Final Environmental Impact Report

Santa Ana River Water Right Applications for Supplemental Water Supply

January 2007
SCH# 2002071062

San Bernardino Valley Municipal Water District • 1954 •

Western Municipal Water District

FINAL ENVIRONMENTAL IMPACT REPORT

SANTA ANA RIVER WATER RIGHT APPLICATIONS FOR SUPPLEMENTAL WATER SUPPLY

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SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT • 1954 •

WESTERN MUNICIPAL WATER DISTRICT

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Errata Figures

APPENDICES

1.0 INTRODUCTION

San Bernardino Valley Municipal Water District and Western Municipal Water District of Riverside County (Muni/Western) prepared a Draft Environmental Impact Report (Draft EIR) to evaluate the potential environmental impacts that could result from the diversion of water from the Santa Ana River (SAR) pursuant to their water right applications filed with the State Water Resources Control Board (SWRCB). The document was released for public review on October 15, 2004. The public review period officially closed on January 14, 2005. Twenty eight comment letters were received on the Draft EIR. One letter was received after the comment period closed.

This Final EIR is comprised of the Draft EIR as amended by this document, including the Responses to Comments.

1.1 OVERVIEW OF THE PROPOSED PROJECT

Muni/Western have filed water right applications to divert and put to beneficial use a total of up to 200,000 acre-feet of water per year (afy) from the SAR. The Project consists of all actions necessary to conserve, divert, convey and store this water from the SAR for beneficial use.

Muni and Western are regional water agencies that manage groundwater and surface water supplies in San Bernardino and Riverside counties in Southern California. The recent completion of Seven Oaks Dam on the SAR provides an opportunity for Muni/Western to achieve the following objectives:

- Increase water supply reliability by reducing dependence on imported water;
- Develop and deliver a new, local, high quality, long-term water supply that is needed to meet part of anticipated future demands; and
- Expand operational flexibility by adding infrastructure and varying sources of water, thereby providing Muni/Western with greater capability to match varying supply and demand.

Water appropriated from the SAR will be put to beneficial use in the Muni/Western service areas through direct use, groundwater recharge, and/or exchange. Muni/Western have developed a set of analytic techniques and models that allows them to demonstrate the manner in which groundwater and surface water resources in their region can be conjunctively used. These techniques and models also demonstrate how it is possible to allocate water for maximum beneficial use through direct delivery, spreading to underground storage, or exchange. Muni/Western have, or will, develop, through joint use agreements, the ability to coordinate use of water conveyance facilities on a local and regional basis. Muni/Western do not propose to export water for use outside their service areas. Any water conveyed outside their service areas would be returned via exchange as soon as practical.

Hydrologic analyses conducted by Muni/Western indicate that, after senior water right claims and environmental needs are accounted for, seasonal water conservation at Seven Oaks Dam can provide a water supply sufficient to help meet projected demand within the Muni/Western service area and so reduce the need to increase the use of imported water. This will, in turn, improve the reliability of regional water supplies and allow for effective conjunctive use of groundwater and surface water supplies. This supplemental water has the added benefit of making water that is not imported by Muni/Western available to help meet the needs of other areas that depend on the State Water Project (SWP) and Colorado River water.

To divert, convey, and store water from the SAR, existing facilities would be used to the extent feasible. However, it would be necessary to construct and/or modify a number of facilities. These Project-related facilities are located in four areas.

- The Seven Oaks Dam and Reservoir Area includes the intake structure of Seven Oaks Dam and the access road to the intake structure. To achieve the desired level of conservation storage, these infrastructure elements require modification.
- The Santa Ana River Construction Area includes the following proposed new facilities: Plunge Pool Pipeline; Low Flow Connector Pipeline; and Morton Canyon Connector II Pipeline.
- The Devil Canyon Construction Area adjacent to the Devil Canyon Power Plant and Afterbays of the SWP would accommodate the new Devil Canyon By-Pass Pipeline.
- The Lytle Creek Construction Area includes the new Lower Lytle Creek Pipeline and Cactus Basins Pipeline.

1.2 FINAL EIR ORGANIZATION

Chapter 2 contains Thematic Responses that are detailed descriptions and clarifications of topics and issues raised by several commenters to the Draft EIR. Chapter 3 presents each comment letter received on the Draft EIR followed by specific responses to each commenter. Chapter 4 contains Errata for the Draft EIR.

2.0 THEMATIC RESPONSES

Topics and issues raised by multiple commenters are addressed as follows in this thematic response:

1. Impact methodology (definition of baseline conditions, definition of No Project conditions, and use of a "bookends" approach);
2. Seasonal conservation storage and Project impacts upstream of Seven Oaks Dam;
3. Project impacts downstream of Seven Oaks Dam;
4. Additional mitigation measures;
5. Cumulative impacts; and
6. Effects of settlement agreements with other water purveyors.

2.1 IMPACT METHODOLOGY

There were a number of comments that addressed the methods through which Muni/Western analyzed impacts in the Draft EIR. Three areas received repeated comments: the baseline that Muni/Western selected to conduct the environmental analysis in the Draft EIR; the related topic of the Draft EIR's description of "No Project" conditions; and the Draft EIR's use of a "bookends" approach in the analysis of potential impacts on the environment. Each of these topics is treated below.

2.1.1 Environmental Baseline

2.1.1.1 Summary of Comments

There were several comments on the Draft EIR that requested clarification of the baseline used as part of the Draft EIR's analysis of the environmental effects of the Project. There were also comments that asked Muni/Western to explain the reason why the selected baseline provides an accurate set of conditions against which to assess the potential impacts of the Project. Some of the comments on the Draft EIR expressed concern that future changes and conditions were incorporated into the baseline so that the Draft EIR understated the effects of the Project on the environment.

2.1.1.2 General Considerations in Selecting the Environmental Baseline

Under the provisions of the California Environmental Quality Act (CEQA), the environmental baseline is the temporal "starting point" or "point of reference" against which the physical changes expected from the proposed project are measured. As noted on page 3.0-2 of the Draft EIR, in many projects the baseline is defined as a fixed point in time; specifically, as the physical conditions existing in the area potentially affected by the proposed project at the time the Notice of Preparation (NOP) is published.

However, in order to serve CEQA's purpose of describing the environmental effects of a project to the public and agency officials, it would be inappropriate to use the date of the NOP as the environmental baseline where physical conditions on that date would not provide a realistic point of reference for an assessment of the potential impacts of the Project. Specifically, selecting the physical conditions at a fixed point in time is not appropriate where the condition of that resource naturally fluctuates over time. Here, surface and groundwater resources naturally fluctuate according to the hydrologic cycles of wet, normal, and dry years. Thus, the selection of a single, fixed-year baseline ignores that natural variability.

For instance, the NOP for the Project was issued in July 2002 when conditions were very dry. Not only was the NOP issued during the period of the year when there normally is little, if any, surface water in the SAR, the NOP was also issued during the middle of a four-year drought. Using conditions on the SAR in July 2002 as the environmental baseline against which to compare Project impacts on surface water or groundwater conditions would, therefore, underestimate the potential effects of the Project on the environment by implicitly assuming that the SAR is always as dry as it was during July 2002.

To avoid this problem and accurately assess the potential impacts of a proposed project on the environment, water resources projects often substitute a multi-year historical baseline called a hydrologic "base-period" for a fixed-year baseline. For instance, as noted in Chapter 5 of the Programmatic Environmental Impact Statement/Environmental Impact Report (PEIS/PEIR) that analyzed the potential effects of the CALFED Bay-Delta Program, the United States and the State of California relied on an environmental baseline of fifteen years, from 1976 to 1991. Instead of relying on environmental conditions at a single point in time, a base period identifies key physical conditions relevant to the project at hand (for instance, precipitation, runoff or other measures of water availability) and evaluates those conditions during a repetition of a historical period of record (the base period) that is representative of the long-term hydrology of the area and that contains multiple cycles of wet, normal and dry years. By using such a representative base period for environmental analysis, a lead agency can avoid giving undue weight to the snapshot of time when the NOP is released for public review and so provide public officials and members of the public with a more accurate picture of the potential effects of the project on the environment.

2.1.1.3 The Draft EIR's Environmental Baseline

As noted above, in general, the environmental baseline that serves as the foundation for the analysis of potential impacts on the environment is the physical condition of the environment on the date on which the NOP is issued. For this reason, for those resources other than surface water and groundwater, the Draft EIR adopted this conventional approach and used physical conditions existing at approximately July 2002 in the area potentially affected by the Project as the environmental baseline. The environmental baseline does not incorporate changes in the environment that would occur without implementation of the Project; those changes in the environment are incorporated in No Project conditions and discussed in detail below. Specifically, Chapters 3 and 4 of the Draft EIR discussed the physical conditions of:

- Surface water infrastructure, including current operations of Seven Oaks Dam;
- Surface water quality;
- Groundwater and groundwater recharge infrastructure;
- Biological resources;
- Geology, soils and mineral resources;
- Land-use and planning;
- Agricultural resources;

- Recreational resources;
- Air quality;
- Cultural and paleontological resources;
- Noise;
- Aesthetics;
- Hazardous materials;
- Groundwater contamination;
- Public services, utilities and transportation; and
- Population and growth inducement.

In analyzing potential impacts from the Project that depend on surface water or groundwater conditions (surface water hydrology, groundwater hydrology and groundwater quality/contamination), the Draft EIR uses as the environmental baseline conditions reflected in the base period hydrology.

Appendix A, Surface Water Hydrology, of the Draft EIR describes in detail the way in which Muni/Western developed the base period for analyzing water-related impacts from the Project. In selecting a base period, Muni/Western looked for a period: (i) where average precipitation would be approximately equal to average precipitation during the entire period of record for the San Bernardino Valley, (ii) where average runoff would be approximately equal to average runoff during the entire period of record, (iii) that is sufficiently long to include average and extreme values for precipitation and runoff, (iv) that has dry periods at both the start and finish to ensure the amount of water in transit in soil is minimal, and (v) that reflects recent land-use patterns. Applying these criteria to the available data led Muni/Western to select a 39-year base period extending from Water Year (WY) 1961-62 to WY 1999-2000. (The analysis of flows in the SAR uses a slightly shorter base period, from WY 1966-67 to WY 1999-2000 because of a lack of data from WY 1961-62 to WY 1965-66.)

2.1.2 No Project Conditions

2.1.2.1 Summary of Comments

There were a number of comments that posed questions about future environmental conditions assuming that the Project was not implemented, i.e., No Project conditions. Some of these comments requested that the Final EIR clarify the similarities and differences between the environmental baseline (discussed above) and No Project conditions. Other comments asked that Muni/Western better explain the differences between conditions with the Project and those under No Project conditions. One comment questioned the Draft EIR's assumption that future demand for water under the No Project alternative would be met through imported surface water deliveries.

2.1.2.2 General Description of No Project Conditions

Under CEQA, the general purpose of describing and analyzing No Project conditions is to provide decision makers and the public with a comparison of the physical conditions of the environment that would occur with and without the Project. In order to fulfill this purpose, an EIR's discussion of No Project conditions should discuss the environmental baseline, as well as the physical conditions of the environment that could reasonably be expected to occur in the foreseeable future if the Project were not implemented, based on current plans and consistent with available infrastructure and community services.

2.1.2.3 No Project Conditions

2.1.2.3.1 Comparison of No Project Conditions with the Project

If Muni/Western did not pursue the Project, the physical conditions in the Project area would generally be similar to the environmental baseline. In particular, as described on page 5-4 of the Draft EIR, Seven Oaks Dam would continue to be operated for flood control purposes only, consistent with the US Army Corps of Engineers' (USACE) Water Control Manual and the requirements of the Biological Opinion for flood control operations issued by the US Fish & Wildlife Service. In contrast to conditions with implementation of the Project, Seven Oaks Dam would not be operated for the purpose of seasonal water conservation. Similarly, the Senior Water Right Claimants[1] and the San Bernardino Valley Water Conservation District (Conservation District) would continue their historical diversions of water from the SAR. Without the Project, Muni/Western would not construct the diversion or conveyance facilities proposed in the Draft EIR and so would not divert water from the SAR. The net result of the No Project, therefore, would be to maintain the current operations of Seven Oaks Dam and the current level of diversions from the upper portion of the SAR. A description of the diversions can be found in Draft EIR Appendix A Surface Water Hydrology, pages A-2-23 and A-2-24.

By contrast, if Muni/Western were to pursue and implement the Project as proposed, Seven Oaks Dam would be operated for seasonal water conservation as well as for flood control. The Biological Opinion for flood control operations would still control operations of Seven Oaks Dam, but would need to be supplemented by an additional document and/or operating criteria that consider the effects of seasonal water conservation. With the Project, diversions of the Senior Water Right Claimants would continue to be used to meet part of the demands by their customers, consistent with the provisions of the Seven Oaks Accord (see Thematic Responses section 2.6). The Conservation District would continue to divert water in the same fashion as it has since 1969, with the slight modifications as described in the settlement agreement between Muni/Western and the Conservation District (again, see Thematic Responses section 2.6 and Appendix E). Muni/Western would construct the diversion and conveyance facilities proposed in the Draft EIR and would divert up to about 1.1 million acre-feet (maf) from the SAR over a repetition of the 39-year base period. In these ways, the Project would change the operations of Seven Oaks Dam, involve the construction of new facilities for diversion and conveyance of water, and place up to about 1.1 million acre-feet of water from the SAR to reasonable and beneficial use in the Inland Empire.

2.1.2.3.2 Comparison of No Project Conditions to the Environmental Baseline

Especially for surface water and groundwater resources, it is important to note that conditions under No Project conditions are not the same as baseline environmental conditions. For many other resources, the No Project condition is the same as the baseline environmental condition

[1] The Senior Water Right Claimants are a group of purveyors who claim pre-1914 rights on the Santa Ana River. They are the Bear Valley Mutual Water Company (and shareholders including the City of Redlands), Lugonia Water Company (and shareholders including the City of Redlands), North Fork Water Company (and shareholders including East Valley Water District) and Redlands Water Company.

because it is not anticipated that there would be any changes to the environment in the absence of the Project. For instance, in a typical land development project, No Project conditions would assume that the land in question is not developed. Under those circumstances, the existing baseline conditions are the same as the No Project conditions (the reasonably foreseeable conditions in the absence of the project).

In the present case, though, Muni/Western determined that, in the absence of the Project, the demand for water in the Muni/Western service areas would continue to grow over time, spurred mainly by changes in land use. The main factors that determine population growth in an area are economic activity, housing affordability and the birthrate of existing residents. The first two factors are the key factors that determine whether individuals will move into an area from other areas (whether inside or outside California) while the last factor determines the natural rate of increase of a population. Review of these factors for the Inland Empire as a whole, a large part of which is served by Muni/Western, indicates that the area continues to have robust economic growth. Over the period 1990 through 2004, civilian employment in California as a whole increased by just over 15 percent (at an average annual rate of 1.01 percent). However, civilian employment over the same time period increased by over 72 percent (4.0 percent annually) in Riverside County and over 48 percent (2.9 percent annually) in San Bernardino County.

A number of counties in California have some of the lowest percentages of affordable housing in the entire nation. Affordable housing is defined as the share of homes for sale that are affordable for the median family income. For the nation as a whole, 50 percent of housing is designated as "affordable" (California Department of Housing and Community Development 2006). The proportion for the Riverside-San Bernardino-Ontario metropolitan area is 17 percent (California Department of Housing and Community Development 2006). This percentage, however, is substantially higher than neighboring areas: 10 percent for the Santa Ana-Anaheim-Irvine area; and 12 percent for the Los Angeles-Long Beach area (California Department of Housing and Community Development 2006). The birthrates (number of live births per 1,000 persons) for both Riverside County (15.7) and San Bernardino County (16.4) exceed that of California (14.8) in general (California Department of Finance 2006).

Given the combination of a robust regional economy, relatively affordable housing, and higher birthrate, it is not surprising that the area has experienced and is projected to experience rapid population growth. The population of the state grew by over 23 percent between 1990 and 2005 at an average annual rate of 1.4 percent per year (California Department of Finance 2002, 2006). Over the same period, the population of Riverside County grew by over 60 percent (3.2 percent annually) and that of San Bernardino County grew by over 37 percent (2.1 percent annually) (California Department of Finance 2002, 2006). Based on projections prepared by the State Department of Finance (DOF), the population of California will increase by over 11 million persons between 2005 and 2030, or over 30 percent (at an average annual rate of 1.1 percent). Over the same time period, and relying on projections prepared by the Southern California Association of Governments (SCAG), the population of Riverside County is forecast to increase by almost 70 percent (2.1 percent annually, on average) and that of San Bernardino County by over 41 percent (1.4 percent annually) (California Department of Finance 2002, 2006).

Compared to the Environmental Baseline, population in the Muni/Western service areas under No Project Conditions is forecast to increase. With a substantial increase in the population of the Muni/Western service areas, the question becomes how Muni/Western can fulfill their respective statutory duties to provide water to a growing population. For the No Project Alternative it was assumed that increased demand would be met through increased use of imported water; other alternatives examined in the Draft EIR assumed use of conservation to serve future population.

Without the Project (No Project), existing supplies would become inadequate to meet anticipated demand around the year 2025. Neither Muni nor Western has the authority to grant or deny land use development permits, since such actions are the responsibility of land use planning agencies and the rate of growth depends on the decisions of these agencies. Actions by others (including private developers) could augment water supplies in the service area (by future purchases or transfers) when demand exceeds supply. Such actions would, however, become increasingly costly. Although these actions by others are likely to occur in the future, their timing and location are uncertain and unknown and are therefore speculative. It is likely that to meet increasing demands, local water sources would be exchanged with SWP water and provided to water users, rather than increasing groundwater extractions from the SBBA. Muni has the responsibility to replace the quantity of water extracted from the basin that exceeds the safe yield by using whatever source of water they have available. The source would, in all likelihood, be comprised of SWP water that would be imported in increasing quantities up to the Table A Amount[2] allocated to Muni. Table A water could be augmented by whatever interruptible (Article 21) waters were, from time to time, available from the SWP[3].

2.1.3 "Bookends" Approach to Impact Analysis

2.1.3.1 Summary of Comments

A number of comments addressed the Draft EIR's use of a "bookends" approach to the analysis of the potential impacts of the Project on the environment. Those comments requested general clarification of the approach to the analysis of impacts under CEQA. Comments also questioned whether the Draft EIR should have evaluated one of the other 32 simulations included in the Draft EIR instead of or in addition to the four scenarios that the Draft EIR used to represent the "maximum" and "minimum" impacts of the Project on the environment.

2.1.3.2 Use of "Bookends" Approach to Address Uncertainty

As noted above, water resources projects are subject to a great deal of uncertainty because of the variability in future hydrologic conditions. For that reason, many water resources projects choose to use a base period rather than a fixed year baseline in order to provide a more realistic assessment of a potential project's impacts on the environment. Water resources projects are also subject to a variety of factors other than hydrology, such as diversions by other water users and the needs of public trust resources. Given the number of potential variables, focusing on a single potential future scenario would unduly limit the environmental analysis and so fail to provide decisionmakers and the public with a full review of the proposed project.

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[2] Table A is a schedule of annual entitlements as set forth in long-term SWP delivery contracts. Table A defines the maximum annual volume of SWP water that a contractor can request in a given year.

[3] Article 21 water is SWP water in excess of that required to meet all demands for entitlement water and water to be stored in the SWP. Article 21 water is not delivered continuously or on a regular pattern, but is delivered when available and when SWP operations allow. Article 21 water allows a SWP contractor to take delivery of water above the approved and scheduled Table A Amount.

In order to address the effects of the many factors that could affect a complex water resources project, public agencies have developed the "bookends" approach to environmental analysis. This approach identifies the minimum and maximum probable values for project activities (the "bookends"), as well as other major factors that could affect the project, and then evaluates the range of impacts that are associated within these minimum or maximum values. For instance, the State of California and the United States described the bookends approach in the PEIS/PEIR for the CALFED Bay-Delta Program as follows:

> To fully describe potential consequences of program actions, the Program has incorporated a reasonable range of uncertainty into this programmatic analysis. This range of uncertainty was quantified by formulating two distinct bookend water management criteria assumption sets. These two sets of assumptions, referred to as Criteria A and B, serve as boundaries for a range of possible Delta inflow, export, and outflow patterns in this programmatic analysis. (CALFED PEIS/PEIR, 5.1-19).

By identifying the maximum and minimum values of all of the factors that could have a major influence on the implementation of a proposed project, the bookends approach to environmental analysis allows a lead agency to succinctly evaluate multiple project scenarios and so to determine whether changes in a project would mitigate for any significant impacts. In this way, the bookends approach to environmental analysis represents an analytic approach that discloses the full range of impacts from a proposed project and accommodates the uncertainty associated with the many factors that can affect a water resources project.

2.1.3.3 Use of "Bookends" in the Draft EIR

The Draft EIR uses the "bookends" approach to evaluate the potential impacts of the Project on the environment. As explained on pages 3.0-3 through 3.0-8 of the Draft EIR, the key determinant of the impacts of the Project on the environment is the quantity of water to be diverted from the SAR by Muni/Western. The quantity of water diverted by Muni/Western is determined by four key factors in addition to the future hydrologic conditions that are addressed through the use of the base period methodology discussed above. Those four factors are: the diversion of water by the Senior Water Right Claimants; the diversion of water by the Conservation District; the releases of water from Seven Oaks Dam for the purpose of restoring habitat as required in the Biological Opinion for flood control operations; and the operation of Seven Oaks Dam for seasonal water conservation. Layered onto these various scenarios are the limits associated with Muni/Western's conveyance facilities (diversion rates of 500 cubic feet per second [cfs] or 1500 cfs).

Combining these four factors and two potential diversion rates with estimates of future hydrology using the base period methodology leads to 32 different potential Project scenarios. As noted above, the "bookends" analysis involves estimating a maximum and minimum value for each of the major determinants of Muni/Western's diversions in order to establish the maximum and minimum bookends. For diversions by the Senior Water Right Claimants, the Draft EIR assumed that the minimum diversions would continue to be at historic levels. The Draft EIR further assumed that maximum diversions for those purveyors would be the 88 cfs that are claimed by these parties and that Muni/Western agreed not to object to in the Seven Oaks Accord. For the diversions by the Conservation District, the Draft EIR assumed that minimum diversions would be the 10,400 afy allowed by that agency's water right licenses and that maximum diversions would be the historical diversions since 1969. The Draft EIR assumed that the Conservation District's maximum diversion rate would be 300 cfs, based on the estimated capacity of Conservation District facilities. For releases required under the Biological Opinion for the operation of Seven Oaks Dam, the Draft EIR recognizes that the U.S. Fish & Wildlife Service did not require the release of water; thus, the minimum release is set at zero. The maximum release of water is set at 1,000 cfs for two days at a six-month minimum interval based on the U.S. Army Corps of Engineers discussion of these releases in the Biological Assessment for the operation of Seven Oaks Dam for flood control (August 2000). For the operation of Seven Oaks for seasonal water conservation, the Draft EIR assumed that the facility would either be operated for seasonal water conservation or would continue to be operated for flood control only. Finally, for the capacity of the diversion and conveyance facilities, the Draft EIR assumed that Muni/Western would construct facilities that are able to divert and convey water from the SAR at a rate of either 500 cfs or 1,500 cfs. Details on the combinations of factors that are used to form these scenarios can be found in Table 3.0-2 on page 3.0-5 of the Draft EIR. The resulting quantities of water available for capture by Muni/Western assuming a diversion rate of 1,500 cfs are shown in Table 3.0-3 while the corresponding capture quantities assuming a diversion rate of 500 cfs are as shown in Table 3.0-4.

After having identified these 32 scenarios, the Draft EIR selected the maximum and minimum diversion quantities assuming either a 500 cfs or 1,500 cfs diversion rate, as the "bookends" for analysis. Scenarios A and C represent the maximum and minimum diversion amounts, respectively, on the assumption that Muni/Western construct diversion and conveyance facilities with a 1,500 cfs capacity. Scenarios B and D represent the maximum and minimum diversion amounts, respectively, on the assumption that Muni/Western construct diversion and conveyance facilities with a 500 cfs capacity. In this way, Scenario A represent the greatest possible diversions by Muni/Western and Scenario D represents the minimum possible diversions. The remaining 30 scenarios fall within the "bookends" of these two scenarios.

The Draft EIR proceeds by comparing impacts under each of the four scenarios, A, B, C and D to those under No Project conditions. For many of the potential impacts of the Project, the impact analyses of these scenarios (and, by extension, all of the other 28 scenarios) were identical and so were not reported separately. Where the impacts of scenarios A, B, C, and D and the No Project conditions differ, the Draft EIR reported those differing results. For instance, the effects of constructing some Project facilities were the same under each of the four scenarios and so the effects of each of the four bookend scenarios were not treated separately. By contrast, there was a difference among the four bookend scenarios in their effects on groundwater and so each of those scenarios is treated separately. The Draft EIR acknowledges that the impacts of the Project are, as a general matter, proportional to diversions in areas like surface and groundwater resources, and biological resources, while the impacts of the Project in other areas, such as air quality or noise, are largely independent of the level of diversions. In all cases, however, the impacts of the Project scenarios (the "bookends") on resources have the same level of significance and so require the same mitigation measures.

2.2 SEASONAL CONSERVATION STORAGE AND PROJECT IMPACTS UPSTREAM OF SEVEN OAKS DAM

2.2.1 Introduction and Summary of Comments

A number of comments posed questions about seasonal conservation storage at Seven Oaks Dam and Reservoir and the potential environmental impacts associated with such an action. Many of these comments confused the impacts of the Project with the impacts of flood control operations at Seven Oaks Dam. Specific concerns addressed here are:

1. The manner in which the operation of Seven Oaks Dam and Reservoir for seasonal water conservation storage in conjunction with flood control (Project conditions) would differ from that for flood control alone (Existing Conditions).
2. The impacts on the environment associated with seasonal conservation storage:
    a) Effects on biological resources upstream of Seven Oaks Dam, within the area of inundation; and
    b) Potential water quality issues within the conservation pool.

The material presented in this thematic response is organized into the following sections: impacts of existing flood control operations; impacts of proposed water conservation operations; and photographic documentation.

2.2.1.1 Impacts of Dam Operated for Flood Control (Existing Conditions)

Seven Oaks Dam was completed in December, 1999 as one component of the Santa Ana River Mainstem Project implemented by USACE. The dam is designed to provide flood protection to downstream communities and its operation is conducted in coordination with that of Prado Dam, located about 40 miles downstream. Seven Oaks Dam is operated for flood control purposes.

Starting October 1 of each year, releases at Seven Oaks Dam are reduced to a maximum of 3 cfs in order to form a debris pool of up to 2,966 acre-feet (af) (2200 feet NGVD). Once the debris pool target elevation is reached all inflow is released. The debris pool is held until the end of the flood season and then drained throughout the summer. During June, July and August all inflow, plus and additional increment necessary to empty the debris pool is released. During flood events, Seven Oaks Dam will store water destined for Prado Dam as long as the reservoir pool at Prado reservoir is rising and the pool at Seven Oaks Dam is not approaching the spillway (147,969 af). When the reservoir pool at Prado reservoir is rising, releases at Seven Oaks Dam are generally limited to 500 cfs. Once the water surface elevation at Prado Dam reaches its peak and starts to recede, Seven Oaks Dam releases will be made, ranging from a minimum of 2,000 cfs or less depending on water level in the reservoir to the maximum rate of 7,000 cfs (USACE 2003b).

Flood control operations can, thus, result in the storage of water behind Seven Oaks Dam. These operations vary from year to year depending on the intensity, timing, and frequency of storms and runoff characteristics within the SAR watershed. In some years, storm water may not be stored behind Seven Oaks Dam. In other years, such as water year 2004-2005, substantial quantities of water can be stored.

2.2.1.1.1 Impacts from Construction of Seven Oaks Dam

The following describes the impacts resulting from construction of Seven Oaks Dam, taken from the *Final Supplemental Environmental Impact Statement, Santa Ana River Mainstem Including Santiago Creek, Phase II General Design Memorandum. Counties of Orange, Riverside, and San Bernardino* (US Army Corps of Engineers, August 1988).

BIOLOGICAL RESOURCES

Excavation of the borrow areas and disturbance due to the construction of haul roads both above and below Seven Oaks Dam resulted in the destruction of biologically valuable habitat consisting primarily of intermittent stands of mixed desert-scrub and alluvial scrub vegetation, and associated wildlife. These adverse impacts to habitat had the potential to affect sensitive species such as Santa Ana River woolly-star, slender-horned spineflower, orange-throated whiptail, San Diego coast horned lizard and the greenest tiger beetle.

WATER RESOURCES

Increased turbidity to surface water was anticipated from: (i) construction-related activities such as excavation of haul and access roads and borrow areas, and (ii) following the first heavy rains after project construction when blasting debris and other fine particles would be flushed into water courses. Increased turbidity was not considered to have significant impacts since similar turbidity appears naturally during the initial storm events of the season as natural accumulations of sediment from weathered rocks and dust are washed into the watercourses.

2.2.1.1.2 Impacts from Flood Control Operations at Seven Oaks Dam

The following describes the impacts resulting from flood control operations at Seven Oaks Dam. Unless otherwise stated, information on impacts of flood control operations has been taken from the *Final Supplemental Environmental Impact Statement, Santa Ana River Mainstem Including Santiago Creek, Phase II General Design Memorandum. Counties of Orange, Riverside, and San Bernardino* (US Army Corps of Engineers, August 1988).

BIOLOGICAL RESOURCES

The Final Supplemental EIS (FSEIS) for construction of Seven Oaks Dam published in 1988 states that "Because of expected sedimentation conditions, it is anticipated that all of the floodplain (including riparian) vegetation upstream from the proposed dam to the 50-year floodline (258 acres) would be lost. Approximately 50 percent of the floodplain vegetation beyond the 50-year line to the maximum flood boundary (an additional 163 acres) would be similarly lost."

The FSEIS identifies these losses as a significant impact. The 50-year floodline is at a surface elevation of 2,425 feet and no sensitive vegetation, wildlife habitat, sensitive plant or wildlife species, or spawning grounds, and migration routes were expected to remain within the 50-year inundation area with operation of Seven Oaks Dam as a flood control facility. Therefore, the 1988 FSEIS included 100 percent mitigation for these losses of sensitive biological resources. In addition, the 1988 FSEIS stated that 50 percent of the biological resources located between the 50-year flood level elevation and 100-year flood level elevation would be lost as a result of the construction and operation of Seven Oaks Dam for flood control. The 1988 FSEIS included mitigation to reduce all of the biological impacts above the 50-year flood level elevation and below the 100-year flood level elevation to a less than significant level.

Approximately 300 acres of chaparral (upland habitat) were expected to be directly impacted by construction of Seven Oaks Dam, and 90 acres of upland habitat would be lost due to inundation. Further, "The shoreline excursion during the rainy season would result in erosion and flooding which would damage all plants within the 10-year floodline and most of those present within the 10- to 50-year boundary." The 10-year floodline is at a surface elevation of 2,300 feet and the 50-year floodline is at a surface elevation of 2,425 feet.

The 1988 FSEIS indicates that significant wildlife habitat would be lost as a result of building the dam. Significant losses to wildlife habitat include the loss of herpetofauna, including sensitive species, due to drowning and habitat alteration; the loss of mule deer habitat and habitat for other mammals; the loss of breeding bird habitat; the loss of trout spawning habitat; and the creation of a barrier that would prohibit the movement of mule deer during migration.

Large portions of the broad alluvial wash (Santa Ana Wash) downstream of Seven Oaks Dam were understood to be inundated less frequently than prior to construction of the dam. Such a change in the frequency of inundation adversely affected the Santa Ana River woolly-star. Assuming that the bed of the main channel remained fixed, it was estimated that about 450 acres would experience a reduction in flood frequency. If it were assumed that the channel bed fluctuates within the floodplain, the area could extend to 700 acres.

During the planning process leading to the preparation of the 1988 FSEIS for the Santa Ana River Mainstem Project (SARMP), the USACE requested formal consultation with the US Fish and Wildlife Service (USFWS) as stipulated under Section 7 of the Endangered Species Act (ESA) for the following federal endangered and/or threatened species: least Bell's vireo *(Vireo bellii pusillus),* peregrine falcon *(Falco peregrinus anatum),* bald eagle *(Haliaeetus leucocephalus),* Santa Ana River woolly-star *(Eriastrum densifolium ssp. sanctorum),* and the slender-horned spineflower *(Dodecahema leptoceras).*

Based on analysis of field and scientific data documented in the USACE's Phase II General Design Memorandum (GDM) Biological Assessment for the SARMP, the USACE concluded and the USFWS concurred that the SARMP was not likely to affect the peregrine falcon, the bald eagle, or the slender-horned spineflower. Therefore, these species were not given further consideration in the USFWS Biological Opinion (BO), dated June 22, 1989. Furthermore, the BO concluded that the SARMP, together with inclusion of the proposed mitigation/compensation plan included as part of the project design (and as detailed in the BO) would not likely jeopardize the continued existence of the least Bell's vireo or the Santa Ana River woolly-star. (USACE, of course, consulted with USFWS regarding impacts on the woolly-star, the slender-horned spineflower and the San Bernardino Kangaroo Rat. Those effects are discussed in section 2.3 of these Thematic Responses.)

At the time the FSEIS was prepared, no special status plants were known to occur in the area upstream of Seven Oaks Dam potentially affected by the flood control project. Biological surveys for the Arroyo Southwestern toad, California Red-Legged frog, and the Santa Ana sucker were negative for the presence of the species both above and below the Seven Oaks Dam. Since preparation of the 1988 FSEIS and the 2000 BO on Seven Oaks Dam, critical habitat for the southwestern willow flycatcher (*Empidonax traillii extimus*) has been designated, including 25.3 miles of the upper SAR from its headwaters to the upstream face of Seven Oaks Dam. It is assumed that the USACE will meet the necessary obligations related to southwestern willow flycatcher (avoidance of impacts, or mitigation as necessary) as part of its on-going ESA obligations for operations at Seven Oaks Dam.

WATER RESOURCES

Operation of the dam for flood control will, in the long term, cause a significant reduction in the peak volume (in cfs) and velocity (in feet per second) of water in the mainstem of the SAR from the upper end of the impoundment area upstream of Seven Oaks Dam to Prado Flood Control Basin. This change will also reduce the amount of sediment moving downstream which will, in turn, change the character of the outwash plain below the dam.

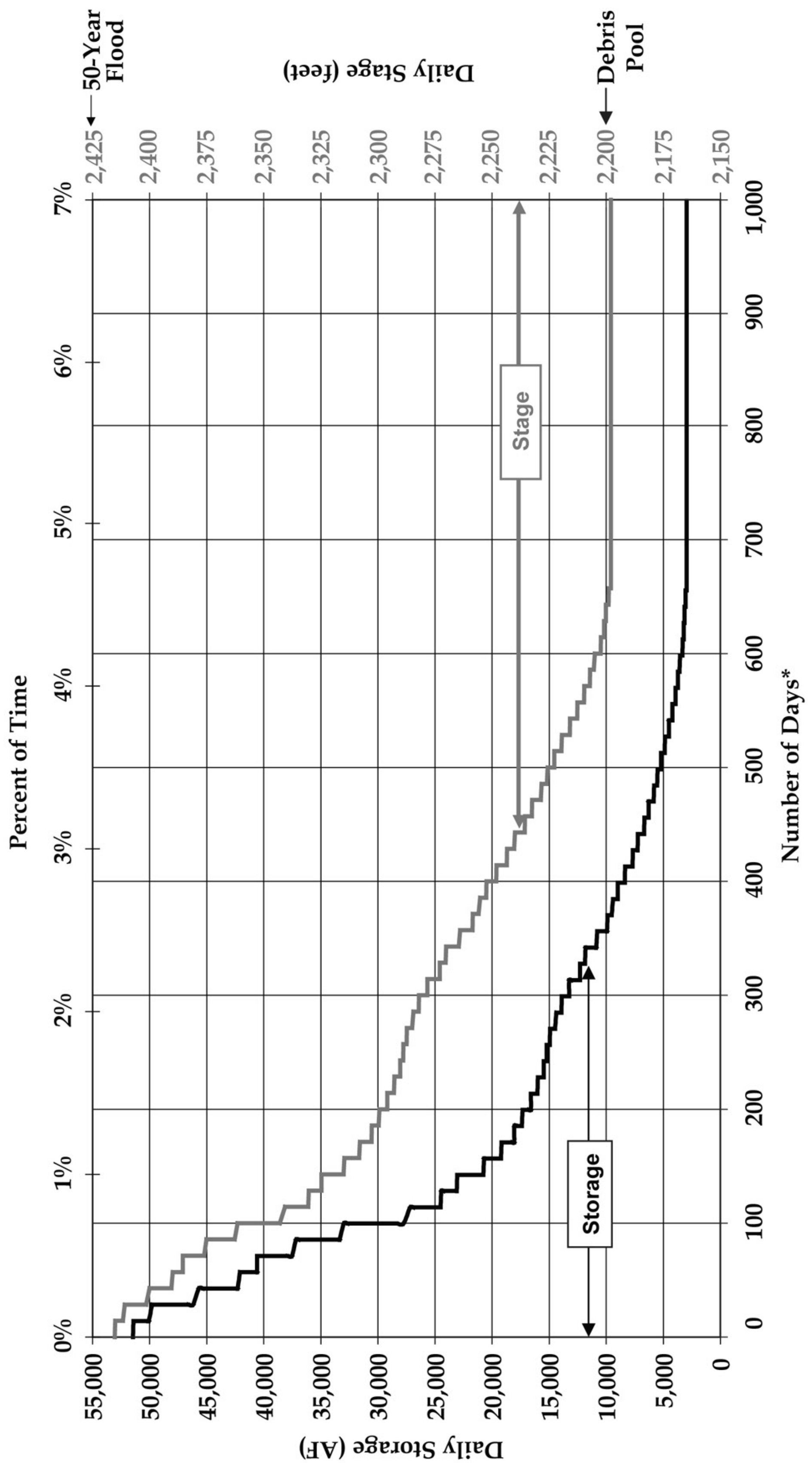
With Seven Oaks Dam operated for flood control and a repeat of hydrologic conditions of the period WY 1962 through WY 2000 (No Project), it is projected that the reservoir would contain more water than that accommodated by the debris pool for approximately 650 days. This would be on less than 5 percent of the days in the period. See Figure 2.2-1. Under a repeat of these hydrologic conditions, storage would not reach the 50-year flood inundation elevation at 2,425. Figure 2.2-1 illustrates the infrequency with which any appreciable quantity of water above that stored in the debris pool would accumulate in Seven Oaks Reservoir.

Certain water quality characteristics can change during impoundment in natural and artificial ponds, lakes, and reservoirs. Solar heating increases water temperature and reduces the natural ability of water to maintain dissolved oxygen concentrations. Further, natural degradation of biological materials reduces dissolved oxygen concentrations. The water column may become stratified and mixing may be reduced or eliminated, thus fostering the development of anaerobic conditions. Anaerobic conditions can also cause several other water quality parameters to be exceeded. For example, hydrogen sulfide can be generated in harmful quantities when materials containing sulfur, such as biological detritus and mineral sulfides, are available. In addition, ammonia can be generated from nitrogen-containing material; un-ionized ammonia, in particular, can be toxic to many aquatic organisms. Anaerobic conditions can also lower the pH (which results in the release of trace metals found in bottom sediments) and local nuisance conditions, such as algal blooms and mosquito breeding are also more likely to occur.

The FSEIS published by the USACE maintained that, should a portion of the water become anaerobic, acidic conditions would tend to be counteracted by the buffering capability (high pH) of the inflowing water. However, anaerobic conditions and resultant changes in other water quality parameters were observed in the summer of 2004 following the formation of the first debris pool behind Seven Oaks Dam. This water was found to be unsuitable for treatment and distribution to water users downstream and was not diverted and put to beneficial use by prior water right holders.

2.2.1.1.3 Mitigation Measures Associated with Construction and Operation of Seven Oaks Dam

Implementation and continuation of mitigation measures that were developed for the 1988 FSEIS, during Section 7 (Endangered Species Act) consultations, and that resulted from subsequent coordination and National Environmental Policy Act (NEPA)/CEQA documentation are the responsibility of the USACE and Local Sponsors. These mitigation measures are designed to offset adverse impacts from the inundation of lands upstream, construction and operation of Seven Oaks Dam and Reservoir for flood control to upland, riparian, and aquatic habitat both above and below the Seven Oaks Dam, and impacts to water quality. As mitigation for loss of vegetation, riparian habitat, upland habitat, wildlife habitat, mule deer migration routes, and trout spawning habitat; two parcels of land (Filaree Flats [139 acres] and Section 5 [649 acres]) were acquired and turned over to the United States Forest



Note: The black curve represents storage and corresponds to the scale on the left.
The gray curve represents stage and corresponds to the scale on the right.

* 14,245 total days in period from WY 1962 through WY 2000

Figure 2.2-1. Probablility of Daily Storage and Stage for Seven Oaks Reservoir (WY 1962 through WY 2000) No Project

Service (USFS). In addition, 60 acres of the SAR Wash between Greenspot Road and Seven Oaks Dam were acquired and improved after completion of the dam as compensation for riparian habitat losses (USACE 1988). This commitment was subsequently eliminated at the request of the USFWS in exchange for providing funding for Arundo removal in the upper watershed. As mitigation for the Santa Ana River woolly-star, the USACE and the USFWS agreed that 760 acres of woolly-star habitat would be preserved in the SAR Wash.

The Operations and Maintenance Manual for Seven Oaks Dam (August 2002) establishes a water quality monitoring program to be performed at the dam by the Local Sponsors. Water quality shall be monitored by the Local Sponsors after initial filling of the reservoir, and during operation. Sampling shall be conducted in the reservoir pool and downstream of the dam for chemical, limnological, and bacteriological parameters. Sampling shall occur within the pool and outlet during the months of January, April, May, June, and October when water is present in the reservoir pool. If warranted, a number of control measures are available and shall be used to control water quality in the reservoir. These measures could include flushing and/or mixing the pool, and other methods that may be recommended by the USACE, the California Regional Water Quality Control Board, or consultants retained by the Local Sponsors to conduct the monitoring.

2.2.2 Impacts of Dam Operated for Seasonal Water Conservation (Project Conditions)

In June of 1997, in coordination with Muni/Western, USACE published the *Seven Oaks Dam Water Conservation Feasibility Study EIS/EIR* (Feasibility Study) which presents the findings of studies conducted to determine the potential for modifying Seven Oaks Dam to accommodate water conservation. In preparing the Draft EIR, Muni/Western critically reviewed and incorporated pertinent information and analysis contained in the Feasibility Study Final EIS/EIR. The Feasibility Study Final EIS/EIR assessed a number of alternative water conservation operations in order "to develop a plan that will provide the maximum water conservation benefits to the Seven Oaks Dam extended study area which is defined as the service areas of the San Bernardino Valley Municipal Water District and the Western Municipal Water District." In addition, analysis of water conservation presented in the Draft EIR incorporated other information and investigations of the biological resources upstream of Seven Oaks Dam and Reservoir. Most notably among this information were materials submitted by Muni and other water purveyors in connection with the relicensing of the Southern California Edison Santa Ana River 1/3 powerplants (Leidy & Spranza, *Aquatic Resources Assessment of the Santa Ana River 3 Reach of the Santa Ana River 1/3 Hydroelectric Project*, 2001) and the draft and final environmental assessments prepared by the Federal Energy Regulatory Commission (FERC) in connection with that relicensing. The discussion of impacts to biological resources during construction on page 3.3-19 and during operations on page 3.3-55 and the discussion of cumulative impacts at page 6-32 of the Draft EIR considered all of these documents, as well as the general scientific literature relating to the biological resources of the SAR. Many of the specific issues and discussion in this Thematic Response rely on information provided to the California State Water Resources Control Board on June 1, 2005 in response to a request for information. A copy of that response is attached as Appendix B to this Final EIR. The conclusions expressed in the Draft EIR and elaborated on in this thematic response and elsewhere in this Final EIR represent the independent judgment of Muni/Western.

The Feasibility Study considered four alternatives in addition to the No Action Plan, each defined in terms of a specific storage volume targets for certain months. See Table 2.2-1. Each of the Alternatives was defined in terms of maximum surface water elevation (and seasonal storage capacity) of the seasonal conservation pool. Alternative 3 had a maximum seasonal storage of 50,000 af. Project scenarios for the Muni/Western EIR that include seasonal storage (Scenarios A and B) incorporate the characteristics of the Feasibility Study Alternative 3. Even with conservation storage, the prime function of the facility would remain flood control. Since the entire capacity of Seven Oaks Reservoir is needed for flood control operations during the portions of the year when large winter storms may cause significant runoff events, alternative water storage plans considered in the Feasibility Study and the Project were limited to the seasonal use of available storage capacity when large runoff events would not be expected.

Table 2.2-1: Seasonal Water Storage by Alternative (USACE 1997 Feasibility Study EIS/EIR)

USACE Alternative	*Maximum Seasonal Storage (af)*
No Action Plan	Not Applicable
Alternative 1	16,293
Alternative 2	35,000
Alternative 3	50,000
Alternative 4	10,270

The Feasibility Study is dated June 1997 (State Clearinghouse No. 95091036), however, a Record of Decision for the document was not published and the local flood control agencies did not complete their CEQA process. Thus, currently, Seven Oaks Dam is operated for flood control purposes only. In order to accommodate seasonal conservation storage, changes would be required to both facilities and operational procedures. Prior to implementing any changes called for in a revised Water Control Manual, the USACE would comply with all appropriate federal environmental policies and procedures, including NEPA and ESA.

In order to develop the Project scenarios assessed in the Draft EIR, it was necessary to simulate the manner in which Seven Oaks Dam and Reservoir would be operated for seasonal conservation storage. This was accomplished by computer modeling based on operational criteria contained in the interim Water Control Manual (WCM) issued by the USACE. Before the release of the Draft EIR in October, 2004, the latest version of the WCM, dated September 2003, was released. A comparison of model parameters from the previous version of the manual did not identify differences that would affect model output and, hence, the environmental analysis presented in the Draft EIR is representative of WCM operations.

Under Project Scenarios A and B (which incorporate seasonal conservation storage), up to 50,000 af could be impounded at Seven Oaks Dam. Such storage would have a water surface elevation over 200 feet above that of the existing debris pool but below the 100 percent mitigated area associated with flood control operations (see sections 2.2.2.1 and 2.2.2.3 of this Final EIR). Operation of the dam for seasonal conservation storage as specified under the Project would involve normal flood control operations in the typical winter flood months of October through February. At the beginning of March each year, the seasonal conservation pool would be expanded over 10 days to a target conservation storage of 50,000 af on March 10th. From March 10th through May, inflow would be released from the dam after the target storage elevation was reached. From June through September, all inflow plus an additional increment of release would be made to ensure that both the conservation pool and debris pool would be drained by the end of September. Target conservation storage and outflow under USACE Alternative 3 (i.e., the Project) is shown in Table 2.2-2.

Table 2.2-2: Target Storage and Releases, Alternative 3 of USACE 1997 Feasibility Study EIS/EIR

Month	*Maximum End-of-Month Target Storage (acre feet)* [a]	*Releases (cfs)*
October	73	Equals Inflow [b]
November	2,966	Equals Inflow [b]
December	2,966	Equals Inflow [b]
January	2,966	Equals Inflow [b]
February	2,966	Equals Inflow [b]
March	50,000	Equals Inflow [b]
April	50,000	Equals Inflow [b]
May	50,000	Equals Inflow [b]
June	37,500	Equals Inflow + 208 [c]
July	25,000	Equals Inflow + 208 [c]
August	12,500	Equals Inflow + 208 [c]
September	73	Equals Inflow + 208 [c]

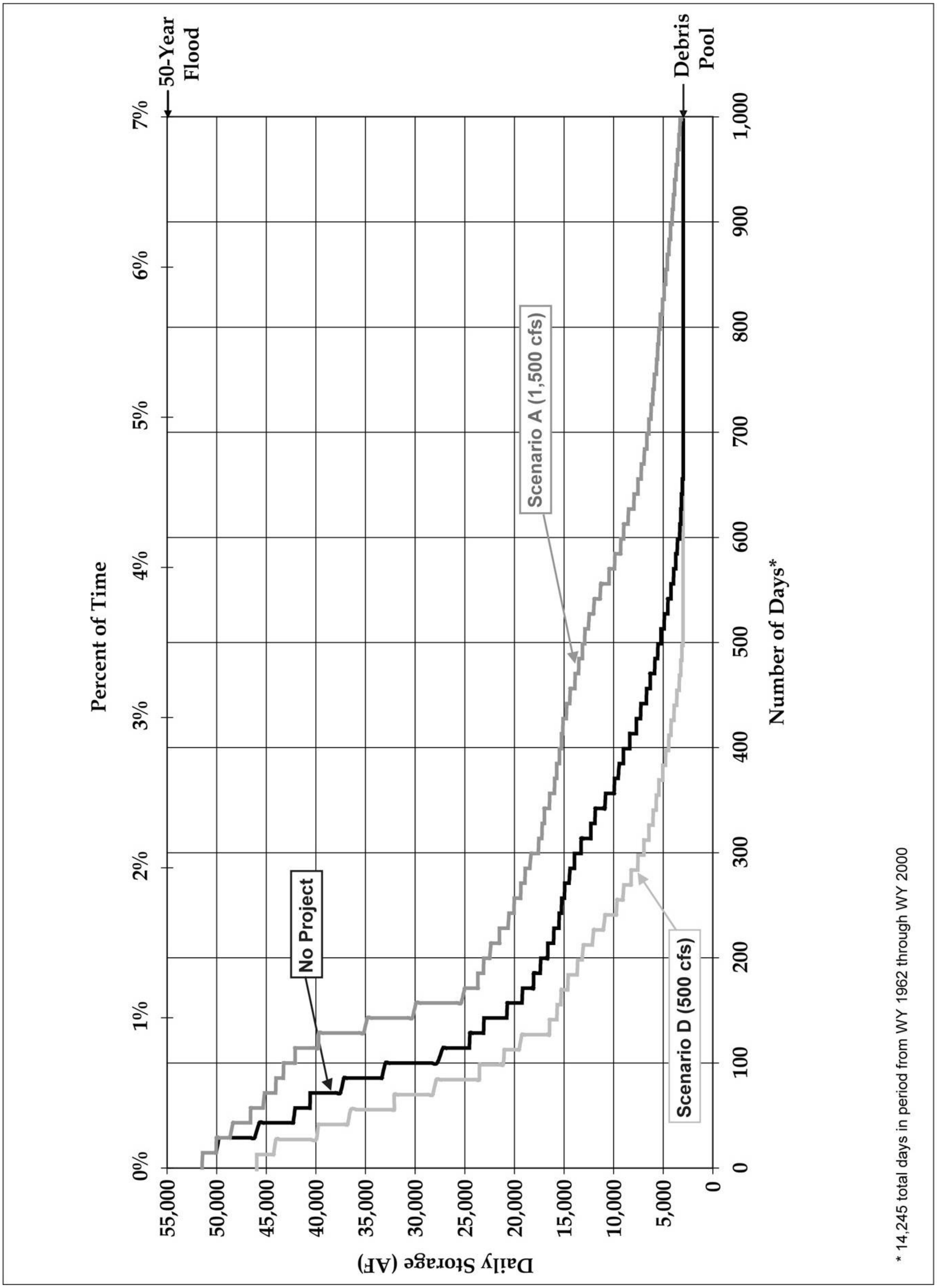
Notes:
[a] Based on Water Control Plan of January 2000, Plate 10.
[b] Except as modified by the Water Control Plan, which states release limited to 500 cfs when Prado Reservoir rising.
[c] Or as required to reach target storage. 208 cfs is the release rate required to dewater a 50,000 af reservoir in three months.

Assuming a repeat of hydrologic conditions of the period WY 1962 through WY 2000, the manner in which daily storage at Seven Oaks Reservoir under the Project would differ from No Project can be seen from Figure 2.2-2. Under Project Scenario A (which includes a seasonal storage element and a diversion rate of 1,500 cfs), daily storage is anticipated to exceed the daily storage that would occur under the No Project but only on approximately 7 percent of days and never would storage exceed the highest volume of storage that would occur under the No Project. This result is confirmed by a comparison of Scenario A and No Project daily stage, see Figure 2.2-3. Under Project Scenario D (which does not include a seasonal storage element), daily storage and stage are anticipated to consistently be below or the same as storage/stage condition that would occur under No Project conditions. See Figures 2.2-2 and 2.2-3.

2.2.2.1 *Construction Impacts for Seasonal Water Conservation*

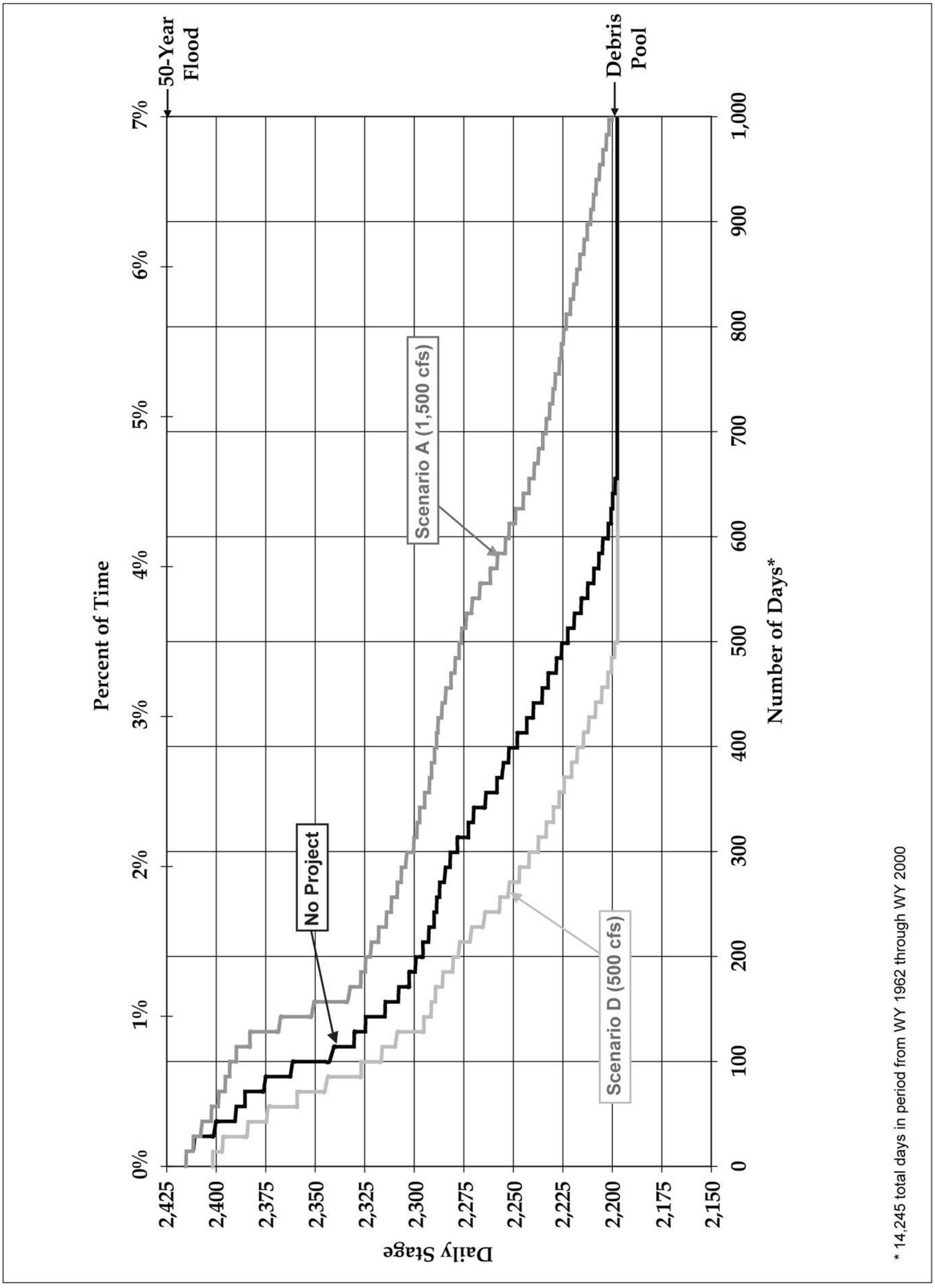
2.2.2.1.1 Biological Resources

No adverse impacts to biological resources are anticipated because all construction activities (as described in the Draft EIR) would take place on the upstream side of Seven Oaks Dam in areas that are already heavily disturbed and that, under flood control operations are anticipated to be disturbed regularly by inundation during the winter storm season. These areas do not have the primary constituent elements of southwestern willow flycatcher habitat and so no effect on the southwestern willow flycatcher is expected.



* 14,245 total days in period from WY 1962 through WY 2000

Figure 2.2-2. Probability of Daily Storage for Seven Oaks Reservoir (WY 1962 through WY 2000)



* 14,245 total days in period from WY 1962 through WY 2000

Figure 2.2-3. Probablility of Daily Stage for Seven Oaks Reservoir (WY 1962 through WY 2000)

2.2.2.1.2 Water Resources

Increased erosion, sedimentation and turbidity caused by grading activities during construction will comprise significant impacts. Mitigation measures designed to offset the impacts include (1) adherence to the relevant conditions established by the San Bernardino County Grading Ordinance, and (2) implementation of the requirements of the National Pollutant Discharge Elimination System (NPDES) for erosion control caused by stormwater runoff during construction, as specified under the general permit to discharge stormwater associated with Construction Activity #92-08-DWQ. This general permit identifies several erosion control devices or methods, including the careful use of grading management techniques, drainage ditches, straw bale barriers, gravel filter berms, dikes, catch basin inlet protection, end-of-pipe filtering devices, silt fences, dams, sediment basins, netting, and slope drains. These mitigation measures will reduce the impacts of the Project to a less than significant level.

2.2.2.1.3 Other Resources

Emissions of air pollutants from construction equipment during grading would have temporary significant impacts to air quality. Emissions of CO, NOx, and PM_{10} would be significant during the construction phases of the Project. As described in the Draft EIR, Muni/Western have proposed mitigation measures to reduce and avoid emissions during construction (MM AQ-1 and MM AQ-2), but impacts would remain significant and unavoidable.

2.2.2.2 Operations Impacts for Seasonal Water Conservation

2.2.2.2.1 Biological Resources

The riverbed upstream of Seven Oaks Dam is occupied by relatively sparse riparian scrub dominated by mule fat along dry secondary channels with riparian woodlands dominated by white alder (*Alnus rhombifolia*), sycamore (*Platanus racemosa*), three species of willow (*Salix lasiolepis*, *S. laevigata*, and *S. gooddingii*), Fremont and black cottonwoods (*Populus fremontii and P. trichocarpa*) and velvet ash (*Fraxinus velutina*) in the vicinity of inflows from Alder and Warm Springs creeks and intermittently along the active channels. Terraces in the floodplain are dominated by Riversidian sage scrub. This segment is marked by periodic flooding, which dramatically alters the woody riparian communities by stripping them from the banks of the stream, followed by episodes of regeneration.

According to Leidy and Spranza (2001), the only fish species in the segment between the Santa Ana River No. 1 Powerhouse downstream to Seven Oaks Dam are introduced brown trout (*Salmo trutta*) and introduced rainbow trout (*Onchorhynchus mykiss*). These two fish are found in perennial segments, known as cienegas, associated with the inflows of Alder Creek and Warm Springs Creek, where groundwater is forced to the surface by shallow bedrock. Swift et al. (1993) found no extant populations of native fish species in this segment.

Operation of Seven Oaks Dam and Reservoir for seasonal water conservation would involve the loss of alluvial scrub, alder woodland and chaparral habitat. Conservation storage of up to 50,000 afy would impound water up to 2,418 feet NGVD. Biological impacts addressed in the 1988 FSEIS include effects on vegetation in the upper Santa Ana Canyon up to the 50-year flood line. The 50-year flood line is at a surface elevation of approximately 2,425 feet NGVD. Therefore, all vegetation impacts at 2,418-foot water levels were previously addressed and mitigated as part of the *Phase H General Design Memorandum on the Santa Ana River Mainstem Including Santiago Creek, California Supplemental Environmental Impact Statement* project (USACE 1988). Furthermore, according to the USACE, and confirmed by modeling performed for the

Muni/Western EIR (see previous section 2.2.2), no increases in the duration of flood flows extending beyond the 50-year flood line were expected to occur under the Project alternatives. Therefore, no impacts to habitat above the 50-year flood line elevation would occur with the implementation of the Project.

According to the USACE, the changes in water flow under water conservation conditions are expected to be nominal compared to the water flow under flood control conditions. The baseline peak water release flow during flood control conditions is up to 500 cfs (USACE 1995). This baseline peak water release would remain the same under the water conservation alternatives and, thus, under the Project. Consequently, no impacts to downstream sensitive plants are expected to occur as a result of the Project.

No additional impacts to wildlife movement corridors are anticipated because this impact was identified and fully mitigated as part of the construction of the Seven Oaks Dam project.

As described earlier, since publication of the Draft EIR, the USFWS has published a final rule designating critical habitat for the southwestern willow flycatcher. Included within the area designated as critical habitat are 25.3 miles of the upper Santa Ana River, from its headwaters to the upstream face of Seven Oaks Dam. The final rule designating critical habitat described this area as providing "riparian habitat for breeding, migrating, dispersing, non-breeding and territorial southwestern willow flycatchers, metapopulation stability, gene flow, connectivity, population growth, and prevention against catastrophic loss."

The Project would subject a small portion of the upper Santa Ana River immediately upstream of Seven Oaks Dam (approximately 1.33 miles) to periodic inundation as part of water conservation operations. The operation of Seven Oaks Dam for water conservation is not likely to remove or appreciably degrade the primary constituent elements of habitat for the southwestern willow flycatcher that may be found in the area affected by water conservation operations. The fluctuation in water levels in Seven Oaks Reservoir due either to flood control operations or due to water conservation operations is likely to lead to the exposure of fine/moist soils in the floodplain of the reservoir, which results in the development of riparian tress and other riparian vegetation of the type utilized by the flycatcher. It is unlikely that this vegetation would be sufficiently persistent or of sufficient patch size to be frequently used by the flycatcher. Riparian vegetation of the type used by the flycatcher will persist on the perimeter of the inundation area and, over time, will increase or decrease. Riparian vegetation, including willows, may be submerged for substantial periods of time and yet remain viable, thereby providing some of the habitat components necessary for the flycatcher. In this way, neither the temporary inundation of riparian habitat nor the temporary drying out of such habitat due to reservoir operations would be likely to affect the ability of the southwestern willow flycatcher to utilize the critical habitat immediately upstream of Seven Oaks Dam. Consequently, water conservation operations would not be expected to have an adverse effect on critical habitat for the southwestern willow flycatcher.

No additional impacts to sensitive wildlife species or habitats are anticipated from implementation of the Project because any known species and habitats were identified and fully mitigated as part of the construction of the Seven Oaks Dam project. Other wildlife species considered sensitive or listed following completion of the 1988 FSEIS fall under the jurisdiction of the SARMP.

2.2.2.2.2 Water Resources

The quality of water impounded in the Debris Pool for flood control was impaired during the summer of 2004 by the development of anaerobic conditions. Water impounded in the reservoir for flood control purposes in 2005 contained high levels of suspended solids and was unsuitable for use. USACE and the Local Sponsors responsible for the operation of Seven Oaks Dam and Reservoir for flood control are currently working on addressing this problem. Muni/Western are cooperating in those efforts.

2.2.2.3 Mitigation Measures

It is assumed that USACE and/or the Local Sponsors will implement a water quality monitoring and mitigation program that will address both the problem of anerobic conditions and the problem of turbidity (assuming the analyses show that these problems were not one-time occurrences) based on the best available data. As noted above, Muni/Western are willing to cooperate in such efforts to the extent the Project would have any impacts on such conditions.

Proposed mitigation measures applied to construction activities would reduce construction-related emissions to the maximum extent feasible. After implementation of the above mitigation measures, construction emissions would remain significant. However, long-term regional and local air quality impacts would be reduced to less than significant.

2.2.3 Photographic Documentation

The following photographs provide visual information regarding a number of characteristics and conditions described above. Figure 2.2-4 shows the alluvial channel of the SAR at and above the confluence of the mainstem and Warm Springs Canyon in September of 2003. Dense woody riparian vegetation is clearly visible in the foreground lying within the incised main channel. Less abundant vegetation extends upstream. Also visible is the USFS road leading upstream on the left bank (right-hand side in the photograph) of the channel and providing access to upstream hydropower facilities. Conditions reflect those following multiple years of well below average runoff.

Following the partial draining of water stored behind the dam in April 2005, the effects of inundation on the riparian vegetation are visible in Figure 2.2-5. The extent of sedimentation is evident and, although some of the woody riparian habitat is visible, the large majority is covered by many feet of sediment. Areas of slope failure are visible especially on the extreme right-hand side of the photograph.

In March of 2005, storage behind the dam reached almost 50,000 af as can be seen in Figure 2.2-6. The debris pool, located below the staff gauges on the upstream dam face, is visible in the center foreground. The engineered slope adjacent to Government Canyon is visible on the extreme left. The access road leading upstream is visible on the extreme right-hand side of the photograph.

Figure 2.2-7 illustrates conditions following partial draining of the reservoir pool in April 2005. The characteristic “bathtub ring” is clearly in evidence as well as instances of slope failure.

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Figure 2.2-4. View Looking North, Upstream into Santa Ana River at Confluence with Warm Springs Canyon within Seven Oaks Reservoir, September 2003

Figure 2.2-5. View Looking North, Upstream into Santa Ana River at Confluence with Warm Springs Canyon within Seven Oaks Reservoir, April 2005

Figure 2.2-6. Seven Oaks Reservoir, March 2005

Figure 2.2-7. Seven Oaks Reservoir, April 2005

2.3 PROJECT IMPACTS DOWNSTREAM OF SEVEN OAKS DAM

There were a number of comments on the Draft EIR that addressed potential effects of the Project on the environment downstream of Seven Oaks Dam. Those comments principally focused on four areas: (i) the impacts of the Project on surface water hydrology, most notably on the availability of water during non-storm conditions; (ii) the impacts of the Project on groundwater hydrology and groundwater quality; (iii) the way(s) in which the Project would assist or detract from the conjunctive management of surface water and groundwater in the San Bernardino Basin Area (SBBA); and (iv) the impacts of the Project on biological resources, most notably on threatened or endangered species. Each of these impacts is discussed in this Thematic Response.

2.3.1 Surface Water Hydrology

2.3.1.1 Summary of Surface Water Related Comments

Comments on the Draft EIR posed questions about the existing hydrology on the SAR and the various uses supported by these flows. In addition, a number of comments questioned the analytical tools used in the surface water analysis.

In order to answer these questions, this section of the Thematic Responses provides additional information about the existing hydrologic condition of the SAR, the beneficial uses supported, and gives additional background information and explanation of the rationales for using the analytical tools and other techniques used in the Draft EIR.

2.3.1.2 Existing Conditions

The natural hydrology of the SAR has been greatly altered over more than a century of development. This development has included the diversion of water for agricultural irrigation, urban uses, and power generation; construction of impoundment structures such as Bear Valley, Prado, and Seven Oaks dams; groundwater extraction; channelization of streambeds; the relocation of tributaries; and the inflow of effluent discharges from wastewater treatment facilities. The natural hydrology of infrequent high runoff events from nearby mountains onto an alluvial plain combined with the cumulative effects of water resource development ensures that a large stretch of the SAR below Seven Oaks Dam is characterized by ephemeral, intermittent flow, punctuated by large flood events. The Biological Assessment for Seven Oaks Dam characterizes the SAR as an ephemeral stream with flows related only to storms and generally with flow only during the months of November to April (USACE 2000, pg. 47). The Santa Ana Regional Water Quality Control Board notes in the Basin Plan that: "Most of this reach [Reach 5, Seven Oaks Dam to the City of San Bernardino] tends to be dry, except as a result of storm flows, and the channel is largely operated as a flood control facility" (SARWQCB 1995, pg. 1-6).

2.3.1.2.1 Santa Ana River Segments

SEGMENT A, UPSTREAM OF SEVEN OAKS DAM

Segment A is defined as the segment above Seven Oaks Dam and is the topic of section 2.2 of these Thematic Responses.

SEGMENT B, SEVEN OAKS DAM TO JUST ABOVE CUTTLE WEIR

Segment B of the SAR extends between river mile (RM) 70.93 and RM 70.46 and is included within SARWQCB Reach 5. Releases from Seven Oaks Dam control the flow in this segment of the river. The outlet works of Seven Oaks Dam discharge to the Plunge Pool, a circular pool, approximately 25-30 feet deep, located immediately downstream of the dam. The banks of the pool have been graded and armored with cobbles. Immediately downstream of the Plunge Pool, the mainstem of the SAR is an engineered trapezoidal channel, and the banks are also lined with loose boulders.

Up to 3 cfs is released constantly from Seven Oaks Dam into the Plunge Pool or Plunge Pool Bypass Pipeline to compensate for subsurface flow intercepted by the dam. This release becomes surface flow diverted via the Auxiliary River Diversion or by infiltration into the Redlands Tunnel. In this segment, the SAR slope is fairly steep, bed material is generally coarse, and the SAR is confined by the canyon walls and is in a constructed channel throughout.

Figure 3.1-7 of the Draft EIR shows probability of exceedance curves for flow above Cuttle Weir that are based on nearby gage data with adjustments made for upstream diversions. [Note to the reader: due to refinements in the modeling, Draft EIR Figure 3.1-7 has been replaced. See the replacement figure provided in Appendix A of this Final EIR.] It is evident from this figure that prior to the construction of Seven Oaks Dam, virtually no flow (less than 1 cfs) was present in this segment about 30 percent of the time, flows above 10 cfs occurred approximately 35 percent of days, and flows above 100 cfs were rare, occurring only about 10 percent of the time. With the dam in operation, daily discharge is at least 3 cfs, and about 55 percent of the time discharge is greater than 3 cfs. For this segment of the SAR, with the dam in operation, a daily discharge of 10 cfs is equaled or exceeded approximately 40 percent of the time, while for flows of 100 cfs and higher, the frequency drops to 12 percent.

SEGMENT C, CUTTLE WEIR TO JUST ABOVE THE CONFLUENCE OF MILL CREEK

Segment C of the SAR is between RM 70.46 and RM 68.59 and in SARWQCB Reach 5. There are no major tributaries in this segment of the SAR. Like its adjacent upstream segment, the SAR slope is fairly steep and bed material is generally coarse throughout. However, just downstream of Cuttle Weir, the SAR exits the upper SAR canyon and enters the upper end of the Santa Ana Wash. At the Greenspot Bridge the SAR channel is approximately 250 feet wide. Throughout this segment, the river floodplain is wider and is no longer confined by the upper SAR canyon walls. Stream flows in this segment are ephemeral.

Figure 3.1-8 in the Draft EIR shows probability of exceedances curves for flow downstream of Cuttle Weir. [Note to the reader: due to refinements in the modeling, Draft EIR Figure 3.1-8 has been replaced. See the replacement figure provided in Appendix A of this Final EIR.] Prior to the construction of Seven Oaks Dam, virtually no flow was present in this segment about 65 percent of the time, flows above 10 cfs occurred just over 20 percent of days, and flows above 100 cfs occurred about 8 percent of the time. With the dam in operation, little or no discharge occurs in this river segment almost 75 percent of the time. With the dam in operation a daily discharge of 10 cfs is equaled or exceeded approximately 22 percent of the time, while for flows of 100 cfs and higher, the frequency drops to about 8 percent.

This river segment includes an area that could be subject to overbank flows. In modeling performed as part of the Biological Assessment (BA) for Seven Oaks Dam (USACE 2000), the USACE determined that even with operation of Seven Oaks Dam, a 100-year flood could overtop the existing low flow channel banks and create continuous, separate, and parallel overbank flood flows on the north bank between RM 69.47 and RM 65.41 (which extends into River Segment D from Mill Creek to "E" Street).

SEGMENT D, MILL CREEK CONFLUENCE TO JUST ABOVE "E" STREET

Segment D of the SAR is between RM 68.59 and RM 57.68, is in both USACE Sub-Areas 2 and 3, and is in SARWQCB Reach 5. This river segment receives substantial tributary inflow from Mill Creek, City Creek, Plunge Creek, Mission Zanja Creek, San Timoteo Creek, and East Twin Creek. Draft EIR Table 3.1-2, provides information on the relative contributions of each of these tributaries to SAR flow.

At the upper end of this river segment, river bed material is generally coarse, whereas the downstream portion of the segment consists of a soft-bottom channel with uncompacted earthen berms on both banks. In the upstream portion, the channel is about 1,800 feet wide (USACE 2000). In the downstream portion, the river is part of a broad wash up to 5,000 feet wide, which includes part of the floodplain for City Creek and Plunge Creek.

Figure 3.1-9 of the Draft EIR shows probability of exceedances curves for flow below the confluence of Mill Creek. [Note to the reader: due to refinements in the modeling, Draft EIR Figure 3.1-9 has been replaced. See the replacement figure provided in Appendix A of this Final EIR.] These curves are estimated based on nearby gage data with adjustments made for diversions and other losses as well as inflow. This figure shows that prior to the construction of Seven Oaks Dam, no flow occurred in this segment about 55 percent of the time, flows above 10 cfs occurred approximately 35 percent of days, and flows above 100 cfs occurred approximately 15 percent of the time. With the dam in operation, flows are similar to those of pre-dam conditions, demonstrating that the inflow from Mill Creek lessens the influence of flows from the Project area in this segment. With the dam in operation, virtually no discharge occurs in this river segment approximately 58 percent of the time, flow above 10 cfs is equaled or exceeded just over 30 percent of the time, while for flows of 100 cfs and higher, the frequency is about 14 percent.

SEGMENT E, "E" STREET TO JUST ABOVE THE RIX AND RIALTO EFFLUENT OUTFALLS

Segment E of the SAR is between RM 57.68 and RM 53.46 and the majority of the segment is in SARWQCB Reach 4. A small portion (about 0.02 mile) at the upstream end of the segment is in Reach 5. River Segment E receives tributary inflow from Lytle Creek and Warm Creek. From November to April, this segment generally has flow along its entire length; however, from May to October the streambed typically dries out from approximately RM 54.5 downstream to the Rapid Infiltration and Extraction (RIX) and Rialto Wastewater Treatment Plant (WWTP) effluent outfalls at RM 53.5 (USACE 2000). Throughout Segment E, the river has been largely channelized to confine flows and protect bridges and other structures.

Draft EIR Figure 3.1-10 presents probability of exceedance curves for flow downstream of "E" Street. [Note to the reader: due to refinements in the modeling, Draft EIR Figure 3.1-10 has been replaced. See the replacement figure in Appendix A of this Final EIR.] Prior to the construction of Seven Oaks Dam, no flow was present in this segment about 5 percent of the time, flows above 10 cfs occurred approximately 90 percent of days, and flows above 100 cfs occurred approximately 13 percent of the time. With the dam in operation, flows are consistently lower than under pre-dam conditions, but this effect is due largely to the loss of WWTP effluent that, prior to 1996, was discharged into this river segment but is now discharged into Segment F. Currently, no flow occurs in this river segment approximately 54 percent of the time, flows above 10 cfs are equaled or exceeded approximately 33 percent of the time, while for flows of 100 cfs and higher, the frequency drops to about 12 percent.

SEGMENT F, RIX AND RIALTO EFFLUENT OUTFALLS TO JUST ABOVE RIVERSIDE NARROWS

Segment F of the SAR is between RM 53.46 and RM 45.2. About two-thirds of Segment F is in SARWQCB Reach 4 and one-third in SARWQCB Reach 3. The river in Segment F receives inflow from wastewater discharges from the RIX and Rialto WWTPs. As described in section 3.1.1.2.1 of the Draft EIR, these WWTPs discharged 57,750 af in WY 2000-01, and in the future discharge could increase to 59,000 afy. Generally, this river segment and downstream sections have year-round flow, attributable to the effluent discharge, rising water, and urban and agricultural runoff (USACE 2000).

Draft EIR Figure 3.1-11 presents probability of exceedance curves downstream of the RIX and Rialto effluent outfalls. [Note to the reader: due to refinements in the modeling, Draft EIR Figure 3.1-11 has been replaced. See the replacement figure in Appendix A of this Final EIR.] They vary from the curves shown for the upstream segments and illustrate the presence of higher and more sustained flows below the outfalls. This figure shows that, prior to the construction of Seven Oaks Dam, flows equaled or exceed 10 cfs at all times. With the dam in operation, flows are consistently higher than under pre-dam conditions, but this effect is due largely to the addition of WWTP effluent that, prior to 1996, was discharged in Segment E. Since 1999, discharge in this river segment has equaled or exceed 60 cfs at all times.

SEGMENT G, RIVERSIDE NARROWS TO PRADO DAM

Segment G extends from Riverside Narrows at RM 45.2 to Prado Flood Control Basin at RM 35.5. This river segment falls entirely within SARWQCB Reach 3. Stream flow is perennial throughout Segment G due to inflow from WWTPs and groundwater up-welling.

2.3.1.2.2 Flow Variability

Table 2.3-1 illustrates the differences between median, maximum, and minimum annual discharge (in acre-feet) for various locations along the SAR (SARWQCB 1995). This great variability between storm and non-storm flows points to the need to treat storm and non-storm flows separately in the hydrologic analysis.

Table 2.3-1. Upper Santa Ana River Median, Maximum, and Minimum Annual Flow

	Median Annual Discharge (af)	*Maximum Annual Discharge (af)*	*Minimum Annual Discharge (af)*
River Only Mentone [a]	7,991	204,812	9
"E" Street [b]	25,525	319,976	0
MWD Crossing [c]	75,934	301,004	9,979

Source: USGS gage data.
[a] USGS Gage 11051500. Period of record is WY 1911-12 through WY 1999-2000.
[b] USGS Gage 11059300. Period of record is WY 1938-39 through WY 1953-54, WY 1966-67 through WY 2000-01.
[c] USGS Gage 11066460. Period of record is WY 1969-70 through WY 2000-01.

Though flood events have played a major part in shaping the river and its environs, dry, low-flow conditions are more prevalent. Non-storm flows are the predominant condition on the SAR; approximately 70 percent of all days are classified as non-storm flow days. As an example, in the

SAR between Cuttle Weir and Mill Creek, for the 34-year record of available data (WY 1966-67 to WY 1999-2000[1]), there were 6,506 of days when there was no surface flow in the channel, i.e., zero flow between Cuttle Weir and Mill Creek. This constitutes 52 percent of all days (12,419 days) in the 34-year period. As can be seen in Figure 2.3-1, the number of consecutive days with no flow has frequently exceeded 10 and has exceeded 301 days 9 times over the 34-year period, i.e., there have been 9 occurrences of ten months in duration without flow in this portion of the channel. The dry trend persists downstream. Between Mill Creek and "E" Street, over the 33-year period (WY 1966-67 to WY 1998-99) used in the analysis, there were 4,860 days with zero flow between Mill Creek and "E" Street[2]. As can be seen in Figure 2.3-2, the number of consecutive days where there was no flow below "E" Street frequently exceeds 10 and has exceeded 101 days 5 times over a 33-year period. It is not until a point downstream of the Rialto Wastewater Treatment Plant and RIX discharge that the SAR has a consistent non-storm day flow.

2.3.1.2.3 Designated Beneficial Uses

The beneficial uses designated for the SAR by the SARWQCB are shown in Table 2.3-2. These beneficial uses are not necessarily present but rather represent an intermittent use or a potential future use. Figure 3.1-6 of the Draft EIR provides a comparison of the river reach designations used by the SARWQCB relative to the river segment designations used in the Draft EIR analysis.

For example, river Segment B (as designated in the Draft EIR) is defined as having beneficial uses of "water contact recreation" and "non-contact water recreation." However, because river Segment B is closed to the public, this segment does not currently support "water contact recreation" or "non-contact water recreation."

River Segments C and D are also defined as supporting water recreation and warm freshwater habitat. But due to the generally low flows (and commonly zero flow) as described earlier, it is unlikely that these river segments support or could support water contact recreation, non-contact water recreation, or sustain a warm freshwater habitat (with the exception of those few areas subject to ponding groundwater).

2.3.1.3 Analytical Tools and Other Techniques Used in the Draft EIR Analysis

2.3.1.3.1 Use of the Median as a Measure of Central Tendency

The Draft EIR provides information on change in median non-storm day flows. Several commenters suggested that the mean would be a more appropriate measure of hydrologic change.

The three commonly used measures of central tendency are the mode, median, and mean.

- Mode – in any distribution, the value that occurs most frequently. The mode has several limitations, some distributions may have no mode, or multiple modes so that the statistic is meaningless (Healy 1999).

[1] A water year runs from October through September of the following year. For example, Water Year 2000- 2001 begins on October 1, 2000 and ends on September 30, 2001.

[2] The RIX WWTP went into operation in 1996 and takes all effluent from the Colton and San Bernardino water reclamation plants. Prior to 1996, effluent from these plants entered the SAR just above and just below "E" Street, respectively. This analysis assumes a repeat of past hydrology but with current water management practices and operations (e.g., gage records modified to reflect operation of the RIX WWTP rather than past operation of the Colton and San Bernardino reclamation plants) as a means of estimating current and future flows.

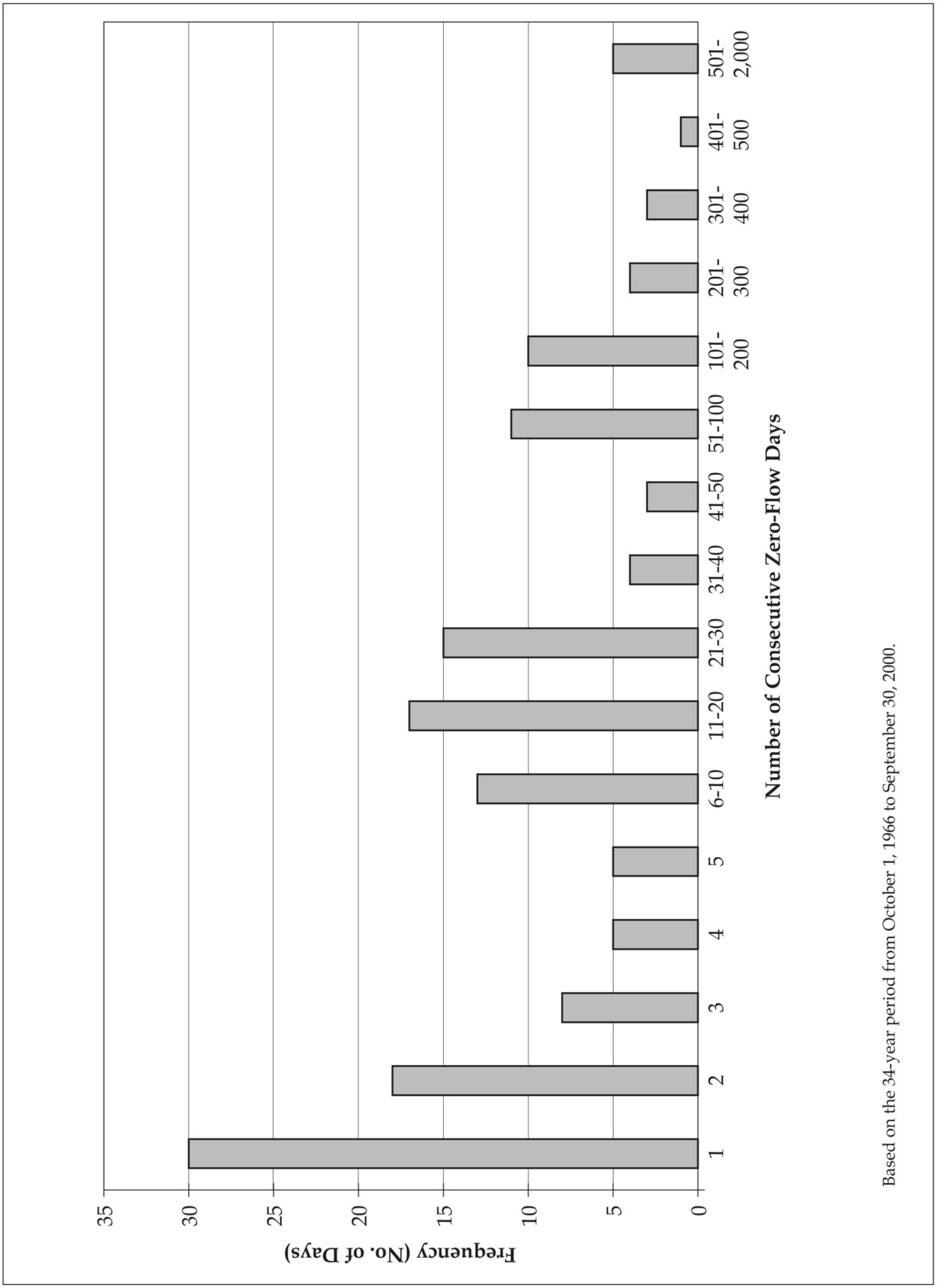
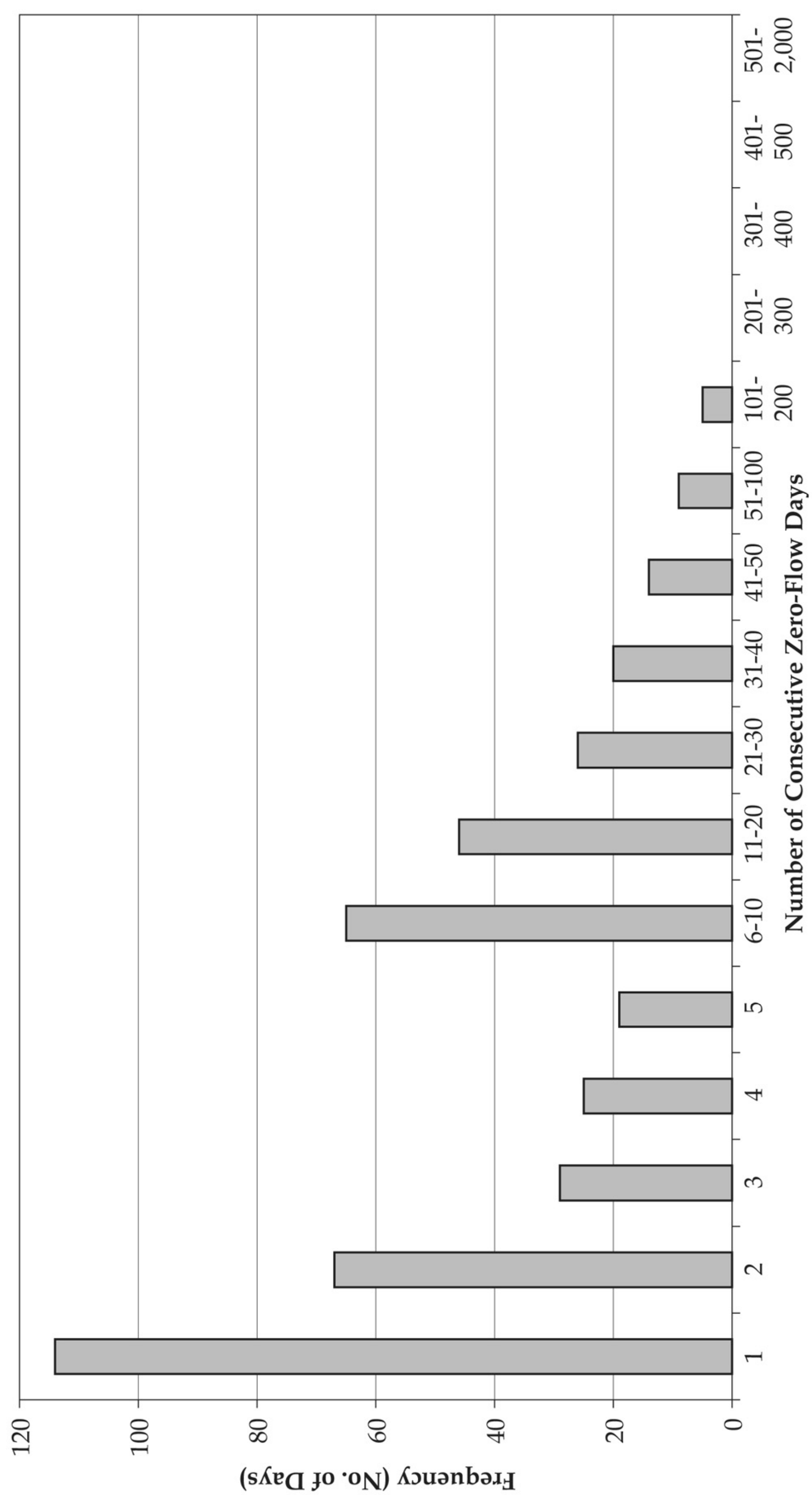


Figure 2.3-1. Frequency of Consecutive Zero-Flow Days in the Santa Ana River below Cuttle Wier Under Existing Conditions



The RIX WWTP went into operation in 1996 and takes all effluent from the Colton and San Bernardino water reclamation plants. Prior to 1996, effluent from these plants entered the SAR just above and just below "E" Street, respectively. This analysis assumes a repeat of past hydrology but with current water management practices and operations (e.g., gage records modified to reflect operation of the RIX WWTP rather than past operation of the Colton and San Bernardino reclamation plants) as a means of estimating current and future flows.

Based on the 34-year period from October 1, 1966 to September 30, 2000.

Figure 2.3-2. Frequency of Consecutive Zero-Flow Days in the Santa Ana River below "E" Street Under Existing Conditions

Table 2.3-2. Beneficial Uses of Santa Ana River Water

Inland Surface Streams in the Upper Santa Ana River Basin	*Municipal and Domestic Supply*	*Agricultural Supply*	*Groundwater Recharge*	*Hydropower Generation*	*Water Contact Recreation*	*Non-Contact Water Recreation*	*Warm Freshwater Habitat*	*Cold Freshwater Habitat*	*Wildlife Habitat*	*Rare, Threatened or Endangered Species*	*Spawning, Reproduction, and Development*
Reach 2 – 17th Street in Santa Ana to Prado Dam	+	X	X		X	X	X		X	X	
Reach 3 - Prado Dam to Mission Blvd. (Segment F, G**)	+	X	X		X	X	X		X	X	
Reach 4 - Mission Blvd. in Riverside to San Jacinto Fault (Segment E, F)	+		X		X[c]	X	X		X		
Reach 5 - San Jacinto Fault in San Bernardino to Seven Oaks Dam[a, c] (Segment B, C, D)	X[b]	X	X		X	X	X		X	X	
Reach 6 - Seven Oaks Dam to Headwaters[c] (Segment A)	X	X	X	X	X	X		X	X		X

Source: SARWQCB 1995, 2004.

Notes:

X The waterbody has an existing or potential use.

\+ The waterbody has been specifically excepted from the Municipal and Domestic Supply designation in accordance with the criteria specified in the "Sources of Drinking Water Policy."

a. Reach 5 uses are intermittent upstream of Waterman Avenue.

b. Municipal beneficial use designation applies upstream of Orange Street (Redlands); downstream of Orange Street, water is excepted from Municipal beneficial use designation.

c. Access prohibited in some portions by San Bernardino County Flood Control District (SBCFCD) and USACE.

** Segment refers to a stretch of the SAR delineated for use in this EIR.

- Median – in an ordered distribution, the median is the exact center of the distribution. The median is the value in the middle of the distribution, half the values are higher and half the values are lower (Healy 1999).
- Mean – the arithmetic average. The summation of all the values in a distribution divided by the number of values in the distribution (Healy 1999).

An important characteristic of the mean is that every score in the distribution affects it, including very high and low outlying values. When a distribution has a few extreme cases (very high or very low values) the mean may become very misleading as a measure of central tendency. Relative to the median, the mean is always skewed in the direction of extreme scores. The median is not affected by a few extreme cases and can be considered more representative of "typical" conditions. Where values are distributed in an unskewed, symmetrical distribution the median and mean have the same value (Healy 1999).

Because of its dry and flood cycles, the SAR hydrologic regime has both very high and very low values affecting flow data and in this case the median is the more appropriate measure of central tendency as it is not "skewed" by extreme values. When measuring and comparing non-storm flows, which we would expect to be less subject to extremes, the median is still the appropriate measure, as it will accommodate the rare extreme event and provides a measure of central tendency similar to that of the mean.

Various water resource agencies have adopted the median as an appropriate measurement of "typical" or "normal" hydrology. For example, the California Department of Water Resources defines the Normal Water Year as "a year in the historical sequence that most closely represents <u>median</u> [emphasis added] runoff levels and patterns" (DWR 2005). As a second example, the California Department of Fish and Game uses the February <u>median</u> flow as a metric of "typical winter flows" (CDFG and NMFS 2002).

2.3.1.3.2 Estimating Change in Non-Storm Day Flow Based on USGS Gage Rating

The USGS rates the gage records in the Santa Ana River used in modeling for the Project as "fair", i.e., data generated by the gage are within plus or minus 15 percent of the "true" value. The USGS defines the accuracy of daily discharges derived from a gage as "fair" if 95 percent of the data generated by the gage are within plus or minus 15 percent of the "true" value. Thus, if the "true" discharge is 100 cfs, 95 percent of the discharge record would be between 85 and 115 cfs. If two different daily discharges taken from a gage rated by the USGS as "fair" differ by more than 15 percent, then there is a less than 5 percent chance that those two discharges represent the same "true" discharge. Under these circumstances, it is reasonable to consider the "true" values of those two discharges to be different discharges.

In the Draft EIR, a significant change in non-storm day flow is defined as any change that is "measurable" – that is, a change that would be discernable from other values taken at the same location. The USGS stream gage records on which the modeling is based have an uncertainty of ±15 percent. To be significant and outside the uncertainty of the measurements, the flow under Project conditions must deviate at least 15 percent from the corresponding flow under No Project conditions. In the graphical depictions presented in Figures 3.1-14 through 3.1-19 of the Draft EIR, any value that falls outside the ± 15 percent bands drawn on either side of the Project and No Project curves would comprise a significant change. [Note to reader: Please see replacement Figures 3.1-14 to 3.1-19 in Appendix A of this Final EIR.] The choice of this significance threshold is very stringent since, essentially, any measurable change in flow attributed to the Project is defined as "significant" for impact analysis purposes.

2.3.1.3.3 Estimating Change in Storm Flows using HEC-RAS

Storm flow analysis utilized the public domain model HEC-RAS Version 3.1.1 (May 2003). HEC-RAS calculates water surface profiles assuming steady, gradually varied flow in a river reach or a full network of channels. The analysis for the Project used channel geometry data and instantaneous flow rates for various return periods (e.g., 50-year flood, 100-year flood, etc.) used by the USACE in the BA (USACE 2000) for the Seven Oaks Dam. The output of the HEC-RAS model allows for a comparison of water velocity, wetted area in the river channel, and velocity of water in overbank areas, between the No Project and Project scenarios (Scenarios A through D) for different types of storm/flood events.

2.3.1.4 Refinements to Daily River Analysis Modeling Since Preparation of the Draft EIR

The Draft EIR was released in October 2004. At that time the only channel cross-sectional data available was from USACE. New channel cross-sectional data were collected during the summer of 2005. The refined cross-sectional data in turn resulted in slight revisions to channel loss estimates. The refined channel losses were input to the modeling and the results are reflected in the data presented in this Thematic Response. Use of the refined cross-sectional data had the primary effect of decreasing estimates of water that would flow from the damsite location to river Segment E and downstream, under low flow conditions, under both the No Project and Project. The overall effect was to decrease the difference between the Project and No Project in river Segment E and downstream.

The refinement to the modeling did not change the classes of impacts for surface water or water quality in the Draft EIR but did change some of the data presented therein. Revisions to the Draft EIR resulting from the refinements to the Daily River Analysis Modeling are provided in Appendix A of this Final EIR.

2.3.1.5 Project Impacts

Implementation of the Project was evaluated for its ability to create hydrologic and fluvio-geomorphic changes in the mainstem of the SAR. Project-related changes can be anticipated under non-storm and storm conditions, each of which are addressed below.

2.3.1.5.1 Non-Storm Conditions

The Draft EIR found significant unavoidable impacts to non-storm day flow in river Segments B through F, based on the following criteria, "a measurable change, i.e., a change greater than ±15 percent, in non-storm flow." The following information is presented to further clarify, and consolidate in one discussion, the nature of potential change in flow on non-storm days and how these changes might affect beneficial uses in the Santa Ana River.

Table 2.3-3 presents information regarding the number of zero-flow days and estimated median daily flow (in cfs) by river segment under pre- Seven Oaks Dam, No Project, and Project conditions. As can be seen, in Segments C, D and E of the SAR (from Cuttle Weir to the RIX/Rialto effluent outfall), implementation of the Project would result in an increase in the number of zero-flow days when compared to No Project conditions. The Project would not, however, affect the number of zero-flow days in Segment B (between the Plunge Pool and Cuttle Weir) and Segments F and G (between the RIX-Rialto outfall and inflow to the Prado Flood Control Basin).

In Segments C, D, and E, median daily flow in the river channel on non-storm days would be unaffected by the Project and remain at zero. The Project would reduce median flow on non-storm days in Segments B, F, and G by 1 cfs as shown in Table 2.3-3. Additional inflow, especially from the Riverside WWTP, below Segment F, further reduces any Project-related effects on river flow.

Change in flows due to the Project would not affect municipal, domestic or agricultural supplies. As detailed in the Draft EIR Appendix A, Project diversions would only occur after existing water rights are satisfied. Project changes in flows would alter the geographic pattern and timing of groundwater recharge but, as detailed in the Draft EIR Appendix B and section 3.2 of the Draft EIR, overall there would be more groundwater recharged by the Project than under existing conditions.

Table 2.3-3. Project Effects Under Non-Storm Conditions

	Segment B	*Segment C*	*Segment D*	*Segment E*	*Segment F*	*Segment G*
PRE-SEVEN OAKS						
Non-Storm Days	8,375	8,375	8,064	8,375	8,375	7,481
Zero Flow Days	4,014	5,813	5,679	521	0	0
Median Flow (cfs)	1	0	0	27	39	86
NO PROJECT						
Non-Storm Days	8,375	8,375	8,064	8,375	8,375	7,481
Zero Flow Days	0	6,506	5,624	5,930	0	0
Median Flow (cfs)	4	0	0	0	76	87
PROJECT (SCENARIOS A AND B)						
Non-Storm Days	8,375	8,375	8,064	8,375	8,375	7,481
Zero Flow Days	0	8,374	6,436	6,120	0	0
Median Flow (cfs)	3	0	0	0	75	86
EFFECT OF PROJECT (PROJECT MINUS NO PROJECT)						
Zero Flow Days	0	1,868	812	190	0	0
Median Flow (cfs)	-1	0	0	0	-1	-1

2.3.1.5.2 Storm Conditions

The Draft EIR evaluated changes in storm flow based on the following significance criteria:

- Change fluvial processes such that, in a 100-year flood event, channel velocity is decreased below that necessary to transport sand and/or gravel and cobble.

It should be noted that this significance criterion was applied to evaluate changes to hydrology only; other criteria were applied to evaluate how hydrologic changes may affect resources such as biology.

The Draft EIR identified a less than significant impact to sediment transport in river segments B through E and anticipated no effects to sediment transport in river Segment F and downstream.

The following information is presented to further clarify, and consolidate in one discussion, the nature of potential changes to flow in the channel, stream velocity, and channel depth for the 100-year flood, 50-year flood, 20-year flood, 10-year flood, 5-year flood, and 2-year flood.

FLOW IN THE CHANNEL

As can be seen in Table 2.3-4, the proportional effect of Project diversions diminishes with progression downstream as total flow in the mainstem of the river is augmented by inflow from successive tributaries. The effect is most noticeable in Segment C since the base flow is the least, due in large part to diversions made by other parties at, and upstream of, Cuttle Weir. The proportional change ranges from a reduction of 30 percent under 100-year flood conditions to de-watering of the segment under 10-year or more frequent flow conditions. The proportional effect of the Project becomes more noticeable in downstream reaches as the flood frequency decreases, e.g., -1.0 percent in Segment G under 100-year flood conditions, -1.7 percent for 50-year, -3.8 percent for 20-year, -2.5 percent for 10-year, -6.0 percent for 5-year, and -27.7 percent for 2-year.

Table 2.3-4. Peak Flow Rates (cfs) in the Main Channel of the Santa Ana River under No Project and Project Conditions

	Segment C	*Segment D*	*Segment E*	*Segment F*	*Segment G*
100-year					
No Project	5,000	25,000	31,000	140,000	153,000
Project	3,500	23,500	29,500	138,500	151,500
Percent Change	-30	-6.0	-4.8	-1.1	-1.0
50-year					
No Project	3,800	15,500	20,000	80,000	87,400
Project	2,300	14,000	18,500	78,500	85,900
Percent Change	-39.5	-9.7	-7.5	-1.9	-1.7
20-year					
No Project	2,500	8,000	10,000	36,000	39,300
Project	1,000	6,500	8,500	34,500	37,800
Percent Change	-60.0	-18.8	-15.0	-4.2	-3.8
10-year					
No Project	500	4,200	5,500	18,000	19,700
Project	0	3,700	5,000	17,500	19,200
Percent Change	-100	-11.9	-9.1	-2.8	-2.5
5-year					
No Project	500	2,000	2,700	7,600	8,300
Project	0	1,500	2,200	7,100	7,800
Percent Change	-100	-25.0	-18.5	-6.6	-6.0
2-year					
No Project	400	610	800	1,400	1,500
Project	0	210	400	1,000	1,100
Percent Change	-100.0	-65.6	-50.0	-28.6	-27.7

Based on recent sediment transport analysis (EIP 2004), flows in excess of 4,000 cfs can mobilize cobbles and gravel while flows between 500 cfs and 4,000 cfs can transport sand. The implementation of the Project would reduce flows below the 4,000 cfs criteria at certain times in all of the SAR segments. For example, Table 2.3-4 shows that in Segment D under the 10-year flood, the peak scouring flow would be reduced from 4,200 cfs to 3,700 cfs with the Project. This is equivalent to saying the gravel and cobble moving flows would occur more rarely with the Project. This implies cobbles and gravels will be shifted less frequently with the Project. The cobbles and gravels still will be shifted; it is just that they will be shifted less often, less frequently with the Project.

STREAM VELOCITY

As reported in the BA published by the USACE in 2000, general criteria are available regarding water velocities necessary to mobilize different materials. Generally, sands become mobilized at 2-3 ft/second or greater, gravels at 6 ft/second or greater, and cobbles at 10 ft/second or greater.

Table 2.3-5 provides median stream velocity values under No Project and Project conditions. Figure 2.3-3 depicts these values graphically and demonstrates that the Project will not have the effect of precluding the transport of sand, gravel, or cobble other than the transport of sand in Segment C in 2- and 5-year flow events. For all other sediment types, in all segments, and for all flow events, the Project would reduce the rate of sediment transport but not preclude sediment transport. The effect of this reduction in flow is analyzed in Draft EIR Section 3.1 (Impact SW-9 as described for each River Segment). The EIR analysis shows that the main sediment contribution is from Mill Creek and other downstream tributaries that are not part of the Project and that the reduction of flows does not affect sand movement in the mainstem of the SAR.

Table 2.3-5. Median Stream Velocity (feet/second) in the Main Channel of the Santa Ana River under No Project and Project Conditions

	Segment C	*Segment D*	*Segment E*	*Segment F*	*Segment G*
100-year					
No Project	6.5	6.5	6.4	12.4	13.2
Project	6.2	6.4	6.3	12.3	13.1
Project minus No Project	-0.3	-0.12	-0.1	-0.1	-0.1
Percent Change	-4.6	-1.6	-1.6	-0.1	-0.1
50-year					
No Project	6.5	5.7	5.5	10.1	11.3
Project	6.1	5.5	5.4	10.0	11.2
Project minus No Project	-0.4	-0.2	-0.1	-0.1	-0.1
Percent Change	-6.2	-3.5	-1.8	-0.1	-0.1
20-year					
No Project	6.3	4.7	4.3	7.5	8.3
Project	5.3	4.4	4.0	7.4	8.2
Project minus No Project	-1.1	-0.3	-0.3	-0.1	-0.1
Percent Change	-17.5	-6.4	-7.0	-1.3	-1.2
10-year					
No Project	5.0	4.2	3.4	5.9	6.8
Project	0.0	4.1	3.3	5.8	6.7
Project minus No Project	-5.0	-0.1	-0.1	-0.1	-0.1
Percent Change	-100.0	-2.4	-2.9	-1.7	-1.5

Table 2.3-5. Median Stream Velocity (feet/second) in the Main Channel of the Santa Ana River under No Project and Project Conditions (continued)

	Segment C	*Segment D*	*Segment E*	*Segment F*	*Segment G*
5-year					
No Project	5.0	3.7	2.7	4.5	5.3
Project	0.0	3.6	2.6	4.4	5.2
Project minus No Project	-5.0	-0.1	-0.1	-0.1	-0.1
Percent Change	-100.0	-2.7	-3.7	-2.2	-1.9
2-year					
No Project	4.6	2.8	1.9	2.8	3.1
Project	0.0	2.3	1.6	2.5	2.7
Project minus No Project	-4.6	-0.5	-0.3	-0.3	-0.4
Percent Change	-100.0	-17.9	-15.8	-10.7	-12.9

Applying these criteria to the information presented in Table 2.3-5, it is evident that stream flows reach velocities capable of mobilizing boulders in Segments F and G only during 50-year and 100-year flood events. Implementation of the Project would not inhibit this capability.

Gravels could be mobilized in all river segments under 100-year flood conditions, in Segments C, F, and G during 50-year and 20-year flood events, and in Segment G under 10-year flood events. Implementation of the Project would impair this capability only in Segment C under 20-year flood conditions.

Implementation of the Project would not inhibit the mobilization of sands in any of the river segments.

Implementation of the Project would have the most pronounced effects on stream velocity: (i) in river Segment C between Cuttle Weir and the confluence of Mill Creek; and (ii) during frequent flood events (2-year return period). See Table 2.3-5.

In Segment C under 2-year, 5-year, and 10-years storm events, stream velocity would fall to zero with the de-watering of the stream in this segment. With the exception of conditions under the 2-year storm event, reductions in stream velocity attributable to the Project would be modest, and decline systematically from the diversion near Seven Oaks Dam downstream toward Segment G.

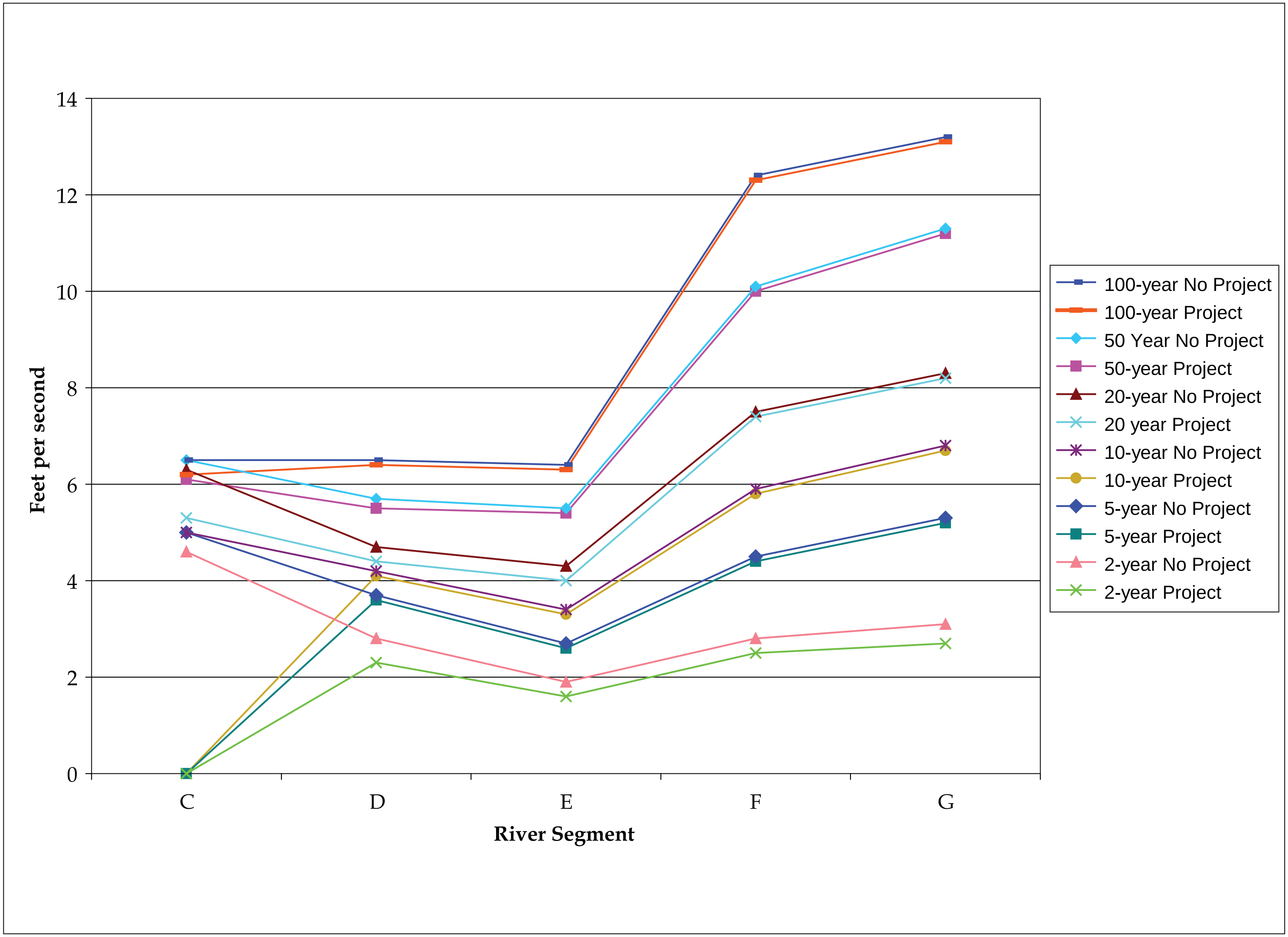


Figure 2.3-3. Median Stream Velocity by River Segment

2.3.2 Groundwater Hydrology

2.3.2.1 Introduction and Summary of Comments

Comments on the Draft EIR raised a number of questions about the effects of the Project on groundwater resources. Topics of concern include:

- Project effects on the location and movement of groundwater contaminant plumes in the region, the resulting impact on water supply wells, and proposed mitigation measures;
- Project effects on TDS and nitrate concentration levels in water supply wells and proposed mitigation measures;
- Project effects on depth to groundwater and the potential for liquefaction;
- Model results reported in the Draft EIR regarding hydraulic conductivity analysis of surface water channels leading into the Pressure Zone differ from those derived and reported in the Hardt and Freckleton [1987] groundwater model; and
- Updates to SBBA demand estimates performed as part of the Integrated Regional Groundwater Management Plan process and the effects on modeling results.

2.3.2.2 Contaminant Plumes within the San Bernardino Basin Area

Groundwater contaminant plumes in the SBBA are discussed in section 3.12 of the Draft EIR, Hazardous Materials and Groundwater Contamination. Results derived from groundwater solute transport modeling of the SBBA are also described in Appendix B of the Draft EIR. There are several major contaminant plumes within the SBBA including:

- Muscoy/Newmark;
- Redlands-Crafton (including San Bernardino plume);
- Norton; and
- Santa Fe.

The manner in which actions associated with implementation of the Project might affect contaminant plumes are investigated for the Muscoy/Newmark, Redlands-Crafton, and Norton plumes because they are located within the SBBA to which the suite of groundwater models apply. The Muscoy/Newmark plume primarily contains tetrachloroethylene (PCE) and trichloroethylene (TCE). The Redlands-Crafton plume generally contains perchlorate with associated, smaller quantities of TCE, PCE, and dibromochloropropane (DBCP). Perchlorate and TCE, having relatively higher concentrations compared to other contaminants, are the contaminants modeled in the Redlands-Crafton plume. The Norton plume generally contains a mix of TCE, PCE, 1,2-dichloroethylene (1,2 DCE), and polychlorinated biphenyls (PCBs) along with heavy metals.

The Rialto-Colton plume is outside of the SBBA and its modeling process is described in section 2.3.2.4 of this Thematic Response. The Santa Fe plume is within the SBBA, but mainly in the shallow, unsaturated layers and therefore was not modeled because water levels in the basin are not expected to rise to a level that would mobilize contaminants. There are plumes in the region containing nitrates attributable to agricultural practices; the nitrate was modeled in equal concentration zones. Other plumes that are of low contaminant concentration and small in size were not modeled. Many of the plumes described here originated from past industrial or military processes. However, there are non-industrial sources for some of these contaminants, e.g., perchlorate is also found in natural forms in some fertilizers.

2.3.2.2.1 Contaminant Plume Modeling

Modeling and analysis of the plumes to gauge the potential effects on groundwater due to Project operations was performed for the Draft EIR. Muni/Western completed an exhaustive analysis of groundwater conditions in the SBBA employing a groundwater flow model initially developed by the USGS. The USGS groundwater flow model (MODFLOW) is a two-layer conceptual representation based on the hydrogeologic setting and hydrogeologic units of the SBBA. The groundwater flow model is useful in estimating aquifer recharge, aquifer discharge and in estimating water levels. The primary purpose of the groundwater model was to systematically and reproducibly simulate groundwater characteristics within the SBBA that would occur under varying potential future conditions. These potential conditions included the No Project and implementation of the four Project scenarios. These simulations made it possible to compare characteristics of the groundwater basin with and without the Project at identical times in the future. Together with significance criteria developed for the Draft EIR, it was possible to make CEQA significance determinations and formulate mitigation measures designed to alleviate impacts.

The solute transport model (MT3DMS) was developed to function in tandem with the MODFLOW groundwater flow model. The model-generated maximum contaminant level (MCL) plume boundary closely matches the MCL plume boundary empirically delineated. The relative error of the model (standard deviation of the water quality residuals divided by the observed range) is 8 percent and 9 percent for PCE and TCE concentrations, respectively. It is common modeling practice to consider a relative error of less than 10 percent to be a good fit (Spitz and Moreno 1996; Environmental Simulations, Inc. 1999). With such a robust goodness-of-fit, it is reasonable to expect that the transport model can accurately address the movement of contaminant plumes. It should be emphasized that the models used in the impact analysis are designed to provide accurate indications of changes to pertinent groundwater attributes (in both space and time) in the SBBA. The models are not designed, however, to provide the level of detail regarding the spatial extent and level of concentration of groundwater contaminants that would be required for remediation. The solute transport model was calibrated using measured and predicted values of PCE and TCE between 1986 and 2000. Calibration parameters (mainly dispersivities) along with the respective retardation factors were then used to simulate movement and concentrations of perchlorate and other constituents (PCE, TCE, TDS, and NO_3). Potential impacts of the Project on existing contaminant plumes were then determined from the solute transport modeling.

2.3.2.2.2 Contaminant Plume Impact Assessment Criteria

Section 3.12 (Hazardous Materials and Groundwater Contamination) and Appendix B (Groundwater Hydrology) of the Draft EIR describe the effects that implementation of the Project could have on the contaminant plumes and, in turn, on selected water supply wells in the SBBA. These effects are compared to changes that can be expected under No Project conditions. A spatial analysis was completed for PCE, TCE, and perchlorate contaminants within the SBBA. This analysis included a delineation of the footprint area for each of the selected contaminant plumes and an estimation of the number of water supply wells affected under Project and No Project conditions within the SBBA.

Regional conditions resulting from implementation of the Project are compared to those under No Project conditions for the major contaminant plumes in the SBBA, i.e., Muscoy/Newmark, Redlands–Crafton, and Norton plumes. Based on this comparison, Project impacts are categorized as significant, less than significant, or beneficial. Impacts were determined using two methods:

1. Comparisons of the spatial extent of the contaminant plume footprint under Project and No Project conditions; and

2. The number of wells affected due to Project implementation compared to the number of wells affected under No Project conditions.

Impact assessment is also conducted for each of 25 wells, referred to as index wells. A significant impact is considered to occur if the level of contaminant concentration projected for an index well, in any of the 39 years of analysis, is both above the MCL and above the level experienced under No Project conditions for the corresponding year.

2.3.2.2.3 Contaminant Plume Impacts

The extent (in surface area acres) of the contaminant plume footprint under No Project and Project scenario conditions is presented in Table 2.3-6. The spatial extent is described by the average acreage, computed over the future 39-year period utilized in the groundwater modeling and analysis. Impacts were assessed in 2 ways: with average acreage of footprint and with number of wells that are affected that would not have been affected under the No Project. Using maximum acreage was not completely relevant for deciding impacts, since there may not have been any wells affected during the year in which there existed the maximum footprint. For this reason the analysis also looked at the number of wells as part of the impact determination and considered average acreage. In other words, maximum extent of the plume did not necessarily coincide with greatest impact to wells.

For example, in the case of perchlorate, the average area affected under the No Project over the 39 years is 1,192 acres. Under the Project scenarios, the corresponding extent of the contamination footprint varies between 1,201 and 1,211 acres, depending on the scenario. If the average contamination footprint area over 39 years is greater under Project than under No Project conditions, it is considered a significant impact.

With migration of a plume, it is possible that water supply production wells that are outside the area of contamination under No Project conditions could become affected with implementation of the Project. Conversely, water supply production wells that are inside the area of contamination under No Project conditions could fall outside the area of contamination with implementation of the Project. Table 2.3-6 shows the number of wells that would be: (1) affected due to implementation of the Project, or (2) subsequently spared contamination due to Project implementation. The latter wells would have been affected under No Project conditions; however, due to implementation of the Project, the wells would be in an area that escapes contamination. The same well may be affected in multiple years; however, the table reflects the total number of different wells affected.

Additionally, annual impacts for each well and each contaminant for all Project scenarios and the No Project have been analyzed. The impact analysis is based on data from the spatial analysis described in the EIR, section 3.12 and is summarized below by contaminant.

Table 2.3-6. Average Contaminant Footprint Area (acres) and Corresponding Production Wells Affected by Perchlorate, PCE, and TCE Plumes

Contaminant and Project Scenario	*No Project Average Footprint Area[1] (acres)*	*Project Average Footprint Area[1] (acres)*	*Difference in Average Footprint Area (Project Footprint – No Project Footprint) (acres)*	*Number of Wells Affected due to Project Implementation Compared to No Project Conditions[2]*	*Number of Wells that Avoid being Affected by Project Implementation Compared to No Project Conditions[2]*	*Net Number of Wells Affected due to Project Implementation[2]*
PERCHLORATE[3]						
Project Scenario A	1,192	1,201	+9	17	5	+12
Project Scenario B		1,211	+19	21	5	+16
Project Scenario C		1,202	+10	12	5	+7
Project Scenario D		1,203	+11	11	7	+4
TCE[4]						
Project Scenario A	1,749	1,624	-125	26	18	+8
Project Scenario B		1,630	-119	26	19	+7
Project Scenario C		1,662	-87	17	17	0
Project Scenario D		1,668	-81	16	13	+3
PCE[5]						
Project Scenario A	1,941	1,761	-180	5	7	-2
Project Scenario B		1,789	-152	5	7	-2
Project Scenario C		1,889	-52	5	5	0
Project Scenario D		1,905	-36	4	3	+1

Notes:
1. Acreage averaged over the 39-year period.
2. May include wells affected in multiple years.
3. Redlands-Crafton Plume.
4. Norton Plume and Redlands-Crafton Plume.
5. Muscoy/Newmark Plume.

TETRACHLOROETHYLENE (PCE)

For PCE, there would be significant, less than significant, and beneficial impacts associated with implementation of the Project. As can be seen from the information contained in Table 2.3-7, the most frequent type of impact is beneficial (comprising between 59.0% and 85.2% of all impact determinations, depending on Project scenario). This is followed by between 5.1% and 26.8% of less than significant impacts and between 9.7% and 15.4% of significant impacts. Most significant impacts occur towards the lower edge of the plume and occur within the first 10 years. The maximum concentration of PCE in all affected wells is 10.43 ug/l, while the minimum concentration is 0 ug/l.

Table 2.3-7. Frequency of Impact Type for PCE Concentration Levels at Index Wells

Project Scenario	*% Significant Impact*	*% Less than Significant Impact*	*% Beneficial Impact*
A	9.7	5.1	85.2
B	9.7	14.5	75.8
C	15.4	26.8	57.8
D	15.4	25.6	59.0

Details of the duration of a significant impact (i.e., the number of years in which a significant impact occurs) for each well and for each Project scenario is shown in Table 2.3-8. The longest duration of significant impact for any well is 17 years. This is for well 01N04W34G03S under Project scenario C. All other wells are affected for 7 years or less. In all wells, the contamination level is also above the MCL for several years under No Project conditions (Table 2.3-8). For most wells, the Project helps to decrease the duration of the contamination. For example, in 5 wells, all Project scenarios reduce the number of years of contamination compared to No Project. In 2 wells, the Project either reduces or leaves unchanged the contamination levels that would be experienced under the No Project. Finally, in 2 wells, the Project increases the number of years of contamination in 3 scenarios (by 1 year) compared to No Project.

Table 2.3-8. Number of Years with Significant Impact for PCE by Index Well and Project Scenario

Well I.D.	*Project Scenario*				*No Project: Years Above MCL*	*Difference Between Years of Significant Impact (Project Scenarios less No Project*			
	A	**B**	**C**	**D**	**NP**	**A - NP**	**B - NP**	**C - NP**	**D - NP**
01N04W16E04S	4	4	4	5	5	-1	-1	-1	0
01N04W16E01S	4	4	4	5	5	-1	-1	-1	0
01N04W16E02S	3	4	4	4	3	0	1	1	1
01N04W16E03S	3	4	4	4	3	0	1	1	1
01N04W27B01S	1	1	5	6	9	-8	-8	-4	-3
01N04W27A01S	1	1	4	3	8	-7	-7	-4	-5
01N04W27G01S	3	3	6	7	11	-8	-8	-5	-4
01N04W27M02S	5	4	6	4	9	-4	-5	-3	-5
01N04W34G03S	10	9	17	16	19	-9	-10	-2	-3

TRICHLOROETHYLENE (TCE)

As described in the EIR, there would be significant, less than significant, and beneficial impacts to TCE levels in wells resulting from implementation of the Project.

As can be seen from the information contained in Table 2.3-9, the most frequent type of impact is beneficial (comprising between 39.8% and 42.9% of all impact determinations, depending on Project scenario). This is followed by between 29.9% and 33.1% of less than significant impacts and between 26.9% and 27.8% of significant impacts. Most significant impacts occur towards the lower edge of the plume, as for PCE. Significant impacts to TCE levels occur within the first 25 years. The maximum concentration of TCE in all affected wells is 36.6 ug/L, while the minimum concentration in all wells is 0 ug/L.

Table 2.3-9. Frequency of Impact Type for TCE Concentration Levels at Index Wells

Project Scenario	*% Significant Impact*	*% Less Than Significant Impact*	*% Beneficial Impact*
A	26.9	33.1	40.0
B	27.2	33.0	39.8
C	27.1	29.9	42.9
D	27.8	31.1	41.1

Table 2.3-10 shows details of the duration of a significant impact for TCE concentration level for each well and for each Project scenario. The greatest number of years with significant impact for any well is 25 years, depending on the scenario. This is the case for wells 01S04W14P06S and 01S04W23C03S under Project scenario A. However, under all Project scenarios, the duration that TCE levels exceed the MCL are reduced in 23 wells (over 57% of the wells affected) when compared to No Project conditions. In 9 wells, at least one Project scenario reduces the duration compared to No Project. An increase in duration of 12 years is the greatest effect the Project has on one well (01S04W23D01E). The Project reduces the duration of contamination up to 24 years in one well (01S04W02Q10S).

Table 2.3-10. Number of Years with Significant Impact for TCE by Index Well and Project Scenario

Well I.D.	*Project Scenario*				*No Project: Years Above MCL*	*Difference Between Years of Significant Impact (Project Scenarios less No Project)*			
	A	**B**	**C**	**D**	**NP**	**A - NP**	**B - NP**	**C - NP**	**D - NP**
01S03W17R02E	6	6	4	5	5	1	1	-1	0
01S03W17R01E	9	9	8	8	9	0	0	-1	-1
01S03W20A01E	12	12	9	9	11	1	1	-2	-2
01S03W20H01S	5	5	5	5	10	-5	-5	-5	-5
01S03W20C01S	14	14	13	13	15	-1	-1	-2	-2
01S03W20F03S	16	16	12	13	16	0	0	-4	-3
01S03W19A01S	16	15	15	14	18	-2	-3	-3	-4
01S03W19H01E	13	12	12	13	18	-5	-6	-6	-5
01S03W19J01E	5	5	5	5	16	-11	-11	-11	-11
01S03W18N02S	8	9	11	9	13	-5	-4	-2	-4
01S03W18N03S	10	10	16	14	18	-8	-8	-2	-4
01S04W24A11E	9	10	16	17	18	-9	-8	-2	-1
01S04W24B01S	17	18	18	16	23	-6	-5	-5	-7

Table 2.3-10. Number of Years with Significant Impact for TCE by Index Well and Project Scenario (continued)

Well I.D.	*Project Scenario*				*No Project: Years Above MCL*	*Difference Between Years of Significant Impact (Project Scenarios less No Project)*			
	A	**B**	**C**	**D**	**NP**	**A - NP**	**B - NP**	**C - NP**	**D - NP**
01S04W24K01S	0	0	0	0	2	-2	-2	-2	-2
01S04W24J03E	7	7	8	9	19	-12	-12	-11	-10
01S04W24J05E	7	7	8	9	19	-12	-12	-11	-10
01S04W24J01E	0	0	1	1	0	0	0	1	1
01S04W24R01S	1	2	2	3	13	-12	-11	-11	-10
01S04W13P01E	9	10	13	13	8	1	2	5	5
01S04W13N02S	10	9	10	11	12	-2	-3	-2	-1
01S04W13N07S	7	7	10	10	8	-1	-1	2	2
01S04W13N01S	17	17	18	19	23	-6	-6	-5	-4
01S04W23A05S	16	16	18	21	24	-8	-8	-6	-3
01S04W23A02S	16	16	18	21	24	-8	-8	-6	-3
01S04W23H01S	10	11	7	5	10	0	1	-3	-5
01S04W23G03S	0	0	0	0	1	-1	-1	-1	-1
01S04W23K01S	1	2	2	2	0	1	2	2	2
01S04W14P06S	25	24	17	16	18	7	6	-1	-2
01S04W23C03S	25	24	17	16	18	7	6	-1	-2
01S04W23C02S	18	19	14	11	10	8	9	4	1
01S04W02Q10S	8	7	10	13	31	-23	-24	-21	-18
01S04W14N	23	24	23	24	21	2	3	2	3
01S04W14N10S	23	24	22	23	21	2	3	1	2
01S04W14N09S	23	24	23	24	21	2	3	2	3
01S04W22A01S	13	14	16	17	32	-19	-18	-16	-15
01S04W23D01E	16	16	13	10	4	12	12	9	6
01S04W22A01E	5	4	9	14	8	-3	-4	1	6
01S04W22B07S	0	0	0	0	20	-20	-20	-20	-20
01S04W22C02S	0	0	0	0	14	-14	-14	-14	-14
01S04W15L03E	0	0	0	0	20	-20	-20	-20	-20

PERCHLORATE

As is the case for PCE and TCE, there would be significant, less than significant, and beneficial impacts to perchlorate levels as a result of implementation of the Project. As can be seen from the information contained in Table 2.3-11, the most frequent type of impact is less than significant (comprising between 45.5% and 54.4% of all impact determinations, depending on Project scenario). Significant impacts occur least frequently and generally occur within the first 19 years. The maximum concentration in all potentially affected wells is 38.3 ug/L, while the minimum concentration in all wells is 0 ug/L. As with TCE and PCE concentrations, there are instances where the maximum No Project concentration is exceeded by the maximum Project concentrations.

Table 2.3-11. Frequency of Impact Type for Perchlorate Concentration Levels at Index Wells

Project Scenario	*% Significant Impact*	*% Less than Significant Impact*	*% Beneficial Impact*
A	17.3	51.4	31.3
B	19.1	54.4	26.5
C	19.1	45.5	35.4
D	20.0	48.6	31.1

Table 2.3-12 shows details of the duration of significant impact for each well and for each Project scenario. The highest duration of significant impact for any well is 15 years (well 01S04W13P01E under Project Scenario C). For 23 of the 27 wells, the number of years in which the contaminant level exceeds the MCL under all Project scenario conditions is less than under No Project conditions. Thus, in the large majority of cases, Project scenarios reduce the duration that perchlorate levels are above the MCL. An increase in duration of 1 year is the greatest effect attributable to the Project.

Table 2.3-12. Number of Years with Significant Impact for Perchlorate by Index Well and Project Scenario

Well I.D.	*Project Scenario*				*No Project: Years Above MCL*	*Difference Between Years of Significant Impact (Project Scenarios less No Project)*			
	A	**B**	**C**	**D**	**NP**	**A - NP**	**B - NP**	**C - NP**	**D - NP**
01S03W19G01S	10	10	10	10	15	-5	-5	-5	-5
01S03W19A01S	9	8	10	11	14	-5	-6	-4	-3
01S03W19H01E	9	9	9	9	14	-5	-5	-5	-5
01S03W19J01E	8	7	6	8	15	-7	-8	-9	-7
01S03W20F03S	7	7	8	8	12	-5	-5	-4	-4
01S03W20F01E	8	8	8	7	12	-4	-4	-4	-5
01S03W20A01E	8	5	7	8	9	-1	-4	-2	-1
01S03W17R02E	6	6	3	4	7	-1	-1	-4	-3
01S03W16L03E	2	2	5	3	5	-3	-3	0	-2
01S04W24F08	13	13	13	14	18	-5	-5	-5	-4
01S04W24K01S	5	6	3	4	12	-7	-6	-9	-8
01S04W24R01S	7	5	2	4	13	-6	-8	-11	-9
01S04W24J05S	6	7	3	4	14	-8	-7	-11	-10
01S04W24J03S	6	7	3	4	14	-8	-7	-11	-10
01S04W24A11E	11	13	12	12	15	-4	-2	-3	-3
01S03W18N03S	13	13	14	14	15	-2	-2	-1	-1

Table 2.3-12. Number of Years with Significant Impact for Perchlorate by Index Well and Project Scenario (continued)

Well I.D.	*Project Scenario*				*No Project: Years Above MCL*	*Difference Between Years of Significant Impact (Project Scenarios less No Project)*			
	A	**B**	**C**	**D**	**NP**	**A - NP**	**B - NP**	**C - NP**	**D - NP**
01S03W18N02S	6	9	10	11	12	-6	-3	-2	-1
01S03W18L01S	4	4	6	5	5	-1	-1	1	0
01S04W23C02S	2	3	3	5	13	-11	-10	-10	-8
01S04W23K01S	3	3	0	1	9	-6	-6	-9	-8
01S04W23G03S	7	6	4	4	13	-6	-7	-9	-9
01S04W23H01S	10	11	7	7	17	-7	-6	-10	-10
01S04W23A02S	2	6	8	7	18	-16	-12	-10	-11
01S04W23A05S	2	6	8	7	18	-16	-12	-10	-11
01S04W13N01S	6	12	11	14	17	-11	-5	-6	-3
01S04W13N07S	6	7	13	14	14	-8	-7	-1	0
01S04W13P01E	6	8	15	12	14	-8	-6	1	-2

2.3.2.2.4 Mitigation of Contaminant Plume Impacts

Muni/Western will follow guidance from existing state- and federally-mandated projects regarding contaminant plumes in the SBBA. This includes coordination with agencies and compliance with policies regarding the remediation of the contaminant plumes. Muni/Western has already taken steps to coordinate, in a basin-wide manner, with various agencies to address the issues of water quality.

In addition to this compliance and coordination, mitigation measures MM HAZ-4 as described in the Draft EIR and an additional mitigation measure MM HAZ-5 is proposed. These measures are described below:

MM HAZ-4: Using available data, in conjunction with the integrated surface and groundwater models, Muni/Western will identify groundwater trends, including plume movement and isolate changes attributable to implementation of the Project. To the extent feasible given existing infrastructure, and consistent with meeting other basin management objectives, Muni/Western will direct Project water spreading to limit adverse plume movements.

MM HAZ-5: Muni/Western will make an alternative water supply available to parties affected by contaminated wells, to the extent and for the duration that the contamination is caused by Project operations, or provide treatment for affected wells, at Muni/Western's discretion. The alternative supply or treatment for affected wells will be made available for all times when pertinent water quality standards are exceeded as a result of the Project.

The durations when action under MM HAZ-5 would be required is given for the individual contaminants in Tables 2.3-8, 4.3-10, and 2.3-12. For example, the PCE mitigation measures could apply to two wells (01N04W16E02S and 01N04W16E03S) depending on the Project scenario chosen. Mitigation measures would be applied for a maximum of one year (see Table 2.3-8) when these two wells could experience contaminant levels above the MCL more frequently than under No Project conditions.

Similarly, for TCE, depending on the Project scenario chosen, the mitigation measure of providing an alternative water supply could apply to 15 wells (see Table 2.3-10):

- 01S03W17R02E, 01S03W20A01E, 01S04W23H01S and 01S04W24J01E (maximum of 1 year)
- 01S04W13N07S and 01S04W23K01S (2 years)
- 01S04W14N, 01S04W14N10S, 01S04W14N09S (3 years)
- 01S04W13P01E (5 years)
- 01S04W22A01E (6 years)
- 01S04W14P06S and 01S04W23C03S (7 years)
- 01S04W23C02S (9 years), and
- 01S04W23D01E (12 years).

For perchlorate, depending on the Project scenario chosen, the following two wells could have mitigation measures applied: 01S03W18L01S, 01S04W13P01E. Mitigation measures would be applied for a maximum of one year (see Table 2.3-12).

2.3.2.3 Impacts to Water Quality

Water quality impacts are assessed through an examination of Project effects on concentration levels of total dissolved solids and nitrates.

2.3.2.3.1 Total Dissolved Solids

Groundwater in the SBBA is generally a sodium/calcium bicarbonate type, containing equivalent amounts of sodium and calcium near the land surface and an increasing predominance of sodium in deeper parts of the valley-fill aquifer. A TDS range of 150 to 550 milligrams per liter (mg/L), with an average of 324 mg/L, is found in public supply wells (DWR 2003).

A comparison between the number of years when significant impacts to groundwater quality can be expected under both Project and No Project conditions is presented in Table 2.3-13. In all but two of the index wells and two of the spreading grounds, the number of years in which water quality objectives (WQOs) would be exceeded are smaller or the same under all Project scenarios than under No Project conditions (see Table 2.3-13). The two spreading grounds are Lytle and Devil Canyon/Sweetwater and the two index wells are IW2 and IW18.

Table 2.3-13. TDS: Duration (Years) of Significant Impacts, Current Water Quality Objectives

	Project Scenario Years Above Current WQO				*No Project: Years Above Current WQO*	*Difference Between Years of Significant Impact (Project Scenarios less No Project)*			
	A	**B**	**C**	**D**	**NP**	**A - NP**	**B - NP**	**C - NP**	**D - NP**
IW1 Vincent Well	19	17	19	14	39	-20	-22	-20	-25
IW2 Devil Canyon 3	2	4	3	3	3	-1	1	0	0
IW3 Devil Canyon 1	0	0	0	0	0	0	0	0	0
IW4 Cajon Well No. 1	12	12	20	17	39	-27	-27	-19	-22
IW5 Mt. Vernon	16	18	5	8	25	-9	-7	-20	-17
IW10 Well 24A	4	4	14	13	39	-35	-35	-25	-26
IW13 Newmark 3	0	0	0	0	0	0	0	0	0
IW14 Leroy Street Well	7	7	18	22	39	-32	-32	-21	-17
SG1 Devil Canyon / Sweetwater SG	0	0	1	1	0	0	0	1	1
SG3 Waterman SG	6	5	13	9	28	-22	-23	-15	-19
SG4 Badger SG	0	0	0	0	0	0	0	0	0
SG8 East Twin Creek SG	0	0	0	0	13	-13	-13	-13	-13
IW11 Raub 1	0	0	0	0	0	0	0	0	0
IW12 Lower Kelly	6	7	16	9	39	-33	-32	-23	-30
IW15 Well 40	0	0	0	0	0	0	0	0	0
IW16 Orange Street Well	0	0	0	0	0	0	0	0	0
IW17 Well 32	0	0	0	0	0	0	0	0	0
IW18 Well 62	35	38	12	10	10	25	28	2	0
IW19 Agate 2	0	0	0	0	0	0	0	0	0
IW20 Nelson Street	0	0	0	0	0	0	0	0	0
IW21 Airport 2	0	0	0	0	0	0	0	0	0
IW22 San Bernardino Ave. Well	0	0	0	0	0	0	0	0	0
IW23 Well 120	0	0	0	0	0	0	0	0	0
IW24 Well 146A	0	0	0	0	0	0	0	0	0
IW25 Observation Well	0	0	0	0	0	0	0	0	0
SG2 Santa Ana River SG	0	0	0	0	0	0	0	0	0
SG5 Patton SG	14	9	14	17	19	-5	-10	-5	-2
SG6 Mill Creek SG	0	0	0	0	0	0	0	0	0
SG7 City Creek SG	0	0	0	0	0	0	0	0	0
IW6 Well 27	0	0	0	0	0	0	0	0	0
IW7 Well 26	0	0	0	0	0	0	0	0	0
IW8 Well 13	0	0	0	0	0	0	0	0	0
IW9 Lord 7	0	0	0	0	0	0	0	0	0
SG9 Lytle SG	8	3	8	11	3	5	0	5	8

Note: 1. Index well and spreading ground name and order matches those in Figures 3.2-25 to 3.2-28 in Draft EIR.

2.3.2.3.2 Nitrates

An analysis similar to that performed for TDS concentration levels was repeated for nitrates. The results are shown in Table 2.3-14.

Table 2.3-14. Nitrate: Duration (Years) of Significant Impacts, Current Water Quality Objectives

Well and Spreading Ground I.D.[1]	*Project Scenario Years Above Current WQO*				*No Project: Years Above Current WQO*	*Difference Between Years of Significant Impact (Project Scenarios less No Project)*			
	A	**B**	**C**	**D**		**A - NP**	**B - NP**	**C - NP**	**D - NP**
IW1 Vincent Well	13	14	20	17	34	-21	-20	-14	-17
IW2 Devil Canyon No. 3	1	2	2	1	6	-5	-4	-4	-5
IW3 Devil Canyon No. 1	0	0	0	0	1	-1	-1	-1	-1
IW4 Cajon Well No. 1	4	4	4	5	6	-2	-2	-2	-1
IW5 Mt. Vernon	1	1	0	0	1	0	0	-1	-1
IW10 Well 24A	0	1	7	3	21	-21	-20	-14	-18
IW13 Newmark 3	0	0	2	2	6	-6	-6	-4	-4
IW14 Leroy Street Well	0	0	2	2	14	-14	-14	-12	-12
SG1 Devil Canyon / Sweetwater SG	0	0	1	2	1	-1	-1	0	1
SG3 Waterman SG	0	0	0	0	0	0	0	0	0
SG4 Badger SG	0	0	2	2	6	-6	-6	-4	-4
SG8 East Twin Creek SG	0	0	0	0	1	-1	-1	-1	-1
IW11 Raub 1	0	0	0	0	0	0	0	0	0
IW12 Lower Kelly	11	13	11	14	19	-8	-6	-8	-5
IW15 Well 40	0	0	0	0	0	0	0	0	0
IW16 Orange Street Well	0	0	0	0	0	0	0	0	0
IW17 Well 32	0	0	0	0	0	0	0	0	0
IW18 Well 62	0	0	0	0	0	0	0	0	0
IW19 Agate 2	0	0	0	0	0	0	0	0	0
IW20 Nelson Street	0	0	0	0	0	0	0	0	0
IW21 Airport 2	0	0	0	0	0	0	0	0	0
IW22 San Bernardino Ave. Well	0	0	0	0	0	0	0	0	0
IW23 Well 120	0	0	0	0	0	0	0	0	0
IW24 Well 146A	0	0	0	0	0	0	0	0	0
IW25 Observation Well	0	0	0	0	0	0	0	0	0
SG2 Santa Ana River SG	0	0	0	0	0	0	0	0	0
SG5 Patton SG	1	1	2	3	2	-1	-1	0	1
SG6 Mill Creek SG	0	0	0	0	0	0	0	0	0
SG7 City Creek SG	0	0	0	0	0	0	0	0	0
IW6 Well 27	0	0	0	0	0	0	0	0	0
IW7 Well 26	0	0	0	0	0	0	0	0	0
IW8 Well 13	0	0	0	0	0	0	0	0	0
IW9 Lord 7	0	0	0	0	1	-1	-1	-1	-1
SG9 Lytle SG	0	0	0	0	0	0	0	0	0

Note: 1. Index well and spreading ground name and order matches those in Figures 3.2-37 to 3.2-40 in Draft EIR.

In two cases, significant impacts under the Project scenarios would be of a greater duration than is the case under No Project conditions. This occurs in Project scenario D for SG5, Patton Spreading Ground and SG1, Devil Canyon/Sweetwater spreading grounds for one year. For all other index wells and spreading grounds, significant impacts under the Project have either the same or a shorter duration that under No Project conditions. The latter occurs in 14 wells, depending on the Project scenario chosen.

Mitigation of TDS and Nitrate Impacts

In some wells, TDS and nitrate levels resulting from implementation of the Project could create significant impacts and Mitigation Measures MM GW-1 and new MM HAZ-5 are proposed as a means to reduce impacts. These mitigation measures are as stated below:

MM GW-1: Using available reliable data, Muni/Western will, on an annual basis, evaluate impacts of the Project on TDS concentrations in the SBBA. To the extent feasible given existing infrastructure, and consistent with meeting other basin management objectives, Muni/Western will direct Project water spreading to reduce significant TDS impacts.

MM HAZ-5: Muni/Western will make an alternative water supply available to parties affected by contaminated wells, to the extent and for the duration that the contamination is caused by Project operations, or provide treatment for affected wells, at Muni/Western's discretion. The alternative supply or treatment for affected wells will be made available for all times when pertinent water quality standards are exceeded as a result of the Project.

A supply of replacement water does not necessitate the closure of a well as a source of water, however, since the water could be used for blending purposes. Therefore blending operations in existing wells are not expected to be limited.

Conditions at the following wells could require mitigation measures MM GW-1 and MM HAZ-5 be implemented for the specified amount of time for TDS:

1. Index well no. 2 (1 year duration for Project Scenario B);
2. SG1 (1 year with Project Scenario C and D);
3. Index well no. 18 (2 to 28 years depending on the Project Scenario); and
4. SG9 (5 – 8 years depending on the Project scenario).

Conditions at the following wells could trigger MM GW-1 and MM HAZ-5 for nitrates given current WQOs:

1. SG5, Patton Spreading Ground, (1 year, Project Scenario D); and
2. SG1, Devil Canyon/Sweetwater spreading grounds (1 year, Project Scenario D).

As noted above in the impact discussion, the Project results in beneficial impacts to water quality throughout the SBBA. This is partly due to the fact that high quality water is diverted away from the SAR channel (which provides relatively rapid movement to the Pressure Zone of the SBBA) and redirected it to numerous recharge facilities throughout the SBBA. This change in both the pattern and timing of groundwater recharge not only disperses the better quality

SAR water over the SBBA but has the added advantage of reducing the liquefaction potential in the Pressure Zone.

2.3.2.4 Contaminant Plumes Outside the SBBA

Spreading grounds outside of the SBBA were not modeled with MODFLOW. At the current time, no equivalent operational groundwater models are available for basins outside the SBBA, i.e., Rialto-Colton or San Timoteo. For the spreading grounds located within these groundwater basins, the increase in groundwater elevation due to Project operations was calculated using the analytical Hantush Equation. For example, Garden Air Creek spreading ground is proposed as a recharge area in the San Timoteo Basin located adjacent to and southwest of the SBBA. Garden Air Creek is a tributary of San Timoteo Creek located approximately 10 miles upstream of where San Timoteo Creek enters the SBBA. Results show that the impacts are restricted to a limited area (see Figures B84-B87 in Appendix B of the Draft EIR). Due to the substantial distance separating the spreading ground and the SBBA, the Project is not expected to substantially increase groundwater inflow from the San Timoteo Basin to the SBBA.

The Rialto-Colton groundwater basin underlies the Cactus Spreading and Flood Control Basins. As described in section 3.2 and Appendix B of the Draft EIR, the groundwater basin is bounded by the San Jacinto Fault on the northeast and the Rialto-Colton Fault on the southwest. Groundwater flow in the Rialto-Colton groundwater basin is generally in a southeasterly direction toward the SAR. The basin consists of three water-bearing units: upper; middle; and lower. The Cactus Spreading and Flood Control Basins are comprised of historic gravel mining operations and are currently utilized as storm water detention and recharge basins. They cover an area of 46 acres and provide recharge at a maximum rate of 2,070 acre-feet per month (1.5 ft/day equivalent percolation rate).

The Rialto-Colton Plume lies beneath the spreading grounds and perchlorate contamination is known to be currently transported in a southeasterly direction with groundwater (Draft EIR Figure 3.12-1). Particle tracking simulations (Draft EIR Figure 3.2-13) conducted by Woolfenden and Koczot (1999) show that mass transport proximal to the spreading basins is consistent with the general trend of groundwater flow. Groundwater elevation is known to fluctuate from year to year by as much as approximately 60 feet (Kleinfelder 2003). Years of high precipitation may raise groundwater levels 40 or more feet and the range of water levels through the 1990s for a well is typically about 50 feet (DWR 2003).

As described earlier, impacts of Project-related spreading in the Cactus Spreading and Flood Control Basins were evaluated by simulating the growth and decay of groundwater mounds in response to uniform percolation as described by Hantush (1967). Results from the analytical Hantush Equation are shown as groundwater mound height contours for each Project scenario (Figures B 84 – B 87 in Appendix B of the Draft EIR). The maximum groundwater mound height was estimated to be 48 feet, near the center of the Cactus Spreading Grounds. Areas with a rise in groundwater level greater than 10 feet cover an extent of approximately 2,400 acres under Scenarios C and D and 3,400 acres under Scenarios A and B. In the northern part of the sub-basin, hydrographs show quick rises of water levels during high precipitation years and slower decline towards a baseline level over several years. Changes in groundwater levels attributable to implementation of the Project would not create significant impacts since they fall within annual and historical ranges.

Inferences can be made regarding possible interactions between Project recharge activities and contaminant plumes and contaminant concentration levels in the Rialto-Colton groundwater basin. For example, increases in the groundwater elevation in the vicinity of the spreading grounds could increase groundwater surface gradient and promote groundwater flow. The increase in flow away from the mound could promote transport of the constituents in the aquifer and groundwater, and could spread the perchlorate plume longitudinally toward the SAR and laterally, to a lesser extent. Quantifying the magnitude of contaminant plume spreading requires the use of a spatially-distributed physically-based numerical groundwater flow model.

Groundwater contamination is a condition of considerable importance in the Rialto-Colton basin and numerous municipal water supply wells have been closed due to elevated levels of contaminants, especially perchlorate. Other supply wells have been fitted with wellhead treatment equipment that removes contaminants.

Muni/Western have obtained a copy of a groundwater model of the Rialto-Colton basin prepared by the USGS that has particle tracking capability. Muni/Western have used this model to estimate, to the extent currently practicable, impacts of the Project on the Rialto-Colton basin. Examination of the model results indicates that the Project will not substantially affect the flows of groundwater contaminants within the Rialto-Colton basin. Specifically, as shown in Chapter 3 of this Final EIR, Figure 3-1, the modeling demonstrates that there are no substantial areas which would become contaminated under the Project condition as compared to the No Project condition. The impact of the Project appears to be to increase the velocity of groundwater flow rather than to change the direction of such flows. This increased flow velocity is due to steeper hydraulic gradients in some areas due to spreading (i.e., artificial recharge). Consequently, the conclusion of the Draft EIR - that the Project would have a less than significant impact on groundwater conditions in the Rialto-Colton basin remains correct.

Recognizing that currently modeling of the Rialto-Colton basin is not as sophisticated as the groundwater modeling in the SBBA, though, Muni/Western propose the following mitigation measure:

MM HAZ-6: Muni/Western shall not spread water diverted or stored pursuant to the Project in the Cactus Spreading and Flood Control Basins or other locations overlying the Rialto-Colton basin until Muni/Western have completed the development of a groundwater model of the Rialto-Colton basin that includes output estimates of the impacts of the Project on groundwater contaminants. In the event that the model shows that the Project would contribute to the contamination of any well used to provide a source of potable water, Muni/Western will comply with the terms of MM HAZ- 5 by providing an alternative source of potable water or treatment of affected wells during the period when the Project contributes to an exceedance of applicable water quality objectives.

2.3.2.5 Liquefaction Analysis

Liquefaction is a form of seismically-induced ground failure. The occurrence of liquefaction hazard is most severe in the zone between the ground surface and a depth of 50 feet below ground surface (CDMG 1997). Liquefaction is a potential condition that is of considerable concern throughout the SBBA since much of the San Bernardino Valley is located in an area susceptible to liquefaction (Matti and Carson 1991). The most likely scenario for significant liquefaction to occur in the

San Bernardino Valley would be as a result of an earthquake on the adjacent San Andreas, San Jacinto, or Cucamonga faults (Matti and Carson 1991). There is new evidence pointing to strain buildup that will ultimately result in a large earthquake along the southern San Andreas fault as well as enhanced probability of an earthquake on the San Jacinto fault (Fialko 2006). Fialko found "Together, the San Jacinto fault and the southern SAF [San Andreas Fault] appear to accommodate the bulk of the relative motion between the North American and Pacific plates in southern California" (Fialko 2006).

The factors that determine whether sedimentary materials are susceptible to earthquake-induced liquefaction can be grouped into three categories: (1) the geotechnical properties of the sediments; (2) the depth to groundwater; and (3) the intensity and duration of ground shaking. By using a variety of techniques, it is possible to determine the potential role and contribution of each of these factors at an individual site and evaluate whether liquefaction is likely to occur during an earthquake of specified magnitude. By using additional analytical methods and statistical analysis, site-specific results can be extrapolated regionally to assign generalized liquefaction-susceptibility ratings to large areas (Matti and Carson 1991).

In evaluating liquefaction hazard, the standard references are California Division of Mines and Geology Special Publication 117 (CDMG 1997) and *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California* (SCEC 1999). These publications are based on original research by Seed and Idriss (1971, 1982), with subsequent refinements by Seed et al. (1983), Seed and De Alba (1986), and Seed and Harder (1990). Based on these publications, the vast majority of liquefaction hazards are associated with sandy soils and silty soils of low plasticity (the ability of the soil to be molded). Cohesive soils are generally not considered susceptible to soil liquefaction, although they can be under certain conditions. In addition, some gravelly soils are potentially susceptible to liquefaction. Most gravelly soils drain relatively well, but these soils may be vulnerable to liquefaction when the voids are filled with finer particles or the gravels are surrounded by less pervious soils that impede drainage. In general, pre-Holocene gravels (older than about 11,000 years) are generally not considered susceptible to liquefaction due to their higher density.

To be susceptible to liquefaction, potentially liquefiable soils must be saturated or nearly saturated. In general, liquefaction hazards are most severe within 50 feet of the surface, but on a slope near a free face or where deep foundations go beyond that depth, liquefaction potential should be considered at greater depth. If it can be demonstrated that any potentially liquefiable materials present at a site: (i) are currently unsaturated (e.g., are above the water table), (ii) have not previously been saturated (e.g., are above the historic high water table) and (iii) are highly unlikely to become saturated (given foreseeable changes in the hydrologic regime), then such soils generally do not constitute a liquefaction hazard that would require mitigation (CDMG 1997). Diminished susceptibility as depth increases is due to the increased firmness of deeper sedimentary materials. Much of the SBBA is located in an area of moderate to high liquefaction susceptibility (Matti and Carson 1991).

The main zones of elevated liquefaction susceptibility within the San Bernardino Valley are associated with shallow groundwater that occurs under the modern flood plains of Cajon Creek, Warm Creek, and the SAR. Recently deposited Holocene sediments that would be expected to have lower penetration resistance and higher susceptibility than older sediments underlie these areas. However, even the older Holocene and uppermost Pleistocene sediments have elevated susceptibilities comparable to those in the younger deposits, and this fact accounts for zones of high and moderately high susceptibility that extend away from the modern flood plains and into adjacent areas underlain by older deposits (Matti and Carson 1991).

In the southern part of the SBBA, on the northeast side of the San Jacinto Fault, there is approximately 1,200 feet of unconsolidated and partly consolidated, water-bearing deposits. In the area between Warm Creek and the SAR, the upper confining member of this aquifer acts to restrict vertical flow, causing semi-confined conditions in the upper 10 – 100 feet of saturated materials (the Pressure Zone). Liquefaction potential can be decreased locally by adjusting the physical recharge or by de-watering the area of high groundwater. Under the Project, water is diverted from recharge in the Santa Ana River Spreading Grounds and the main channel of the river to recharge facilities located around the SBBA thereby decreasing the liquefaction potential. Surface water percolating via the channel of the SAR or through recharge in the Santa Ana River Spreading Grounds finds its way relatively quickly to the areas already experiencing high groundwater levels in the Pressure Zone of the SBBA. It is the area of the Pressure Zone that is highly susceptible to liquefaction because of historically high groundwater levels. Thus, actions that redistribute surface water throughout the SBBA have a tendency to reduce groundwater levels, and susceptibility to liquefaction, in the Pressure Zone.

On a regional level, implementation of the Project could reduce the ground surface area potentially exposed to liquefaction hazard by up to 79% within the Pressure Zone when compared to conditions that would prevail under the No Project (Table 2.3-15). Such an outcome could have beneficial effects since the number of structures and persons at risk would be reduced. Reducing the area exposed to liquefaction potential, however, does not mean that local groundwater supplies would be decreased. Due to recharge in other areas of the SBBA and within the framework of the *Western* Judgment, the basin is kept 'whole', i.e., the total amount of groundwater in storage in the SBBA during the model simulation period 2001-2039 remains essentially the same between No Project and Project conditions (see Table 6.2-9, Appendix B Draft EIR) even though localized changes in storage vary between No Project and Project conditions during the period 2001-2039.

Table 2.3-15. Maximum Areal Extent of Potential Liquefaction in the SBBA

Project Scenario	*Extent Within Pressure Zone (acres)*[1]	*Extent Outside Pressure Zone (acres)*
No Project	5,835	25,516
Scenario A	1,204	19,681
Change from No Project (Percent Reduction)	*-4,631 (79%)*	*-5,835 (23%)*
Scenario B	1,204	20,067
Change from No Project (Percent Reduction)	*-4,631 (79%)*	*-5,449 (21%)*
Scenario C	3,736	22,984
Change from No Project (Percent Reduction)	*-2,099 (36%)*	*-2,532 (10%)*
Scenario D	3,797	23,448
Change from No Project (Percent Reduction)	*-2,038 (35%)*	*-2,068 (8%)*

Note: 1. The extent of acreage within the Pressure Zone does not include the river channels in this area. If liquefaction were to occur in the river channel, it is unlikely to damage buildings or harm persons, as there are no habitable structures in the river channel.

2.3.2.5.1 Liquefaction Impact Mitigation

Two levels of analysis were conducted in order to assess impacts and to assist in the definition of an appropriate mitigation measure. A basin-wide approach showing the spatial extent of the area of high groundwater (less than 50 feet below the ground surface) in the SBBA is presented in a series of figures (Figures B11-B20, and B30-B33 in the Addendum to Appendix B of the Draft EIR). Secondly, a local analysis was accomplished for each index well and spreading ground. These local analyses result in the series of hydrographs shown in Figure B29 in the Addendum to Appendix B of the Draft EIR.

In the event that significant impacts to liquefaction are attributed to the Project, mitigation measure MM GEO-7 is proposed. **MM GEO-7** states:

> Muni/Western will implement a groundwater level monitoring program using data from Index Wells. This information will be used in conjunction with forecasts of groundwater levels derived from the Muni/Western integrated surface and groundwater models to identify trends in groundwater levels and identify changes directly attributable to the Project. To the extent feasible given existing infrastructure, and consistent with meeting other basin management objectives, Muni/Western will direct Project water spreading to limit high groundwater conditions (groundwater within 50 feet of ground surface) in the vicinity of Devil Canyon, Lytle Creek, Mill Creek, and areas in the forebay and intermediate area of the SBBA.

2.3.2.6 *Hydraulic Conductivity and Its Relation to Groundwater Levels in the Pressure Zone*

Comments received on the Draft EIR stated that the Draft EIR's analysis was inconsistent with the results of the Hardt and Freckleton (1987) model of the SBBA. This statement misunderstands the nature of the Hardt and Freckleton model.

Hardt and Freckleton developed one of the first quantitative models of the SBBA almost 20 years ago. At that time, computer technology was much less capable than today and there was also much less data available on the SBBA. Consequently, Hardt and Freckleton made a number of simplifying assumptions in order to understand effects of artificial recharge in different areas in the Pressure Zone. First, they picked one model node in the middle of the entire 25 square mile Pressure Zone. By comparison, the groundwater model used in the Draft EIR (which was initially also developed by the U.S. Geological Survey) uses approximately 1,000 model cells to describe conditions in the Pressure Zone and as such gives a much more accurate picture of conditions. Second, the Hardt and Freckleton model assumed that static groundwater levels in the entire SBBA are at sea level; in fact, static groundwater levels in the SBBA vary from approximately 900 to 2,600 ft above mean sea level. Third, the simplifying assumptions used by Hardt and Freckleton did not include interaction of surface and groundwater systems (i.e. streams and rivers), groundwater pumping, evapotranspiration, areas of high groundwater, and natural recharge. In other words, the groundwater model used in the Draft EIR takes into account actual conditions in the SBBA such as hydraulic gradients, natural groundwater recharge, surface water/groundwater interactions, evapotranspiration and groundwater pumping.

Put otherwise, the Hardt and Freckleton model presents a very simplified picture of the SBBA developed almost 20 years ago. By contrast, the groundwater model used in the Draft EIR presents a more realistic picture of ground water extraction and recharge that relies on modern computing technology, data collected in the past 20 years, and a number of mathematical algorithms that allow for huge numbers of simultaneous calculations. For instance, to calculate the spatial extent of the area in which groundwater is within 50 feet of the land surface, the Draft EIR's model incorporates actual water levels, pumping, recharge, stream flow interaction and evapotranspiration. The Hardt and Freckleton model ignored these factors and/or used data that are not representative of actual basin conditions.

The Hardt and Freckleton model indicated that Waterman Canyon-East Twin Creek had "the most effect" on a confined area. However, as noted above, "the most effect" was based on only one model node in the Pressure Zone and a number of very simplified assumptions. If the Hardt and Freckleton model had been sophisticated enough to analyze evapotranspiration, stream flow interaction and groundwater pumping, it would have shown that rising groundwater levels in the Pressure Zone were primarily the result of spreading in the SAR and Mill Creek areas rather than spreading in the Waterman Canyon and East Twin Creek areas and so would have confirmed the results presented in the Draft EIR.

In sum, results from the two models do not contradict each other; they reflect different assumptions and levels of information applied to the same conditions.

2.3.2.7 Updated Demand Estimates and Effects to Modeling Performed for the Draft EIR

As described in the Draft EIR, Allocation Model utilizes forecasts of water demand in the SBBA. In the Draft EIR Allocation Model runs, the forecasted demand was based on year 2000 Urban Water Management Plans (UWMP) and the Regional Facilities Master Plan (1995). The SBBA demand was recalculated for the ongoing Integrated Regional Groundwater Management Plan process being undertaken by Muni and others in the SBBA area. Demand was recalculated using year 2005 UWMPs and the most recent Western-San Bernardino Watermaster data. New Allocation Model runs were performed to understand what effects updating the SBBA demands would have on the modeling results in the Draft EIR. New Allocation-Groundwater model runs were completed for No Project condition, Scenario A, and Scenario D. The updated demands are approximately six percent higher in 2039 than the demands used in the Draft EIR. The "updated demand" runs forecast an increase in the amount of SWP water and imported water deliveries in all the scenarios compared to the Draft EIR runs.

As with all projections, there is inherent variability in forecast values and their accuracy declines the further removed they are from the benchmark used in the development of the series. In the case of water demands developed from population projections there are a number of assumptions built into the original population projections. Each assumption has implications for the accuracy of the projected population values. Assumptions include survival rates and migration rates. Each assumption introduces some uncertainty and compounds the variability of the eventual projected value for population. The change (six percent) in population projections and resulting demand projections is minor relative to the accuracy at which population can be estimated so far into the future. The updated demands are consistent with the modeling performed for the Draft EIR.

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2.3.3 Conjunctive Use of Surface Water and Groundwater

2.3.3.1 Introduction and Summary of Comments

A number of comments raised questions regarding the manner in which the Project would engage in the conjunctive use of surface water and groundwater. Specifically, comments posed the following questions:

- How would the water developed by the Project be used; and
- Would water developed by the Project be exported from the SBBA?

2.3.3.2 Beneficial Use of Project Water

The Project would develop water supplies, primarily in wet years and during storm events, that would improve water supply reliability for the Muni/Western service areas by conserving water that would otherwise be lost to beneficial use in the SBBA. This diversification of sources of supply will be beneficial to all parties and will facilitate some of the management options discussed later in this section. This program would rely heavily on the conjunctive use of groundwater and surface waters and would not export water from the SAR watershed.

The Project is the latest effort by water agencies in the SBBA to cooperate in the development of local water supplies to meet local needs. Water agencies in the SBBA recognized the importance of developing such local supplies as early as 1969 when they entered into a settlement agreement (the *Western* Judgment) that allowed any agency conserving water over and above historical efforts to acquire title to the newly conserved water.

In the past two years, water agencies in the SBBA have entered into a series of cooperative agreements that are intended substantially to improve water management and water supply reliability. In July 2004, Muni/Western and other agencies entered into the "Seven Oaks Accord" which settled longstanding water right disputes and, more importantly, committed the parties to that agreement to develop an integrated program for the management of surface and groundwater within the SBBA. Muni and Western each recently received grants of approximately $500,000 under Proposition 50 to embark on the planning process for that management program. Shortly after the Seven Oaks Accord, Muni/Western and many of the other parties to the Seven Oaks Accord entered into an agreement with the City of San Bernardino Municipal Water Department and the San Bernardino Valley Water Conservation District to implement a demonstration program involving the spreading of specific quantities of water in a controlled manner. This agreement has been renewed for a third year and it is anticipated that it will provide valuable information for the development of a conjunctive use program. Similarly, Muni/Western have entered into a settlement agreement with the City of San Bernardino Municipal Water Department to develop a groundwater management plan that would implement the goals of the Seven Oaks Accord without interfering with remediation efforts associated with the Newmark and Muscoy plumes. Further, in late 2004, Muni/Western entered into an agreement with The Metropolitan Water District of Southern California that allows Muni/Western to provide water in excess of instantaneous demands for direct use or groundwater spreading to Metropolitan. An equivalent amount of water will then be returned by Metropolitan to Muni/Western at mutually agreeable times. Finally, in August 2005, Muni/Western entered into a settlement agreement with the San Bernardino Valley Water Conservation District that called for parties to cooperate in, and expand on, the groundwater management planning called for in the Seven Oaks Accord and required all parties to conform their recharge to such plans (see Thematic Responses section 2.6). In these ways, water agencies in the

SBBA have developed considerable flexibility to place water to reasonable and beneficial use within their respective service areas.

The Project fits well into these advanced water management strategies. Once appropriate regulatory approvals have been received, the Project will allow Muni/Western to divert and store water that currently flows out of the region without beneficial use or contributes to the high groundwater conditions in the Pressure Zone. Muni/Western will provide this water to purveyors within their service areas for direct deliveries of water; will use the water to recharge the groundwater basins within their service areas in places and at times so as to avoid the risk of liquefaction in the Pressure Zone; and will place the water to reasonable and beneficial use via an exchange with Metropolitan or other water agencies in Southern California. In these ways, the supplemental water supply represented by the Project will increase both the total quantity of water available to Muni/Western and will also improve the water supply reliability of both agencies and the respective retail water agencies within their service areas.

2.3.3.3 Place of Use of Project Water

The end users of the water developed by the Project are relatively well-defined: the water agencies and ultimately, their retail customers located within the Muni/Western service areas. These agencies (and their retail customers) are entitled to the benefit of any water newly conserved by Muni/Western under the terms of the 1969 judgments (the *Western* and *Orange County* judgments). The allocation of such newly conserved water among such retail agencies is also determined by these court decrees and the watermasters that are charged with the legal responsibility for implementing the judgments. As shown in the Draft EIR, Muni/Western would be able to place the maximum quantity of water that could be diverted in any given year (approximately 200,000 af) to reasonable and beneficial use, either within the Muni/Western service area during the same water year or, via an exchange with Metropolitan, during the same or a later water year. More specific forecasts of the end-users of water developed by the Project; the uses to which they will place the water; or the quantity of water directly delivered, stored in a groundwater basin, or delivered via an exchange are not possible at the present time because those details depend on the specific hydrology of each future year, the specific demand for water in that year, and any operational constraints (e.g., pipeline maintenance) that may limit or allow water deliveries.

It is important to note that water developed by the Project would not be exported from the SBBA for delivery to end-users outside the SBBA. If there is not sufficient capacity to take deliveries of water diverted for direct use or groundwater recharge by Muni/Western pursuant to the Project, then water would be delivered to Metropolitan or other water purveyors in Southern California for immediate use within their respective service areas. An equivalent quantity of water would then be delivered by these purveyors to the Muni/Western service area as soon as practical, given operational constraints. This exchange would result in the full quantity of water diverted or stored by Muni/Western being placed to reasonable and beneficial use within the Muni/Western service area. Such water exchanges would be on a one-for-one basis. In this way, the exchange with Metropolitan or other water purveyors in Southern California provides an additional means to store water diverted by Muni/Western and to place that water to reasonable and beneficial use. The Project will not result in the net export of water from the Muni/Western service area.

2.3.4 Biological Resources

2.3.4.1 Introduction and Summary of Comments

A number of commenters questioned the analytical techniques and significance criteria used in the assessment of Project-related impacts on biological resources downstream of Seven Oaks Dam. In general, the commenters requested that the EIR provide more information regarding the biological resources once found along the SAR and the linkage between hydrology and biological resources. They further questioned the biological analyses completed by Muni/Western that support the definition of the significance thresholds, conclusions of impact levels to species, and the extent and effectiveness of mitigation measures.

The following text describes the existing biological conditions for the different segments of the SAR, the link between hydrology and biological conditions for these various segments, and provides detailed descriptions of key species and habitats located in areas potentially affected by the Project, including an inventory of public trust resources. With this background, this section goes on to provide explanations and rationales for the selection of the thresholds of significance and mitigation measures used in the analysis of anticipated Project impacts.

2.3.4.2 Descriptions of Biological Resources by SAR River Segment

The following descriptions of river segments are from the Draft EIR section 3.1.1.7 with minor updates. For the purposes of this analysis, Project-related impacts associated with operations are evaluated for seven segments of the SAR. Each segment of the river is delineated using criteria that have important implications for the analysis of Project-related impacts. These segments as listed below are displayed in the Draft EIR Figure 3.1-6:

- Segment A – Upstream of Seven Oaks Dam (above RM 70.93);
- Segment B – Seven Oaks Dam to just above Cuttle Weir (RM 70.93 to RM 70.46);
- Segment C – Cuttle Weir to just above the confluence with Mill Creek (RM 70.46 to RM 68.59);
- Segment D – Mill Creek confluence to just above "E" Street (RM 68.59 to RM 57.69);
- Segment E – "E" Street to just above the RIX and Rialto WWTP effluent outfalls (RM 57.69 to RM 53.46);
- Segment F – RIX and Rialto WWTP effluent outfalls to just above Riverside Narrows (RM 53.46 to RM 45.2); and
- Segment G – Riverside Narrows to Prado Flood Control Basin (RM 45.2 to RM 35.5).

2.3.4.2.1 Segment A, Upstream of Seven Oaks Dam

Segment A is the area above Seven Oaks Dam and is the topic of preceding section 2.2.

2.3.4.2.2 Segment B, Seven Oaks Dam to just above Cuttle Weir

Within the active channel in Segment B, a narrow band of riparian vegetation became established in response to the flows between the Plunge Pool immediately downstream of Seven Oaks Dam and Cuttle Weir. This channel supported southern willow scrub riparian vegetation dominated by shrubby willows (including *Salix exigua* and *S. laevigata*) and emergent aquatic vegetation such as cattails (*Typha* sp.) prior to 2005. Fremont's cottonwood (*Populus fremontii*) and a few western sycamore (*Platanus racemosa*) trees were also growing along the channel. This plant community had established since completion of the dam and the trees had not grown to full size. The active channel is flanked by sparse mulefat scrub and revegetated areas, mostly Riversidian Sage Scrub (RSS). Much of the riparian vegetation along the channel washed out during releases of storm waters from the dam in 2005.

No native fish are known to be present in this segment and no endangered or threatened plant or wildlife species are known from this segment.

2.3.4.2.3 Segment C, Cuttle Weir to just above the Confluence of Mill Creek

Owing to the ephemeral nature of flows in this segment, the channel is a sandy wash with no wetland vegetation and virtually no riparian vegetation. The active channels are separated by vegetated bars or terraces of different sizes and ages which are dominated by Riversidian Alluvial Fan Sage Scrub (RAFSS) communities ranging from pioneer to mature. Santa Ana River woolly-star (*Eriastrum densifolium* ssp. *sanctorum*), an endangered plant species, is found in this segment, generally associated with lenses of deep sand in the otherwise rocky alluvial deposits. These are mostly at some distance from the active channel and unlikely to be flooded under current conditions with Seven Oaks Dam in place. This segment is being colonized by fountain grass (*Pennisetum setaceum*), an invasive perennial bunchgrass from South Africa. No fish are present in this segment due to the lack of water during much of the year.

2.3.4.2.4 Segment D, Mill Creek Confluence to just above "E" Street

Although the river exists as a wide dry sandy wash vegetated by mulefat scrub and pioneer RAFSS through most of this segment, substantial stands of riparian woodland and perennial water are found near the confluence with San Timoteo Creek upstream from the "E" Street crossing. According to Swift, there are barriers between this site located just upstream of "E" Street and downstream populations of Santa Ana sucker (*Catostomus santaanae*) that inhibit migration of the species upstream to this location (personal communication Swift 2005). Because this area is small and not connected to downstream areas (due to barriers) where the Santa Ana sucker is present, it currently does not support a population of Santa Ana sucker. Santa Ana speckled dace were found at the confluence of San Timoteo Creek as recently as 2001 (Swift 2001), but they were not present during 2005 seining surveys. During those surveys only the non-native green sunfish (*Lepomis cyanellus*), mosquito fish (*Gambusia affinis*), African clawed frog (*Xenopus laevis*), and bullfrog (*Rana catesbeiana*) were found (personal communication Leidy 2006). The dace may be extirpated in this reach. Suitable habitat for arroyo toads (*Bufo californicus*) is present for about 2 miles upstream of "E" Street, although the species is not currently known to be present in this area (USACE 2000).

Southwestern willow flycatchers (*Empidonax trailii extimus*) and least Bell's vireos (*Vireo bellii pusillus*), both federally and state-listed as endangered, are known to occur and nest in the riparian woodland habitat between the San Timoteo Creek confluence and "E" Street (USACE 2000). Suitable habitat for both species is present in patches upstream from "E" Street for about 4 miles, and, according to the USACE, potentially suitable habitat for arroyo toads is present for about 2 miles; however, the arroyo toad is not known from the Santa Ana River (USACE 2000). Since preparation of the Draft EIR, critical habitat for the southwestern willow flycatcher has been designated within a portion of this river segment.

Scrub areas to the north of the river in this segment are potential habitat for California gnatcatcher. Santa Ana River woolly-star (federally and state-listed as endangered) and San Bernardino kangaroo rat (SBKR, *Dipodomys merriami parvus*) (federally listed as endangered, California Species of Special Concern) are found in areas subject to overbank flooding on the north side of this segment. Slender-horned spineflower (federally and state-listed as endangered) is also present on the alluvial fan north of the river but is found in infrequently flooded areas vegetated by intermediate to mature stands of alluvial scrub, frequently dominated by California juniper (*Juniperus californica*).

2.3.4.2.5 Segment E, "E" Street to just above the RIX and Rialto WWTP Effluent Outfalls

Owing to the intermittent flow, this segment lacks well-developed riparian woodland vegetation and does not provide habitat for southwestern willow flycatchers or least Bell's vireos (USACE 2000). However, since preparation of the Draft EIR, critical habitat for the southwestern willow flycatcher has been designated within this river segment. Fish from the lower part of Segment D could move into Segment E when connecting flows are present, but sustaining populations are not present due to the intermittent drying in Segment E.

2.3.4.2.6 Segment F, RIX and Rialto WWTP Effluent Outfalls to just above Riverside Narrows

This segment has perennial flow originating at the RIX-Rialto effluent outfalls that is supplemented by rising groundwater. The perennial flow in this segment supports well-developed riparian habitat, dominated by Fremont cottonwood and various species of willow (*Salix* spp.). Giant reed (*Arundo donax*), an invasive plant species, has established over extensive areas in this portion of the River and has been the target of pioneering attempts at control and subsequent habitat restoration. The dense riparian woodlands in this segment provide medium to high value habitat for riparian-dependent bird species including least Bell's vireo and southwestern willow flycatcher (USACE 2000). Since preparation of the Draft EIR, critical habitat for the southwestern willow flycatcher has been designated within a portion of this river segment.

Native fish in this segment include Santa Ana sucker (endangered) and arroyo chub, *Gila orcutti* (California Species of Special Concern), both of which are abundant in this segment. Due to the perennial water, several non-native fish species are present in this segment (City of San Bernardino Municipal Water Department 2003). Near the RIX-Rialto outflow, tilapia (*Tilapia zilli*), mosquitofish (*Gambusia affinis*), and fathead minnow (*Pimephales promelas*) are present along with the aforementioned native species. Near the downstream end of this segment at the MWD pipeline crossing, six additional introduced species have been documented, including green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropterus salmoides*), yellow and black bullhead (*Ameiurus natalis* and *A. melas*), common carp (*Cyprinnus carpio*), and sailfin molly (*Poecilia latipinna*) (City of San Bernardino Municipal Water District 2003).

2.3.4.2.7 Segment G, Riverside Narrows to Prado Flood Control Basin

Extensive areas of riparian and wetland habitat are present in the Prado Basin and support regionally significant populations of riparian-dependent bird species including least Bell's vireo; western yellow-billed cuckoo (*Coccyzus americanus*) (state-listed as endangered; federal species of concern); and southwestern willow flycatcher. Santa Ana sucker and arroyo chub are present here as well.

2.3.4.3 Description of Key Species and Habitats Present in Project Impact Areas

The Draft EIR discussion of species and habitats is presented under the following geographic headings:

- Santa Ana River Corridor from Seven Oaks Dam to the Prado Flood Control Basin with a focus on aquatic and riparian resources in the stream corridor. See section 3.3.1.2 of the Draft EIR.

- Santa Ana River Alluvial Fan with a focus on the alluvial fan environment as a dynamic entity and the sensitive and non-sensitive resources found in the alluvial fan environment. See section 3.3.1.3 of the Draft EIR.
- Project Construction Areas, providing detailed discussions on the specific environments of different Project construction areas, including those in the vicinity of the Santa Ana River, Devil Canyon, and Lytle Creek. See section 3.3.1.4 of the Draft EIR.

These areas are where potential Project effects are anticipated. In order to focus the EIR discussion on the most important aspects of the species and habitats likely to be affected by the Project, additional supporting information was included in appendices to the Draft EIR or referenced, as appropriate, under specific impact or mitigation discussions.

Appendix E-2 of the Draft EIR provides reports from protocol surveys for listed threatened and endangered wildlife species and Appendix E-3 summarizes the field work associated with habitat characterization and mapping, and sensitive plant species surveys. Appendix E-4 provides detailed accounts of key sensitive resources and their occurrence in the Project region. These include discussions of: (1) RAFSS; (2) Parry's spineflower (*Chorizanthe parryi* var. *parryi*); (3) Santa Ana River woolly-star; (4) San Bernardino kangaroo rat; (5) California gnatcatcher (*Polioptila californica californica)*; and (6) Santa Ana sucker. The detailed information in these accounts was considered in the development of significance thresholds and evaluation of impacts in Chapter 3.3 of the Draft EIR. Information for listed sensitive species known to occur or potentially occurring in the Project region is contained in Appendix E-5 while information for unlisted sensitive species is contained in Appendix E-6 of the Draft EIR.

Presented below are summary discussions that clarify and, to the extent requested by comments, amplify the discussions of the following key resources: (1) RAFSS; (2) Parry's spineflower; (3) slender-horned spineflower (*Dodecahema leptoceras*); (4) Santa Ana River woolly-star; (5) San Bernardino kangaroo rat; (6) California gnatcatcher; (7) Santa Ana sucker; and (8) southwestern willow flycatcher. These were selected because they are sensitive resources located in areas potentially affected by the Project and in some cases the Project could have direct and indirect impacts on these species.

2.3.4.3.1 Riversidian Alluvial Fan Sage Scrub (RAFSS)

RAFSS is a habitat type typically dominated by a distinctive assemblage of shrubs and subshrubs characteristic of both coastal sage scrub and chaparral communities. Compared to other southern California shrub-dominated communities, RAFSS is recognized for its high diversity of plant species and plant life forms and is recognized as a rare and threatened plant community.

STATUS

The California Department of Fish and Game's (CDFGs) current global and state rank for RAFSS is G1, S1.1; this is the rarest and most endangered rank designation by this agency (personal communication Todd Keeler-Wolfe). There is no adopted impact significance threshold for RAFSS recognized by county, state, or federal government agencies. CDFG recommends a three to one mitigation ratio for impacts to RAFSS in San Bernardino County.

ECOLOGICAL CHARACTERISTICS

This habitat type is limited to flood-deposited alluvial soils and is not present on adjacent hillsides, although some of the dominant plant species are also found in coastal sage scrub or chaparral communities on hillsides. Many of the sensitive species associated with RAFSS are largely or entirely restricted to the alluvial fans. These include San Bernardino kangaroo rat, Santa Ana River woolly-star, slender-horned spineflower, and Parry's spineflower. Each of these species is considered separately below.

Heterogeneity is a hallmark of the RAFSS habitat type. The dominant vegetation and soils can vary considerably over short distances as a result of flood frequency and time since last flood; variation in nature of flood-deposited materials; and water availability. Kirkpatrick and Hutchinson (1978) identify high species diversity and unrivalled structural complexity as characteristics of the coastal scrub community developed on fans and washes in cismontane southern California (Kirkpatric and Hutchinson 1978). The structural complexity is the result of co-occurrence of plants having a variety of growth forms, ranging from large woody evergreen shrubs or small trees to small and medium-sized, drought-deciduous shrubs, annual and perennial wildflowers, climbing vines, cacti, and large rosette-plants such as chaparral yucca. The open spaces between the shrubs support a wide variety of low to tall annual and herbaceous perennial wildflowers in the springtime, including many plants not found in chaparral communities (Hanes 1976, Hanes et al 1989). This diversity in growth form is not found in either chaparral or coastal sage scrub communities, which ordinarily do not mix (Minnich 1976).

OVERALL DISTRIBUTION

Once widespread on the alluvial fans of the mountains bounding the Los Angeles Basin, including the San Gabriel, San Bernardino, and the San Jacinto ranges, this habitat has been greatly diminished by human activities. Much of this habitat was originally converted to agricultural uses (such as citrus groves) early in the twentieth century and has subsequently been converted to residential and commercial development. Sand and gravel mining, groundwater-recharge facilities, well fields, and flood control structures and habitat modifications are prevalent in and around remaining areas of this habitat. Remnant stands are threatened by exotic species invasion, illegal dumping of refuse, off-road vehicular activity, intensification or expansion of existing neighboring land uses, and other human activities.

From east to west, the major remaining areas of RAFSS habitat type are along the San Jacinto River near Hemet, in the upper Santa Ana River drainage (near Seven Oaks Dam), near the confluence of Cajon and Lytle Creeks, the vicinity of Etiwanda and Cucamonga creeks (above Rancho Cucamonga), San Antonio Creek (near Claremont and Upland), the San Gabriel River (near Azusa), and Big Tujunga Wash (near Sunland). RAFSS habitats have also been referred to as Alluvial Fan Sage Scrub and Alluvial Scrub vegetation (Hanes 1989 and Smith 1980). Tiny remnants also occur in the vicinity of Monrovia and Pasadena.

DISTRIBUTION IN THE PROJECT REGION AND PROJECT AREA

On the Santa Ana River alluvial fan below Seven Oaks Dam, the USACE (1996) mapped the different phases of RAFSS. The areal extent of each phase is as shown in Table 2.3-16.

Table 2.3-16. Areal Extent of RAFSS, by Phase on the Santa Ana River Alluvial Fan

Phase	*Extent (acres)*
Early Phase	1,131
Intermediate Phase	1,240
Mature Phase w/juniper	1,023
Mature Phase w/chamise	685

Most of the habitat traversed by the Plunge Pool Pipeline would be classified as intermediate phase or is transition to a mature phase with chamise (*Adenostema fasciculatum*). Where chamise is present it does not form a dense cover. Large individuals of sugar bush (*Rhus ovata*) are scattered here and there; otherwise, the vegetation is dominated by drought-deciduous shrubs [brittlebush (*Encelia farinosa*), yerba santa (*Eriodictyon trichocalyx*), California buckwheat (*Eriogonum fasciculatum*), wishbone bush (*Mirabilis californica*)] and cacti [snake cholla (*Opuntia parryi*) and prickly pear (*Opuntia littoralis*)]. Evidence of past fire in the form of charred wood (bases of chamise stems) was present.

CONSERVATION STATUS

A 610-acre conservation bank for alluvial fan scrub has been established in the Lytle/Cajon Creek area (personal communication Mary Meyer 2003, USFWS 2000). According to the USFWS e this bank, when fully purchased, will be combined with two other areas of mitigation lands in the Lytle Creek-Cajon Wash area to form a 1,400-acre preservation area that could serve as a nucleus for an even larger reserve to protect listed species within the Lytle Creek-Cajon Wash area (USFWS 2000).

Within the Santa Ana River drainage, two areas that include alluvial fan sage scrub have been set aside for conservation of endangered plant species. In 1988, the USACE and three local flood control districts established the 764-acre Woolly Star Preserve Area on the Santa Ana River floodplain, concentrated near the low-flow channel. In 1994, the Bureau of Land Management designated three parcels in the Santa Ana River, a total of 760 acres, as an Area of Critical Environmental Concern (ACEC). The primary goal in designation of the ACEC was to protect and enhance the habitat of federally listed plant species occurring in the area, while providing for the administration of existing valid rights (USFWS 2000). Both of these areas contain alluvial fan scrub vegetation, mostly in the early and intermediate phases.

2.3.4.3.2 Parry's Spineflower (Chorizanthe parryi var. parryi)

Parry's spineflower (also known as San Bernardino spineflower) is a low-growing annual herb with tiny white flowers that blooms from April to June. It germinates after fall or winter rains and matures and releases its seed by May or June. It exists only as seed through the summer and fall months until germination is stimulated by rainfall.

STATUS

In the most recent California Native Plant Society Inventory, Parry's spineflower is included on List 3, a review list, with the suggestion that it possibly should be moved to List 1B (Plants Rare, Threatened, or Endangered in California and Elsewhere) (California Native Plant Society 2001).

ECOLOGICAL CHARACTERISTICS

Parry's spineflower is principally found in flood-deposited alluvial soils but may also be present on adjacent hillsides or hilltops with sandy soil. Judging from its occurrences in alluvial fan areas surveyed for this Project in the Lytle Creek and Santa Ana River areas, it is associated with openings in the shrubby vegetation that support low-growing annual plant species such as *Lastarriaea coriacea* and *Pectocarya penicillata*. Cryptogamic soil crusts (soil stabilizing crusts formed by non-flowering plants such as mosses, lichens, and blue-green algae) are typically present and weedy grasses are sparse or absent. Parry's spineflower is scarce or absent from areas dominated by taller native annuals (e.g., *Phacelia distans*) or introduced grasses.

Although Parry's spineflower is generally associated with "undisturbed" habitat, in two instances during surveys for the Project it was found on previously disturbed sites. At these sites, prior physical disturbances had the effect of suppressing the growth of taller competing vegetation. These sites included small patches of the spineflower along the centerline of the Foothill Pipeline, installed in about 1970. At this site, cryptogamic soil crusts had also developed to some extent in the years subsequent to the disturbance. Parry's spineflower was also found to be abundant on a short section of a previously bladed road, where the soil appeared to have been scalped and compacted and competing vegetation was quite low and sparse. Neither site had dense growths of non-native annual grasses or other invasive exotic plant species.

OVERALL DISTRIBUTION

Parry's spineflower is known only from scattered populations fringing the Los Angeles Basin in Los Angeles, San Bernardino and Riverside counties, California. According to the botanical authority on the buckwheat family, much of the native habit of Parry's spineflower (the species is closely associated with RAFSS) has been destroyed by development in the twentieth century (Reveal 2001).

DISTRIBUTION IN THE PROJECT REGION AND LOCAL PROJECT AREA

Previously documented occurrences were recorded within the SAR wash, south of Greenspot Road and east of Orange Street. Additional previously documented occurrences were located within the proposed Lytle Creek and Devil Canyon Project areas. Within the Lytle Creek area, one previously documented occurrence was recorded in the Cajon Wash near the confluence with Lytle Creek. Occurrence in this general area was confirmed during surveys conducted in 2003 when thousands of individuals were observed in an alluvial scrub community. An additional previously documented occurrence was located approximately half a mile south of the proposed Devil Canyon Construction Area.

Approximately 116 locations of Parry's spineflower were mapped along the Plunge Pool Pipeline Phase II corridor. These ranged in size from a few individuals to hundreds of individuals. The fraction of remaining RAFSS habitat that is occupied by this species is unknown but is believed to be a small fraction of the total remaining RAFSS habitat. For example, Parry's spineflower was not found at all in a large site of mature Juniper-dominated RAFSS used as a reference site for slender-horned spineflower or in a pioneer to intermediate phase RAFSS area visited as a reference site for Santa Ana River woolly-star.

CONSERVATION STATUS

An "Environmentally Restricted Area" is mapped and identified in the field adjacent to the MWD pipeline and just south of the western end of the Plunge Pool Pipeline corridor that appears to be a study site for Parry's spineflower. The location of this site is shown in Draft EIR Figure 3.3-4, sheet 5 of 5.

2.3.4.3.3 Slender-Horned Spineflower (Dodecahema leptoceras)

Slender-horned spineflower is a low, spreading annual herb approximately 1 to 4 inches tall with sprays of tiny white to pink flowers, blooming between April and June.

STATUS

The Slender-horned spineflower is federally and state listed as endangered and is listed by the California Native Plant Society (CNPS) as rare and endangered in California and elsewhere (List 1B).

ECOLOGICAL CHARACTERISTICS

This is an annual plant species, germinating after fall or winter rains and completing its life cycle by early summer. After the plants die in late May or June, it exists only as seed through the summer and fall months until germination is stimulated by rainfall. Within the SAR fan, the Slender-horned spineflower is found on alluvial benches vegetated with intermediate to mature phase RAFSS. The habitats where the plant is found are infrequently flooded and have not been recently flooded. There is no evidence that this species is associated with frequent occurrence of flood-mediated habitat renewal processes. Some investigators maintain that the surfaces inhabited by this species are over 100 years old and may range from 1,000 to 5,000 years in age (Wood and Wells 1996). It is usually found in open areas in full sun, typically near California junipers. The preferred soil has been described as medium- to coarse-grained sand with some cohesion (USACE 2000) and is described by other investigators as silty. Allen (1996), who studied 6 populations throughout the range of the species, describes the microhabitats of spineflower as appearing to be "basins filled with silty soil and surrounded by rounded cobbles". The microhabitat where the plants are found may contain other annual plants but generally has a low cover of non-native grasses. Cryptogamic crusts, comprised of lichens, mosses, liverworts and other non-vascular plants, are frequently present, but are absent from some sites (Allen 1996). It is not known what mechanism prevents aggressive non-native annual grasses or other species from pre-empting these areas to the exclusion of the spineflower. It is thought that cryptogamic soil crusts play a role in inhibiting grasses that would otherwise displace the diminutive spineflower. Populations tend to be small and very localized and pollinators are not obvious, however the level of genetic diversity in this species is much higher than is typical for annuals and endemics and, from two independent lines of evidence, Ferguson et al. (1996) confirmed an outcrossing mating system (Ferguson 1996).

Threats to this species include agriculture, urbanization, sand and gravel mining, off-road vehicle activity, and non-native plants.

OVERALL DISTRIBUTION

Slender-horned spineflower is currently known only from a few isolated locations mostly around the Los Angeles Basin, in Los Angeles, San Bernardino, and Riverside counties with southern outlier populations near Hemet and Temecula (in Riverside County) and a northern population near Soledad Canyon on a small tributary of the Santa Clara River (Los Angeles County). Most of the known historic and extant locations are on the upper portions of the alluvial fans along the southern front of the San Gabriel and San Bernardino mountains.

Distribution in the Project Region and Local Project Area

Distribution in the overall Project area is shown in Draft EIR Figure 3.3-2. One occurrence was recorded within the SAR fan 1 mile south of Greenspot Road and 0.5 mile east of the old railroad grade, about 0.75 miles south of the Phase II Plunge Pool Pipeline alignment. Suitable habitat appears to exist for this species along portions of the proposed Plunge Pool Pipeline corridor, although it was not observed during initial surveys conducted in the area during June 2001 nor during focused biological surveys conducted for the Project March 25-27, 2003, May 13-14, 2003, and June 9-10, 2003. During the focused surveys, a nearby known population of the species was visited to verify the growth stage and appearance of the slender-horned spineflower on the survey date. Based on the results of these surveys, this species was not present along the surveyed corridor in 2003.

Conservation Status

A few occurrences of slender-horned spineflower are located within the Santa Ana River woolly-star preserve area.

2.3.4.3.4 Santa Ana River Woolly-Star (Eriastrum densifolium ssp. sanctorum)

Santa Ana River woolly-star is a perennial herb or subshrub, and may reach a height of three feet. The prickly leaves are gray-green and densely woolly. The showy tubular flowers are bright blue and bloom from June to September.

Status

The Santa Ana River woolly-star is federally and state listed as endangered and is included on CNPS List 1B (rare and endangered in California and elsewhere).

Ecological characteristics

Santa Ana River woolly-star occurs only in the floodplain of the SAR where it is most commonly associated with early successional and intermediate phases of RAFSS habitat (Burk et al 1988). It is found primarily on newer surfaces of coarse, loose sand deposits where perennial and annual plant cover is relatively low. This subshrub is also found in intermediate to mature aged RAFSS habitats, but to a lesser extent. Within the more mature RAFSS community, it is often found where animals have moved fresh sand to the surface or where minor stream channels have deposited sand locally.

Overall Distribution

The Santa Ana River woolly-star is known only from floodplain and alluvial fan habitats in the upper Santa Ana River drainage.

Distribution in the Project Region and Local Project Area

Occurrences for the Santa Ana River woolly-star have been recorded within the SAR wash and floodplain (see Figure 3.3-1 of the Draft EIR). A large number of subpopulations are recorded between San Bernardino International Airport (former Norton Air Force Base) on the west and Greenspot Road on the east. A documented occurrence of this species 0.6 mile north of the mouth of Morton Canyon may have been eliminated during construction of the Seven Oaks Dam. Threats to this species include urban development, habitat conversion, and flood control along the SAR. Other threats include sand and gravel mining, off-road vehicle activity, and non-native plants.

Although intermediate to mature RAFSS and RAFSS disturbed by pipeline installation during the early 1970s are present along the proposed Plunge Pool Pipeline Corridor, Santa Ana River woolly-star was not observed there during surveys conducted for this EIR in 2001 and 2003. Based on these survey results, it was concluded that the Santa Ana River woolly-star was not present along the surveyed corridor during 2003.

Known populations of the woolly-star and portions of the Woolly Star Preserve Area (see below) are located within the historical overflow area of the SAR, north of the main channel just downstream of its confluence with Mill Creek. It is thought that these overbank areas are occupied by the species because of the prevalence of records of the species in this area. It is assumed that in the absence of flood-mediated habitat renewal (removing vegetation and leaving a deposit of fresh moist soil), competing vegetation will gradually cause reductions in the woolly-star population.

CONSERVATION STATUS

To protect significant populations of this species, lands within the corridor of the SAR and portions of the alluvial fan terraces were set aside as a conservation area. The Woolly Star Preserve Area (WSPA) is a 764-acre area located west of the Greenspot Road Bridge that crosses the SAR. The WSPA includes active channel habitat as well as floodplain areas that support early and intermediate phase RAFSS. The WSPA was established as mitigation in the 1990's by the USACE and the local sponsors of Seven Oaks Dam to address impacts related to the construction of the dam. The local sponsors were responsible for developing the mitigation and monitoring plan as well as a long-term management approach for the WSPA. A Multi-Species Habitat Management Plan is in preparation for the upper Santa Ana River area, including the Santa Ana River woolly-star habitat.

2.3.4.3.5 San Bernardino Kangaroo Rat (Dipodomys merriami parvus)

The San Bernardino kangaroo rat (SBKR) is a small nocturnal rodent that takes cover in burrow systems that they create. They forage for seeds and other plant material and carry seed in cheek pouches. When pursued, they elude predators by hopping away rapidly with abrupt changes in direction, using their long tail for balance.

STATUS

SBKR is a federally listed endangered species and California Species of Special Concern.

ECOLOGICAL CHARACTERISTICS

Soil type and vegetation appear to be the most important factors in determining habitat suitability. This subspecies is found primarily on sandy loam substrates, characteristic of alluvial fans and flood plains, where they are able to dig simple, shallow burrows (McKernan 1997).

The preferred vegetation type is also associated with alluvial fans, where the common elements are open habitat characterized by low shrub canopy cover (7 to 22 percent cover) (USACE 2000). Although the SBKR occasionally occupies sage scrub just outside an alluvial fan, alluvial scrub supports the highest population densities. A number of variables have been determined to be significantly correlated with higher SBKR abundance including the following: disturbance from the 1938 and more recent floods, smooth boulders without lichens, pioneer to intermediate RAFSS, greater than 40 percent bare ground, less than 60 percent vegetative cover, low grass cover, and low litter cover (USACE 2000).

Abundance appeared to be highest in pioneer and intermediate RAFSS, which generally dates from 1969 to the present. An additional observation was that the abundance of SBKR within a mechanically disturbed (i.e., formerly mined) site was as high, or higher, than in naturally disturbed habitats with pioneer to intermediate stage RAFSS (USACE 2000). Although abundance was low in more mature habitat, it is important to note that most of this habitat occurs in areas of higher elevation that are more distant from the main channel and thus may provide an important refuge for SBKR during flood events (USACE 2000).

OVERALL DISTRIBUTION

The historical range of the SBKR extends from the San Bernardino Valley in San Bernardino County to the Menifee Valley in Riverside County (Lidicker 1960, Hall 1981). Within this range, the SBKR was known from over 25 localities (McKernan 1993). From its discovery during the early 1880's to the early 1930's, the SBKR was a common resident of the San Bernardino and San Jacinto valleys of southern California (Lidicker 1960). Related subspecies of Merriam's kangaroo rat occur in the Mojave and Sonoran deserts.

Within the last 70 years, habitat loss and degradation due to increased development and conversion to agricultural uses have significantly reduced the distribution and population sizes of the SBKR. In 1997, the SBKR was known to occupy approximately 3,247 acres of suitable habitat divided unequally among seven locations, which are widely separated from one another (McKernan 1997). Four of these locations, including City Creek (20 acres), Etiwanda (5 acres), Reche Canyon (5 acres), and South Bloomington (2 acres), support only small, remnant populations (McKernan 1997). The remaining three locations, including the SAR (1,725 acres), Lytle and Cajon washes (1,140 acres), and San Jacinto River (350 acres), contain the largest extant concentrations of SBKR and blocks of suitable habitat (McKernan 1997, USFWS unpub. GIS maps 1998).

DISTRIBUTION IN THE PROJECT REGION AND LOCAL PROJECT AREA

Within the Project area, the USFWS estimated the current range of the SBKR to include about 6,500 acres on the SAR alluvial fan, the lower fan of Mill Creek, and the lower reach of City Creek (USFWS 1988). The amount of suitable habitat within these areas was estimated by the USFWS at 3,679 acres (USFWS 1988). Lands considered unsuitable include the active channel of the SAR, agricultural and residential land, some of the more mature chamise chaparral, and heavily disturbed areas associated with aggregate mining, groundwater recharge basins, and the borrow pit used during construction of Seven Oaks Dam. Subsequent surveys (1999) conducted by local SBKR experts indicate that SBKR may occasionally utilize all but the most severely disturbed habitats on the alluvial fan (USACE 2000). The following summarizes SBKR distribution and abundance:

- Only six populations of SBKR remain three of which are vary small remnant populations. Of the remaining three substantial populations, the Santa Ana River alluvial fan population is the largest, representing as much as 25 percent of the occupied habitat for the SBKR.

- In the Project area, habitat within and adjacent to the Plunge Pool Pipeline footprint is low to moderate quality for the SBKR and is adjacent to disturbed areas such as Greenspot Road, citrus groves, and the Seven Oaks Dam borrow pit. Evidence of past disturbance is also present due to construction of the Foothill Pipeline, Conservation District canal and basin construction and maintenance, and Seven Oaks Dam construction. In addition, there are no records of SBKR within the Plunge Pool Pipeline corridor, and recent protocol trapping surveys were negative.

- The Plunge Pool Pipeline footprint area is near the edge of the SAR alluvial fan, at the edge of potentially suitable habitat, and outside of the edge of the occupied habitat on the fan.
- Future occupation of the eastern 75 percent of the Plunge Pool Pipeline corridor area is unlikely due to its being a narrow strip of habitat along Greenspot Road at the northern edge of suitable habitat and separated from occupied habitat to the south by the large Seven Oaks Dam borrow pit. The western 25 percent, conversely, is contiguous with large portions of the fan known to be occupied by SBKR. During extreme population expansions, the SBKR population may expand outward and into less suitable areas such as the western 25 percent of the Plunge Pool Pipeline alignment.
- The area potentially affected by reduced over-bank flooding includes high quality and occupied habitat.

In summary, the combined studies indicate that SBKR is expected to occur throughout the area between RM 69.7 and RM 61.5, west of Greenspot Road. Although the SBKR occupies younger RAFSS, most of the active channel and some of the immediately adjacent terraces are scoured too frequently to support RAFSS and subsequently are not expected to support the SBKR. Focused surveys conducted within those portions of the SAR alluvial fan associated with Project construction activities yielded no observations of this species (SAIC 2003).

CONSERVATION STATUS

A Multi-Species Habitat Management Plan is in preparation for the upper Santa Ana River area including the SBKR habitat. SBKR are present in the Woolly Star Preserve Area referenced in the previous section.

2.3.4.3.6 California Gnatcatcher (Polioptila californica californica)

The coastal California gnatcatcher is a small active songbird often found in family groups. It is closely associated with coastal sage scrub habitat.

STATUS

The California gnatcatcher is a federally listed threatened species and a California Species of Special Concern.

ECOLOGICAL CHARACTERISTICS

The gnatcatcher typically occurs in or near coastal sage scrub (CSS), which is composed of relatively low-growing, dry-season deciduous, and succulent plants. Characteristic plants of this community include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), lemonadeberry (Rhus *integrifolia*), bush penstemon (*Keckiella antirrhinoides*), *Salvia* spp., *Encelia* spp., and *Opuntia* spp. (Atwood 1990, Beyers and Wirtz 1997, Braden et al. 1997a, Weaver 1998). Up to 90 percent of CSS has been lost as a result of development and land conversion (Barbour and Major 1977, Westman 1981a, 1981b), and CSS is considered to be one of the most depleted habitat types in the United States (Kirkpatrick and Hutchinson 1977, Axelrod 1978, Klopatek et al. 1979, Westman 1987, O'Leary 1990). In addition to agricultural use and urbanization, increased fire frequency and the introduction of exotic plants have had an adverse impact on CSS (USFWS 2002).

CSS is patchily distributed throughout the range of the gnatcatcher, and gnatcatchers are not uniformly distributed within the structurally and floristically variable CSS. Gnatcatchers occur most frequently within California sagebrush-dominated stands of CSS (Atwood 1990, Atwood et al. 1998a, Atwood et al. 1999, Beyers and Wirtz 1997), and Weaver (1998) found that gnatcatcher densities in northern San Diego County are highest in areas where California buckwheat or California encelia (*Encelia californica*) are co-dominant with sagebrush. Despite these general habitat preferences, all shrub species within CSS are used by gnatcatchers. Gnatcatchers are typically found in stands of CSS that have moderate shrub canopy cover (40-80 percent) (Atwood 1980, 1988; Beyers and Wirtz 1997). The relative density of shrub cover influences gnatcatcher territory size, with territory size increasing as shrub cover decreases, probably due to limited resource availability. Gnatcatchers will use sparsely vegetated CSS as long as perennial shrubs are available, although there appears to be a minimum cover threshold below which the habitat becomes unsuitable (Beyers and Wirtz 1997, USFWS 2002).

Overall Distribution

The California gnatcatcher is found on the coastal slopes of southern California, from southern Ventura County southward through Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties into Baja California, Mexico (AOU 1957; Atwood 1980, 1990; Jones and Ramirez 1995). Gnatcatchers were considered locally common in the mid-1940's but had declined substantially in the United States by the 1960's (Atwood 1980). Although observed declines in numbers and distribution of the gnatcatcher resulted from numerous factors, habitat destruction, fragmentation, and degradation are the principal reasons for the federal listing of the gnatcatcher as threatened in 1993 (58 FR 16742).

Distribution in the Project Region and Local Project Area

The occurrence of the California gnatcatcher within the Project areas is extremely rare. The USFWS estimates that Ventura and San Bernardino counties combined may contain only 1 percent of the total species population (USFWS 2000). The site is also located at the northeastern extent of the California gnatcatcher range. Individual birds have been observed on a few occasions (5 records in the CNDDB although the USFWS is aware of 27 recent sightings), but the species has only been observed attempting to breed within the vicinity on one occasion and it has never been detected during numerous sets of focused protocol surveys in the area (Burns et al. 1998). Surveys of the Project area conducted in 2003 also resulted in no observations of California gnatcatcher. In 1996, ten pairs of California gnatcatcher were estimated to occur in the region (Burns et al. 1998). Consequently, use of the area is expected only on rare occasions as transients or juveniles disperse from breeding populations in adjacent regions.

Although RAFSS is a closely related scrub community, coastal sage scrub and Riversidian sage scrub (RSS – a regional form of CSS prevalent on hillsides in the Project region) are much more commonly occupied by California gnatcatcher (USFWS 2000). Other community types are occasionally used where they are adjacent to preferred, occupied habitat or temporarily used when individuals are dispersing from occupied habitat. Based on the lack of observations of California gnatcatcher, RAFSS appears to be rarely suitable for California gnatcatcher occupation. In addition, most of the RAFSS in the impact area is adjacent to disturbed areas or otherwise unsuitable habitat.

The more preferred non-alluvial habitat, RSS, occurs within the Project disturbance area in small patches of moderate to high quality but is unlikely to be occupied based on the negative results of focused surveys and extreme rareness in the region (Burns et al. 1998; USACE 2000).

Due to a number of recent sightings in the region (most unpublished) within RAFSS and RSS, some biologist have speculated that RAFSS may provide important habitat for the recovery of this species in the San Bernardino Valley. They have also suggested that conservation of occupied as well as unoccupied habitat may be required in order to preserve this population at the northeastern periphery of the California gnatcatcher's range (Burns et al. 1998).

CONSERVATION STATUS

A Multi-Species Habitat Management Plan is in preparation for the upper Santa Ana River area including the potential gnatcatcher habitat.

2.3.4.3.7 Santa Ana Sucker (Catostomus santaanae)

The Santa Ana sucker is a bottom-feeding fish with an average length of approximately 4.5 inches and a maximum length of about 8 inches (Moyle 1976).

STATUS

The Santa Ana sucker is a federally listed endangered species and California Species of Special Concern.

ECOLOGICAL CHARACTERISTICS

Santa Ana suckers occupy small- to medium-sized permanent streams with depths ranging from a few inches to three feet or more with flows that range from slow to swift. All the streams preferred by this species are subject to periodic severe flooding. Santa Ana suckers appear to be most abundant where the water is cool (less than 72°F) and clear, although they can tolerate and survive in seasonally turbid water (USFWS 2004). This species prefers coarse substrates consisting of gravel, rubble, and boulders (USFWS 2004). Although the sucker has been reported to be highly susceptible to polluted water, a recent study conducted by the Orange County Water District (OCWD) indicates that the quality of the water is not a factor in the sucker's decline (OCWD 2001, Tennant 2002 pers. comm.). Larvae and young may be found in a greater variety of substrates where the margins of the streams gradually grade to exposed banks, about six inches deep and shallower. They are much less common where the water is deep up to the shoreline. As fish mature, they move into deeper water. Adults are restricted to holes or pools that are usually 18 to 50 inches deep and usually associated with bridge abutments, large clumps of giant reed, the end of gabions, or other obstacles that lead to pool development (MEC and Aspen Environmental Group 2000).

Santa Ana suckers typically reach sexual maturity in just over one year and typically live less than three years. Spawning occurs from March to early July, with a peak in spawning activity occurring in late May and June (Moyle 1976). However, surveys within the San Gabriel River have found small juveniles in December indicating that spawning may begin as early as November under some conditions. The fecundity of the Santa Ana sucker is also very high and may be an important characteristic that aids in its recolonization of streams after a severe flood event. This species feeds primarily on detritus, algae, and diatoms (MEC and Aspen Environmental Group 2000).

OVERALL DISTRIBUTION

The Santa Ana sucker is native to southern California, occurring naturally only in the Los Angeles, San Gabriel, and Santa Ana river drainages.

DISTRIBUTION IN THE PROJECT REGION AND LOCAL PROJECT AREA

The distribution of the Santa Ana sucker within the SAR corridor extends from just upstream of the Riverside Avenue bridge in Riverside, downstream to a few miles below Imperial Highway in Orange County (below Prado Dam). The reliability of daily flows within this portion of the river is largely the result of steady effluent releases from several WWTPs along the river.

The decline of the sucker is attributed to urbanization, water diversions, dams, introduced competitors and/or predators (such as brown trout), and other human-caused disturbances. High flows within the basin between 1991 and 1996 have also been implicated for significant decreases in the Santa Ana sucker populations as evidenced by the low yields of 1996 surveys (USFWS 2004). The USFWS has also stated that random events such as floods may lead to the demise of the species due to genetic isolation of remaining populations (USFWS 2004).

CONSERVATION STATUS

Occupied habitat for the species is protected by the Santa Ana Sucker Conservation Program and the Western Riverside Multi-Species Habitat Conservation Plan.

2.3.4.3.8 Southwestern Willow Flycatcher (Empidonax trailii extimus)

The southwestern willow flycatcher is a small migratory songbird that breeds in riparian habitat in the southwestern U.S. during the spring and summer.

STATUS

The southwestern willow flycatcher is both state- and federally listed as endangered.

ECOLOGICAL CHARACTERISTICS

The species migrates north to breeding areas in the U.S. and northwestern Mexico and nests from April to September. Riparian habitats along rivers, streams, and other wetland habitats with dense growths of willows and other plants of similar structure provide nesting and foraging habitat for the southwestern willow flycatcher (69 FR 60706). Nesting occurs in relatively dense riparian habitats near or adjacent to surface water or in areas with saturated soil. The trees and shrubs used are generally 6 to 98 feet tall with dense foliage from the ground up to a height of about 13 feet (69 FR 60706). Southwestern willow flycatchers feed primarily on insects.

The reasons for population declines include loss and modification of habitat, and the species was federally listed as endangered in 1995 (60 FR 10693) and state listed as endangered in 1991.

OVERALL DISTRIBUTION

Breeding occurs in the southwestern U.S. and extreme northwestern Mexico from California to Texas and north to southern Nevada and Utah (69 FR 60706). The species winters in southern Mexico, Central America, and probably South America.

DISTRIBUTION IN THE PROJECT REGION AND LOCAL PROJECT AREA

Southwestern willow flycatchers have been reported within the Santa Ana River corridor, primarily between the confluence of San Timoteo Creek and Prado Dam. Past surveys have recorded from seven to nine breeding pairs within this segment of the river and the Prado Flood Control Basin. One additional pair was recently observed in the Project area in Morton Canyon (USFWS 2001). Focused surveys conducted in 2003 within a portion of the river corridor just below Seven Oaks Dam resulted in no observations of this species (SAIC 2003).

CONSERVATION STATUS

Critical habitat was designated on October 19, 2005 (70 FR 60886) and includes the Santa Ana River in San Bernardino County from Tippecanoe Avenue to the Riverside County boundary (between South Riverside Avenue and Market Street). The species is protected under the Western Riverside Multi-Species Habitat Conservation Plan in Riverside County.

2.3.4.4 *Impact Methodology*

2.3.4.4.1 Thresholds of Significance

The Draft EIR Table 3.3-4 provided a detailed listing of specific impact significance thresholds for selected biological resources, including key species and habitat types, and provided specific thresholds for different types of impacts (such as direct habitat removal, indirect construction impacts, direct mortality, reduction in frequency of postulated flood-generated habitat renewal processes, and changes in populations or habitat in response to changes in flow regimes). This table has been augmented for this Thematic Response and is presented as Table 2.3-17 below. In Table 2.3-17, additions to the original Draft EIR table are denoted in underline, deletions are denoted in strikeout. Table 2.3-17 provides the rationale supporting each specific significance threshold. There is no universally agreed-upon set of significance thresholds applicable to impacts identified for this Project. An impact significance threshold is established based on the reasonable professional judgment of the Lead Agencies. This judgment is, in turn, based on available scientific data on what constitutes a substantial effect on the resource (e.g., a sensitive species or habitat).

It is essential to recognize that significance thresholds can be developed independently for different resources. For example a significant impact in surface hydrology may not lead to significant impacts on biological resources (e.g., if the hydrological impacts are within the range of variability of normal conditions for the species in question). It is also important to note that thresholds of impact for federal or state Endangered Species Acts (ESAs) are not necessarily the standard for CEQA. CDFG takes the position that any impact on a listed species is significant, whereas in CEQA or NEPA analyses the focus is on the population and species as a whole. From the perspective of a population, "take" of an individual would not necessarily have a noticeable or substantial effect on the population. This fact is reflected in the permissible "incidental take" allowances granted by USFWS following consultation. Similarly, the ESA standards (jeopardy and adverse effect) are not intended to capture the notion of "substantial" effects that characterizes a CEQA impact analysis.

Comments expressing disagreement with the thresholds of significance utilized in the Draft EIR were received and alternative thresholds were often proposed. It is important to note, however, that none of the proposed alternative thresholds of significance was supported by data that would provide a rationale for the lower threshold. For that reason, Muni/Western believe that the thresholds identified in the Draft EIR are reasonable and reflect the uncertainties associated with identifying an impact while avoiding "false positives" (i.e., identifying impacts that do not really exist) and "false negatives" (i.e., not identifying real impacts as a result of an overly generous threshold of significance). Representative comments on the question of the appropriate thresholds of significance are included below, with responses.

Comment: *A concern has been expressed that several of the significance thresholds for biological resources are set too high, and should be reduced by a factor of 10. For example, thresholds used to identify the presence of an impact to RAFSS are based on disturbance to specific quantities of the community: 1 acre for moderate to good quality habitat; 5 acres for poor quality habitat; and 10 acres for indirect impacts. The significance thresholds suggested were 0.1 acre for good quality habitat, 0.5 acres for poor quality habitat, and 1 acre for indirect impacts. An even more stringent threshold for impacts to good or moderate quality RAFSS was proposed by the commenter, i.e., make the threshold the same as for the removal of riparian and wetland habitat. Thus, any removal of RAFSS would be considered significant. Similarly, it was suggested that the 1-acre significance threshold utilized in the Draft EIR for assessing the desiccation of riparian habitat was too high and should be reduced to 0.1 acre. The commenter disagreed with the Draft EIR's statement that 1 acre "is probably at the lower limit of delineation."*

Table 2.3-17. Specific Impact Significance Thresholds for Selected Biological Resources

Resource and Impact	*Threshold*	*Rationale*
RESOURCE: **Riversidian alluvial fan sage scrub (RAFSS)**		
IMPACT: *Habitat removal or long-term disturbance.*	Loss of 1 or more acres of moderate to good quality habitat* within or adjacent to other moderate to good quality habitat. Loss of 5 or more acres of poor quality habitat within or adjacent to existing disturbed areas. Poor quality habitat is assumed to be restorable to moderate quality or better. * Good quality habitat" refers to habitat that lacks obvious manifestations of physical disturbance or that has recovered from physical disturbance without a large influx of non-native plant species, and that contains dominant and characteristic species in good physical condition. In the intermediate and later seral stages, good quality habitat includes sites that have a prevalence of non-native annual grasses between and underneath the shrubs. This appears to be a manifestation of an area-wide trend toward an increasing abundance of non-native annual grasses and other species on the more mature soils. Examples of good quality habitat are widespread in the project vicinity. For example, good quality habitat is present along much of the original routing of the western portion of the Plunge Pool Pipeline alignment; the realignment placing it next to Greenspot takes advantage of the poor quality habitat along the road in that area. Examples of poor quality habitat are present adjacent to the south side of Greenspot Road near the western end of the proposed Phase II Plunge Pool Pipeline alignment.	One-acre and 5-acre thresholds were established considering the recognized structural diversity and species richness of the RAFSS habitat, and the time required to restore the community after severe disturbance. These thresholds are measurable and are ~~conservatively~~ judged to represent a considerable or substantial adverse effect given the very limited amount of remaining contiguous RAFSS habitat.~~, the recognized structural diversity and species richness of the RAFSS habitat, and the time required to restore the community after severe disturbance.~~ A lower threshold for RAFSS was considered but not adopted for two major reasons: (1) the impact of construction would be temporary and habitat quality and function would gradually re-develop after construction and restoration activities have been completed; (2) Muni/Western proposes to implement a suite of revegetation, habitat restoration, impact avoidance and minimization measures (Mitigation Measures BIO-1 to BIO-6) at all sites in native habitat whether or not the impact is judged to be significant. The higher threshold level for poor quality habitat is related to low present-day habitat value, time to restore habitat value, and uncertainties concerning ability to restore poor quality habitat.

Table 2.3-17. Specific Impact Significance Thresholds for Selected Biological Resources (continued)

Resource and Impact	*Threshold*	*Rationale*
Indirect impacts to adjoining areas as a result of construction	Isolation of 10 or more acres of suitable habitat narrower than about 0.5 mile in width (fragmentation) combined with construction-related indirect effects (exotic species invasion, interruption of native cover, off-corridor erosion and sedimentation) on that habitat.	Isolation and construction-related indirect effects degrade but do not eliminate habitat value and would be a temporary impact, minimized by BMPs and diminish as restoration of the intervening disturbed area progresses, hence the higher threshold of 10 acres.
RESOURCE: **Parry's spineflower** IMPACT: *Loss of habitat or individuals.*	Loss of 1 acre or more of occupied habitat or loss of more than about 150 individuals.	Thresholds would be measurable and are conservatively (i.e., in a manner protective of the environment) judged to represent considerable impacts. A lower threshold was judged not to be supportable based on the low proportion represented by the threshold of one acre or 150 individuals, given the overall distribution and abundance of the plant, its current status (CNPS List 3 status, not listed under state or federal endangered species acts), the temporary nature of the impacts to habitat, the proposed revegetation, habitat restoration, impact avoidance and minimization measures (Mitigation Measures BIO-1 to BIO-6) to be implemented at all sites in native habitat whether or not the impact is judged to be significant; and the observed recolonization by Parry's spineflower of previously disturbed areas (roads and pipeline corridors) in the Project area.
Indirect impacts to adjoining areas as a result of construction.	Isolation of 10 or more acres of suitable habitat narrower than about 0.5 mile in width (fragmentation) combined with construction-related indirect effects (exotic species invasion, interruption of native cover, off-corridor erosion and sedimentation) on that habitat.	Isolation and construction-related indirect effects degrade but do not eliminate habitat value and would be a temporary impact, minimized by BMPs and diminish as restoration of the intervening disturbed area progresses.

Table 2.3-17. Specific Impact Significance Thresholds for Selected Biological Resources (continued)

Resource and Impact	*Threshold*	*Rationale*
RESOURCE: **Riparian and wetland habitat** IMPACT: *Removal of habitat as a result of construction including construction-related effects on water quality (sedimentation, turbidity).*	Removal of any riparian or wetland habitat involving excavation or earthmoving.	Any removal involving excavation or earthmoving would be observable and measurable. The low threshold is in recognition of the scarcity of the habitat, high value per unit area, and its ecological importance.
Desiccation of riparian habitat as a result of Project operations.	Predicted observable reduction in density, height or vigor of riparian vegetation or wetted habitat in an area exceeding 1 acre.	The 1-acre threshold is conservative (i.e., in a manner protective of the environment), reflecting the importance and scarcity of riparian and wetland habitat and is probably at the lower limit of delineation since this type of impact would most likely be spread out along habitat boundaries.
RESOURCE: **Santa Ana River woolly-star** IMPACT: *Reduction or elimination of flood-generated habitat renewal as a result of operations.*	Predicted reduction of 1 acre or more in habitat area affected by flooding with a 30-year or greater predicted increase in the recurrence interval of a 50-year flood with Seven Oaks Dam in place.	The 1-acre threshold is conservative (i.e., in a manner protective of the environment), reflecting the importance and scarcity of this species. One acre is also near the lower limits of reliable prediction for the model for indirect potential impact that would occur years into the future. A 30-year increase in recurrence interval is conservatively chosen as a threshold because measurable adverse effects on this species related to habitat maturation would not likely occur during a shorter interval between floods.
RESOURCE: **San Bernardino kangaroo rat (SBKR)** IMPACT: *Direct mortality.*	5 or more individuals. (Note this threshold is defined for CEQA purposes; USFWS defines allowable "Take" under the Endangered Species Act. Allowable take may be greater or less than the threshold defined here.)	The low impact threshold is related to the importance of remaining populations and their isolated nature.

Table 2.3-17. Specific Impact Significance Thresholds for Selected Biological Resources (continued)

Resource and Impact	*Threshold*	*Rationale*
Permanent removal of habitat.	Permanent loss of 1 or more acres of suitable habitat or *any* occupied habitat	The threshold for occupied habitat is *any* occupied habitat and could not be lower. The threshold of one or more acres of unoccupied but suitable-appearing habitat ~~This threshold~~ would be measurable and is conservatively (i.e., in a manner protective of the environment) judged to represent a considerable impact, given a long-term or permanent loss. A lower threshold for unoccupied suitable habitat is not supportable based on the very small fraction (~0.03%) of the total amount of suitable habitat represented by one acre, the position of Project construction on the very edge of suitable habitat for the species and the unlikelihood of a loss of that size having a biological effect given the marginal habitat quality and uncertainties concerning SBKR occurrence in the immediate Project area.
Disturbance of potentially suitable habitat as a result of construction.	5 acres or more of suitable habitat.	This threshold would be measurable and is considered appropriate for the relatively short-term temporal loss of habitat value in suitable but unoccupied habitat that would be associated with a short-term construction disturbance.
Indirect impacts to adjoining areas as a result of construction.	Isolation of 10 or more acres of suitable habitat narrower than about 0.5 mile in width (fragmentation) combined with construction-related indirect effects (exotic species invasion, off-corridor erosion and sedimentation) on that habitat.	Isolation and construction-related indirect effects degrade but do not eliminate habitat value and would be a temporary impact, minimized by BMPs and diminish as restoration of the intervening disturbed area progresses.
Reduction or elimination of flood-generated habitat renewal processes.	Predicted reduction of 1 acre or more in habitat area affected by flooding with a 30-year or greater predicted increase in the recurrence interval of a 50-year flood with Seven Oaks Dam in place.	The 1-acre threshold is conservative, reflecting the importance and scarcity of SBKR. One acre is also near the lower limits of reliable prediction for the model for indirect potential impact that would occur years into the future. A 30-year increase in recurrence interval is conservatively chosen as a threshold because measurable adverse effects on SBKR related to habitat maturation would not likely occur during a shorter interval between floods.

Table 2.3-17. Specific Impact Significance Thresholds for Selected Biological Resources (continued)

Resource and Impact	*Threshold*	*Rationale*
RESOURCE: **California gnatcatcher (CAGN)** IMPACT:		
Direct mortality of individuals during construction.	5 or more individuals. (Note this threshold is defined for CEQA purposes; USFWS defines allowable "Take" under the Endangered Species Act. Allowable take may be greater or less than the threshold defined here.)	The low impact threshold is related to the importance of remaining populations and their isolated nature.
Permanent loss of occupied habitat.	Any measurable loss.	The low impact threshold is related to the importance of remaining populations and their isolated nature.
RESOURCE: **Santa Ana sucker** IMPACT:		
Loss of habitat as a result of reduced flows.	Loss of 1 or more acres of occupied habitat or suitable habitat in close proximity with occupied habitat measured based on dewatering of suitable habitat within areas known to support the Santa Ana sucker.	The 1- acre threshold is conservative (i.e., in a manner protective of the environment), reflecting the limited distribution of this species and small amount of suitable habitat available. This threshold is probably at the lower limit of delineation since this type of impact would most likely be spread out along habitat boundaries.
Reduction in quality of potentially suitable habitat as a result of reduced flow.	Impacts that substantially reduce the potential for occupation of 1 or more acres in areas of habitat.	The 1-acre threshold is conservative, reflecting the limited distribution of this species and small amount of suitable habitat available. This threshold is probably at the lower limit of delineation since this type of impact would most likely be spread out along habitat boundaries.
Changes in flood frequency and magnitude within designated Critical Habitat. *Critical Habitat is no longer in Project area*	Substantial decrease in frequency of gravel and cobble transport during flood events between Mill Creek and the "E" Street Gage (a substantial decrease is one that is sufficiently large to be measurable at the upstream end of occupied habitat).	The threshold is designed to address a principal constituent element of the Critical Habitat designation for the Santa Ana River as it applies in the Project area. In the final Critical Habitat designation for Santa Ana Sucker (Federal Register, January 5, 2005) no Critical Habitat was identified in the upper portions of the Santa Ana River, including the Project area.

Response: The comment proposes reduction of the significance thresholds by a factor of 10 without additional biological justification. The threshold acreages used in the EIR represent between one-tenth of one percent and four-tenths of one percent of the remaining similar habitat in the Santa Ana River study area. The detailed significance criteria proposed by Muni/Western are supported by an objective rationale, as follows:

- *one acre* — *moderate to good quality habitat within or adjacent to other moderate to good quality habitat.*
- *five acres* — *poor quality habitat within or adjacent to existing disturbed areas. Poor quality habitat is assumed to be restorable to moderate quality or better.*
- *ten acres* — *indirect effects such as fragmentation causing isolation of strips of habitat narrower than about 0.5 mile.*

These thresholds for removal of or long-term disturbance to alluvial fan scrub habitats are judged to represent a considerable or substantial adverse effect given: (1) the very limited amount of remaining contiguous RAFSS habitat; (2) the recognized structural diversity and species richness of the RAFSS habitat; (3) the severity of disturbance; and (4) the time required to restore the community after disturbance. The higher threshold for poor quality habitat within or adjacent to disturbed areas is in recognition of its impaired value even if restored and the higher threshold for indirect effects recognizes the fact that the affected habitat would still retain a substantial portion of its value. As noted in Table 2.3-17 above, lower thresholds were not proposed because: (1) the impacts would be temporary and habitat values would gradually redevelop after construction; and (2) the applicant would apply a comprehensive suite of revegetation, habitat restoration, impact avoidance, and minimization measures to all native habitats whether or not a significant impact is identified (as described below under construction effects).

Construction effects. The thresholds are related to the type of effects, in this case *temporary construction-related disturbance that would gradually regain function as the habitat is restored*. A lower threshold such as that proposed in the comment might be justified for permanent removal of habitat as a result of conversion to another land use such as housing that would not offer habitat value to the plants and wildlife of the RAFSS community.

As a practical matter, *if the lowered significance thresholds proposed in the comment were applied, Muni/Western would expect that no additional significant impacts would have been identified.* The impacts on RAFSS from construction of the Plunge Pool Pipeline were identified as *significant.* Moreover, a comprehensive revegetation and habitat restoration plan is proposed in the Draft EIR by the Project proponent for *any* native habitat affected by construction of Project components (whether an impact is found to be significant or not). The following quotation is from Draft EIR Section 3.3.2.1 (Approach to Mitigation) on page 3.3-30:

> Muni/Western would take a consistent approach to impact avoidance, minimization, and habitat restoration by applying a suite of mitigation measures described below (Mitigation Measures MM BIO 1 through MM BIO 6), as applicable, to avoid, minimize, and mitigate impacts identified below at all construction sites in native habitat, including sites at which the specific impacts were found to be less than significant. These measures include a series of actions designed to avoid or minimize impacts to sensitive resources that may be present, minimize the extent and severity of impacts, and restore impacted areas and populations. Measures MM

BIO-1 and MM BIO-2 are designed to minimize impacts on sensitive habitats and species and to restore the habitat after construction. Measures MM BIO-3, MM BIO-4, MM BIO-5 and MM BIO-6 are designed to facilitate avoidance or minimization of construction impacts on rare, threatened, endangered and sensitive plant and wildlife species and to restore populations and habitat where temporary disturbance is unavoidable.

The mitigation approach adopted by Muni/Western would provide added protection for sensitive habitats and species and would minimize the project-specific cumulative impacts on biological resources.

Overbank Effects. With regard to Project-related changes in overbank flooding, the key effect is a change in frequency of inundation. With a longer time period between floods, about 10 acres would be expected to gradually become a more mature RAFSS community. This was found to be a less than significant impact from the standpoint of the RAFSS community itself because of the scarcity and ecological significance of intermediate phase and mature phases of RAFSS and the long-term nature of the habitat maturation process in the project area (hundreds to thousands of years). Impacts on SBKR and Santa Ana River woolly-star, two species that are believed to depend on the early to intermediate phases of RAFSS were found to be *significant* in the SAR segment between Cuttle Weir and Mill Creek. Rejuvenation of 10 acres of RAFSS was proposed as mitigation for this effect (MM BIO-10). A higher mitigation ratio was not proposed because: (1) the habitat being mitigated for would remain in place and therefore there would be no temporal loss of habitat; (2) mitigation will be conducted decades in advance of the actual impact of habitat maturation, allowing for adjustments in approach to ensure performance standards are met; and (3) there is a limited amount of habitat available for rejuvenation without adversely affecting existing habitat values.

Riparian Habitat Desiccation Threshold. With regard to the comment on the criterion for desiccation of riparian habitat, Muni/Western stand by their statement that 1 acre is probably at the lower limit of delineation. This is because any desiccation would most likely occur along one or both banks of the stream bed and would be subtle or almost imperceptible at any one spot and would be spread out along habitat boundaries. Given the other sources of major variation in this river system, it would be very difficult to distinguish a Project-related effect smaller than one acre from natural background variability. There is also uncertainty in predicting effects of this size.

2.3.4.5 Impact Analysis

The effects of the Project on hydrology were discussed in section 3.1 of the Draft EIR and Thematic Responses section 2.3.1 of this Final EIR. Those analyses have contributed to the evaluation of potential effects of the Project on aquatic, terrestrial, and riparian public trust resources.

2.3.4.5.1 Project Effects on Aquatic Public Trust Resources

No fish are currently present in Segments B through C and most of Segment D of the Santa Ana River, as described above in section 2.3.4.2. Consequently, the Project would have no effects on fish in those areas. The small area at the downstream end of Segment D that supports native fish due to rising groundwater would not be adversely affected by Project diversions because those diversions would occur primarily during storm water releases from Seven Oaks Dam that coincide with tributary inflows to the river, resulting in high flows in Segment D. Project diversions when water is released from Seven Oaks Dam in the summer are also not anticipated to affect the small area in Segment D that supports fish, as this area depends on groundwater and persisted for many years when there were no summer releases from Seven Oaks Dam due to lack of water. Aquatic invertebrates and algae would continue to colonize areas of the river with intermittent to ephemeral flows as they have in the past. Project diversions would not adversely affect these species in Segments B-G of the river below Seven Oaks Dam because the diversions would occur during releases of storm water from Seven Oaks Dam when tributary inflows are normally high and would generally constitute a small proportion of the river flow.

As illustrated in Figure 2.3-3, Project diversions would not measurably reduce transport of gravel and cobbles from Segment E into Segment F where native fish reside and would not reduce river flows in Segments F and G during summer low-flow periods to less than those when no releases are made from Seven Oaks Dam. Project effects on the Santa Ana sucker and other native fish in the Santa Ana River were predicted to be less than significant in the Draft EIR.

Effects of providing bypass flows from Seven Oaks Dam for native fish such as the Santa Ana sucker are described in section 2.4 of these Thematic Responses.

2.3.4.5.2 Project Effects on Terrestrial and Riparian Public Trust Resources

Table 2.3-18 provides an inventory of public trust resources, identifying sensitive species and habitats and other biological resources present in all of the areas where Project construction or operations may have adverse effects on biological resources, including river segments from upstream of the dam to Prado Basin and in the following construction areas: Seven Oaks Dam and Reservoir, the Santa Ana River, Devil Canyon, and Lytle Creek. Impacts in these areas are identified in Table 2.3-19, Public Trust Resources Impact Matrix.

Two main types of Project impacts are anticipated for biological resources and are associated with: (1) ground disturbance during pipeline construction activities, and (2) reduction in flows in the main channel of the SAR due to Project diversions. These impacts and proposed mitigation and impact minimization measures identified in the EIR are briefly summarized below.

Construction activities would result in the disturbance and removal of riparian, wetland, stream, and upland habitat, including RAFSS, and cause mortality of common wildlife species. Significant impacts would be reduced by implementation of a suite of mitigation measures as described below (see 2.3.4.6). Prior to construction activities, surveys will be conducted, the results of which will aid in avoiding disturbance to habitats and wildlife species. A program will be implemented that includes: restricting disturbance; employee training; on-site monitoring; adoption of best management practices; and protection measures specifically designed for listed species. Additional mitigation would be achieved through the development and implementation of a Habitat Revegetation, Restoration, and Monitoring Program which will include the following measures: invasive species control; topsoil salvage and replacement; and habitat rehabilitation and replacement. If it is determined that preventative measures are not able to mitigate adverse impacts to RAFSS in a satisfactory manner, a compensation program will be implemented involving the acquisition, for every acre impacted, of a minimum of one acre of habitat of similar or greater habitat value.

No significant adverse impacts from construction on listed species, including SBKR, California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, Santa Ana River woolly-star and slender-horned spineflower, were identified in the Draft EIR.

Table 2.3-18. Inventory of Public Trust Resources

Project Area and Physical Characteristics	PUBLIC TRUST RESOURCES INVENTORY			
	Major Habitat Type	*Sensitive Vegetation Communities and Plant Species*	*Sensitive Wildlife Species and Wildlife Species Habitat*	*Other Biological Resources*
River Segment A Upstream of Seven Oaks Dam • The average gradient of the Santa Ana River (SAR) is 300 feet per mile, but tributaries have gradients ranging from 600 feet per mile to 1,900 feet per mile, illustrating the steep topography of the area. • The area susceptible to flood inundation is contained within River Segment A.	• Riparian vegetation and perennial stream habitat is restricted to two cienegas associated with the inflows of Warm Springs Creek (located within the 50-year inundation area) and Alder Creek (located upstream of the inundation area). • Riparian scrub, dominated by mulefat and shrubby willows, are associated with intermittent stream channels outside the cienegas. • Alluvial scrub vegetation exists in the upland parts of the floodplain. • Areas that would be affected by inundation were previously fully mitigated for as part of construction of Seven Oaks Dam. • Mixed chaparral is the prevailing vegetation type of the hillsides adjacent to the narrow floodplain above the Dam.	• Riparian vegetation, in a limited area of perennial flow associated with the inflow of Warm Creek, is dominated by white alders, various willows, and western sycamore. • No rare, threatened, or endangered plant species identified.	• Introduced populations of brown trout and rainbow trout present in a limited area of perennial flow associated with the inflow of Warm Creek. • No listed bird species known to be resident in the riparian habitat.	• Cienegas are present in the SAR upstream from the sediment pool and construction area. They support introduced brown and rainbow trout and riparian forest. Cienega refers to a riparian marshland or permanently saturated "seep wetland." Cienegas are dominated by sedges and other herbaceous and woody wetland plants.

Table 2.3-18. Inventory of Public Trust Resources (continued)

Project Area and Physical Characteristics	PUBLIC TRUST RESOURCES INVENTORY			
	Major Habitat Type	*Sensitive Vegetation Communities and Plant Species*	*Sensitive Wildlife Species and Wildlife Species Habitat*	*Other Biological Resources*
River Segment B Seven Oaks Dam to Cuttle Weir • Stream flow in this segment is perennial due to a required 3 cfs release from Seven Oaks Dam. • Slope is fairly steep, bed material is generally coarse, and the river is confined by canyon walls and is in a constructed channel throughout. • Immediately downstream of the plunge pool, the mainstem of the SAR is generally an engineered trapezoidal channel and the banks are also lined with loose boulders.	• Mixed Chaparral • Southern Cottonwood-Willow Riparian Woodland • Riversidean Alluvial Fan Sage Scrub (RAFSS) • Mulefat Scrub • Riparian Scrub • Wetland • Aquatic habitat	• Riparian scrub developing into riparian woodland immediately downstream of the plunge pool extending to Cuttle Weir (that portion of the channel reconstruction as part of Seven Oaks Dam construction). • Perennial aquatic habitat maintained by a perennial flow of at least 3 cfs. • No sensitive aquatic species expected to occur in this segment of the river.	• No resident southwestern willow flycatcher or least Bell's vireo are known or expected to occur. Either could occur as transient species. • No fish known to exist in this segment.	
River Segment C Cuttle Weir to Mill Creek Confluence • Slope is steep and bed material is coarse. Downstream of Cuttle Weir, the SAR exits the upper SAR canyon and enters the Santa Ana Wash (alluvial fan).	Instream areas: • No wetland or riparian vegetation in channels, except for scattered mulefat and a few non-native tamarisk.	Instream areas: • No sensitive resources identified. Overbank areas: • RAFSS	Instream areas: • Habitat unsuitable for Southwestern willow flycatcher and least Bell's vireo.	

Table 2.3-18. Inventory of Public Trust Resources (continued)

Project Area and Physical Characteristics	PUBLIC TRUST RESOURCES INVENTORY			
	Major Habitat Type	*Sensitive Vegetation Communities and Plant Species*	*Sensitive Wildlife Species and Wildlife Species Habitat*	*Other Biological Resources*
River Segment C Cuttle Weir to Mill Creek Confluence (cont.) • The channel is a sandy wash with smaller channels separated by vegetated bars or terraces. • The downstream portion of this segment is subject to overbank flooding.	Overbank areas: • RAFSS, pioneer, intermediate, and chamise subclimax stages on terraces adjacent to channels of braided stream.	• Santa Ana River woolly-star • Slender-Horned Spineflower (possible on seldom flooded terraces) • Parry's Spineflower • Plummer's mariposa lily	• No fish in this segment due to lack of flow during most of year. Overbank areas: • San Bernardino Kangaroo Rat (SBKR) • California Gnatcatcher critical habitat (CAGN)	
River Segment D Mill Creek Confluence to "E" Street • Intermittent flow at upper end and perennial flow at lower end due to groundwater upwelling and San Timoteo Creek inflow. • This river segment receives substantial tributary inflow during storm events. • At the upper end of this segment, river bed material is generally coarse, whereas downstream portions of the segment consist of a soft-bottom channel with uncompacted earthen berms on both banks. In the upstream portion, the channel is about 1,800 feet wide.	Instream areas: • Riparian scrub dominated by mulefat and shrubby willows. • Southern Cottonwood-Willow Riparian Woodland and marsh habitat associated with perennial flow at lower end of segment. Overbank areas: • RAFSS	Instream areas: • Sensitive riparian habitat at lower end of segment. Overbank areas: • RAFSS • Santa Ana River woolly-star • Slender-Horned Spineflower	Instream areas: • Riparian habitat at lower end supports nesting for Southwestern Willow Flycatcher and least Bell's vireo. • Santa Ana speckled dace present in aquatic habitat at lower end. Overbank areas: • SBKR • CAGN critical habitat	

Table 2.3-18. Inventory of Public Trust Resources (continued)

Project Area and Physical Characteristics	PUBLIC TRUST RESOURCES INVENTORY			
	Major Habitat Type	*Sensitive Vegetation Communities and Plant Species*	*Sensitive Wildlife Species and Wildlife Species Habitat*	*Other Biological Resources*
River Segment D Mill Creek Confluence to "E" Street (cont.) • In the downstream portion, the river is part of a broad wash, up to 5,000 feet wide, which includes part of the floodplain for City Creek and Plunge Creek. • Segment D includes multiple areas that could be subject to overbank flooding.				
River Segment E "E" Street to RIX Facility • River Segment E receives tributary inflow from Lytle Creek and Warm Creek. • The river has been channelized throughout the segment to confine flows and protect bridges and other structures. • This segment does not have overbank flooding areas.	• Aquatic, riparian, and wetland habitat limited due to intermittent stream flow. • Mostly sparse riparian scrub.	• No sensitive resources identified.	• Lacks suitable habitat for southwestern willow flycatcher or least Bell's vireo due to limited riparian habitat, restricted by intermittent stream flow.	
River Segment F RIX Facility to Riverside Narrows • Inflow from discharges from the RIX and Rialto wastewater treatment plants. • Generally, this river segment and downstream sections have year-round flow, attributable to	• Well-developed riparian forest and aquatic habitat.	• Southern Cottonwood-Willow Riparian Forest, Woodland, and marsh habitat associated with perennial flow.	• least Bell's vireo • Southwestern Willow Flycatcher • Santa Ana sucker (located primarily in the Rialto drain).	

Table 2.3-18. Inventory of Public Trust Resources (continued)

Project Area and Physical Characteristics	PUBLIC TRUST RESOURCES INVENTORY			
	Major Habitat Type	*Sensitive Vegetation Communities and Plant Species*	*Sensitive Wildlife Species and Wildlife Species Habitat*	*Other Biological Resources*
River Segment F RIX Facility to Riverside Narrows (cont.) effluent discharge, rising water, and urban and agricultural runoff. • This segment does not have overbank flooding areas.				
River Segment G Riverside Narrows to Prado Flood Control Basin • Stream flow is perennial throughout Segment G due to inflow from wastewater treatment plants and rising groundwater. • This segment does not have overbank flooding areas.	• Well-developed riparian forest, wetland and aquatic habitat.	• Southern Cottonwood-Willow Riparian Forest, Woodland, and marsh habitat associated with perennial flow.	• Significant breeding populations of riparian-dependent songbirds • least Bell's vireo critical habitat • Southwestern Willow Flycatcher critical habitat • Western yellow-billed cuckoo • Santa Ana sucker	
Seven Oaks Dam and Reservoir Construction Area • This area was previously disturbed as part of Seven Oaks Dam construction. • The construction area lies within the designated debris pool. The debris pool is	• The debris pool provides aquatic habitat but is drained prior to the start of the flood season and this habitat dries out. The habitat supports aquatic invertebrates and	• None in the construction area upstream of the dam	• None in the construction area upstream of the dam	

Table 2.3-18. Inventory of Public Trust Resources (continued)

<table>
<tr><th rowspan="2">Project Area and Physical Characteristics</th><th colspan="4">PUBLIC TRUST RESOURCES INVENTORY</th></tr>
<tr><th>Major Habitat Type</th><th>Sensitive Vegetation Communities and Plant Species</th><th>Sensitive Wildlife Species and Wildlife Species Habitat</th><th>Other Biological Resources</th></tr>
<tr><td>Seven Oaks Dam and Reservoir Construction Area (cont.)
seasonally filled and drained as part of Seven Oaks Dam operations.</td><td>some aquatic plants but does not sustain fish.
• The construction area is bounded by steep slopes occupied by native, undisturbed chaparral. This habitat will be periodically inundated during flood control operations.
• The relocation of Warm Springs road would have affected chaparral and other upland habitats. However, following consultation with the US Forest Service, this aspect of the Project was eliminated.</td><td></td><td></td><td></td></tr>
<tr><td>Santa Ana River Construction Area
• Portions of this area were previously disturbed as part of Seven Oaks Dam construction.</td><td>• RAFSS is the dominant upland plant community on the alluvial fan. The adjacent hillsides support Riversidian sage scrub (RSS) or chaparral.
• Riparian vegetation lines the active channel.</td><td>• RAFSS
• Parry's Spineflower
• Plummer's mariposa lily
• Santa Ana River woolly-star
• Slender-horned spineflower were not found within any of the proposed construction area.</td><td>Potentially occurring species include:
• Arroyo toad
• Western yellow-billed cuckoo
• Southwestern willow flycatcher
• CAGN
• least Bell's vireo
• SBKR</td><td>• Burrowing owl
• San Diego horned lizard
• San Diego woodrat
• Native and non-native herbaceous and scrub species</td></tr>
</table>

Table 2.3-18. Inventory of Public Trust Resources (continued)

Project Area and Physical Characteristics	PUBLIC TRUST RESOURCES INVENTORY			
	Major Habitat Type	*Sensitive Vegetation Communities and Plant Species*	*Sensitive Wildlife Species and Wildlife Species Habitat*	*Other Biological Resources*
Santa Ana River Construction Area (cont.)			Non-listed sensitive species potentially occurring include: • Loggerhead shrike • Black-chinned sparrow • San Bernardino mountain kingsnake	
Devil Canyon Construction Area • Devil Canyon Creek is a perennial stream. • This area was previously disturbed as part of Inland Feeder and other pipeline construction.	• Revegetated coastal sage scrub • The dominant riparian vegetation is alder	• No sensitive resources identified.	Potentially occurring species include: • Southwestern willow flycatcher • CAGN • Least Bell's vireo However, minimal habitat makes it improbable for these species to occur.	• RSS, chaparral, southern willow scrub, mulefat scrub, and ruderal grassland • Brittlebush, California buckwheat, deerweed, willows, cottonwoods, and alders • Riparian species- birds and amphibians • Rufous-crowned sparrow • Northern red-diamond snake Due to disturbance, minimal wildlife is expected in this area.

Table 2.3-18. Inventory of Public Trust Resources (continued)

Project Area and Physical Characteristics	PUBLIC TRUST RESOURCES INVENTORY			
	Major Habitat Type	*Sensitive Vegetation Communities and Plant Species*	*Sensitive Wildlife Species and Wildlife Species Habitat*	*Other Biological Resources*
Lytle Creek Construction Area • Majority of construction area within or adjacent to city streets	• RAFSS predominates with scattered, small sycamores and very large birchleaf mountain mahogany. • Riparian community exists in the constructed drainage channel dominated by mulefat. • Most construction effects would be on previously disturbed areas with some effects on adjacent RAFSS habitat with varying degrees of disturbance.	• No sensitive plant species are expected to occur at the construction sites. • Localized populations of Parry's spineflower are prevalent in nearby areas. • Occasional individuals of Plummer's mariposa lily are present in RAFSS habitat in the surrounding areas.	• least Bell's vireo • Southwestern willow flycatcher • CAGN • SBKR Non-listed sensitive wildlife species that may be present include: • Rufous crowned sparrow • Northern red-diamond rattlesnake • San Diego horned lizard • Coastal cactus wren	• Riparian community including: mulefat, arroyo willow, sandbar willow, mugwort, goldenrod, annual sunflower, grasses, and rushes. • Basin community including: coastal sagebrush, California buckwheat, scalebroom, matchweed, and deerweed. In addition, weedy non-native species are present including: tocalote, filaree, red brome, ragweed, castor bean, and giant reed. • Typical riparian species – black phoebe, black-headed grosbeak, and yellow-rumped warbler. • Scrublands would be expected to support squirrels and deer mice.

Table 2.3-19. Impact to Public Trust Resources (Page 1 of 6)

Project Area	Impacts to Public Trust Resources			
	Scenario A **(seasonal storage, 1,500 cfs diversion)**	**Scenario B** **(seasonal storage, 500 cfs diversion)**	**Scenario C** **(no seasonal storage, 1,500 cfs diversion)**	**Scenario D** **(no seasonal storage, 500 cfs diversion)**
River Segment A **Upstream of Seven Oaks Dam**	Change in hydrology from Baseline: 1. Peak 100-year flood flows: NA 2. Number of zero flow days: NA 3. Median non-storm day flow: NA	Change in hydrology from Baseline: 1. Peak 100-year flood flows: NA 2. Number of zero flow days: NA 3. Median non-storm day flow: NA	Change in hydrology from Baseline: 1. Peak 100-year flood flows: NA 2. Number of zero flow days: NA 3. Median non-storm day flow: NA	Change in hydrology from Baseline: 1. Peak 100-year flood flows: NA 2. Number of zero flow days: NA 3. Median non-storm day flow: NA
	Effects on public trust resources • Increased frequency of inundation up to elevation 2,418 ft msl during seasonal storage period, impacts to public trust resources similar to flood control operations. Impacts less than significant. Biological resources within the flood control reservoir pool (below elevation 2,425 ft msl) already permitted and mitigated for loss during flood control operations. Adverse effects associated with increased aquatic habitat and duration of inundation, such as establishment of introduced fish species are not expected due to the brevity of inundation as well as operating procedures that result in a dry segment of river between the reservoir and upper wetted reaches. Draft EIR page 3.3-55.	Effects on public trust resources • Increased frequency of inundation up to elevation 2,418 ft msl during seasonal storage period, impacts to public trust resources similar to flood control operations. Impacts less than significant. Biological resources within the flood control reservoir pool (below elevation 2,425 ft msl) already permitted and mitigated for loss during flood control operations. Adverse effects associated with increased aquatic habitat and duration of inundation, such as establishment of introduced fish species are not expected due to the brevity of inundation as well as operating procedures that result in a dry segment of river between the reservoir and upper wetted reaches. Draft EIR page 3.3-55.	Effects on public trust resources • No change from existing conditions.	Effects on public trust resources • No change from existing conditions.
River Segment B **Seven Oaks Dam to Cuttle Weir**	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 1,500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: – 1 cfs	Change in hydrology from Baseline: 1. Peak 100-year flood flows: - 500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: – 1 cfs	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 1,500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: – 1 cfs	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: – 1 cfs
	Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. Three cfs, which would remain in the river, considered sufficient to support aquatic community that exists. Draft EIR pages 3.3-62 to 3.3-63.	Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. Three cfs, which would remain in the river, considered sufficient to support aquatic community that exists. Draft EIR pages 3.3-62 to 3.3-63.	Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. Three cfs, which would remain in the river, considered sufficient to support aquatic community that exists. Draft EIR pages 3.3-62 to 3.3-63.	Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. Three cfs, which would remain in the river, considered sufficient to support aquatic community that exists. Draft EIR pages 3.3-62 to 3.3-63.

Table 2.3-19. Impact to Public Trust Resources (Page 2 of 6)

Project Area	Impacts to Public Trust Resources			
	Scenario A (seasonal storage, 1,500 cfs diversion)	**Scenario B (seasonal storage, 500 cfs diversion)**	**Scenario C (no seasonal storage, 1,500 cfs diversion)**	**Scenario D (no seasonal storage, 500 cfs diversion)**
River Segment C Cuttle Weir to Mill Creek	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 1,500 cfs 2. Number of zero flow days: +1,868 3. Median non-storm day flow: 0 cfs	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 500 cfs 2. Number of zero flow days: +1,868 3. Median non-storm day flow: 0 cfs	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 1,500 cfs 2. Number of zero flow days: +1,868 3. Median non-storm day flow: 0 cfs	Change in hydrology from Baseline: 1. Peak 100-year flood flows: –500 cfs 2. Number of zero flow days: +1,868 3. Median non-storm day flow: 0 cfs
	Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. This segment is generally dry and only limited resources are present. Draft EIR pages 3.3-62 to 3.3 -63. • Reduction in frequency and extent of flood flows hindering habitat renewal processes in RAFSS. Less than significant impact. Flood flows would be reduced by up to 1,500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 140 years, leading to RAFSS maturation. Maturation of RAFSS is a less than significant impact. Draft EIR pages 3.3-56, 3.3-59 to 3.3-60. • Reduction in frequency and extent of overbank flooding leading to maturation to less suitable SBKR and Santa Ana River woolly-star habitat. Significant but mitigable impact. Flood flows would be reduced by up to 1,500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 140 years, leading to RAFSS maturation, an undesirable habitat for SBKR. Identified mitigation measures involve the removal of invasive non-native plant species that diminish the value of SBKR and Santa Ana River woolly-star habitats and development of a program of habitat manipulation that simulates the aftermath of natural flooding. Draft EIR pages 3.3-60 to 3.3-62. • Change in sediment transport. Less than significant impact. Diversions of 1,500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely effect critical habitat for the Santa Ana sucker. Draft EIR page 3.3-63.	Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. This segment is generally dry and only limited resources are present. Draft EIR pages 3.3-62 to 3.3 -63. • Reduction in frequency and extent of flood flows hindering habitat renewal processes in RAFSS. Less than significant impact. Flood flows would be reduced by up to 500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 80 years, leading to RAFSS maturation. Maturation of RAFSS is a less than significant impact. Draft EIR pages 3.3-59 to 3.3-60. • Reduction in frequency and extent of overbank flooding leading to maturation to less suitable SBKR and Santa Ana River woolly-star habitat. Significant but mitigable impact. Flood flows would be reduced by up to 500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 80 years, leading to RAFSS maturation, undesirable habitat for SBKR. Identified mitigation measures involve the removal of invasive non-native plant species that diminish the value of SBKR and Santa Ana River woolly-star habitats and development of a program of habitat manipulation that simulates the aftermath of natural flooding. Draft EIR pages 3.3-60 to 3.3-62. • Change in sediment transport. Less than significant impact. Diversions of 500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely effect critical habitat for the Santa Ana sucker. Draft EIR page 3.3-63.	Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. This segment is generally dry and only limited resources are present. Draft EIR pages 3.3-62 to 3.3 -63. • Reduction in frequency and extent of flood flows hindering habitat renewal processes in RAFSS. 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Minor decreases in gravel and cobble transport would not adversely effect critical habitat for the Santa Ana sucker. Draft EIR page 3.3-63.

Table 2.3-19. Impact to Public Trust Resources (Page 3 of 6**)**

Project Area	Impacts to Public Trust Resources			
	Scenario A (seasonal storage, 1,500 cfs diversion)	**Scenario B (seasonal storage, 500 cfs diversion)**	**Scenario C (no seasonal storage, 1,500 cfs diversion)**	**Scenario D (no seasonal storage, 500 cfs diversion)**
River Segment D Mill Creek Confluence to 'E' Street	Change in hydrology from Baseline: 1. Peak 100-year flood flows: –1,500 cfs 2. Number of zero flow days: +812 3. Median non-storm day flow: 0 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. This segment is generally dry and only limited resources are present. Draft EIR pages 3.3-62 to 3.3 -63. • Reduction in frequency and extent of flood flows hindering habitat renewal processes of RAFSS. Less than significant impact. Flood flows would be reduced by up to 1,500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 56 years, leading to RAFSS maturation. Maturation of RAFSS is a less than significant impact. Draft EIR pages 3.3-59 to 3.3-60. • Reduction in frequency and extent of overbank flooding leading to maturation to less suitable SBKR and Santa Ana River woolly-star habitat. Less than significant impact. Flood flows would be reduced by up to 1,500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 56 years. This small change in flood frequency would not have a noticeable or ecologically meaningful effect on vegetation/habitat. Draft EIR pages 3.3-60 to 3.3-62. • Change in sediment transport. Less than significant impact. Diversions of 1,500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely affect critical habitat for the Santa Ana sucker. Draft EIR page 3.3-63.	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 500 cfs 2. Number of zero flow days: +812 3. Median non-storm day flow: 0 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. 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Table 2.3-19. Impact to Public Trust Resources (Page 4 of 6**)**

<table>
<tr><th rowspan="2">Project Area</th><th colspan="4">Impacts to Public Trust Resources</th></tr>
<tr><th>Scenario A
(seasonal storage, 1,500 cfs diversion)</th><th>Scenario B
(seasonal storage, 500 cfs diversion)</th><th>Scenario C
(no seasonal storage, 1,500 cfs diversion)</th><th>Scenario D
(no seasonal storage, 500 cfs diversion)</th></tr>
<tr><td>River Segment E
'E' Street to RIX Facility</td>
<td>Change in hydrology from Baseline:
1. Peak 100-year flood flows: – 1,500 cfs
2. Number of zero flow days: +190
3. Median non-storm day flow: 0 cfs
Effects on public trust resources
• Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. Draft EIR pages 3.3-62 to 3.3-63.
• Change in sediment transport. Less than significant impact. Diversions of 1,500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely affect critical habitat for the Santa Ana sucker. Draft EIR page 3.3-63.
• Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. A small amount of historically suitable Santa Ana sucker habitat exists in Segment E; however there has only been a single fish observation and the potential to support the species has been substantially reduced. Draft EIR pages 3.3-63 to 3.3-64.</td>
<td>Change in hydrology from Baseline:
1. Peak 100-year flood flows: – 500 cfs
2. Number of zero flow days: +190
3. Median non-storm day flow: 0 cfs
Effects on public trust resources
• Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. Draft EIR pages 3.3-62 to 3.3-63.
• Change in sediment transport. Less than significant impact. Diversions of 500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely affect critical habitat for the Santa Ana sucker. Draft EIR page 3.3-63.
• Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. A small amount of historically suitable Santa Ana sucker habitat exists in Segment E; however there has only been a single fish observation and the potential to support the species has been substantially reduced. Draft EIR pages 3.3-63 to 3.3-64.</td>
<td>Change in hydrology from Baseline:
1. Peak 100-year flood flows: -1,500 cfs
2. Number of zero flow days: +74
3. Median non-storm day flow: 0 cfs
Effects on trust resources
• Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. Draft EIR pages 3.3-62 to 3.3-63.
• Change in sediment transport. Less than significant impact. Diversions of 1,500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely affect critical habitat for the Santa Ana sucker. Draft EIR page 3.3-63.
• Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. A small amount of historically suitable Santa Ana sucker habitat exists in Segment E; however there has only been a single fish observation and the potential to support the species has been substantially reduced. Draft EIR pages 3.3-63 to 3.3-64.</td>
<td>Change in hydrology from Baseline:
1. Peak 100-year flood flows: – 500 cfs
2. Number of zero flow days: +74
3. Median non-storm day flow: 0 cfs
Effects on public trust resources
• Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. Draft EIR pages 3.3-62 to 3.3-63.
• Change in sediment transport. Less than significant impact. Diversions of 500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely affect critical habitat for the Santa Ana sucker. Draft EIR page 3.3-63.
• Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. A small amount of historically suitable Santa Ana sucker habitat exists in Segment E; however there has only been a single fish observation and the potential to support the species has been substantially reduced. Draft EIR pages 3.3-63 to 3.3-64.</td></tr>
<tr><td>River Segment F
RIX Facility to Riverside Narrows</td>
<td>Change in hydrology from Baseline:
1. Peak 100-year flood flows: – 1,500 cfs
2. Number of zero flow days: 0
3. Median non-storm day flow: 0 cfs
Effects on public trust resources
• Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. Draft EIR pages 3.3-62 to 3.3-63.
• Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. Habitat in Segment F is suitable for the species, and populations have been detected there. Project effects within this segment are extremely small, and then the only measurable difference occurs in flow ranges of 200 to 300 cfs. Draft EIR pages 3.3-63 to 3.3-64.</td>
<td>Change in hydrology from Baseline:
1. Peak 100-year flood flows: – 500 cfs
2. Number of zero flow days: 0
3. Median non-storm day flow: 0 cfs
Effects on public trust resources
• Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. Draft EIR pages 3.3-62 to 3.3-63.
• Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. Habitat in Segment F is suitable for the species, and populations have been detected there. Project effects within this segment are extremely small, and then the only measurable difference occurs in flow ranges of 200 to 300 cfs. Draft EIR pages 3.3-63 to 3.3-64.</td>
<td>Change in hydrology from Baseline:
1. Peak 100-year flood flows: – 1,500 cfs
2. Number of zero flow days: 0
3. Median non-storm day flow: 0 cfs
Effects on public trust resources
• Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. Draft EIR pages 3.3-62 to 3.3-63.
• Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. Habitat in Segment F is suitable for the species, and populations have been detected there. No measurable difference to non-storm day flow with Scenario C. Draft EIR pages 3.3-63 to 3.3-64.</td>
<td>Change in hydrology from Baseline:
1. Peak 100-year flood flows: – 500 cfs
2. Number of zero flow days: 0
3. Median non-storm day flow: 0 cfs
Effects on public trust resources
• Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. Draft EIR pages 3.3-62 to 3.3-63.
• Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. Habitat in Segment F is suitable for the species, and populations have been detected there. No measurable difference to non-storm day flow with Scenario D. Draft EIR pages 3.3-63 to 3.3-64.</td></tr>
<tr><td>River Segment G
Riverside Narrows to Prado Flood Control Basin</td>
<td>Change in hydrology from Baseline:
1. Peak 100-year flood flows: – 1,500 cfs
2. Number of zero flow days: 0
3. Median non-storm day flow: - 1 cfs
Effects on public trust resources
• Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. No measurable impact. Change in flow in Segment G too small to be accurately measured. Draft EIR page 3.1-47.
• Reduction in non-storm day flow affecting Santa Ana sucker. No measurable impact. Change in flow in Segment G too small to be accurately measured. Draft EIR page 3.1-47.</td>
<td>Change in hydrology from Baseline:
1. Peak 100-year flood flows: – 500 cfs
2. Number of zero flow days: 0
3. Median non-storm day flow: - 1 cfs
Effects on public trust resources
• Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. No measurable impact. Change in flow in Segment G too small to be accurately measured. Draft EIR page 3.1-47.
• Reduction in non-storm day flow affecting Santa Ana sucker. No measurable impact. Change in flow in Segment G too small to be accurately measured. Draft EIR page 3.1-47.</td>
<td>Change in hydrology from Baseline:
1. Peak 100-year flood flows: – 1,500 cfs
2. Number of zero flow days: 0
3. Median non-storm day flow: 0 cfs
Effects on public trust resources
• Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. No measurable impact. Change in flow in Segment G too small to be accurately measured. Draft EIR page 3.1-47.
• Reduction in non-storm day flow affecting Santa Ana sucker. No measurable impact. Change in flow in Segment G too small to be accurately measured. Draft EIR page 3.1-47.</td>
<td>Change in hydrology from Baseline:
1. Peak 100-year flood flows: – 500 cfs
2. Number of zero flow days: 0
3. Median non-storm day flow: 0 cfs
Effects on public trust resources
• Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. No measurable impact. Change in flow in Segment G too small to be accurately measured. Draft EIR page 3.1-47.
• Reduction in non-storm day flow affecting Santa Ana sucker. No measurable impact. Change in flow in Segment G too small to be accurately measured. Draft EIR page 3.1-47.</td></tr>
</table>

Table 2.3-19. Impact to Public Trust Resources (Page 5 of 6**)**

Project Area	Impacts to Public Trust Resources			
	Scenario A (seasonal storage, 1,500 cfs diversion)	**Scenario B (seasonal storage, 500 cfs diversion)**	**Scenario C (no seasonal storage, 1,500 cfs diversion)**	**Scenario D (no seasonal storage, 500 cfs diversion)**
Seven Oaks Dam and Reservoir Construction Area	• The Draft EIR identifies loss of native chaparral vegetation and common wildlife due to road-relocation, but road relocation has been removed as a Project component at the request of the Forest Service.	• The Draft EIR identifies loss of native chaparral vegetation and common wildlife due to road-relocation, but road relocation has been removed as a Project component at the request of the Forest Service.	• The Draft EIR identifies loss of native chaparral vegetation and common wildlife due to road-relocation, but road relocation has been removed as a Project component at the request of the Forest Service.	• The Draft EIR identifies loss of native chaparral vegetation and common wildlife due to road-relocation, but road relocation has been removed as a Project component at the request of the Forest Service.
Santa Ana River Construction Area	• Disturbance and temporary removal of riparian and wetland habitat, and mortality in common riparian wildlife species due to construction. This is a significant but mitigable impact. Construction would temporarily reduce wetted habitat by more than an acre. Identified mitigation measures would restore an equal or greater amount of riparian and wetland habitat compared to that impacted by construction. Draft EIR page 3.3-42. • Disturbance and removal of RAFSS and other upland habitats, mortality of common wildlife species due to construction. This is a less than significant impact for habitat affected by Low Flow Connector Pipeline and Morton Canyon Connector II Pipeline construction because most of the affected habitat has been recently disturbed and is of low quality, supporting only the most ubiquitous wildlife species. Draft EIR pages 3.3-49 to 3.3-50. This is a significant but mitigable impact for Plunge Pool Pipeline construction. The size of the affected area, the status of RAFSS as a CDFG highest priority community, its overall scarcity, and time required to regenerate the plant community make disturbance and removal by Plunge Pool Pipeline construction a significant impact. Identified mitigation measures would realign pipelines to minimize the amount of RAFSS affected, and acquire and place in conservation easements, 1 acre of good quality habitat for every 1 acre RAFSS lost. Draft EIR pages 3.3-43 to 3.3-46. • Disturbance and removal of non-listed sensitive species such as Plummer's mariposa lily and Parry's spineflower due to construction. This is a significant but mitigable impact. Loss of individuals and habitat of Parry's spineflower and Plummer's mariposa lily would be a significant impact because of the substantial amount of habitat affected (more than 1 acre), the scarcity of the remaining suitable habitat, and the sensitive status of these species. Identified mitigation measures would realign pipelines to minimize the amount of habitat impacted as well as provide for habitat restoration after construction. Draft EIR pages 3.3-46 to 3.3-47. • Disturbance and removal of habitat potentially occupied by non-listed sensitive wildlife species due to construction. This is a less than significant impact. Populations of these species are generally not localized or rare, and loss of individuals is not expected to substantially affect regional populations. Draft EIR pages 3.3-48 to 3.3-52.	• Disturbance and temporary removal of riparian and wetland habitat, and mortality in common riparian wildlife species due to construction. This is a significant but mitigable impact. Construction would temporarily reduce wetted habitat by more than an acre. Identified mitigation measures would restore an equal or greater amount of riparian and wetland habitat compared to that impacted by construction. 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Project Area	Impacts to Public Trust Resources			
	Scenario A (seasonal storage, 1,500 cfs diversion)	**Scenario B (seasonal storage, 500 cfs diversion)**	**Scenario C (no seasonal storage, 1,500 cfs diversion)**	**Scenario D (no seasonal storage, 500 cfs diversion)**
Santa Ana River Construction Area (cont.)	• Disturbance and removal of habitat occupied by listed wildlife species including CAGN and SBKR due to construction. This is a less than significant impact. Habitat within the area to be impacted is low to moderate in quality due to past disturbance, continued disturbance by Greenspot Road traffic, and distance from the Santa Ana River. Surveys for the Project resulted in no observations or indications of CAGN or SBKR, in or adjacent to, the area that would be impacted, therefore impacts would be less than significant. Draft EIR pages 3.3-47 to 3.3-48.	• Disturbance and removal of habitat occupied by listed wildlife species including CAGN and SBKR due to construction. This is a less than significant impact. Habitat within the area to be impacted is low to moderate in quality due to past disturbance, continued disturbance by Greenspot Road traffic, and distance from the Santa Ana River. Surveys for the Project resulted in no observations or indications of CAGN or SBKR, in or adjacent to, the area that would be impacted, therefore impacts would be less than significant. Draft EIR pages 3.3-47 to 3.3-48.	• Disturbance and removal of habitat occupied by listed wildlife species including CAGN and SBKR due to construction. This is a less than significant impact. Habitat within the area to be impacted is low to moderate in quality due to past disturbance, continued disturbance by Greenspot Road traffic, and distance from the Santa Ana River. Surveys for the Project resulted in no observations or indications of CAGN or SBKR, in or adjacent to, the area that would be impacted, therefore impacts would be less than significant. Draft EIR pages 3.3-47 to 3.3-48.	• Disturbance and removal of habitat occupied by listed wildlife species including CAGN and SBKR due to construction. This is a less than significant impact. Habitat within the area to be impacted is low to moderate in quality due to past disturbance, continued disturbance by Greenspot Road traffic, and distance from the Santa Ana River. Surveys for the Project resulted in no observations or indications of CAGN or SBKR, in or adjacent to, the area that would be impacted, therefore impacts would be less than significant. Draft EIR pages 3.3-47 to 3.3-48.
Devil Canyon Construction Area	• Disturbance and removal of upland, wetland, and riparian vegetation and wildlife habitat and mortality of common wildlife species. Impacts are significant but mitigable. Identified mitigation measures would minimize construction disturbance and include actions designed to keep animals out of the construction area (removal of sedentary animals in the construction right of way prior to clearing, exclusionary fencing). Draft EIR pages 3.3-52 to 3.3-53. • Disturbance of habitat potentially occupied by listed and non-listed sensitive wildlife species. This is a less than significant impact. Habitat affected is sparsely vegetated and unlikely to support a wide diversity of wildlife. Non-listed sensitive species likely sparse in this poor habitat and resulting mortality during construction would be minimal. Draft EIR page 3.3-53.	• Disturbance and removal of upland, wetland, and riparian vegetation and wildlife habitat and mortality of common wildlife species. Impacts are significant but mitigable. Identified mitigation measures would minimize construction disturbance and include actions designed to keep animals out of the construction area (removal of sedentary animals in the construction right of way prior to clearing, exclusionary fencing). Draft EIR pages 3.3-52 to 3.3-53. • Disturbance of habitat potentially occupied by listed and non-listed sensitive wildlife species. This is a less than significant impact. Habitat affected is sparsely vegetated and unlikely to support a wide diversity of wildlife. Non-listed sensitive species likely sparse in this poor habitat and resulting mortality during construction would be minimal. Draft EIR page 3.3-53.	• Disturbance and removal of upland, wetland, and riparian vegetation and wildlife habitat and mortality of common wildlife species. Impacts are significant but mitigable. Identified mitigation measures would minimize construction disturbance and include actions designed to keep animals out of the construction area (removal of sedentary animals in the construction right of way prior to clearing, exclusionary fencing). Draft EIR pages 3.3-52 to 3.3-53. • Disturbance of habitat potentially occupied by listed and non-listed sensitive wildlife species. This is a less than significant impact. Habitat affected is sparsely vegetated and unlikely to support a wide diversity of wildlife. Non-listed sensitive species likely sparse in this poor habitat and resulting mortality during construction would be minimal. Draft EIR page 3.3-53.	• Disturbance and removal of upland, wetland, and riparian vegetation and wildlife habitat and mortality of common wildlife species. Impacts are significant but mitigable. Identified mitigation measures would minimize construction disturbance and include actions designed to keep animals out of the construction area (removal of sedentary animals in the construction right of way prior to clearing, exclusionary fencing). Draft EIR pages 3.3-52 to 3.3-53. • Disturbance of habitat potentially occupied by listed and non-listed sensitive wildlife species. This is a less than significant impact. Habitat affected is sparsely vegetated and unlikely to support a wide diversity of wildlife. Non-listed sensitive species likely sparse in this poor habitat and resulting mortality during construction would be minimal. Draft EIR page 3.3-53.
Lytle Creek Construction Area	• Disturbance and removal of upland vegetation and wildlife habitat and mortality of common wildlife species. This is a less than significant impact. Habitat affected would be small and has limited wildlife value and impacts would be temporary. Draft EIR page 3.3-54. • Disturbance and removal of habitat potentially occupied by non-listed sensitive wildlife species. This would be a less than significant impact. Populations of non-listed sensitive species are not typically as isolated as listed species and the amount of habitat to be affected is minimal and of low quality. Draft EIR pages 3.3-54 to 3.3-55.	• Disturbance and removal of upland vegetation and wildlife habitat and mortality of common wildlife species. This is a less than significant impact. Habitat affected would be small and has limited wildlife value and impacts would be temporary. Draft EIR page 3.3-54. • Disturbance and removal of habitat potentially occupied by non-listed sensitive wildlife species. This would be a less than significant impact. Populations of non-listed sensitive species are not typically as isolated as listed species and the amount of habitat to be affected is minimal and of low quality. Draft EIR pages 3.3-54 to 3.3-55.	• Disturbance and removal of upland vegetation and wildlife habitat and mortality of common wildlife species. This is a less than significant impact. Habitat affected would be small and has limited wildlife value and impacts would be temporary. Draft EIR page 3.3-54. • Disturbance and removal of habitat potentially occupied by non-listed sensitive wildlife species. This would be a less than significant impact. Populations of non-listed sensitive species are not typically as isolated as listed species and the amount of habitat to be affected is minimal and of low quality. Draft EIR pages 3.3-54 to 3.3-55.	• Disturbance and removal of upland vegetation and wildlife habitat and mortality of common wildlife species. This is a less than significant impact. Habitat affected would be small and has limited wildlife value and impacts would be temporary. Draft EIR page 3.3-54. • Disturbance and removal of habitat potentially occupied by non-listed sensitive wildlife species. This would be a less than significant impact. Populations of non-listed sensitive species are not typically as isolated as listed species and the amount of habitat to be affected is minimal and of low quality. Draft EIR pages 3.3-54 to 3.3-55.

Impacts from project operations and maintenance are described in the Draft EIR in impact calls BIO-15 through BIO-21. However, multiple commenters expressed confusion over which impact call covered which specific species. To clarify, three new specific impact calls are being added: Impact BIO-16a, BIO-16b, and BIO-21a. All these impacts are less than significant.

New Impact BIO-16a. *Reduction in frequency and extent of flood flows could adversely impact slender-horned spineflower by reducing the frequency and extent of habitat renewal processes in RAFSS habitat. This impact would be less than significant.*

The slender-horned spineflower grows in fine-textured soils within intermediate to mature RAFSS habitat, particularly those dominated by California juniper (*Juniperus californica*). Although it occurs primarily in alluvial fan habitats, the species is not believed to be strongly linked to flood-mediated habitat renewal as are many of the species in the RAFSS community and the species does not appear to occur in recently-flooded habitats.

Between Cuttle Weir and the Mill Creek confluence (SAR Segment C), Project diversions (up to 1,500 cfs) would decrease the potential for high flows to flood elevated terraces within the channel during maximum releases (7,000 cfs) from Seven Oaks Dam. This potential for a reduction in the frequency of natural physical disturbance and community restructuring across these terraces could result in the eventual succession of early and possibly intermediate RAFSS to a more mature RAFSS condition. The frequency of flood scouring events on these terraces between Cuttle Weir and the Mill Creek confluence would be reduced from an average of once every 50 years to once every 140 years. The slender-horned spineflower is not known to occur in this segment of the river (above the confluence with Mill Creek), possibly because fine textured soils are infrequent or lacking in this relatively steeply sloping, high energy stream segment and associated alluvial terraces. The existing vegetation in this segment is primarily early and intermediate-phase RAFSS growing on surfaces dominated by flood-deposited boulders, cobbles and rocks. There is some juniper-dominated and chamise-dominated vegetation on older relict high terraces near the channel. The maturation that would be expected to occur in habitats along this stream segment would not be expected to adversely affect the spineflower, even if a seed source were present, because the soils are generally unsuitable. Thus there would be a less than significant impact and no mitigation would be required.

Downstream from the confluence with Mill Creek (Segment D), slender-horned spineflower is known historically from sites within the historically-flooded breakout area, north of the river (see Draft EIR Figure 3.3-2 for spineflower distribution and Figure 3.3-8 for breakout area). In this area, Project-related 1,500-cfs diversions would reduce the area affected by overbank flood inundation by about 4 percent in a 50-year flood and less than 3 percent in a 100-year flood. In effect, Project-related diversions would increase the time between flood-generated inundation events in these areas. The frequency of overbank flooding events would be reduced from an average of once every 50 years to once every 56 years. A small change in flooding frequency (i.e., 6 years) would not have a noticeable or ecologically meaningful effect on the slender-horned spineflower or other vegetation and habitat in this segment and effects would be less than significant and no mitigation would be required.

New Impact BIO-16b. *Reduction in frequency and extent of overbank flooding could adversely affect California gnatcatcher habitat. This impact would be less than significant.*

California gnatcatcher is associated with relatively open habitats classified as sage scrub or coastal sage scrub. The Santa Ana River alluvial fan is included within Critical Habitat designated for the species, however, gnatcatchers are rare in the Project area, which lies at the northeastern extent of its range. It is not known to breed in the Project area and only a handful of sightings have been made in the last 10 years. Individuals that have been observed are believed to be transients, due to the lack of breeding behavior detected and the inconsistent pattern of observations. Sage scrub habitats occupied by California gnatcatcher are typically characterized by denser, less open sage scrub vegetation than is found in the intermediate and pioneer phases of RAFSS.

As described for the RAFSS community, between Cuttle Weir and the Mill Creek confluence (Segment C), Project diversions (up to 1,500 cfs) would decrease the potential for high flows to flood about 10 acres of habitat on terraces within the channel during maximum releases from Seven Oaks Dam (7,000 cfs). The frequency of flood scouring events on these terraces would be reduced from an average of once every 50 years to once every 140 years. This change in frequency would be expected to lead to some changes in the pioneer phase and intermediate phase habitats. Some of the pioneer habitats would be expected to develop into intermediate-phase habitats, which are more likely to be used by CAGN, because of the greater cover they offer. Intermediate-phase habitats would be likely to develop a somewhat denser cover of small shrubs and shrubs characteristic of later phases could begin to colonize the area. The dominant shrubs of the intermediate phase RAFSS are capable of reproducing and establishing in the absence of flood disturbance and would be expected to persist on the site between floods, even with the longer flood return interval. It is expected that the habitat would remain shrub-dominated and relatively open and would remain suitable for use by CAGN. Impacts would be less than significant and no mitigation would be required.

Just downstream from the confluence with Mill Creek (Segment D), Project-related 1,500 cfs diversions would reduce the area affected by overbank flood inundation by about 4 percent and less than 3 percent, respectively, in 50- and 100-year floods. In effect, Project-related diversions would increase the time between flood-generated inundation events in these areas. The Project-related change in frequency of overbank flooding events would be reduced from an average of once every 50 years to once every 56 years. A small change in flooding frequency (e.g., from a 50-year to a 56-year estimated return interval) would not have a noticeable or ecologically meaningful effect on the vegetation and habitat in this segment and Project impacts on CAGN and its habitat downstream of the Mill Creek confluence would be less than significant and no mitigation would be required.

New Impact BIO-21a. *Changes in non-storm day flows caused by the Project could affect riparian and wetland habitat and the southwestern willow flycatcher downstream of the point of diversion. This impact would be less than significant.*

The small amount of riparian habitat present in Segment B does not provide suitable nesting habitat for the southwestern willow flycatcher, although individuals could stop there briefly during migration. The changes in flow resulting from Project diversions would not adversely affect the riparian vegetation in this area as described in Impact BIO-21 and thus would have no effects on the southwestern willow flycatcher.

No habitat suitable for southwestern willow flycatcher nesting is present in Segment C, all but the downstream end of Segment D, and essentially all of Segment E. Riparian habitat used by this species near the San Timoteo Creek confluence with the Santa Ana River in Segment D is supported by high groundwater levels that would not be affected by Project diversions. Segments F and G, as well as Prado Basin, provide nesting habitat for this species supported by perennial surface water resulting from wastewater discharges and rising ground water. Project diversions would have less than significant impacts on the southwestern willow flycatcher and its habitat because the diversions are not expected to substantially affect groundwater or surface water flows that support the riparian vegetation due to additional intervening sources of surface and groundwater inflow between occupied habitat and the points of diversion.

Project diversions also would result in a reduction in the frequency and extent of overbank flooding in Segment C of the Santa Ana River between Cuttle Weir and the confluence with Mill Creek. These changes could have significant impacts on the SBKR and Santa Ana River woolly-star as described in Draft EIR Impact BIO-17. This impact could be minimized by: monitoring and removing invasive non-native plant species that diminish value of SBKR and Santa Ana River woolly-star habitats; and implementing, together with federal and state agencies, a program to restore/renew habitat. Impacts on RAFSS, slender-horned spineflower, and California gnatcatcher from changes in overbank flooding would be less than significant. The evaluation for maturation of RAFSS *per se* is treated in detail in the Draft EIR Impact BIO-16. As indicated in Draft EIR section 3.2.3.1, the spineflower does not appear to depend on frequent flooding and is not known from the specific area that could be affected by Project-related changes in flood frequency. The gnatcatcher is not expected to use RAFSS in this area except as a transient visitor and maturation of the community into a denser shrub community in the very localized area of Project effect would not adversely affect individuals that moved through the area.

Changes in stream flow associated with implementation of the Project could affect riparian and wetland habitats and species, including riparian-dependent songbirds such as least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo, downstream of the points of diversion. These impacts would be less than significant because Project diversions are not expected to adversely affect riparian habitats at the downstream locations where these species are present due to distance from the points of diversion and additional intervening sources of surface and groundwater inflow between occupied habitat and the points of diversion.

2.3.4.6 Mitigation Measures

Mitigation measures identified for the proposed Project include feasible and effective measures to avoid, minimize, or compensate for potential impacts of the Project. Assessment of the feasibility and effectiveness of the proposed mitigation measures for construction impacts is based on extensive experience by the preparers in all phases of pipeline construction projects (from planning, environmental assessment, permitting, construction monitoring, and planning, implementing and monitoring restoration activities in similar environments). In addition, preparers have reviewed the available case studies and literature to evaluate the feasibility and effectiveness of different types of restoration/mitigation as applied to the proposed Project.

As described in section 3.3.2.1 of the Draft EIR, specific mitigation is described for the impacts identified in Draft EIR section 3.3. These measures anticipate the requirements of regulatory agencies. A mitigation implementation program would be prepared by Muni/Western for submittal to agencies having regulatory authority over relevant aspects of the Project. These include San Bernardino County, USACE, USFWS, CDFG, and the SARWQCB. A compliance monitoring program would be developed and implemented by Muni/Western and would include an onsite environmental coordinator or project biologist to oversee implementation of mitigation measures during construction and restoration, to ensure compliance with regulatory requirements, to assist both the regulatory agencies and construction contractors in interpreting the plans in the field, and to address and resolve unforeseen circumstances.

Muni/Western would take a consistent approach to impact avoidance, minimization, and habitat restoration by applying the suite of mitigation measures described in the EIR under Impact BIO-1 (MM BIO-1 through MM BIO-6), as applicable, to avoid, minimize, and compensate for impacts identified at *all* construction sites in native habitat, including sites at which the specific impacts were found to be less than significant. These measures include a series of actions designed to avoid or minimize impacts to sensitive resources that may be present, minimize the extent and severity of impacts, and restore impacted areas and populations. Measures MM BIO-1 and MM BIO-2 are designed to minimize impacts on sensitive habitats and species and to restore the habitat after construction. Measures MM BIO-3, MM BIO-4, MM BIO-5, and MM BIO-6 are designed to facilitate avoidance or minimization of construction impacts on rare, threatened, endangered, and sensitive plant and wildlife species and to restore populations and habitat where temporary disturbance is unavoidable. The mitigation approach adopted by Muni/Western would provide added protection for sensitive habitats and species and would minimize the Project-specific cumulative impacts on biological resources.

2.3.4.6.1 Mitigation for Construction Impacts in RAFSS

Generally a goal of mitigation is to avoid a net loss of habitat value (so that a 1:1 ratio exists between acres of mitigation and acres of habitat loss). Typically mitigation ratios are applied to permanent habitat losses such as might be incurred in a commercial or industrial development. In such cases ratios exceeding 1:1 may be recommended. The rationale for a ratio greater than 1:1 incorporates two principal factors: (1) a concern that the habitat restoration or replacement might not succeed, and (2) compensation for the temporal loss of habitat value during the process of habitat regrowth. A 3:1 ratio would provide compensation for both of these factors with a 100 percent margin of safety.

In Mitigation Measure MM BIO-7, Muni/Western has taken the approach of avoiding the impact to the maximum extent feasible and a key mitigation measure is to reroute the Plunge Pool Pipeline Phase II alignment to closely follow the disturbed Greenspot Road corridor, which is at or very near the northerly edge of contiguous RAFSS habitat. This reduces direct and indirect impacts on the RAFSS community and associated species and is the preferred mitigation. Avoidance or reduction of an impact is in keeping the USFWS Mitigation Policy (Federal Register 45(15)7656-7663).

In the case of Project construction, the loss would be temporary, extending through the construction period and with the habitat gradually recovering value over the next few years. The Project proposes a comprehensive program of impact avoidance, minimization, and restoration measures, including MM BIO 1 through MM BIO 6. Although recovery of key habitat elements would be expected within 2 to 4 years, the impact was conservatively categorized as a long-term loss because of the possibility that some elements might take longer than 5 years to achieve full recovery.

As is acknowledged in the Draft EIR and the literature cited therein, RAFSS is a community that responds to disturbance and the individual species are adapted to rapidly recolonizing disturbed areas (Smith 1980, Hanes 1984, Hanes et al. 1989, Ryan 1995). Although mistakes have been made and lessons learned, the approaches to reestablishing the dominant RAFSS species are well understood, provided that construction planning incorporates the need for post-construction restoration at the outset of planning so that soils and substratum are appropriately handled. For example, in the Devil Canyon area RAFSS dominants, including brittlebush, deerweed, California buckwheat, and coastal sagebrush, were well-established and vigorous within about 3 years subsequent to installation of buried water pipelines. The Project incorporates lessons learned from this and other successful efforts as well as previous unsuccessful approaches. Moreover, performance standards and a mitigation monitoring and restoration program would provide assurance that the habitat would be restored as planned.

Under the terms of MM BIO-8, there would be acre for acre acquisition, preservation, and maintenance of RAFSS habitat coupled with acre for acre restoration of the impacted habitat as required by MM BIO-2 providing full mitigation for Project impacts. This 2:1 mitigation for the temporary construction impacts is appropriate because: (1) there is no permanent habitat loss and habitat values in the construction area begin their recovery immediately after completion of initial restoration activities following construction; (2) adoption of performance standards and a mitigation monitoring program would provide assurance that the habitat would be restored as planned; and (3) purchase and management of RAFSS habitat acreage would provide compensation for temporal losses.

Numerous commenters on the Draft EIR expressed confusion over the purpose and application of MM BIO-8. To address this concern, Muni/Western enhanced the language of MM BIO-8 as follows:

MM BIO-8: To compensate for permanent ~~or~~ long-term <u>and temporal</u> losses of RAFSS habitat and RAFSS habitat value, Muni/Western will acquire, for every 1 acre impacted, a minimum of 1 acre of good quality habitat of similar or greater habitat value than the RAFSS area impacted by the Plunge Pool Pipeline and dedicate it in perpetuity as a habitat conservation easement area, or other appropriate designation, and provide funding for its future management as native habitat in perpetuity. The acquired RAFSS habitat area would ideally be contiguous with existing habitat already set aside in the WSPA or other dedicated RAFSS habitat. If good quality habitat in such a locality is not available for purchase, availability of other RAFSS habitat will be investigated, with the objective of obtaining good quality habitat near the Project area. <u>Implementation of this mitigation measure will be subject to the requirement that such long-term mitigation and reporting plans for such acquisitions are to be approved by the Chief of the Division of Water Rights of the State Water Resources Control Board prior to the construction of the Plunge Pool Pipeline.</u>

2.3.4.6.2 Mitigation for Project Effects on Overbank Flooding in RAFSS

In the case of habitat that would be expected to experience less frequent flooding and thus would be expected to eventually mature potentially becoming unsuitable to SBKR and Santa Ana River woolly-star habitat, a two-fold mitigation approach is proposed by Muni/Western. It is important to understand that any impact from Project activities would occur well into the future (years to decades after the first potential for overbank flooding occurs after the Project is implemented). Until that maturation process is triggered, and gradual changes attributable to the Project can begin, the habitat would remain intact and available to species that inhabit it.

The first mitigation element (MM BIO-9) involves monitoring and removing invasive non-native plant species (that diminish suitability for SBKR and Santa Ana River woolly-star) from habitats within and adjacent to the channel from Seven Oaks Dam to Mill Creek. This is the only reach where Project effects would be detectable, as described in the EIR. This measure can be implemented without delay during project implementation. It addresses a developing problem that is independent of the Project in the same area where reduced overbank flows attributable to the Project would occur. This ongoing effort would affect an area at least the size of the area that would be affected by reduced overbank flows attributable to the Project.

The second element of the mitigation is rejuvenation of 10 acres of RAFSS (MM BIO-10) using mechanical means, high pressure water or both. The 10 acres is equal in area to the area potentially affected by reduced overbank flows.

One to one restoration plus one to one enhancement provided by measures MM BIO-9 and MM BIO-10 is appropriate because: (1) the habitat being mitigated for would remain in place and therefore there would be no temporal loss of habitat; (2) both elements of mitigation would be conducted years to decades in advance of the actual impact of habitat maturation, allowing for adjustments in approach to ensure performance standards are met; and (3) there is a limited amount of habitat available for rejuvenation without adversely affecting existing habitat values.

2.4 ADDITIONAL MITIGATION MEASURES

2.4.1 Introduction and Summary of Comments

Thematic Responses section 2.4 addresses two questions that were the subject of a number of comments on the Draft EIR:

- How will Muni/Western mitigate Project-induced impacts to sensitive species and the RAFSS plant community; and
- Could Muni/Western make bypass flows available in order to enhance aquatic species and riparian habitat downstream of the points of diversion.

Section 2.4.2 describes the manner in which Muni/Western proposes to use adaptive management and performance standards to fully mitigate for the impacts of the Project on RAFSS. Section 2.4.3 describes the hydrologic limits on the availability of water in the SAR. These physical limits prevent Muni/Western from establishing bypass flows that would have any lasting biological benefit for species residing in the SAR watershed.

2.4.2 RAFSS Successional Adaptive Management Process

2.4.2.1 Impact on RAFSS of Operation of Seven Oaks Dam

The operation of Seven Oaks Dam for flood control purposes (as described in the USACE control manual) will reduce overbank flooding in downstream sections of the SAR and negatively impact the RAFSS community. Operation of Seven Oaks Dam for flood control purposes will reduce overbank flooding in an area of approximately 600-700 acres of RAFSS. The RAFSS community also includes SBKR and Santa Ana River woolly-star habitat. With reduced periodic disturbance formerly provided by overbank flooding, the RAFSS habitat will gradually mature, increasing in cover and diversity of native perennial plant species. It is expected that, without disturbance, the increasing vegetation cover will ultimately render the community unsuitable for SBKR or Santa Ana River woolly-star (USACE 2000).

While the change in overbank flooding occurred with the implementation of flood control operations at Seven Oaks Dam, the impact to the RAFSS community would not occur immediately but would develop over a period of decades. The impact on RAFSS associated with flood control operation of the dam will be fully mitigated by USACE through implementation of a Multi-Species Habitat Management Plan (MSHMP). One of several potential measures suggested by USFWS in their BO for flood control operations that is designed to mitigate the impacts to RAFSS includes the construction of temporary dikes in the SAR to divert channel flow over adjacent areas. The purpose of this approach is to replicate pre-dam hydraulic processes and habitat renewal below Seven Oaks Dam to enhance and maintain suitable alluvial scrub habitat for target endangered species within the WSPA (see also Option 1 in the Seven Oaks Dam BA and Appendix E7 [Section 1.0] of the Draft EIR). This plan is designed to combine re-operation of the dam with the construction of artificial structures to flood lands, replicate overbank flooding, and promote habitat renewal, within the WSPA. Major components of the proposed USACE mitigation include:

1. re-operation of Seven Oaks Dam;
2. construction of temporary diversion dikes within the main channel of the SAR;

3. creation of a sediment management plan and monitoring plan; and
4. construction of protective dikes around the WSPA (see pages 237 to 244 of the Seven Oaks Dam BA [USACE 2000]).

The current Water Control Plan for Seven Oaks Dam is designed to achieve flood control objectives only. The dam operation would have to be modified to provide water to accommodate implementation of this mitigation measure. With re-operation of the dam to implement the mitigation, water would be temporarily stored in the dam until temporary diversion dikes could be constructed, provided weather and runoff forecasts were suitable. Reservoir releases could then be diverted into the historic small breakout areas adjacent to the main channel. It is assumed that the cost associated with the re-operation of Seven Oaks Dam would be negligible although the cost of constructing the dikes could be substantial. It is anticipated that the re-operation plan would result in relatively natural flooding processes and would also provide the needed level of control. A disadvantage associated with such an approach is that significant and unavoidable adverse impacts to biological resources would probably occur related to the controlled flooding, construction of temporary water diversion dikes, construction of protective dikes, and in providing for sediment management recharge in the river. In brief, the construction of needed facilities, and the use of floodwaters to scour areas within the dikes may result in the loss of a significant number of plant and animal individuals in the process of rejuvenating RAFSS habitat. A full description of the plan features and impacts on sensitive species and environments can be found in Appendix E7 of the Draft EIR.

2.4.2.2 Impact of Project on Overbank Flooding

As a result of Project-related diversions, additional RAFSS area (up to approximately 10 acres) over and above the impacts associated with flood control operations would be impacted in Segment C of the SAR between Cuttle Weir and the Mill Creek confluence (see Impact BIO-17 in Section 3.3 of the Draft EIR). Project diversions of up to 1,500 cfs would decrease the potential for flood flows on about 10 acres of habitat situated on terraces within the main channel of the SAR during periods when maximum releases from Seven Oaks Dam (7,000 cfs) occur. The frequency of flood scouring events on these terraces would be reduced from an average of once every 50 years currently to once every 140 years following implementation of the Project. Based on field reconnaissance and existing data, the habitat within the areas of potential reduction in flood flow frequency is suitable for SBKR and has a high probability of being occupied. It is estimated that a change in the flood recurrence interval of 30 years or more would have an adverse effect on Santa Ana River woolly-star and SBKR habitat and is, thus, selected as a significance threshold (please refer to Table 3.3-4 in Section 3.3 of the Draft EIR for additional information). A change in the flood recurrence interval of 90 years (the significance criterion is a change of 30 years or more) and the reduction in associated physical disturbance and community restructuring across these terraces could result in the eventual succession of early and possibly intermediate RAFSS to mature RAFSS. This habitat change could adversely affect SBKR and Santa Ana River woolly-star on terraces within the channel in Segment C, and was determined to be a significant impact, affecting approximately 10 acres. A complete discussion of Project impacts related to RAFSS can be found in Section 3.3 of the Draft EIR, under Impacts BIO-16 and BIO-17.

2.4.2.3 Proposed Mitigation Measures

It is expected that implementation of the Project would induce a reduction in overbank flooding on approximately 10 acres and, thus, have a significant impact on RAFSS. Several mitigation measures are proposed and presented below. They are contained in Section 3.3 of the Draft EIR as a result of effects on overbank flooding (MM BIO-9, MM BIO-10). Additionally MM BIO-1, MM BIO-2, and MM BIO-7, which propose minimizing disturbance; preparation of a habitat re-vegetation, restoration, and monitoring plan; and realignment and avoidance, are also included in Chapter 3.3 of the Draft EIR as proposed mitigation measures for impacts on vegetation communities resulting from construction of Project components. As can be seen below, MM BIO-9 and MM BIO-10 have been refined based on comments received on the Draft EIR. Added language is shown as underlined text. Omitted language is shown as strike-out text.

MM BIO-9: Muni/Western will monitor and remove invasive non-native species establishing in the 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 herbicidal treatment using appropriate environmental safeguards. Herbicides will be used pursuant to manufacturer's instructions and standard measures will be taken to avoid impacts to water quality. 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.

MM BIO-10: Muni/Western will develop a program ~~together with the USFWS and CDFG,~~ in coordination with MSHMP agency participants, to selectively restore SBKR and Santa Ana River woolly-star habitat by using habitat manipulation, either by mechanical means or high pressure water, to remove vegetation and leave freshly deposited sand and silt, simulating the habitat-renewing aftermath of natural flooding. This will be done using an adaptive management approach with input from ~~USFWS and CDFG~~ MSHMP stakeholders. If the high pressure water method is used, water will be piped by Muni/Western to areas of suitable habitat. A high-pressure nozzle will be directed at localized areas of habitat determined to be suitable for SBKR and Santa Ana River woolly-star after renewal. The nozzle will be hand-operated or operated from a light vehicle. Treatments will be accomplished in a randomized block design to allow experimental testing of variables such as duration and intensity of spray, addition of clean sand, season of disturbance, application of seed vs. allowing natural dispersal, etc. A rigorous monitoring program funded by Muni/Western will be established to enable the differences among experimental treatments to be determined. The primary indicator of success will be related to development of habitat characteristics identified with pioneer to intermediate RAFSS habitat within which SBKR and Santa Ana River woolly-star populations have been documented. These characteristics are documented in the literature and will be specified as part of the Muni/Western program. The program will be adjusted appropriately as results from earlier efforts become available. The design and implementation of the ongoing effort will be funded by Muni/Western and conducted by representatives of Muni/Western with input from the USFWS and CDFG. A complete description of this method is also included in Appendix E7 of the Draft EIR, Section 2.0. Muni/Western commit to achieving a mitigation performance standard of restoring 10 acres of intermediate-to late stage RAFSS habitat to the early or intermediate stage RAFSS habitat during the first twenty years of Project implementation.

Muni/Western are participating in the planning for the MSHMP program. An adaptive management approach to renewal of RAFSS as outlined in revised MM BIO-10 (to mitigate for the loss of 10 acres as a result of increased diversions) is preferable to increased preservation of RAFSS habitat for two reasons. First adaptive management increases the store of knowledge regarding habitat restoration. As part of the proposed approach, many aspects of renewal activities can be carefully controlled and systematically varied, ideal for an experimental approach to habitat manipulation. Relatively small areas can be treated at one time and the results tracked to allow adaptive management. In addition, it enables specific areas to be targeted and nearby areas to be avoided, enabling manipulation to be done while avoiding populations or individuals of sensitive species or areas of sensitive habitat. An alternative mitigation measure to habitat restoration through adaptive management is the purchase and preservation of existing RAFSS lands. This is proposed in MM BIO-8. Since the Draft EIR, Muni/Western have enhanced the language of MM BIO-8 (additional text shown in underline, deleted text shown in strikeout).

MM BIO-8: To compensate for permanent ~~or~~ long-term and temporal losses of RAFSS habitat and RAFSS habitat value, Muni/Western will acquire, for every 1 acre impacted, a minimum of 1 acre of good quality habitat of similar or greater habitat value than the RAFSS area impacted by the Plunge Pool Pipeline and dedicate it in perpetuity as a habitat conservation easement area, or other appropriate designation, and provide funding for its future management as native habitat in perpetuity. The acquired RAFSS habitat area would ideally be contiguous with existing habitat already set aside in the WSPA or other dedicated RAFSS habitat. If good quality habitat in such a locality is not available for purchase, availability of other RAFSS habitat will be investigated, with the objective of obtaining good quality habitat near the Project area. Implementation of this mitigation measure will be subject to the requirement that such long-term mitigation and reporting plans for such acquisitions are to be approved by the Chief of the Division of Water Rights of the State Water Resources Control Board prior to the construction of the Plunge Pool Pipeline.

Second, even though habitat preservation is a feasible mitigation measure, adaptive management is still the preferred option. The effect in question here is not the destruction of habitat but, instead, the aging of habitat. Habitat preservation avoids the destruction of habitat but does not, absent positive management activities, avoid the aging of habitat. It is for that reason that Muni/Western believe that the adaptive management approach is preferable to simple habitat preservation. The flexibility of the Muni/Western adaptive management approach lends itself to focusing initial restoration attempts on degraded habitat that has limited or no suitability for SBKR and Santa Ana River woolly-star which could lead to expanded suitable habitat for these species while avoiding risks to currently suitable habitat. Once perfected, the renewal techniques could be applied to broader areas of more suitable habitat as it ages.

2.4.3 Bypass Flows

Muni/Western prepared a water availability analysis (WAA) and submitted it to the SWRCB on June 1, 2005. A copy of that WAA is provided in Appendix B of this Final EIR. Within the

WAA the feasibility of providing a bypass flow was evaluated. The bypass flow analysis in the WAA used the Corps of Engineers' cross-sectional data for the SAR, which was the best data then available. Muni/Western recognized, however, that the focus of the Cops of Engineer's study was high-flows that would occur during periods of flooding and that the high-flow cross-sectional data could usefully be supplemented by additional data specifically focused on the low-flow channel of the SAR.

To obtain such data on the low-flow channel configuration, Muni/Western surveyed the low-flow channel of the SAR during the summer of 2005. Muni/Western obtained 63 cross-sections in the low-flow channel of the SAR and measured flows in the river at 17 locations during a period when the Corps of Engineers was releasing water at specified rates from Seven Oaks Dam. The locations of the cross-sections are shown in Figure 2.4-1 as green dots and the water measurement locations are shown as red dots. Using the Corps of Engineers' HEC-RAS model with these new data, Muni/Western were able to estimate the minimum flows needed to establish hydraulic connectivity between Seven Oaks Dam and various locations downstream. These data are the basis for the bypass flow analysis in the following paragraphs. The following paragraphs provide analysis of whether and to what extent, Muni/Western could provide bypass flows to reduce the impacts of the Project on the environment.

2.4.3.1 Hydrology

According to SWRCB guidance, "The bypass flow is the instantaneous flow rate to be maintained past a project's point of diversion, in units of cubic feet per second. The appropriate bypass is developed on a case-by case basis. For projects located in the 'coastal' watersheds in the counties of Mendocino, Sonoma, Marin and Napa, where the flow characteristics are perennial, not ephemeral, the National Marine Fisheries Service (NMFS), the California Department of Fish and Game (DFG) and Division staff have recommended that in most cases, a bypass that is equal to the February median flow be used where needed to protect fish habitat[1]" (CDFG and NMFS 2002). Specific guidance for bypass flows outside of the counties identified has yet to be developed.

The proposed diversion is from an intermittent water source located in San Bernardino County and does not qualify as a coastal watershed in the counties listed above and thus the median February flow is not an appropriate bypass flow applicable to the proposed Project. In fact, the SAR watershed does not have characteristics typical of coastal watersheds in that the SAR is typically dry for extended periods of time. As the historical gage data demonstrates, the large portion (73 percent) of average annual precipitation and runoff occurs during the period December through March and rainless periods of several months are common in the summer. This regime results in many consecutive days in which there is no surface flow in the channel below Seven Oaks Dam.

The dry nature of the SAR is well documented. As an example, the BA for Seven Oaks Dam characterizes the SAR as an ephemeral stream with flows related only to storms and generally with flow only during the months of November to April (USACE 2000, pg. 47). The Santa Ana Regional Water Quality Control Board notes in the Basin Plan (1994) that: "Most of this reach

[1] It is understood that the February median flow guideline is based partly on flows necessary to protect salmonids. The February median flow is a conservatively high bypass flow because it includes winter flows to which native fishes are adapted. The Santa Ana River, below Seven Oaks Dam, does not support salmonids.

[Reach 5, Seven Oaks Dam to the City of San Bernardino] tends to be dry, except as a result of storm flows, and the channel is largely operated as a flood control facility" (pg. 1-6).

The topic of bypass flows is presented below and focuses on the following questions:

1. Is it possible to create bypass flows large enough to produce hydrologic connectivity (a continuous wetted area) from the proposed point of diversion to various points downstream?
2. Would such bypass flows provide benefits to aquatic species and riparian vegetation?

2.4.3.1.1 Methodology

In order to study the feasibility of bypass flows, an assessment of flow loss between Seven Oaks Dam and the RIX-Rialto effluent outfalls, focusing on groundwater infiltration, was conducted (see Figure 2.4-2). The RIX-Rialto effluent outfalls were chosen as the furthest downstream point for the analysis because: (1) downstream of this point the SAR has flow year round attributable to the effluent discharge in addition to rising water, and urban and agricultural runoff (USACE 2000); and (2) physical changes in flow in the SAR, due to Project diversions, are not significant downstream of this location.

The base period for the bypass flow analysis is WY 1961-62 through WY 1999-2000, a 39-year period. Water available for release to the river is based on gage data at Seven Oaks Dam which is available for the entire 39-year period. However, river segments below Seven Oaks Dam have more limited gage data and therefore descriptions of zero flow days specific to a river segment rely on a 34-year hydrologic period. The assessment of flow loss to the river channel includes three primary variables:

- *Flow rate.* Flow rate is the amount of water in a given river segment (usually expressed in cubic feet per second). A flow rate must be defined in order to calculate the wetted area of the channel through which it passes. As a simplifying assumption, and for the purposes of this analysis, it is assumed that within any given 1-mile section of the river the flow rate is uniform and continuous.
- *Wetted area.* The wetted area is the portion of the channel bottom and sides that is in contact with water. This measurement determines the area over which infiltration could take place. Wetted area is based on water depth and channel geometry. For this analysis, HEC-RAS is used to calculate the wetted areas between the series of low flow river cross-sections surveyed by Muni/Western.
- *Infiltration rate.* Infiltration rates are based on the geologic profile and slope of a given channel segment. Available data indicate that from Seven Oaks Dam to "E" Street, infiltration is approximately 2 cubic feet (ft^3) per day for every square foot of wetted area. This estimate is consistent with calculations used by the USACE (1997). From "E" Street to the RIX-Rialto effluent outfalls, the infiltration rate is assumed to be ten times lower, approximately 0.2 ft^3 per wetted square foot per day (SAIC 2003). This lower infiltration rate is due to finer grained sediment in the alluvial channel than the cobbles and gravel of the upper reaches of the SAR.

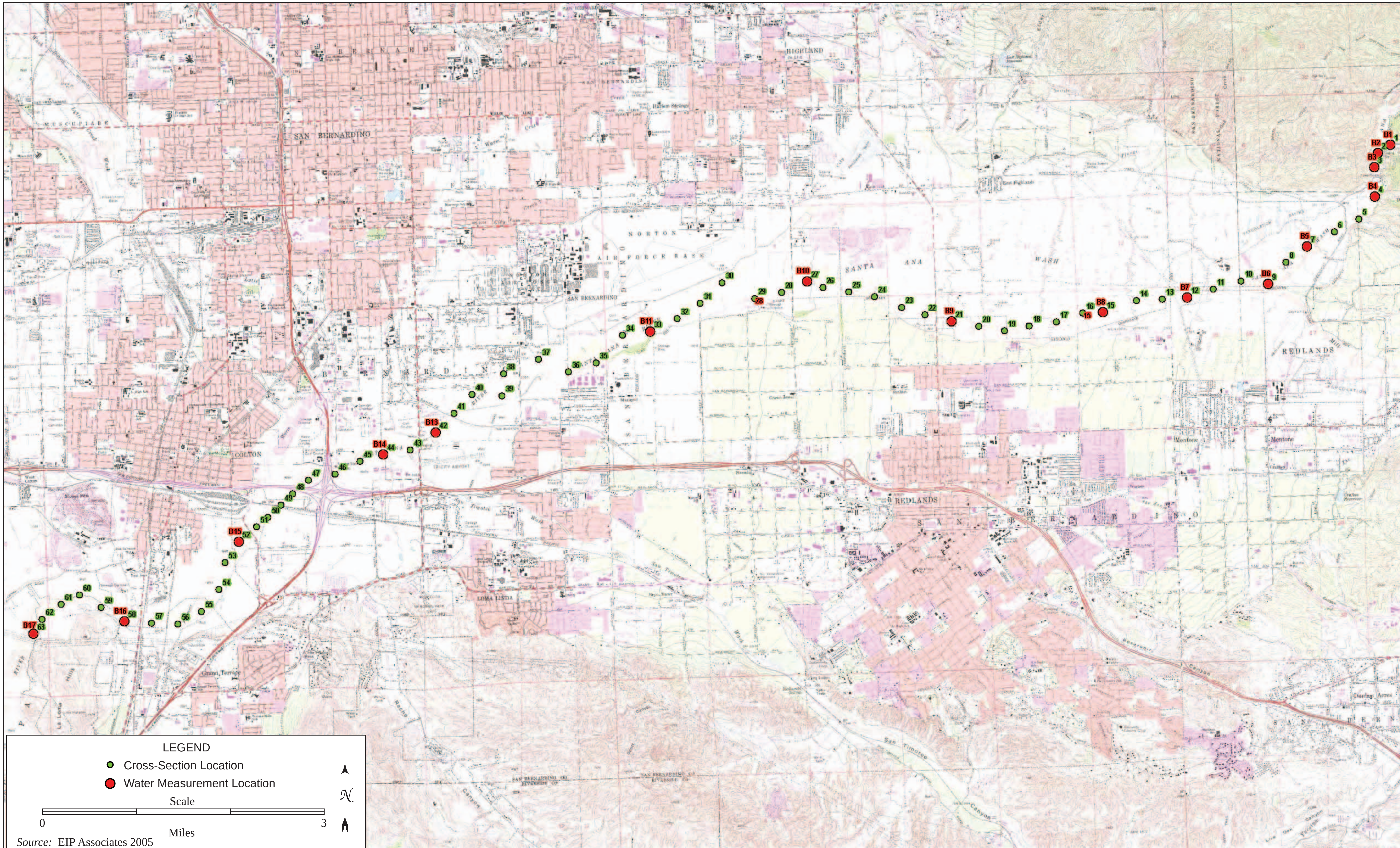

Figure 2.4-1. Low Flow Cross-Sections and Water Measurement Locations

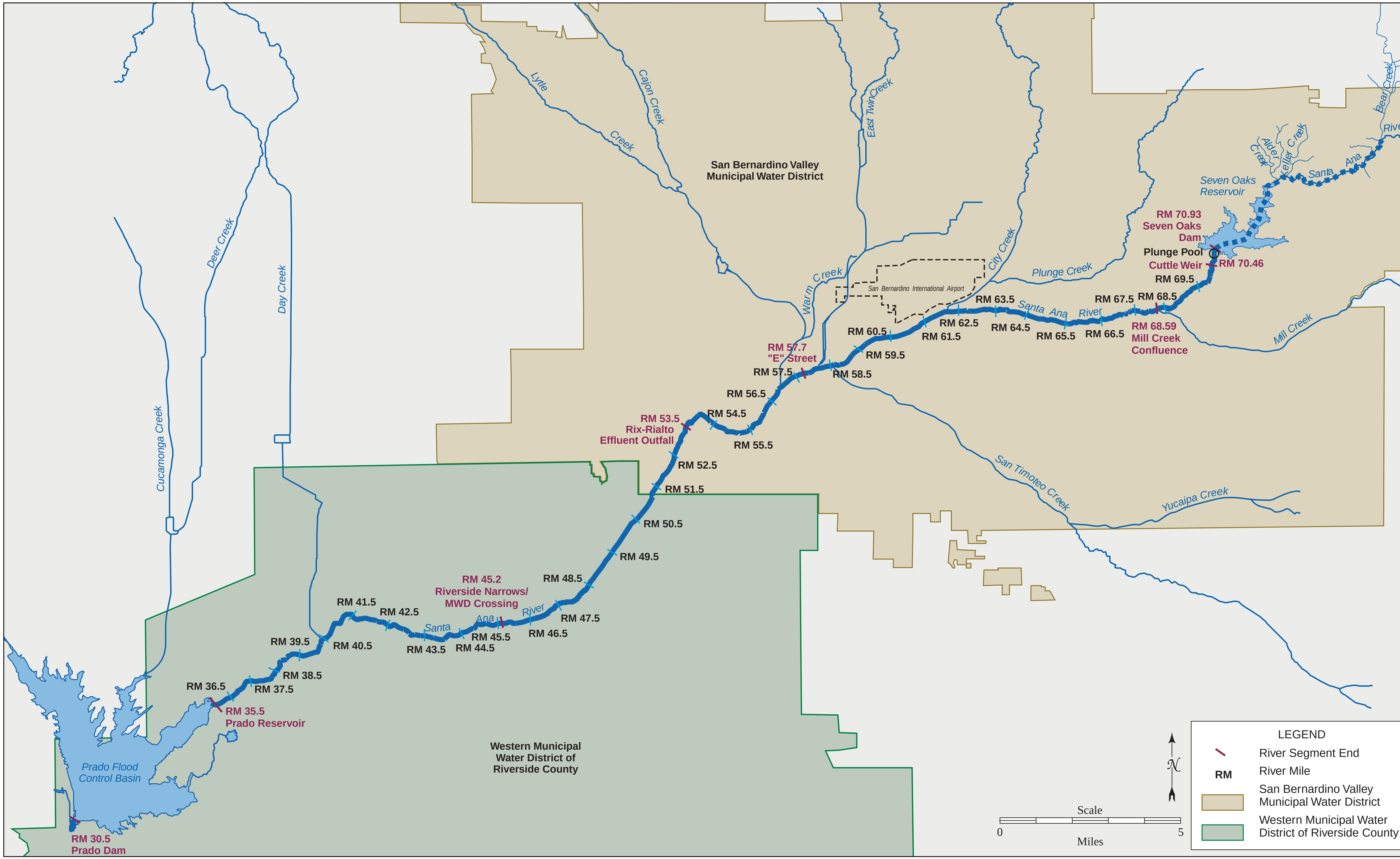

Figure 2.4-2. Santa Ana River, Tributaries, by River Mile between Seven Oaks Dam and Prado Flood Control Basin

2.4.3.1.2 Bypass Flows Necessary to Create Hydraulic Connectivity between Cuttle Weir and Mill Creek

The amount of water required to establish and maintain hydraulic connectivity between Cuttle Weir and other locations downstream was estimated by observation of actual river flow events and calculated using published loss rates (USACE 1988) as verified through independent stream cross-section analyses. Based on field observations, it is known that a 3 cfs release from Seven Oaks Dam, does not result in continuous flow to Mill Creek. Higher release rates would be required for a continuous, live stream between the Cuttle Weir and Mill Creek.

Based on modeling of existing conditions, the median non-storm day flow from Cuttle Weir to Mill Creek is zero cfs. Over the 34-year record of available data used in the analysis, there were 6,506 days when there was no surface flow in the channel, i.e., days when zero flow between Cuttle Weir and Mill Creek occurred. This comprises 52% of all days in the 34-year period. As can be seen in Figure 2.4-3, the number of consecutive days with no flow has frequently exceeded 10 and has exceeded 301 days 9 times over a 34-year period, i.e., there have been 9 occurrences of ten months or more in duration without flow in the channel. Therefore it is reasonable to assume that the proposed bypass flow, in and of itself, must be sufficient to overcome stream losses (primarily infiltration) and create hydraulic connectivity to Mill Creek (e.g., no other flows are available to supplement bypass flows or decrease losses[2]).

Table 2.4-1 shows stream flows remaining in the channel at locations progressively downstream from Cuttle Weir for a given release at Seven Oaks Dam. From Table 2.4-1 it is evident that a continuous flow rate of somewhat less than 5 cfs must pass Cuttle Weir to create hydraulic connectivity to the Mill Creek confluence (a distance of approximately 2 miles). For hydraulic connectivity to be achieved to "E" Street (a distance of approximately 13 miles), a flow rate of between 35 and 40 cfs must pass Cuttle Weir. For hydraulic connectivity to the RIX-Rialto effluent outfalls (approximately 17 miles distant) bypassed flows would need to be between 40 and 45 cfs. Iteration shows that it would take 4 cfs to create continuous flow between Cuttle Weir and Mill Creek, 38 cfs to create continuous flow to "E" Street, and 41 cfs to reach the RIX-Rialto effluent outfalls.

Table 2.4-2 shows river losses for different releases from the dam downstream to Mill Creek. It should be noted that it would take approximately 4 cfs of bypass flow to create hydraulic connectivity to Mill Creek, at which point over 3.5 cfs or 90 percent of the bypassed flow would have been lost to infiltration.

AVAILABILITY OF WATER TO CREATE A BYPASS FLOW TO MILL CREEK

Table 2.4-3 below summarizes the availability of a 4 cfs bypass flow under three different sets of conditions. All results displayed in Table 2.4-3 assume that no Project diversions take place.

- Existing Conditions. This hydrologic analysis assumes the continuation of existing historical diversions by upstream diverters (such as the Senior Water Right Claimants and Conservation District) and the existing operations at Big Bear Lake and Seven Oaks Dam.

- Licensed Diversions Only. There is a recognized controversy over whether or not some diversions by the Conservation District are authorized. As such, this analysis examined the availability of bypass flows assuming diversions by the Conservation District are limited to their currently licensed right and season.

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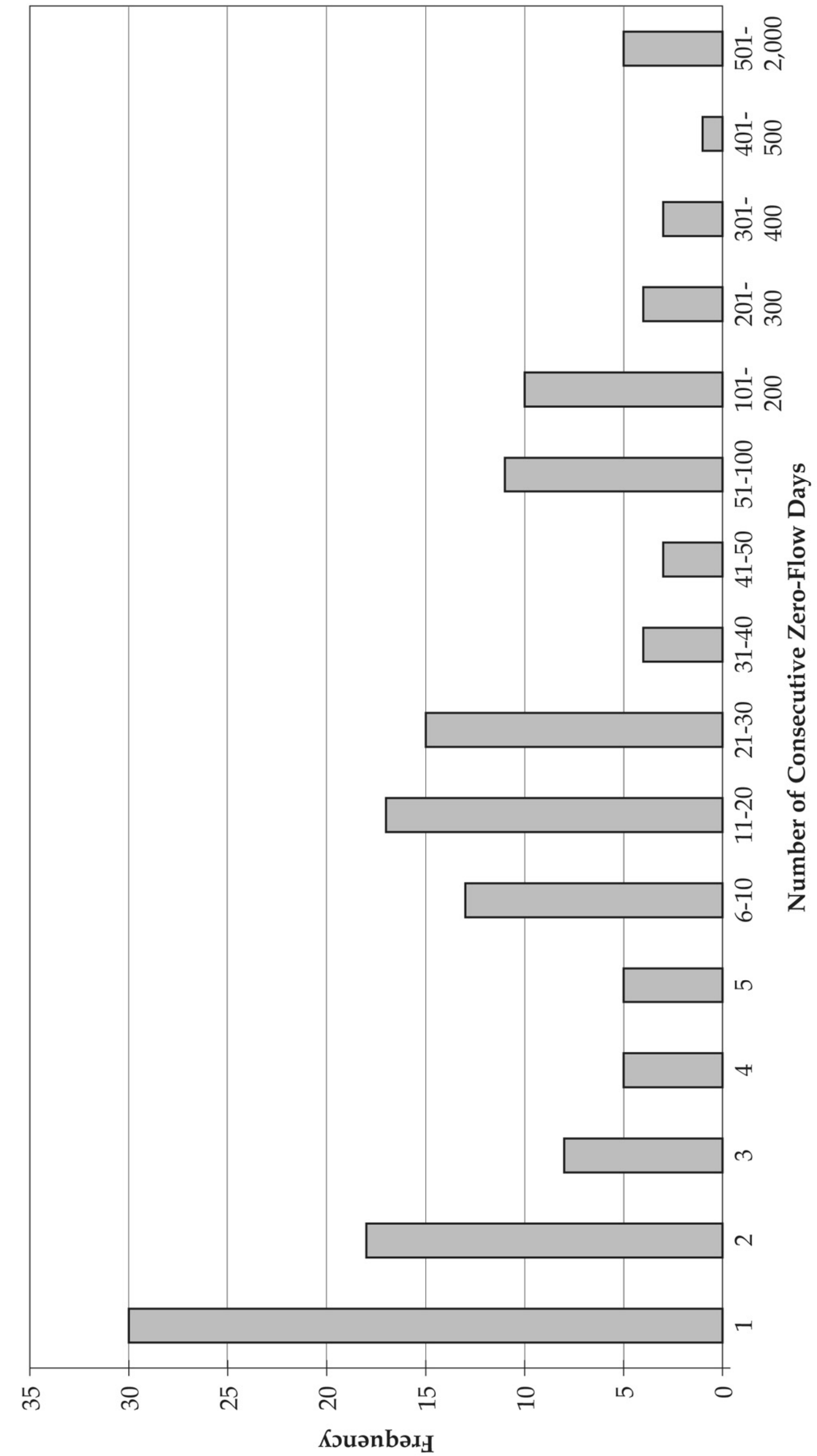
[2] Gage data used in the analysis would reflect any inflow from tributaries.



The RIX WWTP went into operation in 1996 and takes all effluent from the Colton and San Bernardino water reclamation plants. Prior to 1996, effluent from these plants entered the SAR just above and just below "E" Street, respectively. This analysis assumes a repeat of past hydrology but with current water management practices and operations (e.g., gage records modified to reflect operation of the RIX WWTP rather than past operation of the Colton and San Bernardino reclamation plants) as a means of estimating current and future flows.

Based on the 34-year period from October 1, 1966 to September 30, 2000.

Figure 2.4-3. Frequency of Consecutive Zero-Flow Days in the Santa Ana River below Cuttle Wier Under Existing Conditions

- Unimpaired Flow. This analysis assumes the cessation of diversions by Senior Water Right Claimants and the Conservation District. The availability of water necessary to sustain flow has been evaluated for all days in the period of analysis and separately for non-storm days[3].

Table 2.4-1. Surface Flow Remaining in the Santa Ana River Downstream of Cuttle Weir under Different Dam Release Rates

River Mile	*Distance Downstream of Seven Oaks Dam*	RELEASE FROM SEVEN OAKS DAM (CFS)									
		5	*10*	*20*	*30*	*35*	*40*	*45*	*50*	*60*	*70*
68.6 (Mill Creek Confluence)	2.3	1.3	5.4	13.9	22.9	27.4	32.1	36.8	41.5	50.4	59.9
67.0	3.9	-	2.2	9.1	17.1	21.2	25.6	29.9	34.4	42.8	52.0
66.0	4.9	-	0.8	6.5	14.1	18.1	22.3	26.5	30.9	39.2	48.1
65.0	5.9	-	-	4.2	11.4	15.2	19.4	23.6	27.8	36.0	44.9
64.0	6.9	-	-	2.4	9.3	13.0	17.0	21.1	25.2	32.9	41.6
63.0	7.9	-	-	1.2	7.3	10.9	14.8	18.7	22.8	29.9	38.4
62.0	8.9	-	-	-	4.8	8.0	11.7	15.4	19.3	26.2	34.5
61.0	9.9	-	-	-	2.8	5.8	9.2	12.7	16.4	23.1	31.2
60.0	10.9	-	-	-	1.0	3.6	6.7	10.1	13.5	20.0	27.9
59.0	11.9	-	-	-	-	1.9	4.8	7.9	11.2	17.4	25.1
57.7 ("E" Street)	13.2	-	-	-	-	-	1.7	4.4	6.9	12.6	19.6
57.0	13.9	-	-	-	-	-	1.5	4.1	6.5	12.2	19.2
56.0	14.9	-	-	-	-	-	1.1	3.4	5.6	10.9	17.7
55.0	15.9	-	-	-	-	-	0.6	2.7	4.7	9.8	15.3
54.0	16.9	-	-	-	-	-	-	2.2	4.2	8.9	15.3
53.5 RIX-Rialto Effluent Outfalls	17.4	-	-	-	-	-	-	2.1	3.9	8.4	14.6

Notes:

Calculations in this table assume an infiltration rate per wetted area (ft^3/ft^2-day) of 2.0 from Seven Oaks Dam to "E" Street and 0.2 from "E" Street to the RIX-Rialto effluent outfalls.

This table assumes tributary inflow is negligible, that bypass flows released from Seven Oaks Dam are the only source of flow available to create hydraulic connectivity.

Seven Oaks Dam is located at River Mile 70.93.

Under existing conditions, bypass flow necessary to maintain hydraulic connectivity to Mill Creek (4 cfs) would only be available about 21 percent of the time; on non-storm days bypass flows of this magnitude could be provided on only about 19 percent of days. Under existing

[3] Non-storm days are days where flow is not directly attributable to runoff events. Storm and non-storm days are defined by the Santa Ana River Watermaster each year based on rainfall and flow in the Santa Ana River channel at Riverside Narrows.

conditions, on the majority of days, particularly non-storm days, it would not be possible to provide bypass flows of sufficient magnitude to reach Mill Creek.

If all existing diversions were halted the ability to provide bypass flows would improve: water would be available on about 87 percent of both all days and non-storm days. However, even in the absence of any diversions, it would not be possible to provide a bypass flow of 4 cfs on approximately 13 percent of days.

Table 2.4-2. River Losses for Different Flow Rates, Seven Oaks Dam to Mill Creek

	Release from Seven Oaks Dam (cfs)									
	5	*10*	*20*	*30*	*35*	*40*	*45*	*50*	*60*	*70*
Infiltration Rate ft^3/ft^2-day	2	2	2	2	2	2	2	2	2	2
Losses (cfs) to the channel	4	5	6	7	8	8	8	8	10	10
Percent Loss	74	46	30	24	22	20	18	17	16	14
Flow remaining at Mill Creek (cfs)	1	5	14	23	27	32	37	42	50	60
Percent Remaining	26	54	70	76	78	80	82	83	84	86

Table 2.4-3. Availability of Water Necessary to Create Bypass Flows to Mill Creek

	Existing Condition	*Licensed Diversions Only*	*Unimpaired Flow*
All Days			
4 cfs unavailable	11,253	9,169	1,797
Percent of all days 4 cfs unavailable	*79*	*64*	*13*
4 cfs or more available	2,992	5,076	12,448
Percent all days 4 cfs or more available	*21*	*36*	*87*
Non-Storm Days			
4 cfs unavailable	6,803	6,782	1,311
Percent of non-storm days 4 cfs unavailable	*81*	*69*	*13*
4 cfs or more available	1,572	3.096	8,567
Percent non-storm days 4 cfs available	*19*	*31*	*87*

Notes:
Based at Seven Oaks Dam on 39-years of data
14,245 days in base period
8,375 non-storm days in base period

Bypass Flows Necessary to Create Hydraulic Connectivity between Cuttle Weir and "E" Street

An assessment of bypass flow necessary to create hydraulic connectivity from Cuttle Weir to "E" Street and the confluence of San Timoteo Creek was undertaken for the following reasons:

- Providing hydraulic connectivity only as far as Mill Creek has little biological benefit as described in section 2.4.3.2.
- Providing flows to the confluence of San Timoteo, which is roughly at "E" Street, could have some biological benefits as there is existing riparian habitat in this area. See also section 2.4.3.2

Gage records and modeling for the Project demonstrate that between Mill Creek and "E" Street the SAR is typically dry. Assuming a continuation of historical diversions and other existing conditions, the median non-storm day flow between Mill Creek and "E" Street is zero cfs. Over the 34-year period used in the model, there are 4,860 days with zero flow between Mill Creek and "E" Street[4]. As can be seen in Figure 2.4-4, the number of consecutive days where there was no flow below "E" Street frequently exceeds 10 and has exceeded 101 days 5 times over a 34-year period, i.e., there have been 5 occurrences of time periods 101 days or longer without flow in the channel between Mill Creek and "E" Street. Therefore it is reasonable to assume that the proposed bypass flow, in and of itself, must be sufficient to overcome stream losses (primarily infiltration) and create hydraulic connectivity to "E" Street (e.g., no other flows are available to supplement bypass flows or decrease losses).

Table 2.4-1 above shows stream flows remaining in the channel at locations progressively downstream from Cuttle Weir for a given release at Seven Oaks Dam. Table 2.4-4 shows river losses for different releases from Seven Oaks Dam downstream to "E" Street. Conclusions that can be drawn from the information presented in Tables 2.4-1 and 2.4-4 are that it would take approximately 38 cfs of bypass flow to create hydraulic connectivity to "E" Street, at which point 98 percent of the bypassed flow would have been lost to infiltration.

Table 2.4-4. River Losses for Different Flow Rates, Seven Oaks Dam to "E" Street

	Release from Seven Oaks Dam (cfs)									
	5	*10*	*20*	*30*	*35*	*40*	*45*	*50*	*60*	*70*
Infiltration Rate ft^3/ft^2-day	2	2	2	2	2	2	2	2	2	2
Losses (cfs)	5	10	20	30	35	38	41	43	47	50
Percent Loss	*100*	*100*	*100*	*100*	*100*	*96*	*90*	*86*	*79*	*72*
Flow remaining at "E" Street (cfs)	0	0	0	0	0	2	4	7	13	20
Percent Remaining	*0*	*0*	*0*	*0*	*0*	*4*	*10*	*14*	*21*	*28*

2.4.3.1.3 Availability of Bypass Flow to "E" Street

Table 2.4-5 presents information regarding the availability of water that would be required to create a 38 cfs bypass flow to "E" Street. The information demonstrates that under existing conditions water necessary to maintain surface flow to "E" Street would only be available about 11 percent of the time. On low flow days (non-storm days), the frequency at which bypass flows could be provided is only about 5 percent. Under existing conditions, on the majority of days, particularly non-storm days, it would not be possible to provide sufficiently large bypass flows to maintain hydraulic connectivity to "E" Street.

[4] The RIX WWTP went into operation in 1996 and takes all effluent from the Colton and San Bernardino water reclamation plants. Prior to 1996, effluent from these plants entered the SAR just above and just below "E" Street, respectively. This analysis assumes a repeat of past hydrology but with current water management practices and operations (e.g., gage records modified to reflect operation of the RIX WWTP rather than past operation of the Colton and San Bernardino reclamation plants) as a means of estimating current and future flows.

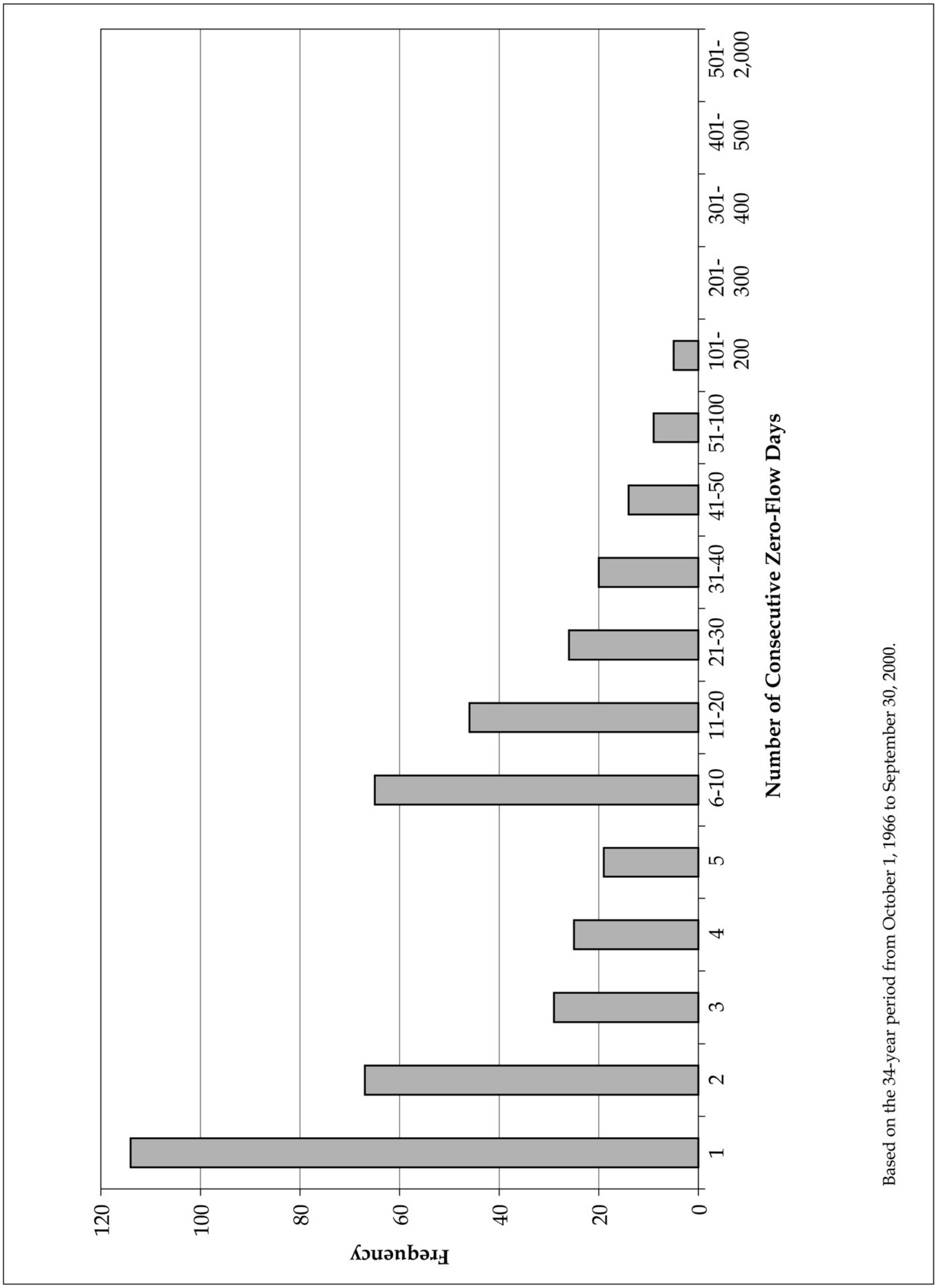


Figure 2.4-4. Frequency of Consecutive Zero-Flow Days in the Santa Ana River below "E" Street Under Existing Conditions

Table 2.4-5. Availability of Water Necessary to Create Bypass Flows to "E" Street

	Existing Condition	*Licensed Diversions Only*	*Unimpaired Flow*
All Days			
38 cfs unavailable	12,622	11,828	5,457
Percent of all days 38 cfs unavailable	*89*	*83*	*38*
38 cfs or more available	1,623	2,417	8,788
Percent all days 38 cfs or more available	*11*	*17*	*62*
Non-Storm Days			
38 cfs unavailable	9,383	9,090	4,503
Percent of non-storm days 38 cfs unavailable	*95*	*92*	*46*
38 cfs or more available	495	788	5,375
Percent non-storm days 38 cfs available	*5*	*8*	*54*

Notes:

Based at Seven Oaks Dam on 39-years of data

14,245 days in base period

9,878 non-storm days in base period

If existing diversions were suspended, the ability to provide bypass flows would improve. Water would be available approximately 62 percent of all days, and approximately 54 percent of non-storm days. However, even in the absence of any diversions, it would not be possible to provide necessary bypass flows of 38 cfs on approximately 38 percent of days.

2.4.3.1.4 Bypass Flows Necessary to Create Hydraulic Connectivity between Cuttle Weir and the RIX-Rialto Effluent Outfalls

Although biological resources in the streambed of the SAR are limited, creating hydraulic connectivity from Cuttle Weir to the RIX-Rialto effluent outfalls could have benefits to biological resources between "E" Street and the RIX-Rialto effluent outfalls. Gage records and modeling for the Project demonstrate that downstream of "E" Street the SAR is typically dry. Assuming a continuation of historical diversions and other existing conditions, the median non-storm day flow between "E" Street and the RIX-Rialto effluent outfalls is zero cfs. Over the 34-year period used in the analysis, there are 4,753 days with zero flow from "E" Street to the RIX-Rialto effluent outfalls. Therefore it is reasonable to assume that the proposed bypass flow, in and of itself, must be sufficient to overcome stream losses (primarily infiltration) and create hydraulic connectivity to the RIX-Rialto effluent outfalls (e.g., no other flows are available to supplement bypass flows or decrease losses).

Table 2.4-1 shows stream flows remaining in the channel at locations progressively downstream from Cuttle Weir for a given bypass flow at Cuttle Weir. Table 2.4-6 shows river losses for different releases from the dam downstream to the RIX-Rialto effluent outfalls. Conclusions that can be drawn from the information presented in Tables 2.4-1 and 2.4-6 are that it would take approximately 41 cfs of bypass flow at Cuttle Weir to create hydraulic connectivity to the RIX-Rialto effluent outfalls, at which point 99 percent of the bypassed flow would have been lost to infiltration.

Table 2.4-6. River Losses for Different Flow Rates, Seven Oaks Dam to RIX-Rialto Effluent Outfalls

	Release from Seven Oaks Dam (cfs)									
	5	*10*	*20*	*30*	*35*	*40*	*45*	*50*	*60*	*70*
Infiltration Rate ft^3/ft^2-day	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Losses (cfs)	5	10	20	30	35	40	43	46	52	55
Percent Loss	*100*	*100*	*100*	*100*	*100*	*100*	*95*	*92*	*86*	*79*
Flow remaining at RIX-Rialto Outfall (cfs)	0	0	0	0	0	0	2	4	8	15
Percent Remaining	*0*	*0*	*0*	*0*	*0*	*0*	*5*	*8*	*14*	*21*

AVAILABILITY OF BYPASS FLOW TO RIX-RIALTO EFFLUENT OUTFALLS

Table 2.4-7 presents information describing the availability of flows of 41 cfs, the bypass flow required to maintain hydraulic connectivity to the RIX-Rialto effluent outfalls.

The information presented in Table 2.4-7 demonstrates that under existing conditions water necessary to maintain surface flow to the RIX-Rialto effluent outfalls would only be available about 11 percent of the time. On low flow days (non-storm days) the frequency with which bypass flows could be provided is less than 5 percent. Under existing conditions, on the majority of days, particularly non-storm days, it would not be possible to provide sufficiently large bypass flows to maintain hydraulic connectivity to the RIX-Rialto effluent outfalls. If existing diversions were suspended (the unimpaired flow condition) the ability to provide bypass flows would improve, water would be available on approximately 58 percent of all days, and approximately 50 percent of non-storm days. However, even without any diversions, on approximately 42 percent of days it would not be possible to provide a bypass flow of 41 cfs.

2.4.3.2 *Biological Resources*

2.4.3.2.1` Santa Ana Sucker and Other Native Fish and Amphibians

SEVEN OAKS DAM TO CUTTLE WEIR

Seven Oaks Dam generally releases at least 3 cfs to support prior water rights and this water may enter the Plunge Pool or the Plunge Pool Bypass Pipeline. In either case, this 3 cfs generally percolates into the channel or is diverted downstream. When water is sent through the Plunge Pool Bypass Pipeline rather than released to the Plunge Pool, approximately one half of this reach is dewatered. During storm runoff events, water is detained by Seven Oaks Dam for flood control purposes. Releases can range from 500 to 7,000 cfs, depending on the amount of reservoir storage, runoff reaching the dam and conditions downstream at Prado Dam. Water remaining in the debris pool behind the dam prior to the onset of the flood season is released in late summer. The substrate in the low-flow channel in this reach is predominantly boulders and cobbles with small amounts of gravel and sand. The gradient is 2.8 percent. No native fish are currently present, and this segment is isolated from other segments of the river by long stretches of river bed that are dry much of the year.

Table 2.4-7. Availability of Water Necessary to Create Bypass Flows to RIX-Rialto Effluent Outfalls

	Existing Condition	*Licensed Diversions Only*	*Unimpaired Flow*
All Days			
41 cfs unavailable	12,696	11,905	6,030
Percent of all days 41 cfs unavailable	*89*	*84*	*42*
41 cfs or more available	1,549	2,340	8,215
Percent all days 41 cfs or more available	*11*	*16*	*58*
Non-Storm Days			
41 cfs unavailable	9,431	9,149	4.984
Percent of non-storm days 41 cfs unavailable	*96*	*93*	*50*
41 cfs or more available	447	729	4,894
Percent non-storm days 41 cfs available	*4*	*7*	*50*

Notes:

Based at Seven Oaks Dam on 39-years of data

14,245 days in base period

9,878 non-storm days in base period

Considering the habitat requirements for each life stage of the Santa Ana sucker, only marginal habitat may be available for spawning and larval growth. Spawning observed in two tributaries to the river (Sunnyslope Drain and Rialto Drain) occurred over gravel that ranged from 1.0 to 41.5 mm in diameter in water approximately 0.5 m deep with a velocity of 0.2 to 0.24 m/sec (SMEA 2003). Deeper water was nearby for use by adult fish. Larval Santa Ana suckers seem to prefer shallow water (5 to 10 cm deep) over silt while fry use slightly deeper water over rippled sand (SMEA 2003). Juveniles are most abundant in riffles while adults prefer runs and pools with depths of 40 cm to over 70 cm and water velocities of less than 1.5 ft/sec (0.5 m/sec).

The mostly high or very low flows released from the dam (for flood control and prior water rights holders, respectively) are unlikely to produce the substrate types needed by the different life stages of the Santa Ana sucker. Sand and gravel would likely be carried further downstream by high flows or not moved at all by low flows so that gravel not imbedded in finer material would not be available for spawning habitat. Silt and rippled sand in shallow water are also not likely to be present near spawning areas or be large enough to support the young suckers. Because no backwater areas are available to act as refugia, releases of water during the summer when the debris pool is drained could flush young fish beyond Cuttle Weir into areas that dry out as soon as the releases stop.

If bypass flows are released that would provide continuous surface water flow downstream to the RIX-Rialto effluent outfalls, flows of approximately 41 cfs would be required below Cuttle Weir. Such flows would have estimated velocities of approximately 2.6 to 3.6 ft/sec. These are mostly higher than the preferred velocity for adults and would wash larvae downstream out of suitable habitat. Additionally, existing water diversion intakes could entrain all life stages of the Santa Ana sucker, thereby reducing the population.

For all of these reasons, re-introduction of the Santa Ana sucker in this reach would not likely produce a viable, self-sustaining population. Instead, suckers introduced into this reach would face a variety of sub-optimal environmental factors that would likely result in the extirpation of the introduced population within a few years of introduction.

Cuttle Weir to Mill Creek. The low flow channel in the river bed from Cuttle Weir to Mill Creek has a very porous substrate of sand, gravel, cobbles, and boulders that allows rapid infiltration of water. Boulders and cobbles dominate the substrate size classes, and the gradient averages 2.9 percent (2.5 percent to Greenspot Road and 3.1 percent from there to Mill Creek). Flow in this section is intermittent and occurs only when releases from Seven Oaks Dam exceed the senior water right claimants and Conservation District diversions at and above Cuttle Weir and the infiltration rate for the entire reach to Mill Creek. Under existing conditions, flows in this segment have, on average, been less than 4 cfs 290 days per year over a 34-year period. This river segment of 1.7 miles is completely dry for much of the year. There are no isolated pools of standing water to provide refugia for fish, and the segment does not provide habitat to sustain a population of Santa Ana sucker. The number of consecutive days with no flow has frequently exceeded 10 and has exceeded 301 days 9 times over a 34-year period, i.e., there have been 9 occurrences of time periods of ten months or more in duration without flow in the channel.

Modeling of this reach indicates that a 4 cfs initial release at 20°C (68°F), without riparian shading, would warm to a predicted maximum daily water temperature of 23.2°C (73.8°F) just upstream of the Greenspot Bridge on those days when the air temperature reaches 32.2°C (90°F). On warmer days when the air temperature reaches 37.7°C (100°F), the maximum daily water temperature would increase to about 23.8°C (74.8°F). Prolonged exposure to water temperatures greater than 22°C would result in suboptimal water temperatures in this reach during the summer and fall for the Santa Ana sucker at a flow of 4 cfs.

If bypass flows of 4 cfs were released from Seven Oaks Dam to keep perennial flow (1 cfs) in the river to Mill Creek, habitat suitable for sustaining a population of Santa Ana sucker would not likely be present due to shallow water depths. Suitable spawning and larval/juvenile habitat may also be lacking. If higher bypass flows (38-41 cfs) were released to maintain flow to "E" Street or the RIX-Rialto effluent outfalls, more water would be present that could potentially provide suitable habitat (i.e., depth) for the Santa Ana sucker and other native fish. However, higher flows in this reach may increase velocity to above that preferred by the different life stages, and such flows would not ensure that suitable spawning or rearing habitat would be present.

As with the reach from Seven Oaks Dam to Cuttle Weir, the foregoing factors indicate that the re-introduction of the Santa Ana sucker in this reach would not likely produce a viable, self-sustaining population.

Mill Creek to "E" Street. Substrate in this river segment is very porous but smaller than that described for the reach between Cuttle Weir and Mill Creek, with an average gradient of 1.2 percent. Riffles have predominantly a cobble and gravel substrate with gravel to sand in runs. The rocks were generally very embedded in the fall of 2005 (Thompson, field notes). Most of this 11-mile long segment is dry much of the year under existing conditions. The area near the confluence of San Timoteo Creek, however, has perennial water due to rising groundwater and surface water inflows and subsurface flows from San Timoteo Creek. This wet area is isolated by dry river bed upstream and downstream for much of the year under existing conditions. Because this area is small and not connected to downstream areas (due to barriers) where the Santa Ana sucker is present, it currently does not support a population of Santa Ana sucker, but Santa Ana speckled dace were found at the confluence of San Timoteo Creek as recently as 2001 (Swift 2001); however, they were not present during 2005 seining surveys. During those surveys only the non-native green sunfish (Lepomis cyanellus), mosquitofish (Gambusia affinis), African clawed frog (Xenopus laevis), and bullfrog (Rana catesbeiana) were found (Leidy, pers. comm. 2006). The dace may be extirpated in this reach. Suitable habitat for arroyo toads (Bufo californicus) is present for about 2 miles upstream of "E" Street, although the species is not currently known to be present in this area (USACE 2000). This species only requires surface water during the spring to summer breeding season.

Bypass of 38 cfs from Seven Oaks Dam would be needed to maintain perennial flow in this segment. Such flows have the potential to provide suitable habitat for the Santa Ana sucker and other native fish but the actual amount would depend on the spatial distribution of appropriate habitat parameters (e.g., velocity, depth, substrate) for all life stages. In addition, providing perennial water in this river segment could also support non-native aquatic species such as bullfrogs, crayfish (*Procambarus* spp.), and a number of fish species. These non-native species can compete with the native species for space and food resources as well as prey upon native species. For these reasons, as with the reaches from Seven Oaks Dam to Cuttle Weir and from Cuttle Weir to Mill Creek, the re-introduction of the Santa Ana sucker into the reach from Mill Creek to "E" Street would not be likely to produce a viable, self-sustaining population.

"E" Street to RIX-Rialto Effluent Outfalls. The river segment from "E" Street to the RIX-Rialto effluent outfalls also has highly pervious substrate that is predominantly sand and is dry for much of the year. From the Mt. Vernon road crossing to the Rialto Drain, the river bed often has shallow, braided channels that provide minimal habitat for fish. Such shallow areas would be expected to have high water temperatures when flows are low and air temperatures are high. This 4.3-mile reach also contains barriers to upstream fish movement caused by energy dissipation and drop structures. The stream invert shown on the 1991 Corps of Engineers analysis for the Seven Oaks Dam project shows a vertical drop of approximately 3 feet between "E" Street and I-215, a nearly vertical drop of about 13 feet (concrete face) just upstream of I-10, and a vertical drop of 3 feet between the Southern Pacific Railroad crossing and the Warm Creek confluence (at or near the energy dissipation structures). Under existing conditions, this segment does not support a population of Santa Ana sucker or other native fish due to lack of water for part of the year. Only one small area of habitat suitable for the arroyo toad is present (USACE 2000).

Bypass flows of 41 cfs from Seven Oaks Dam are required to provide perennial flow in this river segment and would have the potential to provide habitat for the Santa Ana sucker. However, whether a sustainable population could be supported is unknown because habitat for all life stages would be necessary. In addition, connectivity to other upstream areas with Santa Ana suckers would be necessary to allow replacement of those individuals washed downstream of the barriers during winter high flow events. The concern regarding non-native aquatic species described above for the Mill Creek to "E" Street river segment would also apply to this river segment. For these reasons, as with the reaches from Seven Oaks Dam to "E" Street, the re-introduction of the Santa Ana sucker into the reach from "E" Street to the RIX-Rialto effluent outfalls would not be likely to produce a viable, self-sustaining population.

2.4.3.2.2 Riparian Vegetation and Migratory Bird Habitat

SEVEN OAKS DAM TO CUTTLE WEIR

Current dam operations support a small amount of riparian vegetation along the margins of the main channel. The steep riprap banks limit the width of this riparian corridor. In addition, high flows during releases of stormwater from Seven Oaks Dam act to scour the confined channel in this river segment, thereby removing much of the riparian vegetation that becomes established during the summer to fall and through dry years when large releases are not made. Releases in 2005 removed much of the previously existing riparian vegetation.

Increasing the amount of water in this river segment to provide habitat for the Santa Ana sucker would be unlikely to increase the amount of riparian vegetation present due to the narrow channel, riprap, and scouring during high flows. Furthermore, release of 41 cfs would reduce the area of the channel bottom between the riprap banks that is suitable for growth of riparian vegetation by about 6 acres.

Cuttle Weir to Mill Creek. This portion of the river is typically dry for extended periods of time. Under current flow conditions, i.e., no flow for much of the year, the main channel of the river supports sparse, if any, riparian vegetation. Some narrow, linear patches of tamarisk (*Tamarix* spp., an invasive non-native) and mulefat (*Baccharis salicifolia*, a native) are present. Providing perennial flow in this portion of the river would likely result in a narrow band of riparian vegetation along the perennial flow channel. Both native and non-native species would be expected, and the non-native tamarisk and giant cane (*Arundo donax*) would likely proliferate under these conditions. This vegetation would be removed periodically by high flows when stormwater is released from Seven Oaks Dam, resulting in a riparian corridor that remains in early successional stages. This type of riparian habitat can be used briefly by migrating birds but would not provide nesting habitat.

Mill Creek to "E" Street. This segment of the river is dry for much of the year under existing conditions and little riparian vegetation occurs. Just below the Mill Creek confluence, tamarisk is common but does not form a dense stand along the margin of the low flow channel. Overall, little riparian vegetation occurs throughout most of this segment. The river supports some riparian vegetation, dominated by willows (*Salix* spp.) with some cottonwoods (*Populus* sp.), from approximately 1.3 miles upstream of the confluence of San Timoteo Creek to "E" Street due to rising groundwater and surface water inflows and subsurface flows from San Timoteo Creek. Southwestern willow flycatchers and least Bell's vireos are known to occur and nest between the San Timoteo Creek confluence and "E" Street, and suitable habitat for both species is present in patches upstream from "E" Street for about 4 miles (USACE 2000).

As shown in Table 2.4-5, with no diversions of water from the Santa Ana River, surface water continuity from Cuttle Weir to "E" Street would occur only about 54 percent of the time during non-storm conditions. With current levels of diversions (i.e., without the Project), water would reach "E" Street during non-storm conditions only about 5 percent of the time. The current level of flow is sufficient to enhance riparian habitat during wetter than normal years but is not sufficient to ensure a permanent increase in such habitat. Cutting off all diversions from the Santa Ana River would have a similar and larger effect during wetter than normal years but, because water is not available during extended periods of drought, even eliminating all diversions of water from the Santa Ana River would not result in a permanent increase in riparian vegetation in the vicinity of "E" Street.

During wetter than normal years, the increased flows would have the effect of improving the health of riparian areas, particularly in areas where groundwater levels are high. An increase in riparian woodland during wetter than normal years would provide more habitat for southwestern willow flycatchers and Least Bell's vireos during migration and for nesting. Such habitat, however, would probably not survive during periods of drought.

"E" Street to RIX-Rialto Effluent Outfalls. From "E" Street to the RIX-Rialto effluent outfalls, riparian vegetation is essentially absent along the active river channel. This area does not provide habitat for southwestern willow flycatchers or least Bell's vireos (USACE 2000). Bypass releases from Seven Oaks Dam designed to provide perennial flow to the RIX-Rialto effluent outfalls would result in low flows through this reach. A small amount of riparian vegetation could develop along the margins of the perennial flow channel, but the amount would probably not be large and thus would not provide suitable habitat for nesting birds. Invasive non-native plants such as giant cane and tamarisk could become established along the channel.

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2.5 CUMULATIVE IMPACTS

2.5.1 Introduction and Summary of Comments

A series of comments on the Draft EIR were received regarding the cumulative impacts of the Project and other reasonably foreseeable projects on environmental resources in and immediately adjacent to the SAR. Many of these comments expressed concern about the nature and extent of cumulative impacts resulting from the various water management actions and water right applications along the SAR.

CEQA Guidelines section 15130 provides the framework for analysis of impacts associated with implementation of a project and its cumulative impacts. This guidance suggests that the discussion of cumulative impacts in an EIR is limited to the combination of significant and less than significant project-related impacts and all levels of impacts from other past, present, and reasonably foreseeable future projects. Cumulative impacts are not described where the Project has no physical impacts on the environment.

A discussion of significant impacts presented in Section 15126.2 of the Guidelines states that a lead agency should normally limit its examination to changes in the existing physical conditions in the affected area and include relevant specifics of the area, the resources involved, physical changes, alterations to ecological systems, changes induced in the human environment and safety problems caused by the physical changes, and other aspects of the resource base.

The analysis conducted in the Draft EIR was completed in accordance with these concepts, including defining the geographical extent of the affected area, i.e., those areas that would experience direct or indirect physical changes or alterations as a result of the Project. Direct impacts are described in Chapter 3 of the Draft EIR while indirect impacts, including those related to growth in the region that would be supported by the Project, are described in Chapter 4. Cumulative impacts of the Project and other reasonably foreseeable future projects are described in Chapter 6 of the Draft EIR.

The key direct physical changes attributable to the Project are associated with the diversion of water from the mainstem of the SAR and the allocation of that water among beneficial uses. Additional direct changes in the environment would be associated with the construction of new water management facilities. The construction of new facilities is described in Section 2.4.2 and Appendix C of the Draft EIR and the environmental effects associated with this construction are described throughout Chapters 3, 4, and 6. Construction impacts are highly localized, however, physical changes associated with water diversions may occur at some distance from the diversion (e.g., at some downstream location). The manner in which current and proposed diversions of water from the SAR influence the hydrology of the river is addressed in several sections of the Draft EIR (3.1, 3.2, and Chapter 6). The hydrologic analysis in the Draft EIR did not predict impacts below Riverside Narrows (described as river Segment G in the Draft EIR). However, in order to fully respond to comments received on the Draft EIR, this Thematic Response provides additional information regarding other projects that have the potential to affect other portions of the SAR system. Because the Project would not have a physical impact on the environment below Riverside Narrows, there was no need for the Draft EIR to analyze potential cumulative impacts below Riverside Narrows.

CEQA impact analyses are completed with an understanding of the existing conditions, project characteristics and, in the case of cumulative impact analyses, the impacts of other projects that may affect the same environmental resources either in time or in space. Section 2.5.2, below provides a discussion of the existing conditions for four regions of the SAR: (1) the Upper Santa Ana River extending from above Seven Oaks Dam to the RIX-Rialto Effluent Outfalls, (2) the Middle Santa Ana River from the RIX-Rialto Effluent Outfalls to Prado Flood Control Reservoir, (3) the Lower Santa Ana River from Prado Flood Control Reservoir to the Pacific Ocean, and (4) within the Chino Basin drainage to its connection with the Prado Flood Control Reservoir. Section 2.5.3 provides a discussion on the analytical methodology used to perform the cumulative impact analysis. Section 2.5.4 provides a discussion on other related projects and their potential impacts within the four regions of the SAR. Finally, section 2.5.5 provides a summary of anticipated cumulative impacts resulting from the various cumulative projects, with particular emphasis on diversion and flow related impacts resulting from the various water right applications. Section 2.5.6 presents a discussion on SAR river flow with and without cumulative projects.

2.5.2 The Santa Ana River System

The SAR is the largest stream system in Southern California. It begins high in the San Bernardino and San Gabriel mountains and flows over 100 miles southwesterly until discharging to the Pacific Ocean between Newport Beach and Huntington Beach. The SAR watershed covers over 2,650 square miles of widely varying urban, rural, and forested terrain and covers the more populated urban areas of San Bernardino, Riverside, and Orange counties, as well as a small portion of Los Angeles County.

The natural hydrology of the SAR has been greatly altered since the advent of European settlement and influence. Spanish and other European settlement of the SAR basin (starting in the early 1800's) constructed water diversion and conveyance facilities for agricultural irrigation, gold mining and lumber production. Initially, settlers in the San Bernardino Valley diverted water from Mill, Lytle, and Warm creeks and by the 1880's, water diversions from the SAR mainstem and its tributaries were common, mostly supporting large-scale agricultural activities (SAWPA 2005).

The dry nature of the upper SAR is well documented. As an example, the BA for Seven Oaks Dam (USACE 2000) characterizes the SAR as an ephemeral stream with flows related only to storms and generally with flow only during the months of November to April. The Santa Ana Regional Water Quality Control Board notes in the Basin Plan that: "Most of this reach [Reach 5, Seven Oaks Dam to the City of San Bernardino] tends to be dry, except as a result of storm flows, and the channel is largely operated as a flood control facility". Below the City of San Bernardino the river flows perennially, with flow made up of treated wastewater discharge. Downstream of the City of Riverside, flow consists of wastewater discharges, irrigation runoff and daylighting groundwater. Through much of the Orange County coastal plain the river is contained in concrete-lined channels before reaching the Pacific Ocean (SAWPA 2006).

In the following sections, pertinent characteristics of the SAR are described for each of three major sections:

- Upper SAR, extending from above Seven Oaks Dam in the San Bernardino and San Gabriel mountains to the RIX wastewater treatment plant in the City of Colton;
- Middle SAR, extending downstream of the RIX wastewater treatment outfall to the Prado Flood Control Basin;

- Lower SAR, between the downstream face of Prado Dam to the Pacific Ocean; and
- Chino Basin.

2.5.2.1 Upper Santa Ana River

For the purposes of this analysis, the Upper SAR is defined as that portion of the SAR above Seven Oaks Dam, downstream to the RIX-Rialto Effluent Outfalls. A summary of existing conditions within the Upper SAR is provided in Table 2.5-1. Rain and snowmelt runoff from the San Bernardino Mountains and eastern section of the San Gabriel Mountains provide much of the water carried in the Upper SAR and its major tributaries. The headwaters are in areas of characterized by a relatively steep gradient (SAWPA 2006). Water diversions occur for power production and human uses in this reach. Following completion of the Seven Oaks Dam in 2001, floodwaters are now controlled in the upper portion of this reach of the SAR. The gradient of the steam lessens appreciably upon exiting the SAR Canyon immediately downstream of Seven Oaks Dam, where an alluvial floodplain naturally developed. Flood control levees and other channelization and flow management structures help manage and contain water to its current channel. Flow in the mainstem of the SAR is augmented by tributary flow, rising groundwater forced to the surface near San Bernardino, and, occasionally, treated wastewater.

Several tributaries contribute flow to the mainstem of the SAR. These include Mill Creek (immediately downstream from Seven Oaks Dam), Plunge and City creeks (upstream of San Bernardino International Airport), San Timoteo, East Twin and Warm creeks (east of the I-10, I-215 interchange) and Cajon Creek and Lytle Creek. The hydrology of this system is described in Section 3.1 and Appendix A of the Draft EIR.

2.5.2.1.1 Peak Flows

The construction and operation of Seven Oaks Dam for flood protection has substantially influenced high flow conditions on the SAR. Projections (prepared by the USACE) of instantaneous peak flows at various locations along the mainstem of the SAR downstream from Seven Oaks Dam under pre- and post- Seven Oaks Dam conditions, are shown in Table 2.5-2.

Prior to operation of Seven Oaks Dam, peak discharge of the SAR in the vicinity of the dam site during 100-year flood conditions was 58,000 cfs. Flow of this magnitude would represent 25 percent of the peak discharge of 230,000 cfs where the SAR enters the Prado Flood Control Basin. With Seven Oaks Dam in place, the 100-year discharge from the dam has been reduced to 5,000 cfs and its contribution to flow into Prado has been reduced to 2.6 percent.

The effect that Seven Oaks Dam has on flow regulation in the SAR becomes further attenuated downstream from the dam. The largest changes in peak discharge for a given frequency are seen nearest the dam and the smallest changes are seen in inflow to Prado Flood Control Basin. Under 100-year flood conditions flow in the SAR downstream of the confluence with Mill Creek has been reduced by about 67 percent, from 75,000 cfs prior to construction of Seven Oaks Dam to 25,000 after the dam's construction (USACE 1988).

Table 2.5-1. Existing Conditions on the River and Immediately Adjacent

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls [1]	RIX-Rialto Outfalls to Prado Flood Control Basin [1]	Prado Flood Control Basin to Pacific Ocean[2]	Chino Basin to Prado Flood Control Basin[3]
Aesthetics	In the vicinity of, and upstream of, Seven Oaks Dam there is only limited public access from which to view the river. Below the Seven Oaks Dam site and upstream of the San Bernardino International Airport the river area and its views are characterized by a broad, generally dry wash with woody shrubs, interrupted by sizeable aggregate extraction facilities. Downstream of San Bernardino International Airport to the RIX-Rialto Effluent Outfalls the river is narrowly confined between levees. Views are characterized by a generally dry, braided channel with sporadic vegetation.	This section of the river has consistent flow and views are characterized by wide stretches of extensive dense riparian vegetation.	The aesthetics in the river between Prado Reservoir and Imperial Highway are characterized by views of riparian woodland habitats. There is public access to the river through a series of regional parks and a golf course, and State Highway 91 along this portion of the river is a State designated scenic highway. Below Imperial Highway, there are limited aesthetic resources because the river is used for groundwater recharge or is lined with concrete for flood-control purposes.	Aesthetic resources in Chino Basin include viewsheds of the San Gabriel, San Bernardino, and Santa Ana Mountains and Chino Hills; grass covered oak savannah woodland hillsides; scenic corridors; and scenic highways such as SR 30, 71, and 83.
Agricultural Resources	Agricultural lands occur in the more rural portions of the watershed, including areas adjacent to the Santa Ana River.	Agricultural lands occur in the more rural portions of the watershed, including areas adjacent to the Santa Ana River.	Agricultural lands occur in the watershed, but there is no farmland adjacent to the Santa Ana River.	In 1990, approximately 43% of existing land uses in Chino Basin was agriculture and vacant land. Agricultural land is primarily found in the southern portion of the basin.
Air Quality	The South Coast Air Basin is in "extreme" nonattainment for ozone and "serious" nonattainment for carbon monoxide and particulate matter less than 10 microns in diameter.	The South Coast Air Basin is in "extreme" nonattainment for ozone and "serious" nonattainment for carbon monoxide and particulate matter less than 10 microns in diameter.	The South Coast Air Basin is in "extreme" nonattainment for ozone and "serious" nonattainment for carbon monoxide and particulate matter less than 10 microns in diameter.	The South Coast Air Basin is in "extreme" nonattainment for ozone and "serious" nonattainment for carbon monoxide and particulate matter less than 10 microns in diameter.

Table 2.5-1. Existing Conditions on the River and Immediately Adjacent (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls [1]	RIX-Rialto Outfalls to Prado Flood Control Basin [1]	Prado Flood Control Basin to Pacific Ocean[2]	Chino Basin to Prado Flood Control Basin[3]
Biology	Upstream of Seven Oaks Dam the primary habitat is riparian scrub. Riparian vegetation is limited to areas with creek inflow. No rare, threatened, or endangered plant or wildlife species have been identified upstream of Seven Oaks Dam. The Santa Ana River Wash downstream of Seven Oaks Dam has riversidian alluvial fan sage scrub as its dominant vegetation community and includes Santa Ana River woolly-star, Slender-Horned Spineflower, and Parry's Spineflower. The wash has habitat suitable for San Bernardino Kangaroo Rat (SBKR) and California Gnatcatcher. Downstream of San Bernardino International Airport to RIX-Rialto Effluent Outfall, aquatic, riparian, and wetland habitat limited due to intermittent stream flow. In the area wetted by groundwater upwelling (an approximately 4 mile corridor upstream of "E" Street in San Bernardino), there is Southern Cottonwood-Willow Riparian Woodland and marsh habitat supporting nesting for Southwestern Willow Flycatcher and least Bell's vireo. Santa Ana speckled dace present in aquatic habitat created by groundwater upwelling.	Well-developed riparian forest and aquatic habitat, including Southern Cottonwood-Willow Riparian Forest, Woodland, and marsh habitat. The Santa Ana River downstream of the RIX-Rialto Effluent Outfalls known to support the Santa Ana sucker (located primarily in the Rialto drain), and habitat for the least Bell's vireo and Southwestern Willow Flycatcher.	Between Prado Dam and Imperial Highway, the river contains riparian willow woodland habitat that supports a diversity of wildlife and fishes, including three special-status species, the Santa Ana sucker, Santa Ana speckled dace, and arroyo chub. Downstream of Imperial Highway, the river is managed by OCWD for groundwater recharge and has been channelized for flood control. Both uses limit the amount of habitat available to support wildlife. From 17th Street to the ocean the river is a concrete channel with no habitat value.	In Chino Basin, most of the land has been developed or disturbed by human activity, leaving relatively few pristine areas of natural habitat. Significant biological resources occur near the foothills of the San Gabriel Mountains, in Chino Hills State Park, and along the existing drainage courses. Riparian wetlands and cottonwood-willow woodlands occur in low-lying sections of the basin. Chino Hills State Park contains riparian habitat comprised of coast live oak and sycamore woodlands, and one of the largest remaining stands of Southern California black walnut. Other plant communities that occur within Chino Basin include mulefat scrub, coastal sage scrub, hoaryleaf ceanothus chaparral, and non-native grasslands. Several sensitive species of flora and fauna occur within Chino Basin, including federally endangered and threatened species. However, no biological surveys were conducted explicitly for the OBMP EIR.

Table 2.5-1. Existing Conditions on the River and Immediately Adjacent (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls [1]	RIX-Rialto Outfalls to Prado Flood Control Basin [1]	Prado Flood Control Basin to Pacific Ocean[2]	Chino Basin to Prado Flood Control Basin[3]
Cultural and Paleontological Resources	Record searches and surveys were performed only for those portions of the river directly impacted by construction associated with the Muni/Western proposed Project. These record searches and surveys identified many historic resources, primarily associated with past water resources development, and including Greenspot Road Bridge. Upstream of Seven Oaks Dam there are historic resources associated with past hydroelectric and other water development. The historic integrity of these structures has been compromised by the construction of Seven Oaks Dam. A few prehistoric sites have also been identified upstream of the dam, consisting of bedrock metates used for grinding plant material and lithic scatter associated with a stone tool processing site.	The EIR contains no information on Cultural and Palentological Resources in this area as no construction or operational impacts were anticipated	Several historic structures exist within Prado Basin including the Yorba Slaughter and Bandini adobes. No cultural resources are identified within the river channel downstream of Prado Dam.	There are many sensitive cultural resources within Chino Basin, including historic and prehistoric sites and properties designated as historical landmarks, historic places, historical resources, and points of historic interest.
Geology, Soils and Minerals	The regional geology is typified by alluvium of poorly sorted sand, gravel, boulders, and clay. At least four major active or potentially active fault zones cross this portion of the Santa Ana River. This portion of the river and adjacent lands are susceptible to both liquefaction and subsidence.	The EIR contains no information on Geology in this area as no construction or operational impacts were anticipated.	The regional geology of the lower Santa Ana River coastal plain in Orange County is characterized by alluvial and fluvial deposits and floodplain soils. The soils consist of loamy sands and fine sandy loams. The underlying Orange County groundwater basin consists of sand and gravel deposits with discontinuous clay and silt layers. The lower SAR in Orange County is within a seismically active area. There are four major active faults in the vicinity of the lower SAR.	The regional geology of Chino Basin is characterized by alluvium washed from the San Gabriel and Santa Ana mountains. Soils of the Chino Basin are well-drained sands, sandy loams, and silty loams that are well suited for agriculture. Chino Basin contains large deposits of industrial minerals such as limestone, sand, and gravel. Chino Basin is located within a seismically active area near seven major active faults.

Table 2.5-1. Existing Conditions on the River and Immediately Adjacent (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls [1]	RIX-Rialto Outfalls to Prado Flood Control Basin [1]	Prado Flood Control Basin to Pacific Ocean[2]	Chino Basin to Prado Flood Control Basin[3]
Groundwater Hydrology and Water Quality (including groundwater contamination)	This portion of the river is primarily underlain by the San Bernardino Basin Area (SBBA), but a small downstream portion of this segment is underlain by the Rialto-Colton and Riverside groundwater basins. Average total dissolved solids (TDS) in public supply wells of the SBBA averaged 324 mg/L, which is above the current groundwater quality objectives for the basin. The SBBA is affected by five major groundwater contaminant plumes: the Redlands-Crafton, Norton Air Force Base, Muscoy, Newmark, and Santa Fe plumes. Average TDS in wells of the Rialto Colton Basin averaged 264 mg/L, which is above the current groundwater quality objectives for the basin. The Rialto-Colton and Riverside basin are both affected by Rialto-Colton perchlorate plume.	The EIR contains no information on Groundwater in this area as no construction or operational impacts were anticipated.	The lower Santa Ana River overlies the Orange County groundwater basin. Beneficial uses of the basin include municipal supply. Water quality in the basin meets drinking water standards. The groundwater basin provides 50% of Orange County's water demand and is recharged with SAR water. OCWD operates a seawater intrusion barrier that protects the basin from seawater.	The Chino Basin is an adjudicated groundwater basin and is divided into five management zones. Groundwater levels in the basin have been stabilized since the 1978 Chino Basin Judgment was implemented and groundwater production has been managed within the Basin's safe yield of 140,000 AFY. The Watermaster oversees a regular groundwater monitoring program in Chino Basin. Approximately 55% of total water demand in Chino Basin is met with groundwater.
Hazardous Materials	Database searches were performed only for those portions of the river directly impacted by construction associated with the Muni/Western proposed Project. Based on review of these reports, no contaminated sites were identified that would pose threat during construction of Muni/Western Project facilities.	The EIR contains no information on Hazards in this area as no construction or operational impacts were anticipated.	In general, hazardous waste sites including leaking underground storage tank sites occur in numerous locations throughout Orange County. It is the responsibility of the site operators to manage and remediate these sites.	Chino Basin is known to contain a variety of contaminants, such as organic and inorganic pollutants, resulting from industrial activities and population growth over the last 100 years. The following contaminants have been found in groundwater wells within Chino Basin as of 1998: perchlorate, TDS, nitrate, VOCs, pesticides, and herbicides. There are several point sources for contamination, including Chino Airport, two sanitary landfills, and General Electric facilities.

Table 2.5-1. Existing Conditions on the River and Immediately Adjacent (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls [1]	RIX-Rialto Outfalls to Prado Flood Control Basin [1]	Prado Flood Control Basin to Pacific Ocean[2]	Chino Basin to Prado Flood Control Basin[3]
Land Use and Planning	Land uses and applicable governing authorities varies along this portion of the river. Most of the land near and upstream of Seven Oaks Dam is within the San Bernardino National Forest. Downstream of Seven Oaks Dam land use adjacent to the Santa Ana River is primarily urban, dominated by residential, commercial and light industrial uses. The Redlands Municipal Airport and former Norton Airforce Base are adjacent to the River.	Land uses and applicable governing authorities varies along this portion of the river. Below the RIX-Rialto Outfalls land use adjacent to the Santa Ana River includes residential, commercial, and industrial uses but is dominated by the Santa Ana River Wildlife Area.	Land use adjacent to the Santa Ana River below Prado Basin is primarily urban, dominated by residential, commercial, and light industrial uses. Recreational and open space uses are also scattered along the river.	Land use in Chino Basin is primarily residential, open space, agriculture, and vacant land. New development in the basin is rapidly converting historic agriculture and open space to urbanized land uses.
Noise	The noise environment along the river varies greatly, from the relative quiet of those portions of the river in the San Bernardino National Forest, to those portions of the river within urbanized areas.	The noise environment along the river varies greatly, from the relative quiet of those portions of the river abutted by parks and residences, to those portions of the river within more urbanized areas.	The noise environment along the river varies from relative quiet in portions of the river adjacent to parks and residences, to greater noise levels in portions of the river adjacent to urbanized areas and alongside freeways.	The noise environment in Chino Basin is dominated primarily by transportation-related noise sources, including roadways, airports, and railroads.
Public Services and Utilities	Public services associated with the river (water diversion, flood control) are provided all along the Santa Ana River by a multitude of agencies.	Public services associated with the river (water diversion, flood control) are provided all along the Santa Ana River by a multitude of agencies.	Public services associated with the river include flood control, water diversion, and water recharge. USACE and OCFCD provide flood protection to the lower SAR watershed through operation of Prado Dam and other flood control improvements in the river channel. OCWD diverts and recharges river water into the Orange County groundwater basin.	Public services in the Chino Basin (e.g., police, fire, schools, libraries) are provided by a multitude of agencies. Water demand in Chino Basin is met through a combination of groundwater, local surface water, and imported water. Wastewater treatment and disposal is provided by LACSD, IEUA, and Riverside County.

Table 2.5-1. Existing Conditions on the River and Immediately Adjacent (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls [1]	RIX-Rialto Outfalls to Prado Flood Control Basin [1]	Prado Flood Control Basin to Pacific Ocean[2]	Chino Basin to Prado Flood Control Basin[3]
Recreation	The Seven Oaks Dam and reservoir were not designed for and are not used for recreational purposes. Public access to the dam and reservoir is restricted. The surrounding San Bernardino National Forest is used for a variety of recreational activities such as hiking, mountain biking, camping, hunting, and horseback riding.	The EIR contains no information on Recreation in this area as no construction or operational impacts were anticipated.	There is a series of recreational lands along the Santa Ana River between Prado Dam and Imperial Highway, including Chino Hills State Park, Featherly Regional Park, Yorba Linda Regional Park, and Eastside Community Park. There are two golf courses along the lower SAR, one of which occupies the river channel during the dry weather season.	Within Chino Basin, 3864 acres (2% of total basin area) are designated as open space or recreation. Chino Hills State Park is the major recreational facility within the basin.
Surface Water Hydrology and Water Quality	Above Seven Oaks Dam, the Santa Ana River flow is influenced by operation of the SCE hydroelectric system. Below Seven Oaks Dam, river flow is influenced by not only releases from the dam, but water diversions. The river in this segment is generally dry. Above Mill Creek, almost 75 percent of the time there is no discharge in the river. Further downstream, tributary inflow provides additional flows. Above the RIX-Rialto Effluent Outfalls approximately 42 percent of the time there is no flow in the river.	Below the RIX-Rialto Effluent Outfall, the river generally has year-round discharge equaling or exceeding 60 cfs at all times.	Below Prado Reservoir, Santa Ana River flow is controlled by the operation of Prado Dam and is influenced by OCWD groundwater recharge operations downstream of Imperial Highway. Between Prado Dam and Imperial Highway, base flow during non-flood season typically ranges from 200 to 300 cfs and during flood season can range from 300 to 5,000 cfs or more. Below OCWD's recharge operations, there is little flow except during large storm pulses when storm flows reach the Pacific Ocean.	The Santa Ana River flows along the southern boundary of the Chino Basin, starting at Riverside Narrows and ending at Prado Reservoir. Several ephemeral and perennial streams traverse Chino Basin and drain into either the SAR or directly into Prado Reservoir. The Chino Basin creeks typically flow during the wet season (November-March) after significant storm events, and are dry otherwise. Two creeks, Chino and Cucamonga, receive year-round discharges from IEUA Regional Plants No. 1 and No. 2.
Transportation	Not Applicable.	Not Applicable.	Major transportation corridors are located along and across the lower Santa Ana River downstream of Prado Reservoir, including Interstate 5 and 405, and State Routes 55, 57, and 91.	Chino Basin is served by four airport facilities, passenger and freight rail service, and numerous major regional roadways including Interstate 10 and 15, and State Routes 30, 60, 66, 71, and 83.

[1] From: San Bernardino Valley Municipal Water District and Western Municipal Water District of Riverside County, *Santa Ana River Water Right Applications For Supplemental Water Supply, Draft EIR*. October 2004.

[2] From: Orange County Water District. 2006. Application to Appropriate Santa Ana River Water. Recirculated Draft Program Environmental Impact Report. March.

[3] From: Inland Empire Utilities Agency. 2000. Draft Programmatic Environmental Impact Report. Optimum Basin Water Management Plan.

Table 2.5-2. Upper Santa Ana River Mainstem Discharge-Frequency Values under Pre- and Post-Seven Oaks Dam Conditions

Location	*Pre and Post- Seven Oaks Dam*	*Drainage Area Size (sq. mi.)*	*Flood Condition/Frequency of Peak Discharge (cfs)*						
			200-Year	*100-Year*	*50-Year*	*25-Year*	*10-Year*	*5-Year*	*2-Year*
Outflow from Seven Oaks Dam	Pre	177	88,000	58,000	34,000	20,500	8,800	4,300	1,100
	Post		6,400	5,000	3,800	2,900	500	500	400
Downstream of Mill Creek	Pre	242	120,000	75,000	45,000	26,000	11,700	5,600	1,400
	Post		37,000	25,000	15,500	9,300	4,300	2,050	760
Downstream of City Creek	Pre	290	125,000	80,000	48,000	28,000	12,500	5,800	1,400
	Post		49,000	32,000	20,000	12,000	5,400	2,600	800
At "E" Street	Pre	500	165,000	105,000	60,000	33,000	13,500	6,000	1,400
	Post		100,000	67,000	39,000	22,000	9,000	4,000	920

Source: USACE 1988.

During peak flow events, tributaries contribute a substantial amount to flow in the mainstem of the SAR. The USACE projected the contribution made by each of a number of tributaries to the mainstem of the SAR, as shown in Table 2.5-3.

Table 2.5-3. Upper SAR Tributary Flow (During a 100-year Flood Event)

Tributary	*Inflow (cfs)*
Mill Creek	19,500
City Creek & Plunge Creek	5,000
Mission Zanja Creek	3,500
San Timoteo Creek	15,500
East Twin Creek	18,000
Lytle Creek & Warm Creek	70,000

Source: USACE. 2000.

2.5.2.1.2 Non-Storm Conditions

Flows under non-storm conditions in the upper portion of the SAR have also been greatly altered from their natural condition. As can be seen from the information presented in Table 2.5-4, prior to the construction of Seven Oaks Dam, the SAR from Cuttle Weir to "E" Street contained no measurable flow (referred to as "zero-flow days") on almost 50 percent of days over the period of record. Post-Seven Oaks Dam, from Cuttle Weir to the Mill Creek Confluence, the percentage of zero-flow days would increase by almost 6 percent. For the river segment from Mill Creek to "E" Street, the effect of the dam on flow in the river is compounded by the elimination of effluent discharge to the river from the San Bernardino Water Reclamation Plant. This effluent which previously entered the river just upstream of "E" Street, is now piped to the RIX facility for additional treatment and release to SAR.

Table 2.5-4. Upper Santa Ana River Non-Storm Day Conditions

	Seven Oaks Dam to Cuttle Weir	*Cuttle Weir to Mill Creek*	*Mill Creek to "E" Street**	*"E" St to RIX**
PRE-SEVEN OAKS DAM				
Non-Storm Days	8,375	8,375	8,064	8,375
Percent of Total Days	67.4%	67.4%	66.9%	67.4%
Zero Flow Days	4,014	5,813	5,679	521
Percent of Total Days	32.3%	46.8%	47.1%	4.2%
Median Daily Flow (cfs)	1	0	0	27
POST-SEVEN OAKS DAM				
Non-Storm Days	8,375	8,375	8,064	8,375
Percent of Total Days	67.4%	67.4%	66.9%	67.4%
Zero Flow Days	0	6,506	5,624	5,930
Percent of Total Days	0.0%	52.4%	46.7%	47.8%
Median Daily Flow (cfs)	4	0	0	0

Note: Total days in period of record are 12,419 for all segments except the segment between Mill Creek to "E" Street, there are 12,053 for in the period of record for the Mill Creek to "E" Street segment.

*The RIX facility went into operation in 1996 and receives all effluent from the San Bernardino and Colton water reclamation plants. Prior to 1996, effluent from these plants entered the SAR just above and just below "E" Street, respectively.

2.5.2.1.3 Water Diversions

A number of points of diversion occur both upstream and downstream of Seven Oaks Dam.

DIVERSIONS UPSTREAM OF SEVEN OAKS DAM

Water diverted at a number of points of diversion upstream of Seven Oaks Dam is conveyed through the existing Southern California Edison (SCE) Canal for delivery to senior water right claimants (after being used for power generation). These claimants are comprised of the Bear Valley Mutual Water Company (and shareholders including the City of Redlands), Lugonia Water Company, North Fork Water Company (and shareholders including East Valley Water District), and Redlands Water Company. Water that is diverted upstream of Seven Oaks Dam is conveyed downstream in the SCE Canal to the Head Breaking Structure that is located west of, and at a lower elevation than, the spillway of Seven Oaks Dam. Just before the Head Breaking Structure the SCE Canal bifurcates, delivering water to (a) the SCE SAR Powerhouse No. 2/3 via the New SCE Conduit; and after passing through the Head Breaking Structure, and (b) the Greenspot Forebay via the Old SCE Conduit. As part of the 1976 Santa Ana River-Mill Creek Cooperative Water Project Agreement, water diverted upstream of Seven Oaks Dam may be conveyed to senior water rights claimants via the Greenspot Pipeline.

DIVERSIONS DOWNSTREAM OF SEVEN OAKS DAM

The points of diversion downstream of Seven Oaks Dam include the Auxiliary River Pickup, Division Box, Cuttle Weir, and Conservation District Canal. Table 2.5-5 illustrates the quantities of water diverted from the Upper SAR.

Table 2.5-5. Water Diversions (in acre feet) from the Santa Ana River, at and Upstream of Cuttle Weir

	Average Annual	*Maximum Annual*
Senior Water Right Claimants *(Historical)*	26,619	45,245
San Bernardino Valley Water Conservation District *(Historical)*	10,384	48,152
Environmental Habitat Releases (Required by USFWS Biological Opinion) *(Future)*	915	3,967

INFLOW OF WASTEWATER DISCHARGES

Three wastewater treatment plants (WWTPs) (Redlands, Beaumont, and Yucaipa) discharge in the Upper Santa Ana River region. The discharges from these WWTPs within the Upper Santa Ana River Watershed generally do not flow continuously to the nearest gage in the SAR at "E" Street (Santa Ana River Watermaster 2003); therefore, they are not considered to influence the flow of the Santa Ana River below "E" Street.

2.5.2.2 *Middle Santa Ana River*

The middle section of the SAR (downstream from the RIX facility to the Prado Flood Control Basin) is a perennial stream maintained by a series of wastewater discharges and the upwelling of groundwater. A summary of existing conditions within the Middle SAR is provided in Table 2.5-1.

2.5.2.2.1 Peak Flows

No major tributaries contribute flow to the mainstem of the middle SAR. The effect on flow of operation of Seven Oaks Dam is much attenuated from that observed in the upper section of the river. See the information contained in Table 2.5-6.

Table 2.5-6. Middle Santa Ana River Mainstem Discharge-Frequency Values under Pre- and Post-Seven Oaks Dam Conditions

Location	*Pre and Post-Seven Oaks Dam*	*Drainage Area Size (sq. mi.)*	FLOOD CONDITION/FREQUENCY OF PEAK DISCHARGE (CFS)						
			200-Year	*100-Year*	*50-Year*	*25-Year*	*10-Year*	*5-Year*	*2-Year*
At Riverside Narrows	Pre	824	265,000	175,000	102,000	57,000	23,000	9,500	1,600
	Post		205,000	130,000	80,000	45,000	18,000	7,600	1,400
Inflow to Prado Dam	Pre	2,255	360,000	230,000	132,000	72,000	28,000	11,500	2,800
	Post		300,000	195,000	110,000	60,000	23,000	9,500	2,300
Source: USACE 1988.									

2.5.2.2.2 Non-Storm Flows

The middle section of the SAR is a perennial stream. Under non-storm conditions, there are no days in which zero stream flow occurs. As can be seen from Table 2.5-7, daily median flow in the stream is between 76 cfs and 86 cfs.

Table 2.5-7. Middle SAR Non-Storm Day Conditions

	RIX to Riverside Narrows	*Riverside Narrows to Prado Flood Control Basin*
PRE-SEVEN OAKS DAM		
Non-Storm Days	8,375	7,481
Zero Flow Days	0	0
Median Flow (cfs)	34	86
POST-SEVEN OAKS DAM		
Non-Storm Days	8,375	7,481
Zero Flow Days	0	0
Median Flow (cfs)	76	86

Releases from Seven Oaks Dam during the summer months are needed in order to de-water the debris pool prior to the onset of the flood season. This draining adds flow during periods that would not normally experience flows from the Upper Reach. An added influence on flow in the river in this section is the requirement that the defendants in the *Orange County* Judgment maintain base flow of 42,000 afy at the Riverside Narrows.

Prado Flood Control Basin receives inflow from Chino, Dry and Cucamonga creeks (from the Chino Basin) and from Temescal Creek draining southwestern Riverside County. Peak inflow to Prado Flood Control Basin during a probable maximum flood is estimated to be 630,000 cfs with a total volume of 1,300,000 af (USACE 2003).

The channel of the Middle SAR area is defined by flood control levees and riparian vegetation has become established as a result of the perennial availability of water. This habitat now supports a variety of facultative and obligate riparian species including neotropical birds including the southwestern willow flycatcher and least Bell's vireo. Orange County Water District (OCWD) has also established wetlands near the entrance to Prado Flood Control Basin to reduce nutrient concentrations.

The Los Angeles District of USACE has begun construction of improvements to Prado Dam to increase the capacity of Prado Reservoir by 140,000 af. This work will be accomplished in three phases over five to eight years. It will consist of: (1) raising of the dam height by thirty feet and construction of new intake and outlet facilities, (2) construction of new dikes to protect adjacent property, and (3) raising the height of the spillway (USACE 2001). Modifications to the intake and outlet structure will increase the controlled outflow from 9,000 cfs to 30,000 cfs (USACE 2001).

2.5.2.2.3 Inflow of Wastewater Discharges

Base flow in the SAR upstream of Prado Flood Control Basin consists, especially in the summer months, primarily of tertiary treated wastewater discharged from WWTPs. Wastewater treatment plants with hydraulic connection to the middle SAR are discussed below.

*Rapid Infiltration and Extraction WWTP***.** Located in Colton, RIX receives secondary effluent from the Colton WWTP and the San Bernardino Water Reclamation Plant. In operation since 1995, the RIX process involves taking secondary treated wastewater from these two facilities and applying it to percolation basins. As the wastewater percolates, physical and biological treatment occurs. After the wastewater infiltrates approximately 50 feet, a more than equal quantity of water is extracted through shallow wells and discharged to the SAR (SBMWD 2003).

Recent data indicate average daily discharges of between 39 mgd (about 60 cfs) and 50 mgd (77 cfs).

Rialto WWTP. The Rialto WWTP, located in the City of Rialto, discharges of about 7 mgd (11 cfs) of treated water daily into the SAR. Design capacity of the plant is currently at 8 mgd (12 cfs).

Riverside Regional Water Quality Treatment Plant (Riverside Plant). Located in the City of Riverside, the Riverside Plant has a design capacity of 40 mgd (62 cfs). Recent data describing effluent discharges indicate an average daily flow of 32 mgd (50 cfs), and an average peak flow of 36 mgd (56 cfs).

As a result of the increase in wastewater discharges to the SAR above the Prado Flood Control Basin as well as tributaries to the Prado Flood Control Basin, total average inflow (base flow) into the Prado Flood Control Basin has increased from approximately 30,000 afy in the mid-1960s to more than 150,000 afy in 1998. It is projected to increase to 255,000 afy by 2020 (SWRCB 2000).

2.5.2.3 Lower Santa Ana River Area

A summary of existing conditions within the Lower SAR is provided in Table 2.5-1. According to the OCWD Recirculated Draft Program EIR (2006), base flow in the SAR below Prado Dam, is comprised primarily from treated wastewater and generally remains below 200 cfs in the summer and below 300 cfs in the winter. OCWD diverts and recharges in this area and the OCWD's maximum recharge capacity is approximately 500 cfs, so flows in excess of 500 cfs generally reach the ocean. Storm flow in this segment is intermittent. OCWD's diversion facilities cannot take high storm flows and virtually all storm flow that does not percolate reaches the ocean. Base flow and storm flow have increased below Prado Dam due to urbanization (increased runoff and increased wastewater effluent discharge). In the period 1950 to 1988 the average annual flow below Prado Dam was 88,035 af, in the period 1989 to 2003 the average annual flow below Prado Dam was 268,770 af (based on the USGS gage no. 11074000).

2.5.2.4 Chino Basin Area

The Chino Basin area includes the drainages from the San Gabriel Mountains and lower elevation areas including Ontario, Pomona, Claremont and Chino. A summary of existing conditions within the Chino Basin Area is provided in Table 2.5-1. The basin consists of an alluvial valley that is relatively flat from east to west and slopes from north to south at a one to two percent grade (IEUA 2000). The valley elevation ranges from about 2,000 feet in the foothills below the San Gabriel Mountains to about 500 feet near the Prado Flood Control Basin. Chino Creek, San Antonio Creek, Cucamonga Creek, Deer Creek, Day Creek, Etiwanda Creek and San Sevaine Creek are the principal drainage courses for the Basin. To manage the Basin for the long-term benefit of all producers in the area, an Optimum Basin Management Plan (OBMP) has been developed pursuant to a Judgment entered in the Superior Court of the State of California on February 19, 1998 (IEUA 2000). The overseeing body for guidance in the development and implementation of the OBMP is the Chino Basin Watermaster (IEUA 2000).

The Chino Basin is one of the largest groundwater basins in southern California, containing about 5,000,000 af of water in storage, with an additional, unused, storage capacity of about 1,000,000 af (IEUA 2000). Cities and other water supply entities produce groundwater for all or part of their municipal and industrial supplies from the Chino Basin. An additional 300 to 400 agricultural users also rely on groundwater from the Basin. The average annual safe-yield of the Chino Basin is approximately 140,000 af (IEUA 2000).

The Chino Basin is traversed by a series of ephemeral and perennial streams. These creeks, flowing primarily north to south, carry significant flows only during, or a short time after, intermittent storms that typically occur from October through April (IEUA 2000).

2.5.3 Analytic Methodology

CEQA suggests that the evaluation of cumulative impacts in an EIR be limited to the combination of significant and less than significant project-related impacts and all levels of impacts from other past, present, and probable future projects. In this way the cumulative impact analysis describes the total physical effects on the environment combining the synergistic effects of prior human actions on environmental resources and the potential effects of all reasonably foreseeable future projects. However, in locations where the Project has no physical impacts on the environment, CEQA does not require an analysis of cumulative impacts.

The key direct physical changes attributable to the Project are associated with the diversion of water from the mainstem of the SAR and the allocation of that water among beneficial uses. Additional direct changes would be associated with the construction of new water management facilities. Construction impacts are highly localized. However, physical changes associated with water diversions may occur at some distance from the diversion (e.g., at some downstream location).

2.5.4 Identification of Projects

2.5.4.1 Upper Santa Ana River Area

Within the Upper Santa Ana River area several projects were identified that could have impacts similar in nature and location to that of the proposed project. Table 2.5-8a summarizes the potential environmental effects associated with implementation of the Project while Tables 2.5-8b through 2.5-8k provide a summary of the environmental effects for the following projects considered to have potentially cumulative impacts in the Upper SAR:

- San Bernardino Valley Water Conservation District Water Rights Application (Table 2.5-8b)
- Pilot Dewatering Project (Table 2.5-8c)
- East Branch Extension Phase II Project (Table 2.5-8d)
- Metropolitan Water District Inland Feeder (Table 2.5-8e)
- Seven Oaks Dam Borrow Pit Groundwater Conservation and Habitat Restoration Project (Table 2.5-8f)
- Biological Opinion for the Operation of Seven Oaks Dam (Table 2.5-8g)
- North Lake Area and South Lake Area Project (Table 2.5-8h)
- Proposed Land Management and Habitat Conservation Plan for the Upper Santa Ana River Wash (Table 2.5-8i)

- San Bernardino Valley Municipal Water District Regional Water Facilities Master Plan (Table 2.5-8j)
- Riverside-Corona Feeder Project (Table 2.5-8k)

Tables 2.5-8a through 2.5-8k are based on information provided in the various applicable CEQA documents for each of the projects as well as other material descriptive of the projects.

As can be seen from these tables, most of the cumulative impacts relate to temporary, construction actions. However, a few projects would result in consistent changes in flow in the Santa Ana River. In addition to the Proposed Project, the San Bernardino Valley Water Conservation District Application and the Pilot Dewatering Project would result in long-term, consistent changes in flow; each of these projects is briefly described below.

2.5.4.1.1 San Bernardino Valley Municipal Water District/Western Municipal Water District of Riverside County

Muni/Western filed two applications with the SWRCB, Division of Water Rights, for water right permits to divert up to 200,000 afy of water from the SAR and put it to beneficial use in their respective service areas. The anticipated environmental impacts of the Proposed Project are summarized in Table 2.5-8a.

2.5.4.1.2 San Bernardino Valley Water Conservation District Water Right Application (Conservation District Application)

The Conservation District filed an application with the SWRCB, Division of Water Rights, for a water right permit to divert water from the SAR and Mill Creek. The Conservation District seeks to divert water (based on its historical usage prior to 1914, riparian rights, and additional water that may be made available from the operation of Seven Oaks Dam) to underground storage.

The total amount of water requested in the application is 174,545 af in any year, divided into two portions: 104,545 af reflecting the Conservation District's estimate of water spread in 1922 (the year of highest groundwater spreading by the Conservation District) and 70,000 af for environmental restoration. In January 2003, the Conservation District indicated to the SWRCB its desire to modify its application by reducing the SAR portion of the application by 70,000 afy.

The Draft EIR on the SAR and Mill Creek Water Right Application and Groundwater Management Plan Project (San Bernardino Water Conservation District 2004) has restated the requested permit amount at 55,464 af per year which, combined with existing Conservation District licenses, would be consistent with the Conservation District's estimate of the total maximum amount of water diverted and spread in any year since 1969 (the date of the *Western* Judgment).

The application calls for the diversion of water from the SAR at two locations below Seven Oaks Dam: Cuttle Weir and the division box or afterbay of the SCE SAR Powerhouse 2/3. Water diverted at these locations would be conveyed to the SAR spreading grounds located in, and immediately west of, the Seven Oaks Dam borrow pit, via the Conservation District Canal, River Crossing Pipeline, and North Fork Canal. Additional water from the SAR would be conveyed via both the Bear Valley Highline Canal and Greenspot Pipeline, and spread (via turnouts) in the Mill Creek Spreading Basins. Waters diverted directly from Mill Creek would be conveyed to the Mill Creek Spreading Basins. The anticipated environmental impacts of the Conservation District Application are summarized in Table 2.5-8b.

Table 2.5-8a. Impacts of the Proposed Project to Santa Ana River Environmental Resources

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	Temporary change in aesthetics near river during construction of Project facilities. Infrequent, but higher reservoir elevations during the months of March through September. Minor increase in the number of dry days in the river from Cuttle Weir to "E" Street and reduced flow from "E" Street to the RIX-Rialto Effluent Outfall.	Project effects within this segment are extremely small, and the only measurable difference between the No Project and any Project Scenario occurs in flow ranges of 700 to 900 cfs. No aesthetic impacts are anticipated.	Not applicable.	Not applicable.
Agricultural Resources	The Project would result in temporary disturbance of 11 acres of farmland near the Santa Ana River.	No impact.	Not applicable.	Not applicable.
Air Quality	Emissions from construction activities could exceed the daily and calendar quarter air quality standards for the South Coast Air Basin. Daily thresholds for ROC, CO, NOx, and PM_{10} could be exceeded; calendar quarter thresholds for ROC, CO, NOx, and PM_{10} could be exceeded. Construction near this portion of the river would expose the public to some concentration of TACs.	Emissions from construction activities could exceed the daily and calendar quarter air quality standards for the South Coast Air Basin. Daily thresholds for ROC, CO, NOx could be exceeded; calendar quarter thresholds for ROC, CO, NOx, and PM_{10} could be exceeded.	Not applicable.	Not applicable.

Table 2.5-8a. Impacts of the Proposed Project to the Santa Ana River Environmental Resources (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Biology	Loss of native vegetation and temporary effects on common wildlife species due to road realignment and construction in Seven Oaks reservoir. Disturbance and temporary removal of riparian, wetland, and stream habitat and mortality of common riparian wildlife species due to Project construction. Removal of river wash vegetation and habitat, including RAFSS, Plummer's mariposa lily, Parry's spineflower, San Bernardino Kangaroo Rat habitat, and Coastal California Gnatcatcher habitat during construction. Increase in volume of water which could be stored behind Seven Oaks Dam from March through September. Reduction in frequency and extent of flood flows and associated overbank flows to river wash and habitat. Reduction in frequency and extent of flood flows downstream. Minor changes in non-storm day flows downstream of the point of diversion.	No biological impacts are anticipated.	Not applicable.	Not applicable.

Table 2.5-8a. Impacts of the Proposed Project to the Santa Ana River Environmental Resources (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Cultural and Paleontological Resources	Destruction of an unanticipated cultural or paleontological resource because of construction activities would cause a substantial adverse change in the significance of the resource pursuant to section 15064.5 of CEQA. Construction of the realigned upstream access road would cause a less than significant adverse change in the significance of the operator housing complex associated with SAR 2. Construction could cause a substantial adverse change in the significance of the Francis Cuttle Weir Dam, North Fork Canal, and Redlands Aqueduct as defined in section 15064.5 of CEQA, as well as the Greenspot Bridge, a significant historic resource.	No impact.	Not applicable.	Not applicable.
Geology, Soils and Minerals	Substantial erosion may occur during short-term construction activities. Multiple faults in the Project construction areas, including the San Andreas Fault Zone, could produce strong seismic ground shaking that would expose structures to substantial adverse effects. Seismically induced liquefaction could result in pipeline damage and/or failure. The surface area exposed to liquefaction potential within the Pressure Zone of the SBBA would decrease with the Project. The surface area exposed to liquefaction potential outside the Pressure Zone of the SBBA would decrease with the Project.	No impact.	Not applicable.	Not applicable.

Table 2.5-8a. Impacts of the Proposed Project to the Santa Ana River Environmental Resources (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Groundwater Hydrology and Water Quality (including groundwater contamination)	Temporary dewatering during project construction. Increase in TDS and nitrate concentrations at some wells in the SBBA relative to the No Project. Increase in the spatial extent of perchlorate contamination plume relative to No Project. Decrease in spatial extent of TCE and PCE contaminate plume but under some scenarios an increase in number of affected wells.	No impact.	Not applicable.	Not applicable.
Hazardous Materials	Routine transport, use, and disposal of hazardous materials and waste used during grading and construction. Hazards could occur through upset and accident conditions involving the release of construction equipment-related hazardous materials into the environment.	No impact.	Not applicable.	Not applicable.
Land Use and Planning	Increases in groundwater levels, due to Project operations, could conflict with existing land uses and limit future use of property in the Pressure Zone of the SBBA. Project construction and operation could be inconsistent with San Bernardino County policies related to maintaining water utilities during seismic events.	No impact.	Not applicable.	Not applicable.
Noise	Temporary noise increases during construction.	No impact.	Not applicable.	Not applicable.
Public Services and Utilities	No impact.	No impact.	Not applicable.	Not applicable.

Table 2.5-8a. Impacts of the Proposed Project to the Santa Ana River Environmental Resources (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Recreation	Increase in number of zero flow days in river reach with generally little to no flow.	No impact.	Not applicable.	Not applicable.
Surface Water Hydrology and Water Quality	Increased potential for erosion within the reservoir due to seasonal water conservation storage. Degraded water quality as a result of additional impoundment of flows. Decreased river flow on non-storm days. Decreased potential for sediment transport. Decreased depth and velocity of overbank flows.	Project effects within this segment are extremely small, and then the only measurable difference between the No Project any Project Scenario occurs in flow ranges of 200 to 300 cfs.	Not applicable.	Not applicable.
Transportation	Not applicable.	Not applicable.	Not applicable.	Not applicable.

From: San Bernardino Valley Municipal Water District and Western Municipal Water District of Riverside County, *Santa Ana River Water Right Applications For Supplemental Water Supply, Draft EIR* (October 2004).

Table 2.5-8b. Impacts of the San Bernardino Valley Water Conservation District Water Rights Application

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	No impact.	No impact.	Not applicable.	Not applicable.
Agricultural Resources	No impact.	No impact.	Not applicable.	Not applicable.
Air Quality	No impact.	No impact.	Not applicable.	Not applicable.
Biology	No impact.	No impact.	Not applicable.	Not applicable.
Cultural and Paleontological Resources	No impact.	No impact.	Not applicable.	Not applicable.
Geology, Soils and Minerals	Groundwater spreading would be conducted per a program intended to reduce liquefaction potential in the San Bernardino Basin Area.	No impact.	Not applicable.	Not applicable.
Groundwater Hydrology and Water Quality (including groundwater contamination)	Reductions in San Bernardino Valley Conservation District Recharge could result in reduced groundwater levels and reduced groundwater supply in the SBBA. Potentially less recharge of the SBBA by local water. No identified effect on contaminant plume movement in the Bunker Hill Basin.	No impact.	Not applicable.	Not applicable.
Hazardous Materials	No impact.	No impact.	Not applicable.	Not applicable.
Land Use and Planning	No impact.	No impact.	Not applicable.	Not applicable.
Noise	No impact.	No impact.	Not applicable.	Not applicable.
Public Services and Utilities	No impact.	No impact.	Not applicable.	Not applicable.
Recreation	No impact.	No impact.	Not applicable.	Not applicable.

Table 2.5-8b. Impacts of the San Bernardino Valley Water Conservation District Water Rights Application (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Surface Water Hydrology and Water Quality	The application states that diversions would be similar to current operations and thus no impacts are anticipated. Infrequent reductions in San Bernardino Valley Water District diversions could leave additional flow in the Santa Ana River.	No impact.	Not applicable.	Not applicable.
Transportation	No impact.	No impact.	Not applicable.	Not applicable.

From: San Bernardino Valley Water Conservation District, *Draft Environmental Impact Report for the San Bernardino Valley Water Conservation District Santa Ana River and Mill Creek Water Rights Application and Groundwater Management Plan* (June 2004).

2.5.4.1.3 Pilot Dewatering Program for the Bunker Hill Basin Area of Historic High Groundwater (Pilot Dewatering)

Within the San Bernardino Basin Area is an area referred to as the Area of Historic High Groundwater (AHHG). Under certain conditions involving multiple consecutive years of above-average rainfall, it is possible that groundwater may rise and even come to the surface in this area. Potential problems associated with high groundwater include damage to structures and underground facilities due to flooding; increased threat of injury to persons and property during a significant seismic event due to ground liquefaction; and the potential loss of additional recharge of high quality native flows because of the lack of available capacity in the aquifer (SBVMWD 2001).

The goal of the pilot dewatering program is to increase the depth to groundwater within the AHHG to a minimum of 30 to 50 feet from the ground surface by pumping a maximum of 25,000 afy and, thus, eliminating or reducing the potential problems associated with high groundwater (SBVMWD 2001).

The approved action includes two elements. The first element involves pumping groundwater from 19 existing production wells in the AHHG. The water is conveyed through short segments of pipeline to the existing storm drainage system and discharged into the SAR. Under conditions when some or all of the water produced from these wells meets all applicable water quality standards (possibly through blending with higher quality water), the water is discharged into existing flood control channels that eventually discharge into the SAR. The second element of the program involves pumping when well water does not meet all the requirements for discharge into the SAR and sufficient high-quality blend water is not available to allow the requirements for upstream discharge to be met. Under these circumstances, the extracted water is conveyed to a point further downstream on the SAR where discharge requirements will allow the action (SBVMWD 2001). The anticipated environmental impacts of the Pilot Dewatering Project are summarized in Table 2. 5-8c.

2.5.4.1.4 East Branch Extension (EBX) Project Phase II

The EBX is a SWP project administered by DWR designed to serve the eastern portion of the Muni service area and the San Gorgonio Pass Water Agency. The project is proposed in two phases. Phase I, completed, includes facilities necessary to deliver water from the SWP Devil Canyon Powerplant Afterbays to the communities of Yucaipa and Cherry Valley. Phase II of the EBX project would increase capacity to move water from the Devil Canyon Afterbays to Yucaipa and Cherry Valley. Phase II could include a new pipeline originating at the Muni Foothill Pipeline, traversing south across the SAR alluvial fan, then east to connect to Phase I facilities in Crafton Hills. The anticipated environmental impacts of the EBX Project are summarized in Table 2.5-8d.

2.5.4.1.5 The Metropolitan Water District Inland Feeder (Inland Feeder)

The Inland Feeder will be comprised of 44 miles of large diameter pipeline and tunnels from the SWP Devil Canyon Afterbays at the base of the San Bernardino Mountains to the Colorado River Aqueduct in the community of San Jacinto, Riverside County. One of the primary purposes of the project is to allow Metropolitan to move water into reservoirs, such as Diamond Valley Lake, during periods when water is plentiful, for general water supply and as a reserve in the event of an emergency or prolonged drought. Portions of the Inland Feeder south of the SAR became operational in late 2002. A connection between the Inland Feeder and Muni's Foothill Pipeline (near Cone Camp Road in the SAR Wash) allows Metropolitan to make

Table 2.5-8c. Impacts of the Pilot Dewatering Project

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	No impact.	No impact.	No impact.	Not applicable.
Agricultural Resources	No impact.	No impact.	No impact.	Not applicable.
Air Quality	Short-term emissions associated with construction. Minor daily emissions associated with operation of groundwater pumping wells.	Short-term emissions associated with construction. Minor daily emissions associated with operation of groundwater pumping wells.	Not applicable.	Not applicable.
Biology	No impact.	No impact.	No impact.	Not applicable.
Cultural and Paleontological Resources	No impact.	No impact.	No impact.	Not applicable.
Geology, Soils and Minerals	Facilities of the Pilot Dewatering Project would exist in an area subject to seismic activity and subsidence. Project would reduce liquefaction potential in the SBBA.	Facilities of the Pilot Dewatering Project would exist in an area subject to seismic activity and subsidence.	Not applicable.	Not applicable.
Groundwater Hydrology and Water Quality (including groundwater contamination)	Minor increase in extraction of groundwater from the SBBA. Groundwater pumping could draw poor quality water into an area of better quality water.	No impacts identified.	Not applicable.	Not applicable.
Hazardous Materials	Potential for unanticipated discovery and upset of hazardous materials during construction.	Potential for unanticipated discovery and upset of hazardous materials during construction.	Not applicable.	Not applicable.
Land Use and Planning	Project will further City and County goals for reducing environmental hazards associated with potential soil liquefaction in seismic events, as well as flooding and adverse water quality impacts associated with high groundwater.	No impact.	No impact.	Not applicable.

Table 2.5-8c. Impacts of the Pilot Dewatering Project (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Noise	Minor increase in noise at groundwater well extraction sites.	No impact.	No impact.	Not applicable.
Public Services and Utilities	Minor increase in maintenance of facilities associated with the Pilot Groundwater Dewatering Program. Increased use of storm drains.	Minor increase in maintenance of facilities associated with the Pilot Groundwater Dewatering Program. Increased use of storm drains.	Not applicable.	Not applicable.
Recreation	No impact.	No impact.	No impact.	Not applicable.
Surface Water Hydrology and Water Quality	Increased flows (up to 25,000 afy) due to discharge of extracted groundwater to the Santa Ana River near "E" Street.	Increased flow (up to 25,000 afy) due to discharge of extracted groundwater to the Santa Ana River near the Mission Avenue bridge in the City of Riverside and near Riverside Narrows.	Increased flow due to discharge of extracted groundwater to the Santa Ana River upstream.	Not applicable.
Transportation	Not applicable.	Not applicable.	Not applicable.	Not applicable.
From: San Bernardino Valley Municipal Water District, *Addendum to the Initial Study for Pilot Dewatering Program for the Area of High Historic Groundwater* (December 2001).				

Table 2.5-8d. Impacts of the East Branch Extension Phase II Project

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	All proposed pipelines would be underground and pre-existing surface conditions would be restored following construction. Pump stations, tanks, and reservoirs would be screened and landscaped to avoid aesthetic impacts. No impacts to visual resources anticipated.	Not applicable.	Not applicable.	Not applicable.
Agricultural Resources	No Impact.	Not applicable.	Not applicable.	Not applicable.
Air Quality	Emissions during construction would exceed short-term South Coast Air Quality Management District thresholds for NOx, but would not exceed state or federal standards.	Not applicable.	Not applicable.	Not applicable.
Biology	Disturbance and loss of habitat, destruction and injury of individuals, reduced fertility, introduction of exotic species, and erosion into wetlands during construction.	Not applicable.	Not applicable.	Not applicable.
Cultural and Paleontological Resources	Potential for damage and destruction of unanticipated cultural resource discoveries during construction.	Not applicable.	Not applicable.	Not applicable.
Geology, Soils and Minerals	Facilities would be built in an area subject to seismic activity, lateral spreading, subsidence, and liquefaction.	Not applicable.	Not applicable.	Not applicable.
Groundwater Hydrology and Water Quality (including groundwater contamination)	Not applicable. The East Branch Extension Project is intended to deliver State Water Project Water to areas (including groundwater spreading basins) east of the Santa Ana River.	Not applicable.	Not applicable.	Not applicable.

Table 2.5-8d. Impacts of the East Branch Extension Phase II Project (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Hazardous Materials	Potential for unanticipated discovery and upset of hazardous materials during construction.	Not applicable.	Not applicable.	Not applicable.
Land Use and Planning	All of the proposed facilities are allowable given the designated land uses of their respective jurisdictions.	Not applicable.	Not applicable.	Not applicable.
Noise	Temporary construction noise in vicinity of Santa Ana River.	Not applicable.	Not applicable.	Not applicable.
Public Services and Utilities	No impact.	Not applicable.	Not applicable.	Not applicable.
Recreation	No impact.	Not applicable.	Not applicable.	Not applicable.
Surface Water Hydrology and Water Quality	Erosion during construction of pipeline crossing of Santa Ana River. Potential release of toxic materials from construction equipment to waterway during construction of pipeline crossing of Santa Ana River.	Not applicable.	Not applicable.	Not applicable.
Transportation	Not applicable.	Not applicable.	Not applicable.	Not applicable.

Note: No formal environmental documentation has been prepared for the East Branch Extension Phase II Project. In order to prepare the cumulative impact analysis within the *Santa Ana River Water Right Applications For Supplemental Water Supply, Draft EIR*, impacts related to construction and operation of East Branch Extension Phase II facilities were estimated assuming they were similar to those of construction and operation of the Mentone Feeder and Pipeline described in the San Bernardino Valley Water District *Water Facilities Master Plan* (January 2001).

SWP deliveries into Diamond Valley Lake while the remaining portions of the Inland Feeder are completed. Currently, the remaining portions of the Inland Feeder north of the SAR are under active construction. It is anticipated that the entire Inland Feeder will be operational in 2007. The known and anticipated environmental impacts of the Inland Feeder are summarized in Table 2.5-8e.

2.5.4.1.6 Seven Oaks Dam Borrow Pit Groundwater Conservation and Habitat Restoration Project (Restoration Project)

In constructing Seven Oaks Dam, USACE used pervious clays and soil taken from approximately 200 acres of the historic spreading basin of the Conservation District. The Conservation District and USACE are studying the feasibility of restoring the borrow pit to improve groundwater percolation and native habitat. The preliminary restoration plan calls for the development of a series of six percolation basins interspersed with restored habitat areas (SBVWCD 2003b).

In conjunction with restoration of the borrow pit, the Conservation District has also proposed modifying their diversion canal that delivers water to the borrow pit, and creating surface storage in the vicinity of the borrow pit. As described in the Integrated Water Resources Plan for the Santa Ana Watershed (SAWPA 2002a), the Conservation District intends to bifurcate their existing canal to the spreading grounds into north and south canals. The northern canal would carry water to the borrow pit and northwesterly spreading basins. The southern canal would carry water to the borrow pit and southwesterly spreading basins. The Conservation District also proposes having surface storage available for water released from Seven Oaks Dam, in the event spreading basins are under repair, storm events exceed the infiltration rate in the spreading basins, or the groundwater basin is sufficiently full but water is still being released from the dam. The anticipated environmental impacts of the Restoration Project are summarized in Table 2.5-8f.

2.5.4.1.7 Biological Opinion for the Operation of Seven Oaks Dam (BO)

In December 2002, the USFWS issued the final version of the BO, based on Section 7 consultations with USACE, for operations of Seven Oaks Dam. The document outlines measures that must be taken to mitigate adverse impacts anticipated to special status species (SBKR, Santa Ana River woolly-star, and Slender-horned spineflower) and attributable to operation of Seven Oaks Dam. These measures were described in detail in the Biological Assessment (BA) published in August of 2000 by the USACE. They include the following:

- Development of a Multi-Species Habitat Management Plan (MSHMP);
- Directed studies of population trends and habitat relationships, threats to the species, and life requirements;

Table 2.5-8e. Impacts of the Metropolitan Water District Inland Feeder

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	Construction of the Inland Feeder Pipeline in the Santa Ana River wash would not affect a scenic vista or scenic highway but could have a negative aesthetic effect and create light and glare. The pipeline would be underground[1].	Not applicable.	Not applicable.	Not applicable.
Agricultural Resources	Construction of the Inland Feeder Pipeline in the Santa Ana River wash would not affect agricultural resources or operations[1].	Not applicable.	Not applicable.	Not applicable.
Air Quality	Construction within the Santa Ana River would generate fugitive dust and emissions from construction equipment use[1].	Not applicable.	Not applicable.	Not applicable.
Biology	Construction of the Inland Feeder Pipeline in the Santa Ana River wash would have short term temporary losses of native plant communities, wildlife habitat, and special interest species. Direct impacts to approximately 13 acres of RAFSS, 0.41 acres RSS, 8 acres of unoccupied slender-horn spineflower habitat, 13 acres of suitable unoccupied woolly-star habitat, and 14 acres occupied San Bernardino Kangaroo Rat habitat[1].	Not applicable.	Not applicable.	Not applicable.
Cultural and Paleontological Resources	Construction of the Inland Feeder Pipeline in the Santa Ana River wash would destroy portions of three cultural sites associated with former labor camps that once existed in the Santa Ana River Wash (circa 1930 to 1960) and an old railroad alignment[1].	Not applicable.	Not applicable.	Not applicable.

Table 2.5-8e. Impacts of the Metropolitan Water District Inland Feeder (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Geology, Soils and Minerals	Facilities would be built in an area subject to seismic activity, lateral spreading, subsidence, and liquefaction. Construction could also result in erosion and unstable soil conditions[1].	Not applicable.	Not applicable.	Not applicable.
Groundwater Hydrology and Water Quality (including groundwater contamination)	No impact. The portion of the Inland Feeder crossing the Santa Ana River would be buried above historic groundwater levels and would not impede groundwater flows or recharge, and the pipeline would have no features to inject or extract groundwater[1].	Not applicable.	Not applicable.	Not applicable.
Hazardous Materials	Use of potentially hazardous materials during the construction process[1].	Not applicable.	Not applicable.	Not applicable.
Land Use and Planning	Construction in the Santa Ana River Wash would conflict with the Woolly- Star Management Plan. The Inland Feeder crosses the Santa Ana River within the Woolly-Star Preserve Area and would disturb habitat. Construction equipment could encroach upon the airspace of the Redlands Municipal Airport[1].	Not applicable.	Not applicable.	Not applicable.
Noise	Temporary construction noise in vicinity of Santa Ana River[1].	Not applicable.	Not applicable.	Not applicable.
Public Services and Utilities	Temporary buildings on the project site could require police and fire services[1].	Not applicable.	Not applicable.	Not applicable.

Table 2.5-8e. Impacts of the Metropolitan Water District Inland Feeder (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Recreation	Construction of the Inland Feeder in the Santa Ana River wash would not increase the demand for neighborhood services nor affect existing recreational resources in the river[1].	Not applicable.	Not applicable.	Not applicable.
Surface Water Hydrology and Water Quality	Erosion during construction of pipeline crossing of Santa Ana River[1].	Not applicable.	Not applicable.	Not applicable.
Transportation	Not applicable.	Not applicable.	Not applicable.	Not applicable.

Sources: Metropolitan Water District of Southern California, *Inland Feeder Project, Supplemental Environmental Impact Report* (April 1998) and Metropolitan Water District of Southern California, *Inland Feeder Project, Final Environmental Impact Report Statement of Findings & Overriding Considerations, Mitigation Monitoring Plan* (February 1993).

[1] Construction of the Inland Feeder Project, Santa Ana River Crossing, was completed in 2003.

Table 2.5-8f. Impacts of the Seven Oaks Dam Borrow Pit Groundwater Conservation and Habitat Restoration Project

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	Temporary aesthetic impacts during construction. Long-term impacts from improvement of borrow-pit and creation of surface water storage area.	Not applicable.	Not applicable.	Not applicable.
Agricultural Resources	No Impact.	Not applicable.	Not applicable.	Not applicable.
Air Quality	Impacts related to earthmoving activities (fugitive dust, emissions from construction equipment).	Not applicable.	Not applicable.	Not applicable.
Biology	Potential loss of Santa Ana River Wash habitat and associated wildlife values from construction activities.	Not applicable.	Not applicable.	Not applicable.
Cultural and Paleontological Resources	Potential impacts to unknown cultural resources during construction. Potential impacts to unknown cultural resources from inundation resulting from adding surface storage to borrow pit.	Not applicable.	Not applicable.	Not applicable.
Geology, Soils and Minerals	Potential impacts from placing facilities in an area subject to geologic hazards including unstable soils, seismic hazards, ground shaking, landslides, and liquefaction.	Not applicable.	Not applicable.	Not applicable.
Groundwater Hydrology and Water Quality (including groundwater contamination)	Potential for increased recharge in the borrow pit area to have both beneficial and harmful impacts to groundwater and groundwater contaminant plumes in the SBBA.	Not applicable.	Not applicable.	Not applicable.
Hazardous Materials	Construction could result in accidental spill of hazardous materials to the Santa Ana River.	Not applicable.	Not applicable.	Not applicable.

Table 2.5-8f. Impacts of the Seven Oaks Dam Borrow Pit Groundwater Conservation and Habitat Restoration Project (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Land Use and Planning	No impact.	Not applicable.	Not applicable.	Not applicable.
Noise	Temporary construction related noise.	Not applicable.	Not applicable.	Not applicable.
Public Services and Utilities	No impact.	Not applicable.	Not applicable.	Not applicable.
Recreation	No impact.	Not applicable.	Not applicable.	Not applicable.
Surface Water Hydrology and Water Quality	No impact.	Not applicable.	Not applicable.	Not applicable.
Transportation	Not applicable.	Not applicable.	Not applicable.	Not applicable.

Note: No formal environmental documentation has been prepared for the Seven Oaks Dam Borrow Pit Groundwater Conservation and Habitat Restoration Project. In this table impacts have been estimated based on impacts from similar projects in the same geographic area.

- Experimental studies of the effectiveness of different habitat management techniques. The purpose of the studies will be to test the effectiveness of hydraulic renewal and on-ground techniques to slow habitat succession resulting from a lack of fluvial processes. Various techniques will be applied to degraded habitat areas, with pre- and post-monitoring and surveys to document changes in habitat and population dynamics. Hydraulic renewal experiments will include operation of Seven Oaks Dam coupled with the construction of diversion dikes to provide periodic controlled releases to flood designated areas of the WSPA, or prescribed other lands. This experiment may include two types of tests: controlled water releases only; and controlled releases with vegetation clearing (to mimic scouring). On-ground habitat renewal experiments will be accomplished using mechanical equipment to clear vegetation and spread sand and/or water. This experiment may include two types of tests: sand spreading by light equipment in cleared areas (with green waste debris removed); and sand placed in piles and dispersed using water from a water truck. These experimental trials and their results will be monitored;
- Implementation of habitat management in the WSPA on a larger scale than covered by the experimental treatments; and
- Expansion of habitat management measures beyond current boundaries, as approved, authorized, and funded. The USACE has agreed to work with the USFWS to seek conservation or other easements from the BLM to permit habitat management measures, including flooding, on areas currently outside of the agencies' jurisdiction.

The anticipated environmental impacts of the BO implementation are summarized in Table 2.5-8g.

2.5.4.1.8 North Lake Area and South Lake Area Project (North/South Lake)

Muni, the City of San Bernardino, and the Inland Valley Development agency have proposed the development of two lakes within the City of San Bernardino. The North Lake Area and South Lake Area projects are each components of the City's "Vision 20/20 San Bernardino" concept (also known as the "Lakes and Streams Plan"), although these two lakes are the only components contemplated at this time. The purpose of the North/South Lake project is to create lake storage for Muni, lower groundwater in the AHHG, and create opportunities for city revitalization and redevelopment. The North Lake Area project site is 82.4 acres bounded by Baseline Street, 9th Street, "H" Street, and "E" Street in the City of San Bernardino. Currently the site is used for residential, commercial, industrial, and institutional uses. Approximately 10 acres of the site are vacant. A 44-acre lake with approximately 660 af of water storage is proposed on the site, as well as commercial, residential, and open space land uses. The South Lake Area project site is 53.7 acres bounded by the Burlington Northern-Santa Fe railroad, Mill Street, Interstate 215, and "G" Street in the City of San Bernardino. The project site is generally vacant but is within an urbanized area. An approximately 5-acre lake is proposed. Other proposed land uses include office and retail. The anticipated environmental impacts of the North Lake/South Lake project are summarized in Table 2.5-8h.

Table 2.5-8g. Impacts of the Biological Opinion for the Operation of Seven Oaks Dam

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	Temporary but re-occurring aesthetic impacts from construction.	Not applicable.	Not applicable.	Not applicable.
Agricultural Resources	No Impact.	Not applicable.	Not applicable.	Not applicable.
Air Quality	Temporary but re-occurring impacts related to earthmoving activities.	Not applicable.	Not applicable.	Not applicable.
Biology	Potential loss of Santa Ana River wash habitat and associated wildlife values from re-occurring construction activities. Long-term improvement in Wash Habitat within the Woolly-Star Preserve Area.	Not applicable.	Not applicable.	Not applicable.
Cultural and Paleontological Resources	Potential impacts to unknown cultural resources during construction.	Not applicable.	Not applicable.	Not applicable.
Geology, Soils and Minerals	Potential for erosion and sedimentation related to construction activities as well as erosion of temporary dikes during habitat renewal experiments.	Not applicable.	Not applicable.	Not applicable.
Groundwater Hydrology and Water Quality (including groundwater contamination)	Minor increase in groundwater recharge associated with application of water to Santa Ana Wash area during habitat renewal experiments.	Not applicable.	Not applicable.	Not applicable.
Hazardous Materials	Construction could result in accidental spill of hazardous materials to the Santa Ana River.	Not applicable.	Not applicable.	Not applicable.
Land Use and Planning	No impact.	Not applicable.	Not applicable.	Not applicable.

Table 2.5-8g. Impacts of the Biological Opinion for the Operation of Seven Oaks Dam (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Noise	Temporary but re-occurring noise impacts from construction.	Not applicable.	Not applicable.	Not applicable.
Public Services and Utilities	No impact.	Not applicable.	Not applicable.	Not applicable.
Recreation	No impact.	Not applicable.	Not applicable.	Not applicable.
Surface Water Hydrology and Water Quality	Potential for erosion and sedimentation related to construction activities as well as erosion of temporary dikes during habitat renewal experiments.	Not applicable.	Not applicable.	Not applicable.
Transportation	Not applicable.	Not applicable.	Not applicable.	Not applicable.

Note: No formal environmental documentation has been prepared for actions associated with implementation of the Biological Opinion of Seven Oaks Dam (e.g., the Multi-Species Habitat Management Plan, hydraulic renewal experiments). In this table impacts have been estimated based on impacts from similar projects in the same geographic area.

Table 2.5-8h. Impacts of the North Lake Area and South Lake Area Project

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	Potential excavation and grading south east of Seven Oaks Dam to gather materials for clay lake liner (depending on clay borrow pit site selected, there may be no impact to aesthetic resources along the Santa Ana River corridor).	Not applicable.	Not applicable.	Not applicable.
Agricultural Resources	Not applicable. Majority of project construction and implementation located outside of Santa Ana River corridor.	Not applicable.	Not applicable.	Not applicable.
Air Quality	Construction related dust and vehicle emissions would occur within the South Coast Air Quality Management District. Long-term air quality impacts would result from an increase in local and regional use of electricity and natural gas.	Not applicable.	Not applicable.	Not applicable.
Biology	Potential clay borrow site grading and excavation may impact sensitive species (depending on clay borrow pit site selected, there may be no impact to biological resources along the Santa Ana River corridor).	Not applicable.	Not applicable.	Not applicable.
Cultural and Paleontological Resources	Potential impacts to unknown cultural resources during excavation and grading of clay borrow site (depending on clay borrow pit site selected, there may be no impact to cultural resources along the Santa Ana River corridor).	Not applicable.	Not applicable.	Not applicable.

Table 2.5-8h. Impacts of the North Lake Area and South Lake Area Project (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Geology, Soils and Minerals	Clay borrow site excavation and grading could result in temporary erosion (depending on clay borrow pit site selected, there may be no impact to geology and soils along the Santa Ana River corridor).	Not applicable.	Not applicable.	Not applicable.
Groundwater Hydrology and Water Quality (including groundwater contamination)	Provides surface water storage option for water pumped to relieve high groundwater.	Not applicable.	Not applicable.	Not applicable.
Hazardous Materials	Not applicable. Majority of project construction and implementation located outside of Santa Ana River corridor.	Not applicable.	Not applicable.	Not applicable.
Land Use and Planning	Not applicable. Majority of project construction and implementation located outside of Santa Ana River corridor.	Not applicable.	Not applicable.	Not applicable.
Noise	Temporary construction noise adjacent to clay borrow site (depending on clay borrow pit site selected, there may be no impact to noise along the Santa Ana River corridor).	Not applicable.	Not applicable.	Not applicable.
Public Services and Utilities	No impact.	Not applicable.	Not applicable.	Not applicable.
Recreation	No impact.	Not applicable.	Not applicable.	Not applicable.

Table 2.5-8h. Impacts of the North Lake Area and South Lake Area Project (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Surface Water Hydrology and Water Quality	Clay borrow site excavation and grading could result in temporary erosion into Santa Ana River tributaries (depending on clay borrow pit site selected, there may be no impact to water quality along the Santa Ana River corridor). North Lake and South Lake Area projects would add off-stream surface water storage to San Bernardino Valley Municipal Water District system.	Not applicable.	Not applicable.	Not applicable.
Transportation	Not applicable.	Not applicable.	Not applicable.	Not applicable.
From: City of San Bernardino and San Bernardino Valley Municipal Water District, *Draft Program Environmental Impact Report North Lake Area and South Lake Area Projects* (August 2004).				

2.5.4.1.9 Proposed Land Management and Habitat Conservation Plan for the Upper Santa Ana River Wash (Wash Plan)

In 1993, representatives of numerous public and private entities representing water, mining, flood control, wildlife, and municipal interests formed a Wash Committee to address local mining issues in the SAR Wash. The Wash Committee was subsequently expanded to address all the land functions in the Wash Planning Area. Participants include elected officials from San Bernardino County and the cities of Highland and Redlands, the Conservation District, and BLM. The Wash Committee, in conjunction with the USFWS, CDFG, mining interests, and flood control interests have proposed a Land Management and Habitat Conservation Plan (Wash Plan) designed to address land use, mineral resource extraction, recreational, and habitat conservation concerns on the alluvial fan and flood plain of the SAR downstream of Seven Oaks Dam. The area covered by the Wash Plan is 4,330 acres; it starts at the SAR Canyon mouth at Greenspot Road, extends 6 miles downstream to Alabama Street in the City of Redlands, and is up to 2 miles wide. The Wash Plan is intended to coordinate and accommodate existing and future activities anticipated to occur in the Wash Plan Area, such as water conservation, flood control, extraction and processing of aggregate mineral resources, protection and conservation of sensitive and listed native species and habitat, and recreation planning, including a portion of the SAR trail system. The anticipated environmental impacts of the Wash Plan are summarized in Table 2.5-8i.

2.5.4.1.10 San Bernardino Valley Municipal Water District Regional Water Facilities Master Plan (Master Plan)

The proposed Project is one element within Muni's Regional Water Facilities Master Plan. Proposed improvements contained in the Master Plan would be constructed over an indefinite period of time and include approximately 139,000 feet of pipelines ranging in size from 16 to 96 inches in diameter, nine pump stations with capacities of 10 to 100 cfs, three reservoirs ranging in size from 5 million to 100 million gallons, and implementation of a groundwater management program. The overall purpose of the Muni Master Plan is to:

- Respond to anticipated changes in demands for surface water, groundwater, and groundwater pumping;
- Move groundwater from the SBBA to Muni's western service area;
- Move groundwater from the SBBA south to the areas of Colton and Reche Canyon;
- Move groundwater and SWP supplies to the eastern extent of Muni's service area; and
- Pump SBBA groundwater into the SWP California Aqueduct.

The anticipated environmental impacts of the Master Plan are summarized in Table 2.5-8j.

2.5.4.1.11 Riverside-Corona Feeder

The Riverside-Corona Feeder, proposed by Western, would recharge and extract up to 40,000 af of groundwater per year from the SBBA and convey the water through a new pipeline to purveyors in Western's northern service area. The project could involve approximately 20 wells in the SBBA pressure zone, a new pump station, and about 30 miles of pipeline generally paralleling Interstate 91 from just north of Interstate 10 in San Bernardino to just south of Interstate 15 in Corona (Western 2003a). The anticipated environmental impacts of the Riverside-Corona Feeder are summarized in Table 2.5-8k.

Table 2.5-8i. Impacts of the Proposed Land Management and Habitat Conservation Plan for the Upper Santa Ana River Wash

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	Increased intensity of water development projects and related views such as development of spreading basins near the Seven Oaks Dam Borrow Pit and expansion of sand and gravel mining activities north of the main channel of the Santa Ana River.	No impact.	Not applicable.	Not applicable.
Agricultural Resources	No impact.	No impact.	Not applicable.	Not applicable.
Air Quality	Localized increase in particulate matter associated with ground disturbance, short- (construction) and long-term (due to change in land uses).	No impact.	Not applicable.	Not applicable.
Biology	Ground disturbance could adversely affect RAFSS species including special status species.	No impact.	Not applicable.	Not applicable.
Cultural and Paleontological Resources	Construction and operations activities would create ground disturbance that could affect resources.	No impact.	Not applicable.	Not applicable.
Geology, Soils and Minerals	Excavation activities could result in on-site landslides or slope collapse. Development of new spreading basins could result in loss of availability of mineral resources.	No impact.	Not applicable.	Not applicable.

Table 2.5-8i. Impacts of the Proposed Land Management and Habitat Conservation Plan for the Upper Santa Ana River Wash (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Groundwater Hydrology and Water Quality (including groundwater contamination)	The use of new spreading basins in the vicinity of the Borrow Pit would affect groundwater levels in the SBBA. Increase in liquefaction potential in the Pressure Zone. Changes to groundwater conditions in the SBBA could affect the extent and movement of existing groundwater contaminant plumes.	No impact.	Not applicable.	Not applicable.
Hazardous Materials	No impact.	No impact.	Not applicable.	Not applicable.
Land Use and Planning	The Plan involves changes in land use designations and transfers of land ownership.	No impact.	Not applicable.	Not applicable.
Noise	Elevated noise levels could be associated with aggregate extraction activities. Sensitive receptors could experience adverse impacts.	No impact.	Not applicable.	Not applicable.
Public Services and Utilities	No impact.	No impact.	Not applicable.	Not applicable.
Recreation	Recreational amenities would be improved under the Plan through improvements to the Santa Ana River Trail.	Localized improvements to the Santa Ana River Trail would enhance the regional trail system.	Not applicable.	Not applicable.
Surface Water Hydrology and Water Quality	No impact.	No impact.	Not applicable.	Not applicable.
Transportation	Not applicable.	Not applicable.	Not applicable.	Not applicable.

From: San Bernardino Valley Municipal Water District and Western Municipal Water District of Riverside County, *Santa Ana River Water Right Applications For Supplemental Water Supply, Draft EIR*, Section 6.1.2.1. Information in the Draft EIR based on Santa Ana River Wash Coordinated Planning Activities Committee, *Draft Proposed Land Management and Habitat Conservation Plan for the Upper Santa Ana River Wash* (May 2000) and San Bernardino Valley Water Conservation District, *Proposal for Land Transfer or Exchange in the Santa Ana River Wash* (May 1999).

Table 2.5-8j. Impacts of the San Bernardino Valley Municipal Water District Regional Water Facilities Master Plan

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	All proposed pipelines within the Master Plan would be underground and pre-existing surface conditions would be restored following construction. Pump stations, tanks, and reservoirs would be screened and landscaped to avoid aesthetic impacts. No impacts to visual resources anticipated.	All proposed pipelines within the Master Plan would be underground and pre-existing surface conditions would be restored following construction. Pump stations, tanks, and reservoirs would be screened and landscaped to avoid aesthetic impacts. No impacts to visual resources anticipated.	Not Applicable.	Not Applicable.
Agricultural Resources	Construction of Master Plan facilities could result in conversion of agricultural land along the Santa Ana River to non-agricultural uses.	No impact.	Not Applicable.	Not Applicable.
Air Quality	Emissions during construction would exceed short-term South Coast Air Quality Management District thresholds for NOx, but would not exceed state or federal standards.	Emissions during construction would exceed short-term South Coast Air Quality Management District thresholds for NOx, but would not exceed state or federal standards.	Not Applicable.	Not Applicable.
Biology	Disturbance and loss of habitat, destruction and injury of individuals, reduced fertility, introduction of exotic species, and erosion into wetlands during construction.	No Impact.	Not Applicable.	Not Applicable.
Cultural and Paleontological Resources	A cultural resources report prepared for the Master Plan concluded that no identified cultural resources would be impacted by construction of Master Plan facilities. The report did provide mitigation for unanticipated discoveries during construction.	A cultural resources report prepared for the Master Plan concluded that no identified cultural resources would be impacted by construction of Master Plan facilities. The report did provide mitigation for unanticipated discoveries during construction.	Not Applicable.	Not Applicable.
Geology, Soils and Minerals	Master Plan facilities would be built in an area subject to seismic activity, lateral spreading, subsidence, and liquefaction.	No impact.	Not Applicable.	Not Applicable.

Table 2.5-8j. Impacts of the San Bernardino Valley Municipal Water District Regional Water Facilities Master Plan (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Groundwater Hydrology and Water Quality (including groundwater contamination)	The groundwater management plan proposed by the Master Plan could affect TCE, PCE, nitrate and DBCP contaminate plumes and groundwater levels, though without specific spreading locations or volumes anticipated impacts were deemed "speculative". Increased use of SWP water by San Bernardino Valley Municipal Water District could affect groundwater quality.	The groundwater management plan proposed by the Master Plan could affect TCE, PCE, nitrate and DBCP contaminate plumes and groundwater levels, though without specific spreading locations or volumes anticipated impacts were deemed "speculative". Increased use of SWP water by San Bernardino Valley Municipal Water District could affect groundwater quality.	Not Applicable.	Not Applicable.
Hazardous Materials	Potentially unanticipated discovery and upset of hazardous materials during construction.	No impact.	Not Applicable.	Not Applicable.
Land Use and Planning	All of the proposed Master Plan facilities are allowable given the designated land uses of their respective jurisdictions.	All of the proposed Master Plan facilities are allowable given the designated land uses of their respective jurisdictions.	Not Applicable.	Not Applicable.
Noise	No Impact.	No Impact.	Not Applicable.	Not Applicable.
Public Services and Utilities	No Impact.	No Impact.	Not Applicable.	Not Applicable.
Recreation	No Impact.	No Impact.	Not Applicable.	Not Applicable.
Surface Water Hydrology and Water Quality	No Impact.	No Impact.	Not Applicable.	Not Applicable.
Transportation	Not Applicable.	Not Applicable.	Not Applicable.	Not Applicable.

From: San Bernardino Valley Municipal Water District. *Regional Water Facilities Master Plan Draft EIR* (October 2000) and San Bernardino Valley Municipal Water District, *Final Program EIR for the Regional Facilities Master Plan* (January 2001).

Table 2.5-8k. Impacts of the Riverside-Corona Feeder Project

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	Crossing of the Santa Ana River by the Riverside-Corona Feeder near "E" Street in San Bernardino could cause temporary loss of mature riparian vegetation, an aesthetic resource. Other aesthetic impacts could occur but these would be outside the SAR channel.	Aesthetic impacts related to construction and loss of landscaping, but these impacts are outside of the SAR corridor.	Not applicable.	Not applicable.
Agricultural Resources	No impact.	No impact.	Not applicable.	Not applicable.
Air Quality	Emissions associated with construction would exceed SCAQMD recommended daily and quarterly thresholds for ROC and NOx. Minor emissions during project operations from worker trips, increased electrical consumption by pump stations, and period emissions from back-up generator testing and use.	Emissions associated with construction would exceed SCAQMD recommended daily and quarterly thresholds for ROC and NOx. Minor emissions during project operations from worker trips, increased electrical consumption by pump stations, and period emissions from back-up generator testing and use.	Not applicable.	Not applicable.

Table 2.5-8k. Impacts of the Riverside-Corona Feeder Project (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	**RIX-Rialto Outfalls to Prado Flood Control Basin**	**Prado Flood Control Basin to Pacific Ocean**	**Chino Basin to Prado Flood Control Basin**
Biology	Potential disturbance and loss of Santa Ana River woolly-star, slender-horned spine-flower, San Bernardino Kangaroo Rat, Stephen's Kangaroo Rat, Southwestern willow flycatcher, Arroyo southwestern toad near proposed Riverside-Corona Feeder crossing of SAR near "E" Street in San Bernardino. Potential loss of habitat for least Bell's vireo, and White-tailed kite, due to construction. Temporary disruption of natural transport gravel and cobble during construction in SAR channel. Disturbance and temporary removal of riparian, wetland, and stream habitat and mortality of common riparian wildlife species due to construction in SAR channel. Temporary dewatering of wetland areas during construction.	Potential impacts to coastal California gnatcatcher related to construction outside of river channel.	Not applicable.	Not applicable.
Cultural and Paleontological Resources	The Riverside-Corona Feeder would not impact any known archaeological resources but could affect unidentified archeological resources.	The Riverside-Corona feeder would not impact any known archaeological resources but could affect unidentified archeological resources.	Not applicable.	Not applicable.
Geology, Soils and Minerals	No impacts identified.	No impacts identified.	Not applicable.	Not applicable.

Table 2.5-8k. Impacts of the Riverside-Corona Feeder Project (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Groundwater Hydrology and Water Quality (including groundwater contamination)	The Riverside-Corona Feeder project would have the beneficial effect of stabilizing water levels in the upper part of the SBBA. Water added and extracted from the SBBA as part of the Riverside-Corona Feeder Project has the potential to move groundwater plumes and cause contamination in wells that otherwise would not have been contaminated or cause a well to become contaminated sooner than would have occurred without the project.	No impacts identified.	Not applicable.	Not applicable.
Hazardous Materials	The Riverside-Corona Feeder Project will be constructed within the vicinity of four hazardous materials sites near the SAR in the City of San Bernardino and hazardous materials could be encountered during construction.	The Riverside-Corona Feeder Project will be constructed within the vicinity of hazardous materials sites but these are outside the SAR corridor.	Not applicable.	Not applicable.
Land Use and Planning	No impact.	No impact.	Not applicable.	Not applicable.
Noise	No impacts identified.	No impacts identified.	Not applicable.	Not applicable.
Public Services and Utilities	No impact.	No impact.	Not applicable.	Not applicable.
Recreation	No impact.	No impact.	Not applicable.	Not applicable.
Surface Water Hydrology and Water Quality	No impacts identified.	No impacts identified.	Not applicable.	Not applicable.
Transportation	Not applicable.	Not applicable.	Not applicable.	Not applicable.

From: Western Municipal Water District, *Draft Program Environmental Impact Report for the Western Municipal Water District Riverside-Corona Feeder Project* (July 2004).

2.5.4.2 Middle Santa Ana River Area

Within the Middle Santa Ana River area several projects were identified that could have impacts similar in nature and location to that of the proposed project. Table 2.5-8a summarizes the potential environmental effects associated with implementation of the Project while Tables 2.5-8c, and 2.5-8j through 5-8m provide a summary of the environmental effects for the following projects considered to have potentially cumulative impacts in the Middle SAR:

- Pilot Dewatering Project (Table 2.5-8c, provided above)
- San Bernardino Valley Municipal Water District Regional Water Facilities Master Plan (Table 2.5-8j, provided above)
- Riverside-Corona Feeder Project (Table 2.5-8k, provided above)
- City of Riverside Water Rights Application (Table 2.5-8l)
- RIX Facility Recycled Water Sales Program (Table 2.5-8m)

As can be seen from these tables, most of the cumulative impacts relate to temporary, construction actions. However, a few projects would result in consistent changes in flow in the SAR. In addition to the proposed project, the City of Riverside Water Rights Application and the RIX Facility Recycled Water Sales Program would result in long-term, consistent changes in flow; each of these projects is briefly described below.

2.5.4.2.1 City of Riverside

The City of Riverside filed an application with the SWRCB on November 6, 2002 for the right to appropriate treated effluent from the City of Riverside regional water quality control plant, effluent which currently flows into the SAR just below Riverside Narrows (RM 45.7). The City of Riverside seeks to divert up to 75 cfs year round, up to 41,400 afy. Once diverted, the water would be used for municipal irrigation of parks, schools, golf courses, and greenbelt areas. Effluent would also be used for agricultural irrigation. The City of Riverside proposes to phase the project, with the first phase involving near-term improvements to the existing system, and later phases involving the development of a core distribution system and agricultural use system.

2.5.4.2.2 RIX Water Recycling

The City of San Bernardino, in cooperation with Western Water Company, has undertaken a project to sell excess tertiary effluent from the Rapid Infiltration and Extraction (RIX) wastewater treatment facility. It is estimated that approximately 18,000 afy of tertiary effluent (relative to the approximately 44,895 afy discharge) could be sold to water users in the Southern California region (City of San Bernardino Municipal Water Department 2003). This sale would decrease discharge from the RIX facility to the SAR. The City of San Bernardino has concluded that a discharge of up to 16 million gallons a day is needed to fulfill downstream obligations created by SAR adjudication, but that the remaining portion of RIX discharge is not currently obligated to downstream uses or users and is "excess," available for sale (City of San Bernardino Municipal Water Department 2003).

Table 2.5-8l. Impacts of the City of Riverside Water Rights Application

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	Not applicable.	No direct significant impact identified	Not applicable.	Not applicable.
Agricultural Resources	Not applicable.	No direct significant impact identified	Not applicable.	Not applicable.
Air Quality	Not applicable.	Potential air quality impacts during ground disturbance activities.	Not applicable.	Not applicable.
Biology	Not applicable.	Potential impacts to fish species of concern through: the construction and operation of the core distribution system, increased salinity and contaminants in surface runoff, and decreased wastewater discharges. Potential harm to sensitive habitats from construction and operation of core distribution system and wastewater treatment plant expansion.	Not applicable.	Not applicable.
Cultural and Paleontological Resources	Not applicable.	Potential demolition, removal, or alteration of structures and landscapes affecting historic resources. Potential for damage to unknown archeological resources or human remains during ground disturbance activities.	Not applicable.	Not applicable.
Geology, Soils and Minerals	Not applicable.	No direct significant impact identified	Not applicable.	Not applicable.
Groundwater Hydrology and Water Quality (including groundwater contamination)	Not applicable.	Decreased groundwater quality due to construction below water table. Decreased water quality from wastewater collection pipeline rupture. Degradation of groundwater quality due to construction equipment and from use of recycled water.	Not applicable.	Not applicable.

Table 2.5-8l. Impacts of the City of Riverside Water Rights Application (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfall	RIX-Rialto Outfall to Prado Flood Control Reservoir	Prado Flood Control Reservoir to Pacific Ocean	Chino Basin to Prado Flood Control Reservoir
Hazardous Materials	Not applicable.	No direct significant impact identified	Not applicable.	Not applicable.
Land Use and Planning	Not applicable.	No direct significant impact identified	Not applicable.	Not applicable.
Noise	Not applicable.	Temporary construction noise and potential long-term noise related to operation of pump-stations.	Not applicable.	Not applicable.
Public Services and Utilities	Not applicable.	No direct significant impact identified	Not applicable.	Not applicable.
Recreation	Not applicable.	No direct significant impact identified	Not applicable.	Not applicable.
Surface Water Hydrology and Water Quality	Not applicable.	Sedimentation and erosion due to construction. Decreased water quality from waste water collection pipeline rupture or discharge of recycled water to surface water bodies. Degradation of surface water quality due to construction equipment and from use of recycled water.	Not applicable.	Not applicable.
Transportation	Not applicable.	Not applicable.	Not applicable.	Not applicable.

Note: City of Riverside Public Utilities Department Recycled Water Program Draft Program EIR. October 2006.

Table 2.5-8m. Impacts of the RIX Facility Recycled Water Sales Program

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	Not applicable.	Temporary change in aesthetics during construction of associated pipelines.	Temporary change in aesthetics during construction of associated pipelines.	Temporary change in aesthetics during construction of associated pipelines.
Agricultural Resources	Not applicable.	No impacts anticipated.	No impacts anticipated.	No impacts anticipated.
Air Quality	Not applicable.	Fugitive dust and construction equipment exhaust is anticipated during construction. Potential for long-term emissions from operation of pump stations and back-up generators.	Fugitive dust and construction equipment exhaust is anticipated during construction. Potential for long-term emissions from operation of pump stations and back-up generators.	Fugitive dust and construction equipment exhaust is anticipated during construction. Potential for long-term emissions from operation of pump stations and back-up generators.
Biology	Not applicable.	Reduced flow could result in less available Santa Ana Sucker habitat and less Arroyo Chub habitat.	No Impact.	No Impact.
Cultural and Paleontological Resources	Not applicable.	Potential exists for damage and destruction of unanticipated cultural resource discoveries during construction.	Potential exists for damage and destruction of unanticipated cultural resource discoveries during construction.	Potential exists for damage and destruction of unanticipated cultural resource discoveries during construction.
Geology, Soils and Minerals	Not applicable.	Erosion during construction activities. Multiple faults in the project construction area could produce strong seismic ground shaking that would expose structures to substantial adverse effects such as lateral spreading, subsidence, liquefaction, and collapse.	Erosion during construction activities. Multiple faults in the project construction area could produce strong seismic ground shaking that would expose structures to substantial adverse effects such as lateral spreading, subsidence, liquefaction, and collapse.	Erosion during construction activities. Multiple faults in the project construction area could produce strong seismic ground shaking that would expose structures to substantial adverse effects such as lateral spreading, subsidence, liquefaction, and collapse.
Groundwater Hydrology and Water Quality (including groundwater contamination)	Not applicable.	RIX operations may have difficulty meeting TDS and TIN limits of its wastewater discharge permit and this in turn could be harmful to receiving groundwater basins. Potential decrease in groundwater recharge due to reduced flows in Santa Ana River.	RIX operations may have difficulty meeting TDS and TIN limits of its wastewater discharge permit and this in turn could be harmful to receiving groundwater basins. Potential decrease in groundwater recharge due to reduced flows in Santa Ana River.	RIX operations may have difficulty meeting TDS and TIN limits of its wastewater discharge permit and this in turn could be harmful to receiving groundwater basins.

Table 2.5-8m. Impacts of the RIX Facility Recycled Water Sales Program (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Hazardous Materials	Not applicable.	Potential for accidental release of fuels, oils, solvents, or other petroleum materials during construction and operations.	Potential for accidental release of fuels, oils, solvents, or other petroleum materials during construction and operations.	Potential for accidental release of fuels, oils, solvents, or other petroleum materials during construction and operations.
Land Use and Planning	Not applicable.	Potential conflict between infrastructure to be constructed as part of the water sales program and adjacent land uses.	Potential conflict between infrastructure to be constructed as part of the water sales program and adjacent land uses.	Potential conflict between infrastructure to be constructed as part of the water sales program and adjacent land uses.
Noise	Not applicable.	Temporary construction related noise.	Temporary construction related noise.	Temporary construction related noise.
Public Services and Utilities	Not applicable.	The project would not create direct demand for public services and utilities but may affect these services by facilitating indirect land use changes by contributing to an adequate water supply.	The project would not create direct demand for public services and utilities but may affect these services by facilitating indirect land use changes by contributing to an adequate water supply.	The project would not create direct demand for public services and utilities but may affect these services by facilitating indirect land use changes by contributing to an adequate water supply.
Recreation	Not applicable.	Potential for future project facilities to be installed within recreational areas, causing temporary impacts.	Potential for future project facilities to be installed within recreational areas, causing temporary impacts.	Potential for future project facilities to be installed within recreational areas, causing temporary impacts.
Surface Water Hydrology and Water Quality	Not applicable.	RIX operations may have difficulty meeting TDS and TIN limits of its wastewater discharge permit. Surface flows below the RIX facility will be reduced.	RIX operations may have difficulty meeting TDS and TIN limits of its wastewater discharge permit. Surface flows below the RIX facility will be reduced.	RIX operations may have difficulty meeting TDS and TIN limits of its wastewater discharge permit.
Transportation	Not applicable.	Not applicable.	Not applicable.	Not applicable.

From: City of San Bernardino Municipal Water Department, *RIX Facility Recycled Water Sales Program, Program Environmental Impact Report* (March 2003).

2.5.4.3 Lower Santa Ana River Area

The Proposed Project is not anticipated to have impacts in the Lower SAR. However, to provide an understanding of how all the pending water right applications on the Santa Ana River might interact, a description of the Orange County Water District Water Rights Application is provided in this discussion (see also Table 2.5-8n and section 2.5.6). The Muni/Western application and OCWD application are non-competing applications. In 1969 Muni/Western, OCWD and other parties entered into a stipulated judgment in *Orange County Water District v. City of Chino* (*Orange County* Judgment). Under that judgment parties upstream of Prado Reservoir have a right to:

> divert, pump, extract, conserve, store and use all surface and groundwater supplies originating within Upper Area without interference or restraint by Lower Area claimants, so long as Lower Area receives the water to which it is entitled under this Judgment and there is compliance with all of its provisions.

The *Orange County* Judgment further provides that Muni/Western and other entities upstream of Prado Dam shall have full freedom to engage in any activities for conservation or storage above Prado Reservoir provided that Base Flow obligations of the Judgment are fulfilled.

Orange County Water District Water Rights Application

OCWD submitted an application to the SWRCB in November, 1992 for the purpose of confirming existing rights to SAR water (42,000 afy baseflow plus any additional storm flows reaching Prado Dam) and establishing rights to the increased volumes of water reaching Prado Dam subject to the terms of the 1969 Stipulated Judgment (*Orange County* Judgment).

OCWD has constructed, over a number of years, facilities designed to capture SAR water to recharge the Orange County groundwater basin. These facilities capture virtually all river flows released from Prado Dam, except during occasional peak storm flows. OCWD has facilities to recharge 250,000 afy and this capacity has been almost fully used in many of the last several years. OCWD has identified several projects to increase recharge and storage capacity to accommodate projected increased river flows. It is anticipated that these new facilities will provide an additional 255,000 afy of diversion capacity.

Near-term projects that OCWD plans to implement include percolation basin cleaning devices enhancing existing facilities and adding new facilities to create 99,000 afy of additional recharge capacity, and raising the Prado Dam conservation pool. Long-term projects under consideration by OCWD include raising Prado Dam conservation storage, constructing more recharge facilities, and providing for off-river storage reservoirs.

2.5.4.4 Chino Basin Area

The proposed project is not anticipated to have impacts in the Chino Basin Area. However, to provide an understanding of how all the pending water right applications on the Santa Ana River might interact, a description of the Chino Basin Watermaster Water Rights Application is provided in this discussion (see also Table 2.5-8o and section 2.5.6).

2.5.4.4.1 Chino Basin Watermaster Water Rights Application

The Chino Basin Watermaster filed an application with the SWRCB on November 4, 2002 for the right to appropriate water from Deer, Day, Etiwanda, San Sevaine, Chino, San Antonio, and Cucamonga creeks. These creeks are tributaries that empty directly into the Prado Flood Control

Basin. The Chino Basin Watermaster seeks to divert up to 97,000 afy using existing channels, diversion structures, and percolation basins. The Chino Basin Watermaster also proposes to construct new recharge facilities in the upper half of the Chino Basin. The Chino Basin Watermaster already holds rights to 27 thousand acre-feet (taf) from the Santa Ana River (OCWD 2006); and of the pending water right application 15 taf is already accounted for by diversions to existing detention basins (OCWD 2006). Therefore the "net" amount of additional water anticipated to be taken by Chino Basin Watermaster in any year is 109 taf (27 taf plus 97 taf, less 15 taf). For the purposes of estimating cumulative impacts it has been assumed that water applied for in the Chino Basin Watermaster Application will be used in the manner described by Chino Optimum Basin Management Program, as described in the Final Program Environmental Impact Report for the Optimum Basin Management Plan (Inland Empire Utilities Agency, July 2000). However, it is also assumed that additional environmental documentation may be performed related to the Chino Basin Watermaster Application and/or the Optimum Basin Management Plan because: (a) the original documentation was a programmatic document; (b) the Program Environmental Impact Report discloses the need to evaluate site specific impacts from recharging recycled water in the future when specific recharge proposals are available; and (c) the volume of stormwater and recycled water recharged differs from that evaluated in the Programmatic Environmental Impact Report.

Table 2.5-8n. Impacts of the Orange County Water District Water Rights Application

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	Not Applicable.	Not Applicable.	Temporary construction impacts. Potential long-term aesthetic impacts from development of future recharge basins and reservoir in undeveloped areas.	Not Applicable.
Agricultural Resources	Not Applicable.	Not Applicable.	No Impact.	Not Applicable.
Air Quality	Not Applicable.	Not Applicable.	Construction activities associated with new recharge basins and reservoirs could result in emissions of criteria pollutants.	Not Applicable.
Biology	Not Applicable.	Not Applicable.	Impacts to nesting cormorants, herons, egrets, raptors, and other birds from expansion of recharge basins. Increased flows through potential wetland areas in Santiago Creek, encouraging development of riparian habitat. Potential loss and removal of vegetation and wildlife resources from expansion of recharge areas and increasing Prado Dam conservation pool.	Not Applicable.
Cultural and Paleontological Resources	Not Applicable.	Not Applicable.	Potential impacts to unknown cultural resources during construction. Potential impacts to unknown cultural resources from inundation resulting from expanding the conservation pool at Prado Dam and operation of new recharge basins.	Not Applicable.

Table 2.5-8n. Impacts of the Orange County Water District Water Rights Application (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Geology, Soils and Minerals	Not Applicable.	Not Applicable.	The Orange County Water District Application would involve building and placing facilities in an area subject to geologic hazards including unstable soils, seismic hazards, ground shaking, landslides, and liquefaction. Some facilities would be located in areas identified as mineral resources zones.	Not Applicable.
Groundwater Hydrology and Water Quality (including groundwater contamination)	Not Applicable.	Not Applicable.	Increased recharge could transport contamination from surface soils into the Orange County groundwater basin. Increased recharge could create groundwater mounding, slow recharge rates, and reduce recharge capacity. Recharge of water may influence soil contamination plumes on adjacent properties.	Not Applicable.
Hazardous Materials	Not Applicable.	Not Applicable.	Potential to encounter hazardous materials during expansion of existing recharge basins and construction of new recharge basins. Construction could result in accidental spill of hazardous materials to the Santa Ana River and its tributaries.	Not Applicable.

Table 2.5-8n. Impacts of the Orange County Water District Water Rights Application (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basinto Pacific Ocean	Chino Basin to Prado Flood Control Basin
Land Use and Planning	Not Applicable.	Not Applicable.	Raising the conservation pool of Prado Dam would flood areas used as open space and wildlife habitat. Future recharge and reservoir areas may conflict with surrounding land uses and goals of the Coastal/Central Orange County Natural Community Conservation Plan and the Western Riverside Multi-Species Habitat Conservation Plan.	Not Applicable.
Noise	Not Applicable.	Not Applicable.	Temporary construction noise could affect local residences and other sensitive receptors.	Not Applicable.
Public Services and Utilities	Not Applicable.	Not Applicable.	No Impact.	Not Applicable.
Recreation	Not Applicable.	Not Applicable.	Construction could temporarily reduce the availability of recreation resources at Anaheim Lake and Hart Park.	Not Applicable.
Surface Water Hydrology and Water Quality	Not Applicable.	Not Applicable.	OCWD's increase in diversions of SAR water would reduce the amount of future storm flow that would otherwise reach the ocean. Construction of new, and rehabilitation of other recharge basins, could temporarily add sediment and pollutants to urban stormwater runoff.	Not Applicable.
Transportation	Not Applicable.	Not Applicable.	Not Applicable.	Not Applicable.

Note: Impacts of the Orange County Water District Application to Appropriate Santa Ana River Water have been developed based on the Recirculated Draft Program Environmental Impact Report (Orange County Water District, March 2006). This is a Programmatic Environmental Impact Report and some elements related to the implementing aspects of the water rights application will require project-specific future environmental documentation (e.g., future groundwater recharge basins and reservoirs). In addition, specific environmental impacts from expanding the water conservation pool within Prado Dam and operating the dam for increased water conservation are being evaluated by the US Army Corps of Engineers.

Table 2.5-8o. Impacts of the Chino Basin Watermaster Water Rights Application

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	Not Applicable.	Not Applicable.	Not Applicable.	Future facilities of the Chino Optimum Basin Management Program could conflict with surrounding landscapes but likelihood is minimal as most facilities would be located underground or be too small to affect a scenic vista.
Agricultural Resources	Not Applicable.	Not Applicable.	Not Applicable.	Potential for future Chino Optimum Basin Management Program facilities to take some existing agricultural lands out of production.
Air Quality	Not Applicable.	Not Applicable.	Not Applicable.	Operation of Chino Optimum Basin Management Program facilities (desalters, pumps, recycled water distribution system) could result in air emissions that exceed South Coast Air Quality Management District thresholds for criteria pollutants.

Table 2.5-8o. Impacts of the Chino Basin Watermaster Water Rights Application (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Biology	Not Applicable.	Not Applicable.	No impacts identified.	Decrease in water tributary to Prado Dam will benefit riparian resources since riparian resources would otherwise be flooded and destroyed due to increases in wastewater flows. Construction associated with Chino Optimum Basin Management Program facilities could affected endangered species such as the Arroyo Toad, Least Bell's Vireo, Southwestern Willow Flycatcher, Quino Checkerspot Butterfly, San Bernardino Kangaroo Rat, and Coastal California Gnatcatcher and cause potential degradation and loss of plant communities such as Chaparral, Coastal sage scrub, deciduous woodlands, grasslands, wetlands, California Sycamore series, Arroyo Willow series, and Coastal Sage scrub. Potential for new construction of Chino Optimum Basin Management Program facilities to introduce non-native plant material that could hinder re-establishment of native plants.
Cultural and Paleontological Resources	Not Applicable.	Not Applicable.	Not Applicable.	Potential for encountering archeological and paleontological sites during construction of future Chino Optimum Basin Management Program facilities.

Table 2.5-8o. Impacts of the Chino Basin Watermaster Water Rights Application (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Geology, Soils and Minerals	Not Applicable.	Not Applicable.	Not Applicable.	The Chino Optimum Basin Management Program will require future facilities which would be placed in areas subject to significant ground shaking. Water applied per the Chino Optimum Basin Management Program could decrease liquefaction potential or increase liquefaction potential (if used as part of a conjunctive use program). Pumping per the Chino Optimum Basin Management Program has the potential to exacerbate subsidence. Construction and operation of recharge basins will expose slopes to potential soil erosion.
Groundwater Hydrology and Water Quality (including groundwater contamination)	Not Applicable.	Not Applicable.	No impacts identified.	Increase water available for recharge and production in the Chino Basin. Water applied per the Chino Optimum Basin Management Program (spread in upper basin and pumped by desalter in lower basin) will increase gradient in the basin. Beneficial effect of recharging groundwater with low TDS stormwater. Potential for recharge via recycled water to add TDS and nitrate to the Chino Basin. Potential decrease in number of wells available for potable water production due to minimum dilution and retention times required for potable water if recycled water used for recharge.

Table 2.5-8o. Impacts of the Chino Basin Watermaster Water Rights Application (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Hazardous Materials	Not Applicable.	Not Applicable.	Potential for accidental release of hazardous materials during construction and maintenance of Chino Optimum Basin Management Program facilities.	Potential for accidental release of hazardous materials during construction and maintenance of Chino Optimum Basin Management Program facilities.
Land Use and Planning	Not Applicable.	Not Applicable.	Not Applicable.	The Chino Optimum Basin Management Program will require construction of future facilities, the construction and operation of which could conflict with existing land uses as well as general plan goals, objectives, and policies for: controlling the height of the groundwater table; limiting use of flood control basins; limiting ground disturbance in areas subject to high wind conditions; short-term construction noise; maintaining access to mineral deposits; degradation of aesthetic resources and values; protection of cultural resources; and maintenance and protection of recreational and open space resources.
Noise	Not Applicable.	Not Applicable.	Not Applicable.	Temporary construction noise during construction of Chino Optimum Basin Management Program facilities. Operations noise from pumps, production wells, and a desalting facility proposed by the Chino Optimum Basin Management Program.
Public Services and Utilities	Not Applicable.	Not Applicable.	Not Applicable.	Increased use of electrical pumps with implementation of the Chino Optimum Basin Management Program.

Table 2.5-8o. Impacts of the Chino Basin Watermaster Water Rights Application (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Recreation	Not Applicable.	Not Applicable.	Not Applicable.	The Chino Optimum Basin Management Program will require construction of future facilities, the construction and operation of which could conflict with existing land uses as well as general plan goals, objectives, and policies for maintenance and protection of recreational and open space resources.
Surface Water Hydrology and Water Quality	Not Applicable.	Not Applicable.	Potential for release of petroleum pollutants and sediment during modification and construction of recharge basins. Decrease in TDS load to Santa Ana River from decrease in groundwater discharge from Chino Basin to Santa Ana River (per Chino Optimum Basin Management Program).	Utilizing flood control basins for recharge increases potential flood hazard. Potential for release of petroleum pollutants and sediment during modification and construction of recharge basins. Decrease in TDS load to Santa Ana River from decrease in groundwater discharge from Chino Basin to Santa Ana River (per Chino Optimum Basin Management Program). Increased recharge of recycled water results in less recycled water discharge (e.g., less flow) to the Santa Ana River.
Transportation	Not Applicable.	Not Applicable.	Not Applicable.	Not Applicable.

Note: For the purposes of creating this table, it has been assumed that water applied for in the Chino Basin Watermaster Application will be used in the manner described by Chino Optimum Basin Management Program, as described in the *Final Program Environmental Impact Report for the Optimum Basin Management Program* (Inland Empire Utilities Agency, July 2000). However, it is also assumed that additional environmental documentation may be performed related to the Chino Basin Water Master Application and/or the Optimum Basin Management Plan because: (a) the original documentation was a programmatic document; the Program Environmental Impact Report discloses the need to evaluate site specific impacts from recharging recycled water in the future when specific recharge proposal an available; and (c) the volume of water contemplated in the Application (recharge of 68,500 afy stormwater; recharge of 28,500 afy recycled water) differs from that evaluated in the Programmatic Environmental Impact Report (recharge of stormwater up to 40,000 afy under Alternative A2 and recharge of 40,000 afy recycled water).

2.5.5 Cumulative Impact Analysis

CEQA impact analyses are completed with an understanding of the existing conditions, project characteristics and, in the case of cumulative impact analyses, the impacts of other projects that may affect the same environmental resources either in time or in space. Table 2.5-9 provides a summary of cumulative impacts presented by resource area for the four regions of the SAR.

This section expands upon the Draft EIR's discussion of cumulative impacts. The Draft EIR discussed cumulative impacts of the Project and past, present, and reasonably foreseeable future projects along the SAR and other appropriate resource management areas. In particular, the Draft EIR discussed the cumulative impact of construction activity associated with the Project and other construction activities in the region including the additional information regarding the potential cumulative effects of water development/management projects along the SAR. A number of comments on the Draft EIR requested additional information regarding the potential cumulative effects of water development/management projects along the SAR. In responding to these requests for information, Muni/Western have also considered the potential for additional cumulative effects from a number of other projects that have been recently proposed by water districts through Muni's Integrated Regional Groundwater Management Plan and Western's Integrated Regional Water Management Plan processes. All of those projects were included in one of the projects previously analyzed in the Draft EIR; will take place at such locations and/or at such times that they, in combination with the Project, will not create cumulative impacts on the environment; or are so early in the development process that any analysis of potential impacts would be speculative. Consequently, no changes in the cumulative impacts analysis of the Draft EIR were necessary. Table 2.5-9 and the accompanying text provide the information requested.

As can be seen in Table 2.5-9 significant impacts to aesthetics are anticipated in the portion of the river from RIX-Rialto Effluent Outfalls to the Prado Flood Control Basin as well as downstream of Prado Basin. The Project and related projects could reduce baseflow in the river segment from the RIX and Rialto WWTP Outfall to Riverside Narrows. This section of river has many pleasing aesthetic qualities, such as an extensive area of riparian vegetation. This river segment is also very visible by the general population because it runs through a highly urbanized section of Riverside County. No feasible mitigation measures were identified that would avoid a significant change in river flow and, in turn, aesthetics on non-storm days, while still allowing for the RIX Recycled Water Sale and a consistent and reliable diversion by either the Project or per the Conservation District Application.

Though the Proposed Project would not affect the SAR downstream of Prado Basin, the Draft EIR for the OCWD water rights application found that off-river storage reservoirs proposed as part of that project would add to the cumulative degradation of aesthetics in open space areas.

Emissions from construction activities related to the Project and related projects could cause air quality standards in the South Coast Air Basin to be exceeded, a significant cumulative impact.

The Project and related projects would affect several sensitive species during construction near and adjacent to the SAR, upstream of the RIX-Rialto Effluent Outfalls. Due to the highly sensitive nature of the dominant plant community of the area (Riverside Alluvial Fan Sage Scrub), the consequent sensitivity of the habitat of several state- and or federally- listed species, and the level of uncertainty in restoration methods, the cumulative impact on these species is considered significant.

Table 2.5-9. Cumulative Effects of All Projects

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Aesthetics	Cumulative impacts within and adjacent to the Santa Ana River would be temporary during construction of project facilities and less than significant. (LTS) Infrequent increases in the duration of higher reservoir elevations during the months of March through September would be the same as for the Project and less than significant. (LTS) Increases in the number of dry days in the river from Cuttle Weir to "E" Street and reduced flow from "E" Street to the RIX-Rialto Effluent Outfalls would also be less than significant. (LTS). (Muni/Western DEIR, 6-48 and 6-49)	Reduce baseflow in the river segment from the RIX and Rialto WWTP Outfall to Riverside Narrows would be a significant aesthetic impact. (S) (Muni/Western DEIR, 6-51) Cumulative impacts associated with growth include conversion of open space to urbanized development. Significant unavoidable cumulative impact. (S) (Muni/Western DEIR, 6-50)	Flood control improvements and urbanization have affected the visual character of the SAR downstream of Prado Dam. The cumulative effect of SAR diversions would not affect the existing visual character of the SAR downstream of Prado Dam. An expanded conservation pool would not significantly alter the existing visual character of Prado Basin or add to a cumulatively significant impact to the basin's character. (LTS) Off-river storage reservoirs could contribute to cumulatively significant impacts to visual resources in the hills west Prado Basin. (S) (OCWD DEIR, 7-13 and 7-15)	Since the OBMP has no potential to adversely impact any existing aesthetic qualities in Chino Basin or significant views to or from the basin after implementing mitigation measures, the proposed project cannot contribute to any cumulative adverse aesthetic or visual resource impacts. (NI) (IEUA PEIR, 4-444)
Agricultural Resources	Cumulative impacts associated with growth include conversion of farmland to some form of urbanized development. Despite general plan policies, significant unavoidable cumulative impacts to agricultural resources would still occur. (S) (Muni/Western DEIR, 6-41)	Cumulative impacts associated with growth include conversion of farmland to some form of urbanized development. Despite general plan policies, significant unavoidable cumulative impacts to agricultural resources would still occur. (S) (Muni/Western DEIR, 6-41)	Cumulative impacts of growth to land conversion would not affect agricultural resources downstream of Prado Basin since the area is highly urbanized already. No cumulative impact would occur downstream of Prado Basin. (NI) (OCWD DEIR7-11, 7-12, 7-14, 7-15, 7-17, and 7-18)	The loss of agricultural land within the southern portion of the Chino Basin has been identified as an unavoidable cumulative impact from transition of the existing agricultural operations to urban uses. The OBMP could contribute to this loss of agricultural activity in a small, but cumulatively significant manner by converting up to 100 acres of agricultural acreage to OBMP program water resource uses. The project's potential contribution to this cumulative impact can be avoided by implementing the proposed mitigation. (LTS) (IEUA PEIR, 4-26)

Table 2.5-9. Cumulative Effects of All Projects (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Air Quality	Emissions from construction activities could exceed the daily and calendar quarter air quality standards for the South Coast Air Basin. Daily thresholds for ROC, CO, NOx could be exceeded; calendar quarter thresholds for ROC, CO, NOx, and PM_{10} could be exceeded. Construction near this portion of the river would expose the public to some concentration of TACs. (S) (Muni/Western DEIR 6-56)	Emissions from construction activities could exceed the daily and calendar quarter air quality standards for the South Coast Air Basin. Daily thresholds for ROC, CO, NOx could be exceeded; calendar quarter thresholds for ROC, CO, NOx, and PM_{10} could be exceeded. (S) (Muni/Western 6-58)	Emissions from construction activities of future recharge and storage projects could exceed the daily and calendar quarter air quality standards for the South Coast Air Basin. This could contribute along with the other identified projects to the cumulative regional impact to air quality. (S) (OCWD DEIR 7-11 and 7-14)	Implementation of the OBMP will contribute pollutants into the SCAB from construction and operation of facilities. These facilities are designed to provide an adequate water supply for the land uses and intensities identified in applicable general plans. The AQMD assumes that if growth occurs that is consistent with applicable general plans, then ambient air quality standards can be met. Because this project does not propose amendments to existing general plan land uses, it is in conformity with the AQMD and will not result in significant adverse cumulative air quality impacts. (LTS) (IEUA PEIR, 4-295)
Biology	Repeated loss of native vegetation and temporary effects on common wildlife species due water storage in Seven Oaks reservoir. The cumulative effect would be less than significant and no mitigation is required. (LTS) (Muni/Western DEIR, 6-32) Direct impacts or habitat modification could affect common species resulting in an adverse but less than significant impact. (LTS) (Muni/Western DEIR, 6-32)	Growth and other development would impact wetlands and may impact riparian habitats and special status species including state and federally listed species. Despite general plan policies, significant unavoidable cumulative biological resources impacts would still occur. (S) (Muni/Western DEIR, 6-36)	Since new recharge basins would likely be occurring in previously developed portions of Orange County, no cumulatively significant impacts to biological resources would occur during construction. Operation recharge facilities would have minimal effects to biological resources. Since the recharge basins would have little effect on biological resources, they would not contribute significantly to cumulative impacts to biological resources in the region. (LTS)	No significant biological resource impacts are forecast to occur due to OBMP implementation. If all potential biological impacts are fully mitigated according to all required mitigation ratios established by jurisdictional agencies, then the net cumulative impacts to these resources will be less than significant, and no unavoidable significant adverse impacts to biological resources are forecast to occur as a result of project implementation. (LTS) (IEUA PEIR, 4-344)

Table 2.5-9. Cumulative Effects of All Projects (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Biology (continued)	Temporary removal of habitat and other construction effects would be a significant cumulative impact on sensitive species, including several state- and or federally listed species. While project-specific mitigations would reduce these impacts the residual impact would be significant. These mitigation measures may not reduce impacts to sensitive species to a level of less than significant. (S) (Muni/Western DEIR, 6-33) Cumulative removal of RAFSS habitat would be significant cumulative impact. While project-specific mitigations would reduce these impacts the residual impact would be significant. Mitigation actions may not fully restore the structure and function of RAFSS in a reasonable timeframe. (S) (Muni/Western DEIR, 6-33) Cumulative changes in flow downstream of Seven Oaks Dam would have less than significant cumulative effects on riparian habitat, aquatic habitat, and aquatic species. The cumulative reduction in flow is not expected to impact riparian habitat or associated species. (LTS) (Muni/Western DEIR, 6-34)		Storage reservoirs constructed in designated conservation lands would add to the cumulative degradation of biological resources in the region as development encroaches upon open space. This would be considered a potential cumulatively significant impact. (S) Increasing the Prado Dam conservation pool could result in inundation of least Bell's vireo and southwestern flycatcher habitat. Compensation lands provided as mitigation for these project level impacts would ensure that the project would not add to the cumulative reduction in habitat for these sensitive species in the watershed. (LTS) (OCWD DEIR, 7-11 through 7-15)	

Table 2.5-9. Cumulative Effects of All Projects (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Biology (continued)	Cumulative reduction in flood flows and a similar reduction in overbank flooding and within-channel upper terrace scour within the upper stretch of the SAR between the Cuttle Weir and areas just downstream of the confluence with Mill Creek would significantly impact the highly sensitive nature of the dominant plant community (RAFSS), and the presence of habitat of several state- and/or federally listed species within the flood reduced area. While project-specific mitigations would reduce these impacts the residual impact would be significant. Mitigation actions may not be fully effective in restoring the structure and function of RAFSS either initially or over long timeframes. (S) (Muni/Western DEIR, 6-35) Growth and other development could impact wetlands and may impact riparian habitats and special status species including state and federally listed species. Despite general plan policies, significant unavoidable cumulative biological resource impacts would still occur. (S) (Muni/Western DEIR, 6-36)			

Table 2.5-9. Cumulative Effects of All Projects (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Cultural and Paleontological Resources	Construction of cumulative projects could cause a significant adverse change in the significance of a historical or archaeological resource, destroy a unique paleonotological resource, or disturb human remains. While project-specific mitigations would reduce these impacts the residual impact may be significant. These mitigation measures may not reduce impacts to a level of less than significant. (S) (Muni/Western DEIR, 6-44) Growth and other development could impact cultural resources. Despite the policies and mitigation measures in the San Bernardino County and Riverside County General Plans, significant cumulative impacts to cultural resources could still occur given the potentially large amount of ground disturbance related to growth and development. (S) (Muni/Western DEIR, 6-45, CR-2)	Growth and other development could impact cultural resources. Despite the policies and mitigation measures in the San Bernardino County and Riverside County General Plans, significant cumulative impacts to cultural resources could still occur given the potentially large amount of ground disturbance related to growth and development. (S) (Muni/Western DEIR, 6-45)	Construction of recharge basins could encounter previously unknown cultural resources. However, with implementation of project-level mitigation, no significant cumulative impacts would occur. (LTS) Construction of storage reservoirs could encounter previously unknown cultural resources. However, with implementation of project-level mitigation, no significant cumulative impacts would occur. (LTS) (OCWD DEIR, 7-12 through 7-14)	Cumulative cultural resource impacts can only occur when such resources are not avoided or are not recovered, evaluated, and their data value placed in the broader context of such resources. Based on the requirement to ensure that such resources are avoided or otherwise protected and evaluated, no cumulative significant cultural resource impacts are forecast to occur if the OMBP is implemented. (NI) (IEUA PEIR, 4-434)

Table 2.5-9. Cumulative Effects of All Projects (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Geology, Soils and Minerals	Substantial sources of erosion, sedimentation and turbidity may occur during short-term construction activities. Implementation of mitigation measures, erosion, sedimentation, and turbidity would reduce these cumulative impacts to a less than significant level. (LTS) (Muni/Western DEIR, 6-19) Construction of division facilities and other related structures in the flood hazard area would be subject to flooding and other dangers. Since these structures would be designed to withstand these hazards this would be a less than significant impact without further mitigation (LTS) (Muni/Western DEIR, 6-20) New facilities would be subject to geologic hazards and associated significant impacts. Residual cumulative seismic impacts would be significant and unavoidable, because even with implementation of identified mitigation, substantial damage may still occur during a seismic event. (S) (Muni/Western DEIR, 6-37)	(NI) (Muni/Western DEIR, 6-20)	(OCWD DEIR, 7-12 through 7-14)	Future development in accordance with the OBMP will not cause any significant adverse geologic or soil impacts. With implementation of mitigation measures, the proposed project will not contribute to cumulative exposure of humans in occupied structures to seismic, liquefaction or subsidence hazards. Therefore, no additional mitigation measures are required to ensure that cumulative geologic and soil impacts remain below a significant impact threshold. (NI) (IEUA PEIR, 4-87)

Table 2.5-9. Cumulative Effects of All Projects (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Geology, Soils and Minerals (continued)	Overlapping effects on groundwater levels could locally and intermittently result in significant impacts from the potential for liquefaction if groundwater levels are less than 50 feet from the ground surface. In the absence of a regional groundwater management plan with goals to maintain a safe groundwater level, impacts would be significant and unavoidable, because elevated groundwater levels could not be avoided. (S) (Muni/Western DEIR, 6-38) Growth and other development could result in ground disturbance and associated erosion, resulting in adverse impacts to local drainages, creeks, and the Santa Ana River. As a result of existing permit requirements and general plan policies, cumulative impacts would be less than significant. (LTS) (Muni/Western DEIR, 6-39)			

Table 2.5-9. Cumulative Effects of All Projects (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Groundwater Hydrology and Water Quality (including groundwater contamination)	Interference with regional groundwater recharge resulting in a net loss of water stored in the SBBA. Because SAR water diversions would not result in a net deficit in aquifer volume, cumulative impacts would be less than significant. (LTS) (Muni/Western DEIR, 6-29) Nitrate and TDS concentrations could increase to the point where they would exceed WQOs at certain locations; at other locations impacts would be less than significant or beneficial. Residual cumulative nitrate and TDS impacts would be significant and unavoidable at certain locations; at other locations impacts would be less than significant or beneficial. (S) (Muni/Western DEIR, 6-30 & -31) Growth and other development could increase water demand, generate urban contaminants, cause a loss of natural recharge areas and could reduce aquifer volume. Despite general plan policies, significant unavoidable cumulative groundwater impacts would still occur. (S) (Muni/Western DEIR, 6-31 & -32)	(NI) (Muni/Western DEIR, 6-29)	Excessive recharge could result in groundwater mounding that could adversely affect surface structures. This would be considered a cumulative impact of proposed recharge projects. In addition, impacts to groundwater quality could result depending source water quality and on existing contamination in surface soils. Mitigation measures for individual recharge projects such as site assessments for new recharge locations and on-going groundwater modeling would reduce cumulative impacts of groundwater mounding and effects to surface structures. Cumulative impacts to groundwater quality would less than significant. (LTS) (OCWD DEIR, 7-12 and 7-13)	(See Surface Water Hydrology and Water Quality)

Table 2.5-9. Cumulative Effects of All Projects (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Hazardous Materials	Cumulative increase in routine transport, use, and disposal of hazardous materials and waste used during grading and construction could increase risk of hazards through upset and accident conditions involving the release of construction equipment-related hazardous materials into the environment including directly enter local drainages and creeks, including the SAR. With mitigation, residual impacts would be less than significant. (LTS) (Muni/Western DEIR, 6-52) Cumulative projects would locally and intermittently result in Perchlorate, TCE, and PCE plumes moving and affecting wells resulting in a significant impact. Mitigation could reduce impacts however residual impacts would remain significant. (S) (Muni/Western DEIR, 6-53) Impacts related to urban development and growth could result in significant impacts related to hazardous waste use and storage. These impacts would be mitigated to less than significant by local governments implementing existing policies. (LTS) (Muni/Western DEIR, 6-54)	(NI) (Muni/Western DEIR, 6-53)	Recharge basins would not substantially affect the baseline condition for hazards materials. (NI) Storage reservoirs would not substantially affect the baseline condition for local public services, utilities, or hazards. (NI) (OCWD DEIR, 7-12, 7-14, and 7-15)	Hazards, risk of upset, and human health impacts within Chino Basin are not forecast to be cumulatively significant and adverse. The proposed project has no identified potential to significantly increase the risk of such impacts beyond current levels. The proposed project will not contribute to any new cumulative adverse impacts. (NI) (IEUA PEIR, 4-366)

Table 2.5-9. Cumulative Effects of All Projects (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Land Use and Planning	Cumulative changes in groundwater spreading could result in high groundwater levels in specific local areas which could, in turn, limit uses on overlying properties, creating a significant land use impact. Mitigation could reduce impacts however residual impacts would remain significant. (S) (Muni/Western DEIR, 6-39) Land use impacts associated with growth include incompatibility between existing and future land uses, and the conversion of undeveloped portions of the counties to some form of urbanized development. These impacts would be mitigated to less than significant by local governments implementing existing policies. (LTS) (Muni/Western DEIR, 6-40)	Land use impacts associated with growth include incompatibility between existing and future land uses, and the conversion of undeveloped portions of the counties to some form of urbanized development. These impacts would be mitigated to less than significant by local governments implementing existing policies. (LTS) (Muni/Western DEIR, 6-40)	Recharge basins could modify local land uses, but the new facilities would be consistent with local General Plans and would not result in cumulatively significant effects to land uses. (LTS) Off-river storage reservoirs may be located in areas currently designated as open space. Use of open space for reservoirs could add to the regional decline in open space as development encroaches in the region. This would be considered a cumulatively significant impact to land uses. (S) (OCWD DEIR, 7-11, 7-13, and 7-15)	The proposed project has been evaluated as being fully consistent with the Study area's general plans and the OBMP activities are not forecast to contribute to any land use incompatibilities with existing or future uses within the Study area based on implementing identified mitigation measures. (NI) (IEUA PEIR, 4-26)

Table 2.5-9. Cumulative Effects of All Projects (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Noise	No Cumulative Impact since there are no noise sensitive resources associated with this portion of the Santa Ana River. (NI) (Muni/Western DEIR, 6-47)	No Cumulative Impact since there are no noise sensitive resources associated with this portion of the Santa Ana River. (NI) (Muni/Western DEIR, 6-47)	Construction activities would temporarily increase noise close to the construction sites. Due to the temporary nature of construction, no significant cumulative noise impacts would occur. (LTS) Once constructed, recharge basins would not generate significant noise, since maintenance requirements would require minimal activities. (LTS) Construction of the proposed off-river storm water storage reservoirs could add significantly to cumulative noise impacts. (S) (OCWD DEIR, 7-11, and 7-13 through 7-15)	The noise forecast data contained in local agency general plans demonstrate that future traffic noise levels from general growth (cumulative traffic increases) within the Chino Basin will result in significant noise impacts. However, the OBMP is not forecast to cause or contribute to such cumulative noise impacts. Any traffic generated by OBMP operations is considered a *de minimis* contribution to this traffic related noise impact. Therefore, the proposed project is not forecast to contribute to cumulatively significant noise impacts. (LTS) (IEUA PEIR, 4-392)
Public Services and Utilities	No Cumulative Impact since there are no public service resources associated with this portion of the Santa Ana River. (NI) (Muni/Western DEIR, 6-55)	No Cumulative Impact since there are no public service resources associated with this portion of the Santa Ana River. (NI) (Muni/Western DEIR, 6-55)	Construction of recharge basins would not substantially affect regional public services or utilities. (NI) Storage reservoirs would not substantially affect the baseline condition for local public services or utilities. (NI) (OCWD DEIR, 7-12, 7-13 and 7-15)	The OBMP is consistent with planned future growth projections in Chino Basin. The OBMP can be implemented without causing or contributing to significant growth or development in Chino Basin. Therefore, implementation of the OBMP would not significantly increase demand for public services or utilities that could be considered cumulatively significant and adverse. (LTS) (IEUA PEIR, 4-409, 4-424)

Table 2.5-9. Cumulative Effects of All Projects (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Recreation	Increase in number of zero flow days in river reach with generally little to no flow. (LTS) (Muni/Western DEIR, 6-42)	Impacts to recreation resources associated with growth include conversion of recreational lands to urban uses, over use and crowding at existing recreational facilities, and need for expansion of parks and recreational facilities. These impacts would be mitigated to less than significant by local governments implementing existing policies. (LTS) (Muni/Western DEIR, 6-42)	Raising the Prado Dam conservation pool could constrict future recreational uses within the Prado Basin. However the constraints would not add significantly to cumulative effects to recreational facilities. (LTS) (OCWD DEIR, 7-11, 7-13, and 7-15)	The OBMP would have no cumulative impacts on recreation (See Land Uses and Planning). (NI)
Surface Water Hydrology and Water Quality	Cumulative impacts could result in substantial additional sources of erosion, sedimentation, and turbidity for runoff entering the Santa Ana River. These impacts would be mitigated to less than significant by implementation of sedimentation and erosion control plans. (LTS) (Muni/Western DEIR, 6-19) Cumulative projects could result in higher water surface elevations behind Seven Oaks Dam increasing the potential for erosion within the reservoir. However, fluctuation of the reservoir would be minimal and wave action and resulting erosion would also be minimal. The nature of the geology of the reservoir and the infrequency of increased water surface elevation it is unlikely that stored water would create scouring activity resulting in benches. This is a less than significant impact. (LTS) (Muni/Western DEIR, 6-20)	Cumulative projects would decrease flow in the river in a manner that could change sediment transport trends. This river segment typically does not contribute gravel and cobble to downstream locations and thus this decrease in flow would not likely result in a change to geomorphologic processes in this river segment. Project effects within this segment are extremely small, and then the only measurable difference between the No Project any Project Scenario occurs in flow ranges of 200 to 300 cfs Therefore this is a less than significant impact. (LTS) (Muni/Western DEIR, 6-25)	Cumulative diversions would reduce the annual volume of water that would otherwise reach the ocean. However storm flows would continue to bypass the OCWD diversion points and reach the ocean. (OCWD DEIR, 7-8 through 7-11)	The areas where OBMP programs have a potential to cause local cumulative impacts include: contributions to increased cumulative runoff and flood hazards (mitigated to a level of non-significance); violation of area-wide Basin Plan water quality objectives and beneficial uses (mitigated to a level of non-significance); contributions to subsidence (mitigated to a level of non-significance); preventing a loss of safe yield, on the order of 40,000 acre-feet (a beneficial impact); and maintaining water quality throughout the Basin at or better than current conditions (a beneficial impact). Implementation of the proposed OBMP is not forecast to cause any cumulative significant adverse environmental impacts with implementation of the recommended mitigation. (LTS) (IEUA PEIR, 4-168)

Table 2.5-9. Cumulative Effects of All Projects (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Surface Water Hydrology and Water Quality (continued)	Cumulative impacts could produce an increase risk of anaerobic conditions in Seven Oaks Reservoir and downstream. These impacts would be mitigated to a less than significant level. (LTS) (Muni/Western DEIR, 6-21) Cumulative impacts could produce an increase risk of seiche conditions in Seven Oaks Reservoir and downstream. These impacts would be mitigated to a less than significant level. (LTS) (Muni/Western DEIR, 6-21) Cumulative impacts could produce an increase risk of mudflow conditions in Seven Oaks Reservoir and downstream. These impacts would be mitigated to a less than significant level. (LTS) (Muni/Western DEIR, 6-21) Cumulative impacts decrease river flow and could degrade water quality downstream of Seven Oaks Dam. The "worst-case" analysis found very little change in concentration levels. Therefore, while diversions by the Project and related projects could cause changes in water quality, this change would be less than significant. (LTS) (Muni/Western DEIR, 6-22)			

Table 2.5-9. Cumulative Effects of All Projects (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Surface Water Hydrology and Water Quality (continued)	Cumulative projects could significantly decrease non-storm flow. Various potential mitigation measures involving changes in the timing, pattern, and volume of diversions were assessed. However, no feasible mitigation measures were identified that would avoid a significant change in river flow on non-storm days while still allowing a consistent and reliable diversions of applicants. These impacts would remain significant. (S) (DEIR, 6-22, SW-8) Cumulative projects could decrease flow in the river in a manner that could change sediment transport trends. This river segment typically does not contribute gravel and cobble to downstream locations and thus this decrease in flow would not likely result in a change to geomorphologic processes in this river segment. Therefore this is a less than significant impact and no mitigation is required. (LTS) (Muni/Western DEIR, 6-24) Cumulative projects could decrease the area that is inundated by flood flows (overbank flow areas). The overbank velocity and water depth in this area would not be perceptibly affected by cumulative projects. Therefore, this is a less than significant impact, and no mitigation is required. (LTS) (Muni/Western DEIR, 6-25)			

Table 2.5-9. Cumulative Effects of All Projects (continued)

	Upstream of Seven Oaks Dam to RIX-Rialto Effluent Outfalls	RIX-Rialto Outfalls to Prado Flood Control Basin	Prado Flood Control Basin to Pacific Ocean	Chino Basin to Prado Flood Control Basin
Transportation	No cumulative impact would occur since there are no transportation resources associated with this portion of the Santa Ana River. (NI) (Muni/Western DEIR, 6-55)	No cumulative impact would occur since there are no transportation resources associated with this portion of the Santa Ana River. (NI) (Muni/Western DEIR, 6-55)	Due to the temporary nature of construction, no significant cumulative traffic impacts would occur. (NI) Recharge basins would not add to a cumulatively significant traffic impact since recharge basins would generate few daily trips. (NI) Construction of the proposed off-river storm water storage reservoirs could significantly add to cumulative impacts to regional traffic congestion. (S) (OCWD DEIR, 7-12, 7-14, and 7-15)	The addition of up to 100 permanent jobs in support of OBMP activities result in a *de minimus* contribution to an area that is forecast to generate approximately 2 million trips per day at present and into the future. Implementation of the OBMP will accommodate, but not cause, cumulative traffic growth as is forecast to occur as the affected jurisdictions are built out. Therefore, under the current conditions, the proposed project is not forecast to contribute to cumulative significant traffic impacts within the Chino Basin area. (LTS) (IEUA PEIR, 4-307)

Muni Western DEIR = San Bernardino Valley Municipal Water District and Western Municipal Water District of Riverside County, *Santa Ana River Water Right Applications For Supplemental Water Supply, Draft EIR*, October 2004.

OCWD DEIR = Orange County Water District. 2006. *Application to Appropriate Santa Ana River Water, Recirculated Draft Program Environmental Impact Report*. March.

IEUA PEIR = Inland Empire Utilities Agency. 2000. *Draft Programmatic Environmental Impact Report, Chino Optimum Basin Management Plan*.

The Project and related projects would have significant cumulative effects on sensitive natural communities and habitat of sensitive species downstream of Seven Oaks Dam through change in flow. The Project and the Conservation District Application would cumulatively reduce flood flows and would reduce overbank flooding and within-channel upper terrace scour within the upper stretch of the SAR between the Cuttle Weir and areas just downstream of the confluence with Mill Creek.

Though the Proposed Project would not affect the SAR downstream of Prado Basin, the Draft EIR for the OCWD water rights application found that construction of off-river storage reservoirs proposed as part of that project would add to the cumulative degradation of biological resources in open space areas.

The Project and related projects could cause a significant adverse change in the significance of a historical or archaeological resource, destroy a unique paleonotological resource, or disturb human remains during construction near and adjacent to the SAR upstream of the RIX-Rialto Outfall. It is not certain that all significant cumulative impacts could be successfully mitigated, given the potentially large amount of ground disturbance involved with the Project and related projects. Therefore, potential cumulative impacts on cultural resources would remain significant.

The Project, in combination with related projects, would expose structures to seismic ground shaking, ground failure, and liquefaction, a significant impact. Further, Project-related groundwater recharge, in combination with recharge from related projects, could result in shallow groundwater conditions in a few areas and increase the area susceptible to liquefaction during certain seismic events. Cumulative impacts would be significant. Increases in groundwater levels, due to operations by the Project and related projects, could conflict with existing land uses and limit future use of property in the Pressure Zone of the SBBA, a significant impact.

At some wells, implementation of the Project, in combination with related projects, would increase TDS and nitrate concentrations to the point where they would exceed WQOs. This impact is significant. Residual cumulative nitrate impacts would be significant and unavoidable.

Though the Proposed Project would not affect the SAR downstream of Prado Basin, the Draft EIR for the OCWD water rights application found that construction of off-river storage reservoirs proposed as part of that project would add to the cumulative degradation of biological resources, decline in regional open space, a significant land use impact. Construction of the off-river storage reservoirs could also add significantly to cumulative noise and traffic impacts.

Combined diversions per the Project, Conservation District Application, and the RIX Recycled Water Sales would significantly decrease non-storm flow in the river segment from Cuttle Weir to Riverside Narrows. No feasible mitigation measures were identified that would avoid a significant change in river flow on non-storm days while still allowing a consistent and reliable diversion per either the Project or the Conservation District Application. This cumulative impact (Cumulative Impact SW-8 in the Draft EIR) is significant and unavoidable.

The Project and related projects would have significant indirect effects related to growth and development in the service areas. The San Bernardino County General Plan and Riverside County General Plan contain a number of policies designed to avoid and limit impacts related to growth. However, with regard to surface water, groundwater, biological resources, agricultural, cultural, noise, aesthetics, and public services and utilities in San Bernardino and Riverside counties, significant unavoidable impacts would still occur.

2.5.6 Depiction of Santa Ana River Flow With and Without Cumulative Projects

A schematic representation of the a wet year flow regime for the SAR from its headwaters above Seven Oaks Dam to its terminus at the Pacific Ocean is presented as Figure 2.5-1.

Represented in Figure 2.5-1 are simulated flow conditions assuming a repetition of Water Year (WY) 1992-93. The simulation is based on historical records, results derived from hydrologic models, and calculated results derived from a comparison of historical records and model results. In Figure 2.5-1 results are presented for two sets of conditions: (i) with implementation of the various water right applications and other projects affecting SAR flow (referred to as With Project [WP] conditions); and (ii) in the absence of such projects (referred to as the No Project [NP] conditions).

The NP condition assumes that diversions by senior water right claimants and the Conservation District are consistent with historical diversions, that environmental habitat releases would be used to meet provisions of Seven Oaks Dam BO, and that Seven Oaks Dam operations do not include a seasonal storage pool. The WP condition assumes that diversions by Senior Water Right Claimants are consistent with historical diversions, diversions by the Conservation District are limited to existing licenses, that methods besides releasing water from the dam are used to meet provisions of Seven Oaks Dam Biological Opinion, and that Seven Oaks Dam operations do include a seasonal storage pool. The WP conditions portrayed in Figure 2.5-1 have assumed that water available in the vicinity of Seven Oaks Dam will be diverted as part of the Muni/Western water rights application, rather than be diverted as part of the Conservation District water rights application. However, it is within the discretion of the SWRCB to grant one or more new rights for waters of the SAR and it is possible that some combination of the Project and Conservation District Application could be implemented.

In Figure 2.5-1, the centerline is representative of the Santa Ana River mainstem, shaded boxes represent geographic locations along the river. Arrows pointing away from the centerline represent depletions from the river, arrows toward the centerline represent inflows to the river system. Figure 2.5-1 was based on WY 1992-93 conditions because it is one of the wettest years in the base period (WY 1961-62 to 1999-2000). The probability of a similar wet year occurring in any future year is five percent. Water Year 1992-93 conditions were developed based on gage data.

2.5.6.1 Above Seven Oaks Dam

Gage records from WY 1992 show inflow to the Santa Ana River of 165 taf. In the upper section of the SAR, diversions from the river are made on behalf of Senior Water Right Claimants both upstream and/or just below Seven Oaks Dam. The amounts of water taken at the points of diversion vary based on flow conditions and other circumstances associated with operation of power generating facilities owned and operated by SCE. In a wet year such as 1993, Senior Water Right Claimant diversions are estimated to be 39 taf. Senior Water Right Claimant diversions are the same for the NP and WP conditions. Given these diversions, inflows to the reservoir, and estimated evaporative losses, outflow from the dam is estimated at 125 taf for both the NP and WP conditions.

2.5.6.2 Seven Oaks Dam to Cuttle Weir

There are no tributary or other inflows to this segment of the SAR. Both Muni/Western and the San Bernardino Valley Water Conservation District propose diversions in this river reach (see section 2.5.4.1) .

Assuming a repeat of water year 1993, under its licenses the Conservation District is estimated to divert approximately 8 taf at Cuttle Weir; leaving 117 taf for Muni/Western diversions under the WP conditions. With Project diversions would result in zero flow in the SAR below Cuttle Weir, until augmented by tributary inflow.

Under NP conditions it has been assumed that the San Bernardino Valley Water Conservation District is not limited to its license and would divert up to 39 taf. Under NP conditions Muni/Western would divert no water, leaving 86 taf of undiverted flow in the river below Cuttle Weir.

2.5.6.3 Cuttle Weir to "E" Street

Tributary inflow from a number of streams occurs downstream of Cuttle Weir and upstream of "E" Street. Net tributary inflow is provided by Mill Creek, Plunge Creek, City Creek, and San Timoteo Creek. In this reach channel losses and percolation deplete the stream. It is estimated that depletions under the NP conditions would be 55 taf and 0 taf under WP conditions.

2.5.6.4 "E" Street to Riverside Narrows

Warm Creek and Lytle Creek provide inflow in this section of the SAR. There are also effluent discharges to the river from the RIX and Rialto wastewater treatment facilities. No depletions were identified for this reach of the river.

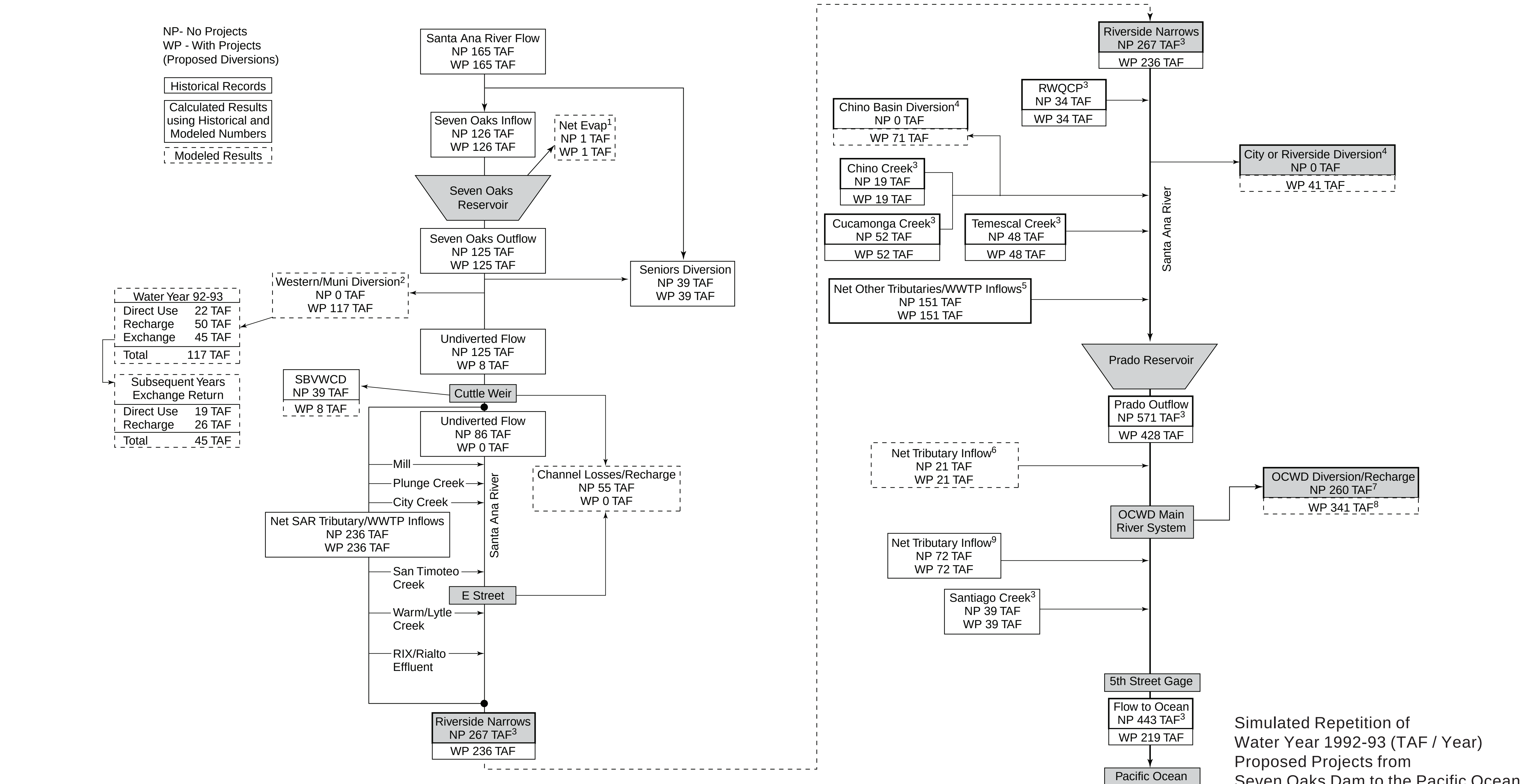
2.5.6.5 Riverside Narrows to Prado Reservoir

Chino, Cucamonga, and Temescal creeks contribute to flow in this section of the SAR. There are also effluent discharges to the river from the Riverside Regional Water Quality Control Plant. Both the City of Riverside and Chino Basin Watermaster propose diversions affecting this river reach (see section 2.5.4.2 and 2.5.4.4). With implementation of the Riverside Water Rights Application, WWTP effluent flows in this reach will decline by 41 taf. Under WP conditions, the Chino Basin Watermaster would divert up to 109 taf when available from tributaries to the SAR, in WY 1993 it is estimated that only about 71 taf was available.

The net effect of inflows and diversions in this segment of the SAR result in an outflow from Prado Reservoir of approximately 571 af under NP conditions and 428 under WP conditions. Outflow from Prado Dam is reduced, in a wet year such as WY 1993, by up to 143 taf by implementation of the various water right applications and water recycling projects.

2.5.6.6 Prado Reservoir to Pacific Ocean

For the lower SAR below Prado Dam, tributary inflow for both the NP and WP conditions would total 132 taf. OCWD proposes increased diversion and recharge in this river segment. Assuming a repeat of WY 1993, assuming NP conditions OCWD would divert approximately 260 taf; assuming WP conditions OCWD would divert 341 taf. Outflow to the ocean under WP conditions would total approximately 219 taf, approximately 224 taf less in a wet year than would arrive under NP conditions.



Note: Water Year 92-93 is the 3rd wettest year in the period from WY 1961-62 to WY 1999-2000. The probablility of a similar wet year occurring in any future year is 5%.

1 Modeled value estimate at 0.2 TAF but 1 TAF used for illustrative purposes.
2 Muni/Western Diversion based on modeled Project Scenario A.
3 Flow volume based on USGS gage data for Water Year 1992-1993.
4 Diversions assume water rights applications are accepted and approved by SWRCB. Chino Basin Watermaster (IEUA) has 27 TAF of water rights approved in 1994 and is applying for an additional 97 TAF. In simulated WY 1993, 71 TAF is available for diversion.
5 Flow volume calculated as the difference between gaged river flow above and below Prado Dam net of evapotranspiration and channel losses.
6 USACE estimate of inflow to the Santa Ana River between Prado Dam and OCWD Main River System. (Prado Conservation Feasibility Study EIS, 2004)
7 OCWD diversions for Water Year 1992-1993. (See OCWD Water Rights DEIR, Appendix D, Attchment A, Table A)
8 This represents OCWD's estimate of diversions during a simulated WY 1993, based on daily flow rates below Prado Dam at USGS Gage No. 11074000. OCWD assumes that 108 TAF of water bypasses its points of diversion when the river is flowing over 3,500 cfs.
9 Flow volume calculated as the difference between Prado (11074000). 5th Street (11078000), and Santiago Creek (11077500) gages and OCWD Diversions for Water Year 1992-1993.

Source: OCWD, ESA 2005

Figure 2.5-1. Schematic of Santa Ana River Flows with and Without Cumulative Projects

2.6 EFFECTS OF SETTLEMENTS

2.6.1 Introduction and Summary of Comments

There were several comments on the Draft EIR that asked Muni/Western to clarify the effect, if any, that the settlement agreement among Muni/Western and a number of other water purveyors in the San Bernardino Valley might have on the Project. Since the release of the Draft EIR, Muni/Western have also entered into a settlement agreement with the San Bernardino Valley Water Conservation District. This thematic response discusses the potential effects on the environment of these two settlement agreements.

2.6.2 Seven Oaks Accord

In July 2004, Muni/Western entered into a water right settlement agreement with the Senior Water Right Claimants known as the "Seven Oaks Accord." Under the terms of that agreement, Muni/Western agreed not to object to the diversion by the Senior Water Right Claimants of up to 88 cfs from the Santa Ana River in exchange for an agreement by the Senior Water Right Claimants to withdraw their respective protests against Muni/Western's water right applications that are needed for the Project to proceed. The Seven Oaks Accord does not address diversions by the San Bernardino Valley Water Conservation District, the flows required under the Biological Opinion for Seven Oaks Dam, the operational conditions of the dam or the size of diversion and conveyance facilities to be built by Muni/Western. The Seven Oaks Accord calls for the parties to develop and implement a groundwater management plan within five years.

By limiting diversions by the Senior Water Right Claimants to 88 cfs, however, the Seven Oaks Accord is within the scope of the "bookends" analysis. The effects, if any, of the groundwater management plan will only be known once that plan is developed. Because Muni/Western will be the lead agencies for that plan, Muni/Western will need to evaluate the potential effects of that plan on the environment in full compliance with CEQA. Accordingly, the effects of implementing that settlement agreement are either within the "bookends" of this EIR or are speculative at this time (because the groundwater management plan has not yet been prepared) and will be the subject of future CEQA review.

2.6.3 Settlement Agreement with San Bernardino Valley Water Conservation District

In August 2005, Muni/Western entered into a water right settlement agreement with the Conservation District. Under the terms of that agreement, Muni/Western agreed to withdraw its protest against the Conservation District's water right application and the Conservation District agreed to withdraw its protests against Muni/Western's water right applications. The parties agreed that they would work with the parties to the Seven Oaks Accord to develop a groundwater management plan and would divert water from the Santa Ana River in the following priority order:

- Conservation District's Water Right License Nos. 2831 and 2832.
- Muni/Western's Water Right Application No. 31165.
- Conservation District's Water Right Application No. 31371.
- Muni/Western's Water Right Application No. 31370.

If the groundwater management plan for a specific year calls for spreading more than 10,400 afy in the Conservation District's Santa Ana River spreading grounds, Muni/Western will allow the Conservation District to have priority to spread up to an additional 39,600 afy at its Santa Ana River spreading grounds in accordance with the groundwater management plan.

The main elements of this settlement agreement are the allocation of priorities to the use of water from the Santa Ana River and the agreement to develop a groundwater management plan. Muni/Western's two water right applications, of course, are the subject of this EIR. The Conservation District's two water right licenses, in combination with its water right application, were intended to provide the Conservation District with a legal basis to take the quantities of water that it has diverted since 1969. In that way, the settlement agreement contemplates that the Conservation District would take the water that it has historically diverted since 1969 and so the proposed diversions by the Conservation District are consistent with the "bookends" approach of the Draft EIR. As with the groundwater management plan proposed under the Seven Oaks Accord, the groundwater management plan proposed under this settlement agreement has not yet been developed and so any environmental analysis would be speculative. Also, like the groundwater management plan proposed under the Seven Oaks Accord, Muni/Western would be the lead agencies for the groundwater management plan and would comply fully with CEQA prior to implementation of that plan. Thus, the implementation of the settlement agreement is, to the extent that it is not speculative, within the "bookends" of the environmental analysis contained in the Draft EIR.

During the past year, there have been questions relating to the potential impacts of the settlement with the Conservation District on the maximum quantity of water that could be appropriated by Muni/Western during a wet year. Using the models and methodology described in Chapter 3.1 and Appendices A and B of the Draft EIR, Muni/Western have analyzed the potential water that they would divert based on a repetition of hydrologic conditions in Water Year 1969 (a wet year occurring after a dry period) and Water Year 1980 (a wet year in the midst of a wet period). The analysis shows that, during such wet years, there would be large quantities of rainfall that would naturally percolate into the SBBA. These large quantities of percolation would preclude the need for any additional recharge of the SBBA at the Conservation District's Santa Ana Spreading Grounds. Thus, diversions in these years by the Conservation District under the settlement agreement would be zero. There are 208,916 af of flow above Seven Oaks Dam in WY 1969 and 216,301 af of flow in WY 1980 based an USGS readings (Combined Gage at Mentone No. 11051501). During such wet years, diversions by the Senior Water Right Claimants would also be reduced. Specifically, those diversions were 18,390 af during WY 1980 according to verified diversion data from the Watermaster. Watermaster data are not available for WY 1969. For the future, diversions during such wet years are projected to be approximately 19,000 afy based on historical wet year verified diversions by the Senior Water Right Claimants. As a result, there would be approximately 190,000 af available for diversion by Muni/Western in a repetition of WY 1969 and 198,000 af in a repetition of WY 1980. Thus, the analysis indicates that Muni/Western's maximum diversion could be as much as 198,000 af during a repetition of historical hydrologic conditions of the period modeled (WY 1962 through WY 2000) for the Draft and Final EIRs. It should be added that this analysis, and the analysis contained in the Draft and Final versions of the EIR, does not consider the potential impacts of increased rainfall due to global climate change.

The wettest year on record is not in the period analyzed above. According to gage data, there were 265,535 af of flow above Seven Oaks Dam in WY 1916. Again, as indicated above, it is likely in such a wet year that the groundwater management plan would not allow for any spreading of water by the Conservation District. Thus, the diversion by Senior Water Right Claimants of 19,000 afy during a repetition of those conditions would result in approximately 247,000 af available for diversion by Muni/Western in such a year.

The area of the SAR watershed upstream of Seven Oaks Dam, which is largely composed of lands in the San Bernardino National Forest, has not changed in a significant fashion since 1916. There has been relatively little urbanization and no new dams have been constructed (Bear Valley Dam was constructed prior to 1916). The timing and magnitude of flows in the SAR were modified by the 1977 Big Bear judgment but that judgment did not have the effect of substantially reducing the total quantity of water flowing past Mentone. For these reasons, a repetition of WY 1916 hydrology is quite possible during the term of any permit or lease issued by the SWRCB.

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3.0 COMMENT LETTERS AND SPECIFIC RESPONSES TO COMMENTS

Twenty-eight comment letters were received on the Draft EIR. Comment letters were received from the following agencies and organizations:

- US Army Corps of Engineers
- US Forest Service
- California Department of Fish and Game
- California Department of Water Resources, Division of Safety of Dams
- California Department of Toxic Substances Control
- California Regional Water Quality Control Board
- Colorado River Board of California
- Native American Heritage Commission
- State Water Resources Control Board
- Big Bear Municipal Water District
- Big Bear Watermaster
- Chino Basin Watermaster
- City of Rialto
- City of Riverside
- City of San Bernardino Municipal Water Department
- East Valley Water District
- Flood Control Districts of Orange County, Riverside County, and San Bernardino County
- Metropolitan Water District of Southern California
- Orange County Water District
- Riverside Highland Water Company
- San Bernardino County Department of Public Works
- San Bernardino Valley Water Conservation District
- Southern California Association of Governments
- Center for Biological Diversity (Dated December 6, 2004)
- Center for Biological Diversity (Dated January 11, 2005)
- Center for Biological Diversity (Dated May 25, 2005)
- Lockheed Martin
- Upper Santa Ana Water Resources Association

Copies of each of these comment letters appear in the following pages in the order in which they appear in the above list. In the following chapter, first the comment letter is presented, followed by the specific response by Muni/Western to the comments raised in the comment letter.

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
P.O. BOX 532711
LOS ANGELES, CALIFORNIA 90053-2325

REPLY TO
ATTENTION OF

January 12, 2005

Office of the Chief
Planning Division

Mr. Robert L. Reiter
General Manager and Chief Engineer
San Bernardino Valley Municipal Water District
P.O. Box 5906
San Bernardino, California 92412

Dear Mr. Reiter:

Enclosed are our comments on the October 2004 Draft Environmental Impact Report (EIR) on the Santa Ana River Water Right Applications for Supplemental Water Supply. It appears from our initial review that your plans concerning water conservation at Seven Oaks Dam have not been fully developed. Please be advised that additional comments and concerns may be generated when and if the project progresses to a more detailed design stage, and a formal request for water conservation is made through the local sponsors for the U.S. Army Corps of Engineers' Santa Ana River flood control project.

If you have any questions, please contact Ms. Hayley Lovan, the Santa Ana River Project environmental coordinator, at (213) 452-3863. Thank you for the opportunity to provide comments.

Sincerely,

For Alex C. Dornstauder
Colonel, US Army
District Engineer

U.S. Army Corps of Engineers
Comments on the October 2004 Draft EIR for
Santa Ana River Water Rights Applications for Supplemental Water Supply

January 12, 2005

1 The following comments are based on a cursory review of the proposed project as described in the EIR. Additional comments and concerns may be generated when and if the project progresses from this (apparently) programmatic stage to a more detailed design, and the flood control sponsors are formally approached with a request to use Seven Oaks Dam for water conservation.

2 1. The project description should be revised to provide more detail on the proposed water storage behind Seven Oaks Dam.

- To what elevation would water be stored?
- Do plans include importing water, or only capturing spring and summer flows?
- What is the maximum duration that water could be held at various elevations, and how would this compare with current flood control operations?
- When and at what rate would the water be released?
- How would the dam's flood control capacity and function be protected during water conservation?

2. The EIR needs to specifically state, up front and as needed throughout the document, that flood control operations (including mitigation for flood control) will always have first priority. Water conservation would be a secondary use, and cannot interfere with flood control.

3 3. Alternatives analysis: The document does not fully address reasonable alternative water storage and diversion scenarios. Table E-1 (Report Summary), Impact SW-7 (Segments B through F) states that "various potential mitigation measures involving changes in the timing, pattern and volume of Muni/Western diversion were assessed. However, no feasible mitigation measures were identified that would avoid a significant change in river flow on non-storm days while still allowing a consistent and reliable diversion for beneficial use by the project." However, the document does not provide a summary of these "mitigation measures" (i.e., project alternatives), and does not specifically explain why they were dropped from further analysis.

4 4. Section 2.4.1, 1st paragraph states that, "With or without the Project, Seven Oaks Dam will be operated… with seasonal water conservation storage beginning in March and ending in September." Although water may be present behind the dam during that time of year without the project, it would not be considered "seasonal water conservation storage."

5 5. Section 3.2.2.3.2: "Dewatering would be temporary, localized and would not substantially deplete groundwater supplies or affect the local area. Therefore, …no

mitigation is required." Extraction of groundwater could affect local vegetation due to depletion of water at the root level. If water is pumped onto the ground surface, excess water could also have an adverse affect on vegetation in that area. We recommend that you monitor vegetation at both the extraction and diversion sites. Groundwater should also be tested to ensure that it meets applicable standards (especially if it is pumped into the river). 5

6. Section 3.3.1.4.1: "Biological resources upstream of Seven Oaks Dam that would potentially be affected by the Project were assumed to be within the potential inundation area of Seven Oaks Dam and mitigation for their loss was the responsibility of the USACE..." Although the Corps' 1997 Water Conservation feasibility report came to a similar conclusion, the impacts of the current proposal were not specifically analyzed. In fact, without more information on the proposed water conservation project (as discussed above), the impacts cannot be fully assessed. It should also be noted that the U.S. Fish and Wildlife Service did not completely agree with all of the feasibility study conclusions. 6

7. Section 3.3.2.1, Approach to Mitigation – Discussion of the Biological Assessment and Biological Opinion for Seven Oaks Dam operations (and Appendix E):

a) "The scale of the proposed mitigation appears to be related to the extent of the area to be treated (between 600 and 700 acres)." It is extremely unlikely that all this area would require habitat manipulation (particularly overbank flooding) at one time. Rather, this area will be monitored and managed as needed to benefit multiple species. 7

b) We disagree that construction of temporary diversion or containment dikes would involve substantial negative impacts to the river or endangered species habitat. The Corps has not completed environmental documentation to fully assess those impacts, although the BA/BO did not foresee significant adverse impacts. However, it should be noted that no decision has been made on the method or methods that may be used to replenish the multi-species habitat preservation area. That decision will be made in coordination with the USFWS, on the basis of the results of various experimental treatments, the condition of the habitat, species populations, and other factors. 8

c) The EIR does not clearly explain how the impact area from reduced overbank flooding was calculated. The document mentions an analysis of 50- and 100-year flood events (as well as a 7000 cfs maximum release from the dam), but it does not describe the impact from lesser events. Is the habitat on the lower terraces more dependent on flooding from lesser (more frequent) events? If so, how would the project affect distribution of these flows? 9

d) The report should clearly identify the location of impacted "overbank" areas, and verify that these areas are not located within the Corps'/Counties' mitigation lands (the Woolly Star Preserve Area). 10

8. Table 3.3-4: Some of the thresholds of significance are questionable and may not be supported by resource agencies. For instance, in the EIR, an impact to woolly-star or San Bernardino Kangaroo Rat (SBKR) habitat is considered significant only if there is a 30-year or greater increase in the recurrence level between inundation periods, and SBKR and gnatcatcher losses are "insignificant" if fewer than five individuals are lost or killed. 11

11 Given the extreme rarity of these species and habitat types, any losses would probably be considered significant, although the impacts may be mitigated. In terms of Endangered Species Act compliance, such an impact would be considered adverse (i.e., significant), although if compensated would probably not result in a jeopardy opinion.

12 9. Table 3.3.2.3, MM BIO-2: In addition to restoring temporarily affected areas, Muni/Western should provide or restore additional habitat to compensate for temporal losses, at a rate or in a manner approved by the U.S. Fish and Wildlife Service and the California Department of Fish and Game.

13 10. Section 3.3.2.4.1: As discussed above, the EIR may not have fully addressed other potential impacts to the reservoir and surrounding areas caused by long-term storage and changes in release rates, although a more complete analysis is not possible without a more complete project description

14 11. Table 3.3-5, Section 3.3.2.4.2, and other sections of the document describe impacts to Riversidian Alluvial Fan Sage Crub (RAFSS) and other overbank habitats. The Corps questions the conclusion that the loss of immature RAFSS communities in Segment C caused by changes in the flooding regime is "not necessarily adverse," and that "effects would be less than significant and no mitigation is required" (Impact BIO-16). This is a very rare community type, and any impact should be mitigated. In addition, the impacts may include more than just maturation of the habitat. For instance, non-native vegetation may become established. It is not clear that MM BIO-9 (non-native species control) and MM BIO-10 (habitat renewal) would occur specifically within all these impacted areas, or only in occupied SBKR and woolly-star habitat.

15 Clarify whether Impact BIO-17 addresses the same area as Impact BIO-16. Perhaps the intent was to say that from a RAFSS habitat perspective only, the impacts would be considered insignificant (which is debatable), but because the impact area provides suitable habitat for endangered species, then the same impact should really be considered significant.

16 12. Mitigation Measures BIO-9 and 10: The EIR mentions that Muni/Western will develop a program with the USFWS and CDFG to implement MM BIO-10. The document should further recognize the need for (and stress the importance of) working closely with the USACE, the flood control local sponsors, and the resource agencies to assess the cumulative affect of both the flood control and water conservation projects. Appropriate mitigation measures should be determined as a group, especially if mitigation for water conservation overlaps or affects the Corps' flood control mitigation. Because this analysis and coordination has not yet occurred, there is no way to determine whether the mitigation measures proposed in the EIR would suffice, or would even be appropriate. Non-native vegetation control, for instance, could have an unintended impact on sensitive species that may inhabit the area.

As with the Corps' plans for flood control mitigation, MM BIO-10 (if approved) would undoubtedly need to include intensive species surveys and monitoring to establish the species' response (in terms of population dynamics) to various experimental treatments. 17

The EIR description of this mitigation measure does not include the acreage or specific area where habitat manipulations would potentially take place. 18

13. Impact BIO-19 (first paragraph): Reduction in natural flood flows should not be viewed as a possible benefit to the Santa Ana sucker. The species is adapted to withstand these surges, as long as sufficient refugia are available. 19

14. Impact BIO-21: On what basis is it assumed that 3 cfs will continue to support the existing riparian vegetation in Segment B (and other areas downstream)? It is recommended that Muni/Western adopt a monitoring plan and a commitment to reduce, modify or mitigate water diversions if adverse impacts are noted, especially in Segments B through E. 20

15. Section 6.1.2.6, Anticipated Impacts: The EIR assumes that "environmental habitat releases" (flood control mitigation releases) of 1000 cfs for two days will occur every five years. This estimate, although it may be useful for planning purposes, should not be viewed as an absolute or maximum release rate. In some years, the Corps and Sponsors may not need to make any flood control mitigation releases, while in other years we may need to release far greater flows for a longer period. In order to do so, the Corps/ Sponsors may need to hold water behind the dam to build the pool elevation and enable a larger release. This would require temporary reductions in the average daily releases, which could affect Muni/Western's planned diversions. 21

16. The EIR should discuss the additional steps that would be required prior to implementing water conservation at Seven Oaks Dam, including but not necessarily limited to the following:

a) The water agencies must ensure that all hydrological requirements for flood control and related environmental mitigation purposes for Seven Oaks Dam would continue to be met before water conservation is considered. 22
b) Water agencies must recognize that they would be fully responsible for paying all costs related to implementation including, but not limited to engineering, environmental analysis (in the form of a NEPA document), environmental mitigation, right-of-way acquisition, permit approvals and construction.
c) Water agencies must ensure that existing water rights are not impacted.
d) Water agencies must work with the Corps and the flood control Local Sponsors to ensure that flood control operations, including biological mitigation, are not adversely affected.
e) Water agencies must enter into an agreement with the Local Sponsors for implementation of the water conservation program. The Corps will not consider implementation without a request from the Local Sponsors.

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US ARMY CORPS OF ENGINEERS (USACE)

USACE Comment 1

CEQA specifies that an EIR should provide only a general description of the project's characteristics and shall not supply extensive detail beyond that needed for evaluation and review of significant environmental impacts. "General" means involving only the main features of something rather than details or particulars. In this regard, precise engineering designs are not needed to analyze potentially significant impacts.

The "general description" requirement is consistent with other CEQA mandates to make the EIR a user-friendly document. For example, Guidelines section 15140 states that EIRs must be written in plain language so that decision makers and the public can rapidly understand them. The general description requirement also fosters the principle that EIR's should be prepared early enough in the planning stages of a project to enable environmental concerns to influence the project's design. A general description of a project element can be provided earlier in the process than a detailed engineering plan and is more amenable to modification to reflect environmental concerns. The CEQA reporting process is not designed to freeze the ultimate proposal in the precise mold of the initial project; new and unforeseen insights may emerge during investigation, evoking revision of the original proposal. The primary requirement is that there be sufficient information to understand the significant environmental impacts of the proposed project.

Muni/Western will evaluate technical details on an ongoing basis consistent with 14 C.C.R. § 15162 (standards for review of new information).

It should be noted that Muni/Western have entered into an agreement with the Local Sponsors to fund the costs of an update of the Corps of Engineers' 1997 Feasibility Study EIS/EIR for water conservation at Seven Oaks and that it is expected that the Corps of Engineers and the Local Sponsors have or will shortly amend their agreement regarding the water conservation study to include such an update.

It should also be noted that the comment is incorrect in stating that the Draft EIR analyzed the Project at a programmatic level. For the reasons described above, the Draft EIR analyzed the Project at a project-level of analysis and no further environmental analysis will be required to comply with the provisions of the CEQA. Muni/Western recognize that there will need to be compliance with the provisions of the National Environmental Policy Act (NEPA) prior to the implementation of water conservation; Muni/Western anticipate that the update of the 1997 Feasibility Study EIS/EIR will be fully adequate to satisfy NEPA requirements.

USACE Comment 2

Please see Thematic Responses section 2.2, which provides specific information regarding the proposed operation of Seven Oaks Dam for water conservation.

The Project proposes to temporarily store up to 50,000 af behind Seven Oaks Dam, which would result in a water surface elevation of approximately 2,418 feet NGVD. The Project does not include importing water from outside the SAR watershed for storage in Seven Oaks Dam. The

Project would capture water in the SAR at Seven Oaks Dam beginning on approximately March 1 of any year or at such other times as permitted by a revised Water Control Manual for Seven Oaks Dam. Water would be released from the conservation pool at a rate that depends on the diversion capacity selected by Muni/Western (either 500 or 1,500 cfs), and the water allocation parameters simulated in Allocation Model (e.g., demand for direct delivery to local purveyors, the availability of spreading grounds). Thematic Responses section 2.2 demonstrates that conservation storage operations would have a limited effect on water levels in Seven Oaks; water levels would never exceed the highest stage that would occur with the No Project. But on some days (approximately 7 percent of days), with seasonal storage (e.g., Project Scenario A) water levels could be higher than would occur under the No Project condition.

As noted in the response to USACE Comments 21 and 22, Muni/Western concur with USACE that flood control operations, including the mitigation program approved by USFWS in its BO, are part of the regulatory baseline for the Project. Water conservation would be implemented in a way that does not interfere with flood control operations.

USACE Comment 3

The Draft EIR stated, under the heading "Mitigation Measures" on pages 3.1-37, 3.1-41, 3.1-43, 3.1-45, and 3.1-47 that various mitigation measures for Impact SW-7 were considered but no feasible mitigation measures were identified. The rationale for this conclusion lies in the timing of Muni/Western's diversions of water.

Impact SW-7 is a result of the draining of the Debris Pool during the mid to late summer in each year. As discussed in the Draft EIR, the Debris Pool contains approximately 3,000 af of water that serves to protect the works of Seven Oaks Dam from damage during flood events. This water, therefore, is the last water that will be released during a water year. Debris Pool water could be diverted by the Conservation District, by Muni/Western, or could be allowed to percolate in the Santa Ana River channel.

Under the settlement with the Conservation District, Muni/Western will only be able to divert water from the Debris Pool if the Conservation District has diverted and spread all of the water that the annual groundwater management plan allows to be spread in the Conservation District's spreading basins. (For the reasons described in Thematic Response section 2.6, the settlement agreement with the Conservation District is within the "bookends" of analysis contained in the Draft EIR.) Under such circumstances, allowing water from the Debris Pool to percolate into the Santa Ana River channel, which would be necessary to mitigate for the reduction in flows identified in Impact SW-7, would have the effect of surcharging a groundwater basin that has already been determined to be filled to capacity.

In particular, recharging 3,000 af through the Santa Ana River channel would result in an average increase of 2.0 feet in static groundwater levels across the entire 15,900 acre Pressure Zone (assuming a porosity of 0.095). The increase in groundwater levels would be greater than 2.0 feet and up to 4.7 feet in the southwestern boundary of the Pressure Zone (along the San Jacinto Fault) since effective porosity of that area is approximately 0.04. An increase of groundwater levels of 4.7 feet would only aggravate the risk of liquefaction during a sizeable earthquake on either the

San Andreas or San Jacinto faults. For this reason, allowing increased flows of water in reaches B, C, D, E and F, which was the only mitigation measure identified that would avoid the hydraulic impact of SW-7, would create/aggravate another significant adverse effect on the environment and so is not a feasible mitigation measure.

Chapter 5 of the Draft EIR presents an extensive discussion of possible alternatives to the Project. In brief, Muni/Western could obtain the water supply reliability and flexibility that are the key objectives of the Project by seeking new sources of water within Southern California (e.g., by the use of brackish water), could make more efficient use of existing supplies by means of increased levels of conservation, or could increase the level of imported supplies from Sacramento-San Joaquin Delta, or seawater desalination. The analysis of these alternatives fully complies with CEQA.

For alternatives that were not carried forward for detailed analysis, CEQA requires only a brief explanation; that explanation is found in Draft EIR section 5.2.

USACE Comment 4

Agreed. Muni/Western appreciate the clarification.

USACE Comment 5

The Draft EIR addresses biological impacts in the Santa Ana River Construction Area from pipeline construction, including dewatering, in section 3.3.2.3.2.

USACE Comment 6

The comment is inaccurate. Alternative 3 of the 1997 Feasibility Study analyzed the effects of a 50,000 af water conservation pool at Seven Oaks; the Project is proposing a water conservation pool of the same volume. As noted in the response to USACE Comment 1, the proposed Project has been described in sufficient detail for Muni/Western to complete an analysis that fully complies with CEQA and that fully assesses the impacts of the Project.

Muni/Western understands that USFWS did not completely agree with the conclusions of the Feasibility Study. With regard to the impacts of a 50,000 af water conservation pool, however, Muni/Western believe that the experience of the winter of 2004-05 – as summarized in Thematic Response section 2.2 – demonstrates that the Feasibility Study's conclusion that there are no biological resources that would survive inundation within the 50-year flood inundation area (approximately 56,000 af) is correct.

Please see Thematic Responses section 2.2 for additional information.

USACE Comment 7

Agreed. Muni/Western understand that USACE would mitigate for the effects of flood control operations at Seven Oaks on habitat using smaller (approximately 10 acre) parcels. Please see Thematic Response section 2.4.2.

USACE Comment 8

Please see Thematic Responses section 2.4. Muni/Western agree that the USACE, working through the MSHMP process, has not determined what the ultimate strategy will be for mitigation of flood control operations downstream of Seven Oaks Dam. Muni/Western assumes the USACE will fully mitigate for the impacts of flood control operations at Seven Oaks. For the reasons described in Thematic Responses section 2.4, Muni/Western believe that there is substantial evidence to indicate that the construction of diversion dikes, either on a temporary or permanent basis, would have adverse effects on the environment of the SAR. Page 3.3-31 of the Draft EIR analyzed this potential effect and concluded that each diversion dike would affect 2-3 acres of habitat in the SAR channel. The comment provides no evidence to challenge that conclusion.

USACE Comment 9

Muni/Western calculated the effects to high flow-rate hydrology (e.g.; changes to overbank flooding) using a HEC-RAS model and other data used by USACE in its analysis of the effects of flood control operations at Seven Oaks Dam. The effects of changes in flow on biological resources is more fully described in Section 3.2.2.4.2 of the Draft EIR. Existing and with Project hydrology were evaluated for the 2, 5, 10, 20, 50 and 100-year flood events. Overbank flow in Segment C (between Cuttle Weir and the confluence with Mill Creek) was eliminated in the 20-year storm events and below. More frequent flood events lack the discharge necessary to develop water surface elevation necessary to over-top normally operating flood control structures.

USACE Comment 10

As part of the BA for Seven Oaks Dam, the USACE determined that there are three major areas where floods could result in overbank flows under post-Seven Oaks Dam conditions:

- The north bank between the Mill Creek Confluence and RM 65.41 where the 100-year flood could overtop the existing low flow channel banks and create continuous, separate, and parallel overbank flood flows within this approximately 4-mile stretch.

- Between RM 64.90 and RM 63.78 flood flows could break out into the north overbank area and inundate a large active sand and gravel mining operation; and

- Just upstream of the railroad bridge between RM 59.12 and RM 59.17, approximately 1,200 cfs of the post-dam 100-year flood flows (of 33,000 cfs) could break out into the north overbank (USACE 2000). Model results indicate that the flooding in this area would amount to less than 6 inches of shallow sheet flow (USACE 2000).

As described in Impact BIO-17 and Thematic Responses 2.3.4, Project diversions could reduce overbank flows in the north bank Mill Creek Confluence area in Segment C of the SAR which is adjacent to the Woolly Star Preserve Area (please refer to Draft EIR Figure 3.3-1). The Draft EIR provides mitigation for Impact BIO-17 (see Draft EIR MM BIO-9 and MM BIO-10).

USACE Comment 11

Please see Thematic Response 2.3.4, which describes the scientific rationale for the thresholds of significance. In brief, Muni/Western developed thresholds of significance for biological effects that were: (i) based on a review of the available scientific literature, (ii) linked to changes in the physical environment that might have biological significance to the species in question (e.g., loss of habitat area), (iii) measurable in a relatively consistent and reproducible manner, and (iv) conservative, in that these thresholds would err on the side of over-protecting the species in question. For the reasons described in Thematic Responses 2.3.4, the resource agencies lack substantial evidence for their critiques of the thresholds of significance used in the biological analysis.

Muni/Western believe that the thresholds of significance defined in the Draft EIR serve two important purposes. First, they use the best available scientific and commercial information to determine an effect in a measurable and reproducible way. In that way, the thresholds of significance avoid the need to mitigate for imaginary effects on a species. Second, by making the thresholds of significance very conservative, Muni/Western has taken the mandate of CEQA to protect the environment to the greatest extent feasible seriously. Neither this comment nor other comments identify significant effects on the environment that were not already identified in the Draft EIR. Similarly, neither this comment nor other comments identify feasible mitigation measures for impacts on the environment that were not already identified in the Draft EIR.

USACE Comment 12

Please see Thematic Responses 2.4 and the immediately preceding response to comment. Muni/Western believe that mitigation is appropriate for the temporary effects of construction on species and believes that MM BIO-2 reduces these impacts to a less than significant level. CEQA does not require a lead agency to obtain approval from either the USFWS or CDFG for mitigation ratios when the evidence before the lead agency supports mitigation ratios identified in the environmental document.

USACE Comment 13

Please see Thematic Responses 2.2 for a description of the operation and effects of Seven Oaks for water conservation. The comment speculates, without evidence or specific examples, that the Draft EIR may not have identified and analyzed all effects of water conservation at Seven Oaks Dam. Without such evidence, no further response is necessary, or even possible.

Nonetheless, in the interest of providing as much information as possible about the Project, Muni/Western note in the response to USACE Comment 1, that the analysis presented in the Draft EIR is sufficient to describe the effects of the Project on the environment as required by CEQA and so can be relied upon by Muni/Western and responsible agencies for their respective decisions on the Project. The commenter may not have fully understood that the Project would not result in the "long-term" storage of water behind Seven Oaks Dam and that "release rates" would not substantially differ from those allowed by operations of Seven Oaks Dam for flood control purposes.

USACE Comment 14

Please see response to USACE Comment 11 and Thematic Responses 2.4.2. MM BIO-9 states "Muni/Western will monitor and remove invasive non-native species establishing in the channel and adjacent RAFSS habitats between Seven Oaks Dam and Mill Creek."

USACE Comment 15

BIO-16 addresses impacts to RAFSS as a natural community while BIO-17 addresses impacts to two species (the San Bernardino Kangaroo Rat and the Santa Ana River woolly-star) that inhabit RAFSS. Thus, the area affected by BIO-16 includes the area affected by BIO-17 and includes areas of RAFSS habitat that are not home to populations of the San Bernardino Kangaroo Rat or the Santa Ana River woolly-star.

The comment suggests that because RAFSS provides habitat for endangered species, the cumulative impacts of BIO-16 and BIO-17 should be considered significant. The comment does not provide any evidence for this conclusion and does not provide any information suggesting that the Draft EIR's threshold of significance for these effects is inadequate. There is no need for the Draft EIR to analyze such speculative effects. For a more detailed discussion of the thresholds of significance for biological resources, please see Thematic Responses 2.3.4.

USACE Comment 16

Muni/Western agree that it is important to work with USACE, USFWS, and CDFG to evaluate potential mitigation measures Muni/Western strongly believe in the collaborative approach to addressing environmental resource management issues and will discuss all activities and proposed activities with appropriate resource agencies. Muni/Western have modified MM BIO-10 to reflect the need to coordinate with MSHMP agency participants (see below). However, CEQA charges the lead agency with ultimate responsibility for the project, and it would be improper to delegate that responsibility to the USACE or any other agency. Further, CEQA requires Muni/Western to develop feasible mitigation measures in preparing the Draft and Final EIR; contrary to the comment, the law does not allow Muni/Western to delay identifying mitigation measures until the conclusion of the MSHMP process. The Draft EIR recognizes the potential invasion of non-native species could be an effect of the Project; MM BIO-9 states that Muni/Western "will monitor and remove invasive non-native species establishing in the channel and adjacent RAFSS habitats between Seven Oaks Dam and Mill Creek." The comment does not identify any deficiencies in this mitigation measure.

Muni/Western hereby make the following change to the Draft EIR:

Page	Line(s)	Edit
3.3-61 and 3.3-62	38-42 and 1-19	**MM BIO-10** Muni/Western will develop a program ~~together with the USFWS and CDFG,~~ in coordination with MSHMP agency participants, to selectively restore SBKR and Santa Ana River woolly-star habitat by using habitat manipulation, either by mechanical means or high pressure water, to remove vegetation and leave freshly deposited sand and silt, simulating the habitat-renewing aftermath of natural flooding. This will be done using an adaptive management approach with input from the ~~USFWS and CDFG~~ MSHCP stakeholders. If the high pressure water method is used, water will be piped by Muni/Western to areas of suitable habitat. A high-pressure nozzle will be directed at localized areas of habitat determined to be suitable for SBKR and Santa Ana River woolly-star after renewal. The nozzle will be hand-operated or operated from a light vehicle. Treatments will be accomplished in a randomized block design to allow experimental testing of variables such as duration and intensity of spray, addition of clean sand, season of disturbance, application of seed vs. allowing natural dispersal, etc. A rigorous monitoring program funded by Muni/Western will be established to enable the differences among experimental treatments to be determined. The primary indicator of success will be related to development of habitat characteristics identified with pioneer to intermediate RAFSS habitat within which SBKR and Santa Ana River woolly-star populations have been documented. These characteristics are documented in the literature and will be specified as part of the Muni/Western program. The program will be adjusted appropriately as results from earlier efforts become available. The design and implementation of the ongoing effort will be funded by Muni/Western and conducted by representatives of Muni/Western with input from the USFWS and CDFG. A complete description of this method is also included in Appendix E7 of the Draft EIR, Section 2.0. Muni/Western commit to achieving a mitigation performance standard of restoring 10 acres of intermediate-to late stage RAFSS habitat to the early or intermediate stage RAFSS habitat during the first twenty years of Project implementation.

USACE Comment 17

Agreed. Please see Thematic Responses section 2.4.2 and response to USACE Comment 16.

USACE Comment 18

The Draft EIR states at page 3.3-61 that the Project would "decrease the potential for high flows to flood about 10 acres of habitat." MM BIO-10, which is found on that same page, is intended to mitigate for that impact of the Project. The small number of acres and the approach to mitigation allows a great deal of flexibility with regard to where the mitigation could be accomplished. The actual site would be determined by Muni/Western with input from MSHMP agency participants after consideration of management activities being implemented by USACE and the Local Sponsors.

See also Thematic Responses 2.4. MM BIO-10 has been enhanced to include a performance standard stating that Muni/Western will restore 10 acres of intermediate-to-late stage RAFSS habitat to the early or intermediate stage RAFSS habitat during the first twenty years of Project implementation.

USACE Comment 19

Muni/Western hereby make the following change to the Draft EIR:

Page	Line(s)	Edit
3.3-63	18-19	~~These flow changes could result in benefits to this species by reducing flood flows that may otherwise wash some individuals downstream.~~

USACE Comment 20

As noted in the Draft EIR on pages 3.3-19 and 3.3.20, during one of the longest droughts on record in southern California, riparian vegetation developed between Seven Oaks Dam and Cuttle Weir in an area that had been denuded during construction of the dam. The only water available on a year-round basis was the 3 cfs bypass flow from the dam to compensate for the loss to Senior Water Right Claimants of sub-surface flow interrupted by the grout curtain beneath the dam (see page 3.1-19 of the EIR.) On that basis, Muni/Western believe that releases consistent with current dam operations are sufficient to maintain the riparian corridor in this segment of the river. It is not necessary for Muni/Western to engage in an analysis to determine the minimum flows needed to sustain riparian vegetation when the existing flow regime has been able to sustain such an ecological community. High flows resulting from release of storm water collected behind the dam are expected to periodically remove part to all of the riparian vegetation that becomes established during dry years, as high storm flows would have done prior to construction of the dam. No mitigation or monitoring is necessary as these impacts are part of the flood control operation of Seven Oaks and hence the baseline conditions of the Project.

USACE Comment 21

Muni/Western concur that the release of 1,000 cfs for two days is not an absolute or maximum release rate. However, because there is no public Draft MSHMP yet available (see USACE Comment 16), USACE has not developed more specific estimates than those described in the Draft EIR, which are entirely adequate for planning purposes. Muni/Western note that there are significant limits on the ability of USACE or the Local Sponsors to retain water in a reservoir in the absence of a state-law water right for such activities; Muni/Western presume that all activities by USACE and/or the Local Sponsors will comply with such limitations.

USACE Comment 22

As noted in the response to USACE Comment 1, Muni/Western have recently begun a cooperative process with USACE and the Local Sponsors to update the 1997 Feasibility Study on water conservation at Seven Oaks Dam. Muni/Western understand and agree that: (i) flood control operations, including the mitigation flows required by the terms of the Biological Opinion for the operation of Seven Oaks Dam, take priority over water conservation; (ii) the incremental costs of water conservation (including but not limited to those identified in the comment) will be the responsibility of Muni/Western; (iii) water conservation operations should respect prior water rights and to that end have entered into settlement agreements with all of the prior water right holders; (iv) the update of the 1997 Feasibility Study must ensure water conservation can occur without an adverse impact on flood control operations; and (v) an agreement with the Local Sponsors will be needed to implement water conservation (discussions aimed at reaching such an agreement have begun).

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File Code: 1560
Date: 12/17/04

Robert L. Reiter
General Manager and Chief Engineer
San Bernardino Valley Municipal Water District
1350 South "E" Street
P.O. Box 5906
San Bernardino, CA 92412

Dear Mr. Reiter:

The Forest Service appreciates the opportunity to comment on the Water District's draft Environmental Impact Report for the Santa Ana River Water Right Applications for Supplemental Water Supply (October 2004). Good stewardship of NFS lands within the project area and improved utilization of water originating on National Forest watersheds are goals we both share. Focusing our effort on your proposals for modifications taking place upstream from Seven Oaks Dam, we have the following recommendations.

The Application proposes to move Forest Road 2N13 from its present location at the toe of the slope to mid-slope between Warm Springs Creek and approximately 2 ½ miles up the Santa Ana River. We believe it is both unnecessary and environmentally unacceptable to do this. 1

- Safety – Control gates are located at Green Spot Rd., (1N16), upper Dam Rd. (1N16A), Dam/Spillway Rd., Highway 38, upper Warm Springs Rd, lower Warm Springs Rd., lower 1N13, upper 1N13 and N09 below Manzanita Flats. Relocating Forest Road 1N13 for public safety concerns is unnecessary. Inclement weather closures (except for administrative and permitted use) are already in place.
- Access – Since high water will potentially only impact the existing river road infrequently and for short duration, the need to relocate seems unnecessary. We would like to see public access restricted with trailheads at the confluence of Forest roads 1N13 and 1N12. The southern public trailhead and closure should be at the junction of Santa Ana Road (1N13) and Warm Springs Road (1S12). The northern public trailhead and closure could be near the existing gate on Santa Ana Road on the south end of Manzanita Flat on 1N13.
- Increased sedimentation - New road construction and side cast would be a major contributor to erosion and sedimentation. Edison has had great difficulty maintaining roads to their forebays and holding soil on slopes once disturbed (e.g. penstock to power house #2) less impact to the environment.
- Reasonable and Safe Public Use of the Forest - Creating trailheads at the closure points to allow the public to drive in close proximity to the River, rather than having to bike or hike into the area on a closed road is responsive to scooping on this matter in the past.
- Major construction vs. lesser impacts – It would be difficult to hold the road on steep slopes. Road construction would have greater impacts to the watershed over fewer and less significant changes we would prefer to see.

The primary public use of the area is for primitive stream fishing, hunting, and mountain biking, hiking and driving for exploration. Forest Service use is for fire prevention and suppression and occasional 2

2 resource projects. Edison uses the road for maintaining their power station and water intakes up-stream and tunnel downstream, the Corp of Engineer's use it for weather station monitoring and debris removal upstream and dam and pool operation and maintenance downstream (upstream of the Dam). Since, even if a new road is constructed at mid-slope, there will be a need for a second road in its present location. We believe there is a preferred alternative to the one proposing to construct and maintain a realigned Forest Road 2N13. That alternative would include:

- Retention of public access by vehicle to the river on Forest Road 1N12 (Warm Springs Rd.) to a centralized parking location on the south side of the canyon. Limit public to existing access and parking for trailheads close to the river.
- For public safety, build the trailheads, road closure structures, and perform limited road maintenance on the existing road.
- At the trailheads, construct dirt/gravel parking for up to six vehicles, a small information kiosk, and appropriate barriers to stop site enlargement. The kiosk will need space for messages, limited overhead cover, an area map showing the site location, information on area/fence closures and resource protection information. These structures, if on National Forest lands, should also meet Forest design and construction standards.
- Rebuild and maintain the Warm Springs Road (1S12) to Forest Service road standards and experience level from Morton Peak Junction to the parking area/ trailheads. Your proposed use of the Warm Springs Road coming down from Morton Peak is neither in shape nor safe for many vehicles due to narrow turns, erosion, and necessary widths. This would be the primary public access route The Forest Service no longer maintains that section since its closure due to dam construction.
- Maintain the road closure devices between the trailheads and the Santa Ana Road (1N13), to the Forest plan level.
- When and if, in the lifetime of the project, the size of the parking becomes too limited or inappropriate, rebuild these facilities or move the sites to better respond to the existing management objectives at that time. For example, the parking area may need to be enlarged and, if parking for over ten vehicles were required, a toilet maintained by the project would be needed.
- Approval of changes or improvements on National Forest System lands will require compliance with the National Environmental Protection Act for which archaeological clearances, and biological evaluations are needed.

3
- Documentation and evaluation in the Application referencing improvements to National Forest System lands should be sufficient that the Forest Service can tier your document to create a defensible Federal decision.

Please feel free to call Doug Pumphrey at 909-382-2688 for further discussion of these recommendations or other assistance we can provide.

Sincerely,

Douglas Pumphrey

GENE ZIMMERMAN
for Forest Supervisor

cc: Gabe Garcia, District Ranger

US FOREST SERVICE (USFS)

USFS Comment 1

In the Draft EIR Muni/Western proposed relocating an approximately 2-mile section of an upstream access road leading to Southern California Edison (SCE) facilities. See Draft EIR Page 2-3 Lines 26-33, Figure 2-5 and Appendix C, section 1.1.3. Based on information provided by the USFS, Muni/Western have decided to eliminate this element of the Project.

With the elimination of the upstream road relocation as a Project element, many potential impacts associated with the Project would be lessened or eliminated:

- Impact GEO-2, Substantial erosion and sedimentation may occur during grading and excavation activities associated with construction of new access roads at the dam and immediately upstream.

The elimination of the upstream road relocation as a Project element would lessen but not avoid Impact GEO-2; with implementation of MM GEO-1 residual impacts would remain less than significant.

- Impact BIO-1, Construction related to realigning roads in the Seven Oaks Dam and Reservoir Area would result in loss of native vegetation and temporary effects on common wildlife.

In the Draft EIR Impact BIO-1 is considered less than significant but MM BIO-1 through BIO-6 are recommended. The elimination of the upstream road relocation as a Project element would lessen but not avoid Impact BIO-1.

- Impact AQ-1, Emissions from construction activities would not exceed a criteria pollutant ambient air quality standard for O_3, CO, NO_2, PM_{10}, and $PM_{2.5}$, substantially contribute to an existing or projected air quality standard violation, or expose sensitive receptors to substantial pollutant concentrations.
- Impact AQ-2, Emissions from construction activities would exceed the daily and calendar quarter SCAQMD emission significance thresholds for ROC, CO, NOx and PM_{10}.

In the Draft EIR Impact AQ-1 is considered less than significant. The elimination of the upstream road relocation as a Project element would lessen but not avoid Impact AQ-1. In the Draft EIR AQ-2 is considered a significant unavoidable impact even after the implementation of MM AQ-1 and AQ-2. The elimination of the upstream road relocation as a Project element would lessen Impact AQ-2 but it would remain significant and unavoidable.

The road relocation was originally included as a Project element to assure continuous access to USFS staff and users of the National Forest, SCE personnel, and other permitted users requiring access upstream of the Seven Oaks Dam during periods of Project-associated water conservation. The realignment of this road would have reduced or avoided any Project-related impacts to access and transportation systems. Removal of the road relocation will result in the following new, albeit less than significant, impact:

Impact PS-23. *Conservation Storage would intermittently make it necessary to use alternate routes to access facilities upstream of Seven Oaks Dam.*

Modeling shows that over the base period, seasonal storage as implemented by the Project could cause water levels to be higher than elevation 2,250 ft msl approximately four percent of days. When conservation storage exceeds elevation 2,250 ft msl the existing upstream access road would be inundated and it would be necessary to access facilities upstream of Seven Oaks Dam using an alternative route. Alternate routes include traveling from Highway 38/Mill Creek Canyon Road to Warm Springs Canyon Road or Highway 38 from the Barton Flat area. These alternate routes would also be in use during the longer and more frequent flood control operations at Seven Oaks Dam. Use of these alternate routes would not cause a substantial increase in traffic compared to the existing traffic load, increase hazards to vehicles, conflict with adopted transportation policies, or result in inadequate emergency access and is thus a less than significant impact.

USFS Comment 2

Please see response to USFS Comment 1.

USFS Comment 3

Please see response to USFS Comment 1.

State of California – The Resources Agency

ARNOLD SCHWARZENEGGER, *Governor*

DEPARTMENT OF FISH AND GAME
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Western Municipal Water District of Riverside County
Mr. John V. Rossi, General Manager
450 Alessandro Blvd.
Riverside, CA 92508
Fax No.: (951) 780-3837

San Bernardino Valley Municipal Water District
Mr. Robert L. Reiter, General Manager and Chief Engineer
P.O. Box 5906
San Bernardino, CA 92412

San Bernardino Valley and Western Municipal Water Districts' Draft Environmental Impact Report on the Santa Ana River Water Rights Applications for Supplemental Water Supply - SCH # 2002071062

Dear Mr. Rossi and Mr. Reiter:

The following statements and comments have been prepared pursuant to the California Department of Fish and Game's (Department) authority as trustee agency with jurisdiction over natural resources affected by the project (CEQA Guideline Section 15386) and its authority as a responsible agency under CEQA Guideline Section 15381 over those aspects of the proposed project that come under the purview of the California Endangered Species Act (CESA), Fish and Game Code Section 2050 et seq., and Fish and Game Code Section 1600 et seq. 1

As described in the Draft Environmental Impact Report (DEIR), San Bernardino Valley Municipal Water District and Western Municipal Water District of Riverside County (collectively referred to as "Muni/Western") have jointly filed two water right applications to divert a total of up to 200,000 acre feet per year from the Santa Ana River. In addition to the use of existing facilities, the proposed project would involve the construction of facilities in four general geographical areas (1) at and upstream of the Seven Oaks Dam and Reservoir; (2) in the lower Santa Ana wash area immediately downstream of Seven Oaks Dam; (3) adjacent to the Devil Canyon Power Plant; and (4) near Lytle Creek at the northern edge of the City of Rialto. Additionally, the proposed project would involve the use of existing groundwater recharge facilities located within the San Bernardino Valley Municipal Water District service area.

The Department believes the proposed project will result in significant adverse impacts by reducing or eliminating flows available to riparian and aquatic resources within the Santa Ana River. The Department is concerned that the DEIR fails to adequately address potential impacts to biological resources from the proposed project. The Department believes the DEIR should be revised and recirculated in order to adequately address instream flow needs, including flows for the preservation and enhancement of fish, wildlife, and their habitat. The Department believes that water should be retained in the Santa Ana River to support species that exist in and near the 2

2 river, including the federally-threatened Santa Ana sucker (*Catostomus santaanae*, "sucker"), state- and federally-endangered least Bell's vireo (*Vireo bellii pusillus*), and other sensitive species.

Biological Impact Conclusions

3 The Department's primary concern with the DEIR is that it's biological impact conclusions lack supporting evidence. Particularly in those segments of the river where significant reductions in surface flows are anticipated, the DEIR fails to make a connection between the facts found and the conclusions reached. To the extent that the DEIR recognizes that the elimination and reduction of surface water flows is a significant impact, but concludes that impacts to biological resources are less than significant, the Department believes this conclusion is not supported by substantial evidence. The presence of these unsupported conclusions throughout the DEIR "subverts the purposes of CEQA if it omits material necessary to informed decisionmaking and informed public participation. Case law is clear that, in such cases, the error is prejudicial." (*County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 946.)

4 For example, in Section 3.1 (Surface Water Hydrology and Water Quality) the DEIR concludes that the project would significantly decrease river flow on non-storm days in Segment B (Seven Oaks Dam to just above Cuttle Weir). However, in Section 3.3 (Biological Resources) the DEIR states on page 3.3-29 that changes in river flows in Segment B are expected to have little or no effect on the existing riparian habitat. It is not clear how this determination was made because there is no analysis indicating how much water is needed to support the habitat in Segment B. Similarly, on page 3.3-64, it states that "the continued flow of 3 cfs on non-storm days would likely be sufficient to support the small amount of riparian habitat that exists in this reach and a measurable reduction in habitat is not expected." This appears to be based upon
5 speculation. No quantitative information supporting this conclusion was provided. Page 3.3-62 of the DEIR indicates that aquatic habitat is present within Segment B, and with the project, flows would be reduced in this segment to 3 cfs. However, the DEIR concludes that flows of "3 cfs would likely be sufficient to support the aquatic community that currently exists in this segment." Again, the DEIR does not provide facts or analysis supporting this determination, and it appears to be based on speculation rather than substantial evidence. This sort of unsubstantiated, qualitative approach to biological impacts analysis is repeated throughout the document.

6 The Department believes the DEIR does not provide sufficient analysis of impacts to biological resources caused by the predicted reductions of surface flows in the Santa Ana River. Without site specific studies there is no way to adequately assess the biological impacts of the project or to develop measures to mitigate or avoid significant impacts. On page 21 of Muni/Western's August 27, 2004 comments on the draft EIR prepared by the San Bernardino Valley Water Conservation District, Muni/Western appropriately commented that "where possible, the DEIR must use a quantitative rather than qualitative analysis to support impact conclusions...Underlying data, explanations of analytical methodology and other information should be provided in a technical appendix to enable decision-makers and the public to review the conclusions of the DEIR." The Department agrees with Muni/Western that quantitative analysis, underlying data, and explanations of methodology should be provided to enable public review of the DEIR's impact conclusions. The Department respectfully requests that Muni/Western apply this standard to its own document in a revised and recirculated DEIR.

7 The Department believes the proposed project will have substantial adverse effects on the Santa Ana sucker. The DEIR's biological impact conclusions regarding the sucker are not supported by substantial evidence and are thus inadequate under CEQA. Muni/Western has

failed to comply with Public Resources Code section 21083 and CEQA Guidelines section 15065, 7
which "control not only the decision of whether to prepare an EIR but also the identification of effects to be analyzed *in depth* in the EIR...." (Emphasis added.) (*Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal. App. 4th 98, 120-21.) The Department believes the proposed project will have many of the impacts described in CEQA Guideline section 15065, which warrant *in depth* analysis that is not provided in the DEIR.

Sensitive Fishery Resources

Four of the Santa Ana River's eight native fish have already been extirpated, and the four 8
remaining native fish have limited distributions. The range of the Santa Ana speckled dace (*Rhinichthys osculus* ssp.) has been dramatically diminished to a few small populations and its extinction is likely unless it receives special protection. (Moyle 2002, p. 164.) The arroyo chub (*Gila orcutti*), a California species of special concern, is found in slow-moving streams with mud or sand substrates. They are present in the middle Santa Ana River and its tributaries. Arroyo chub are presently common at only four places within their native range. (Moyle 2002, p.131.)
The Santa Ana sucker, listed as "threatened" under the federal Endangered Species Act (ESA) 9
and as a California species of special concern by the Department, is present in the Santa Ana River downstream of Seven Oaks Dam.

Historically, Santa Ana sucker occurred from near the Pacific Ocean to the uplands of the 10
Los Angeles and San Gabriel River systems, and to at least where Pump House No. 1 is now located, near the San Bernardino National Forest Boundary in the Santa Ana River (Swift et al. 1993). Fish collections made in the 1930's by University of Michigan biologists confirm the presence of Santa Ana sucker approximately one mile above the Seven Oaks Dam.

In the last 50 years, the Santa Ana sucker has dramatically declined and is now restricted to the headwaters of the San Gabriel River system, Big Tujunga Creek in the Los Angeles River basin and portions of the Santa Ana River. The portions of the Santa Ana River currently occupied by the Santa Ana sucker constitute approximately 60 percent of the total remaining range of the species. The Santa Ana sucker is thought to have lost approximately 75 percent of its native range. (See 50 C.F.R. Part 17.)

The U.S. Fish and Wildlife Service (USFWS) has concluded that urbanization, water 11
diversions, groundwater over-drafting, dams, pollution and introduced species are the main contributors to the decline of the Santa Ana sucker on the Santa Ana River. While currently no decision has been made to reestablish Santa Ana sucker into areas formerly occupied by the species, USFWS has indicated that the reintroduction of Santa Ana sucker into formerly occupied habitat is a key component to recovery of the species. This means that suitable habitat should be preserved and existing marginal habitat must be restored to benefit the species.

The restricted range and severe drop in population numbers in the last 30 years prompted 12
the USFWS to list the Santa Ana sucker as a threatened species under the federal Endangered Species Act (ESA) in April of 2000. The Santa Ana sucker is likely to become an endangered species in the foreseeable future if present threats continue and populations decline further. (65 Fed. Reg. 19686.) At present, populations of the Santa Ana sucker are not stable, with population numbers declining severely in the last 5-10 years. If trends continue and additional water is removed from the Santa Ana River, conditions for the Santa Ana sucker will further decline and it will likely face extirpation in the Santa Ana River.

13 The Department is concerned that expected surface flow reductions caused by the project have the potential to significantly impact sucker habitat and existing populations in the Santa Ana River by reducing flows necessary for existing populations to survive and recover. Expected flow reductions will also significantly affect the habitat needed for feeding and spawning by reducing the amount of cobble and gravel that is washed downstream. The Department believes mitigation measures should be incorporated into the project to avoid, minimize, and/or compensate for impacts to sucker. The Department recommends that Muni/Western study the feasibility of providing minimum flows to allow for the survival and recovery of the Santa Ana sucker.

14 Although Santa Ana sucker do not occupy the immediate area of Muni/Western's proposed diversion in the Santa Ana River, the USFWS designated Unit 1B (the entire river between Seven Oaks Dam and the La Cadena Ave. Bridge in segment F and Mill and City Creeks) as critical habitat on February 26, 2004. The USFWS determined this habitat was "essential for the conservation of the Santa Ana sucker" because:

> "they provide and transport sediment necessary to maintain the preferred substrates utilized by this fish; convey stream flows and flood waters necessary to maintain habitat conditions for the Santa Ana sucker; and support riparian habitats that protect water quality in the downstream portions of the Santa Ana River occupied by the sucker... City Creek, a tributary of the Santa Ana River, was documented as containing Santa Ana suckers as recently as 1982, but has not been recently surveyed. Protection of these unoccupied areas is essential to provide the downstream habitat conditions necessary to maintain the Santa Ana River population of the sucker. Unit 1B is essential because it provides the source for preferred spawning and feeding substrate of the Santa Ana sucker. Although portions of Unit 1B (Santa Ana Wash) are generally dry during the summer, this portion of the river has a higher gradient and a greater percentage of gravel and cobble substrate than the occupied areas that are downstream. Suckers spawn over gravel substrates where their eggs can adhere to gravel before hatching into larvae. Winter flows from upstream areas annually replenish this substrate and clean sand from it. In addition, suckers feed by scraping algae, insects, and detritus from gravel and cobble. Therefore, the upstream source of spawning and feeding substrates (gravel and cobble) are essential to the reproductive ability and development of the sucker in the downstream occupied reaches.
>
> 15 Unit 1A and Unit 1B are essential to the conservation of the sucker because they maintain a relatively natural hydrograph. The Santa Ana sucker evolved in the naturally dynamic hydrological systems of southern California. Therefore, as a larger intact river system has greater potential to provide a more natural hydrograph, Unit 1A and Unit 1B are essential to maintain the natural hydrograph of the Santa Ana River and ensure the continued existence of the sucker in the Santa Ana River. The importance of a natural hydrograph for native fishes has been demonstrated for many systems. For example, nonnative fishes can more easily invade systems where the natural hydrograph has been disrupted by dams and reservoirs and these nonnative fishes can contribute to the decline of native fishes through predation and competition.
>
> Unit 1A and Unit 1B are also essential because they maintain habitat for the southernmost extent of the existing distribution of the Santa Ana sucker. Consequently, these units enhance the long-term sustainability of the sucker by maintaining its genetic adaptive potential and a well-distributed geographical range to buffer the sucker's particular vulnerability to environmental fluctuations and catastrophes because of its limited number of populations." (Internal citations omitted.)(69 Fed. Reg. 8845.)

On January 4, 2005, the USFWS announced that effective February 3, 2005 the critical 16
habitat designation for the Santa Ana sucker will be modified to exclude all sucker habitat in the Santa Ana River. According to the USFWS, this modification is based in part on a new interpretation of congressional directives to be "circumspect" in designating critical habitat that is not currently occupied. (70 Fed. Reg. 436.) However, the USFWS did not back away from its earlier determination that "Mill Creek, City Creek, and the upper Santa Ana Wash in Unit 1B are a source of sediment for the occupied portion of the Santa Ana River (Dr. Thomas Haglund, pers.
comm. 2004; Dr. Jonathan Baskin, pers. comm. 2004; EIP Associates 2004). This sediment, 17
which is composed of cobble, gravel, and sand, provides spawning and feeding substrates for the sucker and is essential to the conservation of the species." (70 Fed. Reg. 431.) Furthermore, reaffirmed the USFWS, Unit 1B also "supports a functioning hydrological system (Dr. Thomas Haglund, pers. comm. 2004; Dr. Jonathan Baskin, pers. comm. 2004) that experiences peaks and ebbs in water volume within the Santa Ana River watershed (Dr. Thomas Haglund, pers. comm. 2004; Dr. Jonathan Baskin, pers. comm. 2004)." (70 Fed. Reg. 431.) The USFWS recognized, and the Department agrees, that although "much of the surface water within Unit 1B has been diverted for municipal uses or other purposes, heavy rainstorms during the rainy season do provide flows that are biologically important to the sucker (Swift 2001; EIP Associates 2004)." (70 Fed. Reg. 431.) These are important habitat values that should be acknowledged and carefully addressed in the DEIR.

Section 3.1 of the DEIR discusses the expected reduction of flows capable of transporting 18
gravel and cobble downstream in some of the river segments. These were not identified as significant impacts because the DEIR indicated that these sections don't typically contribute gravel and cobble. However, the Department believes infrequent depositional events are biologically important, and over time, there will be significant cumulative impacts related to decreases in the rate of gravel and cobble deposition in the river. The DEIR did not adequately address how the project will affect the downstream transport of these essential substrates.

Decreased Surface Flow and Impacts to Biological Resources

The Department is particularly concerned that potential impacts to native fish and other 19
biological resources were not clearly disclosed in the DEIR. The DEIR failed to adequately address how the anticipated significant flow reductions will impact the Santa Ana sucker. Nor does the DEIR describe minimum bypass flows for the maintenance of aquatic habitat. Page 3.3-56 of the DEIR indicates project diversions would result in an incremental reduction in non-storm flows during both the winter and summer season, and the effect on non-storm day flows diminishes as one proceeds downstream and becomes essentially indistinguishable from no project conditions within Segment F (more than twenty river miles downstream of Seven Oaks Dam). Page 3.3-64 of the DEIR states habitat within Segment F (from RIX and Rialto effluent outfall to Riverside Narrows) "is suitable habitat for the Santa Ana sucker nearly throughout," and
"populations have been detected in several locations within this segment." But, the DEIR 20
concludes, project effects on the sucker within this segment are "extremely small." Although the DEIR doesn't acknowledge it, this conclusion is impossible without relying on continued wastewater discharges into the river. Furthermore, this conclusion oversimplifies the modeling output regarding potential impacts to surface flows and potential impacts to fishery resources in this segment of the river. Table 3.3-6 on page 3.3-59 indicates that the project will result in flow
reductions in Segment F during July through September that could reach up to 15 cfs. This 21
represents a reduction in flows of approximately 18 percent. This is a significant reduction in flows, and it is especially crucial since it will occur in a portion of the river that supports one of the few remaining populations of sucker. Also, it will occur during a time of year when flows are already low. These flow reductions could result in suckers being isolated from the main flow of

21 the river in pools that could dry up or expose them to increased predation. The Department cannot adequately assess the impacts to sucker populations due to the expected flow reductions during these months because sufficient information was not provided in the DEIR indicating expected changes in water depth or elevation caused by these flow reductions.

22 The DEIR acknowledges that the Project would significantly decrease surface river flows on non-storm days from the Seven Oaks Dam to the Riverside Narrows, resulting in portions of the river being completely dewatered except during storm days. Although the DEIR recognizes that these flow reductions are significant effects on the environment, no feasible mitigation measures or alternatives are identified. For example, on Page 3.1-41 regarding Segment C (from Cuttle Weir to just above the confluence with Mill Creek) it states that "with the project there would be no flow in this river segment on non-storm days". According to the DEIR, Muni/Western assessed various potential mitigation measures involving changes in timing, pattern, and volume of diversion, but "no feasible mitigation measures were identified that would avoid a significant change in river flow on non-storm days while still allowing a consistent and reliable diversion for
23 beneficial use by the Project." The Department has serious concerns about these anticipated reductions in surface flows and how dewatering portions of the river will affect fishery resources and riparian habitats in the Santa Ana River. The Department is also concerned that no mitigation is offered to avoid or minimize these significant impacts, especially since any reduction in flows would be a significant impact on the federally threatened Santa Ana sucker (also see our discussion below under "Significance Thresholds" and "Cumulative Impacts").

24 The Department is concerned that potential impacts to the Santa Ana sucker and other fishery resources were not adequately addressed as they relate to surface flow reductions. The Department is similarly concerned by the DEIR's failure to identify mitigation to avoid, minimize, and reduce impacts to sucker and other biological resources. Muni/Western should conduct studies to determine whether minimum instream flows would reduce these impacts. Muni/Western should ensure adequate flows are retained in the Santa Ana River to support existing sucker populations downstream of Seven Oaks Dam. Without appropriate studies within each portion of the river, impacts to the Santa Ana sucker and other instream biological resources are difficult to quantify. The Department recommends conducting appropriate studies, such as an Instream Flow Incremental Methodology (IFIM) analysis, to adequately determine the potential impacts to fishery resources in the river as the result of surface flow reductions, especially in Segment F from June through September.

25 Numerous biological resources exist within the Santa Ana River, but the discussion of biological resources in the DEIR was inappropriately limited to threatened and endangered species. There are many other sensitive species known to occur in the project area. Although these species are listed in Appendix E, expected impacts are not discussed and mitigation measures are not identified. Among these sensitive species are arroyo chub, speckled dace, southwestern pond turtle, and spadefoot toad. For each of these species, the DEIR simply lists a one sentence description of their habitat, then states they "may potentially occur" in the project area. (Page 2 of Table E5-2.)

26 Section 3-3 (Biological Resources) fails to provide any site specific or quantitative information on the fishery resources found within the project area. The DEIR should discuss impacts associated with reduced flows in the various reaches and how this would impact fishery resources. As stated earlier, the DEIR should include the results of site-specific studies, such as IFIM analyses, for all segments of the river that are affected by the proposed diversions. These studies are necessary to ensure there are adequate flows to protect fishery resources. The Department believes that it may be necessary to provide for a continual release of water through

Seven Oaks Dam to maintain fishery resources below the plunge pool and downstream for 26
several miles. An IFIM study could be used to determine the amount of flow needed to maintain fishery resources below the dam.

Significance Thresholds

The Department believes the DEIR's significance criteria for biological resources are too 27
narrowly focused and do not address the particular environmental impacts of the proposed project. On Page 3.3-36 (in Table 3.3-4), the DEIR identifies the loss of at least one acre of sucker habitat as the threshold of significance for the loss of existing Santa Ana sucker habitat and reductions in quality of potentially suitable habitat. An impact to a fishery resource is not generally considered in acres. One acre of habitat may be home to 1,000 or more individuals. This is not an adequate approach to assess significance, especially for a species whose habitat has been reduced to only a small portion of the Santa Ana River and is in danger of becoming eliminated from the Santa Ana River. Without detailed site specific studies, such as an IFIM
study, specific impacts to the Santa Ana sucker cannot be determined. This DEIR should not be 28
finalized until these studies are completed and incorporated into the document. Once completed and incorporated into the DEIR, the Department may be able to develop dismissal terms for our protest. The permanent, unmitigated loss of sucker habitat is not acceptable to the Department.

The Department is concerned that several of the significance thresholds for biological 29
resources are too high, and we recommend their reduction by a factor of 10. For example, Riversidean alluvial fan sage scrub (RAFSS) thresholds are at 1, 5 and 10 acres for moderate to good quality, poor quality and indirect impacts, respectively. More feasible significance criteria would be 0.1 acre for good quality habitat, 0.5 acres for poor quality habitat, and 1 acre for indirect impacts. An even more appropriate threshold for impacts to good or moderate quality RAFSS, is to make the threshold the same as for the removal of riparian and wetland habitat. Thus, any removal of RAFSS would be considered significant. Similarly, the 1-acre significance threshold on page 3.3 – 34 for assessing the desiccation of riparian habitat is too high and should be reduced to 0.1 acre. The Department disagrees with the DEIR's statement that 1 acre "is probably at the lower limit of delineation." No information was provided that supports this conclusion.

The Department objects to the DEIR's lack of significance criteria to evaluate changes in 30
storm flows, and the document's corresponding failure to address the biological impacts of significantly altering the natural hydrograph. Although only thirty percent of all days are classified as storm days, they are the source of greater than half of the water expected to be diverted by the proposed project. Given the importance of preservation of a natural hydrograph in maintaining native fishes in general, and the USFWS's continued assertion that Unit 1B is vital for the maintenance of a natural hydrograph for the Santa Ana sucker, this is a serious omission that should be remedied.

Cumulative Impacts

The DEIR fails to fully consider the cumulative biological impacts of the proposed project in 31
light of all of the other applications that are currently before the Board, past and existing diversions, and the potential for future wastewater marketing. The DEIR notes in several places that flow impacts diminish with distance from the Seven Oaks Dam, but the impact conclusions, particularly in segments G and F, appear to rely on the continued discharges of wastewater treatment facilities. The DEIR should be revised to consider how other water right applications and other probable future projects will affect the hydrology and biological resources in the Santa

31 Ana River, particularly against the backdrop of the precarious status of the Santa Ana sucker and
32 other sensitive biological resources. Recognizing that the cumulative condition is already severe,
the DEIR should address whether any additional contribution to the problem through increased
diversions should be considered significant in light of the serious nature of the problem. (*See
Communities for a Better Environment, supra,* 103 Cal.App.4th at p. 118; *Kings County Farm
Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 718; *Los Angeles Unified School Dist. v.
City of Los Angeles* (1997) 58 Cal.App.4th 1019, 1024-1026.) The more severe the cumulative
problem, the lower the threshold should be for treating a project's contribution as significant. (*Id.*)
"From *Kings County* and *Los Angeles Unified,* the guiding criterion on the subject of cumulative
impact is whether any additional effect caused by the proposed project should be considered
significant given the existing cumulative effect." (*Communities for a Better Environment, supra,*
33 103 Cal.App.4th at p. 118) The DEIR's analysis of cumulative impacts fails to properly apply
these CEQA principles. The Department urges Muni/Western to reconsider its analysis of
cumulative impacts, and propose mitigation that may serve as protest dismissal terms.

Streambed Alteration Agreement

34 In Table 2-1 on Page 2-9, a Section 1601 Streambed Alteration Agreement is listed as one
of the permits that Muni/Western will potentially need. The Department agrees that the project
will require notification to the Department, pursuant to Section 1600 et seq. of the Fish and
Game Code, for a Streambed Alteration Agreement, because the project will divert the flow
and/or will result in alterations to the bed, channel, and/or bank of the Santa Ana River.
Muni/Western should be aware that Section 1600 et seq. of the Fish and Game Code has been
recently amended, and the notification requirement can now be found in Section 1602 instead of
1601. The purpose of a Streambed Alteration Agreement is to provide measures to avoid and
minimize impacts to river, streams, or lakes and their associated resources. If impacts cannot be
avoided and minimized, measures are incorporated to compensate for loss to the resources.
35 Therefore, mitigation measures will need to be developed to mitigate impacts to the Santa Ana
River and associated resources. These measures should not be deferred to the Streambed
Alteration Agreement process, but should be identified in the EIR. As discussed above, no
mitigation was offered for the reduction in non-storm flows and storm flows and resulting impacts
to fishery resources.

Other Specific Comments

36 ❖ On Page 3.3-44, MM BIO-8 states that if MM BIO-7 is found to be infeasible, to compensate for permanent or long-term losses of RAFSS habitat and RAFSS habitat value, Muni/Western will acquire and preserve RAFSS of equal or greater value than impacted at a 1:1 ratio, in perpetuity, and provide funding for future management in perpetuity. This is a very low ratio for this plant community, and is only offered for RAFSS habitat. Due to the scarcity and value of RAFSS, mitigation ratios should be a minimum 3:1 for RAFSS.

37 ❖ Impact BIO-16 indicates that there would potentially be a transition/conversion from pioneer/intermediate to mature RAFSS. The DEIR indicated this impact would be less than significant, and therefore proposed no mitigation measures. The Department does not agree with this determination and Muni/Western should acquire other lands as part of a mitigation plan and/or other mitigation measures.

38 ❖ Page 3.3-61, MM BIO-10 states "Muni/Western will develop a program, together with the USFWS and CDFG, to selectively restore SBKR and Santa Ana River woolly-star habitat by using habitat manipulation, either by mechanical means or high pressure water, to remove

vegetation and leave freshly deposited sand and silt, simulating the habitat-renewing aftermath of natural flooding. This will be done using an adaptive management approach with input from the USFWS and CDFG." The Department has serious concerns about the feasibility of this mitigation measure. Rejuvenation of alluvial surfaces comes from both scouring and depositional events. And, those events are closely correlated with the severity of flooding. Typically, depositional events occur in very large flood events while scouring occurs in moderate flooding events. More detail should be provided in order to assess this proposed mitigation measure to ensure that it would mimic the effects of natural processes. Other mitigation measures should also be implemented to mitigate impacts. These could include habitat acquisition and protection, and/or modification to the project such that natural flooding can occur. 38

- Page 3.3-63 states that the "minor decrease in frequency of gravel and cobble transport during flood events between Mill Creek and E Street would not adversely affect critical habitat or the physical habitat occupied by the Santa Ana sucker. Thus impacts on Santa Ana sucker would be less than significant, and no mitigation is required." First, it is not clear why Segment C (from Cuttle Weir to Mill Creek confluence) was not included in this discussion. Second, the Department does not agree with this finding and believes the DEIR does not provide substantial evidence in support of this claim. Occupied portions of the Santa Ana River are already limited in the supply of the necessary cobbles and gravel components needed for the Santa Ana sucker to spawn. Any decrease in these materials should be treated as a significant impact. Appropriate mitigation should be proposed for this impact. The Department recommends mitigation measures include restoration of potentially suitable habitat for Santa Ana sucker within the Santa Ana River. 39

- The Department recommends the reduced diversion rate of 500 cfs, as opposed to the 1500 cfs, as way of reducing project impacts on storm days and minimizing impacts to the natural hydrograph. 40

- The Department objects to the DEIR's misleading suggestion on page 3.3-63 that reducing peak storm flows "could result in benefits to [the Santa Ana sucker] by reducing flood flows that may otherwise wash some individuals downstream." The importance of a natural hydrograph for native fishes has been demonstrated for many systems. For example, nonnative fishes can more easily invade systems where the natural hydrograph has been disrupted by dams and reservoirs and these nonnative fishes can contribute to the decline of native fishes through predation and competition. (69 Fed. Reg. 8845.) The Santa Ana sucker, in particular, is adapted for living in unpredictable environments subject to periodic, severe flooding. (Moyle 2002, p.183.) "Such adaptations include short generation time (early maturity), high fecundity, and a relatively prolonged spawning period. These characteristics enable Santa Ana suckers to recolonize streams rapidly by producing more young over a longer time span. The short generation time allows Santa Ana suckers to reproduce early in life, and the probability of adult mortality is high. The small size also probably enables individuals to utilize a greater range of instream refuges than would be available to larger fish during high flows." (Id.) 41

- The DEIR should describe the basis for the assertion on page 3.1–29 that the gages on the Santa Ana River have a margin of measurement error plus or minus fifteen percent. 42

- The tables and accompanying text in section 3.1 of the DEIR mask the expected flow reductions by comparing changes in median flows rather than changes in mean flows. This 43

43 is particularly misleading in systems like the Santa Ana River that are subject to extended dry periods and periodic, severe flooding.

44 ❖ Beneficial uses which relate to surface and groundwater are discussed in the Surface Water Hydrology and Groundwater Hydrology Sections. However, as described on page 3.1-13, Table 3.1-8, and in the Department's original protest letter, Beneficial Use Designations for Warm Freshwater Habitat (Reaches 2, 3, 4, 5); Cold Freshwater Habitat (Reach 6); Wildlife Habitat (Reaches 2, 3, 4, 5); Rare, Threatened or Endangered Species (Reaches 2, 3, 5); and Spawning, Reproduction, and Development (Reach 6) also exist for Santa Ana River water. How these beneficial uses are impacted for these biological values
45 was not specifically analyzed. Analyses specific to these beneficial uses should include: the preservation and enhancement of aquatic habitats, vegetation, fish and wildlife, including invertebrates; the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife; use of waters which support habitats necessary for the survival and successful maintenance of plant or animal species designated under state or federal law as rare, threatened or endangered; and waters which support high quality aquatic habitats necessary for reproduction and early development of fish and wildlife. The protection of beneficial uses and any impacts to these uses needs to be addressed. The allocation model on page 3.1-27 should include the beneficial use of protecting fish and wildlife resources that are in the project area.

46 ❖ On page 3.2-26 it states "Project diversions would divert water from the Santa Ana River, which would reduce recharge in the river channel." The DEIR went on to say that the lack of recharge in the river would be offset by other means and that "The net effect is to recharge the [San Bernardino Basin Area] with a similar quantity of water as would occur under No Project conditions. The project would affect only the timing and location of recharge." What the DEIR failed to adequately address is the effect the change in timing and especially location will have on the riparian habitat within the Santa Ana River. The riparian habitat within the river would no longer benefit from the natural groundwater recharge that would occur under the no project alternative. Riparian habitat usually relies on groundwater resources during the dry season. If the surface water is diverted out of the river and recharge within the river is reduced or eliminated, riparian habitat could no longer survive.

47 ❖ On page 2-2, section 2.4.1, it states that criteria under which Seven Oaks Dam is currently being operated would be changed to accommodate conservation storage in addition to its current use for regulatory flood storage. However, the DEIR does not explain how the U.S. Army Corps of Engineers' (USACE) has a legal right to impound water in the Santa Ana River, nor does it describe releases necessary to comply with Fish and Game Code section 5937. This section requires adequate flows to be released below the dam to keep in "good condition" any fish that exist below the dam.

48 ❖ The Biological section relies on mitigation by the USACE for the Seven Oaks Dam project for the impacts to the area upstream of the dam. For example, on page 3.3-19 the DEIR states "Biological resources upstream of Seven Oaks Dam that would potentially be affected by the Project were assumed to be within the potential inundation area of Seven Oaks Dam and mitigation for their loss was the responsibility of the USACE following its construction and operation for flood control." The Department believes the length of time the water would be pooled behind the dam for this project would be longer than analyzed by the USACE for flood control purposes. However, without a discussion of how the Project's impacts compare to impacts from flood control only, it is difficult to know what impacts would occur beyond that analyzed in the USACE document. The Department believes the

impacts of water conservation behind the dam should be further addressed in a recirculated DEIR. 48

Thank you for this opportunity to provide comment. Questions regarding this letter and further coordination on these issues should be directed to Ms. Leslie MacNair, Staff Environmental Scientist, at (949) 458-1754.

Sincerely,

Leslie MacNair
for
Curt Taucher
Regional Manager

cc: State Clearinghouse
Sacramento

SWRCB
Sacramento

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CALIFORNIA DEPARTMENT OF FISH AND GAME (CDFG)

CDFG Comment 1

Thank you for your comments.

CDFG Comment 2

At the request of CDFG and other commenters we have provided additional information that was used by Muni/Western in the development of the Draft EIR in Thematic Responses 2.3.4. This information provides, on a reach by reach basis, the habitat data and impact analysis information used to determine the impact levels included in the Draft EIR. See also response to USACE Comment 20 for effects on riparian habitat between Seven Oaks Dam and Cuttle Weir.

The information described above provides additional details supporting the analysis in the Draft EIR but does not require Muni/Western to recirculate the Draft EIR for an additional public comment period. The supplementary information in Thematic Responses 2.3.4 does not:

- include substantial changes in the Project, since this information is about the characteristics of the existing environment;
- result in substantial changes regarding the circumstances under which the Project is being undertaken, since the environment has not substantially changed; or
- provide new information which was not known and could not have been known, since this information was considered in the development of the Draft EIR.

CDFG Comment 3

The Draft EIR's conclusions were based on substantial evidence, as set forth in section 3.3, in Appendix E of the Draft EIR and the scientific literature referenced in those discussions. Muni/Western are entitled to rely on that information and to exercise their independent judgment as to the significance of the impacts.

Thematic Responses section 2.3.4 details the water flow and biological information used in developing the Draft EIR biological resources analysis of impacts from the proposed water diversion. The significance thresholds established for the surface water hydrology and biological resources differ consistent with the differing characteristics of the resources being evaluated. As described in that section of the Thematic Responses, the significance threshold established for changes in surface water were based on the ability of the USGS gauge data to differentiate between two values of flow. While some of the changes in surface water flow may be measurable (and therefore be identified as a significant impact), small changes in high flows are not expected to have significant effects on biological resources. For this reason, the impacts of proposed Project effects on surface water hydrology are different for water resources and biological resources.

CDFG Comment 4

Please see response to USACE Comment 20, CDFG Comment 3, and Thematic Responses section 2.3.4.

Significant hydrological impacts do not necessarily result in significant impacts to biological or other resources. Likewise, certain hydrologic parameters that are coupled to specific physical actions (e.g.; critical velocity needed to transport or deposit sediment) may occur within the 15 percent plus or minus accuracy of the USGS estimate of daily discharge in the Santa Ana River.

CDFG Comment 5

Please see response to USACE Comment 20 and CDFG Comments 3 and 4.

The comment is incorrect in that it suggests that this conclusion is based on speculation; instead the statement in the Draft EIR is based on existing physical conditions in Reach B.

It is important to recognize that the even though the Project would reduce flow in Segment B by approximately 1 cfs (from 4 to 3 cfs median flow on non-storm days), this reduced flow would not have a major impact on riparian vegetation in Segment B. The reduced flow would continue to support the existing levels of riparian and aquatic resources in this segment of the SAR. The engineered channel and bank configuration of much of this area does not allow expansion of the riparian vegetation, as shown in Figure 3.3-3 of the Draft EIR. The isolation of this reach from other segments of the SAR does not allow the natural recruitment and development of self-sustaining populations of fish or other aquatic species. The riparian vegetation that occasionally develops in the stream channel is also subject to removal by normal flood control releases from Seven Oaks Dam, as occurred during spring 2005.

CDFG Comment 6

Please see Thematic Responses sections 2.3.4 and 2.4.2. These responses discuss, using extensive quantitative analysis, the potential impacts of the Project on biological resources in the Santa Ana River downstream of Seven Oaks Dam. Recirculation of the document is not required.

CDFG Comment 7

Please see Thematic Responses sections 2.3.1 and 2.3.4. The comment does not provide any evidence to support its contention of impacts to the Santa Ana sucker. As shown in Thematic Response section 2.3.1, the Project would not have a significant effect on flows in areas occupied by the sucker. Nor would the Project interfere with the potential re-introduction of the Santa Ana sucker into the SAR between Seven Oaks Dam and the RIX Outfall. As shown in Thematic Responses 2.4.3, even without the Project there are substantial periods of time when there is zero flow in these reaches of the SAR. Accordingly, it is not feasible to re-introduce the Santa Ana sucker into these reaches.

CDFG Comment 8

Muni/Western concur with the observations made by CDFG that prior actions have extirpated native fish species from the SAR and that the remaining native fish have limited distributions. Arroyo chubs occur primarily in tributaries to the SAR and those populations would not be affected by the Project. Effects of the Project on native fish within the mainstem of the SAR would be minimal because Project diversions would occur primarily during high flow periods in the river as described in Thematic Responses section 2.3.4.

CDFG Comment 9

Muni/Western agree that the threatened Santa Ana sucker is present in the Project area of the SAR downstream of the RIX-Rialto Outfall to the Prado Flood Control Basin as described in section 3.3.2.4.2 of the Draft EIR. See response to CDFG Comment 7 as to the reason that the Project will not have a significant impact on the Santa Ana sucker.

CDFG Comment 10

While the description provided of the historical extent of Santa Ana sucker habitat may be correct, this is not the appropriate baseline for analysis of the impacts of this Project. The Santa Ana sucker distribution in the river is no longer as historically described. The current distribution of this species is as described in the Draft EIR and is the appropriate distribution to use for the CEQA process.

CDFG Comment 11

Muni/Western supports reasonable USFWS actions to protect and recover species in jeopardy of extinction. However, based on the limited effect of the Project on occupied Santa Ana sucker habitat (see Thematic Responses section 2.3.4) and the current lack of perennial water in the Santa Ana River between Seven Oaks Dam and habitat occupied by the sucker, it is highly unlikely that this Project would reduce the potential future opportunities for USFWS actions. As shown in Thematic Responses section 2.4.3, without the Project, Segment C would be dry approximately 52 percent of the time. Reintroduction of the Santa Ana sucker under such circumstances is speculative, at best, and it would be unreasonable and unlawful to attempt to require the Project to mitigate for impacts unrelated to the Project.

CDFG Comment 12

Please see response to CDFG Comment 11.

CDFG Comment 13

As with all of the other comments by CDFG relating to the Santa Ana sucker, this comment does not identify any specific information relating the Project with adverse effects on the sucker, relying instead on generalized "concerns" that may or may not apply to the SAR system. Such concerns are mere speculation and do not constitute substantial evidence of any potential effect of the Project on the environment.

Please see Thematic Responses section 2.3.4 for supporting information regarding Project effects on flow and coarse sediment transport. The feasibility of bypassing water to maintain a wetted channel from Seven Oaks Dam to the Rialto Drain are assessed in Thematic Responses section 2.4.3.

CDFG Comment 14

The revised critical habitat designation issued on January 4, 2005 does not include the SAR or its tributaries. Thematic Responses section 2.3.4 shows that the Project would not adversely affect sediment transport from "E" Street (above habitat occupied by the Santa Ana sucker) to the Prado Flood Control Basin.

CDFG Comment 15

Unit 1A is the Prado Flood Control Basin and tributaries to the SAR in that area. Neither the basin nor those tributaries would be affected by the Project.

Unit 1B is the SAR wash, which is no longer included in the critical habitat designation for the Santa Ana sucker. This section of the river currently does not have a natural hydrologic regime due to existing dams and diversions, including Seven Oaks Dam, which will continue to influence river flows with and without the Project. For example, flow in the section of the SAR immediately downstream of the dam will decrease from 58,000 cfs to 5,000 cfs during a 100-year flood event. The Project would have minimal effects on the hydrograph of storm flows under these conditions as described in Thematic Responses section 2.3.4. The river from Seven Oaks Dam to the RIX-Rialto Outfall has no flow for much of the year in most years. The proposed Muni/Western diversion would not change that hydrograph during dry times. Thus, the Project would not increase the potential for invasion by non-native fish and amphibians.

CDFG Comment 16

Muni/Western agree that the larger tributaries such as Mill Creek and City Creek and the Santa Ana River Wash section of the mainstem are important sources of sediment for downstream reaches of the river. As described in Thematic Responses section 2.3.4, the Project would not prevent transport of sediment materials during storm flows but could decrease the frequency at which the river transports sand, gravel, and cobbles. For this reason, the Project would not have a significant effect on sediment transport.

CDFG Comment 17

Effects of the Project on fluvial processes below Seven Oaks Dam that are considered to be essential to the maintenance of Santa Ana sucker habitat were addressed in the Draft EIR (see section 3.1.2.4.2, Impact SW-9) and found to be less than significant. Thematic Responses section 2.3.4 shows that the Project would not significantly affect sediment transport from "E" Street (above habitat occupied by the Santa Ana sucker) to the Prado Flood Control Basin and would not have a significant effect on the existing hydrograph (i.e., peaks in flow would still occur during storm runoff).

CDFG Comment 18

Section 3.1.1.3.2 of the Draft EIR describes the existing conditions of fluvial processes in the region of the Project. Specifically, this section reported that:

> "The operation of Seven Oaks Dam effectively eliminated downstream transport of sediment larger than sand from the upper SAR watershed (EIP 2004, USACE 2000)." (page 3.1-9, lines 11-12)

Table 3.1-7 identified the primary sources of sediment from the mainstem and contributing tributaries. Impacts to sediment transport were identified by river segment under the overall Impact SW-9 starting on page 3.1-39.

The comment is incorrect with regard to the rationale use for the significance determination. In the case of Segment B (from Cuttle Weir to the confluence with Mill Creek) the change in flow rate would not significantly change fluvial processes in this reach. It should also be identified that there are no biological resources (e.g., Santa Ana sucker) in this reach that are dependent on the existing fluvial regime.

Muni/Western concur with the notion that infrequent fluvial events may be biologically important. Thematic Responses section 2.3.4 provides additional information to substantiate the Draft EIR conclusion that the Project would not significantly affect sediment transport from "E" Street (above habitat occupied by the Santa Ana sucker) to the Prado Flood Control Basin.

The Project does not affect overall sediment supply by either removing sediment or by affecting flows in river segments that provide sediment.

CDFG Comment 19

The comment confuses the significance conclusions relating to surface water and those relating to biological resources. Significant impacts to surface water flows were arithmetically determined without regard to the needs of biological resources dependent on the availability and characteristics of surface water. Surface water effects were determined to be significant any time that there was a reliably measurable difference with the Project. See Thematic Responses section 2.3.1.

Impacts to biological resources like the Santa Ana sucker were based on the needs of those species without regard to the specific arithmetical differences in surface water flow volumes. Impacts to biological resources were discussed in the Draft EIR (see pages 3.3-29 to 3.3-64). Please see Thematic Responses 2.3.4 for additional information supporting the finding of no significant impacts of the proposed Project to native fish. Flows in the SAR are intermittent and, as such, minimum bypass flows would not be available in a sufficient number of years to establish habitat that would support native fish and other biological resources that are dependent on constant surface water. The Project would not alter the intermittent nature of the SAR. The analysis supporting these conclusions is set forth in detail in Thematic Responses section 2.4.3.

CDFG Comment 20

Muni/Western does not dispute that wastewater flows are currently supporting the Santa Ana sucker from the RIX-Rialto discharge to Prado Basin. However, this is the current baseline condition upon which the impact analysis must be based under CEQA.

The reduction in river flow predicted for July through September is the result of diversions when water is released from Seven Oaks Dam to drain water remaining behind the dam (the debris pool) before the next rainy season. The analysis used in the Draft EIR used channel configuration and percolation rates used by USACE in developing its HEC-RAS model of the SAR. In the HEC-RAS modeling performed for the Draft EIR the draining of the debris pool was evident as far down as River Segment F under No Project conditions. However new information on channel configuration and other data gathered during 2005 indicated that debris pool draining (and the effect of the Project on debris pool draining) would not be evident as far down as River Segment F. New data pointed to the fact that the HEC-RAS modeling performed for the Draft EIR overestimated the impacts of the Project. In fact, the draining of the debris pool would not have an effect on biological resources because such water would percolate into the SAR channel with or without the Project and could not support biological resources below RIX.

CDFG Comment 21

Please see Thematic Responses section 2.3.1 and response to CDFG Comment 20. The flows in question are an artifact of overly conservative modeling; in fact, field measurements indicate that the effect identified by the comment would not occur. As described in Draft EIR Table 3.1-17, changes in flows during June, July, and August would be no more than 1 percent [Note to the reader: Due to refinements in the modeling, Draft EIR Table 3.1-17 has been replaced, see the replacement table provided in Appendix A of this Final EIR].

CDFG Comment 22

See response to USACE Comment 3. The comment is correct in stating that Muni/Western was unable to identify any feasible mitigation measures or alternatives to the diversion of water for beneficial use.

CDFG Comment 23

See response to USACE Comment 3. The Project would only divert water when releases are made from Seven Oaks Dam. On non-storm days, this would occur intermittently as the median flow between Cuttle Weir and Mill Creek is zero in all months of the year (see revised Table 3.1-14 of the Draft EIR in Appendix A of this Final EIR) both with and without the Project. The river between Cuttle Weir and “E” Street currently does not support a population of Santa Ana sucker due in part to lack of perennial flow. Please see Thematic Responses section 2.3.4 for a more detailed analysis of Project effects on flow and the Santa Ana sucker. Conditions in the reach between the Cuttle Weir and “E” Street could not support a population of suckers even if all water proposed for diversion by the Project were devoted to instream flows. Thus, any mitigation measure calling for increased instream flows is not feasible.

CDFG Comment 24

Please see Thematic Responses sections 2.3.1 and 2.3.4 for supporting information regarding effects on flow and the Santa Ana sucker. Because no significant impacts related to flow reductions were found, no mitigation would be necessary. No additional studies, such as IFIM, are necessary because the Project would have minimal effects as described in Thematic Responses section 2.3.1. Please also see Thematic Responses 2.4.3, which evaluates the feasibility and effectiveness of implementing bypass flows to benefit aquatic resources and concludes that such bypass flows are not feasible and would not be effective in improving the condition of biological resources.

CDFG Comment 25

Please see Thematic Response 2.3.4. Other sensitive biological resources and their habitat are evaluated throughout the analysis both in terms of construction impacts and effects on flows. These are referred to in aggregate as non-listed sensitive species as discussed in section 3.3.2.2 on page 3.3-32 in the Draft EIR. Where there was an identified potential for a significant impact the resources are discussed specifically (e.g., RAFSS, Parry's spineflower, riparian and wetland habitat). Mitigation measures identified in the document are also broad in scope and are intended to address habitat impacts and are applicable to both listed and non-listed sensitive species as well as common and typical plant and wildlife species.

CDFG Comment 26

Thematic Responses section 2.3.4 provides information supporting the Draft EIR impact analysis for the Santa Ana sucker and other aquatic resources. Flows in Segments F and G currently support Santa Ana sucker, and the proposed Project diversions would have negligible effects on low flows as detailed in Thematic Responses sections 2.3.1 and 2.3.4. As shown in Thematic Responses section 2.3.1, River Segments C to E currently have no flow for much of the year and do not support fish populations, except for a small area with rising groundwater near the confluence of San Timoteo Creek. Conducting additional studies, such as IFIM, in the areas with intermittent to ephemeral flow would not help to ensure that adequate flows are present to protect fishery resources since no such resources are present. The availability of water for continuous releases to the river to support fish is discussed in Thematic Responses section 2.4.3.

CDFG Comment 27

Muni/Western agree that the distribution of individuals is not uniform from acre-to-acre. The small impact area does not justify a detailed survey and IFIM study. Moreover, analysis of flow effects determined that there was not an ecologically meaningful change in flow within the Santa sucker habitat. See Thematic Responses 2.3.1 and 2.3.4 and the Draft EIR's discussions of Impacts BIO-19 and BIO-20.

CDFG Comment 28

The comment assumes, without support, that the Project will have an adverse effect on sucker habitat. As described in Thematic Responses sections 2.3.1 and 2.3.4, as well as in the responses to CDFG 26 above, the Project will not have a significant effect on sucker habitat. No mitigation is required.

CDFG Comment 29

The arbitrary reduction of the significance criteria by a factor of 10 proposed in the comment is not supported with any biological justification. The detailed significance criteria proposed by Muni/Western are supported by objective rationales. As a practical matter, though, if the lowered significance thresholds proposed in the comment were applied, the preparers would not expect that additional significant impacts would be identified. With regard to the comment on the criterion for desiccation of riparian habitat, the preparers stand by their statement that 1 acre is probably at the lower limit of delineation. This is because any desiccation would most likely occur along one or both banks of the stream bed and would be subtle or almost unnoticeable at any one spot and would be spread out along habitat boundaries. An effect smaller than one acre would be very difficult to distinguish from natural background variability.

CDFG Comment 30

The Draft EIR looked at potential impacts related to storm flows in terms of changes to sediment transport (see Draft EIR section 3.1) and in terms of changes to overbank flooding (see Draft EIR section 3.3). As shown in Thematic Responses section 2.3.4, the Project would have very little effect on peak storm flow and would not cause a substantial change in the hydrograph of storm runoff. The river no longer has a natural hydrologic regime due to the presence of Seven Oaks Dam and other existing diversions as described in response to CDFG Comment 15. The significance criteria are consistent with the USFWS concerns for the natural hydrograph.

CDFG Comment 31

Please see the discussion of cumulative impacts in Chapter 6 of the Draft EIR and in Thematic Responses section 2.5. Those two analyses discussed the potential cumulative effects of the combination of all the water right applications currently pending before the State Water Resources Control Board on the SAR. These analyses also consider potential reduced flows from the proposed RIX Facility Recycled Water Sales Program.

The comment correctly notes that the Draft EIR's conclusion as to the impacts of the Project relies on the continued discharge of wastewater flows into the SAR. Such flows form part of the environmental baseline and so are an appropriate basis for an evaluation of the effects of the Project.

CDFG Comment 32

The cumulative impacts of the Project and other reasonably foreseeable projects are evaluated in Chapter 6 and in Thematic Responses section 2.5. It should be noted that the threshold of significance for hydraulic impacts is any measurable difference in non-storm day flows using the existing gages. This is a very conservative (i.e. protective of the environment) standard in that it means that any real effect on the environment is treated as significant. For additional discussion of this standard, please see Thematic Responses 2.3.1

CDFG Comment 33

This comment is legal in character and does not identify a physical impact to the environment; no response is required.

CDFG Comment 34

Muni/Western understand the requirements and intent of the Sections 1600 *et seq.* of the Fish and Game Code. Muni/Western intend to seek a permit from the Department following the actions of the SWRCB.

CDFG Comment 35

The Draft EIR and this Final EIR have not deferred the development of mitigation measures; mitigation is not required where a project does not have a significant effect on the environment, as described in the responses to CDFG Comments 24 and 28.

Comment 36

Please see Thematic Response 2.3.4. In MM BIO-8, Muni/Western propose a 1:1 ratio to compensate for the impact to RAFSS in view of the fact that the impacted habitat will be subject to restoration following construction (MM BIO-2) and will gradually recover its function as plant and wildlife habitat as the corridor revegetates. This is not a permanent impact such as would be caused by a residential or commercial development. The compensation is identified to address the temporal habitat loss due to the anticipated long-term nature of the habitat recovery (5 years or more to full recovery) and for that temporal loss a 1:1 ratio is appropriate. Indeed, to the extent that construction impacts with subsequent revegetation serves to rejuvenate aging RAFSS habitat, it could be said that such revegetation provides a long-term benefit to the ecological community.

CDFG Comment 37

Please see response to USACE Comment 11 and Thematic Responses 2.4.2.

The habitat impacted by the Project is located in the existing channel of the Santa Ana River upstream from the confluence of Mill Creek. The habitat would be impacted from construction of the mitigated alignment of the Plunge Pool Pipeline, Phase II. The quality of potentially effected habitat was evaluated by trained biologists familiar with the specific habitat type and sufficiently experienced to judge its character and quality. Muni/Western established specific significance criteria in compliance with CEQA Guidelines. Based on the field surveys and the significance criteria the anticipated impacts were judged to be less than significant.

As described in Impact BIO-16, mature RAFSS tends to be scarce relative to the other representations of RAFSS. Therefore, an increase in mature RAFSS is a less than significant impact and no mitigation is required.

CDFG Comment 38

Muni/Western understand that the proposed mitigation measure will require testing and modification to produce the result anticipated as described in the text of MM BIO-10 and will coordinate with MSHMP agency participants in developing that program of mitigation to ensure that it is based on the best available scientific and commercial information.

Muni/Western also question the feasibility and effectiveness (especially the reasonable use of water) of the untested measures proposed by the USACE. It is anticipated that Muni/Western will integrate their proposed habitat mitigation measures with those that result from the deliberations of the MSHMP Committee that is responsible for addressing the much larger impact caused by Seven Oaks Dam on overbank flooding. With Seven Oaks Dam in place, opportunities for natural flooding are very limited. This is why a flexible habitat management approach is proposed in MM BIO-10.

Muni/Western have modified MM BIO-10 to reflect the need to coordinate with MSHMP agency participants (see below). In addition, Muni Western have enhanced MM BIO-10 to include a specific performance standard.

Muni/Western hereby make the following change to the Draft EIR:

Page	Line(s)	Edit	
3.3-61 and 3.3-62	38-42 and 1-19	**MM BIO-10**	Muni/Western will develop a program ~~together with the USFWS and CDFG,~~ in coordination with MSHMP agency participants, to selectively restore SBKR and Santa Ana River woolly-star habitat by using habitat manipulation, either by mechanical means or high pressure water, to remove vegetation and leave freshly deposited sand and silt, simulating the habitat-renewing aftermath of natural flooding. This will be done using an adaptive management approach with input from the ~~USFWS and CDFG~~ MSHCP stakeholders. If the high pressure water method is used, water will be piped by Muni/Western to areas of suitable habitat. A high-pressure nozzle will be directed at localized areas of habitat determined to be suitable for SBKR and Santa Ana River woolly-star after renewal. The nozzle will be hand-operated or operated from a light vehicle. Treatments will be accomplished in a randomized block design to allow experimental testing of variables such as duration and intensity of spray, addition of clean sand, season of disturbance, application of seed vs. allowing natural dispersal, etc. A rigorous monitoring program funded by Muni/Western will be established to enable the differences among experimental treatments to be determined. The primary indicator of success will be related to development of habitat characteristics identified with pioneer to intermediate RAFSS habitat within which SBKR and Santa Ana River woolly-star populations have been documented. These characteristics are documented in the literature and will be specified as part of the Muni/Western program. The program will be adjusted appropriately as results from earlier efforts become available. The design and implementation of the ongoing effort will

Page	Line(s)	Edit
		be funded by Muni/Western and conducted by representatives of Muni/Western with input from the USFWS and CDFG. A complete description of this method is also included in Appendix E7 of the Draft EIR, Section 2.0. Muni/Western commit to achieving a mitigation performance standard of restoring 10 acres of intermediate-to late stage RAFSS habitat to the early or intermediate stage RAFSS habitat during the first twenty years of Project implementation.

CDFG Comment 39

Segment C was not included in the analysis on page 3.3-63 of the Draft EIR because with Seven Oaks Dam in operation, flows above Mill Creek generally would not be sufficient to contribute substantial amounts of gravel and cobble material downstream to habitat used by the Santa Ana sucker. Thematic Responses section 2.3.4 provides further supporting information for the impact analysis, and Thematic Responses section 2.4.3 discusses the availability of water for bypass flows to provide perennial water in the river between Cuttle Weir and the RIX-Rialto discharge.

As noted above, in response to CDFG Comments 24 and 28, CDFG has not presented any substantial evidence to suggest that the Project would have a significant effect on Santa Ana sucker and so no mitigation is required.

CDFG Comment 40

The selection of the maximum diversion rate will be based on environmental, financial and other criteria. The selection of the 500 cfs maximum diversion rate would reduce the amount of water available for beneficial use by water users in the Muni and Western service areas. This could result in a greater dependence on imported water supplies (i.e., from the Sacramento/San Joaquin Delta) for users in these service areas.

CDFG Comment 41

See response to USACE Comment 19.

CDFG Comment 42

The USGS defines the accuracy of daily discharge data derived from a gage as “fair” when 95 percent of the record associated with the gage are within plus or minus 15 percent of the “true” value. Thus, if the record had 100 daily values of 100 cfs, 95 of these records would have a “true” discharge value of between 85 and 115 cfs and that only 5 of the daily discharge records would be greater or less than the 15 percent interval. Therefore, if two different daily discharges taken from a gage rated by the USGS as “fair” differ by more than 15 percent, it is reasonable to assume that those two discharges represent the same “true” discharge. Under these circumstances, it is reasonable to consider the “true” values of those two discharges to be different discharges. This variation in the record and “true” values accounts for various natural characteristics of the stream (e.g. changes in channel configuration during high flow events) and the inherent inaccuracies of the measurement technique.

Hydrologic data used in modeling for the Project are derived from gages in the Santa Ana River that are rated as "fair" (e.g., the data record associated with the gage are within plus or minus 15 percent of the "true" value. This is the best available data for this purpose.

CDFG Comment 43

Please see Thematic Responses section 2.3.1 for a discussion of the use of median flows rather than average/mean flows. Various statistical and descriptive measures of stream flow, such as mean, median, and probability of exceedance, are important to an understanding of the hydrology of the SAR. All of these measures are used in the Draft EIR to quantify changes in flows associated with implementation of the Project. Since flow in upper reaches of the SAR are intermittent and highly variable, the average (mean) does not provide the most appropriate measure of central tendency to describe the range of values. The median is the descriptive statistic that more accurately represents the hydrology of the SAR. The probability of exceedance analysis gives a more complete picture of SAR flows, showing the rarity of the higher flows, and that the median flow is less than the average flow.

CDFG Comment 44

Beneficial uses are a water quality designation and are usually addressed in that section and are not specifically addressed under biological resources. However, fish and wildlife (including threatened and endangered species) are discussed in the biological resources section. Effects of the Project on warm water fish, wildlife, and threatened/endangered species were all addressed in section 3.3 of the Draft EIR and are discussed in Thematic Responses 2.3.4. The proposed Project would not affect aquatic habitats in Reach 6 (above Seven Oaks Dam) outside of the flood control storage pool area.

CDFG Comment 45

Please see response to CDFG Comment 44.

The SARWQCB beneficial uses as adopted in the 1995 Basin Plan for each reach are provided in Table 3.1-8. Amendments to the Basin Plan since adoption of the Draft EIR do not include changes to the designated beneficial uses of Reaches 3 through 6 of the SAR (SARWQCB 2004). The additional beneficial uses proposed by CDFG may be more appropriate to consider on streams that are more frequently able to sustain fish and wildlife that are obligate users of surface water.

CDFG Comment 46

Project water diversions would occur primarily during the wet season when runoff is captured and released by Seven Oaks Dam as part of the area flood control. At that time, diverting a portion of the flow from the river would not adversely affect riparian vegetation along the river. Furthermore, little riparian vegetation is present, except in areas where groundwater is already high (e.g., near "E" Street) and where wastewater releases maintain perennial flow in the river (downstream of the RIX-Rialto discharge). Diversion of water released from Seven Oaks Dam during the summer would not change conditions from the dam to the RIX-Rialto discharge; prior to construction of the dam flow generally was not present in the summer. The amount and timing of summer releases from the dam without the Project would not support riparian vegetation along the river channel due to the porous nature of the river bed sediments which would not retain shallow groundwater long enough or with a lateral extent large enough to allow development or maintenance of a riparian corridor.

CDFG Comment 47

This comment relates to the legal rights and obligations, if any, of the USACE to impound water or to comply with Fish & Game Code Section 5937. These comments are legal in nature and do not identify a physical effect on the environment; no further response is required.

CDFG Comment 48

Please see Thematic Responses section 2.2 for a discussion of the effects of the Project upstream of Seven Oaks Dam. Under all Project Scenarios the impoundment of water would be within the 50 year inundation area, where the US Army Corps of Engineers fully mitigated for the loss of all biological resources in constructing Seven Oaks Dam. Because the effects of the Project are fully discussed in the Draft EIR and in Thematic Responses section 2.2, there is no need to recirculate the EIR.

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STATE OF CALIFORNIA – THE RESOURCES AGENCY
ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 942360001
(916) 653-5791

RECEIVED
NOV 08 2004
WMWD-Eng.

NOV 2 2004

Mr. Norman Thomas
Western Mutual Water Company
450 Alessandro Boulevard
Riverside, California 92508

Draft Environmental Impact Report, Santa Ana River Rights Application for Supplemental Water Delivery, October 2004
Riverside and San Bernardino Counties

The Division of Safety of Dams has reviewed the Draft Environmental Impact Report for Santa Ana River Water Application and finds that Seven Oaks Dam, No. 8-016 is currently under State jurisdiction for safety. 1

An application, together with plans and specifications, must be filed with the Division for an alteration or repair of the dam. All dam safety issues must be resolved prior to the approval of the application. Design and construction of the alteration or repair must be performed under the direction of a civil engineer registered in California. The Acting Design Engineering Branch Chief is responsible for the application approval process and can be reached at (916) 227-4660.

If you have any questions, please contact Office Engineer Chuck Wong at (916) 227-4601 or Regional Engineer Mutaz Mihyar at (916) 227-4600.

Sincerely,

David A. Gutierrez, Acting Chief
Division of Safety of Dams

cc: Ms. Nadell Gayou
Resources Agency Project Coordinator
Environmental Review Section, DPLA
901 P Street
Sacramento, California 95814

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CALIFORNIA DEPARTMENT OF WATER RESOURCES, DIVISION OF SAFETY OF DAMS (DSOD)

DSOD Comment 1

Muni/Western understand that an application must be filed with, and approved by, the Division of Safety of Dams prior to alteration or repair of Seven Oaks Dam.

Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
2-9	3	*Add the following to Table 2-1* <u>Department of Water Resources - Permit for alterations to Seven Oaks Dam</u>

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Department of Toxic Substances Control

Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

5796 Corporate Avenue
Cypress, California 90630

Arnold Schwarzenegger
Governor

December 20, 2004

Mr. Robert L. Reiter
General Manager and Chief Engineer
San Bernardino Valley Municipal Water District
Post Office Box 5906
San Bernardino, California 92412-5906

Mr. John Rossi
General Manager
Western Municipal Water District of Riverside County
Post Office Box 5286
Riverside, California 92517-5286

NOTICE OF AVAILABILITY OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR SANTA ANA RIVER WATER RIGHTS APPLICATIONS FOR SUPPLEMENTAL WATER SUPPLY (SCH# 2002071062)

Dear Mr. Reiter and Mr. Rossi:

The Department of Toxic Substances Control (DTSC) has received your submitted Environmental Impact Report (EIR) document for the above-mentioned project. Your document states the following information: "...Muni/Western have jointly filed two water right applications to divert unappropriated water from the Santa Ana River. The applications seek the right to divert and put to beneficial use a total of up to 200,000 acre feet per year." And, "Actions include the construction of three pipe lines with lengths of approximately 15,000 feet, 3,500 feet, and 1,900 feet, respectively, in the vicinity of seven Oaks Dam on the Upper Santa Ana River. Other actions include, but are not limited to, groundwater recharge activities in several groundwater basins using existing facilities, and storage of water in existing surface storage facilities." Most of the issues identified in DTSC's letter dated August 21, 2002 have been responded to, and some of the comments are restated in this letter. Based on the review of the submitted document DTSC has comments as follows:

1) Your document states: "Review of hazardous waste databases found that within Project construction areas there are no sites that pose a high threat with respect 1

1 to environmental contamination of soil and/ or groundwater. There are a number of contaminant plumes in the San Bernardino Basin Area (SBBA) comprised mainly of perchlorate, tricholorethylene (TCE) and tetracholoroethylene (PCE). Under Project conditions, plume boundaries would intermittently and locally exceed those anticipated under No Project conditions". This appears to indicate that the Project might result in spreading of the above-referenced contaminant plumes. Proper mitigation measures are necessary to ensure that this does not occur. Spreading of any of the contaminant plumes could result in degradation of drinking water supplies and the need for additional groundwater pumping and treatment.

2 2) If it is determined that hazardous wastes are, or will be, generated by the proposed operations, the wastes must be managed in accordance with the California Hazardous Waste Control Law (California Health and Safety Code, Division 20, chapter 6.5) and the Hazardous Waste Control Regulations (California Code of Regulations, Title 22, Division 4.5).

3 3) If it is determined that hazardous wastes are or will be generated and the wastes are (a) stored in tanks or containers for more than ninety days, (b) treated onsite, or (c) disposed of onsite, then a permit from DTSC may be required. If so, the facility should contact DTSC at (818) 551-2171 to initiate pre application discussions and determine the permitting process applicable to the facility.

4 4) If it is determined that hazardous wastes will be generated, the facility should obtain a United States Environmental Protection Agency Identification Number by contacting (800) 618-6942.

5 5) Certain hazardous waste treatment processes may require authorization from the local Certified Unified Program Agency (CUPA). Information about the requirement for authorization can be obtained by contacting your local CUPA.

6 6) The Project must mitigate the effects of pumping or recharge on any existing contaminated groundwater plumes. The Project should comply with pumping restrictions imposed by the proposed Newmark-Muscoy Plume Consent Degree (City of San Bernardino Municipal Water Department v. United States of America, Department of the Army [C.D. Cal.], D.J. Ref #90-11-3-06902/1) which is currently under judicial review. Additionally, if any contaminated groundwater is pumped to the surface, it may require treatment and, potentially, an effluent discharge permit from the Regional Water Quality Control Board (RWQCB).

7) If during construction/demolition of the project, soil and/or groundwater contamination is suspected, construction/demolition in the area should cease and appropriate health and safety procedures should be implemented. If it is determined that contaminated soil and/or groundwater exist, the EIR should identify how any required investigation and/or remediation will be conducted, and the appropriate government agency to provide regulatory oversight. 7

DTSC provides guidance for cleanup oversight through the Voluntary Cleanup Program (VCP). For additional information on the VCP, please visit DTSC's web site at www.dtsc.ca.gov.

If you have any questions regarding this letter, please contact Ms.Teresa Hom, Project Manager, at (714) 484-5477 or email at thom@dtsc.ca.gov.

Sincerely,

Greg Holmes
Unit Chief
Southern California Cleanup Operations Branch - Cypress Office

cc: Governor's Office of Planning and Research
State Clearinghouse
P.O. Box 3044
Sacramento, California 95812-3044

Mr. Guenther W. Moskat, Chief
Planning and Environmental Analysis Section
CEQA Tracking Center
Department of Toxic Substances Control
P.O. Box 806
Sacramento, California 95812-0806

CEQA #977

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CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL (DTSC)

DTSC Comment 1

See Thematic Responses section 2.3.2. Mitigation Measure (MM HAZ-4) will be applied to avoid and limit adverse plume movements. Further, based on comments received during review of the Draft EIR Muni/Western have developed additional mitigation measures designed to avoid significant impacts related to adverse plume movement (see below). However, in addition to applying this mitigation measure to plume movements, Muni/Western propose applying MM HAZ-5 to TDS and nitrate impacts attributable to the Project (see section 3.2.2 of the Draft EIR). This is further detailed in section 2.3.2 of this Final EIR. With adoption of MM HAZ-5 impacts related to adverse plume movement, TDS and nitrates would be less than significant.

Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
3.12-14 and 3.2-29 and 3.2-31	35 and 32 and 15	**MM HAZ-5:** Muni/Western will make an alternative water supply available to parties affected by contaminated wells, to the extent and for the duration that the contamination is caused by Project operations, or provide treatment for affected wells, at Muni/Western's discretion. The alternative supply or treatment for affected wells will be made available for all times when pertinent water quality standards are exceeded as a result of the Project.
3.12-15	23	MM HAZ-4 and MM HAZ-5 will be applied to reduce significant TCE-related impacts.
3.12-16	7	MM HAZ-4 and MM HAZ-5 will be applied to reduce significant PCE-related impacts.
3.2-30	2-4	~~With implementation of MM GW-1, impacts to TDS concentration levels would be reduced. However there may be short periods of time when significant impacts remain. Therefore, impacts to TDS concentration levels in the SBBA would be significant and unavoidable.~~ With implementation of MM GW-1 and MM HAZ-5 residual impacts would be less than significant.
3.2-31	10-14	**MM GW-~~1~~ 2:** Using available data, Muni/Western will, on an annual basis, evaluate impacts of the Project on nitrate concentrations in the SBBA. To the extent feasible given existing infrastructure, and consistent with meeting other basin management objectives, Muni Western will direct Project water spreading to reduce significant nitrate impacts.
3.2-31	16-18	~~With implementation of MM GW-1, impacts to nitrate concentration levels would be reduced. However, there may be short time periods when significant impacts remain. Therefore, impacts to nitrate concentration levels in the SBBA would be significant and unavoidable.~~ With implementation of MM GW-2 and MM HAZ-5 residual impacts would be less than significant.

DTSC Comment 2

Outside of accidental spills of fuels, lubricants, and hydraulic fluid by construction equipment (see Impact HAZ-1 and associated mitigation measures), it is not anticipated that Project construction or operations would result in generation of hazardous waste. However, Muni/Western understand that if hazardous wastes are generated by the Project, these wastes must be managed in accordance with applicable law.

DTSC Comment 3

Muni/Western will comply with all applicable laws in the storage and handling of hazardous wastes.

Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
2-9	3	*Add the following to Table 2-1* Department of Toxic Substances Control - Permit for hazardous wastes (if any) (a) stored more than 90 days (b) treated onsite, or (c) disposed of onsite San Bernardino County Fire Department, Hazmat Division - Obtain authorization for any proposed on-site hazardous waste treatment US Environmental Protection Agency - Obtain Facility Identification Number if Project results in hazardous waste generation

DTSC Comment 4

Muni/Western will comply with all applicable laws in the storage and handling of hazardous wastes.

DTSC Comment 5

Muni/Western will comply with all applicable laws in the storage and handling of hazardous wastes.

DTSC Comment 6

Please see Draft EIR section 3.12 and Thematic Responses sections 2.3.2 and 2.3.3. The Project will comply with pumping restrictions imposed by the Consent Decree as implemented through the Agreement to Develop and Adopt an Institutional Controls Groundwater Management Program, as amended. Muni/Western will acquire any permit required by applicable law.

DTSC Comment 7

Section 3.12.1.2, Project Construction Areas, references EDR reports (i.e., environmental database reports) applicable for each potential construction area. Upon analysis of these reports, no potential hazardous substances or wastes are suspected at the construction areas. This is reflected on page 3.12-11, section 3.12.2.2, as part of the discussion for no impacts.

California Regional Water Quality Control Board

Santa Ana Region

Terry Tamminen
Secretary for Environmental Protection

3737 Main Street, Suite 500, Riverside, California 92501-3348
(951) 782-4130 • Fax (951) 781-6288
http://www.swrcb.ca.gov/rwqcb8

Arnold Schwarzenegger
Governor

December 16, 2004

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DEC 21 2004
W. M. W. D.

Robert L. Reiter
San Bernardino Valley Municipal Water District
1350 South E. Street
San Bernardino, CA 92408-2724

John V. Rossi
Western Municipal Water District of Riverside County
450 Alessandro Blvd.
Riverside, CA 92508-2449

SANTA ANA RIVER WATER RIGHT APPLICATIONS FOR SUPPLEMENTAL WATER SUPPLY DRAFT ENVIRONMENTAL IMPACT REPORT / STATE CLEARING HOUSE NO. 2002071062

Dear Mr. Reiter and Mr. Rossi:

Staff of the Regional Water Quality Control Board, Santa Ana Region (RWQCB), have reviewed the Draft Environmental Impact Report (DEIR) for the above referenced project. The project proponents have jointly filed two water right applications to divert unappropriated water from the Santa Ana River at Seven Oaks Dam, located east of the City of Highland, in San Bernardino County. The proponents seek the right to divert and put to beneficial use an average of 27,000 acre feet per year, and may be as high as 200,000 acre feet per year. To convey the appropriated water, existing facilities would be used and new facilities would be constructed at, above, and just downstream of Seven Oaks Dam, adjacent to the State Water Project's Devil Canyon power plant in the City of San Bernardino, and near Lytle Creek and in the northern part of the City of Rialto. Proposed facilities that are downstream of the dam are pipelines providing connections to existing infrastructure. The appropriated water would be directed to groundwater recharge basins for spreading and storage, used directly, and/or used for exchange.

We have the following comments on the proposed project and the DEIR:

1. In Section 3.12 of the DEIR, it is acknowledged that the proposed project will increase the number of wells in the San Bernardino Basin Area that will be contaminated by perchlorate. Other sections of the DEIR explain that the increase in groundwater recharge that will occur under the proposed project, particularly recharge in the Cactus Basin Spreading Grounds, will cause the existing contamination plume to spread and will extend the resulting contamination to from 11 to 21 water supply wells (depending on the different project scenarios) that otherwise would not be contaminated under the no project alternative. The DEIR states that this is a significant impact. The proposed mitigation for this impact, as stated in Section 3.12, is that, "...to the 1
2

2 extent feasible given existing infrastructure, and consistent with meeting other basin management objectives, Muni/Western will direct Project water spreading to limit adverse plume movements." This proposed mitigation is not sufficient for this impact. Further contamination of wells with perchlorate in the San Bernardino Basin Area is a serious impact that should be avoided, or thoroughly mitigated. The EIR must provide for adequate mitigation for any wells that will be impacted by perchlorate as a result of the project.

3 In addition, the DEIR does not adequately describe specific conditions relating to the expanding plume and the specific impacts to water supply wells resulting from the project. In the EIR, you should provide a more comprehensive description of these conditions, including a listing of the wells that would be impacted, the magnitude of the impacts to these wells, the duration of impact, specific mitigation measures, the parties that will be providing mitigation for these wells, and the mechanism that would allow some current impacted wells to avoid further contamination due to the project.

4 2. Section 3.12 of the DEIR describes the impact to the tetrachloroethylene (PCE) and trichloroethylene (TCE) plumes resulting from the project. The DEIR states that, depending on the different project scenarios, there will be between 16 and 26 water supply wells that will be contaminated with TCE that otherwise would not be contaminated under the no project alternative. Again, the DEIR states that this is a significant impact and that the same mitigation measures used for the perchlorate plume expansion will be used to mitigate for the impacts to water supply wells that are contaminated with PCE and TCE. Again, the proposed mitigation is not sufficient. These impacts must also be
5 avoided or adequate mitigation must be provided. The same specific conditions and impacts noted in Comment I, above, for perchlorate, should also be provided in the EIR for PCE and TCE.

6 3. After the flood season, i.e., after March of each year, and if runoff volume is sufficient, the proposed project would create a 50,000acre-foot debris pool behind Seven Oaks Dam. This pool will be drained by September of each year. Currently, up to a 3,000 acre-foot debris pool is maintained and drained by September (personal communication, Aram Eftekhari Orange County Flood Control District). Runoff is annually variable above the dam. Since the Dam was completed in 1999, there has not been enough runoff to create the 3,000 acre foot debris pool (personal communication, Aram Eftekhari). Partially as a result, a riparian corridor has developed from the Dam to upstream of the confluence of Warm Springs Canyon and the Santa Ana River, a distance of over a mile. This reach of the river has a base, perennial flow supported entirely by groundwater, as evidenced by the stream and riparian conditions present, despite the drought conditions that have prevailed in this watershed for the last several years. The beneficial uses of REC-1, REC-2, WILD, COLD,
7 and possibly RARE are present in this reach. The proposed project would inundate this entire reach, and impact the beneficial uses found there, much more frequently than under current dam operating conditions. The DEIR, in

Section 3.3.1.4, states that mitigation has been implemented for loss of biological resources in the potential inundation area of Seven Oaks Dam as a condition of the construction of the Seven Oaks flood control project. It appears the proposed project will create impacts to beneficial uses of the river behind the dam that are temporally substantially different from, and consequently more destructive to beneficial uses than, the current operation of the dam. As a result, it is not clear whether the mitigation already provided for the environmental impacts of the dam and its flood control operation is also sufficient to mitigate for the additional impacts that will be caused by the proposed project. We believe that additional mitigation, avoidance, or impact minimization measures may be necessary for the additional impacts to the beneficial uses upstream of the Dam that will result from this project. In the project EIR, please evaluate whether additional mitigation measures are necessary to address the impacts to these beneficial uses that the project will cause. 7

If you have any questions, contact Dave Woelfel at (909) 782-7960, or me at (909) 782-3234.

Sincerely,

Mark G. Adelson, Chief
Regional Planning Programs Section

cc: Scott Morgan – State Clearinghouse

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD (RWQCB)

RWQCB Comment 1

Please see Thematic Reponses section 2.3.2. As noted in the comment, the Draft EIR discloses the potential impacts to wells in the SBBA. Impacts in the SBBA were estimated using sophisticated modeling tools, including the modeling of solute transport. At the current time, no equivalent operational groundwater models are available for basins outside the SBBA, i.e., Rialto-Colton.

The Rialto-Colton Plume lies beneath the Cactus Basin spreading grounds and perchlorate contamination is known to be currently transported in a southeasterly direction with groundwater (Draft EIR Figure 3.12-1). Particle tracking simulations (Draft EIR Figure 3.2-13) conducted by Woolfenden and Koczot (1999) show that mass transport proximal to the spreading basins is consistent with the general trend of groundwater flow. Groundwater elevation is known to fluctuate from year to year by as much as approximately 60 feet (Kleinfelder 2003). Years of high precipitation may raise groundwater levels 40 or more feet and the range of water levels through the 1990s for a well is typically about 50 feet (DWR 2003).

As described in the Draft EIR, impacts of Project-related spreading in the Cactus Spreading and Flood Control Basins were evaluated by simulating the growth and decay of groundwater mounds in response to uniform percolation as described by Hantush (1967). Results from the analytical Hantush Equation are shown as groundwater mound height contours for each Project scenario (Figures B 84 – B 87 in Draft EIR Appendix B). The maximum groundwater mound height was estimated to be 48 feet, near the center of the Cactus Spreading Grounds. Areas where a rise in groundwater level greater than 10 feet cover an extent of approximately 2,400 acres under Scenarios C and D and 3,400 acres under Scenarios A and B. In the northern part of the sub-basin, hydrographs show quick rises of water levels during high precipitation years and slower decline towards a baseline level over several years. Changes in groundwater levels attributable to implementation of the Project would likely not create significant impacts since they fall within annual and historical ranges.

Inferences can be made regarding possible interactions between Project recharge activities and contaminant plumes and contaminant concentration levels in the Rialto-Colton groundwater basin. For example, increases in the groundwater elevation in the vicinity of the spreading grounds could increase groundwater surface gradient and promote groundwater flow. The increase in flow away from the mound could promote transport of the constituents in the aquifer and groundwater, and could spread the perchlorate plume longitudinally toward the SAR and laterally, to a lesser extent. Quantifying the magnitude of contaminant plume spreading requires the use of a spatially-distributed physically-based numerical groundwater flow model.

Groundwater contamination is a condition of considerable importance in the Rialto-Colton basin and numerous municipal water supply wells have been closed due to elevated levels of contaminants, especially perchlorate. Other supply wells have been fitted with wellhead treatment equipment that removes contaminants.

Muni/Western have obtained a copy of a groundwater model of the Rialto-Colton basin prepared by the USGS. The USGS model of the Rialto-Colton basin is a groundwater flow model which also has particle tracking capability. In response to this and other comments, Muni/Western have used this model to estimate, to the extent currently practicable, impacts of the Project on the Rialto-Colton basin. Examination of the model results indicates that the Project will not substantially affect the flows of groundwater contaminants within the Rialto-Colton basin. Specifically, as shown in Figure 3-1, the modeling shows that there are no substantial areas which would become contaminated under the Project condition as compared to the No Project condition. The impact of the Project appears to be to increase the velocity of groundwater flows rather than to change the direction of such flows. Consequently, the conclusion of the Draft EIR – that the Project would have a less than significant impact on groundwater conditions in the Rialto-Colton basin – is correct. Recognizing that current modeling of the Rialto-Colton basin is not as sophisticated as the groundwater modeling in the SBBA, though, Muni/Western propose the following mitigation measure:

MM HAZ-6: Muni/Western shall not spread water diverted or stored pursuant to the Project in the Cactus Spreading and Flood Control Basins or other locations overlying the Rialto-Colton basin until Muni/Western have completed the development of a groundwater model of the Rialto-Colton basin that includes in its model output estimates of the impacts of the Project on groundwater contaminants. In the event that the model shows that the Project will cause the contamination of any well used to provide a source of potable water, Muni/Western will comply with the terms of MM HAZ-5 by providing an alternative source of potable water or treatment of affected wells during the period where the Project contributes to an exceedance of applicable water quality objectives.

Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
		<u>**MM HAZ-6:**</u> <u>Muni/Western shall not spread water diverted or stored pursuant to the Project in the Cactus Spreading and Flood Control Basins or other locations overlying the Rialto-Colton basin until Muni/Western have completed the development of a groundwater model of the Rialto-Colton basin that includes in its model output estimates of the impacts of the Project on groundwater contaminants. In the event that the model shows that the Project will cause the contamination of any well used to provide a source of potable water, Muni/Western will comply with the terms of MM HAZ-5 by providing an alternative source of potable water or treatment of affected wells during the period where the Project contributes to an exceedance of applicable water quality objectives.</u>

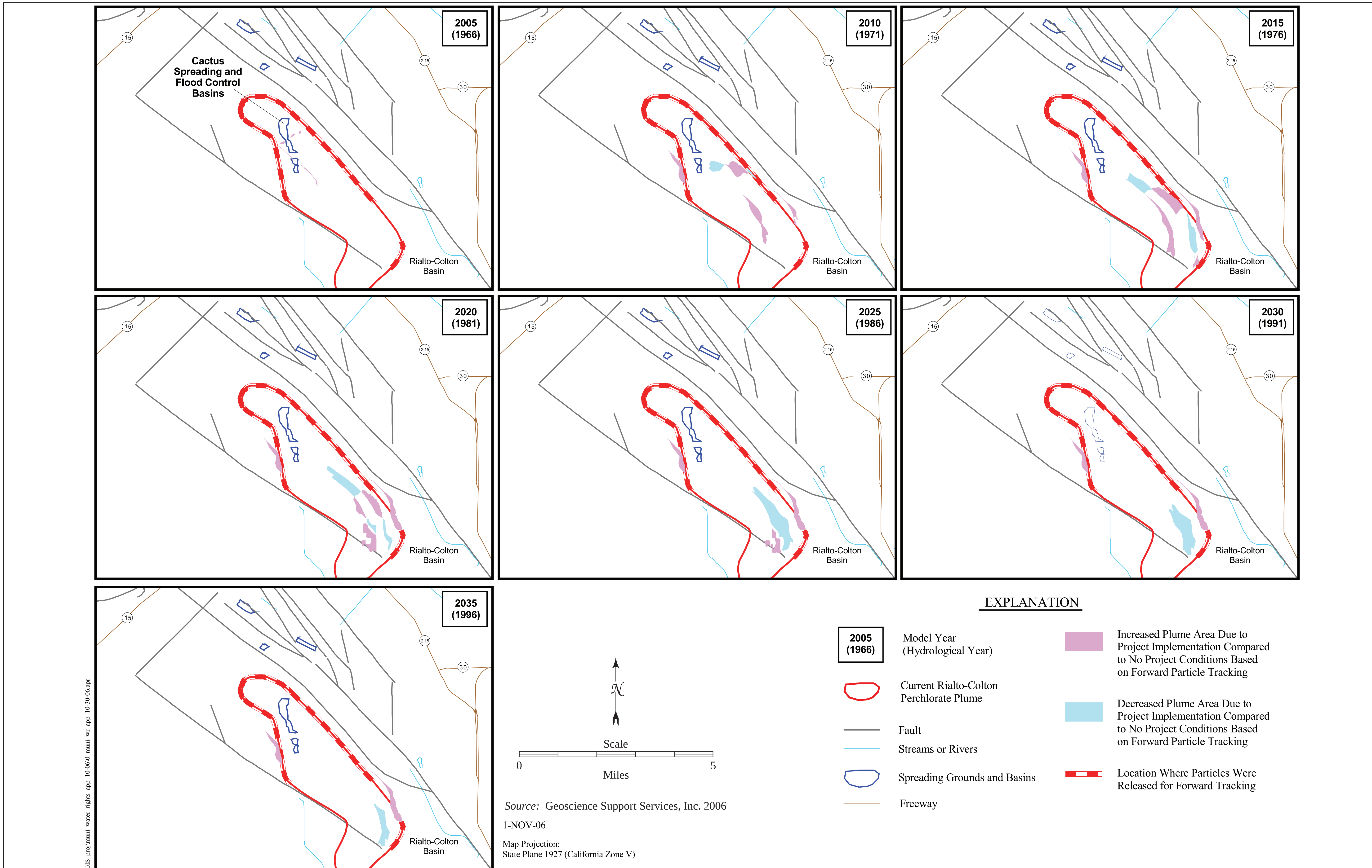

Figure 3-1. Forward Particle Tracking of Perchlorate Plume - Changes between the Project Scenario A and No Project Conditions

RWQCB Comment 2

Comment noted. For the reasons stated in the comment, Muni/Western are adopting MM HAZ-5, which requires Muni/Western to provide an alternate source of water or treatment of affected wells (at Muni/Western's discretion) for the duration of contamination due to the Project.

RWQCB Comment 3

Section 3.12 of the Draft EIR provided a general description of the contaminant plumes in the SBBA. Thematic Response 2.3.2 includes a comprehensive description of the index wells that would be impacted by the Project and the duration and general magnitude of such impacts. Mitigation Measures MM HAZ-4, which requires Muni/Western to engage in spreading in a manner that limits the impacts on contaminant plumes, and MM HAZ-5, which requires Muni/Western to provide an alternative source of water or provide treatment for affected wells (at Muni/Western's discretion) for the duration of contamination due to the Project, are the appropriate mitigation measures for this impact. Together, these mitigation measures avoid impacts on groundwater wells to the extent feasible and mitigate for otherwise-unavoidable impacts.

RWQCB Comment 4

Please see the response to RWQCB Comment 3 for a general discussion of the approach Muni/Western have taken to mitigate for effects of the Project on groundwater resources. That response addresses impacts of perchlorate; the same approach to mitigation applies to contaminant plumes containing PCE or TCE.

RWQCB Comment 5

Muni/Western agree that they should approach contamination by PCE and TCE in the same way that they approach contamination by perchlorate. Please see the response to RWQCB Comments 1 through 4 for a general discussion of that approach. Muni/Western will adopt that same approach to PCE and TCE contamination.

RWQCB Comment 6

The comment is correct in noting that, after the flood season, the proposed Project would create up to a 50,000 af conservation pool behind Seven Oaks Dam. (The term "debris pool" is generally taken only to refer to a pool of approximately 3,000 af that would be filled at the start of flood season in order to protect the Dam and its facilities from trees and other floating debris that might damage those facilities during a flood event. See the Seven Oaks Dam Water Control Manual.)

This comment is incorrect in stating that since completion of the Dam in 1999 there has not been sufficient runoff to create a debris pool. Sufficient water was collected during Water Years 2003-04, 2004-05, and 2005-06 to fill the debris pool and, during the latter two years, detain substantial water in excess of 3,000 af.

For a description of the riparian resources located above the Dam see Thematic Response 2.2. The beneficial uses of this reach are identified in the Draft EIR section 3.1, Table 3.1-8.

RWQCB Comment 7

Please see Thematic Responses section 2.2 and Draft EIR 3.1 page 3.1-19.

The comment is incorrect in suggesting that the environmental baseline includes the riparian corridor from the Dam to the confluence of Warm Springs Canyon and the Santa Ana River. The environmental baseline reflects existing operations of the Dam for flood control. During the 2004-05 winter water was impounded behind the Dam. That impoundment inundated the riparian area behind the Dam for several months, resulting in the destruction of most of that vegetation. The Project would, under Scenario A, inundate this area at greater depth than at present on about 7 percent of days. Please see Figure 2.2-2 in Thematic Responses section 2.2. Thus, contrary to the comment, the operation of the Dam as proposed in the Project would not substantially alter the inundation of any riparian vegetation that might become established between Warm Springs Canyon and Seven Oaks Dam. For this reason, the mitigation adopted by the Corps of Engineers (100 percent mitigation for biological resources that would be inundated by a 50-year flood event, which is an area greater than the 50,000 af conservation pool) is fully adequate to mitigate for the potential impacts of the Project on biological resources in this reach.

COLORADO RIVER BOARD OF CALIFORNIA
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(818) 543-4676
(818) 543-4685 FAX

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STATE CLEARING HOUSE

clear
1-14-05
late

January 28, 2005

Mr. Scott Morgan
State Clearinghouse
1400 Tenth Street
P.O. Box 3044
Sacramento, CA 95812-3044

Regarding: SCH# 2002 071 062 - Notice of Completion & Environmental Document Transmittal with the Draft Environmental Impact Report (Draft EIR) for the Santa Ana River Water Right Applications for Supplemental Water Supply and its Notice of Extension of the Review Period

Dear Mr. Morgan:

The Colorado River Board has received and reviewed a copy of the subject Notice of Completion & Environmental Document Transmittal and Draft EIR and Notice of extension of the review period to accommodate the review process for the subject project. The Draft EIR was dated October 2004 and prepared for San Bernardino Valley Municipal Water District (Muni) and Western Municipal Water District of Riverside County (Western).

The lead agencies, Muni and Western, have proposed that the project meet the following objectives: 1) increase water supply reliability by reducing dependence on imported water; 2) develop and deliver a new, local, high quality, long-term water supply that is needed to meet part of anticipated future demands; and 3) expand operational flexibility by adding infrastructure and varying sources of water, thereby providing Muni/Western with greater capability to match varying supply and demand.

To further these objectives, Muni and Western have jointly filed two water rights applications to divert unappropriated water from the Santa Ana River. The applications seek the right to divert and put to beneficial use a total of up to 200,000 acre-feet per year. The project consists of discretionary actions necessary to conserve, divert, convey and store water from the Santa Ana River and put it to beneficial use. In addition to the use of existing facilities, the project would involve the construction of facilities in four general geographical areas: 1) at and upstream of Seven Oaks Dam and Reservoir; 2) in the lower Santa Ana River wash area immediately downstream of Seven Oaks Dam; 3) adjacent to the Devil Canyon power plant of the State Water Project; and 4) near Lytle Creek at the north edge of the City of Rialto, California. Additionally, the project would involve the use of existing groundwater recharge facilities located within the Muni service area.

We have no comments at this time. If you have any questions, please contact me at (818) 543-4676. 1

Sincerely,

Gerald R. Zimmerman
~~Executive~~ Director

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COLORADO RIVER BOARD OF CALIFORNIA (CARB)

CARB Comment 1

Thank you for your interest in the Project.

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STATE OF CALIFORNIA Arnold Schwarzenegger
Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 – Fax

December 17, 2004

Mr. Robert Reiter and Mr. John Rossi
San Bernardino Valley Municipal Water District
1350 South E. Street
San Bernardino, CA 92508-2499

Re: Santa Ana River Water Right Applications for Supplemental Water Supply DEIR
SCH# 2002081062

Dear Mr. Reiter and Mr. Rossi:

Thank you for the opportunity to comment on the above-mentioned document. The Commission was able to perform a record search of its Sacred Lands File for the project area, which failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the Sacred Lands File does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites. 1

Early consultation with tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Enclosed is a list of Native Americans individuals/organizations that may have knowledge of cultural resources in the project area. The Commission makes no recommendation of a single individual or group over another. Please contact all those listed; if they cannot supply you with specific information, they may be able to recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If you have not received a response within two weeks' time, we recommend that you follow-up with a telephone call to make sure that the information was received. 2

Lack of surface evidence of archeological resources does not preclude the existence of archeological resources. Lead agencies should consider avoidance, as defined in Section 15370 of the CEQA Guidelines, when significant cultural resources could be affected by a project. Provisions should also be included for accidentally discovered archeological resources during construction per California Environmental Quality Act (CEQA), Public Resources Code §15064.5 (f). Health and Safety Code §7050.5; and Public Resources Code §5097.98 mandate the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery and should be included in all environmental documents. If you have any questions, please contact me at (916) 653-6251. 3

Sincerely,

Carol Gaubatz

Carol Gaubatz
Program Analyst

Cc: State Clearinghouse

Native American Contacts
San Bernardino County
December 20, 2004

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(760) 775-4639 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of 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 local Native Americans with regard to cultural resource assessment for the proposed Santa Ana River Water Right Applications for Supplemental Water Supply DEIR, SCH# 2002081062, San Bernardino County.

NATIVE AMERICAN HERITAGE COMMISSION (NAHC)

NAHC Comment 1

See responses to NAHC Comments 2 and 3.

NAHC Comment 2

All Native American individuals/organizations listed in the Native American Heritage Commission letter were contacted via US Mail. No additional cultural resources were identified by the individuals/groups contacted.

NAHC Comment 3

As described in MM CR-1, MM CR-2, and MM CR-3, potential impacts to cultural resources would be mitigated through Project redesign and avoidance. Specific means of avoiding cultural resources include mapping resources on engineering plans and temporary fencing to prevent heavy equipment from intruding into sensitive areas during construction.

The Draft EIR includes provisions for unanticipated discoveries of cultural resources during construction (see Impact CR-2 and MM CR-1). The Draft EIR, mitigation measures MM CR-1 states:

> "In the event of an unanticipated archaeological or paleontological resource discovery during construction, all ground disturbances within 150 feet of the discovery will be halted or redirected to other areas until the discovery has been documented by a qualified archaeologist or paleontologist, and its potential significance evaluated consistent with CEQA. Resources considered significant will be avoided by Project redesign. If avoidance is not feasible, the resource will be subject to a data recovery mitigation program, as appropriate. If human remains are discovered, the County Coroner will be contacted, and all procedures required by the California Health and Safety Code Section 7050.5, State CEQA Guidelines Section 15064.5(e), and PRC Section 5097.98 will be followed."

Per California Health and Safety Code Section 7050.5, State CEQA Guidelines Section 15064.5(e), and PRC Section 5097.98, if Native American human remains are discovered, the lead agencies will work with the Native American Heritage Commission and appropriate Native Americans to attempt to identify the remains, and there will be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the remains are disposed of with appropriate dignity according to the wishes of the descendants, if any, or in a location not subject to further subsurface disturbance as provided for by applicable regulations.

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State Water Resources Control Board

Division of Water Rights
1001 I Street, 14th Floor, Sacramento, California 95814
P.O. Box 2000, Sacramento, California 95812-2000
(916) 341-5300 ♦ FAX (916) 341-5400 ♦ www.waterboards.ca.gov

Alan C. Lloyd, Ph.D.
Agency Secretary

Arnold Schwarzenegger
Governor

In Reply Refer to: JF:A031165

Western Municipal Water District of Riverside County
Mr. John V. Rossi, General Manager
450 Alessandro Blvd.
Riverside, CA 92508

Dear Mr. Rossi:

SWRCB COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT REPORT ON THE SANTA ANA RIVER WATER RIGHT APPLICATION FOR SUPPLEMENTAL WATER SUPPLY FOR SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT AND WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY

On October 15, 2004, the San Bernardino Valley Municipal Water District and Western
Municipal Water District (Muni/Western) issued the Draft Environmental Impact Report on the
Santa Ana River Water Right Applications for Supplemental Water Supply (DEIR). On
December 17, 2004, Muni/Western extended the deadline to file comments to January 14, 2005.
The California Environmental Quality Act (CEQA) requires the State Water Resources Control 1
Board (SWRCB), Division of Water Rights (Division), as responsible agency, to consider the
environmental effects as shown in the DEIR. In issuing any water right permits, however, the
SWRCB will make independent findings, and may require additional or different mitigation
measures for impacts identified in resource areas within the SWRCB's jurisdiction, specifically for
the water right application component of the Project. (Cal. Code Regs., tit. 14, § 15096.) Staff
has concerns about the environmental analysis, particularly for the stretch of the Santa Ana River
(SAR) below Seven Oaks Dam. Staff provides comments on resource areas in detail below.

Environmental Settling, Project Impacts, and Mitigation Measures

Muni/Western states that 16 different simulations combining four basic parameters were used to 2
bracket potential impacts to the environment based on upper and lower limits of diversion
quantities. (DEIR at p. 3.0-3.) Ideally, this would help facilitate the SWRCB's decision-making
under various water allocation schemes advocated for at any hearing on this matter.
Unfortunately, the document proves less useful in this respect because the four Project scenarios
are not segregated and analyzed independently under each impact assessment, and they are
compared to a No Project Scenario which occurs somewhere in the bracketed range of
alternatives. The No Project Scenario includes water diversions by San Bernardino Valley Water 3
Conservation District (SBVWCD) and senior water right claimants, (DEIR at p. 3.0-2; 3), which
are also presented as a major parameter in the variation in amount of appropriated water under
project implementation. (DEIR at p.0-3.) Assuming that the No Project Scenario accounts for
the historical diversions of senior water right claimants and SBVWCD, whether authorized or not,
a comparison with the Project reveals no or very little change. The No Project alternative should

3 introduce a scenario with parameters similar to Scenario 13 but where Muni/Western does not capture water for a better impact assessment.

4 **Surface Water Hydrology and Associated Biological Impacts**
The DEIR identifies the decrease in river flow on non-storm days in all river segments below Seven Oaks dam as significant and unavoidable. (DEIR at pp. 3.1-37; 41; 43; 45; 47). As a result of the Proposed Project, Segment C will be completely dewatered. (DEIR at p. 3.1-41.) In Segments D and E, there will be some small flow but the volume would be less and occur less frequently. (DEIR at pp. 3.1-43; 45.) Segment F would experience decreased flows, however, the impact is reduced by reliance on the continued discharges from the Rapid Infiltration and Extraction facility (RIX) and Rialto Effluent Outfall. (DEIR at p. 3.1-47.) Segments C through E have been historically dry, due in part by water diversions of SBVWCD and others. The Project appears to exacerbate an already degraded condition. This suggests that even otherwise minor impacts of individual water development projects may be cumulatively significant when considered along with past projects.

5 Change in flow on non-storm days is critical to the environmental analysis because impacts in other resource areas stem from changes in hydrology. In the biological resources area, changes in non-storm day flows could affect aquatic, riparian and wetland habitats and species, including the Santa Ana Sucker (SAS), downstream of the point of diversion.

6 For example, the document states that reduced flow on non-storm days could reduce aquatic habitat and species downstream, but concludes that reductions are "negligible throughout the year due to lack of flows under No Project conditions." (DEIR at p. 3.3-62.) This conclusion appears to rely in part on the historic dewatering of this stream section, which may not be appropriate
7 because some of the historic diversions in this reach may not be authorized. Moreover, this conclusion is inconsistent with the finding of significant and unavoidable impact in surface hydrology section 3.1. There lacks evidence to support the conclusion that there is no significant impact from a significant reduction of non-storm day flow on aquatic habitat and species.

8 Another example is the document's conclusion that changes in non-storm day flows could affect SAS but does not because of the unlikely presence of the species in this reach. (DEIR at p. 3.3-63.) As discussed in detail below, year-round aquatic habitat is present between Seven Oaks Dam and Cuttle Weir, but SAS is not expected because of nine miles of intervening non-suitable habitat. The species is not currently supported in this reach because of lack of water; however, some evidence indicates that increased flow could create a benefit to the habitat in this area,
9 potentially supporting the existence of the species. A more refined analysis is needed. Similarly, the document states that changes in non-storm day flow could effect riparian and wetland habitat. (DEIR at p. 3.3-64.) The DEIR concludes that this impact is less than significant without any supporting evidence or analysis, except to say that only a small amount of riparian and wetland habitat exists in this reach. The fact that only a small amount still exists suggests that its protection is even more critical.

The DEIR lacks evidence to support biological resource conclusions of less than significant 10
impacts in light of the significant change in surface hydrology. Approximately 70 percent of all
days are classified as non-storm flow days. (DEIR at p. 3.1-29.) Non-storm flow days result in
low flows, and thus diversions are more likely to have a measurable impact. (Id.) Muni/Western
must conduct a more refined analysis of the impacts on biological resources considering that the
DEIR identifies significant impacts already identified with surface hydrology. The DEIR states 11
that the effect of Project diversions on SAR non-storm flows is identical regardless of whether
Muni/Western diverts at a rate of 500 or 1500 cubic feet per second (cfs). (DEIR at p. 3.1-29.)
The DEIR concludes that Scenario A and B will have the same impacts, as does Scenario C and
D. (Id.) It seems unlikely that a difference in the diversion rate of 1000 cfs would not have an
impact, unless there is no chance that diversions over 500 cfs will occur on non-storm flow days.
If that is the case, it should be clarified in the document as a mitigation measure or as part of the
project description.

In light of additional impacts in other resource areas that stem from reduced flow on non-storm days, Muni/Western must conduct a detailed analysis to determine whether some amount of flow retained in these reaches on non-storm days could reduce impacts, and if so, the amount and timing of such flow that is needed. The DEIR states that an assessment was made involving changes in timing, pattern, and volume of diversions, however, no feasible mitigation measures were identified that would still allow "a consistent and reliable diversion for beneficial use by the Project." (DEIR at pp. 3.1-37; 41; 43; 45; 47.) No evidence exists to support this conclusion. Altering the quantity of water that Muni/Western may divert in order to avoid changes in flow on non-storm days and the resulting impacts from that change in flow may be the most feasible and practicable mitigation available. 12

SWRCB staff has heard suggestions that instream flows would not provide habitat benefits because any water would seep into the ground too rapidly. The DEIR contains no evidence to support this conclusion. The DEIR states that "[i]t is likely that, due to evaporation and percolation, very little surface water in River Segment B has hydrologic connectivity to points downstream." (DEIR at p. 3.1-39.) This conclusion regarding hydrologic connectivity appears to be based on the historical dewatering of the stream by diversions, not on natural hydrology. More evidence is needed before Muni/Western can conclude that flow mitigation is not feasible. 13

Mitigation Measures that Lack Assurances

Several mitigation measures proposed in the DEIR and relied upon to reduce impacts to less than 14
significant levels lack assurances to make these conclusions proper. Conservation storage at
Seven Oaks Dam will increase the amount of water subject to anaerobic conditions. (DEIR at p.
3.1-35.) Simply implementing a program as suggested in MM SW-1, without requiring the
cessation of storage if the measures do not solve the program, is not sufficient to reduce this
impact to less than significant levels. Reduction in frequency and extent of overbank flooding 15
could adversely affect San Bernardino Kangaroo Rat (SBKR) and SAR woolly-star habitat.
(DEIR at p. 3.3-60.) Simply funding and implementing an adaptive management program and an
invasive species control plan does not ensure that this impact will be mitigated. Plans and

15 programs must contain measures that monitor and report on program success and that cease diversions if the suggested mitigation is not working.

16 MMBIO-2 states that monitoring for revegetation and erosion control for all habitat areas directly affected by construction activities will continue for 3 to 5 years or until performance criteria are met. (DEIR at p. 3.3-40.) Clarify the performance criteria that will be used to determine if revegetation goals have been met. Also, cite the reference to demonstrate that 3 to 5 years will be adequate to meet the goals.

17 Mitigation measures MMBIO-3, 4, 5 and 6, (DEIR at p. 3.3-40), discuss the following actions for non-listed and listed plant and animal species; preconstruction surveys, relocation of animals species to suitable habitat, development, implementation, and monitoring for listed plant species involving permits or memorandums of understanding with U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG). Describe how Muni/Western will ensure these mitigation measures are met and the actions Muni/Western will undertake if they are not.

18 In mitigation measure, MMBIO-8, (DEIR at p. 3.3-44), the DEIR states that to compensate for permanent or long term loss to Riversidian alluvial fan sage scrub (RAFSS) habitat, Muni/Western will acquire, for every one acre impacted, a minimum of one acre of good quality habitat of similar or greater habitat value. Please cite the reference to demonstrate this amount of mitigation is adequate. In addition, MMBIO-8 lacks the standard habitat mitigation and reporting plans to
19 assure the long-term viability of the RAFSS restoration. SWRCB staff requests that the requirement of long-term mitigation and reporting plans being approved by the Chief of the Division of Water Rights prior to the diversion of water, be added to MMBIO-8.

20 **Impact Conclusions that Rely on Wastewater**

In Segment F and G, the DEIR impact conclusions rely on the continued inflow of various wastewater treatment facilities. For example, water quality impacts that are of greater concern upstream diminish further downstream. (DEIR at pp. 3.1-39; 41; 43; 45 [no impacts on water quality].) Evidence suggests that the base flow in the SAR provided by numerous wastewater treatment facilities may not stay constant. The RIX facility discharges over 40,000 acre-feet of treated wastewater to the SAR in a reach where the SAS is known to exist. (See DEIR at p. 3.1-5; See Economic Analysis of Critical Habitat Designation of the Santa Ana Sucker, Northwest Economic Associates, 2004, at p. 50 [hereinafter referred to as "Economic Analysis"]) RIX is proposing to sell up to 18,000 acre-feet per year (afy) of water that has historically been discharged into the river. (Id.) To what extent do Muni/Western's impact conclusions rely on this base flow? Is Muni/Western willing to backstop the historic flow maintained in the channel?
21 The biological impact conclusions for reduced non-storm flow for Segment F and G are all called less than significant because flow is present from continued wastewater discharge. Do any of these impact conclusions change depending on increased wastewater marketing in the future?

The analysis presented in the Cumulative Impacts section falls short because it assumes that no base flow exists below Cuttle Weir. The method for evaluating water quality impacts supposedly assumed a "worst-case" scenario where all the water diverted by the proposed project and SBVWCD would otherwise flow downstream. (DEIR at p. 6-22.) Yet the analysis does not in fact compare the two scenarios for an accurate assessment of impacts in Segments C-E, and Segment F if water was removed from the system by the RIX facility. (DEIR at Table 6.2-1.) 21
SWRCB comments above also apply to cumulative impacts that identify significant and unavoidable impacts from decreased non-storm day flow in the river. (DEIR at p. 6-26.) Biological impacts that stem from significant impacts on surface hydrology must be analyzed and mitigation explored in detail. Reductions in the rate or quantity of diversions is a feasible mitigation. 22

Sediment Transport

The DEIR states that flows over 4,000 cfs transport gravel and cobbles, whereas flows from 500 to 4,000 cfs transport sand. (DEIR at 3.1-9.) The DEIR should explain this assumption in more detail, particularly because the impact conclusion on change in storm flows affecting the SAS relies on this assumption. In addition, the DEIR concludes that impacts on sediment transport from decreased flows is less than significant above Mill Creek because Mill Creek dominates sediment contribution and transport in this stretch. (DEIR at p. 6-25.) The cumulative impact assessment should analyze effects together with the SBVWCD application to appropriate 19,800 acre-feet from Mill Creek as well. 23

Seven Oaks Dam

The DEIR omits any discussion of biological impacts related to seasonal water conservation. (DEIR at p. 3.3-1; 3.3-55.) The DEIR states that these impacts were evaluated in the United States Army Corp of Engineers (Corps) Seven Oaks Dam Water Conservation Feasibility Study Final EIS/EIR in 1997. (Id.) The DEIR should summarize this analysis and incorporate any mitigation measures identified in that document into this EIR. 24

Reduced Flood Flows

The DEIR identifies a significant impact to SBKR and SAR woolly-star habitat from reduced overbank flooding. (DEIR at p. 3.3-60.) These species are associated with pioneer to intermediate phase RAFSS. Lack of flood disturbance causes this habitat to mature into less-suitable habitat that does not support SBKR. (Id.) The DEIR concludes that this impact is mitigated to less than significant levels through implementation of MM BIO-9 and MM BIO-10. MM BIO-9 proposes using a combination of physical removal and herbicidal treatment to remove invasive non-native species. (DEIR at p. 3.3-61.) The use of herbicidal treatments could cause water quality impacts that should be identified and mitigated in the EIR. 25

MM BIO-10 proposes the development of an adaptive management program to "selectively restore" SBKR and SAR woolly-star habitat by simulating the "habitat-renewing aftermath of natural flooding." (Id.) A high-pressure nozzle will be directed at suitable habitat areas in a randomized block design to allow experimental testing of variables. (DEIR at p. 3.3-62.) The 26

26 DEIR cites no evidence that this method has been peer reviewed or effective in other cases. Muni/Western must provide more evidence and analysis to determine whether this proposal could be effective mitigation. For example, the germination cycle of RAFSS vegetation may require conditions not provided by mechanical manipulation. Do seeds need to soak in water for a time? Do the seeds require scarification in order to germinate? These inquiries may help determine the probability of success of this type of program. Without more supporting data, the conclusion that the impact is mitigated is improper. If Muni/Western proposes to answer these questions in the future through adaptive management, the impact must be called significant and unavoidable for
27 now. In addition, it is unclear why this impact is considered mitigated in Section 3.3 but significant and unavoidable in the Cumulative Impacts section. (DEIR at p. 6-35.) The conclusion in Cumulative Impact BIO-6 seems more appropriate. (Id. ["[D]ue to the uncertainty of the effectiveness of the proposed mitigation, cumulative impacts remain significant"].)

Santa Ana Sucker

28 The Santa Ana Sucker (SAS) is listed as threatened under the federal Endangered Species Act and as a state species of special concern. The SAS is a small brown fish that occupies small to medium sized permanent streams in habitat subject to periodic flooding. (DEIR at p.3.3-10.) Historically, the SAS was native to the Los Angeles, San Gabriel, and Santa Ana River drainage systems in Los Angeles, Orange, Riverside, and San Bernardino Counties. (See 65 Fed. Reg. 19686 (April 12, 2000).) The SAS has lost approximately 75 percent of its historic range and has declined in significant portions of its current range. (Economic Analysis at 12.) Decline of the species is attributed to urbanization, water diversions, dams, introduced species, and other human
29 caused disturbances. (Id.) Sixty percent of the remaining range of the SAS occurs in the SAR. (See 50 C.F.R. Part 17.) Distribution within the SAR corridor extends from just upstream of the Rialto Drain downstream to below Prado Dam. (DEIR at p. 3.3-11.) Suitable year-round habitat exists from Seven Oaks Dam downstream to just below the confluence with Lytle Creek, however, the species does not occur in this area due to 9 miles of intervening, non-suitable habitat where there is little or no water. (DEIR at p. 3.3-21.)[1]

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30 [1] On January 4, 2004, the federal government removed the Santa Ana River from the critical and essential habitat designation for the SAS. (See 50 C.F.R. Part 17.) The USFWS justified its decision to remove the critical habitat designation on the SAR based on an economic analysis of the benefits of listing critical habitat or not. The Service excluded "essential habitat" designations in areas covered by the Western Riverside Multispecies Habitat Conservation Plan and SAS Conservation Program. Neither Plan nor Program is applicable to the stretch of the SAR below Seven Oaks Dam (Unit1B), nor do they identify increased flows to improve habitat, a primary conservation measure for the species. It is unclear whether the removal of the critical habitat designation on the SAR will alter any previous federal consultation and mitigation for the Seven Oaks Dam and other projects as they relate to the SAS. Thus, it would be improper to rely on any previous or future mitigation measures required by federal agencies to ensure the adequate protection of this species.

The DEIR suggests that the reduction of peak storm flows benefits the SAS because flood flows may otherwise wash some individuals downstream. (DEIR at p. 3.3-63.) This conclusion seems inconsistent with background data that find the SAS adapted to habitats prone to flooding. Although high flows in the early 1990's caused a decline in population, a large number of SAS juveniles were found in tributaries. (Economic Analysis at p.12.) Some evidence suggests that increased flow below Seven Oaks Dam would benefit habitat and water quality, (San Bernardino Water Conservation District DEIR at pp.5.3-26; 5.3-28; 29), and that additional water removal would detrimentally affect the SAS. (See Economic Analysis pp. 63-64 [citing U.S. Fish and Wildlife Service comments on NOP].) The SAS is present in the stretch of the SAR where there is water. There is no evidence to show that SAS would not exist in the reach below Seven Oaks Dam if sufficient water were present. More analysis is needed to determine what flows could benefit the SAS in this reach. 31

The DEIR lists a significant measurable change in non-storm day flows in SAR segments C, D, and E attributable to the Project; however, no feasible mitigation measures were identified to avoid that impact (DEIR at pp. 3.1-41-45), even though the SAS may utilize this stretch of the River. As discussed previously, there lacks evidence to support the conclusion that no mitigation is feasible for this impact. For the protection of the SAR, Muni/Western must analyze alternative flow regimes to maintain the fish in good condition in this area of the river. If the analysis does not reveal a feasible flow regime, Muni/Western should investigate potential mitigation upstream of Seven Oaks dam. 32

Water Availability

Every water right application submitted to the SWRCB must include "sufficient information to demonstrate a reasonable likelihood that unappropriated water is available for the proposed appropriation." (Water Code section 1260(k).) In addition, in accordance with Section 1375(d) of the Water Code, there must be unappropriated water available to supply the applicant in order for the SWRCB to issue a permit to appropriate water. Furthermore, as stated above, CEQA requires the SWRCB to consider the environmental effects of a project before issuing a permit. Muni/Western's water availability analysis (WAA), therefore, must quantify the amount of water available for diversion and then evaluate the impacts of that diversion under CEQA in order for the SWRCB to issue a permit. The WAA must consider all existing and pending senior water rights, under all bases of right, both upstream and downstream, as well as any necessary bypass flows to protect public trust resources. Additional information regarding WAAs, as well as an example of a WAA format, is available at: http://www.waterrights.ca.gov/WaterAvailability/default.html. 33

Muni/Western requests 200,000 acre-feet per year (afy) in its water right applications. According to Tables 3.0-3 and 3.0-4, this amount of water is available for capture by Muni/Western with a "Maximum Annual" flow, at a project diversion capacity of 1,500 cfs, with senior claimant diversions at historical levels (i.e. 65 cfs), with no environmental habitat release, and with SBVWCD diversions at its current licensed diversion amount of up to 10,400 afy. These parameters raise several questions. Generally, long-term average or median water year flows are 34

34 used for the WAA. It is not readily apparent how the "Maximum Annual" flows in Tables 3.0-3
35 and 3.0-4 were calculated. The definition of the Maximum Annual flow should be listed in the tables in a footnote or there should be a reference to the applicable section in the document. How does Muni/Western justify its request to appropriate 200,000 afy? What is the probably that 200,000 afy of flow will be available to Muni/Western? It appears Muni/Western has assumed in its model that any available water will be applied to the two pending applications and not to any of the other competing applications pending before the Board. Did Muni/Western include any other pending applications in their model? If not, Tables 3.0-3 and 3.0-4 could be expanded to show pending applications.

36 In compliance with Water Code section 1243, "in determining the amount of water available for appropriation, the SWRCB shall take into account, whenever it is in the public interest, the amounts of water needed to remain in the source for protection of beneficial uses...." Instream beneficial uses include, but are not limited to, recreation and the preservation of fish and wildlife habitat. One objective of a Water Availability Analysis (WAA) is to determine the impact of the project on streamflow in order to evaluate the impacts to fishery resources as required by the CEQA, the California Endangered Species Act (CESA), and the federal Endangered Species Act (ESA). The CDFG filed a protest against Muni/Western's water right applications, among others, which requested a specific proposal to provide minimum bypass flows for maintenance of aquatic habitat, fish, and wildlife resources as a protest dismissal term. Muni/Western needs to consider possible bypass flows in its analysis, and establish how it intends to comply Fish and Game Code section 5937 as well.

Water Quality and Groundwater Contamination

37 The proposed Project has the potential to affect the groundwater quality in the Bunker Hill and Lytle Creek groundwater basins collectively referred to as the San Bernardino Basin Area (SBBA). Constituents such as nitrates, perchlorate, polychlorinated biphenyls (PBCs), tetrachloroethylene (PCE), total dissolved solids (TDS) and trichloroethylene (TCE) were investigated in the DEIR.

38 In DEIR section, 3.2 Groundwater Hydrology and Water Quality, for the TDS constituent, impact GW-4 (DEIR at p. 3.2-27), Muni/Western states the Project would increase TDS concentrations such that post-Project TDS would exceed water quality objectives. This is a significant impact. Even with mitigation measure MM-GW-1 which states; to the extent feasible given existing infrastructure and consistent with meeting other basin management objectives, Muni/Western will direct Project water spreading to reduce significant TDS impacts, (DEIR at p.
39 3.2-29), the impacts to TDS concentration levels in the SBBA remain significant. Muni/Western draws an identical conclusion for the Project's impact on nitrate concentrations in the SBBA and mitigates with MM-GW-1. (DEIR at 3.2-31.) The levels of impact of TDS and nitrate concentrations (ranging from beneficial to significant) to wells in the Lytle Creek and Bunker Hill sub-basins is demonstrated in DEIR pp. figures pp. 3.2-21 to 28 (the annual impacts for TDS under current and proposed water quality objectives) and figures pp. 3.2-33 – 40 (the annual
40 impacts for nitrates under current and proposed water quality objectives). Since well locations

are known, Muni/Western should state what action(s) it will pursue if spreading Project water is unsuccessful at reducing significant nitrate and TDS impacts to those wells. For example, Muni/Western could pay for water treatment or supplemental state project water for downstream users or necessary instream flows. 40

In DEIR section 3.12, Hazardous Materials and Groundwater Contamination, regional groundwater contamination plumes such as Muscoy/Newmark Plume, the Norton Plume and the Redlands-Crafton Plume containing PCBs, perchlorate, and TCE have been documented to exist within the SBBA and adjoining basins where Project related facilities are located. (DEIR at p. 3.12-4-5.) Project-related groundwater recharge in spreading basins located around the perimeter of the San Bernardino Valley could affect existing groundwater contamination plumes. The movement of the plumes in relation to Project activities such as groundwater spreading was modeled as part of this DEIR. The modeling results are shown in Appendix B, section 6. 41

The impacts of the movement of groundwater contaminants such as perchlorate, TCE and PCE under Project scenarios A-D are cited in HAZ-2, (DEIR at p.3.12-14), HAZ-3, and HAZ-4. Impact HAZ-2 through 4 each state that a significant impact will result from the implementation of some or all of the Project scenarios. Following implementation of mitigation measure MM HAZ-4, (DEIR at p. 3.12-14), the DEIR concludes that impacts of PCE, perchlorate, and TCE on the groundwater supply will remain significant and unavoidable. As mitigation, to the extent feasible, Muni/Western will direct Project water spreading to limit adverse plume movement, (DEIR at p. 3.12-14), in the Lytle Creek and Bunker Hill sub-basins 42

The DEIR does not, however, show levels of impact (ranging from beneficial to significant) to wells in the Lytle Creek and Bunker Hill sub-basins for perchlorate, TCE and PCE as it did for nitrate and TCE in figures pp. 3.2-21 to 28 and figures pp. 3.2-33 to 40. Muni/Western's document should include similar tables for the effects of perchlorate, TCE and PCE contaminant plumes on the wells in the SBBA. As with wells potentially contaminated with TDS or nitrates, the document should state what action(s) Muni/Western will take if direction of Project water spreading to reduce significant perchlorate, TCE and PCE impacts to those wells is unsuccessful. 43

43 For example: will the well owners be notified of the possible impact to the wells at the onset of the Project? If an individual well owner's water supply becomes contaminated due to project activities, will Muni/Western supply an alternative source of water to the well owners?
If you have questions regarding these comments, please contact me at (916) 341-5349.

Sincerely,

Jane Farwell
Environmental Scientist
bcc: Jean McCue, Samantha Olson
JF:llv 01/14/05 U:\Herdrv\JFarwell\File A031165DEIRfinal.doc

STATE WATER RESOURCES CONTROL BOARD (SWRCB)

SWRCB Comment 1

Muni/Western have identified the SWRCB as a Responsible Agency as defined by CEQA and acknowledge the rights, responsibilities and independence of the SWRCB to make its own determination regarding the impacts of the Project on the environment.

SWRCB Comment 2

Please see Thematic Responses section 2.1.3. The Draft EIR analyzed four "bookend" scenarios independently throughout its discussion of the impacts of the Project on the environment. Where the analysis indicated that there would be a difference in the impacts on the environment among the four scenarios (e.g., total water available for appropriation by Muni/Western), the Draft EIR presented the results for each of those scenarios. In other cases, where the impacts of the Project were substantially the same for all four bookend scenarios, the Draft EIR presented the "worst-case" of the four bookend scenarios. It should be noted that each of the four bookend scenarios assumes the implementation of the Project in some fashion; the Draft EIR independently presents the impacts to be expected under No Project conditions.

SWRCB Comment 3

The Draft EIR did introduce a scenario with parameters similar to Scenario 13 but where Muni/Western does not capture water through seasonal storage - this is Scenario 14. The Draft EIR did not label this set of conditions as the No Project scenario, but analysis of Scenario 14 is contained in the Draft EIR within the bookends of environmental impacts as described in Thematic Responses section 2.1. For more information regarding the approach to the No Project scenario, please see Thematic Responses section 2.1.

The comment suggests that Tables 3.0-3 and 3.0-4 include data regarding the No Project Scenario, but in fact those tables do not include data on environmental effects of the No Project Scenario. To clarify this, we have added table (below) which shows the diversions from the Santa Ana River under the No Project Scenario. The No Project Scenario assumes that Senior Water Right Claimants will divert water pursuant to their historical practices, that the Conservation District will divert water pursuant to its historical practices, and that the USACE will implement any habitat releases mandated by the U.S. Fish and Wildlife Service. The comment noted that it might be appropriate to assume the Conservation District is limited to its licensed rights in the No Project Scenario; an evaluation where a no project scenario contains this assumption is also included in the table below. The comparison of the No Project Scenario with either Table 3.0-3 or Table 3.0-4 reveals that the Project would result in a substantial change because, cumulatively, approx 800,000 acre-feet of water would be put to reasonable and beneficial use by Muni/Western.

Unappropriated Water - No Project Scenario

	Basis or Condition	Cumulative	Average	Maximum
Senior Claimant Diversions	Historical Diversions	1,038,135	26,619	45,245
*Reservoir Evaporation**		5,608	144	368
Conservation District Diversion	Historical Diversions	404,980	10,384	48,152
Environmental Habitat Release	1,000 cfs /2 days	35,703	915	3,967
Muni/Western Diversions	N/A	0	0	0
Unappropriated Water	N/A	807,448	20,704	171,389
Total	N/A	2,291,874	N/A	N/A

Unappropriated Water – a no project scenario where Conservation District diversions held to Licensed Right

	Basis or Condition	Cumulative	Average	Maximum
Senior Claimant Diversions	Historical Diversions	1,038,135	26,619	45,245
*Reservoir Evaporation**		5,608	144	368
Conservation District Diversion	Licensed Right	193,483	4,961	10,400
Environmental Habitat Release	1,000 cfs /2 days	35,703	915	3,967
Muni/Western Diversions	N/A	0	0	0
Unappropriated Water	N/A	1,018,945	26,127	194,350
Total	N/A	2,291,874	N/A	N/A

* Note: Reservoir Evaporation may be overestimated since it was based on the potential seasonal storage.

It should be noted that the foregoing tables depict quantities of unappropriated water under No Project conditions. As discussed in Thematic Response 2.6, with the implementation of the settlement agreement among Muni/Western and the Conservation District it is anticipated that the maximum diversion by Muni/Western upon a repetition of conditions in Water Year 1980 would be 198,000 afy. This estimate differs from the data shown in the foregoing tables because it assumes that the settlement agreement will not permit the Conservation District to divert water for spreading during very wet years.

SWRCB Comment 4

See Thematic Responses sections 2.1, 2.3.1, and 2.5.

The commenter is incorrect in stating that the Draft EIR found a *significant impact* to non-storm day flow in segment G and downstream in the SAR. The Draft EIR did not find a significant impact to non-storm day flow below River Segment F. While the Project would increase the number of zero flow days in Segment C, zero flow days would occur without the Project (i.e., it is not correct to say that "As a result of the Proposed Project, Segment C will be completely dewatered….")

Chapter 6 of the Draft EIR and Thematic Responses section 2.5 discuss the cumulative impacts of the Project and the proposed sale of water that would otherwise be discharged from the RIX facility. It should be noted that the discharge of wastewater from the RIX facility and in the Rialto Drain represent the current physical conditions in the environment and so are appropriate to include in the environmental baseline. Muni/Western assume that any agencies that wish to change such flows will prepare appropriate environmental documentation for such changes and will include the Project as part of the cumulative impacts analysis contained in those environmental documents.

SWRCB Comment 5

See Thematic Responses sections 2.3.1 and 2.3.4. Muni/Western concur that the evaluation of change in surface water hydrology is critical to the evaluation of many other environmental resources. However, significant impact calls for surface water hydrology (Thematic Responses section 2.3.1) relate only to impacts to surface water (not surface water as it relates to other resources, such as aesthetics or biology). The impact analysis in the Draft EIR did not presume that impacts to surface water resources must result in impacts to biological resources, rather impacts to biological resources were examined in light of the anticipated hydrologic changes and the linkages (or lack thereof) to biological resources.

Thematic Responses sections 2.3.1 and 2.3.4 explain in detail the reasons that Muni/Western believe that such changes in non-storm day flows would not have a significant impact on aquatic, riparian and wetland habitats and species, including the Santa Ana sucker. In brief, these species are all adapted to prolonged periods of zero or no flows; the reduction in flows from the Project would, therefore, have a less-than-significant effect on these biological resources. There would be some loss of habitat and individual members of given species, but these would be less-than-significant as determined by the thresholds of significant set forth in the Draft EIR.

SWRCB Comment 6

Please see Thematic Responses section 2.1 for a discussion of the appropriate baseline for analysis. Although some of the diversions may not be authorized, the CEQA baseline for impact analysis is generally the physical conditions that exist at the time of the start of the environmental review process.

SWRCB Comment 7

Please see Thematic Responses sections 2.3.1 and 2.3.4 for a discussion of the thresholds of significance for hydrological and biological resources. Given the differing thresholds of significance, it is very reasonable to conclude that there may be a significant and unavoidable impact on hydrology that does not necessarily result in a significant impact on biological resources. These conclusions are supported by substantial evidence, as set forth in detail in Thematic Responses sections 2.3.1 and 2.3.4.

SWRCB Comment 8

The current perennial flow between Seven Oaks Dam and Cuttle Weir is a result of (1) a release of 3 cfs to compensate for subsurface flows within the SAR that were reduced by the grout curtain supporting the structure of Seven Oaks Dam and, (2) the delivery of water to prior right holders with diversion points below Seven Oaks Dam. These flows are not sufficient to support the types of aquatic habitats necessary for all life stages of the Santa Ana sucker. The segment of the SAR between Seven Oaks Dam and Cuttle Weir currently does not and has not supported the Santa Ana sucker in many years, and construction of Seven Oaks Dam permanently altered flows in this stretch of the river. These conditions are the existing baseline for use in the impact analysis under CEQA. To assume that the Santa Ana sucker could be present in the future is speculative at this time. Thus, additional analysis for this area is not required under CEQA. In the narrow canyon of the SAR between Seven Oaks Dam and Cuttle Weir, high turbulent flows during storm water releases (up to 7,000 cfs) and the limited presence of refugia make it unlikely that this area of the river would ever support a sustaining population of Santa Ana suckers. Furthermore, this segment of the river is short (about 0.5 mi) and high flows would wash the suckers to below Cuttle Weir, which is a barrier to upstream movement, into a segment of the river that does not have perennial flow. Thematic Responses section 2.4.3 provides an analysis of bypass releases necessary for perennial flows in the river below Seven Oaks Dam.

SWRCB Comment 9

Please see Thematic Responses section 2.3.4 and response to USACE Comment 20.

SWRCB Comment 10

Please see the response to SWRCB Comment 7. As noted in that response, there may be a significant impact on surface water hydrology without there being a significant impact on biological resources.

SWRCB Comment 11

The probability that releases from Seven Oaks Dam would exceed 500 cfs on a non-storm day is extremely low. A review of the data shows that, assuming conditions per Scenario A or B, in only 9 days, of 12,419 days in the River Analysis Base Period, would releases exceed 500 cfs on a non-storm day. Assuming conditions per Scenario C or D, in only 5 days of the 12,419 days in the Base Period would releases exceed 500 cfs on a non-storm day.

SWRCB Comment 12

Please see Thematic Responses section 2.4.3, which evaluates in detail the possibility of releasing bypass flows to mitigate for the effects of the Project. That analysis found that the release of bypass flows would not be a feasible means of mitigating for the effects of the Project.

SWRCB Comment 13

Please see Thematic Responses section 2.4.3 for a detailed analysis of the potential impacts on the environment of bypass flows.

SWRCB Comment 14

The Operation and Maintenance Manual for Seven Oaks Dam states, at page II-4-5 that "if anaerobic conditions occur, outlet operations may have to be modified to alleviate the condition." The US Army Corps of Engineers, the Local Sponsors, Muni/Western and many local water agencies are currently involved in a cooperative program to identify the cause(s) of water quality concerns at Seven Oaks and may then implement appropriate solutions. Muni/Western believe that this process will result in operations of Seven Oaks that will fully comply with the Operation and Maintenance Manual.

Thematic Responses section 2.2 demonstrates that conservation storage operations would have a limited effect on water levels in Seven Oaks; water levels would never exceed the highest stage that would occur with the No Project. But on some days (approximately 7 percent of days), with seasonal storage (e.g., Project Scenario A) water levels could be higher than would occur under the No Project condition. It is speculative to conclude that such limited conservation storage would have a substantial effect on the environment once the Corps of Engineers and its cooperating agencies resolve the current operational problem.

SWRCB Comment 15

See Thematic Responses section 2.4.

As stated under MM BIO-10, a rigorous monitoring program funded by Muni/Western will be established and the program will be adjusted appropriately as results from earlier efforts become available. Input from MSHMP participating agencies is a part of the proposed plan as written. The adaptive management aspect of that program coupled with the fact that these agencies along with the USACE are developing a program to address impacts over a much larger impacted area ensure appropriate mitigation.

Muni/Western's mitigation measures meet CEQA requirements. Muni/Western is committed to mitigation measure success and has in fact enhanced MM BIO-10 to include a performance standard. The adaptive management approach allows for flexibility in the event of new circumstances. Finally, there is a legal presumption that Muni/Western will comply with their mitigation commitments because such commitments are legally enforceable.

SWRCB Comment 16

See Thematic Responses section 2.3.4. Muni/Western have developed several mitigations related to construction impacts to RAFSS. In Mitigation Measure MM BIO-7, Muni/Western has taken the approach of avoiding the impact by rerouting the Plunge Pool Pipeline Phase II alignment to closely follow the disturbed Greenspot Road corridor, which is at or very near the northerly edge of contiguous RAFSS habitat. This reduces direct and indirect impacts on the RAFSS community and associated species and is the preferred mitigation. Avoidance or reduction of an impact is in keeping the Fish and Wildlife Service Mitigation Policy (Federal Register 45(15)7656-7663). In the case of Project construction, the loss would be temporary, extending through the construction period and with the habitat gradually recovering value over the next few years. The Project proposes a comprehensive program of impact avoidance, minimization, and restoration measures, including MM BIO 1 through MM BIO 6. Although recovery of key habitat elements would be expected within 2 to 4 years, the impact was conservatively categorized as a long-term loss because of the possibility that some elements might take longer than 5 years to achieve full recovery.

As is acknowledged in the EIR and the literature cited therein, RAFSS is a community that responds to disturbance and the individual species are adapted to rapidly recolonizing disturbed areas (Smith 1980, Hanes 1984, Hanes et al. 1989, Ryan 1995). Although mistakes have been made and lessons learned, the approaches to reestablishing the dominant RAFSS species are well understood, provided that construction planning incorporates the need for post-construction restoration at the outset of planning so that soils and substratum are appropriately handled. For example, in the Devil Canyon area RAFSS dominants, including brittlebush, deerweed, California buckwheat, and coastal sagebrush, were well-established and vigorous within about 3 years subsequent to installation of buried water pipelines. Further, under the terms of MM BIO-8, there would be acre for acre acquisition, preservation, and maintenance of RAFSS habitat coupled with acre for acre restoration of the impacted habitat as required by MM BIO-2 providing full mitigation for Project impacts. As described in response to SWRCB Comment 19 below, MM BIO-8 has been further enhanced to require that mitigation and reporting plans for RAFSS habitat acquisitions are approved by the Chief of the Division of Water Rights of the State Water Resources Control Board prior to the construction of the Plunge Pool Pipeline.

SWRCB Comment 17

Once the EIR has been completed and certified, the mitigation measures become part of the legally enforceable mitigation and monitoring plan to be implemented as part of the Project.

SWRCB Comment 18

Please see Thematic Responses section 2.3.4 and response to SWRCB Comment 16.

SWRCB Comment 19

Muni/Western will consult with SWRCB staff in the development of the operational details of MM BIO-8 and will include in that measure a provision requiring that the mitigation activities undertaken pursuant to MM BIO-8 be approved by the Chief of the Division of Water Rights.

Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
3.3-44	23-33	**MM BIO-8:** To compensate for permanent ~~or~~ long-term <u>and temporal </u>losses of RAFSS habitat and RAFSS habitat value, Muni/Western will acquire, for every 1 acre impacted, a minimum of 1 acre of good quality habitat of similar or greater habitat value than the RAFSS

Page	Line(s)	Edit
		area impacted by the Plunge Pool Pipeline and dedicate it in perpetuity as a habitat conservation easement area, or other appropriate designation, and provide funding for its future management as native habitat in perpetuity. The acquired RAFSS habitat area would ideally be contiguous with existing habitat already set aside in the WSPA or other dedicated RAFSS habitat. If good quality habitat in such a locality is not available for purchase, availability of other RAFSS habitat will be investigated, with the objective of obtaining good quality habitat near the Project area. Implementation of this mitigation measure will be subject to the requirement that such long-term mitigation and reporting plans for such acquisitions are to be approved by the Chief of the Division of Water Rights of the State Water Resources Control Board prior to the construction of the Plunge Pool Pipeline.

SWRCB Comment 20

See Thematic Responses section 2.1 for a discussion of the appropriate baseline for environmental analysis.

The cumulative impact analysis (Chapter 6) considered the cumulative impacts of the Project and the proposed sale of water that would otherwise be discharged from the RIX facility. The cumulative impact analysis found that decreases in flow on non-storm days would be significant in River Segment F. Because there was no measurable effect of the Project in Segment G, no cumulative analysis was performed for this river segment.

Thematic Responses section 2.5 amplifies these conclusions by demonstrating that there is a cumulative impact on water flows in the SAR from the Project and other past, present and reasonably foreseeable future projects. The analysis in Thematic Responses section 2.5 did not identify any additional impacts beyond those identified in the Draft EIR.

Muni/Western has no obligation to "backstop" the actions of others for which it has no control or formal relationship. Forcing one project to mitigate for the impacts of another project is contrary to CEQA and California law. If such a transfer were to occur, it would be the obligation of that project's proponent to mitigate for the effects suggested in the comment.

SWRCB Comment 21

The presentation of Project impacts (Draft EIR Chapter 3) is based on current and future operation of the wastewater discharges to the SAR and compares against baseline as required by CEQA. The cumulative impact analysis is based on the information available from each of the cumulative projects (including the reduction in discharge from the proposed sale of water at RIX). As noted in the prior comment, mitigation for the impacts of any proposed transfer of wastewater is not the responsibility of the project proponent.

SWRCB Comment 22

See response to USACE Comment 3. As noted in the responses to SWRCB Comment 5, it is entirely possible for there to be a significant impact on hydrological resources without there being a corresponding significant impact on biological resources. For both the Project impacts analyzed in the Draft EIR and cumulative impacts analyzed in the Draft EIR and Thematic Responses section 2.5, the relationship between surface hydrology impacts and biological impacts is complicated. For example, significant hydrological impacts (e.g., SW-7, Cumulative SW-8 and Cumulative SW-11) lead to both significant and less than significant cumulative biological impacts (Cumulative BIO-5 and Cumulative BIO-7), but only to less than significant Project-related impacts (BIO-18, BIO-20, and BIO-21). Therefore, there is not a simple correlation between significant hydrological impacts and significant biological impacts. The Draft EIR thoroughly examines all biological impacts and potential mitigation measures, both at the Project level and cumulatively.

Reductions in the rate or quantity of diversions would not be a feasible mitigation measure because it would not avoid the impacts of the Project on biological resources. See Thematic Responses section 2.4.3 for a detailed discussion of this proposed mitigation measure.

SWRCB Comment 23

The analysis of sediment transport (EIP 2004) is attached as Appendix C to the Final EIR. The analysis is based on empirical measurements and is consistent with the mobilization velocities relied on by the Corps of Engineers in its Biological Assessment for Seven Oaks Dam in 2000. Please see the discussion of stream velocity in Thematic Responses section 2.3.1 for additional details.

The commenter misunderstands the discussion of sediment transport. Above the Mill Creek confluence, the Project would have a less than significant effect on sediment transport because sediment is typically not transported to downstream locations due to a lack of high flows (Draft EIR, p. 6-24). Below the Mill Creek confluence, the combined diversion of Muni/Western and the Conservation District will total 1,590 cfs (1,500 from Muni/Western and Conservation District on the SAR and 90 cfs by Conservation District on Mill Creek), thereby reducing flows during a 100-year flood event to 23,410 cfs. In this way, the full cumulative impacts of both the Muni/Western and Conservation District applications were analyzed in the Draft EIR.

SWRCB Comment 24

Impacts of seasonal storage are principally the same as those of regulation for flood control purposes, therefore no new or additional biological impacts are anticipated. See Thematic Responses section 2.2.

The analysis contained in the Draft EIR at page 3.3-55 was based on review and evaluation of the 1997 Army Corps of Engineers *Seven Oaks Dam Water Conservation Feasibility Study.* The Draft EIR presented those impacts and applicable mitigation measures identified in the 1997 study. The 1997 analysis was revised as necessary (e.g., revised to include newer air quality standards) and augmented, particularly where seasonal storage or construction necessary to facilitate seasonal storage would interact with other Project elements (e.g., new information was added as to construction schedule).

SWRCB Comment 25

Comment noted. Herbicides will be used pursuant to manufacturer's instructions and standard measures will be taken to avoid impacts on water quality. MM BIO-9 has been enhanced to include additional language to this affect (see below):

Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
3.3-61	28-37	**MM BIO-9:** Muni/Western will monitor and remove invasive non-native species establishing in the 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 herbicidal treatment using appropriate environmental safeguards. Herbicides will be used pursuant to manufacturer's instructions and standard measures will be taken to avoid impacts to water quality. 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.

SWRCB Comment 26

As implied by the comment, no proven methodology for restoration of SBKR and Santa Ana River woolly-star habitat currently exists; experimental studies like those proposed by Muni/Western are needed to determine which measures will be successful. The BO for Seven Oaks Dam (USFWS 2002) on pages 8 and 9 specifies that experimental studies are agreed to by USACE and USFWS. The mitigation proposed is an alternative to that being investigated by the USACE and local sponsors to mitigate for the impact of the flood control measures related to Seven Oaks Dam. With the inclusion of a performance standard of restoring 10 acres of intermediate-to late stage RAFSS habitat to the early or intermediate stage RAFSS habitat during the first twenty years of Project implementation, as described in Revised MM BIO-10 in Thematic Responses section 2.4, the proposed mitigation measure fully complies with CEQA.

SWRCB Comment 27

The analysis in Draft section 3.3 focuses on impacts of the Project alone. As discussed in Impact BIO-17, Project diversion of 1,500 cfs would reduce the area affected by overbank flooding between Cuttle Weir and Mill Creek by 10 acres and the frequency of overbank flooding events would be reduced from an average of once every 50 years to once every 140 years. BIO-17 was considered significant but mitigable to less than significant with habitat renewal and removal of invasive species.

The cumulative impact analysis considered the effect of multiple projects. In addition to the reduction in overbank flooding from the Project, there is an additional reduction in overbank flooding due to operations of Seven Oaks Dam. The July 2000 Army Corps of Engineers *Biological Assessment* estimated that the dam would reduce the overbank area in a 50-year flood by 348 acres and by 451 acres in a 100-year flood. Potential mitigation measures identified for the Project are reasonable for the relatively small 10 acres affected by the Project, but it is unreasonable to assume that these mitigation measures would be implemented by others and could effectively mitigate impacts over such extensive acreages. For this reason, impacts related to overbank flooding are considered mitigable for Project specific impacts but not for cumulative impacts.

SWRCB Comment 28

Comment noted.

SWRCB Comment 29

Comment noted.

SWRCB Comment 30

This comment does not identify an environmental impact; therefore no response is necessary. Nonetheless, in the interest of providing the most information as possible about the Project, Muni/Western note that the Project does not rely on previous federal consultations and mitigation measures for Seven Oaks Dam to adequately protect Santa Ana sucker.

SWRCB Comment 31

Please see response to USACE Comment 19 regarding effects of peak storm flows on Santa Ana sucker. Thematic Responses section 2.4.3 describes the amount of water that would need to be released from Seven Oaks Dam to maintain perennial flow from the dam to the RIX-Rialto Outfall and demonstrates that sufficient flows could not be maintained to provide for a population of Santa Ana suckers. That section also describes the substantial other constraints (e.g., large flood releases, the lack of refugia and barriers to upstream movement for fish washed down below the Cuttle Weir) that would make it improbable that Santa Ana suckers introduced into the reach between Seven Oaks Dam and the Cuttle Weir would survive for any appreciable period.

SWRCB Comment 32

The Santa Ana sucker has not been documented to currently be present in Segments C, D, and E as described in Table 3.3-2 of the Draft EIR. Additional surveys performed after publication of the Draft EIR did not find Santa Ana sucker present in these reaches. These segments of the river do not have perennial flow. Please see response to CDFG Comment 22 regarding mitigation measures for significant reduction in flows. The requested analysis of flows below Seven Oaks Dam is found in Thematic Responses section 2.4.3. That analysis shows that it would not be possible to maintain sufficient flows to permit the introduction of the Santa Ana sucker in that reach. Mitigation for this species above Seven Oaks Dam is unlikely to be feasible or advisable because habitat conditions above the dam's inundation area (e.g., high gradient and cold water temperatures). Moreover, mitigation for impacts to the Santa Ana sucker are not needed because no significant impacts have been identified for the proposed Project.

SWRCB Comment 33

The comment identifies statutory requirement on the part of the State Water Resources Control Board and describes the need for a Water Availability Analysis (WAA). A copy of the WAA submitted by Muni/Western on June 1, 2005, is attached as Appendix B. The WAA substantiates the availability of up to 200,000 afy of unappropriated water in the SAR.

Also within the WAA the feasibility of providing a bypass flow was evaluated. The bypass flow analysis in the WAA used the Corps of Engineers' cross-sectional data for the SAR, which were the best data then available. Muni/Western recognized, however, that the focus of the Cops of Engineer's study was high-flows that would occur during periods of flooding and that the high-flow cross-sectional data could usefully be supplemented by additional data specifically focused on the low-flow channel of the SAR. To obtain such data on the low-flow channel configuration, Muni/Western surveyed the low-flow channel of the SAR during the summer of 2005. Using the Corps of Engineers' HEC-RAS model with these new cross-sectional data, Muni/Western were able to refine the bypass flow analysis done for the WAA. The updated analysis is presented in Thematic 2.4. The overall result of the refined bypass flow analysis is the same of that in the WAA; the necessary flow to create a bypass flow is not available on many days, particularly on non-storm days.

SWRCB Comment 34

The request for 200,000 afy is for the maximum year diversion from the SAR for the described Scenario A, which has an associated long-term average diversion of 27,042 afy. Other Project scenarios obtain lesser amounts of diversions.

The maximum year diversion was estimated to occur in water year 1969 when there were unusually high rates of runoff. It is during this unusual year that Muni/Western could capture nearly 200,000 af by using a diversion capacity of 1,500 cfs. The maximum diversions were calculated for the all the Scenarios using water year 1969.

The long-term averages required in the WAA are an appropriate measure for streamflow and diversions in perennial streams of the type found in coastal Northern California, but in the arid zones like Southern California, maximum flows and diversions are an order of magnitude greater than average flows and diversions, and need to be considered with the average. The Muni/Western application requests permission to divert in a manner adequate for the most extreme runoff year.

Thematic Responses section 2.6 discusses the potential impact on diversions by Muni/Western of the settlement with the San Bernardino Valley Water Conservation District. The analysis contained in Thematic Responses 2.6 indicates, given the terms of the settlement with the Conservation District, there could be approximately 190,000 af available for diversion by Muni/Western in a repetition of WY 1969 and 198,000 af in a repetition of WY 1980.

SWRCB Comment 35

A definition of Maximum Annual flow has been added to the footnotes of Tables 3.0-3 and 3.0-4 (see below). Muni/Western justifies its request for 200,000 af of diversion based on the Maximum Annual flow (see response to SWRCB Comment 34). As shown in Figure 5.5-8 of Draft EIR Appendix A, 200,000 af is forecasted as being diverted and put to beneficial use by Muni/Western in one year of the forecasted future period (39 years) (under Scenario A). Please also see the preceding response for a discussion of the impact of the settlement with the San Bernardino Valley Water Conservation District.

Muni/Western's modeling evaluated its proposed Project as is required by CEQA and, as part of that analysis, evaluated the other projects that could divert the same water (the Senior Water Right Claimants' diversions and the current and proposed diversions of the San Bernardino Valley Water Conservation District). Muni/Western also considered other applications in the Cumulative impact analysis contained in the Draft EIR and as part of the WAA (see Appendix B of the Final EIR).

Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
3.0-6		*Add the following footnote to Table 3.0-3 and 3.0-4 as follows:* ** Maximum Annual refers to the maximum diversion available to Muni/Western in any one year, given the assumptions of a particular scenario, e.g., the forecasted maximum amount of unappropriated water available in any year of the 39-year base period.
3.0-6		*Correct the footnote in Tables 3.0-3 and 3.0-4 as follows:* c) Release of continual 3 cfs from dam to account for groundwater interruption by the dam foundation is used by the senior claimants, but is not shown in the surface flows above.
A-4-11 and A-4-12		*Correct Table 4.2-5 and Table 4.2-6 by adding the following::* Senior Claimant Diversions (3) Maximum Annual **
A-4-11 and A-4-12		*Add the following footnote to Table 4.2-5 and Table 4.2-6:* ** Maximum Annual refers to the maximum diversion available to Muni/Western in any one year, given the assumptions of a particular scenario, e.g., the forecasted maximum amount of unappropriated water available in any year of the 39-year base period.
A-4-11 and A-4-12		*Correct the footnote in Table 4.2-5 Table 4.2-6 as follows::* 3) Release of continual 3 cfs from dam to account for groundwater interruption by the dam foundation is used by the senior claimants, but is not shown in the surface flows above.

SWRCB Comment 36

Please see the analysis of this topic in Thematic Responses section 2.4.3 and the WAA provided in Appendix B of this Final EIR.

SWRCB Comment 37

Comment noted.

SWRCB Comment 38

It should also be noted that the Project has beneficial or no impacts at most wells in most years for TDS concentrations. See Table 3.2-8 in Thematic Responses section 2.3.2. However, the comment is correct in noting that at some wells the Project would have a significant effect on groundwater quality. In order to mitigate for that effect, Muni/Western are proposing Mitigation Measure MM HAZ-5, which would require Muni/Western to provide an alternate water supply or treatment of affected wells to meet the needs of any users where the quality of water from a groundwater well is reduced to less than the applicable water quality objective as a result of the Project. Please see the response to RWQCB Comment 3. Overall, The Project would not increase TDS concentrations in the sub-basins of the SBBA such that post-Project concentrations would exceed WQOs.

SWRCB Comment 39

See the response to SWRCB Comment 38.

SWRCB Comment 40

See the response to SWRCB Comment 38.

SWRCB Comment 41

Comment noted.

SWRCB Comment 42

Comment noted. In addition to mitigation measures HAZ-1 to HAZ-4, Muni/Western are also proposing Mitigation Measure HAZ-5, which would require Muni/Western to provide an alternate water supply or treatment of affect wells to meet the needs of any users where the quality of water from a groundwater well is reduced to less than the applicable water quality objective as a result of the Project.

SWRCB Comment 43

Thematic Responses section 2.3.2 provides detailed information on potential impacts to wells related to perchlorate, TCE and PCE. As described in Thematic Responses section 2.3.2, in addition to mitigation measures HAZ-1 to HAZ-4, Muni/Western are also proposing Mitigation Measure HAZ-5, which would require Muni/Western to provide an alternate water supply or treatment of affected wells to meet the needs of any users where the quality of water from a groundwater well is reduced to less than the applicable water quality objective as a result of the Project. See responses to SWRCB Comment 38 and RWQCB Comments 3 and 5.

Big Bear Municipal Water District

Lake Management

January 12, 2005

Robert L. Reiter
General Manager and Chief Engineer
San Bernardino Valley Municipal Water District
1350 South E Street
San Bernardino, CA 92408-2724

RE: Santa Ana River Water Right Applications for Supplemental Water
Draft Environmental Impact Report

Dear Mr. Reiter:

Thank you for the opportunity to review the Draft Environmental Impact Report (EIR). It is a very impressive document. 1

As you know, the Big Bear Municipal Water District is the owner and operator of Bear Valley Dam, which forms Big Bear Lake. Discharges from the lake enter Bear Creek, which is a tributary of the Santa Ana River above Seven Oaks Dam.

I have noted that the Draft Environmental Impact Report (EIR) does not include a 2
discussion of how the proposed project could impact both the future operation of Big Bear Lake and the existing operation of the lake under the Physical Solution, which is described in Judgment No. 165493, Big Bear Municipal Water District v. North Fork Water Company, et al. The Big Bear Municipal Water District (BBMWD) has testified 3
in an earlier hearing before the State Water Resources Control Board that the proposed project could have a beneficial impact on the future operations of Big Bear Lake. I did not see any discussion in the Draft EIR of how the proposed project could improve the future operations or effect existing operations. The BBMWD would like the final version of the EIR to include a discussion of the expected impacts on these two topics.

If you have any questions concerning this request, please give me a call. I can be reached at 909-866-5796.

Sincerely,

Sheila Hamilton

Sheila Hamilton,
General Manager

P.O. Box 2863 • Big Bear Lake, CA 92315-2863 • (909) 866-5796 • Fax (909) 866-6485 • E-MAIL:bbmwd@bbmwd.org

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BIG BEAR MUNICIPAL WATER DISTRICT (BBMWD)

BBMWD Comment 1

Thank you for your comments.

BBMWD Comment 2

There is no physical impact to the operations of Big Bear Lake or the associated environmental resources. Changes in the operational criteria for Big Bear Lake have been accounted for in the hydrology of the upper SAR including in the assumptions for surface water inflow to Seven Oak Reservoir (see Draft EIR Appendix A section 4.2.2.1).

BBMWD Comment 3

The Project would improve overall water supply reliability for Big Bear and all other water users in the Muni service area.

By use of returning exchange water, the Project would improve use of local water so Muni would have more flexibility with imported water supplies. The improved flexibility of Muni's use of imported water due to the Project would have a corresponding positive effect on maintaining the Big Bear Agreement.

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BIG BEAR WATERMASTER

FOR
BIG BEAR MUNICIPAL WATER DISTRICT VS. NORTH FORK WATER CO. ET AL
CASE NO. 165493--COUNTY OF SAN BERNARDINO

WATERMASTER MEMBERS:
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January 12, 2005

Robert L. Reiter
General Manager and Chief Engineer
San Bernardino Valley Municipal Water District
1350 South E Street
San Bernardino, CA 92408-2724

RE: Santa Ana River Water Right Applications for Supplemental Water
Draft Environmental Impact Report

Dear Mr. Reiter:

The Big Bear Watermaster Committee oversees the administration of the Judgment issued by the Superior Court of the State of California for the County of San Bernardino in *Case No. 165493, Big Bear Municipal Water District vs. North Fork Water Company, et al.* This Judgment includes a Declaration of Rights of the parties to the Judgment to the waters of Bear Creek. It also includes a Physical Solution, which describes a plan of operation for Big Bear Lake and releases from the Lake into Bear Creek. The Big Bear Watermaster submits a report to the Court each year. The annual Watermaster report sets forth the accounting for water under the Physical Solution and describes all other significant Watermaster activities during the year. 1

The Watermaster Committee has noted that the Draft Environmental Impact Report (EIR) does not include a discussion of how the proposed project might impact the operation of the Physical Solution and the appropriateness of the formulas used in the accounting procedures. The Committee would like the final version of the EIR to include a discussion of the expected impacts on these two topics. 2

If you have any questions concerning this request, I can be reached at 925-9333-2250.

Cordially,

Donald E. Evenson
President
Big Bear Watermaster Committee

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BIG BEAR WATERMASTER (BBWM)

BBWM Comment 1

Thank you for your comment.

BBWM Comment 2

Water is available for diversion by the Project only after accounting for prior water right holders, including those represented by the Big Bear Watermaster. The details of the analysis are covered Appendix A to the Draft EIR, on pages A.5-16 through A.5-20. The Project assumes the current operations by the Watermaster under the Physical Solution and no impacts on the Physical Solution are anticipated.

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December 20, 2004

Robert L. Reiter
General Manager and Chief Engineer
San Bernardino Valley Municipal Water District
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San Bernardino, CA 92412-5906

John V. Rossi
General Manager
Western Municipal Water District
450 Alessandro Boulevard
Riverside, CA 92508

Re: **Chino Basin Watermaster's Comments to Muni/Western Draft Environmental Impact Report on the Santa Ana River Water Right Applications for Supplemental Water Supply**

Dear Mr. Reiter and Mr. Rossi:

The Chino Basin Watermaster has reviewed the San Bernardino Valley Municipal Water District ("Muni") and Western Municipal Water District of Riverside County's ("Western") Draft Environmental Impact Report on the Santa Ana River Water Right Applications for Supplemental Water Supply (State Clearinghouse Number 2002071062) ("Draft EIR") and submits the following comments.

The Chino Basin Watermaster supports Muni and Western's efforts to increase your water supply reliability by reducing dependence on imported water; by developing and delivering a new, local, high quality water supply; and to expand your operational flexibility by adding infrastructure and varying sources of water. These are the same goals that motivate the Chino Basin Watermaster's project that is the subject of its Application 31369. 1

We believe that the projects which are intended to accomplish Muni and Western's goals are fully within Muni and Western's rights guaranteed by the Santa Ana River adjudication judgment, *Orange County Water District v. City of Chino et al.*, Superior Court of Orange County, Case No. 117628 (April 17, 1969) ("1969 Judgment"). 2

3 Similar to the Muni/Western Applications, the Chino Basin Watermaster's Application describes a project which will allow for the diversion of as much as 97,000 acre-feet of stormwater to be recharged into the Chino Groundwater Basin. We believe that this project is fully within our rights as guaranteed under the 1969 Judgment.

4 The State Water Resources Control Board ("SWRCB") has clearly indicated a desire to process all of the pending applications in a coordinated manner. However, thus far, none of the parties to these proceedings have performed environmental analyses which fully consider the cumulative impacts their project may have on the Santa Ana Watershed when considered in a coordinated manner with all of the other applications that are currently before the SWRCB. These include not only the Western/Muni Draft EIR, but also the Orange County Water District's ("OCWD") Draft EIR dated May 2004, and the San Bernardino Water Conservation District's ("Conservation District") Draft EIR dated June 29, 2004 (SCH # 2003071003).

5 The projects that are the subject of the applications before the SWRCB are specific in scope and therefore amendable to concrete analysis. In fact, the projects that are the subject of the applications by OCWD, the Conservation District, and Chino Basin Watermaster are all existing projects currently in implementation. However, except for brief and passing references, none of the environmental analyses to date consider how these various projects may impact the ability of the other parties to implement their own projects, or how the implementation of all of these projects may impact the Santa Ana River. For example, the diversion of stormwater upstream may impact the water quality of the River in such a way as to limit the diversion of stormwater in other places in the system by other parties. Similarly, upstream stormwater diversion may have ancillary consequences such as the alteration of stream-bed composition which alters the ability of other entities to perform essential recharge operations. These types of impacts do not appear to have been considered in the Muni/Western Draft EIR.

6 We are very concerned that the current manner of proceeding with the environmental analyses for all of the applications will not provide the SWRCB with the information that it will need in order to process the applications in a coordinated manner. It is our hope that the Santa Ana River parties can soon begin to work together in order to comprehensively address the needs of all stakeholders in the watershed.

Sincerely,

Michael T. Fife
For HATCH & PARENT
Counsel For
CHINO BASIN WATERMASTER

MXF:kac

SB 365947 v1:008350.0001

CHINO BASIN WATERMASTER (CBW)

CBW Comment 1

Thank you for your comment.

CBW Comment 2

Thank you for your comment.

CBW Comment 3

Thank you for your comment.

CBW Comment 4

Muni/Western have completed a comprehensive analysis of all projects that could cumulatively contribute to impacts of the proposed Project and, upon certification of this EIR and project-specific decision-making, will be ready to move to a decision by the SWRCB on these applications. An expanded version of that analysis can be found in Thematic Responses section 2.5.

CBW Comment 5

Please see Thematic Reponses section 2.5 for a complete discussion of the cumulative impacts of all water development projects currently pending before the SWRCB, including the projects proposed by Chino Basin Watermaster. Section 2.5 expands on the discussion of cumulative impacts contained in the Draft EIR and reaches the same conclusions.

Muni/Western evaluated the Chino Basin actions and water right application in the early development of the EIR. However, the effects of the water right applications and other plans do not overlap with those proposed by Muni/Western for this Project. Therefore, there is no cumulative effect of these two projects.

CBW Comment 6

Comment noted. The analysis contained in Thematic Responses 2.5 is intended to provide the SWRCB with all of the information described in this and the prior comment.

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December 20, 2004

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John V. Rossi
General Manager
Western Municipal Water District of Riverside County
P. O. Box 5286
Riverside, CA 92517-5286

Re: Comments of City of Rialto on Community Report and Draft Environmental Impact Report for the Santa Ana River Water Right Applications For Supplemental Water Supply

Dear Messrs. Reiter and Rossi:

On behalf of the City of Rialto ("Rialto" or the "City"), we write in support of the 1
Community Report and the Draft Environmental Impact Report ("DEIR") for the Santa Ana River Water Right Applications For Supplemental Water Supply (the "Project") prepared and issued by San Bernardino Valley Municipal Water District ("Muni") and Western Municipal Water District of Riverside County ("Western").

<u>Summary of Comments</u>

Rialto urges Muni and Western to certify the DEIR and move forward as 2
expeditiously as possible in constructing the Project. Rialto believes that the DEIR is adequate and that the Project represents sound public planning to achieve a safer, more affordable and more reliable water supply for Muni's and Western's customers.

Rialto's one substantive comment is to urge Muni and Western to reconsider the 3
Distribution Priority for supplemental water generated by the Project. Rialto believes that the various phases of the Project should be funded and constructed based on community needs. Those communities whose local water supplies are at the greatest risk should be first in line for receiving the benefits of the Project.

4 Rialto believes that its local water supply is one of the most threatened, if not the most threatened, of all the local communities in the service area of Western and Muni. Recent circumstances, not the least of which is drought, have critically affected the water supplies available to Rialto. Both of Rialto's major sources of groundwater – the Rialto/Colton subbasin and the Bunker Hill Basin – are severely and adversely affected by pollution and drought. The proposed Lower Lytle Creek pipeline and proposed Cactus Basins pipeline projects and the upstream projects necessary to put water in those pipelines (collectively, the "Rialto Basin Project") should be Western and Muni's top priority. The projects that will increase groundwater recharge opportunities in the Lytle Basins (the "Lytle Basins Project") should be another top priority, as many of the pumpers with water rights in those basins are adversely affected in their other sources of supply.

5 The California Environmental Quality Act, Public Resources Code section 21000 et seq. ("CEQA") must be interpreted so "as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language." (*Friends of Mammoth v. Board of Supervisors* (1972) 8 Cal.3d 247, 259.) CEQA thus imposes a substantive mandate that public agencies lessen the environmental impact of their projects. In the context of this Project, Western and Muni should analyze whether a different distribution priority for newly-available Santa Ana River Water would reduce overall environmental impacts.

6 Rialto is faced with planning for and undertaking a multi-year response to the environmental damage to all of its water supply sources. Giving priority to the Rialto Basin Project and the Lytle Basins Project could, potentially, substantially reduce the time needed to clean up the environment, as the new water is used to "flush" the Basins. Rialto disagrees, therefore, with the distribution priorities articulated in the Community Report and DEIR, and requests that Muni and Western consider raising the priority of the Rialto Basin and Lytle Basin projects.

<u>Interest of Rialto</u>

7 The City is a municipality of approximately 100,000 residents. It is an environmental justice community, and the majority of its population consists of members of minority groups. The City lies immediately west of the City of San Bernardino, north of the City of Colton and east of the City of Fontana.

Rialto residents are served water by two agencies, the City's own water department and West Valley Water District. Rialto is located within Muni's service area. Muni has built a facility which takes State Water Project ("SWP") water from the Devil Canyon and delivers it to two water treatment plants near Linden Avenue. However, Rialto currently lacks the facilities to take delivery of, treat and distribute the SWP water. At this time, Rialto relies entirely on pumped local groundwater from the Rialto, Lytle and Bunker Hill basins, and the surface flows of Lytle Creek as its water supply sources. In addition, Rialto takes delivery of certain exchange water produced by Muni from the Bunker Hill Basin. That water is delivered through the Baseline Feeder, in exchange for direct deliveries of SWP water. On December 15, 2004, Rialto learned that the pumps which draw water delivered through the Baseline Feeder are showing signs of contamination, requiring costly treatment. 8

The City holds critically important water rights in the Rialto/Colton groundwater basin, which were adjudicated in *The Lytle Creek Water and Improvement Company v. Fontana Ranchos Water Company et al.*, San Bernardino County Superior Court Case No. 81264. A Consent Decree in that case was entered on July 12, 1961. Under the terms of that Decree, producers' rights to pump are restricted in a drought. 9

Perchlorate has been detected in the groundwater produced from the Rialto/Colton Basin. Investigations directed by the California Regional Water Quality Control Board, Santa Ana Region ("RWQCB") indicate that the contamination is widespread. In response, the City has filed litigation in federal court against more than 40 potentially responsible parties for cleanup of the contamination, and for cost recovery. (*City of Rialto, et al., v. United States Department of Defense, et al.*, U.S. District Court, C.D. Cal. No. EDCV 04-00079 VAP (Ssx)).

The City has learned that its extraction rights in the Bunker Hill Basin, from Lytle Creek and the Lytle Creek Basin are seriously threatened and are about to be curtailed by the City of San Bernardino's execution of a Consent Decree in connection with a clean-up plan for VOC contamination of the Muscoy and Newmark plumes in the Bunker Hill Basin. Pursuant to that consent decree, the City of San Bernardino proposes to adopt and impose by ordinance a strict groundwater management plan which would impose draconian regulations on both Rialto's exercise of its own water rights, but on its continued ability to take delivery of Bunker Hill water through its Baseline Feeder from Muni, in lieu of State Water Project deliveries. The City of San Bernardino's proposed ordinance would restrict and eventually curtail Rialto's ability to meet half of its current 10

10 water demand, and most likely preclude it from meeting future demand of its anticipated build out.

11 Due to these events, the residents of Rialto face a dismal water future of rising rates and diminished supply. Western and Muni's Project offers additional cleanup options and some relief on the impacts to supply.

<u>The Project's Support of Basin Management Achieves Important Goals Set By State Law and Local Agency Planning Documents</u>

12 The City of Rialto and other Rialto Basin pumpers have enjoyed for decades Muni's historic use of the Rialto Basin for banking of water. Further development through conjunctive use projects in connection with the implementation of the Rialto Basin Project is critical to assuring the ability of Rialto and West Valley Water District to deliver safe, affordable and reliable water to Rialto's residents.

13 State law encourages the development of conjunctive use projects. "The Legislature further declares that it is the policy of this state to encourage conjunctive use of surface water and groundwater supplies . . ." (Water Code § 1011.5.) Conjunctive use of groundwater and surface water here would include the banking of water in groundwater basins with available storage space in years of surplus supply, for purposes of meeting demand in drought years.

The importation of SWP water for conjunctive use is a key part of the Basin Plan authored by the RWQCB.

14

> Imported water supplies are an important part of this Recommended Plan, from both a quantity and quality standpoint. Imported water is needed by many agencies to supplement local sources and satisfy the ever-increasing demands. The importation of high quality State Water Project water (water that is low in salt content) is particularly essential. The use of State Water Project water allows maximum reuse of water supplies without aggravating the mineralization problem. It is also used for recharge and replenishment to improve the

> quality of local water supply sources, which might otherwise be unusable. Thus, the use of high quality State Water Project water in the Region has water supply benefits that extend far beyond the actual quantity imported. 14

(Basin Plan, at p. 5-12.) The Basin Plan contemplates the minimum use of SWP water to be 138,000 acre feet per year, using 10,000 acre feet per year for storage in the Rialto/Colton basins. (Basin Plan, at p. 5-12 & Table 5-3, at p. 5-13.) Implementation of the Rialto Basin Project and Lytle Basins Project will facilitate the goals articulated in the Basin Plan. 15

The Basin Plan states that the Santa Ana Watershed Project Authority ("SAWPA") is to play a crucial role in the implementation of the Basin Plan. (Basin Plan, at p. 7- 1 .) SAWPA is a joint powers agency comprised of five water districts. Muni, Western, Eastern Municipal Water District, Inland Empire Utilities Agency, and Orange County Water District, whose boundaries collectively embrace the entire Santa Ana River watershed. In 2002, SAWPA published its Santa Ana Integrated Watershed Plan (the "SAWPA Plan") to assist in the implementation of the Basin Plan. A principal goal of the SAWPA Plan is to drought-proof the region, in the face of a growing population and increasing concerns about the reliability of imported water. (SAWPA Plan, at p. ES-8.) To achieve this goal, 16
the SAWPA Plan calls for storage of 1.3 million acre feet of water in conjunctive use projects. (SAWPA Plan, at p. ES-4.) The SAWPA Plan notes that the basins within the boundaries of Muni, including the Rialto Basin, show great potential as major water storage areas. (SAWPA Plan, at p. 5-18.) 17

The Rialto Basin Project and Lytle Basins Project will support the SAWPA Plan, which has already been adopted by the two agencies sponsoring the Project.

<u>CEQA Imposes a Substantive Obligation to Minimize Environmental Impacts</u>

As noted above in the Summary, CEQA imposes an active, substantive obligation on Muni and Western to minimize the environmental impacts of the Project. Muni and Western may want to consider whether a different Distribution Priority than that described at page 15 of the Community Report will result in lessened environmental impacts, by allowing Rialto and the other agencies whose groundwater supply is adversely affected by the Rialto/Colton, Newmark and Muscoy pollution plumes to more quickly obtain cleanup of those plumes. 18

18 Environmental impacts are to be examined "in light of the environment as it exists when a project is approved." (*Riverwatch v. City of San Diego* (199) 76 Cal.App.4th 1428, 1453 [91 Cal.Rptr.2d 322, 338]. This includes, to a certain extent, illegal activities which have adversely impacted the environment. (*Ibid.*) In *Riverwatch*, the court of appeal directed agencies responding to illegal conduct to "comment in the EIR process on the impact any new project may have on their enforcement activities." (*Ibid.*)

19 By this letter and in light of *Riverwatch*, Rialto, as one of the agencies principally in charge of responding to the perchlorate contamination in the Rialto/Colton Basin, notifies Muni and Western that a different Distribution Priority could have the effect of assisting in the remediation of significant groundwater pollution. Rialto urges Muni and Western to reconsider the Distribution Priority and determine whether raising the priority of the Rialto Basin Project and Lytle Basin Projects would have a substantial beneficial environmental effect.

<u>Conclusion</u>

20 Rialto strongly supports the Project as a whole and the Rialto Basin and Lytle Basin subprojects. Rialto believes that the analysis in the DEIR is adequate and urges Muni and Western to proceed with certifying the DEIR as final and with developing the Project. However, Rialto requests that Muni and Western consider whether a changed Distribution Priority, giving greater priority to the Rialto Basin and Lytle Basin subprojects, would have an overall environmental benefit.

Sincerely,

LAW OFFICES OF SUSAN M. TRAGER
A Professional Corporation

Susan M Trager

Susan M. Trager

SMT:mwy

CITY OF RIALTO (RIALTO)

Rialto Comment 1

Comment noted.

Rialto Comment 2

Comment noted.

Rialto Comment 3

The selection of distribution priorities is intended to retain the greatest benefit of SAR water.

The priority of use of the diverted water is first to the San Bernardino Basin Area (SBBA). Delivery of water to direct uses (Priority 1) limits the amount of imported water delivered to these uses and also reduces groundwater pumping by these direct uses – resulting in "in-lieu" groundwater recharge. Reduced groundwater pumping and reduced importation of water also have benefits related to reduced energy use. Delivering water directly provides water treatment plants with high quality water that saves water treatment costs and also avoids the addition of dissolved solids that could occur if the water were allocated to groundwater recharge.

Delivery of water to Priority 1 uses does have direct benefits for the City of Rialto and indirectly benefits Rialto because of increased water of better quality in the groundwater basin. Priority 1, Direct Uses, includes the Yucaipa Water Treatment Plant (WTP), Yucaipa irrigation, West Valley WTP, City Creek WTP, Hinkley WTP, and Tate WTP. It is Muni/Western's understanding that water from the West Valley WTP is delivered to the community of Rialto. As discussed in Draft EIR Appendix A, section 5.0, after accounting for water diverted and water returned as part of exchange, the median annual value of water delivered to the West Valley Water District WTP would be between 0 af (Scenario C and D) up to 297 af (Scenario A and B). In any given year, a maximum of 2,372 af of water attributable to the Project could be delivered to the West Valley Water District WTP.

Even with direct uses being the first priority, a large percentage of Project water would go toward groundwater spreading in the SBBA. As shown in Figure 5.5-25 of Appendix A of the Draft EIR, cumulatively (over the future 39 years forecasted), similar amounts of water go to Direct Uses and toward spreading in the SBBA (under all Project scenarios). Also notable in Figure 5.5-25 is the fact that some water is also delivered to Priority 3, spreading outside the SBBA, but inside the Muni/Western Service Area. Water is only delivered to Priority 3 once recharge targets for the SBBA have been met. This means that over the course of the forecasted period, it would not be possible to spread additional Project water in the SBBA area without exceeding recharge targets, targets which are intended to maximize recharge but avoid groundwater mounding, high groundwater levels in the Pressure Zone, and adverse movement of groundwater plumes.

The various phases of the Project must be constructed in a particular order for the Project to be operable. In order to divert water as part of the Project, it is necessary to construct Phase I of the Plunge Pool Pipeline (and its associated intake structure). In order to divert water volumes in excess of 500 cfs it is necessary to construction Phase II of the Plunge Pool Pipeline. In order to get the full benefits of the head (force of gravity) at Seven Oaks Dam it is necessary to build Phase III of the Plunge Pool Pipeline. In order to facilitate delivery of water to the western portion of the Muni's service area it is necessary to construct the Devil Canyon Bypass.

So therefore while it may be possible to construct the Lower Lytle Creek and Cactus Basins pipelines (within Rialto) early in the Project, these pipelines would not be able to receive the full benefits of the Project diversions until other Project components are completed. However, the Lower Lytle Creek and Cactus Basin pipelines could receive partial benefits at anytime for taking SWP exchange water associated with the Project or replenishment water.

Rialto Comment 4

See response to Rialto Comment 3.

Rialto Comment 5

See response to Rialto Comment 3.

Rialto Comment 6

See response to Rialto Comment 3.

Rialto Comment 7

This comment does not identify an impact on the environment that is the result of the Project; therefore no further response is necessary.

Rialto Comment 8

This comment does not identify an impact on the environment that is the result of the Project; therefore no further response is necessary.

Rialto Comment 9

This comment does not identify an impact on the environment that is the result of the Project; therefore no further response is necessary.

Rialto Comment 10

This comment does not identify an impact on the environment that is the result of the Project; therefore no further response is necessary.

Rialto Comment 11

This comment does not identify an impact on the environment that is the result of the Project; therefore no further response is necessary.

Rialto Comment 12

This comment does not identify an impact on the environment that is the result of the Project; therefore no further response is necessary.

Rialto Comment 13

This comment does not identify an impact on the environment that is the result of the Project; therefore no further response is necessary.

Rialto Comment 14

This comment does not identify an impact on the environment that is the result of the Project; therefore no further response is necessary.

Rialto Comment 15

This comment does not identify an impact on the environment that is the result of the Project; therefore no further response is necessary.

Rialto Comment 16

This comment does not identify an impact on the environment that is the result of the Project; therefore no further response is necessary.

Rialto Comment 17

This comment does not identify an impact on the environment that is the result of the Project; therefore no further response is necessary.

Rialto Comment 18

See response to Rialto Comment 3. This comment does not identify an impact on the environment that is the result of the Project; therefore no further response is necessary.

Rialto Comment 19

This comment does not identify an impact on the environment that is the result of the Project; therefore no further response is necessary.

Rialto Comment 20

See response to Rialto Comment 3. This comment does not identify an impact on the environment that is the result of the Project; therefore no further response is necessary.

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CITY OF RIVERSIDE

"People Serving People"

File: Seven Oaks Dam

January 14, 2005

Mr. John V. Rossi
General Manager
Western Municipal Water District
450 Alessandro Boulevard
Riverside, CA 92508-2449

Robert L. Reiter
General Manager and Chief Engineer
San Bernardino Valley Municipal Water District
P.O. Box 5906
San Bernardino, CA 92412-5906

RE: Draft Environmental Impact Report (EIR) for Santa Ana River Water Right Applications for Supplemental Water Supply

The City of Riverside supports the application of Western Municipal Water District 1
("Western") and San Bernardino Valley Municipal Water District ("Muni") before the State Water Resources Control Board and the beneficial use of the water captured behind the Seven Oaks Dam subject to the following comments.

The draft EIR, dated October 2004, was prepared to evaluate the environmental impacts associated with the proposed diversion of up to 200,000 acre-feet per year of water from the Santa Ana River downstream of the Seven Oaks Dam.

Due to the complexity involved in the modeling of the water resources in the area, and 2
unpredictable factors such as weather patterns, population growth, contamination plumes and the constantly evolving regulatory climate, we cannot completely rely on the model long-term projections. In order to assure that the proposed projects and diversions would not adversely impact our water resources and groundwater basins in the future, we propose the following mitigating programs:

- Groundwater basin recharge to be given the highest priority. The EIR provides priority 3
  for diversion versus recharge. This is of particular concern to Riverside regarding water supply and levels in the downstream wells, and the eventual supply to Colton and Riverside basins. In response to inquiries by the City of Riverside, in a letter dated January 5, 2005, SAIC – the environmental consultant for the EIR-- confirmed an estimate of 7,600 to 15,200 AF annual reduction in flows across the San Jacinto Fault into the Colton/Riverside basins. The resultant decrease in recharge in these basins, or in the Bunker Hill Basin upstream is a source of a great deal of concern to Riverside.. The

PUBLIC UTILITIES DEPARTMENT
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EIR assumes without factual support that the reduction of flows across the San Jacinto 3
Fault will not have a significant impact due to the availability of additional conservation
water to Riverside from the Projects. This assumption fails to consider the impacts on 4
water levels or concentrations of contaminants in the Riverside Basin caused by reduced recharge of the Riverside Basin. At present the City of Riverside derives 25 percent of its potable water supply from the Riverside Basin and provides treatment on these wells for 1-2-3 Dibromochloropropane (DBCP). To mitigate these impacts Riverside proposes the following:

- o Develop and manage a groundwater spreading program similar to the Seven Oaks 5
  Accord to maintain groundwater levels at a number of wells in the Riverside Basin owned and operated by Riverside.

- Monitor and evaluate the impact of the any implemented project, especially water levels, 6
  and prepare an annual project report for review and evaluation by the USAWRA. In case of any adverse impact, modify the project or implement actions to alleviate the adverse impacts.

- San Bernardino Valley Municipal Water District (Muni) and the Western Municipal 7
  Water District (Western) adopt a process whereby policies, programs and projects associated with the new allocations to be first coordinated with their partners in the Seven Oaks Dam improvements that enabled the production of the additional water supply, including the City of Riverside. EIR Table 2-1 listing Potentially Required Permits, Approvals, and Consultations omits, but should include the City of Riverside, due to the City of Riverside's entitlement under its agreement with Western and Muni related to Seven Oaks Dam improvements and under the Western Judgment In addition the projects be reviewed and endorsed by the Upper Santa Ana Water Resources Association (USAWRA).

With the proposal to make diversions a number one priority versus recharge, Riverside has 8
extreme concern over water supply and levels to its downstream wells, which provide the city with over 95% of its water supply. In order to safeguard that supply and to minimize possible downstream environmental consequences as much as possible, the City of Riverside supports the San Bernardino Valley Water Conservation District's (SBVWCD) traditional historical recharge program as modified by its *Program for Effective Recharge Coordination* (PERC), and subject to review by USAWRA.

The City of Riverside further cautions that adoption of this EIR not be assumed to endorse a 9
water level target of 50 feet below the ground level ("bgs"). The present adopted program provides for a water level of 30 feet bgs with pumping allowed until a 50 feet level is

achieved, and the pumping then not to be resumed until the water level recovers to 30 ft bgs or more. 9

For further consultation on these comments, please contact Zahra Panahi at 951-826-5612.

Sincerely,

Dieter P. Wirtzfeld

Dieter P. Wirtzfeld
Assistant Director - Water

xc: Dave H. Wright, City of Riverside
Eileen Teichert, City of Riverside
Zahra Panahi, City of Riverside
Babs Makinde, City of Riverside

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CITY OF RIVERSIDE (RIVERSIDE)

Riverside Comment 1

Thank you for your support of the Project.

Riverside Comment 2

The Draft EIR uses standard surface water modeling techniques, uses a groundwater model developed by the USGS, and estimates concentrations of groundwater constituents using standard groundwater modeling tools. Please see Appendices A and B of the Draft EIR for additional details. These modeling tools are fully adequate to assess the impacts of the Project on the environment. Moreover, as described in the Draft EIR and in response to Riverside Comments 5, 6 and 7 below, Muni/Western plan to implement the Project using adaptive management so as to conform groundwater levels to certain performance standards. In so doing, Muni/Western believe that the Project will avoid impacts of concern to the City.

Riverside Comment 3

Muni/Western determined that the direct delivery of water from the SAR should have the highest priority for several reasons. First, the direct delivery of water (particularly for municipal and industrial purposes) ensures that retail purveyors served by Muni/Western receive water of high quality. Water from the mountain areas of the SAR typically contains TDS of approximately 200 mg/l. Second, delivering water from the SAR reduces the need for retail purveyors to pump groundwater and so reduces energy use. Third, direct delivery of water from the SAR serves as "in-lieu" recharge of the SBBA (and indirectly, the Riverside and Rialto-Colton basins) and so promotes the groundwater recharge function identified in the comment.

The Muni/Western water right applications will result in reduced surface flow across the San Jacinto fault, which in turn will reduce percolation to the Riverside and Rialto-Colton basins. It is estimated that average annual percolation to the Riverside Basin under No Project conditions would average 2,674 afy, with proposed Muni/Western diversions percolation to the Riverside Basin would average 1,616 afy. Under No Project conditions it is estimated that percolation to the Rialto-Colton Basin would average 998 afy and under the proposed Muni/Western Project would average 695 afy. The *Western* Judgment contains provisions to maintain the water supplies obtainable from the Rialto-Colton Basin and Riverside North Basin and water levels in specified wells located Rialto-Colton Basin and Riverside North Basin. Muni/Western will comply with the terms of the *Western* Judgment.

However, water made available by the Project more than compensates for decreased percolation to the Riverside and Rialto-Colton basins. The Muni/Western Project would result in diversions averaging between 10,000 to 27,000 afy. All or a portion of the new diversions would be considered "new conservation" under the *Western* Judgment. (The labeling of water as new conservation in this document is for general planning purposes only. The final determination of new conservation quantities, as defined in the *Western* Judgment, will be made by the Western-San Bernardino Watermaster. Such determination is highly dependent on the specific conditions during an actual water year; however, it is expected that the Watermaster will deem a large percentage of total diversions to be new conservation.) Under the *Western* Judgment, Plaintiffs, including the City of Riverside are entitled to 27.95 percent of any "new conservation," which could range from 2,800 to 7,400 afy on average. Further, per the terms of the Memorandum of Understanding (MOU) between Muni, Western, and the City of Riverside (September 2005), it is the intent of Muni/Western to work cooperatively with Riverside to devise institutional and physical arrangements through which the City of Riverside could directly benefit from "new conservation." The MOU, under Recitals, Item 4(b) states, "The Parties [Muni, Western, and the City of Riverside] shall engage in good-faith negotiations with the goal of reaching a long-term agreement relating to the purchase, storage, and sale to Riverside by Western of imported water stored in the San Bernardino Basin Area, and relating to storage, transport and delivery of *conservation water from the Seven Oaks Dam project* [emphasis added]…."

One of the significance criteria for impacts of the Project on groundwater levels was stated in the Draft EIR as the following: "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 existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)." (See Draft EIR, p. 3.2-25).

In the case of the Rialto-Colton and Riverside North basins, that significance criterion is established by the terms of the Western judgment. That judgment contains specific provisions to maintain water supplies from the Rialto-Colton and Riverside North basins and water levels in specified wells within these basins. Muni/Western will comply with the terms of the Western judgment and therefore, given the threshold of significance for such effects, the Project will not have an adverse impact on groundwater levels in the Rialto-Colton and Riverside North basins.

Riverside Comment 4

Any reduction in recharge to the Rialto-Colton and Riverside basins due to the Project could result in increased TDS and total inorganic nitrogen (TIN) concentrations relative to No Project conditions, as shown in the table below. Even with the Project, however, TDS and TIN concentrations in the Rialto-Colton and Riverside basins would be substantially improved over current ambient conditions. It is not anticipated that the Project will cause water quality objectives for TDS and nitrogen to be exceeded in the Riverside and Rialto-Colton basins.

Muni/Western would implement Mitigation Measure GW-1, to substantially lessen TDS/nitrate impacts. The text of Mitigation Measure GW-1 reads as follows:

> "Using available data, Muni/Western will, on an annual basis, evaluate impacts of the Project on TDS/nitrate concentrations in the SBBA. To the extent feasible given existing infrastructure, and consistent with meeting other basin management objectives, Muni Western will direct Project water spreading to reduce significant TDS/nitrate impacts."

Summary of Water Quality Changes Anticipated in the Riverside and Rialto-Colton Basins with the Project

	RIVERSIDE BASIN		RIALTO-COLTON BASIN	
	TDS	*TIN*	*TDS*	*TIN*
Water Quality Objective[1]	560 mg/l	6.2 mg/l	410 mg/l	2.7 mg/l
Ambient Conditions[2]	440 mg/l	4.4 mg/l	430 mg/l	2.9 mg/l
No Project Scenario (water quality at end of cumulative 34-year period[3])	303 mg/l	1.58 mg/L	380 mg/l	2.12 mg/l
Project Scenario A or B (water quality at end of cumulative 34-year period[3])	339 mg/l	2.29 mg/l	394 mg/l	2.30 mg/l
Project Scenario C or D (water quality at end of cumulative 34-year period[3])	317 mg/l	1.85 mg/l	386 mg/l	2.20 mg/l
Project Scenario A/B less No Project	+36 mg/l	+0.71 mg/l	+14 mg/l	+0.18 mg/l
Project Scenario C/D less No Project	+14 mg/l	+0.27 mg/l	+6 mg/l	+0.08 mg/l
Would water quality objectives be exceeded with the Project?	No	No	No	No

Notes:

1. Water Quality objectives for the Colton and Riverside "A" Groundwater Management Zones as stated in SARWQCB 2004.
2. Ambient conditions for the Colton and Riverside "A" Groundwater Management Zones as stated in SARWQCB 2004.
3. The analysis is based on a 34-year period because it is the period of record for the "E" Street gage. A mass balance approach is used to estimate TDS and TIN levels both with and without the Project.

The ability to blend surface water conserved as a result of the Project, as contemplated under the MOU between Muni/Western and Riverside and described in the response to Riverside Comment 3, would further reduce the effect of the Project on the quality of water delivered by Riverside. However, as with impacts to groundwater in other portions of the Project area, the residual effects of the Project on water quality would be significant and unavoidable.

Riverside Comment 5

Consistent with the provisions of the *Western* Judgment, Muni/Western are willing to develop and implement groundwater spreading in a manner similar to that described in Mitigation Measure PS-12, so as to avoid a reduction in static water levels of more than 10 feet when compared to the effects of the No Project scenario. The text of Mitigation Measure PS-12 has been amended (see below).

Mitigation Measure PS-12 was included in the Draft EIR. The Draft EIR and any changes have been incorporated by reference into this Final EIR. Per the terms of the MOU between Muni, Western, and the City of Riverside (September 2005), "Valley District [Muni] and Western shall, upon issuance by the State Water Resources Control Board of a water right permit for the diversion and/or storage of water at Seven Oaks Dam and Reservoir, implement the mitigation measures in the Seven Oaks Final EIR that were included in that document in response to comments submitted by Riverside." [Recitals, 2(f)]

Mitigation Measure PS-12 was based on the execution of the Seven Oaks Accord by most major producers in the eastern San Bernardino Valley.

Muni/Western hereby make the following changes to the Draft EIR:

Page	**Line(s)**	**Edit**
3.13-30	34-37	**MM PS-12**: "<u>Consistent with the direction</u> ~~Per the requirements~~ of the Seven Oaks Accord, to avoid a significant effect on groundwater levels at one or more index wells located outside the Pressure Zone, Muni/Western will spread sufficient water to maintain static groundwater levels at the affected index wells. To implement this mitigation measure, Muni/Western will use a groundwater monitoring program based on information derived from the index wells. This information will be used in conjunction with forecasts of groundwater levels derived from Muni/Western integrated surface and groundwater models to identify trends in groundwater levels and isolate the share of change attributable to the Project. Remedial action will be implemented prior to an actual 10-foot reduction being reached, to avoid the significant impact."

Riverside Comment 6

Please see the response to Riverside Comments 5 and 7. In addition, Muni/Western will monitor and evaluate the potential effects of the Project and prepare an annual report describing those effects. Muni/Western will also provide a courtesy copy of that report to USAWRA for its review. Further, Muni/Western will implement Mitigation Measure GW-1, which calls for Muni/Western to direct spreading in such as way as to minimize adverse effects on groundwater quality.

Riverside Comment 7

On July 21, 2004, Muni, Western, the City of Redlands, East Valley Water District, Bear Valley Mutual Water Company, Lugonia Water Company, North Fork Water Company, and Redlands Water Company signed a settlement agreement known as the Seven Oaks Accord. The terms of the Seven Oaks Accord and the terms of the settlement agreement between Muni/Western and the San Bernardino Valley Water Conservation District (dated August 9, 2005) describe the process by which these various parties will work cooperatively to develop an annual groundwater management plan. This process will ensure that Muni/Western coordinate the annual groundwater management plan with producers from the SBBA, including the City of Riverside. These producers largely overlap with the membership of the USAWRA.

Riverside Comment 8

Please see response to Riverside Comment 3.

Within a settlement agreement dated August 9, 2005, Muni, Western, and the San Bernardino Valley Water Conservation District have agreed to work cooperatively to develop an annual groundwater management plan. Further, the settlement agreement lays out the following priorities for use of water:

a) Conservation District License Nos. 2831 and 2832 would have first priority.

b) Muni/Western Application No. 31165 would have second priority.

c) Conservation District Application No. 31371 would have third priority.

d) Muni/Western Application No. 31370 would have fourth priority.

e) If the water management plan for that year calls for spreading in the SAR spreading grounds beyond the 10,400 af in Licenses 2831 and 2832, Muni/ Western will step back and allow the Conservation District to divert up to 39,600 afy under its new permit for spreading at the SAR spreading grounds in accordance with the water management plan.

f) All spreading would be as described in the water management plan for that year and no spreading would take place without being authorized by the water management plan.

Muni/Western believe that the cooperative approach to groundwater management will be more effective than the PERC program for balancing groundwater levels and liquefaction hazards. The PERC program would allow groundwater levels to remain up to 30 feet below ground surface, when scientific literature shows that saturation of soils closer than 50 feet below ground surface is a significant liquefaction risk.

Riverside Comment 9

The Draft EIR uses 50 ft below ground surface as a means to evaluate potential for significant liquefaction hazard. This criteria comes from standard references including California Division of Mines and Geology Special Publication 117 (1997) and *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California* (1999). These publications are based on original research by Seed and Idriss (1971, 1982), with subsequent refinements by Seed et al. (1983), Seed and De Alba (1986), and Seed and Harder (1990). In essence, although liquefaction can occur when groundwater is at depths greater than 50 ft below ground surface, the risk of liquefaction is generally understood to be minimal except under special circumstances.

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CITY OF SAN BERNARDINO
MUNICIPAL WATER DEPARTMENT

January 19, 2005

Robert Reiter, General Manager
San Bernardino Valley Municipal Water District
1350 South E Street
San Bernardino, CA 92408-2725

John Rossi, General Manager
Western Municipal Water District of Riverside County
450 Alessandro Boulevard
Riverside, CA 92508-2449

Re: Comments on Santa Ana River Water Rights Applications for Supplemental Water Supply Draft Environmental Impact Report (DEIR)

Dear Mssrs. Reiter and Rossi:

City of San Bernardino Municipal Water Department staff have reviewed the above- 1
referenced DEIR and concur that the DEIR is exceptionally well done in its analysis of
the potential impacts of the proposed project. We have only one small issue of concern 2
and that involves statements associated with the section entitled "Comparison of the
Project and Alternatives," Section S.6.3.

Section S.6.3 addresses the Enhanced Conservation Alternative and states, in pertinent part, that this alternative would "result in ... adverse impacts to surface water quality, associated with reduced effluent flows from wastewater treatment facilities and attendant increased salt concentrations." The DEIR essentially states that the proposed project would have a lesser impact in this area than would the Enhanced Conservation Alternative.

We respectfully disagree with this assertion. Because wastewater dischargers are required to meet permit limits that are imposed by the Regional Water Quality Control Board to meet that Board's Basin Plan objectives, the Enhanced Conservation Alternative might increase the costs for treatment of salt loads, but might also reduce hydraulic demands on wastewater treatment plants. However, there would be no corresponding increase to salt concentrations from this alternative because the gating factor is the permit requirement to meet the Basin Plan objectives. Additionally, in the event that there are increased salt loadings to the Santa Ana River, the discharger is required to participate in an offset program of some sort. 3

Similarly, any additional constituents of concern that a discharger sends to the Santa Ana River are subject to a variety of permit limits that would ameliorate or eliminate the impacts of increased concentrations sent to the treatment plant. Impacts from this alternative would take the form of increased treatment costs which, again, might be offset by reductions in hydraulic loading. 4

In spite of this minor comment, the City of San Bernardino Municipal Water Department applauds your agencies' diligence and thoroughness in preparation of the DEIR.

Very truly yours,

Bernard C. Kersey
General Manager

cc: Stacey Aldstadt
William Bryden
DMS

CITY OF SAN BERNARDINO MUNICIPAL WATER DEPARTMENT (SBMWD)

SBMWD Comment 1

Thank you.

SBMWD Comment 2

Please see section 5.3.3.3 of the Draft EIR. Enhanced water conservation would have many different and significant impacts when compared to the impacts of the Project. Enhanced conservation actions necessary to reliably reduce water demand by 10,000 to 27,000 afy would decrease the amount of water delivered to the regional water treatment plants and that water would have a higher TDS concentration than either the No Project or the Project.

SBMWD Comment 3

Please see response to SBMWD Comment 2.

SBMWD Comment 4

Please see the response to SBMWD Comment 2.

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PLEASE REFER TO

January 14, 2005

VIA HAND DELIVERY

San Bernardino Valley Municipal Water District
Mr. Robert L. Reiter, General Manager and Chief Engineer
1350 South "E" Street
San Bernardino, CA 92408

Re: Draft Environmental Impact Report ("DEIR")
Santa Ana River Water Right Applications for Supplemental Water Supply

Dear Mr. Reiter:

This office serves as General Counsel to the East Valley Water District ("EVWD").

Pursuant to the authority provided in the California Environmental Quality Act ("CEQA"), Public Resources Code ("PRC") Section 21000 et seq., and the Guidelines promulgated thereunder, California Code of Regulations ("CCR") Section 15000 et seq., EVWD submits the following comments to the DEIR issued by the San Bernardino Valley Municipal Water District ("SBVMWD") and Western Municipal Water District ("WMWD") in October of 2004 in connection with the above-referenced matter.

As you know, on or about July 21, 2004, EVWD entered into the Seven Oaks Accord with SBVMWD and WMWD. Pursuant to Section 14 thereof, the DEIR is required to contain the thresholds of significance and mitigation measures described in Exhibit I of the Seven Oaks Accord. However, it is not clearly apparent from the DEIR whether such thresholds of significance and mitigation measures as contained in Exhibit I of the Seven Oaks Accord have been included in the DEIR. 1

Thus, EVWD requests, pursuant to PRC Section 21091(d) and CCR Sections 15002(j) and 15088, that SBVMWD and WMWD provide detailed written responses to these comments which establish unequivocal compliance with the requirements of Section 14 of the Seven Oaks Accord.

The anticipated consideration of these comments by SBVMWD and WMWD is greatly appreciated.

Very truly yours,

BRUNICK, McELHANEY & BECKETT

Steven M. Kennedy

cc: John V. Rossi, WMWD
Robert E. Martin, EVWD

EAST VALLEY WATER DISTRICT (EVWD)

EVWD Comment 1

The Draft EIR contains the thresholds of significance and mitigation measures described in Exhibit I of the Seven Oaks Accord.

The thresholds of significance and mitigation measures related to groundwater levels at Index Wells Outside the Pressure Zone (Parts 1 and 3 of Exhibit I of the Seven Oaks Accord) are contained in Section 3.13 of the Draft EIR. Section 3.13.2.2 (page 3.13-10) states the following significance criteria for utilities:

> "Impair groundwater production (i.e., lower average groundwater levels by more than 10 feet during a repetition of the 39-year base period hydrology)"

This impact is evaluated by the Draft EIR in section 3.13.2.4 (page 3.13-30). Impact PS-22 states:

> "Change in the pattern of groundwater recharge related to the Project could lower average groundwater levels at wells outside the Pressure Zone, thus impairing groundwater production, a significant impact. Based on groundwater modeling results, it is estimated that under Scenarios A and B, static groundwater levels at seven of the 23 index wells located outside the Pressure Zone would be reduced, on average over the 39-year forecast period, by more than 10 feet when compared to No Project conditions. (See Appendix B for more detail on the models and modeling results.) This is a significant impact."

The mitigation measure for Impact PS-22 is MM PS-12, which states [Note to reader: MM PS-12 has been modified as part of this Final EIR, see response to Riverside Comment 5]:

> "Consistent with the direction of the Seven Oaks Accord, to avoid a significant effect on groundwater levels at one or more index wells located outside the Pressure Zone, Muni/Western will spread sufficient water to maintain static groundwater levels at the affected index wells. To implement this mitigation measure, Muni/Western will use a groundwater monitoring program based on information derived from the index wells. This information will be used in conjunction with forecasts of groundwater levels derived from Muni/Western integrated surface and groundwater models to identify trends in groundwater levels and isolate the share of change attributable to the Project. Remedial action will be implemented prior to an actual 10-foot reduction being reached, to avoid the significant impact."

The thresholds of significance and mitigation measures related to groundwater levels at Index Wells within the Pressure Zone (Parts 2 and 4 of Exhibit I of the Seven Oaks Accord) are contained in Section 3.5 of the Draft EIR. Section 3.5.2.4, Impact LU-1 states:

> "Increases in groundwater levels, due to Project operations, could conflict with existing land uses and limit future use of property in the Pressure Zone of the

> SBBA, a less than significant impact. The integrated surface water and groundwater models developed for the Project (and described in detail in Appendix A [Surface Water Hydrology] and Appendix B [Groundwater Hydrology]) were used to evaluate changes in groundwater level at a number of index wells and spreading grounds throughout the SBBA, including wells in the Pressure Zone (see section 3.2 for a description of the index wells). Under conditions where groundwater is close to the ground surface, this can have implications regarding the appropriateness of certain land uses in such areas. Based on discussions with local agencies, it was determined that a land use conflict could occur if static water levels at one or more index well(s) in the Pressure Zone increased by an average of more than 10 feet during a repetition of the 39-year base period hydrology when compared to static water levels under No Project conditions. Based on model results, it is estimated that static groundwater levels at index wells located in the Pressure Zone would not rise, on average over the 39-year forecast period, by more than 10 feet when compared against No Project conditions under any of the Project scenarios. Therefore, this is a less than significant impact and no mitigation is required."

Other related discussions occur in section 3.4 of the Draft EIR. As an example, Impact GEO-13 and Impact GEO-14 examine the potential for high groundwater levels and the potential for liquefaction. Mitigation Measure GEO-7 is applicable to Impacts GEO-13 and Impact GEO-14, and reads:

> "Muni/Western will implement a groundwater level monitoring program using data from Index Wells. This information will be used in conjunction with forecasts of groundwater levels derived from the Muni/Western integrated surface and groundwater models to identify trends in groundwater levels and identify changes directly attributable to the Project. To the extent feasible given existing infrastructure, and consistent with meeting other basin management objectives, Muni/Western will direct Project water spreading to limit high groundwater conditions (groundwater within 50 feet of ground surface) in the vicinity of Devil Canyon, Lytle Creek, Mill Creek, and areas in the forebay and intermediate area of the SBBA."

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January 14, 2005

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Re: **Comments from the Santa Ana River Mainstem Project Local Sponsors on the Draft Environmental Impact Report, Santa Ana River Water Right Applications for Supplemental Water Supply (State Clearinghouse Number 2002071062)**

Dear Mr. Reiter and Mr. Rossi:

On behalf of the Santa Ana River Mainstem Project Local Sponsors (Local Sponsors),[1] we submit the following comments on the Draft Environmental Impact Report, Santa Ana River Water Right Applications for Supplemental Water Supply (State Clearinghouse Number 2002071062) (DEIR). The DEIR was jointly prepared by your respective agencies, the San Bernardino Valley Municipal Water District ("Muni") and Western Municipal Water District of Riverside County ("Western"), to evaluate the potential environmental impacts associated with Muni/Western's water right applications to the State Water Resources Control Board (SWRCB). Muni/Western's water right applications propose diversion of up to 200,000 acre feet of water per annum (afa) from the Santa Ana River (SAR) for beneficial uses within the Muni/Western service areas and potentially for exchange with other water agencies. The DEIR defines the Project, for purposes of the California Environmental Quality Act (CEQA), to consist of "all discretionary actions necessary to conserve, divert, convey and store [appropriated] water from the SAR for beneficial use." (DEIR, pp. S-1 and 2-1).

The Local Sponsors are responsible for various flood control activities and operations in the Santa Ana River basin, including but not limited to responsibility for operation, maintenance, repair, replacement and rehabilitation of Seven Oaks Dam (SOD). SOD provides flood control

[1] The Santa Ana River Local Sponsors include the Orange County Flood Control District, the Riverside County Flood Control and Water Conservation District, and the San Bernardino County Flood Control District.

benefits and protection to millions of people in Orange, Riverside and San Bernardino Counties. SOD flood control operations include various mitigation requirements for project impacts on downstream water users and the downstream environment. SOD is operated pursuant to the 2003 *Water Control Manual for Seven Oaks Dam & Reservoir*, prepared by the United States Army Corps of Engineers (USACE). The SOD Water Control Manual includes a "Water Control Plan," which describes and directs SOD operations for flood control and mitigation purposes.

1 The Local Sponsors support Muni/Western's Project to conserve the waters of the Santa Ana River for beneficial uses within Muni/Western's service area. Further, the Local Sponsors support the use of SOD for water conservation purposes, so long as the conservation uses do not interfere with or compromise the flood control functions of the Dam, and provided that Muni/Western pay all costs associated with use of SOD for water conservation purposes.

2 Muni/Western's Project proposes a number of modifications to facilities owned and operated by the Local Sponsors (collectively or individually), and has the potential to affect the Local Sponsors' flood control operations and procedures at SOD and at other flood control facilities in the Santa Ana River basin. However, the DEIR does not provide sufficient information to fully evaluate the physical and operational impacts of the proposed modifications to SOD. Supplemental planning and engineering analysis, and possibly additional environmental review, must be performed prior to implementation of the Project.

3 Muni/Western must obtain the Local Sponsors' approval to access or operate SOD and other flood control facilities for water conservation purposes, and/or to modify facilities owned or operated by the Local Sponsors.[2] The mechanism for obtaining this approval is through an agreement with the Local Sponsors. Among other things, the agreement must ensure consistency with flood control operations and delineate responsibilities and requirements for operations, liability and indemnity, and costs. If and when the Local Sponsors and Muni/Western reach agreement on these issues, the Local Sponsors will request from the USACE appropriate modifications to the Water Control Manual and Water Control Plan in order to implement water conservation at SOD.

4 The Local Sponsors are responsible agencies under CEQA for the Project and therefore will rely on the DEIR to the extent practicable to analyze the affects of the Project on flood control facilities and operations. The Local Sponsors, collectively, must exercise discretion and independent judgment in approving and conditioning Muni/Western's use of SOD and other facilities for water conservation purposes, and the DEIR will provide valuable information in that effort. To the extent the Project is modified or evolves as the Local Sponsors and Muni/Western discuss the use of SOD and other facilities for water conservation purposes, additional

[2] For example, in addition to approvals for access to SOD, an agreement may be required with the San Bernardino County Flood Control District related to use of the Cactus Basin or other facilities owned or operated separately by one or more of the Local Sponsors.

environmental review or approvals may be required. The Local Sponsors will continue to work 4
with Muni/Western to ensure that all agreements for use of SOD and other flood control facilities comply with CEQA and other applicable environmental requirements. Of course, the USACE must comply with federal environmental requirements in approving modifications to the Water Control Manual and Water Control Plan for SOD, and the Local Sponsors will participate in those federal environmental review processes, as well.

Muni/Western's proposed Project also may impact or modify facilities or operational 5
requirements of other agencies or entities. Muni/Western is responsible for obtaining necessary approvals for such impacts or modifications, separate from any agreement with the Local Sponsors. For example, Muni/Western is responsible for obtaining all necessary approvals and permits from entities and agencies such as Southern California Edison Company, the U.S. Forest Service, and any of the several water companies in proximity to SOD or other flood control facilities of the Local Sponsors (collectively and individually).

The Local Sponsors provide the following specific comments and clarifications to Muni/Western's DEIR, as it affects the Local Sponsors' flood control and mitigation activities involving SOD and other facilities owned or operated by the Local Sponsors, individually and collectively:

1. 1997 Feasibility Study for Water Conservation at Seven Oaks Dam

The DEIR states that *"Conservation storage would be consistent with that analyzed by* 6
the USACE in the Seven Oaks Dam Water Conservation Feasibility Study Final Environmental Impact Statement (EIS)/Environmental Impact (EIR) date June 1997)." (DEIR, p. 2-3; Section 2.41). In the mid-1990's, at the request of Muni/Western, the San Bernardino Flood Control District, acting on behalf of Local Sponsors for the Santa Ana River Mainstem Project, requested that the USACE prepare a feasibility study on the potential for water conservation at SOD. The USACE required that the study be requested through the Local Sponsors. The feasibility study was completed in 1997 and concluded that certain water conservation scenarios at SOD were feasible, physically and economically. The preferred project analyzed in Muni/Western's DEIR is substantially similar to Alternative 3 in the 1997 Feasibility Study. Alternative 3 was neither the preferred National Economic Development Alternative nor the Locally Preferred Plan in the 1997 Feasibility Study.

When the feasibility study was completed in 1997, the USACE had initiated informal 7
consultation with the United States Fish and Wildlife Service in response to the proposed listing of the Merriam's San Bernardino Kangaroo Rat as a threatened species under the federal Endangered Species Act (ESA). As a result, mitigation requirements for SOD were unknown at the time and important operational aspects of SOD were in a state of flux. At the time, therefore, the USACE was unable to issue a Record of Decision for the 1997 Feasibility Study and

7 National Environmental Policy Act documentation for the various SOD water conservation proposals analyzed in the Feasibility Study.

Since the completion of the 1997 Feasibility Study, two ESA consultations have been completed for SOD. Also, the Local Sponsors have since assumed ownership, operation and maintenance responsibilities at SOD, and have gained extensive experience and working knowledge regarding the operation of SOD. As a consequence of these changed circumstances since the completion of the Feasibility Study in 1997, the conclusions reached in the 1997 feasibility study may need to be re-evaluated and perhaps updated by the USACE. If further feasibility studies are required, Muni/Western must make the request to the USACE through the Local Sponsors.

2. Approvals for Water Conservation Program at Seven Oaks Dam

8 The DEIR states *"Any modifications to Seven Oaks Dam, either operational or structural, must be approved by the USACE. Details on construction activities in the Seven Oaks Dam and Reservoir area are provided in Appendix C."* (DEIR, p. 2-3; Section 2.41).[3] The Local Sponsors formally assumed ownership and responsibility for operation and maintenance of Dam on October 1, 2002. However, the DEIR does not acknowledge the Local Sponsors' role in approving physical and operational changes to SOD. As the owners of the Dam and as the agencies responsible for operation and maintenance of SOD, the Local Sponsors must approve any proposed facility and operational changes before making recommendations to the USACE. Modifications and/or changes to SOD operations then must be approved by the USACE and implemented through appropriate modifications to the Water Control Manual and Water Control Plan for SOD.

9 **3. Principles for Water Conservation at Seven Oaks Dam**

The Local Sponsors and USACE have established the following basic principles for implementation of a water conservation program at Seven Oaks Dam:

a. All water and operational requirements for the Local Sponsors' flood control and related environmental mitigation activities at and below SOD must be satisfied prior to implementing water conservation activities.
b. Water agencies proposing water conservation at SOD will be fully responsible for all incremental costs related to implementation of a water conservation program at SOD, including but not limited to the costs associated with operation, maintenance, repair,

[3] Appendix A to the DEIR further states that: *"At this time, operating policies concerning monthly target storage volumes for the dam have not been finalized, and thus, the USACE is using an "Interim Operational Control Plan."* (DEIR, p. A-4-5; Section 4.2.2.2). The Interim Water Control Plan is no longer used, and the current water control plan for SOD was last revised in October 2003. The USACE does not operate SOD. SOD operation and maintenance is performed by the Local Sponsors.

replacement, rehabilitation, engineering, environmental analysis, environmental mitigation, right-of-way acquisition, permit approvals and construction. 9

c. Water agencies must ensure that existing water rights are not impacted as a result of water conservation activities, and must acquire all necessary water rights for water conservation at SOD.
d. Water agencies must work with the Local Sponsors and the USACE to ensure that flood control operations, including mitigation operations for biological purposes, are not adversely affected by water conservation operations.
e. Water agencies must enter into an agreement with Local Sponsors for implementation of any water conservation program at SOD. The USACE will not consider implementation of water conservation at SOD without a request from the Local Sponsors.

4. Flood Control Operations at Seven Oaks Dam Include Existing Mitigation Requirements

The Local Sponsors will operate SOD for flood control purposes, which include 10
requirements in all Biological Opinions that have been issued by the U.S. Fish and Wildlife Service for SOD construction and operation. Operational practices of SOD will continue pursuant to these requirements, in coordination with the USACE and the various resource agencies involved within the operational and/or environmental aspects of long-term operations. Pursuant to the U.S. Fish and Wildlife Service's 2002 Biological Opinion, mitigation activities and requirements are being coordinated by a committee under the auspices of a Multi-Species Habitat Management Plan (MSHMP). Any operational or structural changes proposed in Muni/Western's DEIR are not binding on the Local Sponsors until such time that arrangements and agreements have been made with the Local Sponsors to the satisfaction of the USACE and appropriate resource agencies.

Table 3.0-1 and elsewhere in the DEIR state that the model simulations assumed that *"1,000 cfs for 2 days at a 6-month minimum interval when water is available"* would be sufficient to satisfy the requirements for environmental habitat releases specified in the U.S. Fish and Wildlife Service's 2002 Biological Opinion for SOD. The 2002 Biological Opinion covers operation of SOD for flood control purposes. Among other requirements, the Biological Opinion requires development of the MSHMP, which relies on an adaptive management approach for maintaining sensitive species habitat in the existing Woolly-Star Preserve Area (WSPA). It is anticipated that that the MSHMP will include provisions for conducting research and evaluating different methods of performing minimization measures, including simulation of natural flooding over the WSPA. One possible method to simulate natural flooding events involves the construction of temporary dikes for the purpose the redirecting controlled flood control releases from SOD over the WSPA lands.[4] Because the specific methods, scope and timing of this

[4] Another possible method is discussed in Muni/Western's DEIR and involves the use of high pressure hoses and mechanical equipment to simulate natural flooding conditions.

10 minimization measure has not been fully developed, the amount of water and the area of disturbance needed for biological mitigation for flood control purposes cannot be predicted with any certainty at this time. It is possible, therefore, that the flow rate and duration necessary for flood control for mitigation purposes may be different than the flow rate and duration assumed in Muni/Western's DEIR.

In regard to the use of temporary dikes for the purpose of creating overbank flooding, the DEIR states the following: *"The earthmoving needed to create the temporary dike would affect 2-3 acres of habitat in the river and the protective (containment) dikes around the Woolly-Star Preserve Area would have a footprint of up to 30 acres along with additional acreage for access and work area. These unintentional impacts of implementing these mitigation measures would affect SBKR and Santa Ana River woolly-star habitat (see Appendix E)."* (DEIR, p. 3.3-31; Section 3.3.2.1). This mitigation concept was developed by biological and engineering professionals at the USACE and U.S. Fish and Wildlife Service, after consideration of a broad range of proposals and concepts (including the concept proposed in Muni/Western's DEIR). However, specific and detailed plans for construction of dikes and temporary containment structures have not been developed at this time. As such, it is highly speculative for the DEIR to suggest "unintentional impacts" associated with these activities.

5. Flood Control Season

11 In various places in the DEIR, the flood control season is defined as October through February. For example: *"To optimize the beneficial use of unappropriated water in the SAR, the criteria under which Seven Oaks Dam is currently operated would be changed to accommodate conservation storage in addition to its current use for regulatory flood storage. After the designated flood control season (October through February), up to 50,000 af of water could be impounded in Seven Oaks Reservoir in seasonal water conservation storage."* (DEIR, p. 2-2; Section 2.41). This defined flood control season is not consistent with the Seven Oaks Dam (SOD) Operation and Maintenance Manual, which defines it as from October 15 to April 15. 50,000 acre-feet of conservation storage would reduce the available flood control storage (145,000 acre-feet) by one-third. With no provision made for restoring the flood storage in advance of a major storm – i.e., "dumping" the water conservation pool – the Project would reduce the flood control capabilities of SOD during water conservation operations. Additional studies are necessary to determine how the SOD Water Control Plan should be modified so as not to compromise flood control capabilities, taking into account the uncertainty of rainfall forecasts, the physical limitations of the Dam, and potential impacts to biological resources, transportation facilities and other structures downstream. Flood control uses of SOD must remain paramount to water conservation uses, and may not be compromised by water conservation uses.

6. Proposed Facility and Operation Modifications at Seven Oaks Dam

The DEIR describes numerous physical and operational modifications to SOD and other facilities that are necessary to implement Muni/Western's proposed water conservation program. (*See e.g.*, DEIR, p 2-3; Section 2.41). Among other things, proposed physical modifications to SOD include construction of a concrete sleeve around the main intake tower, reconstruction of the main trash racks, erection of a 123 foot high steel frame structure to raise the maintenance platform, construction of a new access road on the embankment, construction of a new 205 foot bridge to gain access to the raised maintenance platform, and construction of new pipelines and intake structures within the plunge pool and at SOD. 12

Unfortunately, the DEIR does not describe all features of the Project in the same amount of detail. While specific modifications are described regarding changes to the SOD intake tower, very little information other than an alignment is provided regarding the low flow connector and the plunge pool pipeline. In general, the proposed physical modifications and the required operational changes for implementation of the proposed water conservation program are not described at a sufficiently detailed level to allow the Local Sponsors to fully evaluate the Project's feasibility and potential impacts on flood control facilities and operations.

The Local Sponsors presently perform many maintenance and operation activities from atop the intake tower. These activities include staff gauge reading, placement of stop logs, removal of debris from the main trash racks, operation of the sluice gate and operation of bulkheads. The impacts and feasibility of relocating the maintenance platform 123 feet higher to the top of a steel frame structure needs to be evaluated in terms of operational safety and practicality.

Annual inspection and routine maintenance of Seven Oaks Dam typically occurs after the debris pool is drained between September 1 and October 15. However, the Local Sponsor must be able to drain the proposed conservation and debris pools at any time to perform necessary maintenance and repairs. The implementation of a water conservation program would potentially result in increased annual maintenance and a corresponding decrease in time that the reservoir is empty to do the work. Muni/Western's proposed Project must not impact the Local Sponsors' ability to perform necessary maintenance and repairs at SOD.

The proposed Project contemplates construction of several pipelines and structures near SOD and the plunge pool that may affect SOD's outlet works. (*See* DEIR, Section 2.4.2.1):

- *"Phase III consists of connecting those portions of the pipeline developed in Phases I and II to the plunge pool of Seven Oaks Dam (Figure 2-4). The Phase III segment consists of a 15-foot pipeline, extending 2,980 feet from the southeast quadrant of the plunge pool to a point on the west bank of the SAR approximately 1,600 feet downstream of the Cuttle Weir. An intake structure to the Plunge Pool Pipeline would be built within*

12 *the plunge pool."* (DEIR, p. 2-5). The Plunge Pool Pipeline-Phase III would involve construction of an intake structure within the southeast quadrant of the SOD Plunge Pool. Insufficient information regarding the proposed modification to the plunge pool is provided to evaluate the feasibility of this Pipeline, as this facility was not addressed in the 1997 Water Conservation Feasibility Study.

- *"As shown on Figure 2-4, the Low Flow Connector Pipeline (a 4-foot diameter, approximately 3,500-foot long, 100 cfs capacity pipeline) would connect the existing Low Flow Outlet at Seven Oaks Dam to the Greenspot Pipeline. The northerly 750 feet of the pipe would either be buried under shallow cover (approximately 7 feet), or would be installed above ground on piers along the eastern edge of the existing bank slope of the plunge pool. Approximately 2,750 feet of the pipe downstream of the plunge pool would be underground in a common trench with the Plunge Pool Pipeline Phase III."* (DEIR, p 2-5). The existing Minimum Discharge Line Extension (MDLE) is a pipe installed at SOD to by-pass low flows around the plunge pool. Figure 2-4 suggests that the Low Flow Connector Pipeline connects to SOD at the same location at the MDLE, but the DEIR provides only information regarding the alignment of the Low Flow Connector Pipeline. The DEIR provides no details regarding the physical connection of these facilities. If the proposed Low Flow Connector Pipeline is intended to replace the MDLE, the DEIR should include additional information regarding potential impacts to the MDLE and MDLE operations. The proposed Low Flow Connector Pipeline was not addressed in the 1997 Water Conservation Feasibility Study.

Table S-1, page S-13, item GEO-1 assumes that construction work can take place during the rainy season. This may or may not be the case depending upon existing safety guidelines and flood control operations at SOD.

13 Under existing flood control operations, water is retained behind SOD for only a short period of time, which allows sediments (silts and clays) to pass through SOD without significant settling behind the Dam. Under the proposed water conservation program, storage of sediment-laden storm flow would be held at SOD for an extended period of time. (DEIR, p. 3.1-5). This could result in increased deposition of sediment behind SOD, which could decrease the life of the flood control project or otherwise affect flood control operations. The DEIR should evaluate the potential and effect of increased deposition of sediments behind SOD, and the potential impacts of this sedimentation on reservoir capacity and flood control operations and maintenance.

14 Finally, the DEIR should clarify the source of the water to be stored at SOD for water conservation purposes. The DEIR and informal comments from your consultants suggest that only naturally occurring runoff from SOD's tributary watershed will be stored at SOD under the Project. In other words, the Project does not propose storage of water from outside the watershed at SOD. A clear statement to this effect should be included in the DEIR.

7. Water Conservation Programs Must Not Interfere with Flood Control Activities, Facilities and Operations.

The DEIR states that "[c]onstruction of Phase I of the Plunge Pool Pipeline would block roadway access to the Seven Oaks Dam site". (DEIR, p. 3.13-19 – Impact PS13; and under table S-1 item PS-13). The proposed alternative access routes as discussed in section 3.13 and as illustrated in Figure 3.13-2 would, during some phases of construction, require Dam operators and Southern California Edison (SCE) vehicles to use Alder Creek Road as the means to access the Dam at the right abutment of the Dam. This road is very difficult to maintain and navigate, and requires considerable time to access SOD. Use of this road increases travel time to and from the Dam by approximately 30 to 60 minutes each way, and require the use of four-wheel drive vehicles. During storms, the area is subjected to frequent and severe land slides. Since this is an essential facility, an alternative route or means of construction should be pursued. 15

Similarly, one of the detour routes identified in Figure 3.13-2 requires personnel to traverse private property. This particular detour also requires use of a bridge erected during the original construction of SOD as a haul road. This bridge has since fallen into disrepair and is unsafe to cross. The bridge would need to be replaced if used as planned in the DEIR.

8. Separable Impacts from Water Conservation Uses of SOD and Other Flood Control Facilities

In various places the DEIR assumes that past or existing mitigation measures implemented by the Local Sponsors or USACE for flood control impacts sufficiently mitigate for impacts that may result from water conservation uses. For example, the DEIR states that "*Biological resources upstream of Seven Oaks Dam that would potentially be affected by the Project were assumed to within the potential inundation area of Seven Oaks Dam and mitigation for their loss was the responsibility of the USACE following its construction and operation for flood control.*" (DEIR, p. 3.3-19; Section 3.3.1.4.1). Similarly, Table S-1, page S-14, item SW-1 supposes that additional erosion, over and above what has already been accounted for as a result of SOD flood control operations, does not require additional mitigation. 16

Mitigation provided by the Local Sponsors and the USACE for impacts to biological resources upstream of SOD was based upon flood control operations only and did not assess impacts associated with water conservation. Although the 1997 Feasibility Study concluded that biological impacts associated with water conservation upstream of SOD were assumed to be included within the range of impacts associated with flood control operations, this determination should be reevaluated in the context of current circumstances. In the same way, erosion resulting from more frequent and higher reservoir levels behind SOD, or from rapid releases from the conservation pool, may exacerbate erosion at SOD. Potential environmental impacts above SOD should be reevaluated in light of current circumstances and knowledge, and the DEIR should 17

17 make clear that Muni/Western are responsible for all such environmental impacts and associated costs resulting from water conservation activities.

9. Water Quality

18 The DEIR makes several assumptions related to water quality in and below SOD, some of which require clarification. For example, Table S-1, page S-14, item SW-2 assumes that a water quality plan has been or will be developed by the Local Sponsors for water temporarily retained behind SOD for water conservation operations. Muni/Western is responsible for mitigation of all water quality impacts associated with water conservation activities, independent of any water quality issues associated with flood control operations. (Page 3.1-35; Impact MM SW1).

The Local Sponsors are pleased to provide comments on Muni/Western's DEIR, and look forward to working with the Muni/Western on an agreement for water conservation at Seven Oaks Dam. If you have any questions concerning these comments, do not hesitate to call Lance Natsuhara at the Orange County Flood Control District at (714) 834-5398, David Lovell at the San Bernardino County Flood Control District at (909) 387-7964, or Zully Smith at the Riverside County Flood Control and Water Conservation District at (951) 955-1299.

Very truly yours,

Robert Donlan

Robert E. Donlan, on behalf of the
Santa Ana River Mainstem Project Local Sponsors

cc: Mr. Herb Nakasone, Orange County Flood Control District
Mr. Warren Williams, Riverside County Flood Control and Water Conservation District
Mr. Patrick Mead, San Bernardino County Flood Control District

FLOOD CONTROL DISTRICTS

Flood Control Districts Comment 1

Water conservation will be implemented in a way that does not interfere with flood control operations. So as to avoid interfering with flood control, the Project's water conservation actions would be limited to activities allowed within the existing or modified Seven Oaks Dam Operations Manual, water conservation would occur outside of the flood control season, and appropriate modifications to Seven Oaks Dam would be undertaken.

Flood Control Districts Comment 2

Please see response to Flood Control Districts Comment 1 and USACE Comment 1.

Flood Control Districts Comment 3

Muni/Western have begun the process of negotiating such an agreement with the Local Sponsors and hope to conclude those negotiations in the near future.

Flood Control Districts Comment 4

Muni/Western agree that additional environmental review and approvals may be needed to implement water conservation at Seven Oaks. Muni/Western, working cooperatively with the Local Sponsors, USACE and other appropriate local, state and federal agencies, intend to implement water conservation at Seven Oaks in full compliance with all applicable law. The process of updating the 1997 Feasibility Study EIS/EIR for water conservation has commenced; Muni/Western believe that this process will provide the information needed for appropriate public agencies, including but not limited to the Local Sponsors and USACE, to consider water conservation at Seven Oaks Dam.

Flood Control Districts Comment 5

Muni/Western concur with this position. The reader is also directed to section 2.5.1 and Table 2-1 of the Draft EIR. For the record, Muni/Western have already obtained the approval of senior water purveyors through the Seven Oaks Accord and the settlement agreement with the San Bernardino Valley Water Conservation District. Discussions with the Local Sponsors have also begun.

Flood Control Districts Comment 6

The comment correctly summarizes the conclusions of the 1997 Feasibility Study. The water conservation scenario analyzed by Muni/Western in the Draft EIR is, Alternative 3 as described in the 1997 Feasibility Study. This alternative was selected since it most closely represents the amount of storage at Seven Oaks Dam (a maximum of 50,000 af) requested in the Muni/Western application before the State Water Resources Control Board. USACE is presently commencing an update of the 1997 Feasibility Study with the full participation of the Local Sponsors and Muni/Western that will include an update of the 1997 Feasibility Study National Economic Development (NED) Analysis.

Flood Control Districts Comment 7

Muni/Western concur that it is important to update the 1997 Feasibility Study. The recent drought on the SAR underscores the importance of a reliable water supply to the San Bernardino Valley and the rest of the Inland Empire. Accordingly, Muni/Western, the Local Sponsors and USACE are cooperating in such an update.

Flood Control Districts Comment 8

Muni/Western agree that the Local Sponsors now own the Dam, are responsible for its operation and maintenance, and so must approve any facility or operations changes at the Dam. It is also true that any such changes must be also approved by USACE.

The latest operations plan of October 2003, "Water Control Manual" is referenced in the Final EIR. See Thematic Responses section 2.2. A comparison of model parameters from the previous version of the manual did not identify differences that would affect model output and, hence, the environmental analysis presented in the Draft EIR is representative of current Water Control Manual operations.

Flood Control Districts Comment 9

Please see response to USACE Comment 22.

Flood Control Districts Comment 10

Please see Thematic Responses section 2.4 and the responses to USACE Comments 8 and 22.

Flood Control Districts Comment 11

As noted above, flood control operations will take priority over water conservation operations and so there would not be a reduction in the flood control capabilities of the dam. The details of such operations will be developed during the update of the 1997 Feasibility Study, which is a cooperative effort among USACE, the Local Sponsors and Muni/Western.

Muni/Western believe that the Draft EIR and the Operation and Maintenance Manual use the term "flood season" in two different ways that are not inconsistent.

- In the Draft EIR the term "flood season" is used to describe when the dam would only be operated for flood control, October through February. In March through September, the dam would be operated for flood control and seasonal storage.
- In the Seven Oaks Dam operation and maintenance manual, by contrast, the October 15 through April 15 flood season is defined as the season during which the operators of Seven Oaks Dam must monitor water levels in the dam. During this reporting season, daily observations are required.

Both definitions of the term "flood season" (operations and monitoring) reflect the decision by US Army Corps of Engineers that establishes a priority for flood control over water conservation throughout the entire year (USACE 1997). To that end, the 1997 USACE Feasibility Study ensured that with the retrofit of Seven Oaks that there would be sufficient flood storage to control peak summertime storms even while water conservation was also being implemented. US Army Corps of Engineers limited the seasonal water conservation period to the non-winter months to avoid any impact on flood control operations by water conservation operations that might occur during the winter flood season.

Flood Control Districts Comment 12

Please see response to USACE Comment 1. The comment raises engineering questions such as the feasibility of relocation of the maintenance platform, safety, and the physical connection of the Low Flow Connector Pipeline, which will all be addressed during the engineering design phase of the Project. To the extent that the comment raises issues related to environmental impacts, such impacts are already analyzed in the EIR.

Flood Control Districts Comment 13

The Draft EIR relied on USACE's estimate of sedimentation for water conservation, which was part of the 1997 Feasibility Study. Using generally accepted methods, USACE determined that seasonal water conservation of the type proposed by the Project would increase the rate of sedimentation at Seven Oaks by about 0.1 percent. Because of regional assumptions for this method (the Churchill method), it is unclear whether this effect would, in fact, occur. In any case, the 1997 Feasibility Study did not provide any information suggesting that this very minimal increase in sedimentation rates would have a significant impact on the environment.

Flood Control Districts Comment 14

The Project does not propose to store water from outside of the watershed at Seven Oaks Dam.

Flood Control Districts Comment 15

The Seven Oaks Dam Operations and Maintenance Manual (August 2002), lists Alder Creek Access Road as one of the facilities used for the access, operation, maintenance, and management of facilities at Seven Oaks Dam. Further, the Operations and Maintenance Manual states that Alder Creek Access Road was constructed as part of the Seven Oaks Dam project (page I-2-10). As such, "Operation, maintenance, repair, replacement, rehabilitation (OMRRR) and inspections" of the Alder Creek Access Road are the responsibility of the Local Sponsors.

The Draft EIR identifies construction of Phase I of the Plunge Pool Pipeline as a significant impact to transportation but mitigable to a less than significant level with the inclusion of alternative access routes. The comment does not identify any access routes other than those described in the Draft EIR that would reduce the impacts of construction on access for the Local Sponsors and/or Southern California Edison. Further, the comment does not state that the impact, after mitigation, is still significant. No additional response is required.

With regard to the proposed detour route that comes off of Greenspot Road, Muni/Western acknowledge that it may be necessary to repair or rehabilitate the bridge crossing at the conservation District Canal, or to install a culvert or other temporary crossing, before this would be a viable detour route.

Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
3.13-19	31-34	**MM PS-6:** Muni/Western will direct the contractor to regrade a pathway, a portion of which was formerly used as a road during the construction of Seven Oaks Dam. Upgrading the pathway could include repairing or replacing (with a like structure, culvert or temporary crossing) the existing bridging over the Conservation District canal. During Project construction in the Santa Ana River Construction Area, non-construction vehicles will be directed to this detour route; see Figure 3.13-2.
3.13-21	8	… these permitting processes. Repairing and/or replacing the bridge over the Conservation District canal could result in temporary and minor sedimentation.

Flood Control Districts Comment 16

Please see Thematic Responses section 2.2.

USACE indicated that it and/or the Local Sponsors would fully mitigate for the impacts to biological resources occurring below the 50-year inundation zone (USACE 1988; SEIS, Design Memorandum No. 1, Vol. 2). Muni/Western are entitled to rely upon the effectiveness of those mitigation measures as part of the regulatory baseline for the Project. Water conservation would be limited to a 50,000 af conservation pool, which lies wholly within the 50-year inundation area. Consequently, any effects of the Project would be in an area already fully mitigated as part of the USACE mitigation for flood control operations.

It is an incorrect statement by the commenter that the Draft EIR "supposes that additional erosion, over and above what has already been accounted for as a result of SOD flood control operations, does not require additional mitigation." The Draft EIR provides a reasoned analysis of the potential for increased erosion in the reservoir and determined the impact was less than significant.

Flood Control Districts Comment 17

In preparing the Draft EIR, Muni/Western critically reviewed and incorporated pertinent information and analysis contained in the Feasibility Study Final EIS/EIR so as to make sure the analysis was consistent with current circumstances and knowledge. Erosion as a result of conservation storage was determined to be a less than significant impact in SW-1 on page 3.1-34 of the EIR. As described in Impact SW-2 (pages 3.1-34 and 35) of the EIR, conservation storage would result in an incremental increase in anaerobic conditions that are known to arise with storage of water in the debris pool behind the dam during summer months. In MM SW-1 on page 3.1-35 of the EIR, Muni/Western agrees to contribute funding, in proportion to the volume of seasonal conservation storage, to implement measures that will avoid and counteract anaerobic conditions.

Muni/Western understand and agree that the incremental costs of water conservation will be the responsibility of Muni/Western.

Flood Control Districts Comment 18

Muni/Western will fully mitigate for their contribution to any water quality impacts associated with water conservation activities, as proposed in MM SW-1. Conversely, Muni/Western are not responsible for any water quality issues associated with flood control operations; those effects are part of the environmental baseline and are the responsibility of others.

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MWD

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Executive Office

January 14, 2005 **FEDERAL EXPRESS**

Mr. Robert L. Reiter
San Bernardino Valley Municipal Water District
1350 South E Street
San Bernardino, California 92412

Dear Mr. Reiter:

Draft Environmental Impact Report for the
Santa Ana River Water Right Applications for Supplemental Water Supply

The Metropolitan Water District of Southern California (Metropolitan) has reviewed a copy of Draft Environmental Impact Report (Draft EIR) for the Santa Ana River (SAR) Water Right Application for Supplemental Water Supply (Project). The San Bernardino Valley Municipal Water District (SBVMWD) and Western Municipal Water District of Riverside (WMWD) have jointly filed two applications with the State Water Resources Control Board to appropriate water from the SAR. The applications seek the right to divert and put to beneficial use up to 200,000 acre-feet of water per year (afy) of local water to help meet anticipated demands. The SBVMWD and WMWD service area occupies the western portions of San Bernardino and Riverside counties. While implementation of the Project would use existing facilities to the extent feasible, some new facilities would be constructed and some existing facilities would be modified. This letter contains Metropolitan's response to the Draft EIR as a Responsible Agency under the California Environmental Quality Act.

Metropolitan staff has reviewed the Draft EIR and has determined that the document acknowledged 1
Metropolitan's facilities and correctly noted that implementation of the Project has the potential to impact our facilities and/or right-of-ways. Metropolitan respectfully requests that SBVMWD and/or WMWD contact Mr. Kieran Callanan of the Substructures Team at (213) 217-7474 regarding any construction related activities and Mr. Dirk Marks of the Water Resource Management Group at (213) 217-6039 regarding disruption of Metropolitan's water supply or our water rights.

700 N. Alameda Street, Los Angeles, California 90012 • Mailing Address: Box 54153, Los Angeles, California 90054-0153 • Telephone (213) 217-6000

2 We appreciate the opportunity to provide input to your planning process and we look forward to receiving future environmental documentation, including a copy of the Final EIR, for this project. If we can be of further assistance, please contact Ms. Ana Reyes at of the Environmental Planning Team at (213) 217-7079.

Very truly yours,

Laura J. Simonek

Laura J. Simonek
Manager, Environmental Planning Team

LIM/rdl
(Public Folders\EPT\Letters\12-JAN-05B.doc – Robert L. Reiter)

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA (MWD)

MWD Comment 1

Thank you for your comments.

MWD Comment 2

Thank you for your comments.

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PILLSBURY WINTHROP LLP

MGM TOWER 10250 CONSTELLATION BOULEVARD 21ST FLOOR LOS ANGELES, CA 90067-6221 310.203.1100 F: 310.286.6672

January 13, 2005

Christopher J. McNevin
Phone: 310.203.1172
cmcnevin@pillsburywinthrop.com

Via Facsimile and U.S. Mail

Mr. Robert L. Reiter
General Manager & Chief Engineer
San Bernardino Valley Municipal Water District
1350 South E Street
San Bernardino, CA 92408-2724

Mr. John V. Rossi
General Manager
Western Municipal Water District of Riverside County
450 Alessandro Boulevard
Riverside, CA 92508-2449

Re: Comments on Draft Environmental Impact Report for Santa Ana River Water Right Applications for Supplemental Water Supply, State Clearinghouse No. 2002071062

Dear Messrs. Reiter and Rossi:

Orange County Water District ("OCWD") appreciates the opportunity to review the above-referenced Draft Environmental Impact Report ("DEIR"). OCWD supports the efforts of Muni/Western to maximize the beneficial use of our water resources in ways that are consistent with the 1969 Judgment. OCWD offers the following comments. 1

1. The DEIR states that a "third priority" for distribution of project water is to convey Santa Ana River water to areas outside the Muni/Western service area, in exchange for water to be returned to Muni/Western at a later date. DEIR at 2-8. (Please note that the Community Report p. 15 and the Allocation Model Section 5.0 describe this as a fourth priority.) OCWD understands that Muni/Western are committed to the proposition that Santa Ana River water should be used within the watershed. We would be greatly concerned about any distribution proposals that would amount to a net export, or that would involve a prolonged return period, with attendant uncertainty on the return of such flows. We 2

PILLSBURY WINTHROP LLP

2 understood that this is not your intent, and suggest that this be confirmed in the final Environmental Impact Report.

3 2. Section 3.1 of the DEIR, Surface Water Hydrology and Water Quality, states that "The Project would decrease river flow and so could degrade water quality." The DEIR concludes that this impact would be "less than significant." DEIR at 3.1-39. This conclusion derives from an analysis in which "The maximum volume of water diverted under the Project was subtracted from baseflow (as defined by SARWQCB) at points downstream and the concentration of TDS was calculated based on the adjusted flow (see Table 3.1-12)." Id. A similar approach was used to evaluate increases in total inorganic nitrogen concentrations.

4 There may have been an oversight in this approach. Because the Seven Oaks Dam would capture and divert stormflow, DEIR at 2-2, the analysis of water quality impacts should not be based solely on subtracting the diverted water from baseflow. More appropriately, the water quality evaluation should consider the potential for TDS and nitrogen changes during both baseflow and stormflow periods.

We look forward to reviewing subsequent documents for your project.

Sincerely,

Christopher J. McNevin

cc: Ms. Virginia E. Grebbien, P.E.
Mr. Craig D. Miller, P.E.
Mr. John Kennedy
Mr. Roy L. Herndon
Mr. Greg Woodside

ORANGE COUNTY WATER DISTRICT (OCWD)

OCWD Comment 1

Thank you for your support of the Project and the goals of Muni/Western.

OCWD Comment 2

The comment is correct that the Project will not create a net export of water; any water delivered outside the Muni/Western service areas will be returned, via an exchange, as quickly as feasible.

OCWD Comment 3

Comment noted.

OCWD Comment 4

Section 3.1 and 3.2 of the Draft EIR assess the impacts to flows and water quality in both high and low flow periods. The reason that the discussion focuses on the Project's impacts on baseflows is that it is during those times, which are generally during the summer and during dry periods, that the Project will have its greatest impact on the environment. Evaluating water quality during low flow periods is the approach promulgated by the Regional Water Quality Control Board (Santa Ana Regional Water Quality Control Board, Santa Ana River Basin Plan, Attachment to Resolution No. R8-2004-0001 pg. 20).

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RIVERSIDE HIGHLAND WATER COMPANY
1450 E. Washington St. • Colton, CA 92324-4696 • (909) 825-4128 FAX (909) 825-1715

December 16, 2004

San Bernardino Valley Municipal Water District
Mr. Robert L. Reiter, General Manager and Chief Engineer
P.O. Box 5906
San Bernardino, CA 92412

Re: Comments on the "Environmental Impact Report on the Santa Ana River Water Rights Application for Supplemental Water Supply".

Dear Mr. Reiter:

This letter, which is submitted by the Riverside Highland Water Company, responds to your agency's request for comments on the "Environmental Impact Report on the Santa Ana River Water Right Application for Supplemental Water Supply".

The Draft EIR prepared by your agency for the Water Right Application for Supplemental Water Supply is deficient in at least three respects:

1. It provides for a reduced flow across the Bunker Hill Dike but does not provide for adequate water to meet the requirements of the of the *Judgment in the Western Municipal Water District vs. East San Bernardino County Water District et al. Case No. 78426, County of Riverside* to maintain water levels in the Rialto-Colton Water Basin and required flows into the Riverside North Basin. 1
2. There is no discussion on who pays for makeup water into the Rialto-Colton Basin and the Riverside North Basin due to the reduced flows proposed in the Draft EIR. 2
3. The high nitrate concentrations within the Riverside South Basin are being pumped and used for irrigation purposes and adequate inflow into the basin is needed to dilute the remaining nitrate concentration. There is no discussion on this matter to provide low nitrate water for this problem with the reduced flows at the Bunker Hill dike. 3

All of these deficiencies involve long-term threats to the Riverside Highland Water Company to maintain a potable water supply to its customers. 4

5 The Riverside Highland Water Company produces groundwater in the Lytle Creek sub-basin of the San Bernardino Basin, the Bunker Hill Basin, the Colton Basin and Riverside North Basin and the Riverside South Basin. The only discussion within the Draft EIR regarding the water into the Riverside Basins is that the San Bernardino Valley Municipal Water District is talking to the City of San Bernardino to maintain a flow from the RIX plant into the Riverside South Basin to help the flows at the Riverside narrows. This does not correct the possible problems in the Riverside North Basin.

6 The discussion on the percolation of water into the Lytle Creek sub-basin shows that water spread will percolate through the Barriers and the Rialto-Colton barrier into the Rialto-Colton water Basin. The barriers are permeable in the upper sections but, as depth of the water decreases, the barriers become less permeable reducing the flow downstream. With no guarantee of adequate water for percolation into the Rialto-Colton Basin and the Riverside Basins, there is no discussion of an alternate supply to meet the Western Judgment.

Your assistance in an acceptable resolution of our concerns would be sincerely appreciated. We look forward to receipt of your responses to these comments on your Draft EIR. If you have any have any questions regarding the above, please contact me.

Sincerely

Don Hough
General Manager

cc: Bill Brunick, Attorney

RIVERSIDE HIGHLAND WATER COMPANY (RHCW)

RHWC Comment 1

Please see the response to City of Riverside Comment 3. The Project will reduce flows across the Bunker Hill Dike but will increase the overall quantity of water available for use by the Plaintiff parties in the *Western* Judgment referenced in the comment. The Project will be operated in full compliance with the *Western* Judgment.

RHWC Comment 2

Please see the response to City of Riverside Comment 3. There is no need for make-up water when the Project will, as a general matter, increase the availability of water to the Plaintiff parties in the *Western* Judgment referenced in Riverside Highland Water Company Comment 1.

RHWC Comment 3

The comment incorrectly assumes that the Project will reduce water availability in the Riverside North basin and so speculates that there will be an increase in nitrate concentrations in the Riverside South Basin. As noted in the response to City of Riverside Comment 3, the Project provides a net benefit in supply to the North Riverside Basin, so there could be an increase of subsurface flows to Riverside South Basin. The actual effect on the Riverside South Basin will depend, however, on the management of both the Riverside North and Riverside South basins. Those management decisions are beyond the scope of this EIR.

RHWC Comment 4

Please see the response to City of Riverside Comment 3. Muni/Western do not believe that the Project represents a long-term threat to Riverside Highland Water Company's ability to provide a potable water supply to its customers, for two reasons. First, as described in the responses to City of Riverside Comment 3 and Riverside Highland Water Company Comments 1-3, the Project will result in an overall increase in water supplies to Riverside Highland Water Company. Second, Riverside Highland Water Company has been the beneficiary of surplus groundwater declarations by the *Western* Watermaster. These declarations are not expected to continue with or without the Project. It would be unwise for the Riverside Highland Water Company to rely on this surplus supply as a reliable future water supply. The water rights of the Riverside Highland Water Company, as a plaintiff in the *Western* Judgment, will be fully protected by actions of the Watermaster with or without the Project.

RHWC Comment 5

Please see the response to City of Riverside Comment 3. The Project will result in an overall increase in the quantity of water available to Plaintiff parties in the *Western* Judgment.

RHWC Comment 6

Please see the response to Riverside Highland Water Company Comment 5.

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DEPARTMENT OF PUBLIC WORKS

FLOOD CONTROL • REGIONAL PARKS • SOLID WASTE MGMT • SURVEYOR • TRANSPORTATION

825 East Third Street • San Bernardino, CA 92415-0835 • (909) 387-8104
Fax (909) 387-8130

COUNTY OF SAN BERNARDINO
ECONOMIC DEVELOPMENT
AND PUBLIC SERVICES GROUP

PATRICK J. MEAD
Director of Public Works

December 28, 2004

Santa Ana River Water Rights Applications EIR
c/o Science Applications International Corporation
Attention: Christopher Clayton
525 Anacapa Street
Santa Barbara, CA 93101-1603

File#10(ENV)-3.01

REFERENCE: DRAFT ENVIRONMENTAL IMPACT REPORT (EIR) FOR THE SANTA ANA RIVER RIGHTS APPLICATIONS FOR SUPPLEMENTAL WATER SUPPLY

Dear Mr. Clayton:

Thank you for giving the San Bernardino County Department of Public Works the opportunity to comment on the above-referenced project.

The site is generally located in the eastern portion of the San Bernardino Valley. Due to the vast area that the proposed pipelines will cross, the comments made here are general in nature. More site-specific recommendations will be made at the time of permit application.

The Environmental Management Division's Storm Water Program Manager has reviewed the above-referenced project and their marks are as follows:

1. MM GEO-1 should also specify that the project shall obtain a General Construction Stormwater NPDES Permit, and abide by its requirements. The words "where possible" with regard to implementing erosion and sediment control measures should also be deleted. These measures should always be possible to use. The project should also consider disallowing construction in any stream channels during the wet season. 1

2. MM GEO-2 should specify a monitoring provision so if MM GEO-2 is not effective and erosion is taking place, enhanced mitigation measures will be implemented. 2

3. MM SW-2 should specify a monitoring provision so if the MM SW-2 is not effective and erosion is taking place, enhanced mitigation measures will be implemented. 3

4. For Impact SW-7, a long-term monitoring provision should be added so that at some impact significance level, mitigation measures will be required. 4

5 Should there be any further changes to this project, please notify our Department so that we may have the opportunity to comment on the changes. If you have any questions or need additional information, please contact Kelly A. Rozich, of my staff, at (909) 387-8114.

Sincerely,

Frank Moliva for

NARESH P. VARMA, P. E., Division Chief
Environmental Management Division

NPV:KAR:jm/SantaAnaRiverWaterRightsResponse.doc

cc: Matt Yeager, EMD
Kelly A. Rozich, EMD
PJM/VRO Reading File

SAN BERNARDINO COUNTY DEPARTMENT OF PUBLIC WORKS (SBDPW)

SBDPW Comment 1

Text has been added to the mitigation measure to clarify that the SWPPP is a requirement of the General Construction Stormwater NPDES permit (see below). No construction in river channels or the reservoir during the rainy season is stated in Appendix C of the Draft EIR - Proposed Construction and Operations Activities, Section 1.0 - Construction Activities.

Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
3.4-18	2-10	**MM GEO-1:** Before beginning construction, a sedimentation and erosion control plan will be prepared by Muni/Western and submitted to the SARWQCB for approval. In addition, a Storm Water Pollution Prevention Plan (SWPPP) will be prepared by Muni/Western and submitted to the SARWQCB for approval prior to construction. <u>A SWPPP is a requirement of the General Construction Stormwater NPDES Permit.</u>

SBDPW Comment 2

Text has been added to the mitigation measure to include a monitor during dewatering operations to verify that energy dissipation features are working effectively (see below).

Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
3.4-19	10-15	**MM GEO-2:** Muni/Western will direct the contractor to install, prior to de-watering activities, energy dissipation devices at discharge points to prevent erosion. Sedimentation basins (such as straw bales lined with filter fabric) will be used at dewatering discharge points to prevent excess downstream sedimentation. These basins will be constructed before dewatering and regularly maintained during construction, including after storm events, to keep them in good working order. <u>A monitor will verify effective operation of energy dissipation features during dewatering.</u>

SBDPW Comment 3

Text has been added to the mitigation measure to include monitoring during dewatering operations to verify that energy dissipation features are working effectively. See SBDPW Comment 2.

SBDPW Comment 4

See response to USACE Comment 3. Please see pages 3.1-37 and 3.1-38. Mitigation is not considered feasible and therefore monitoring would not occur.

SBDPW Comment 5

Muni/Western will consider the comments provided on the Draft EIR. Consultation with agencies and review of comments has resulted in minor modifications to the Project and mitigation measures as identified in this Final EIR. The lead agencies will endeavor to notify other concerned agencies about any future modifications.

David B. Cosgrove
Direct Dial: (714) 662-4602
E-mail: dcosgrove@rutan.com

January 13, 2005

Robert L. Reiter
General Manager and Chief Engineer
San Bernardino Valley Municipal Water District
P.O. Box 5906
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John V. Rossi
General Manager
Western Municipal Water District of Riverside County
P.O. Box 5286
Riverside, CA 92517-5286
450 Alessandro Blvd.
Riverside, CA 92508-2449

Re: Draft Environmental Impact Report (State Clearinghouse Number 2002071062) Santa Ana River Water Right Applications for Supplemental Water Supply

Dear Mr. Reiter and Mr. Rossi:

This office, and the undersigned in particular, represent the San Bernardino Valley Water Conservation District (Conservation District).[1] The Conservation District appreciates the opportunity to comment on the Draft Environmental Impact Report (DEIR) prepared by the San Bernardino Valley Municipal Water District (Muni) and Western Municipal Water District (Western), referred to together as "Muni/Western," for the Santa Ana River Water Right Applications for Supplemental Water Supply (Project).

Based upon our review, we believe the DEIR contains a number of areas that must be revised in order to permit meaningful evaluation of the Project and to comply with CEQA. At a minimum, we believe the DEIR must be revised to address the following:

---

[1] The Conservation District was created pursuant to the Water Conservation District Act of 1931. (Water Code Section 74000 et seq.) Under Water Code Section 74521, a water conservation district is authorized to "appropriate, acquire, and conserve water and water rights for any useful purpose." Additionally, Water Code Section 74522 authorizes a conservation district to "conserve, store, spread, and sink water." Thus, the Water Conservation District Act specifically recognizes the need for and benefits of groundwater recharge in and of itself. The Conservation District engages in groundwater recharge on the Santa Ana River and Mill Creek consistent with the provisions of the Water Conservation District Act.

- the Project Description must include a description of how water would be managed, to identify the actual users and places of use, and to include full evaluation of facilities that are necessary to implement the Project;

- the DEIR must be revised to include evaluation of the potential environmental impacts of the Project when compared to proper baseline existing conditions;

- the impact analysis in the DEIR must be revised to provide sufficient information to permit the public to understand the full extent of the environmental impacts of the Project;

- the DEIR must evaluate feasible alternatives that could avoid or reduce significant impacts of the project, and

- the DEIR must properly evaluate proposed mitigation measures, and consider additional feasible mitigation measures, where residual significant environmental impacts exist.

1 Of primary importance to the Conservation District, the DEIR does not adequately analyze potentially significant impacts of the Project on local groundwater supplies. Nor does it identify and discuss potentially feasible mitigation measures to address such impacts. The Conservation District also notes the Project involves construction within the Conservation District Canal, and either modification of the Conservation District's intake structure adjacent to the Cuttle Weir or construction of a new intake structure immediately north of the Conservation District's intake structure. (DEIR, p. 2-4.) The Conservation District requests that Muni/Western clarify the extent that construction activities could impact the Conservation District's operations (e.g., construction at or adjacent to the Conservation District's intake), and provide greater detail regarding mitigation measures to eliminate such impacts. These and other problems with the DEIR are described in more detail below.

I. PROJECT DESCRIPTION.

2 A legally adequate environmental impact report must contain an accurate project description in order to fulfill the purposes of CEQA, by allowing decision makers and the public to understand a project's likely effect on the environment. "A curtailed or distorted project description may stultify the objectives of the reporting process. Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal's benefits against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal (i.e., the 'no project' alternative) and weigh other alternatives in the balance. An accurate, stable and finite project description is the sine qua non of an informative and legally

sufficient EIR." (County of Inyo v. City of Los Angeles, 71 Cal.App.3d 185, 192-193 (1977).) A complete project description is necessary to ensure that all of a project's environmental impacts are considered. (City of Santee v. County of San Diego, 214 Cal.App.3d 1438, 1450 (1989).) 2

In this case, the DEIR describes a project that involves the applications for a water right in the amount of up to 200,000 acre-feet in a single water year. (DEIR, p. S-1.) However, the DEIR provides insufficient information regarding how this "new" water would be managed (i.e., future water exchanges and groundwater management activities). In order to comply with the requirements of CEQA, the DEIR must be revised to describe these future activities and to analyze their environmental impacts. 3

A. The Project Description Fails To Describe The Manner In Which New Water Supplies Would Be Managed. 4

The DEIR identifies the following Project objectives: increase water supply reliability; develop a new, local water supply to meet part of anticipated future needs; and expand operational flexibility by adding infrastructure. (DEIR, p. 2-1.) To meet these objectives, Muni and Western propose to obtain a water right permit from the State Water Resources Control Board (SWRCB), to construct extensive new facilities, and to share in utilization of other existing facilities. (DEIR, pp. 1-1 through 1-2.) Overall, the Project is designed to accommodate diversion of up to 200,000 acre-feet in a single water year, and to increase available water supplies by up to 29,000 acre-feet per year (long-term annual average). (DEIR, p. 4-7.) However, the DEIR's explanation of how Muni/Western would manage the water supplies 5
potentially made available through the Project is too vague, and contains no specific program to guide future water management. It states only "SAR water could be delivered directly to users or to a number of groundwater storage basins, both within and outside the Muni/Western service area." (DEIR, p. 2-7.) Under this description, the geographic scope of the area of SAR water delivery, application, and ultimate use is unlimited, to say nothing of the amount, timing, or purpose of proposed use. More is needed for any meaningful environmental assessment.

The DEIR's inadequate project description is particularly evident with respect to future water "exchanges." The DEIR states that "Muni/Western do not propose to export water for use outside their service areas. Any water *conveyed* outside their service areas would be returned via *exchange as soon as practical*." (DEIR, p. 1-1. emphasis added.) Here, the DEIR appears guilty of engaging in semantics. The DEIR provides no explanation of the distinction between "export" outside of lead agencies' service areas and "conveyance" outside of their service areas. Further, the DEIR defines "water exchanges" as "the conveyance of newly appropriated SAR water to other agencies in consideration for the return of a like amount of water to the 6

6 Muni/Western service area within a prescribed period." (DEIR, p. 2-7.) This definition suggests that an exchange is simply a form of conveyance.

Further, the DEIR lacks detail on what an "exchange" would entail, particularly with respect to the time lag between export and return of water, and the locations of export and return. The DEIR's discussion of the contemplated exchanges (to which most of the "new" water under the Project would be dedicated) is bereft of any real information:

> The actual amounts of new SAR water used in exchange by local agencies within the Muni/Western service area would vary, depending on both local hydrologic conditions and the availability of alternative supplies. The actual amounts of exchange water would be coordinated with other water users according to the priorities described in the following section. In the wettest of years, when the largest diversions from the SAR would occur, up to approximately 200,000 af of water could be available for exchange. All this water could be used in an exchange if (a) no local purveyors are able to take direct delivery of the water; (b) no local spreading facilities with adequate capacity are available or recharge of the water would be inconsistent with groundwater management goals; and (c) conveyance capacity is available. (DEIR, p. 2-7.)

While the DEIR identifies four potential exchange partners, it does not provide any information on the amount, timing, location, or nature of exchanges, nor the conditions that would be required for exchanges. The DEIR indicates that it may take up to 5 years (under scenarios C and D) or 10 years (under scenarios A and B) for exchange water to be returned. (DEIR, p. A-5-6.) Depending on the specifics of an exchange, water might be returned from the State Water Project or the Colorado River Aqueduct, which have significantly different TDS concentrations, or not be returned at all. Without more descriptive information, it is not possible to determine whether the water "exchanges" would result in significant environmental impacts.

7 The DEIR also does not adequately explain how Muni and Western would manage the potential recharge of "new" water. The DEIR identifies factors that would be taken into account, but does not explain how these factors would be balanced. (DEIR, pp. A-5-15 to A-5-21.) In essence, the only explanation of the manner in which "new" water would be recharged (i.e., how groundwater management would be conducted) is that the model was "manually adjusted" until water levels met "management objectives."[2] (A-5-15.) The omission of any details for

[2] With regard to the "manual adjustments" that were made, the DEIR indicates that Muni and Western attempted to avoid "groundwater mounding" related to recharge. (DEIR, p. A-5-15.) While "groundwater mounding" is defined in the DEIR, there is no explanation as to why this phenomenon is injurious, or the quantity of reduction in spreading that occurs as a result.

implementing groundwater recharge and management has particular importance in light of the flaws associated with the DEIR's evaluation of potential impacts related to high groundwater and contamination plumes. The DEIR indicates that recharge targets "do not represent optimal groundwater management; but provide a guideline on how much, and in what manner, water could be spread to avoid [adverse effects]." (DEIR, p. A-5-15.) Given the critical importance of stable groundwater supplies in the region, the DEIR must be revised to provide a more detailed, coherent explanation of future groundwater management, including the process under which decisions would be made, by whom, and under what balancing criteria.[3] 7

B. Not Only Does The DEIR Omit Any Management Plan For "New" Water, But The Project Description Also Fails To Adequately Identify The Intended Users Of The Additional Water Supply. 8

The DEIR explains that Muni/Western have "several options available to them for conveying and distributing SAR water." (DEIR, p. 2-7.) In this regard, the DEIR lists potential beneficial uses in Table 5.3-1. However, in the absence of any management plan, it is highly speculative to assume where "new" water would be delivered, particularly given that the DEIR indicates that existing sources can meet projected demand in the service areas of Muni and Western until at least 2025. (DEIR, p. 4-7.)

The vague assumptions in the DEIR regarding potential users of "new" water are not sufficient to meet the requirements of CEQA. Depending on the actual use of this new water, including possibilities not evaluated (e.g., that current demand would be static and all new water would be exported out of the San Bernardino Basin), the impacts of the Project could be substantially different from those evaluated in the DEIR.

Moreover, "[a] statement of alternative, potential beneficial uses," rather than discussion of specific users and areas of use, fails to meet the requirements of the Water Code or of CEQA. (Central Delta Water Agency v. State Water Resources Control Board, 20 Cal.Rptr.3d 898, 907 (2004).) In that case, the court pointed out that the State Water Resources Control Board's failure to investigate the intended use of the appropriated water deprived it of sufficient evidence to determine the scope and extent of environmental impacts. (Id.)[4]

---

3 The denominated "Seven Oaks Accord" does nothing to fill the gaps in the project description. As the Conservation District reads it, that document contemplates that Muni/Western will, at some future date, develop a groundwater spreading program. (See, Seven Oaks Accord, ¶ 4; Section V (A), infra..) At present, there are no more specifics on that proposed program than there are on any other Muni/Western water management plan.

4 The court stated: "Appellants argue that by failing to evaluate the environmental impacts of the delivery of water to actual purchasers, the Board violated its duty under CEQA to evaluate

8 Muni/Western's DEIR suffers from the same flaws as discussed in the Central Delta Water Agency case. In order to comply with the requirements of CEQA, the DEIR must be revised to include information on the end users and places of use of any new water supplies and to evaluate impacts that would be associated with such anticipated use.

9 **C. The DEIR Improperly Segments The Water Rights Application From Planned Water Management Facilities Necessary To Implement The Project.**

The CEQA Guidelines define "project" to mean "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment..." (CEQA Guidelines Section 15378(a).) A governmental agency must fully analyze each "project" in a single document to ensure that "environmental considerations do not become submerged by chopping a large project into many little ones, each with a potential impact on the environment..." (Burbank-Glendale-Pasadena Airport Authority v. Hensler (1991) 223 Cal.App.3d 577, 592.) An environmental
10 document must "include an analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects." (Laurel Heights Improvement Assn. v. Regents of the University of California, 47 Cal.3d 376, 396 (1988).)

11 Rather than incorporate necessary or closely related features into the Project, the DEIR relegates proposed actions such as the Riverside-Corona Feeder, the East Branch Extension, and the Inland Feeder to the cumulative impact analysis. For instance, the DEIR notes that Western would not take its portion of newly conserved water through surface facilities, but would instead receive them by increased pumping. (DEIR, p. A-5-1.) If such pumping relies on the proposed Riverside-Corona Feeder, or other facilities not included in the Project, those actions should be incorporated into the DEIR, not addressed superficially in the cumulative impact analysis section. All of the actions referenced in this paragraph are reasonably foreseeable and would
12 expand the scope and nature of the Project. It also appears that the cumulative impact analysis has improperly assumed that significant cumulative impacts are the result of other activities, not
13 the Project itself.[5] The Project Description must be revised to accurately reflect the true scope of the Project; only in that way can the decision makers and the public accurately consider whether the benefits of the Project outweigh its significant environmental impacts.

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the impacts of the project and all of its components before approving the project. We agree." (Central Delta Water Agency v. State Water Resources Control Board, 20 Cal.Rptr.3d 898, 914 (2004).)

[5] In the absence of an accurate Project Description, a cumulative impact analysis cannot properly describe potentially significant environmental impacts.

Project segmentation violates CEQA; therefore, the Conservation District requests that the DEIR be revised to incorporate integral components of Muni/Western's proposed plan into the description of the Project. 13

D. <u>The DEIR Misstates The Acreage Associated With The Conservation District's Santa Ana River And Mill Creek Recharge Basins And Its Role In The Project.</u> [6] 14

Table 3.2-3 of the DEIR indicates that the Conservation District's Santa Ana River spreading grounds have an active recharge area of 60 acres. (DEIR, p. 3.2-5.) According to "note g" of this table, the DEIR used the 60-acre estimate based on a 1995 aerial photograph.[7] (DEIR, p. 3.2-6.) Additionally, the DEIR utilizes an active recharge area of 26 acres for the Mill Creek Spreading Grounds. The acreages used for these recharge areas are incorrect.

The Conservation District's Santa Ana River facilities include 63.49 acres of spreading basins; the Conservation District also has the capability to use an additional 122 acres within the Seven Oaks Dam Borrow Site. In total, available recharge within the Santa Ana River facilities is approximately 185 acres. For Mill Creek, the Conservation District has calculated the available recharge area as approximately 65 acres.

The DEIR should be revised to reflect the actual acreage available for recharge purposes in Santa Ana River and Mill Creek and the assessment of environmental impact should be repeated based on the proper acreages, to determine whether the DEIR's conclusions regarding significant impacts is affected.

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[6] It should also be noted that, while the DEIR provides information on average diversions for recharge by the Conservation District for water years 1915-16 to 1968-69 and 1970-71 to 1999-2000, the Conservation District actually initiated diversions in water year 1911-12. Conservation District recharge in the years prior to 1915-16 were as follows: 1911-12: 9,103 acre-feet; 1912-13: 2,211 acre-feet; 1913-14: 23,934 acre-feet; and 1914-15: 28,595 acre-feet. Additionally, it is not evident why the DEIR selected two periods that omit water year 1969-70. In water year 1969-70, the Conservation District diverted and recharged 31,354 acre-feet from the Santa Ana River. To the extent that the DEIR uses the incomplete diversion history of the Conservation District in a manner that distorts analysis, the analysis should be conducted using the additional information.

[7] It appears that, in other areas, the DEIR may have used the 448-acre figure. (See, e.g., DEIR, p. 3.2-13.)

II. BASELINE AND NO PROJECT ALTERNATIVE.

15 The Conservation District believes the baseline used in the DEIR does not comply with CEQA. Under the CEQA Guidelines: "An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." (CEQA Guidelines Section 15125(a).) "Before the impacts of a project can be assessed and mitigation measures considered, an EIR must describe the existing environment. It is only against this baseline that any significant environmental effects can be determined." (County of Amador v. El Dorado County Water Agency, 76 Cal.App.4th 931, 952
16 (1999).) The CEQA Guidelines also expressly state that "[t]he no project alternative analysis is not the baseline for determining whether the proposed project's environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish that baseline." (CEQA Guidelines Section 15126.6(e)(1).)

Contrary to the requirements of CEQA, the DEIR incorporates future changes and conditions into the baseline and fails to provide a true comparison of the Project with existing conditions.

17 Separately, CEQA requires that the Project be compared with No Project conditions. (CEQA Guidelines Section 15126.6.) In doing so, the DEIR must include in the No Project alternative those changes that "would reasonably be expected to occur in the foreseeable future if the project were not approved." (Id.) The DEIR does not meet this requirement.

18 In the event that the DEIR is modified to compare the Project with both the existing conditions *and* with some other "baseline" that differs from existing conditions, it must provide a more comprehensive and understandable description of the alternative baseline. As currently written, the DEIR provides unclear and inadequate descriptions of existing conditions, baseline, and No Project—perhaps to improperly ascribe beneficial impacts to the Project—and muddies the distinctions among them. These deficiencies must be corrected in a revised DEIR.

19 A. The DEIR Incorrectly And Inaccurately Assumes Future Conditions As Part Of The Baseline.

The DEIR utilized an improper environmental baseline against which to evaluate the environmental impacts of the Project. In this regard, the DEIR states:

> To assess the potential impacts of Project implementation on environmental resources, a comparison must be made to conditions that exist at an appropriate point in time, also referred to as "baseline" conditions. This baseline is conventionally defined as the existing physical conditions in the affected area at the time the Notice of Preparation (NOP) is published. Surface water and groundwater conditions change in response to numerous factors, the most fundamental of which are precipitation and runoff (supply) and diversions and extractions (demand). Surface water and groundwater conditions at any point in time depend on antecedent conditions of water supply and demand and will change in response to changes in the supply and demand determinants. It is, thus, not appropriate to compare surface water and groundwater conditions at some time in the future against a static description of conditions in a past time period. For this reason, anticipated conditions under the Project are compared to anticipated conditions likely to occur in the future without the Project, i.e., under the No Project scenario. (DEIR, p. 3.0-2.) **19**

To the extent that the DEIR incorporates future conditions into the baseline, it does not comply with CEQA. Under CEQA, an agency must assess environmental impacts of a proposed project by comparing it with actual, existing conditions. (Environmental Planning and Information Council v. County of El Dorado, 131 Cal.App.3d 350, 354 (1982)["EPIC"].) The court in EPIC explained that where there is no detailed evaluation of the impacts of a project on the environment in its current state, the EIR fails as an informative document. (Id. at 358.) **20**

Here, the DEIR has assumed that future conditions, including water demand and population (and possibly facilities that will be built in the future), are part of the baseline.[8] These assumptions ignore that the Project will facilitate such growth and demand, which do not currently exist. The DEIR's comparison of the Project to a baseline presuming future conditions is akin to comparing a proposed development project to a baseline which presumes hypothetical future environmental characteristics (e.g., air quality, traffic, water use, etc.), which was expressly rejected in EPIC. If, in fact, the DEIR has used the same conditions of the No Project alternative as the baseline, the DEIR directly violates CEQA Guidelines Section 15126.6(e)(1).

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8 This approach differs from those situations where an EIR has assumed ***prior*** environmental characteristics, such as traffic levels, as part of the baseline. (See, e.g., Fairview Neighbors v. County of Ventura, 70 Cal.App.4^{th} 238 (1999).)

20 The DEIR must be revised to include environmental impact analysis that compares the Project to the existing conditions. Only with such information can decision makers and the public understand and evaluate the true environmental impacts of the Project.

21 **B. The DEIR's Assumptions Pertaining To Future Groundwater Extractions Under The No Project Alternative Are Not Reasonable Or Supported By Substantial Evidence, And Are Inconsistent With Available Data.**

The DEIR also fails to define the "No Project" alternative accurately. Specifically, the DEIR incorporates future demand for water into the No Project alternative, but makes the unsupported assumption that (apart from Western's increased pumping due to additional conservation) such demand would be met through surface deliveries alone: "It is likely that to meet increasing demands, local water sources would be exchanged with SWP water and provided to water users, rather than increasing groundwater extractions from the SBBA." (DEIR, p. 5-4.)

The DEIR's assumption regarding how future demand for water will be met is not supported by any evidence or explanation and is, in fact, contrary to available evidence regarding recent trends. The Western Watermaster Verified Extraction data for the years 1990-2000 indicates increased groundwater extractions have occurred in response to demand. The following graph is taken from Western Watermaster reports:

TABLE 1

Year	Total Extractions (afy)	Precipitation (inches)
1990	222,947	8.12
1991	226,726	15.48
1992	231,336	16.54
1993	239,279	30.78
1994	257,396	11.65
1995	245,666	24.1
1996	262,377	11.92
1997	258,368	-
1998	260,942	32.67
1999	268,221	8.02
2000	260,990	16.85

As Table 1 indicates, groundwater extractions within the San Bernardino Basin have increased significantly since 1990 under a number of different precipitation scenarios. Overall, annual extractions increased by 17.06% when 2000 is compared with 1990, and the increase in extractions averaged 3,800 acre-feet per year. Further, the trend is more-or-less consistently upwards, and the only four years in which extractions exceeded 260,000 acre-feet occurred after 1995.[9] This data indicates that, contrary to the assumption in the DEIR, demand is being met through increased groundwater extractions.[10] Thus, the No Project alternative does not include "what would be reasonably expected to occur in the foreseeable future if the project were not approved." (CEQA Guidelines Section 15126.6.) 21

22
Given that the DEIR has, contrary to CEQA, compared the Project to No Project conditions, or some variation thereof (see above), the inaccurate estimate of future groundwater extractions leads to unsupported impact analysis, particularly in the areas of high groundwater, liquefaction, and local groundwater supplies. This distortion ascribes beneficial impacts on groundwater levels to the Project, which trends indicate may in substantial part occur from pumping itself, under a No Project scenario. The DEIR must be modified to include within the No Project alternative an accurate and supported estimate of future groundwater extractions in the San Bernardino Basin.

C. <u>The DEIR Appears To Use Multiple, Inconsistent Hydrologic Base Periods.</u> 23

The hydrologic base period is a critical element of the DEIR and forms the basis for impact analysis. In Appendix A, the DEIR provides analysis to justify the selection of a hydrologic base period from WY 1961-62 to WY 1999-2000. (DEIR, p. A-3-1.) However, in Section 3.1 of the DEIR, the period of WY 1962-63 to WY 2000-2001 is identified as the input for OPMODEL. (DEIR, p. 3.1-27.) This discrepancy should be explained, and the DEIR should be revised to clearly indicate which period or periods were used for the hydrologic base period. If multiple hydrologic base periods were used, the DEIR should provide discussion of the rationale and implications of this. The DEIR should also provide discussion regarding the relationship between the hydrologic base period(s) and the Orange County and Western Judgments, both of which were entered into in 1969. As Muni and Western are aware, the Orange County and Western Judgments had important implications on water management. These implications should be addressed to ensure that the DEIR appropriately recognizes 24

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9 Moreover, while prior decades experienced fluctuations in groundwater extraction levels, basin extractions never exceeded 260,000 acre-feet in any year between 1970 and 1990, and exceeded 250,000 acre-feet in only two years.

10 In a similar vein, the DEIR assumes that the increase in surface deliveries under the Project could result in "in lieu" recharge. (DEIR, p. 2-4 ["Groundwater recharge could also be accomplished indirectly through the delivery of surface water in lieu of groundwater pumping."].) However, there is no analysis in the DEIR of whether the users that currently extract groundwater have the physical infrastructure to accept increased deliveries of surface water, or even whether it would be feasible for water users to accept such surface deliveries. This issue must be addressed in a revised DEIR.

24 potential discrepancies between pre-1969 and post-1969, and most closely relates to current legal conditions.

III. IMPACT ANALYSIS.

25 "An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences." (CEQA Guidelines Section 15151.) The DEIR falls short of this standard. The Conservation District believes that in order to meet the legal requirements of CEQA, the impact analysis must be corrected in several different ways, as discussed below.

26

A. **The DEIR's Impact Analysis Relies Heavily On Models That Have Not Been Made Publicly Available, Despite Numerous Requests, Rendering Analysis Based On These Models Invalid.**

The DEIR's impact analysis is heavily dependent on a number of models, including: OPMODEL, Allocation Model, HEC-RAS, MODFLOW, MODPATH, MT3DMS, Hantush Equation, and Press Model. The Conservation District has previously requested, on a number of occasions, that any model related to the pending water rights applications be made available for its review, particularly where the model would be used as the basis for water management or allocation. The DEIR refers to the models, describes the models, and relies extensively on the models, but does not make the models or model runs available for review. The DEIR suggests that the above models may very well serve as the basis for future groundwater management activities. Nonetheless, the models have never been made public, nor made available to the Conservation District.

This violates CEQA, and nullifies any reliance on the models as "substantial evidence." The CEQA Guidelines are very clear that when a document is incorporated by reference, it must be made available publicly for the full comment period.[11] CEQA Guidelines Section 15150(b) provides as follows:

> Where part of another document is incorporated by reference, such other document shall be made available to the public for inspection at a public place or public building. The EIR or Negative Declaration shall state where the incorporated documents will be available for inspection. ***At a minimum, the***

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[11] Given the lengthy period (over five years) during which Muni and Western have been developing these models, even the length of the public comment period on this DEIR is unduly brief, considering the apparent complexity of the models.

> ***incorporated document shall be made available to the public in an office of the Lead Agency in the county where the project would be carried out or in one or more public buildings such as county offices or public libraries if the Lead Agency does not have an office in the county.*** (Emphasis added.) 26

The Conservation District believes there are a number of areas where modeling assumptions in the DEIR are incorrect or inaccurate, indicating a clear need for review of the models and model runs. For example, by making the models and model runs available, Muni/Western will allow the public to review the results associated with scenarios that were not analyzed in the DEIR, and to evaluate whether refinement of model parameters would disclose additional or more severe environmental impacts (or alternatively, could indicate the ability to mitigate significant environmental impacts). Here, the DEIR makes no reference to the availability of models or model runs, nor has such information been made publicly available. As a result, the DEIR fails to comply with CEQA.

B. <u>The DEIR's Denominated "Bookend" Approach Does Not Capture All Environmental Impacts Of The Project.</u> 27

The DEIR applied its modeling to five different sets of "parameters" that generated a total of thirty-two (32) different scenarios.[12] (DEIR, p. 3.0-4.) These parameters include those 28
related to "senior water rights claimants" water use, Conservation District recharge activities, environmental mitigation water, seasonal storage, and Muni/Western diversion capacity. (DEIR, p. 3.0-6 to 3.0-7.) However, in conducting evaluation in the DEIR, Muni/Western selected only five scenarios (including No Project) under the incorrect view that these cover the "full range of potential environmental consequences."[13] (DEIR, p. 3.0-8.) Specifically, the DEIR wrongly 29
assumes that the maximum and minimum values for surface diversion by Muni/Western encompass the full range of environmental impacts; this assumption ignores the fact that certain

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[12] The DEIR references "16 different simulations" apparently under the assumption that Phase I capacity (500 cfs) will be increased during Phases II and III (to 1,500 cfs). However, it appears that the DEIR treats the issue of "diversion capacity" as two different alternatives, not stages in the Project. To the extent that this is what has been done in the DEIR, it should be clearly stated and explained. Moreover, the DEIR should be revised to analyze and explain whether this approach understates environmental impact.

[13] In this regard, the DEIR states: "By evaluating the extreme values in this range (Scenarios A and C assume diversions at the higher rate of 1,500 cfs while Scenarios B and D assume a diversion rate of 500 cfs), the full range of potential environmental consequences associated with implementation of any of the 16 possible simulations are included in the analysis." (DEIR, p. 3.0-8.)

29 environmental impacts depend not on Muni/Western diversions, but on water use or recharge by other parties.

30 This error in the DEIR's impact analysis is evident when one examines potential impacts on groundwater supplies, which the DEIR already acknowledges are potentially significant (see discussion below). One factor that influences groundwater levels is the amount of water recharged in the basin. Yet, the four scenarios selected for analysis in the DEIR do not capture the full spectrum of potential future groundwater recharge by the Conservation District. Table 3.0-3 sets forth the different uses of water under the thirty-two different modeled scenarios. Under the table, average annual Conservation District recharge ranges from a high of 10,384 acre-feet per year in scenarios 9 through 12 to a low of only 2,745 acre-feet per year in scenarios 5 through 8. Therefore, if the analysis of the DEIR were accepted as accurate, these scenarios would represent the extremes of Conservation District recharge, and have the greatest potential impacts in those areas that are affected by groundwater recharge. Still, none were carried forward for analysis in the DEIR. In particular, under scenarios 5 through 8, the Conservation District's recharge would be significantly reduced (to approximately 2,745 acre feet per year) compared with the No Project, thereby potentially creating significant impacts on the environment. The DEIR's failure to evaluate scenarios that would involve reduced groundwater recharge compared with the No Project requires that the DEIR be revised and recirculated.

31 The DEIR's selection of scenarios is also questionable due to the inapplicability of those scenarios (A and B) that assume senior water rights claimants will be limited to historical
32 diversion amounts.[14] In fact, scenarios A and B are in direct conflict with the Project. Specifically, the DEIR states:

> On July 21, 2004, Muni/Western and a number of water users in the San Bernardino Valley signed a settlement agreement known as the Seven Oaks

[14] The DEIR cites the Seven Oaks Accord as the basis for Muni/Western to recognize the right of "senior water rights claimants" to divert up to 88 cfs. (DEIR, p. 1-4.) The Seven Oaks Accord provides no authority to establish a water right and, even as a private contractual matter, included only a subset of the water users of the upper Santa Ana River. Moreover, the DEIR's use of the diversion capacity of 88 cfs, rather than actual water demand, to determine the total quantity of diversions (e.g., annual totals) for the senior water rights claimants artificially inflates future water use by those water users. The effect of this artificial analysis is evident when comparing "historical" diversions on an acre-foot basis to diversions using the 88 cfs diversion capacity. Tables 4.2-7 and 4.2-8 show that under historical, the senior water rights claimants divert an average of 26,619 acre-feet per year and a total of 1,038,131 acre-feet over the life of the Project. In contrast, using 88 cfs, diversions increase to an average of 36,323 acre-feet per year and a total of 1,416,607 acre-feet.

> Accord. In brief, the ***Seven Oaks Accord calls for Muni/Western to recognize the prior rights of the water users up to 88 cubic feet per second (cfs) from the natural flow of the SAR***. In exchange, the water users agree to withdraw their protests to the Muni/Western water right applications. Further, all the parties to the Seven Oak Accord have agreed to support the grant of other necessary permits to allow Muni/Western to divert water from the SAR. By means of the Seven Oaks Accord, Muni/Western agreed to modify their water right applications to the SWRCB to incorporate implementation of the Accord. ***Consequently, the analysis conducted in this EIR assumes implementation of the Accord.*** (DEIR, p. 1-4, emphasis added.) 32

In fact, the only scenarios that are consistent with the actual project, given its incorporation of The Seven Oaks Accord, are C and D. In order to comply with CEQA, the DEIR must be revised to include evaluation of other scenarios, each of which is consistent with all components of the Project. As written, the DEIR offers no basis for decision by any responsible agency, including the SWRCB, to approve any Project scenario other than C or D.

C. <u>The DEIR Does Not Adequately Evaluate Potentially Significant Impacts On Overall Groundwater Levels In The Basin.</u> 33

As acknowledged in the DEIR, groundwater in the San Bernardino Basin is the "major source of water for a number of water purveyors (retailers) in both San Bernardino and Riverside Counties." (DEIR, p. 4-2.) Therefore, a primary focus of the DEIR should be on the potential impacts associated with reduction in groundwater levels. The Conservation District believes the DEIR is notably inadequate in this regard.

In its analysis of "Groundwater Storage and Fluctuations in Groundwater Level," the DEIR states:

> Per the provisions of the Western Judgment, the SBBA is regulated and monitored with regard to the amount of water in storage, along with extractions and additions that are made, on an annual basis. The long-term equilibrium of the basin is maintained by ensuring that extractions do not exceed the natural safe yield. To the degree that extractions made by pumping on the part of agencies with authority to do so exceed the safe yield, it is the responsibility of Muni to make the basin "whole" through replenishment. . . . Because maintenance of the safe yield of the basin is the responsibility of Muni, Project operations would not measurably deplete the groundwater storage capacity of SBBA. (DEIR, p. 3.2-22.)

33 The DEIR's explanation glosses over a key point, and obscures Project impacts to groundwater supply in the San Bernardino Basin. While Muni may be obligated under the Western Judgment to replace the quantity of water extracted from the San Bernardino Basin that exceeds safe yield, it is not required to maintain the San Bernardino Basin at any specific groundwater levels. (DEIR, S-8.) The DEIR's description of the Western Judgment itself states that this obligation pertains only to the Colton and Riverside basins. (DEIR, p. 3.1-17.) This point is significant, because Muni's obligation to maintain safe yield does not necessarily equate to stable groundwater levels.

According to the DEIR, "safe yield" is estimated as 232,100 acre-feet per year. (DEIR, p. A-5-17.) However, using this estimated "safe yield" under the Western Judgment, the San Bernardino Basin is over 150,000 acre-feet below the storage of the "Base Year" of 1934.[15] (DEIR, Figure 2.1-13.) When Muni's claimed credit of 270,000 acre-feet is taken into account (which, when added to the over 150,000 acre-feet of basin losses equals over 400,000 acre-feet in lost groundwater storage), it appears that the estimate of "safe yield" may not be accurate and, in any event, provides no meaningful basis for evaluating actual groundwater levels.

34 Therefore, neither the structure of the Western Judgment nor the history of its implementation supports the DEIR's blithe presumption that Muni's obligations will ensure that groundwater resources are appropriately protected. Such obligations therefore provide no support, evidentiary or otherwise, that maintenance of safe yield will result in no net deficit in aquifer volume. (DEIR, p. 3.2-26.)

With respect to long-term groundwater levels, the DEIR states: "Allocation Model was also designed so that all Project scenarios would match the change in annual groundwater storage as the No Project, by allowing some shifting of spreading and use of credits between years. These design features are to ensure that comparisons of the scenarios are not skewed by the use of credits and groundwater storage." (DEIR, p. A-5-25.) The DEIR should indicate the total number of existing credits that would be used by Muni to satisfy the replenishment obligations and to "match" No Project recharge activities. Additionally, the DEIR provides for a Conservation District Replenishment Adjustment based on the difference between diversions

[15] It should also be noted that the use of 1934 as the base year for basin storage in the Western Judgment represents a point of relatively low aquifer water volume, as it occurred at the tail end of an 8-year dry period (1928-1935) in the San Bernardino Valley. (Hardt, William F. and John R. Freckleton, *Aquifer Response to Recharge and Pumping, San Bernardino Ground-Water Basin, California*, U. S. Geological Survey, Sacramento, California Water-Resources Investigations Report 86-4140, prepared in cooperation with the San Bernardino Valley Municipal Water District, 1987. A copy is attached as Exhibit A.) Therefore, the current aquifer deficit is in comparison to a base period when Basin storage was low.

prior to 1960 and those under different Project scenarios. (DEIR, p. A-5-17.) To the extent that this adjustment has not been previously recognized under the Western Judgment, the DEIR should evaluate whether inclusion of this adjustment—which would effectively increase Muni's credits—would impact groundwater levels, and how. 34

Muni/Western must significantly expand the DEIR's evaluation of impacts on groundwater supplies, which is cursory and, in essence, ignores the issue. Absent revision, the DEIR fails to adequately address the critical issue of groundwater supplies in the San Bernardino Basin.

In sum, the DEIR must include information and analysis regarding the extent of reduction of groundwater levels and identify feasible mitigation measures to address the impacts.

D. **<u>The DEIR Lacks Substantial Evidence To Support Conclusions Regarding High Groundwater.</u>** 35

The DEIR evaluates impacts to high groundwater and liquefaction based on an assessment of certain index wells, and whether those wells would experience water levels within 50 feet below ground surface under the Project. It then compares this result, by well, to the No Project conditions. (DEIR, p. 3.4-13.)

This impact analysis used in the DEIR suffers from several flaws. First, the DEIR fails to distinguish between wells located in areas with structures that might be damaged from seismically induced liquefaction during an earthquake, and those that are in undeveloped locations. The DEIR uses 25 index wells and 9 spreading grounds for this analysis. (Id.) At least seven index wells are located adjacent to or nearby the Santa Ana River, where few structures exist that might be damaged due to liquefaction. (See, e.g., Figure 3.6-1.) To evaluate these wells using the same criteria as, for example, those wells located within the City of San Bernardino, does not provide a meaningful comparison.

The spatial distribution of wells used to evaluate liquefaction also skews the impact analysis, as the inclusion in the index of a greater number of wells from the southeastern portion of the basin (and few wells in the western portion) may underestimate liquefaction impacts from the Project in the western area of the basin. (See Figure 3.4-5.) The DEIR should also consider the proximity of index wells to faults, given the greater risks that areas near faults experience during earthquakes. Overall, in applying the impact threshold, the DEIR must include a broader and more evenly distributed selection of index wells, and evaluate the liquefaction risks based on the characteristics of the areas in which the index wells occur.

36 Second, the DEIR appears to evaluate incorrectly the impact of artificial recharge on liquefaction potential at different spreading basins, based on the hydraulic conductivity. (DEIR, p. 3.4-26.) In this regard, the DEIR states:

> As the amount of recharge and spreading in the Santa Ana River Spreading Grounds and SAR Channel increases, the percent reduction in the cumulative area susceptible to liquefaction decreases, i.e., the more spreading that takes place in the Santa Ana River Spreading Grounds, the greater the area that is susceptible to liquefaction in the Pressure Zone. There are other variables that contribute to the liquefaction area, such as spreading in other locations. However, ***due to the greater hydraulic conductivity of the SAR and Mill Creek***, in comparison to the other creeks in the SBBA, almost 50 percent of the surface inflow for the entire SBBA is derived from the SAR and Mill Creek combined. This accounts for the large influence of recharge on shallow groundwater and associated liquefaction potential in the Pressure Zone. (DEIR, p. 3.4-26, emphasis added.)

This analysis in the DEIR indicates that "hydraulic conductivity" causes recharge in Santa Ana River spreading grounds to have a greater impact on high groundwater than recharge in other basins. This finding is inconsistent, both with other portions of the DEIR, and a published USGS report.

The particle tracking section of the DEIR (Appendix B Section 6.2.4 page B-6-22) contains MODFLOW simulations for each scenario used in conjunction with MODPATH to simulate particle tracking. Particles were released at the spreading grounds and tracked for the 39-year modeled period (2001-2039). The paths traveled by particles under No Project conditions were compared to paths traveled by particles under each of the four project scenarios. These particle paths are shown on Figures B 38 through B 49 for select years. Figures for the years 2015 and 2020 (Figures B 38(d), B 38(e) B 41(d), B 41(e) B 44(d), B 44(e), B 47(d), and B 47(e)) indicate that particles released in spreading grounds north and east of the Pressure Zone (Waterman, East Twin Creek, Patton, and City Creek) all reached the pressure zone *before* particles released in the Santa Ana River or Mill Creek spreading grounds. This is inconsistent with the DEIR's conclusion attributing heavier liquefaction impacts in the Pressure Zone to spreading in the Santa Ana River Spreading Grounds, based on "hydraulic conductivity."

The DEIR also appears to be inconsistent with the results of a previous USGS model and report, specifically prepared to focus on the relative contributions that various artificial recharge facilities have on water levels in the pressure zone: Hardt, William F. and John R. Freckleton, *Aquifer Response to Recharge and Pumping, San Bernardino Ground-Water Basin, California*, U. S. Geological Survey, Sacramento, California Water-Resources Investigations Report 86-

4140, prepared in cooperation with the San Bernardino Valley Municipal Water District, 1987. The report states: 36

> Artificial recharge from the major streams in the basin also was simulated separately to determine the separate effects of each stream system on water levels in the confined area. Model simulations indicated that Waterman Canyon-East Twin Creek had the most effect on the confined area, followed in order by Lytle Creek, Santa Ana River, and Devil Canyon Creek. The quantity of recharge from streams needed to produce a 1-foot rise in water levels after 10 years near the center of the confined area at a node on Warm Creek (see fig. 14) was calculated for the various major streams. The quantity of recharge required was 3,400 acre-ft/yr from Waterman Canyon-East Twin Creek; 7,500 acre-ft/yr from Lytle Creek; 7,700 acre-ft/yr from the Santa Ana River; and 11,600 acre-ft/yr from Devil Canyon Creek. Artificial recharge simulated at Mill Creek did not have an effect on calculated water levels in the confined area at the end of the 10-year period. Accordingly, recharge in the north-central part of the ground-water basin has the greatest effect on water levels in the confined area. (USGS Water Resources Investigations Report 86-4140, p. 65.)

Under this analysis, a unit of recharge in the Waterman Canyon-East Twin Creek spreading areas caused a rise in water levels in the center of the pressure area that was 126 percent greater than for the same unit volume of recharge in the Santa Ana River spreading grounds, and 120 percent greater than for the same unit of recharge in Lytle Creek. To understand how the DEIR modeling interprets the relationships between recharge and Pressure Zone groundwater levels and subsequent liquefaction, the DEIR must include runs similar to the ones in the 1987 USGS report, where recharge in each spreading ground is modeled separately, to see the impact on water levels in the Pressure Zone.[16] The DEIR must be revised to reconcile

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[16] In the USGS report, increased Pressure Zone pumping was simulated separately from other pumping and recharge conditions to determine the effects of that pumping on water levels. (Hardt and Freckleton, 1987.) An increased pumping rate of 25,000 acre-feet per year for 3 years resulted in water level declines in most of the Pressure Zone. Declines of 40 to 80 feet occurred in the Pressure Zone, 10 feet in the upper reaches of Lytle Creek and Santa Ana River areas, and 20 to 30 feet in the Waterman Canyon-East Twin Creek and City Creek areas. Of note, an increase in pumping of 25,000 acre-feet per year, compared with 1987 levels, has, in fact, occurred, which may help to explain why the Basin groundwater levels are currently well below "base year" aquifer storage level (See Section III(C)).

36 the conflicting and inconsistent parameters regarding impacts of various spreading basin recharge, and to provide substantial evidence to support its somewhat counterintuitive conclusions regarding the relationship of Santa Ana River Spreading Ground recharge to high groundwater.

37 A third problem pertains to the assumptions related to high groundwater within the river channel areas. The DEIR identifies areas with depth to water less than 50 feet within the Pressure Zone and outside the Pressure Zone for the various scenarios. The river channel areas are not included in the area totals for the Pressure Zone, but are included in the totals for areas outside of the Pressure Zone (see footnotes Table 3.4-1 and Figures B 11, B 13, B 15, B 17, and B 19). It is unclear why the DEIR has treated high groundwater within river channels differently for "within the Pressure Zone" and "outside of the Pressure Zone." Moreover, it appears that the river channel area has been colored green on the figures in the Pressure Zone, but not included in the area totals tables. The DEIR must be revised to explain this differential treatment.

38 Finally, the DEIR ignores countervailing impacts that occur when recharge is modified to purportedly avoid liquefaction. By modifying recharge, the Project results in significantly lower groundwater levels and corresponding impacts on water supply. The example used in the DEIR is particularly instructive. Figure 3.4-6 shows that, under the No Project conditions, well IW12, located in the Pressure Zone, would exceed 50 feet below ground surface for only a brief period, less than one year. (DEIR, p. 3.4-13.) At the same time, under the No Project alternative, groundwater levels would be maintained 50 to 60 feet above levels in alternative scenarios A and B for extended periods of time. (Figure 3.4-6.) By designing the Project to avoid liquefaction without appropriately considering impacts on local groundwater supplies (see Section III(C) of this letter), the DEIR distorts the groundwater management process. The DEIR must evaluate "high groundwater" based on the specific circumstances of different locations, rather than relying on an oversimplified, general analysis of liquefaction.

The USGS model also compared a scenario of increased recharge to one with both increased recharge and increased pumping, and stated "Comparison of water-level-change contours in these two illustrations (figs. 15 and 16) shows that increased local ground-water pumping from the confined area would lower water levels and is an effective method of relieving the high hydraulic head in the aquifer." Another scenario simulated highest recharge and highest pumping, as follows: "High pumping rates in the low-altitude area caused water levels to decline even with high recharge rates in the high-altitude areas." Thus, the impact of increased Pressure Zone pumping influences water levels and should be simulated separately in a revised DEIR, to determine how increased pumping in the Pressure Zone alone impacts water levels. An alternative that involves increased pumping appears to be a viable option for water supply and for controlling high water levels in the Pressure Zone, and should be considered (see Section IV).

Overall, while the DEIR provides numerous figures and tables, the actual analysis of liquefaction impacts is vague, conclusory, and not supported by sufficient evidence or reasoned explanation. The DEIR must be revised to correct this deficiency. 39

IV. ALTERNATIVES ANALYSIS.

"An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project." (CEQA Guidelines Section 15126.6(a).) The heart of the EIR process is the alternatives and mitigation analyses. (<u>Citizens of Goleta v. Board of Supervisors</u>, 52 Cal.3d 553, 564 (1990).) An alternative may not be rejected simply because it would not meet all of the project objectives. (CEQA Guidelines Section 15126.6(b).) 40

The DEIR evaluates three alternatives to the Project: New Local Water Supplies, Enhanced Conservation, and New Imported Water Supply. (DEIR, pp. 5-3 to 5-4.) All of these alternatives involve strategies that significantly deviate from the general approach of the Project. By focusing only on these wide-ranging alternatives, Muni/Western unnecessarily truncated any meaningful alternatives analysis.

The EIR declined to consider, without supporting substantial evidence, an alternative that would involve reliance on Conservation District Santa Ana River spreading grounds (the "use of existing facilities" alternative). The DEIR indicates that this alternative would not meet the Project objectives of increasing flexibility or allowing for water exchange. (DEIR, p. 5-3.) However, the DEIR does not explain why existing facilities do not provide area water users flexibility, or why Muni/Western must exchange water now, if the demands within their service areas are met on a consistent and reliable basis, and will be for at least the next twenty years. It also fails to explore use by Muni/Western of presently unused allocations of SWP water for current exchanges, based on a conjunctive use program for the Basin. The DEIR also cites the purported impact on high groundwater as a reason for rejection of the "use of existing facilities" alternative. (DEIR, p. 5-3.) As explained elsewhere in this letter, the DEIR's analysis of high groundwater is flawed, and cannot serve as the basis for rejection of an alternative. It should also be noted that the DEIR implicitly accepts significant environmental impacts in the areas of groundwater quality, groundwater contamination (plumes), and local groundwater supply that would be reduced or eliminated by the "use of existing facilities" alternative that was improperly rejected. Therefore, the Conservation District requests that the DEIR be modified to include full evaluation of the "use of existing facilities" alternative.

Additionally, the DEIR does not consider any alternative that would provide for use of some, but not all, of the additional facilities that are part of the Project. In addition to the "use of

40 existing facilities" alternative suggested above, and in order to potentially reduce impacts on habitat, the Conservation District requests that the DEIR be revised to consider a project alternative for use of seasonal storage, expanded groundwater recharge and pumping, and construction of the Low Flow Connector Pipeline and Morton Canyon Connector. While this alternative would include some new facilities, it would reduce or eliminate impacts associated with the Plunge Pool Pipeline, and would still meet the professed project objective of increased water supply flexibility. (The DEIR indicates that inclusion of seasonal storage alone would likely provide significant water supply benefits.) (DEIR, p. A-5-26.)

Consideration of such alternatives is also warranted given the demand for new water by users within the service areas of Muni and Western over the next two decades. As indicated in the DEIR, demand in the service areas of Muni and Western can be met by existing supplies until at least 2025. (DEIR, p. 4-7.) Moreover, the vast majority of initial water deliveries under the Project would go to water exchanges with entities outside of the San Bernardino Basin. In particular, under scenario A, approximately 427,510 acre-feet would go to exchange, compared with only 262,371 acre-feet to direct delivery. (DEIR, Figure 5.5-3.) Under scenario B, 320,378 acre-feet would go to exchange, while only 262,371 acre-feet would go to direct delivery. (DEIR, Figure 5.5-3.) Given the extensive upset and impacts to habitat that would occur under the Project, the DEIR must evaluate alternatives that could meet water supply demand without resorting to the Project's facilities-intensive, export-dominated approach.

In order to permit meaningful consideration, the DEIR must include analysis of a reasonable range of alternatives that could potentially meet certain Project objectives, yet also reduce or eliminate potentially significant environmental impacts of the Project. The DEIR has failed to meet this standard, and must be revised and recirculated.

V. MITIGATION MEASURES.

41 A fundamental purpose of CEQA is to facilitate the identification of feasible mitigation measures that would substantially lessen the significant environmental effects of a project. (CEQA Guidelines Section 15002(h).) Moreover, under CEQA, a public agency "should not approve a project as proposed if there are feasible alternatives or mitigation measures available that would substantially lessen any significant effects that the project would have on the environment." (Public Resources Code Sections 21002; CEQA Guidelines Section 15021(a)(2).) Here, the DEIR has failed to identify feasible mitigation measures capable of reducing or eliminating the environmental impacts of the Project. The DEIR also lacks substantial evidence to support conclusions regarding the effectiveness of those mitigation measures that are discussed in the DEIR. For these reasons, the DEIR does not comply with CEQA and must be revised and recirculated.

A. <u>The DEIR Fails To Identify And Discuss Feasible Mitigation Measures To Address Significant Impacts To Local Groundwater Supplies.</u> 42

The DEIR recognizes potentially significant impacts on groundwater levels that would result from implementation of the Project. Specifically, the DEIR states that, at least under scenarios A and B, "static groundwater levels at seven of 23 index wells located outside of the Pressure Zone would be reduced, on average over the 39-year forecast period, by more than 10 feet when compared to No Project conditions." (DEIR, p. 3.13-30.) The DEIR identifies as a mitigation measure (MM PS-12) implementation of the Seven Oaks Accord, and finds that this measure would reduce impact PS-22 to less than significant. (DEIR, pp. 3.13-30 to 3.13-31.) The DEIR's reliance on the Seven Oaks Accord is not legally sufficient as a mitigation measure, for a number of reasons. First, the Seven Oaks Accord does not require development of any groundwater management plan, whatever its specifics may be, until 2009. (Seven Oaks Accord, ¶ 4.) Second, the Seven Oaks Accord excludes the City of Riverside, the City of San Bernardino, and the Conservation District,[17] whose activities will impact groundwater levels under any version of the project. Third, there is no binding legal requirement that the Seven Oaks Accord, in fact, address this issue. (See Seven Oaks Accord, Paragraph 4 ["Applicants, after consultation with Water Users, shall develop and manage a groundwater spreading program that is ***intended*** to maintain groundwater levels at the wells specified in Exhibit G at relatively constant levels ..."].) This statement of interest is not binding, and fails to meet the requirement of CEQA that mitigation measures be fully enforceable through permit conditions, agreements, or other legally-binding instruments. (CEQA Guidelines Section 15126.4(a)(2).)

43 The DEIR's reliance on the Seven Oaks Accord is also unfounded because the DEIR already implicitly acknowledges a policy decision on the part of Muni/Western, to favor impacts to local groundwater supply and groundwater plumes as a "trade off" for the purported benefits of the Project. While this is not admitted directly in the DEIR, it is evident from the explanation of its modeling: "The iterative process between the Allocation Model and the groundwater model starts with an initial estimate of annual deliveries to each spreading ground (provided as input from Allocation Model) as input to the groundwater model. The effect of these initial delivery estimates on groundwater levels are evaluated, and then manual adjustments are made to the recharge targets in the Allocation Model. The iterative process is repeated until an acceptable recharge target is identified that meets the groundwater management objectives." (DEIR, p. A-5-15.)

[17] Despite repeated calls for negotiation of a cooperative groundwater management plan by the Conservation District (see, for example, the Conservation District's protest of the Muni/Western water rights application), the Conservation District was not invited to participate in discussions regarding the Seven Oaks Accord.

43 In the process of conducting modeling for the DEIR, Muni/Western reviewed the impact of "water management" decisions at each annual increment over the 39-year hydrologic base period determination, and apparently made unilateral decisions regarding which impacts would be acceptable, and which would not. The DEIR provides no basis to determine what Muni/Western's calculus was in deciding "recharge targets" for each step of the base period (see Section I(A) of this letter regarding the lack of any management plan). In any event, it is clearly disingenuous for the DEIR to include a "hidden" water management program that ignores impacts on local groundwater supplies and groundwater plumes, and, at the same time, to assume that the same impacts will be mitigated when Muni/Western "manage" groundwater recharge in the future.

44 The DEIR must be revised to include binding mitigation, with specific planned actions and manners of response, for impacts of the Project on groundwater supplies, such as a condition that requires Muni/Western to address circumstances where groundwater levels—as a result of the Project—are reduced below specified targets.

45 **B. <u>Mitigation Measures Related To Water Quality At Seven Oaks Dam Are Improperly Deferred To Another Agency And A Later Time, And Are Not Described In Any Detail.</u>**

The DEIR identifies a potentially significant impact related to anaerobic conditions resulting from seasonal storage behind Seven Oaks Dam. (DEIR, p. 3.1-35.) As explained in the DEIR, such anaerobic conditions can impact other water quality parameters. For example, anaerobic conditions can generate hydrogen sulfide and ammonia, lower pH, and cause algal blooms. (DEIR, pp. 3.1-35 to 3.1-36.) Unless adequately mitigated, these impacts have the potential to significantly degrade the quality of local water supplies and to harm downstream fish and wildlife.

While identifying this significant impact, the DEIR provides no mitigation measure, other than anticipation that the Local Sponsors will address the issue and Muni/Western will provide financial assistance. (DEIR, p. S-3.) Notwithstanding this complete lack of detail, the DEIR finds that this as-yet unidentified mitigation measure would reduce impacts to less than significant. (DEIR, p. 3.1-35.)

Under CEQA, deferral of identification of feasible mitigation measures until a later date is not permissible, except under certain conditions clearly not met here. (<u>Sundstrom v. County of Mendocino</u>, 202 Cal.App.3d 296, 306-308; <u>Oro Fino Gold Mining Corp. v. County of El Dorado</u>, 225 Cal.App.3d 872, 884-885 (1990).) Muni/Western may not avoid its CEQA obligations by relying on other agencies to address impacts created by its Project. (CEQA Guidelines Section 15020, 15091(c); <u>Citizens for Quality Growth v. City of Mount Shasta</u>, 198

Cal.App.3d 433, 443, fn. 8 (1988).) Here, Muni/Western have violated CEQA, both by deferring identification of mitigation measures, and by assuming other agencies will address the significant environmental impacts at issue. 45

The DEIR must be revised to identify, evaluate, and discuss potential mitigation measures that would address water quality impacts associated with seasonal storage behind Seven Oaks Dam.

C. <u>The DEIR Fails To Adequately Describe Mitigation Measures To Address Potential Impacts On Delivery Of Water For Recharge In Conservation District Facilities.</u> 46

The DEIR identifies a number of construction activities (including modification of the Conservation District's intake structure and the installation of a portion of the Phase I Plunge Pool Pipeline within the Conservation District's Santa Ana River Canal) that could result in significant impacts to the Conservation District's recharge activities. (DEIR, pp. 3.13-15, C.1-8.)

Under one mitigation alternative (MM PS-3), the DEIR indicates that deliveries that would have occurred to the Santa Ana River spreading grounds would occur via Muni facilities, but does not provide any explanation as to the specific facilities that would be used to convey water from the Conservation District's intake to the Santa Ana River recharge area, or how deliveries might otherwise differ — in quantity, location, or water quality — because of the rerouting through Muni facilities. (DEIR, p. 3.13-15.) Further, the DEIR contains no discussion of potentially significant impacts associated with construction of Muni/Western's intake to Phase I of the Plunge Pool Pipeline, which the DEIR indicates would be constructed at or adjacent to the Conservation District's intake.

Other statements in the DEIR regarding impacts of the Project on existing facilities appear to misstate the potential impacts on existing facilities. For example, in one location, the DEIR states:

> It is anticipated that the Project would make use of existing water supply and distribution infrastructure, some of which is owned and operated by other agencies. This infrastructure includes conveyance and recharge facilities, all of which would be operated within the parameters of established operating guidelines, permits and maintenance procedures. Groundwater recharge would involve the use of numerous groundwater recharge or spreading grounds. These facilities, which are described in detail in Appendix B, are not owned or operated by Muni/Western and would be used based on cooperative agreements. ***The***

46 ***Project would not affect the manner in which these facilities are operated or maintained.*** (DEIR, p. 3.0-2, emphasis added.)

If the statement that existing facilities (including those owned by the Conservation District) would not be affected by the Project is true, this commitment must be imposed as a condition of the Project. Alternatively, if the Project may affect normal operations, the DEIR must be revised to explain in detail the mitigation measures that would fully mitigate impacts of the Project on diversion and conveyance of water by the Conservation District for recharge purposes.

47 **D. The DEIR Fails To Identify Potential Mitigation Measures To Address Significant Unavoidable Impacts On Groundwater Contamination And Groundwater Quality.**

The DEIR finds that the Project would result in significant unavoidable impacts on perchlorate contamination, TCE contamination, and PCE contamination based on the increase in the number of wells that would experience contamination, compared with the No Project alternative. (DEIR, pp. 3.12-14 to 3.12-16.) Impacts on perchlorate well contamination are illustrative of the nature of the significant impacts: at least 20 wells would be impacted by perchlorate due to Project implementation. Figures 3.12-3, 3.12-4, and 3.12-5 indicate that the majority of significant impacts (i.e., wells that experience contamination under the Project, but not under No Project) are associated with the Redlands-Crafton plume on the eastern side of the basin. This suggests that the impacts may occur due to the shift of recharge activities from the eastern portion of the basin to the north and west.

Notwithstanding the DEIR's identification of significant impacts on contamination plumes, the only mitigation measure (MM HAZ-4) identified is for Muni to review its proprietary models and "[t]o the extent feasible given existing infrastructure, and consistent with meeting other basin management objectives, Muni/Western will direct Project water spreading to limit adverse plume movements." (DEIR, p. 3.12-14.)

This assessment of mitigation measures is deficient in several respects. First, MM HAZ-4 lacks specificity necessary to consider whether it would result in any significant reduction in these significant impacts. Second, the DEIR fails to consider potentially feasible mitigation measures that would reduce or eliminate these significant impacts. For example, the DEIR should include evaluation of a mitigation measure that involves a shift in spreading from recharge areas in the western portion of the basin to those in the east (which would essentially attempt to mimic recharge under the No Project alternative). Finally, Muni/Western have implicitly signaled in conducting the modeling for the DEIR that impacts on groundwater plumes will be ignored (see discussion above in Section V(A)).

As a general matter, the DEIR's evaluation of contamination plume impacts is defective. 47
The DEIR must be revised to provide a more expansive discussion of the Project's impacts on "contamination footprints" and to identify and evaluate potentially feasible mitigation measures to address such impacts.

Similar defects exist in the area of overall groundwater quality in the San Bernardino 48
Basin. The DEIR finds significant residual impacts with respect to total dissolved solid (TDS) concentrations and nitrate concentrations. (DEIR, pp. 3.2-30 to 3.2-31.) These impacts appear to result from the reduction in Santa Ana River spreading and the increase in State Water Project spreading. (DEIR, p. 3.2-27.) Despite the clear indication that a potential mitigation measure would be to increase spreading of native water at the Santa Ana River Spreading Grounds as part of the Project, the DEIR ignores this possibility. Moreover, the mitigation measures that are proposed (MM GW-1 and MM GW-2) are illusory (see discussion above in Section V(A)) and lack enforceability. In particular, the mitigation measures do not commit Muni/Western to maintain groundwater water quality above any specific thresholds. This analysis of mitigation for groundwater quality is insufficient, and the DEIR must be revised to address the inadequacy.

E. **<u>The DEIR Lacks Substantial Evidence To Support Findings Regarding The Effectiveness Of Mitigation Measures To Reduce Impacts On Biological Resources To Less Than Significant.</u>** 49

The DEIR includes findings regarding the effectiveness of mitigation measures to address biological impacts that are entirely unsupported by substantial evidence or reasoned analysis. For example, for impact BIO-3, the DEIR describes some of the residual impacts that would result from the Project and yet, without any explanation at all, indicates that such impacts would be mitigated to less than significant by a combination of mitigation measures. (DEIR, p. 3.3-45.) A similar approach is taken with impact BIO-4, where no explanation is given as to how mitigation measures will reduce impacts to less than significant. (DEIR, p. 3.3-47.) To comply with CEQA, the DEIR must explain the analytical linkage between evidence and conclusions, not merely assert that mitigation measures will be sufficient.

The DEIR also relies on mitigation that would involve acquisition of replacement RAFSS 50
habitat, but fails to identify where such replacement habitat exists, or whether its acquisition is feasible, or even available. (DEIR, p. 3.3-45.) This failure to identify locations of potential replacement habitat constitutes impermissibly deferred mitigation, and fails to support any finding that such mitigation is feasible.

VI. ADDITIONAL ISSUES.

The DEIR suffers from additional flaws, including the following:

51 • The DEIR references the feasibility study for seasonal storage from Seven Oaks Dam that concludes storage could increase supplies by, on average, 4,000 acre-feet per year. (DEIR, p. 1-4.) The DEIR must explain how this number relates to the projections under the different scenarios for the Project.

52 • The DEIR recognizes that implementation of the Project would require approval from the Conservation District for the use of certain facilities. However, Table 4 of the DEIR does not list the Conservation District. The DEIR must be modified to properly reflect the necessary approvals from the Conservation District or, alternatively, the Project must be revised to exclude use of and/or impacts to Conservation District facilities. (DEIR, p. 2-9.)

53 • The DEIR's cumulative impact analysis appears to assume that the Conservation District's water rights application could contribute to groundwater, biological, hydrological, and geological impacts if a water right permit or license were granted. (DEIR, p. 6-14.) This statement, and the related analysis in the cumulative impacts section, is incorrect, as the Conservation District's application requests a right only to continue diversions consistent with historical practices. In fact, this is recognized in the DEIR's evaluation of the No Project alternative.

54 • The DEIR recognizes that, at present, no gage exists to directly measure flow into Seven Oaks Dam. (DEIR, p. 3.1-27.) As the Project contemplates potential diversions of water above intake points of more senior water right holders, it will likely be necessary to construct a gage to provide timely data on inflow. The DEIR should consider and evaluate construction of a measurement gage for Santa Ana River flows above Seven Oaks Dam as a mitigation measure or Project component.

55 • For a number of potentially significant impacts on geologic resources, the DEIR recommends mitigation measure MM GEO-1. (DEIR, pp. 3.1-31 to 3.1-34.) MM GEO-1 proposes future development of a sediment and erosion control plan, without identifying any details of the plan or enforcement mechanisms. As such, this mitigation measure is impermissibly vague and amounts to deferred mitigation, in violation of CEQA.

VII. CONCLUSION.

56 The Conservation District's review leads it to the conclusion that the DEIR suffers from numerous significant deficiencies, which necessitate revision and recirculation. "A lead agency is required to recirculate an EIR when significant new information is added to the EIR after

public notice is given of the availability of the draft EIR for public review under Section 15087 but before certification. As used in this section, the term 'information' can include changes in the project or environmental setting as well as additional data or other information." (CEQA Guidelines Section 15088.5(a).) In this case, necessary revisions include, but are not limited to, modification of the project description, revision of the baseline, additional impact analysis, making modeling documents, programs, and data publicly available, and inclusion of additional alternatives and potentially feasible mitigation measures. Each of these changes will generate significant new information that must be shared with the public before any final EIR is certified, or the Project is approved. 56

We therefore believe the DEIR must be revised to inform the public of the *actual details* of the Project. At present, the DEIR amounts to a vague justification for the shift of a significant portion of local water supplies to areas outside the San Bernardino Basin, with questionable marginal benefit, while incurring significant cost and environmental impacts. Additionally, the absence of any specific proposal for management of new water, or details on end users, leaves the DEIR as little more than a rationale for hazily-defined plans by Muni/Western to control water in the future, without explaining the benefit. This not only fails to meet the intent of CEQA, but also appears to advocate a unilateral assumption by Muni/Western of water management activities, which because of the number of stakeholders and their varying interests, must of necessity be a cooperative effort.

The Conservation District thanks Muni/Western for the opportunity to provide comments, and looks forward to reviewing a revised and recirculated DEIR. As always, the Conservation District believes that cooperative management can best meet the needs of all water users, while minimizing impacts on the environment. Should Muni/Western wish to discuss any aspect of these comments, or explore Project modifications that would better integrate the Conservation District's activities, we look forward to hearing from you. 57

Very truly yours,

RUTAN & TUCKER, LLP

David B. Cosgrove

DBC:tr
Enclosure

cc: David R. E. Aladjem, Esq.

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SAN BERNARDINO VALLEY WATER CONSERVATION DISTRICT (CONSERVATION DISTRICT)

Conservation District Comment 1

The analysis of potentially significant impacts of the Project in the Draft EIR is sufficient to identify all significant impacts of the Project particularly to local groundwater supplies. This analysis and the discussion of feasible mitigation measures have been expanded, as presented in Thematic Responses section 2.3.2.

Project implementation could involve three phases. As described on page 2-4 of the Draft EIR implementation of Phase 1 would require no modification to the Conservation District Canal and the diversion structures at Cuttle Weir. Phase 2 would involve modifications to the diversion structure (or the construction of a new diversion structure) in order to remove existing diversion capacity constraints. Implementation of Phase 3 would not involve these structures or facilities but would provide new facilities near the plunge pool of Seven Oaks Dam. The description of these construction activities are contained in Chapter 2 of the Draft EIR and in Appendix C, pages C1-5 to C1-10. A description of potential impacts to public utilities (including facilities and operations of the Conservation District) as well as mitigation measures is provided in section 3.13 of the Draft EIR.

Conservation District Comment 2

This is a statement of legal doctrine with no information suggesting an impact on the environment; therefore, no response is necessary. Responses to specific comments provided by the Conservation District regarding the adequacy of the Draft EIR are provided below.

Conservation District Comment 3

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. Responses to specific comments provided by the Conservation District regarding the adequacy of the Draft EIR are provided below. Nonetheless, the Draft EIR complies with the requirements of CEQA by providing extensive information on how water would be managed in Chapters 2 and 3 and in Appendices A and B.

Conservation District Comment 4

Comment noted.

Conservation District Comment 5

The information requested by the comment is set forth in Chapters 2 and 3 and Appendix A of the Draft EIR. Chapters 2 and 3 of the Draft EIR, as well as Appendix A, make reasonable projections regarding the use of water that would be diverted by Muni/Western and the environmental impacts of such use, including maximum and average volumes allocated to direct uses, specific spreading grounds, and exchange partners. Unlike a construction project, all details of future operations cannot be completely defined at present; they depend on precipitation, water demands in various areas, the availability of conveyance capacity and similar variables.

Conservation District Comment 6

As noted above in the response to Conservation District Comment 5, the details of proposed exchanges cannot be known at present because they would be dependent on conditions at the time of the exchange with regard to regional water demand, water levels in various southern California reservoirs, anticipated water supplies on the SWP, and the Colorado River. The Draft EIR made reasonable projections as to the likely effects of these exchanges on the environment, in full compliance with CEQA.

Contrary to the comment, exchanges to be undertaken as part of this Project would result in water from the SAR being conveyed to an agency in exchange for an equal amount of water that would be delivered to Muni/Western at a later date.

The Draft EIR demonstrated the potential for exchanges, identified four exchangers with existing facilities that could be used, determined an annual estimate of how much water would go to exchange and to which potential exchanger, and estimated the time it would be returned. See Section 5.3.1.4 and Figures 5.5-4 through 5.5-7 in Draft EIR Appendix A which show the disposition of all water subject to exchange.

The water management strategy used in the Allocation Model is to deliver exchange water into the regional supply system during wet periods when local water is being delivered for local uses, and then return this water to the SBBA at a later time when there is demand for the return water. The exchange water would not replace existing local water, it would be brought in when local direct delivery demands are greater than local divertable supplies or after the Watermaster determines imported water is needed for replenishment. In short, the exchange mechanism means that excess local water can be used in the regional supply system during wet periods and water sent to exchange as part of the Project would be brought back to the SBBA as the non-wet period supply.

The annual amount of delivery to exchange and the potential exchange partners are described in Section 5.5 of Draft EIR Appendix A (also see figures 5.5-4 through 5.5-7 for summary of deliveries to exchanges). The exchanges were assumed to be only from the SWP, since Colorado River water is not delivered to Muni's service area. Thus, a TDS representative of SWP supplies was used in the groundwater modeling for the return of exchange water. The Draft EIR assumed that the exchanges would use existing facilities on an "as available" basis. An MOU (included in Appendix D of this Final EIR) is already in place for Muni to make exchanges with Metropolitan, which would be the primary exchange partner. If other agencies get involved, these agencies and Muni or Western would need to develop appropriate agreements. At this stage, it was demonstrated that there was sufficient existing capacity to make the exchanges possible, and the exchange water only replaces or adds to the supply delivered from the existing imported source, SWP water. The impacts of these exchanges were included in the impact analyses, most notably groundwater hydrology.

Conservation District Comment 7

The Draft EIR assumes that recharge of "new" local water is a higher priority than recharges with imported supplies. The same priority rules are used with and without the Project, "new" water is spread before imported water. The Project analysis demonstrates the ability to move "new" water to recharge areas at the edges of the SBBA and into the regional supply system by exchanges, thus increasing overall flexibility and reliability of supplies. As more water is available for the Project diversion, the modeling indicates that it is easier control the timing of recharge to meet recharge goals listed on Page A-5-1. A comparison of the high diversion scenarios A and C to the smaller diversion scenarios B and D is presented on Figure 5.5-3, showing how the higher diversion rates control and direct more local water. These effects were included in the analysis of the impacts of the Project on the environment.

When the Draft EIR referred to "groundwater management objectives" it intended to refer to the recharge distribution goals described on Page A-5-1 mid-page. Groundwater mounding is typical of recharge projects and can be injurious if it produces locally high groundwater to the extent that liquefaction potential is increased. Maintaining groundwater levels in the Pressure Zone below 50 feet was one of the parameters used in the analysis.

The term "Manually adjusted" was intended to explain the modeling iteration process of checking initial spreading locations to see if there would be any problem with groundwater mounding and rejected recharge associated with conditions in that model run. If there would be such a problem, a new run would be made, adjusting spreading locations until the mounding problems are eliminated. For this reason, the term "Manually adjusted" may be rephrased to "iterative modeling."

Since the date of the Draft EIR, the Conservation District and Muni/Western have entered into a settlement agreement, which is attached as Appendix E of this Final EIR. See also Thematic Responses section 2.6. That settlement agreement, in combination with the Seven Oaks Accord, memoranda of understanding entered into among Muni/Western and the Cities of Riverside and Redlands, and the Integrated Management Program Demonstration Project Agreement creates a process for the management of groundwater in the SBBA that has been agreed to by most of the major water purveyors which overlie or use the San Bernardino Valley.

Conservation District Comment 8

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. Nonetheless, in the interest of providing additional information, Muni/Western respond as follows:

As noted above in the responses to Conservation District Comments 5, 6 and 7, the Draft EIR used sophisticated modeling tools to project the likely impacts of the Project.

This Project does not implicate the concerns addressed in the *Central Delta* case. That decision involved potential service to all areas within the service areas of the Central Valley Project or the State Water Project, i.e., a very large portion of the State of California. Here, water appropriated under Muni/Western's applications will be put to use within those agencies' respective service areas, just as with the typical water right application.

Conservation District Comment 9

This is a statement of legal doctrine with no information suggesting an impact on the environment; therefore, no response is necessary.

Conservation District Comment 10

This is a statement of legal doctrine with no information suggesting an impact on the environment; therefore, no response is necessary.

Conservation District Comment 11

These Projects are not dependent on one another. The Project could be implemented given existing facilities (including some parts of the East Branch Extension which are already completed and operating), pending facilities that have already undergone environmental review (Inland Feeder and Riverside-Corona Feeder) and construction of pipelines proposed by the Project and analyzed within the Draft EIR. Western could increase its pumping to acquire Project water without the Riverside-Corona Feeder.

Conservation District Comment 12

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. See also response to Conservation District Comment 11 and Thematic Responses section 2.5.

Conservation District Comment 13

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. See response to Conservation District Comment 11.

Conservation District Comment 14

The Draft EIR does contain the Conservation District data for water year 1969-70, as shown in Figure 2.4-1; however, it appears the water year 1969-70 was left out of the text description in section 2.4.5 that compares Conservation District spreading before and after water year 1968-69. A check on the data record verifies that Conservation District spread 31,354 acre-feet in water year 1968-69 not in water year 1969-70 as suggested in the comment. Section 2.4.5 has been updated to include discussion of the 1969-70 water year and to include reference to data from water year 1914-15 through 1999-00 (see below).

The active recharge area of 60 acres was chosen to not include the borrow pit because the borrow pit had serious recharge limitations at the time of writing the Draft EIR. The 60 acres corresponds closely to the commenter's 63.49 acres, but the 60 acres was specifically based on the 1995 aerial photos and the USGS 1972 report on Artificial Recharge in the Upper SAR. The source of the commenter's acreage of 63.49 acres is not supported in the comments.

The 448 acre area was only used to estimate an upper limit of diversions by the Conservation District, and in this case, the borrow pit would be used for storage and the spreading basins for recharge. The Mill Creek area of 26 acres was obtained from the Water Rights Application map that was prepared to show areas that Muni/Western could likely direct recharge. This estimate recognizes that Muni/Western diversions cannot be spread on all the Mill Creek spreading area. The reduced acreage was also assumed to be the most generous to existing spreading operations, in that it gives the more acreage to local and existing spreading operations, and less for the Muni/Western diversions.

For these reasons, the estimated acreages used for recharge in the Draft EIR are proper estimates for purposes of environmental analysis.

Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
A-2-20	24-30	Conservation District diversions are measured below the North Fork Box and include the total of diversions made at the Cuttle Weir and waters from the North Fork Box. A histogram showing historical Conservation District diversions of SAR water for the period 1914-15 through ~~1998-99~~ 1999-2000 is presented in Figure 2.4-1. Diversions by the Conservation District have averaged ~~9,870 af~~ 9,847 af annually over the period of record, with median annual diversions being ~~6,145 af~~ 6,024 af. For the period WY ~~1915-16~~ 1914-15 to WY ~~1968-69~~ 1969-70 Conservation District diversions averaged ~~7,337 afy~~ 7,390 afy; for the period after the *Western* Judgment became effective from WY ~~1970-71~~ 1969-70 to 1999-2000 diversions averaged ~~14,896 afy~~ 14,299 afy.
		Replace Appendix A Figure 2.4-1 (see replacement Figure 3-2)
A-2-23	24	Canal for WY 1914-15 through ~~1998-99~~ 1999-2000 are ~~31,824 af~~ 29,101 af.

Conservation District Comment 15

This is a statement of legal doctrine with no information suggesting an impact on the environment; therefore, no response is necessary.

Conservation District Comment 16

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. Nonetheless, Muni/Western provide Thematic Responses section 2.1.1 describing the rationale for the selection and use of the baseline for environmental analysis of the Project.

Conservation District Comment 17

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. Nonetheless, Muni/Western note that Thematic Responses section 2.1.1 discusses the rationale for No Project conditions.

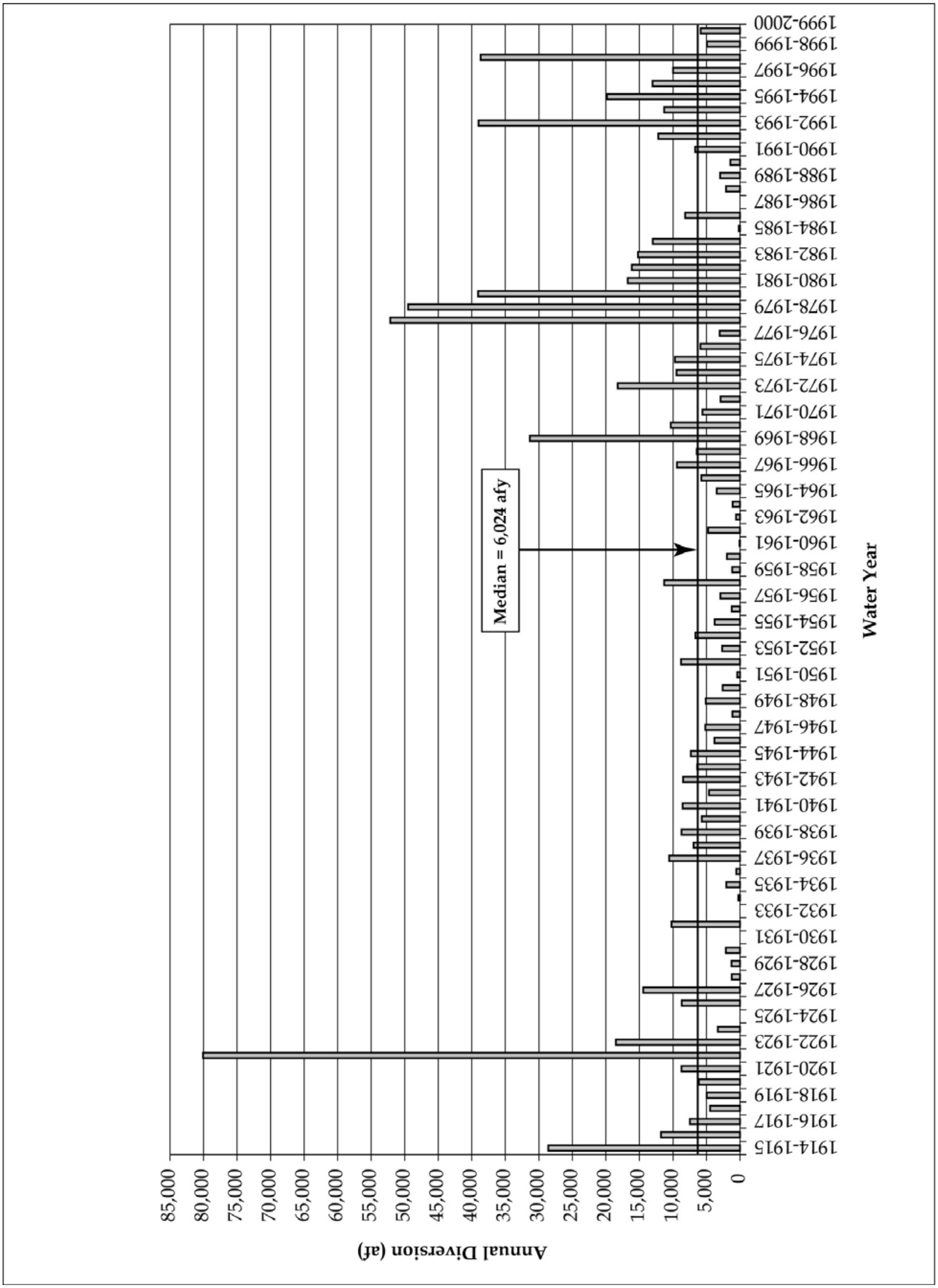

Figure 3-2. San Bernardino Valley Water Conservation District Annual Santa Ana River Diversions, WY 1914-15 through 1999-00
(Formerly Appendix A Figure 2.4-1)

Conservation District Comment 18

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

Conservation District Comment 19

Comment noted.

Conservation District Comment 20

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. Nonetheless, Muni/Western provide Thematic Responses section 2.1.1 describing the rationale for the selection and use of the baseline for environmental analysis of the Project.

Conservation District Comment 21

The No Project was configured based on the most reasonable assumptions about how future water demands could be met. These are described in Appendix A, Chapter 5. The citation to page 5-4 is taken out of context.

Under the terms of the *Western* Judgment, Muni is obligated to replenish directly or may provide direct delivery in-lieu of extractions by non-Plaintiffs when the non-Plaintiffs demand more water than the non-Plaintiff's share of the determined safe yield. In the past Muni has undertaken additional spreading above and beyond what is necessary to maintain the safe yield; this is a prudent water management strategy as SWP water may not be available in all years. Muni may then rely upon these "credits" instead of delivering SWP water in some years to meet the requirements of the Judgment. And, in fact, during some periods groundwater extractions have increased without a corresponding increase in SWP spreading, but this is due to the use of credits. Relying soley on credits to meet the terms of the Judgment over the long-term as groundwater extractions increase flies in the face of sound water management practice as this would result in drawdown of the aquifer. Hence Muni/Western have proposed a more reasonable No Project - as demands for water increase, demands for groundwater will also increase and will require Muni to bring in replenishment water from the SWP to maintain compliance with the *Western* Judgment. Rather than undertaking the expense of both pumping groundwater for use and then incurring the expense of purchasing and spreading SWP water as part of groundwater replenishment, Muni and retail water purveyors within its service area are likely instead to simply directly deliver SWP water. This would maintain the safe yield of the SBBA and be cost effective. Thus the future No Project could be characterized as increased use of SWP water in lieu of increased use of groundwater. As demands increase in the Western area, Western's ability to pump from the SBBA will be limited. In recent years, as reported in the Western Watermaster Reports it is true that increased demand has been met by increased pumping – this is because this demand has either (a) been within the established safe yield of the SBBA or (b) been within credits Muni has established or (c) been compensated for by Muni delivery of replenishment water or (d) been authorized by an excess extractions agreement.

Conservation District Comment 22

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. Nonetheless, Muni/Western provide Thematic Responses section 2.1.1 describing the rationale for the selection and use of the baseline for environmental analysis of the Project.

Conservation District Comment 23

The Draft EIR does not use multiple or inconsistent base periods. For OPMODEL, Allocation Model, and the groundwater model, the base period selected to represent average hydrologic conditions was WY 1961-62 through 1999-2000 (a 39-year period).

Due to data limitations, the base period selected for the non-storm flow portion of River Analysis is shorter, i.e., WY 1966-67 to WY 1999-2000 (a 34-year period).

Page 3.1-27 incorrectly states the OPMODEL base period as WY 1962-63 through WY 2000-01, please see the correction below.

Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
3.1-27	16-17	…conditions of the period WY ~~1962-63~~ 1961-62 through WY ~~2000-01~~ 1999-2000. For more information on the use of this hydrologic base period (WY ~~1962-63~~ 1961-62 to WY ~~2000-01~~ 1999-2000) to make forecasts, see Appendix A.

Conservation District Comment 24

The hydrologic base period was selected in order to represent long-term hydrologic conditions. The *Orange County* and *Western* Judgments affected the use of water but were not themselves estimates of long-term precipitation. Instead, they used a shorter period representative of the then-current state of hydrologic knowledge to fashion a physical solution resolving water right disputes. Thus, there is no need to modify the hydrologic base period to reflect the *Orange County* or *Western* Judgments. Compliance with the *Orange County* and *Western* judgments can affect groundwater levels but has had no direct effect on surface water flows in the Santa Ana River. Compliance could affect the water diverted under Project conditions but only to the extent that additional flow at Riverside Narrows could be required. This is not considered likely given the historical record and the accumulated credits in the account of the upstream parties.

Conservation District Comment 25

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

Conservation District Comment 26

CEQA requires that a public agency describe the data and the logical implications of those data used to analyze the effects of a project on the environment. To that end a lead agency is entitled to rely on standard engineering/hydrologic models and tools.

Here, as described in Appendix A and B of the Draft EIR, the modeling that forms the basis of the environmental analysis began with calibrated and validated dated sets, used standard tools developed and used by the United States Geological Survey and the Corps of Engineers, and compared the results of models and tools against actual data in order to ensure that the model output reflected actual experience. In order to present the information on potential impacts of the Project most clearly and succinctly, the data, modeling assumptions and modeling methodologies were described in Appendices A and B while the results of the model were presented in the main text of Draft EIR.

The models are quite complicated. Muni/Western have described the key modeling assumptions; the comment fails to identify any modeling assumptions that are incorrect or inconsistent with available data. If the Conservation District wishes to identify a modeling assumption that it believes is incorrect (together with the reasoning supporting that belief), Muni/Western will be glad to provide a model run based on any reasonable set of modeling assumptions. It should be noted that these models are not documents incorporated by reference, but instead are tools used to analyze the effects of the Project on the environment.

Conservation District Comment 27

As described in section 2.4.2.1 of the Draft EIR, with construction of Phase I of the Plunge Pool Pipeline diversion capacity would be up to 500 cfs, upon completion of Phase II of the Plunge Pool Pipeline diversion capacity would increase to up to 1,500 cfs. Section 2.4.2.1 correctly describes these as stages of the Project. However, for purposes of analysis, to capture all the possible environmental impacts of the Project, both the 500 cfs stage and 1,500 cfs stage were analyzed. In this way, the Draft EIR analyzed a full range of diversion options.

Conservation District Comment 28

Please see the discussion of the "bookends" approach to environmental analysis in Thematic Responses section 2.1. In brief, the Draft EIR examined the maximum and minimum diversions that could be available for Muni/Western diversion based on the parameters identified in the comment and then analyzed the effects of the Project under each of those "maximum" or "minimum" scenarios.

Conservation District Comment 29

CEQA requires that a lead agency analyze the potential impacts on the environment of its project and the cumulative impacts of its project in combination with all past, present, and reasonably foreseeable future projects. As described in Thematic 2.1, the bookends approach analyzes the full range of effects of the Muni/Western Project. The comment asserts that the maximum effects of the Project "depend not on Muni/Western diversions, but on water use or recharge by other parties." This statement confuses the direct impact analysis of the Project with the analysis of cumulative effects of the Project, and the comment fails to identify any inadequacies in the cumulative impacts analysis. The cumulative impacts analysis included analysis of the maximum diversions by all present and potential water right holders in the SAR watershed. That analysis is fully adequate under CEQA. No further response is necessary.

Conservation District Comment 30

The comment misstates the analysis in the Draft EIR. The use of "bookends" allowed the Draft EIR to capture the extremes of the aggregated diversions and spreading by the senior claimants, Conservation District, and potential water commitments as part of the BA/BO for flood control operations at Seven Oaks Dam.

The four scenarios selected represent the potential maximum and minimum environmental impacts of the proposed Project. The four scenarios do not purport to represent the extremes of Conservation District recharge; rather, they represent the maximum and minimum diversions that could be made by Muni/Western. The comment confuses the average recharge by the Conservation District with the maximum recharge by the Conservation District. The comment accurately states that the average Conservation District recharge ranges from a high of 10,384 to a low of 2,745. However, the analysis of potential impacts of that recharge did not rely upon the average recharge, which is not available in every year, but instead relied upon the maximum recharge by the Conservation District which is 48,152 acre-feet. In this way, the Draft EIR fully analyzed the potential impacts of maximal Conservation District spreading on the environment. As discussed in Draft EIR Sections 3.4.1 and 3.4.2, that spreading has been a substantial cause of liquefaction in the Pressure Zone and the Project would have the beneficial effect of reducing that liquefaction and the consequent risk of damage to downtown San Bernardino during a large earthquake.

Conservation District Comment 31

At the time the Conservation District submitted this comment, there was still an ongoing dispute between the Conservation District and the Senior Water Right Claimants as to whether that latter diverters' pre-1914 water rights would allow them to take water beyond their historical diversions, up to a total of 88 cfs. To fulfill CEQA's informational purpose the Draft EIR analyzed both a diversion of 88 cfs for the Senior Water Right Claimants and limiting those parties to their historical diversions.

Since that time, the Conservation District has entered into a settlement agreement with Muni/Western and, under the terms of that agreement, the Conservation District agreed to: "not object to the diversion of up to the first 88 cfs of natural flow of the SAR by Bear Valley *et al*"

Further, the comment misconstrues the Seven Oaks Accord. That agreement does not purport to establish a water right, but rather states Muni/Western will not object to diversions of up to 88 cfs by the Senior Water Right Claimants.

Conservation District Comment 32

While the Seven Oaks Accord provides for Senior Water Right Claimants to take <u>up to</u> 88 cfs, it does not obligate the Senior Water Right Claimants to divert at this rate. It is reasonable to assume that Senior Water Right Claimants' actual diversion amounts will be based on real-time demands within their respective service areas and so, over time, will result in diversions between the Senior Water Right Claimants' historical diversion quantities and a maximum diversion of 88 cfs.

More generally, as described in Thematic Responses section 2.1, the "bookend" approach to environmental analysis allowed the Draft EIR to evaluate every possible combination of diversions by the major parties with rights (or seeking rights) on the upper SAR. It is notable that there are no comments on the Draft EIR that identify some combination of diversions not analyzed in the Draft EIR. For this reason, a lead or responsible agency can rely on and approve any one of the full range of potential scenarios as part of an evaluation of the Project. The Draft EIR also evaluates the Project's indirect impacts on air quality. See Table 4.2.7 on pp. 4-18 through 4-20.

Conservation District Comment 33

This comment confuses the *Western* Judgment and the Project. Under the terms of the *Western* Judgment, Muni is required to replenish the SBBA in order to maintain the safe yield, which the *Western* Watermaster and the Riverside County Superior Court (which has continuing jurisdiction over the SBBA) have determined to be 232,100 afy. Any effects of the Project can only occur once Muni satisfies its obligations under the *Western* Judgment.

The comment incorrectly identifies 1934 water storage as the "Base Year." The *Western* Judgment was based on conditions known in 1969 and used a base period from 1934 to 1959, which was a generally dry period. Thus, by comparing aquifer storage in 1934 with the safe yield approved by the Court inevitably leads to the irrelevant conclusion that groundwater storage declined from 1934 to 1969. Such a decline in storage was a motivating factor for the *Western* Judgment; it has nothing to do with the Project.

In order to respond to concerns about water levels, Muni/Western have agreed to manage groundwater levels at 25 index wells to ensure that static water levels with the Project are no more than 10 feet below the levels that would have occurred without the Project. See Mitigation Measure PS-12.

Conservation District Comment 34

With regard to the comment's discussion of safe yield, please see the response to Conservation District Comment 33.

The replenishment adjustment was made to make sure the process and accounting of how the *Western* Judgment would have been applied were reflected in the modeling. Under the *Western* Judgment groundwater spreading would have been accounted for as conducted by the Conservation District or would have become a replenishment requirement of Muni's – either way the groundwater safe yield requirements of the *Western* Judgment would be met so the comment is moot. The replenishment adjustment was made to insure that the Project scenarios were compliant with the *Western* Judgment. It is not reasonable to measure the Project against a set of conditions not compliant with *Western* Judgment. Therefore the adjustment does nothing more than assure a reasonable assessment of the Project. The comment takes the mistaken position that the adjustment could have environmental impacts when in fact the adjustment assures a reasonable evaluation of the Project.

Conservation District Comment 35

The analysis of liquefaction hazard is not only based on the 25 index wells but also on results for individual model grid cells (an area of 820 ft by 820 ft). The spatial extent of liquefaction impacts is shown on Figure 3.4-7 of the Draft EIR. As can be seen on this figure, beneficial impacts are largely found in the Pressure Zone while small areas of adverse impact are present along Lytle Creek and near the Devil Canyon and Sweetwater Spreading Grounds. The maximum areal extent of potential liquefaction in the SBBA, both within the Pressure Zone and entire SBBA, is shown on Table 3.4-1 of the Draft EIR.

It should be emphasized that the analysis of liquefaction hazard presented in the Draft EIR is intended to provide the approximate location and extent of potential liquefaction hazard under Project and No Project conditions, using criteria established by the Southern California Earthquake Center and the California Division of Mines and Geology (CDMG, 1997 and SCEC, 1999). It is not meant as a substitute for site-specific evaluations of potential structural damages. Due to the proximity of numerous active faults, the entire San Bernardino Basin Area is an area of high seismic hazard. No part of the basin is more than approximately 3.5 miles from the nearest mapped fault (see Figure 3.4-1), and all areas of the SBBA could potentially experience ground motions sufficient to induce liquefaction (Fialko 2006).

Please also see the discussion of liquefaction in Thematic Responses section 2.3.2.

Conservation District Comment 36

The comment states that "the DEIR appears to evaluate incorrectly the impact of artificial recharge on liquefaction potential at different spreading basins, based on the hydraulic conductivity." The comment then states that "'hydraulic conductivity' causes recharge in the Santa Ana River spreading grounds to have a greater impact on high groundwater than recharge in other basins. This finding is inconsistent, both with other portions of the DEIR, and a published USGS report." In making these statements, the comment misunderstood the analysis contained in the Draft EIR and misunderstood the nature of the US Geological Survey report.

The impact of artificial recharge on liquefaction potential is primarily a function of the depth to groundwater in a given area (CDMG 1997 and SCEC 1999). The depth to groundwater (in response to artificial recharge), in turn, is a function of: (i) the quantity of water spread in a given location (ii) the lithology of the area and, more particularly, the streambed conductance (i.e. permeability and cross sectional area of the riverbed). In the Santa Ana River and Mill Creek areas the streambed conductance is high compared to the streambed conductance in other creeks that overly the SBBA. This is due to the combination of high permeability and large cross sectional areas in Santa Ana River and Mill Creek. The Draft EIR found that the Santa Ana River and Mill Creek contribute almost 50% of the total surface inflow to the SBBA (Draft EIR, p. 3.4-27, Table 3.4-2). By contrast, Waterman, East Twin and City Creeks combined to produce 8% of total surface inflow to the SBBA. Therefore, it is eminently reasonable that the combination of large quantities of recharge and high streambed conductance results in the Santa

Ana River and Mill Creek contributing disproportionately to the high groundwater problem in the Pressure Zone.

This conclusion is confirmed by and consistent with the results of the particle tracking modeling contained in the Draft EIR. A particle tracking model shows the movement over time of an imaginary particle and can therefore be used to estimate the movement of groundwater in the future. The particle tracking results in Appendix B of the Draft EIR (Figures B38, B41, B44, B47) show that there would be movement into the Pressure Zone from several recharge areas upon a repetition of a representative set of hydrological conditions. Those figures also show that particles released in spreading grounds north and east of the Pressure Zone reach the Pressure Zone more quickly than particles released at the Santa Ana River spreading grounds. However, as noted above, liquefaction potential is primarily a function of the total quantity of water recharged, not the speed with which that water moves through an aquifer. A small quantity of water, no matter how quickly it moves, can only increase static groundwater levels by a relatively small amount and, therefore, can only increase liquefaction potential by an amount proportional to the increase in static groundwater levels. A large quantity of water, conversely, no matter how slowly it moves, will create a larger increase in static groundwater levels and so will increase liquefaction potential proportionally.

The comment also stated that the Draft EIR's analysis is inconsistent with the results of the Hardt and Freckleton (1987) model of the SBBA. This statement misunderstands the nature of the Hardt and Freckleton model.

Hardt and Freckleton developed one of the first quantitative models of the SBBA almost 20 years ago. At that time, computer technology was much less capable than today and there was also much less data available on the SBBA. Consequently, Hardt and Freckleton made a number of simplifying assumptions in order to understand effects of artificial recharge in different areas in the Pressure Zone. First, they picked one model node in the middle of the entire 25 square mile Pressure Zone. By comparison, the groundwater model used in the Draft EIR (which was initially also developed by the US Geological Survey) uses approximately 1,000 model cells to describe conditions in the Pressure Zone and as such gives a much more accurate picture of conditions. Second, the Hardt and Freckleton model assumed that static groundwater levels in the entire SBBA are at sea level; in fact, static groundwater levels in the SBBA vary from approximately 900 to 2,600 ft above mean sea level. Third, the simplifying assumptions used by Hardt and Freckleton did not include interaction of surface and groundwater systems (i.e. streams and rivers), groundwater pumping, evapotranspiration, areas of high groundwater, and natural recharge. In other words, the groundwater model used in the Draft EIR takes into account actual conditions in the SBBA such as hydraulic gradients, natural groundwater recharge, surface water/groundwater interactions, evapotranspiration and groundwater pumping.

Put otherwise, the Hardt and Freckleton model presents a very simplified picture of the SBBA developed almost 20 years ago. By contrast, the groundwater model used in the Draft EIR presents a more realistic picture of ground water extraction and recharge that relies on modern computing technology, data collected in the past 20 years, and a number of mathematical algorithms that allow for huge numbers of simultaneous calculations. For instance, to calculate the spatial extent of the area in which groundwater is within 50 feet of the land surface, the Draft EIR's model incorporates actual water levels, pumping, recharge, stream flow interaction and evapotranspiration. The Hardt and Freckleton model ignored these factors and/or used data that are not representative of actual basin conditions.

The Hardt and Freckleton model indicated that Waterman Canyon-East Twin Creek had "the most effect" on a confined area. However, as noted above, "the most effect" was based on only one model node in the Pressure Zone and a number of very simplified assumptions. If the Hardt and Freckleton model had been sophisticated enough to analyze evapotranspiration, stream flow interaction and groundwater pumping, it would have shown that rising groundwater levels in the Pressure Zone were primarily the result of spreading in the SAR and Mill Creek areas rather than spreading in the Waterman Canyon and East Twin Creek areas and so would have confirmed the results presented in the Draft EIR.

In sum, results from the two models do not contradict each other; they reflect different assumptions and levels of information applied to the same conditions.

Conservation District Comment 37

The analysis of the entire San Bernardino Basin Area was intended as a general summary of changes in liquefaction potential. More local analyses, such as that performed in the Pressure Zone, were completed with a correspondingly greater level of detail; river channels were left out of these detailed analyses because they contain no habitable structures that would be damaged by liquefaction.

The river channel areas were colored green in Draft EIR Appendix B, Figures B11, B13, B15, B17, and B19 because these figures illustrated an analysis of high water levels within the entire San Bernardino Basin Area. River channels within the Pressure Zone were included in this analysis, and are accounted for in the summary tables presented with each figure.

Conservation District Comment 38

The Draft EIR evaluated impacts related not only to liquefaction but to groundwater storage, spreading, and quality (see Draft EIR sections 3.2, 3.12, 3.13, and Appendix B).

Contrary to the comment, the Project was not designed to favor reduction in liquefaction at the expense of groundwater supplies. As discussed in Draft EIR Appendix A section 5.3.5, the Muni/Western groundwater model attempts to maximize recharge of the groundwater basin consistent with 1) avoiding high groundwater levels in the Pressure Zone and 2) minimizing adverse plume movement. Though the Project was designed to maximize recharge while avoiding other adverse effects, some adverse effects were identified and analyzed in the Draft EIR. Mitigation measures were identified to address these impacts, including PS-12. In addition the Seven Oaks Accord requires a groundwater management plan, together with specific performance standards acceptable to other water purveyors, as a condition of the withdrawal of protests to the Muni/Western water right applications.

Conservation District Comment 39

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. Nonetheless, Muni/Western note, for the reasons described in the responses to Conservation District Comments 35 to 38 above, that the analysis in the Draft EIR is based on substantial evidence.

Conservation District Comment 40

The analysis of alternatives in the Draft EIR was not unnecessarily truncated and, in fact, fully complies with CEQA. As noted in the comment, an EIR should describe alternatives that would achieve most of the basic objectives of the project while avoiding or lessening the significant impacts of the project. Significant impacts of the Project are focused on the diversion of water from the SAR and impacts from the construction of new facilities. Accordingly, the three alternatives analyzed in the Draft EIR involve approaches to enhance water supply that do not involve surface water diversion from the SAR and minimize the construction of new facilities.

In the case of the New Local Water Supplies alternative, Muni/Western would rely on increased reclamation of various sources of water to increase water supplies. As noted on page 5-13 of the Draft EIR, this alternative would reduce certain impacts on the environment but would increase other impacts. This alternative would not provide a local, high quality supply of water in lieu of imported supplies and so would not meet one of the key objectives of the Project.

In the case of the Enhanced Conservation alternative, Muni/Western would require retail water purveyors (except in Western's retail service area, where Western could impose these requirements directly) to impose stringent conservation measures sufficient to conserve 10 percent more water than at present. As noted on pages 5-15 and 5-16 of the Draft EIR, this alternative would avoid a number of impacts from the Project on the environment. This alternative would not, however, meet the goals of providing a local, high quality supply of water in lieu of imported supplies and would not improve operational flexibility and so would not meet two of the key goals of the Project.

In the case of the New Imported Water Supplies alternative, Muni/Western would either purchase additional State Water Project entitlement or water from seawater desalination. As noted on pages 5-22 and 5-23 of the Draft EIR, this alternative would reduce many of the impacts of the Project but would also increase the severity of other impacts. The alternative would not, however, meet the Project's goal of providing a local, high quality supply of water in lieu of imported supplies and so would not meet one of the key objectives of the Project.

The comment suggests that the Draft EIR should have analyzed the "Use of Existing Facilities" alternative in more detail. That alternative was considered and not carried forward for a full analysis because it would not meet most of the basic objectives of the Project, as noted on page 5-3. The use of the Conservation District's spreading grounds would not allow for increased spreading without creating a severe public safety risk of liquefaction and would not allow for the exchange of water and other operational flexibility during wet years.

Specifically, as noted in the analysis of surface water hydrology in Draft EIR section 3.1 and Appendix A, placing the waters of the SAR to full beneficial use requires the ability to moderate high flows (e.g., flows greater than 500 cfs) that occur in approximate 5 percent of days. Recharging such water in the Conservation District's spreading grounds simply results in "rejected recharge," i.e., recharged water re-emerging on the surface shortly thereafter. Thus, some form of exchange is essential during wet years and so the construction of some major pipeline to convey that water is also key. For these reasons, the use of existing facilities would not achieve the Project's objectives and would, in fact, magnify the current problem with liquefaction in the basin.

The comment suggests an alternative of seasonal storage together with the construction of certain new facilities and groundwater recharge. The comment contends that purpose of this alternative is to avoid the adverse effects associated with the Plunge Pool Pipeline. In fact this alternative would only avoid the impacts of constructing the Plunge Pool Pipeline but would not avoid the impacts from of surface water diversions which would still occur using the Low Flow Connector. As noted above, without such additional conveyance capacity, the SBBA cannot absorb the peak recharge that would be available during very wet years. Thus, adopting this alternative would aggravate the liquefaction problem or result in rejected recharge, representing a futile effort on the part of Muni/Western.

The comment suggests that Muni/Western explore "alternatives that could meet water supply demand without resorting to the Project's facilities-intensive, export-dominated approach." However, as noted above, in order to place the waters of the SAR to full beneficial use, Muni/Western (or any other diverter) need to develop a plan to take advantage of high flows and low flows in other periods. Because in many cases, such large quantities of water cannot be recharged effectively and safely, the only feasible alternative to the use of SAR water is based on a plan that exchanges much of the water for later return of an equal amount of water from other sources. (It is important to note that the Project will exchange SAR water for State Water Project water; the Project will not simply export SAR water.) Other alternatives – which were fully analyzed in the Draft EIR – do not involve the use of SAR water and so do not allow the region to take advantage of one its most important natural resources and fail to meet one of the Project objectives. For these reasons, the Draft EIR fully complies with CEQA and does not need to be recirculated.

Conservation District Comment 41

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

Conservation District Comment 42

The use of the Seven Oaks Accord as a mitigation measure is fully adequate under CEQA. The Accord requires a groundwater management plan, together with specific performance standards acceptable to other water purveyors, as a condition of the withdrawal of protests to the Muni/Western water right applications. Those standards will, therefore, be in place prior to any diversions by Muni/Western and thus prior to any physical effect on the environment from the Project. The fact that Seven Oaks Accord does not include the City of Riverside, the City of San Bernardino and the Conservation District is irrelevant given the performance standard set forth in MM PS-12. The only effect of excluding these three parties would be to make achievement of the performance standard more difficult; it does not call the legality of that standard into question. Lastly, even if there were a question about the enforceability of the Seven Oaks Accord (which Muni/Western dispute), there is no question that MM PS-12, which operates independently of the Seven Oaks Accord, is legally enforceable.

Conservation District Comment 43

The comment misunderstands the modeling process. As discussed in Draft EIR Appendix A section 5.3.5, the Muni/Western groundwater model attempts to maximize recharge of the groundwater basin consistent with 1) avoiding high groundwater levels in the Pressure Zone and 2), minimizing adverse plume movement. To the extent there was a policy decision on behalf of Muni/Western to assist in the remediation of contaminant plumes and reduce the risk of liquefaction of high groundwater, contrary to the implication of the comment, water supplies available to purveyors in San Bernardino basin are held constant and/or improved. There were no "hidden" water management plans or objectives.

Conservation District Comment 44

Please see Mitigation Measure PS-12 on page 3.13-30 in the Draft EIR.

Conservation District Comment 45

The conditions described in the Draft EIR have occurred in the absence of any implementation of the Project. Thus, the mitigation for such impacts on the environment lies with the United States Army Corps of Engineers and the Local Sponsors, please see Draft EIR page 3.1-35. The Operations and Control Manual for Seven Oaks Dam, Part II, Chapter 4, section 4.3.3 describes the water quality monitoring that is to be undertaken by the Local Sponsors and outlines potential actions that can be taken in the event of anaerobic conditions. The Army Corps of Engineers and Local Sponsors, with the cooperation of Muni/Western and the Conservation District are currently participating in a special study that will identify the cause(s) and solution(s) to this problem. Muni/Western are entitled to assume that other public agencies will carry out their obligations under the National Environmental Policy Act and so mitigate for this existing impact on the environment. This is not deferral of mitigation or relying other agencies to mitigate the effects of the Project; instead, Muni/Western are cooperating with other agencies (including the Conservation District) to resolve a matter of common concern. Muni/Western's voluntary participation in such a program that will reduce the effects of poor water quality from an existing project undertaken by other public agencies to a less than significant level is fully consistent with CEQA.

Conservation District Comment 46

The impact described by PS-7, disruption of supplies to the Conservation District Canal for up to 17 months, relates to construction of both the Phase I pipeline *and* associated intake structure. The text of Impact PS-7 has been modified to make this more clear, see below.

Muni/Western could supply water to Conservation District spreading facilities using pipelines of the Santa Ana River-Mill Creek Cooperative Water Project Agreement (of which the Conservation District is a signatory). As an example, Muni could supply substitute State Water Project water to the Conservation District using: (1) the Foothill Pipeline southeast to the Santa Ana Low Turnout (delivery to the Conservation District Santa Ana River Spreading Grounds); or (2) the Foothill Pipeline southeast, then further southeast in the SARC Pipeline, then east in the Morton Canyon Connector, and finally south in the Greenspot Pipeline to the Mill Creek Spreading Turnout. Also, it would be possible for Muni to deliver SAR water from the SCE System (when not being diverted by Senior Water Rights Claimants) to the Greenspot Pipeline to the Mill Creek Spreading Turnout. Details on all these pipelines are provided in Draft EIR Appendix A, section 5.

The schedule and location for delivery of substitute water supplies would have to be mutually agreed upon by Muni, Western, and the Conservation District. Indeed, pursuant to the settlement agreement among Muni/Western and the Conservation District, there already is an agreement among the parties allowing Muni/Western to use the Conservation District's facilities on a "space-available" basis. In this way, there would be no adverse effects on the Conservation District. Further, because the water would be either from the State Water Project or SAR, both sources that are currently spread in the San Bernardino Basin Area, water quality is not expected to be an issue. The volume of substitute water would be roughly proportional to supplies that otherwise would have been available to the Conservation District in the absence of Project construction. For these reasons, Muni/Western believe that the Project will not have an adverse effect on the Conservation District's operations.

Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
3.13-15	20-21	**Impact PS-7.** Construction of Phase I of the Plunge Pool Pipeline <u>and associated intake structure</u> could result in disruption of water supplies conveyed by the Conservation District Canal, a significant impact.

Conservation District Comment 47

The Draft EIR in fact did evaluate the potential for adverse plume movement with implementation of Project scenarios, please see section 3.12.2.4. To this analysis, Muni/Western have added MM HAZ-5, which states that Muni/Western will make an alternative water supply available to parties affected by contaminated wells or provide treatment for affected wells, to the extent and for the duration that the contamination is caused by Project operations. Thematic Responses section 2.3.2, provides further detail on the potential impacts of the Project on groundwater contamination. In combination with MM HAZ-5, Muni/Western believe that they have substantially lessened the Project's impacts on contaminant plumes to the greatest extent feasible.

It should also be noted that, under the terms of the settlement agreement among Muni/Western and Conservation District, Muni/Western have agreed that the annual groundwater management plan will be developed to "maximize the quantity of water spread each year at the Santa Ana River spreading grounds" consistent with avoiding liquefaction in the Pressure Zone and other adverse impacts on the environment. Thus, the Project effectively incorporates the mitigation measure proposed in the comment.

Conservation District Comment 48

Please see sections 3.2 and 3.12 of the Draft EIR for discussion about how water quality standards are anticipated to be exceeded in the future under the No Project scenario. Please see Thematic Responses section 2.3.2 for a detailed discussion of the Project's impacts on groundwater. With the addition of MM HAZ-5, Muni/Western have substantially lessened the effects of the Project on the environment. Please also see the response to Conservation District Comment 47. The mitigation measures incorporated in the Final EIR are enforceable as part of the Mitigation Monitoring and Reporting Plan. The design of the mitigation measures does not require Muni/Western to maintain water quality above any specific level but does require Muni/Western to compensate (by means of an alternate water supply or treatment for affected wells) for any such effects.

Conservation District Comment 49

The discussion of impacts BIO-3 and BIO-4 in the Draft EIR fully complies with CEQA. In the case of BIO-3, which can be found at pages 3.3-43 to 3.3-46 of the Draft EIR, Muni/Western conclude that the Project, without mitigation, would have a significant impact on the environment. Even with the addition of MM BIO-1 (which limits construction disturbance) and MM BIO-2 (which calls for the salvage of topsoil and revegetation), the Draft EIR states that there would be a significant impact on the environment. It is only with the addition of MM BIO-7 and, if necessary, MM BIO-8, that the Draft EIR finds that the Project will have a less than significant effect on the environment. These last two mitigation measures call for the realignment of the Plunge Pool Pipeline to the edge of sensitive habitat to avoid impacts and then compensation for any residual impacts. Compensation for impacts by preservation of habitat is accepted by regulatory agencies as adequate mitigation for loss or disturbance of habitat. Thus, it is deemed to be an effective type of mitigation. In this way, the discussion of Impact BIO-3 fully discloses the analytic path traveled by the Lead Agencies to reach the conclusion of a less than significant impact. The discussion of BIO-4 at pages 3.3-46 to 3.3-47 of the Draft EIR is to the same effect.

Conservation District Comment 50

Please see Thematic Responses section 2.4, which describes the RAFSS Successional Adaptive Management Process. That discussion adopts a performance standard in revised MM BIO-10 requiring the restoration of 10 acres of intermediate-to late stage RAFSS habitat to the early or intermediate stage RAFSS habitat during the first twenty years of Project implementation. The adoption of such a performance standard is fully consistent with CEQA.

Conservation District Comment 51

The comment incorrectly construes conclusions in the USACE 1997 Feasibility Study. That study concluded that NED alternative would be a conservation pool of 4,000 af at Seven Oaks Dam. The Feasibility Study also considered conservation pools up to 50,000 af. Under the assumptions used in the Feasibility Study water conservation at Seven Oaks Dam would increase yield (e.g., augment supplies) by 4,000 af. As shown in Tables 3.0-3 the Project would increase the available SAR supplies by up to 27,000 af per year.

Conservation District Comment 52

Comment noted. We assume the commenter meant Table 2-1 on page 2-9 and that table has been revised accordingly, see below. Muni/Western note that, by means of the settlement agreement with the Conservation District, Muni/Western have obtained the necessary approvals for the use of the Conservation District's facilities.

Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
2-9	3	*Add the following to Table 2-1* <u>San Bernardino Valley Water Conservation District - MOU or easement for modification of Conservation District facilities.</u>

Conservation District Comment 53

CEQA requires that a cumulative impact analysis include the effects of all past, present, and reasonably foreseeable future projects. Thus it is irrelevant whether the effects of the Conservation District's diversions are past effects (as contended by the Conservation District) or future effects (as described in the Draft EIR); in either case, an adequate environmental impact analysis must include the full amounts of such diversions. The Draft EIR contained such an analysis and no further evaluation of these impacts is required.

Conservation District Comment 54

Comment noted. This is not a CEQA issue. If Muni/Western determine that a gage would be useful and feasible in order to coordinate real-time operations of the SAR in a manner that protects senior water rights as contemplated in the Seven Oaks Accord and the settlement agreement with the Conservation District, Muni/Western will install such a gage.

Conservation District Comment 55

NPDES permits and associated SWPPPs are required by the EPA for construction sites in excess of one acre, in accordance with NPDES Phase II stormwater regulations. Preparation of a SWPPP, including an erosion control plan, is a standard procedure for construction sites. Under CEQA, Article 9, Section 15126.4(B), mitigation measures may specify performance standards that would mitigate the significant effect of a project. A standard erosion control measure is considered a plausible mitigation measure if it can demonstrate that the approving agency possesses "meaningful information reasonably justifying an expectation of compliance" There is no uncertainty associated with the completion of the SWPPP (i.e., the outcome is certain), therefore, under CEQA, this is not considered deferred mitigation and no additional detail is required.

Conservation District Comment 56

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. Detailed responses to the specific comments addressing the modification of the Project description, revision of the baseline for analysis, the need for additional analysis of impacts on the environment, the request for modeling programs, and the inclusion of additional alternatives and mitigation measures are found in responses to previous Conservation District comments.

Conservation District Comment 57

Thank you for your comments.

SOUTHERN CALIFORNIA
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November 9, 2004

San Bernardino Valley Municipal Water District

Mr. Robert L. Reiter
General Manager and Chief Engineer
1350 South E. Street
San Bernardino, CA 92408-2724

Western Municipal Water District of Riverside County

Mr. John V. Rossi
General Manager
450 Alessandro Blvd.
Riverside, CA 92508-2449

RE: Comments on the SCAG No. I20040734 Santa Ana River Water Right Applications for Supplemental Water Supply

Dear Mr. Reiter and Mr. Rossi:

Thank you for submitting the **Santa Ana River Water Right Applications for Supplemental Water Supply** to SCAG for review and comment. As areawide clearinghouse for regionally significant projects, SCAG reviews the consistency of local plans, projects, and programs with regional plans. This activity is based on SCAG's responsibilities as a regional planning organization pursuant to state and federal laws and regulations. Guidance provided by these reviews is intended to assist local agencies and project sponsors to take actions that contribute to the attainment of regional goals and policies.

SCAG staff has reviewed your response to our comments, which were outlined in our August 21, 2002 letter. SCAG's comments were considered, and we appreciate your efforts. Therefore, we have no further comments. 1

The project title and SCAG Clearinghouse number should be used in all correspondence with SCAG concerning the above referenced document and project. If you have any questions, please contact me at (213) 236-1857. Thank you.

Sincerely,

Jeffrey M. Smith

JEFFREY M. SMITH, AICP
Senior Regional Planner
Intergovernmental Review

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SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS (SCAG)

SCAG Comment 1

Thank you for your comment.

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CENTER FOR BIOLOGICAL DIVERSITY

CALIFORNIA AND PACIFIC OFFICE

protecting and restoring natural ecosystems and imperiled species through science, education, policy, and environmental law

VIA FACSIMILE AND U.S. MAIL

December 6, 2004

Mr. Robert L. Reiter
General Manager and Chief Engineer
Post Office Box 5906
San Bernardino, CA 92412-5906
Facsimile: (909) 387-9247

Mr. John V. Rossi
General Manager.
Post Office Box 5286
Riverside, CA 92517-5286
Facsimile: (951) 780-3837

Re: Draft EIR for the Santa Ana River Water Right Applications for Supplemental Water Supply, State Clearinghouse Number 2002071062

Dear Mr. Reiter and Mr. Rossi:

The Center for Biological Diversity ("Center") hereby requests an extension of the official public comment period for the Draft EIR for the Santa Ana River Water Right Applications for Supplemental Water Supply, State Clearinghouse Number 2002071062 ("the project"). The Center is a non-profit environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 11,000 members throughout California and the western United States, including in the area where the project is located. 1

The Center is currently reviewing and commenting upon the lengthy draft EIR and appendices, and will submit our written comments as soon as possible. Due to the great public importance of this project and its impacts to imperiled species and the environment, and due to the complexity of the issues, we hope that your agencies will grant a short 30-day extension to the official public review period. An extension is in the public interest because full consideration of our comments in the Final EIR should assist your agencies in their review of this highly significant proposal.

I would greatly appreciate your response to this request. I can be reached by telephone at (951) 659-6053 x. 302, by facsimile at (951) 659-2484, and by mail at Center for Biological Diversity, P.O.

Kassie Siegel, Staff Attorney
PO Box493, Idyllwild, CA 92549
TEL.: (951) 659-6053 x. 302 • FAX: (951) 659-2484
Email: ksiegel@biologicaldiversity.org • www.biologicaldiversity.org

Box 493, Idyllwild, CA 92549, Attn: Kassie Siegel. Thank you very much for your consideration of this request for an extension.

Sincerely,

Kassie Siegel
Center for Biological Diversity

CENTER FOR BIOLOGICAL DIVERSITY 1 (CBD1)

CBD1 Comment 1

The Draft EIR was distributed for public review on October 15, 2004, with the review period scheduled to close on December 12, 2004. On November 19, 2004 Muni/Western provided notice that the public review period for the Draft EIR would be extended to December 20, 2004. On December 17, 2004, Muni/Western granted a second extension to the public review period, through January 14, 2005. In total the public review period was 13 weeks (91 days).

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CENTER FOR BIOLOGICAL DIVERSITY

CALIFORNIA AND PACIFIC OFFICE

protecting and restoring natural ecosystems and imperiled species through science, education, policy, and environmental law

VIA U.S. MAIL

January 11, 2005

Robert L. Reiter
General Manager and Chief Engineer
San Bernardino Valley Municipal Water District
1350 South "E" Street
POB 5906
San Bernardino, CA 92412-5906
(909) 387-9200

Re: Draft EIR for the Santa Ana River Water Right Applications for Supplemental Water Supply

Dear Mr. Reiter:

These comments are submitted on behalf of the Center for Biological Diversity ("Center") for the Draft Environmental Impact Report ("EIR") for the Santa Ana River Water Right Applications for Supplemental Water Supply ("the project"). The Center is a non-profit environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 11,000 members throughout California and the western United States, including Riverside and San Bernardino Counties. As described below, the Center objects to approval of the project based on the inadequacy of the current environmental documents. 1

The Draft Environmental Impact Report has been prepared pursuant to the California Environmental Quality Act ("CEQA") to evaluate the potential environmental impacts associated with water right applications filed by the San Bernardino Valley Municipal Water District ("Muni") and Western Municipal Water District of Riverside County ("Western"). Muni/Western have jointly filed two applications with the State Water Resources Control Board ("SWRCB") to appropriate 200,000 acre feet per year ("afy") of water from the Santa Ana River.

In 1989 (WR 89-25) and again in 1998 (WR 98-08), the SWRCB issued a declaration that the Santa Ana River was considered fully appropriated year-round. In 1989, the state Water Code prevented the SWRCB from accepting any new applications to appropriate water from watercourses considered fully appropriated. Muni/Western subsequently submitted a petition to revise the Declaration of Fully Appropriated Stream Status for the Santa Ana River ("SAR"), together with an application to appropriate 100,000 afy from the SAR. Muni/Western provided evidence which

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represented that flows in the SAR watershed had increased due increased runoff and releases of treated wastewater resulting from urbanization, and increased availability of water during wet years due to the subsequent operation of the Seven Oaks Dam.

2 The project also includes the following construction related activities: modification of the intake structure and access roads at Seven Oaks Dam; creation of the Plunge Pool Pipeline, Low Flow Connector Pipeline, and Morton Canyon Connector II Pipeline; modification of the Devil Canyon area, including State Water Project Afterbays, to accommodate the Devil Canyon By-Pass Pipeline; and creation of the Lower Lytle Creek Pipeline and Cactus Basin Pipeline.

3 The direct and indirect effects of the project will impact a host of rare, sensitive, threatened and
endangered species, but not limited to, the following: Marsh Sandwort *(Arenaria paludicola),*
Gambel's Water Cress *(Rorippa gambelii),* Stephen's Kangaroo Rat (*Dipodomys stephensi),* Arroyo
Toad (*Bufo californicus),* California Red-Legged Frog (*Rana aurora draytonii),* Western Yellow-billed
Cuckoo *(Coccyzus americanus occidentalis),* Southwestern Willow Flycatcher (*Empidonax trailii*
extimus), Coastal California Gnatcatcher (*Polioptila californica californica),* Least Bell's Vireo (*Vireo*
bellii pusillus), Santa Ana Sucker *(Catostomus santaanae),* The Santa Ana River Woolly-Star
4 (*Eriastrum densifolium* ssp. *sanctorum),* Slender-Horned Spineflower (*Dodecahema leptoceras),* San
Bernardino Kangaroo Rat *(Dipodomys merriami parvus),* Nevin's barberry (*Berberis nevinii),* SAR
woolly star (*Eriastrum densifolium ssp. sanctorum),* Swainson's hawk *(Buteo swainsoni),* Plummer's
mariposa Lily (*Calochortus plummerae),* Robinson's peppergrass *(Lepidium virginicum* var.
robinsonii), Arroyo Chub (*Gilia orcutti),* Santa Ana speckled dace *(Rhinichthys osculus* ssp. 3),
Western spadefoot toad (*Scaphiopus hammondii),* Southwestern pond turtle *(Clemmys marmorata*
pallida), San Diego horned lizard *(Phrynosoma coronatum blainvillei),* Sharp-shinned hawk
(Accipiter striatus), Burrowing owl *(Athene cunicularia*), Coastal cactus wren *(Campylorhynchus*
brunneicapillus couesi), and California thrasher *(Toxostoma redivivum).* Draft EIR Table 3.3-2, 3.3-3,
E5-1, E5-2.

5 Many localities, agencies and organizations, including the Center, commented on the project when the Notice of Preparation was released. The Center herein incorporates by reference comments made by those organizations listed in the Draft EIR, Appendix D at 2-3, 54-101. The comments referenced herein include, but are not limited to, those referenced in the list in Exhibit 1, App. D, NOP comment list and references.

6 I. THE DRAFT EIR'S ANALYSIS OF IMPACTS TO BIOLOGICAL RESOURCES IS INADEQUATE

The Biological Resources section of the Draft EIR fails to adequately disclose, analyze, minimize, and mitigate impacts to the biological resources of the project site. While the Draft EIR discloses that the endangered threatened Santa Ana sucker (*Catostomus santaanae*, "sucker"), as well as a host of other state-listed and sensitive species, will be impacted by the project, the Draft EIR fails to adequately analyze the significance of the project to these species.

7 The project represents three of the four main threats contributing to the decline of the sucker: 1) direct loss of suckers due to water divesions; 2) loss of connectivity; 3) destruction and degredation of habitat through urbanization, channelization and other flood control structures, water diversion and

withdrawl, reductions in water quality; and 4) competition and predation from introduced non native 7
competitors. 65 Fed. Reg. 19696 (April 12, 2000). As a threat contributing to the decline of the sucker population the project must be analyzed critically within the DEIR.

Contrary to CEQA guidelines and relevant case law, the Draft EIR erroneously concludes that 8
the impacts the Santa Ana sucker will be less than significant. The project will have significant impacts on sucker habitat. The Legislature and the Secretary of Resources have determined that certain kinds of impacts are necessarily significant. "Mandatory findings of significance" are required for the following circumstances:

> The project has the <u>potential</u> to… 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, [or] reduce the numbers or restrict the range of an endangered, rare or threatened species.

CEQA Guidelines § 15065; see also Pub. Resources Code § 21083 [emphasis added]. Additionally, the State CEQA Guidelines Appendix G defines an impact significant if it would "interfere substantially with the movement of any native resident or migratory fish or wildlife species."

Section 15065 applies "to the contents of an EIR once it is determined an EIR must be 9
prepared." *Los Angeles Unified School Dist. V. City of Los Angeles* 58 Cal.App.4th 1019, 1024, fn.6. The mandatory findings of significance control "the identification of effects to be analyzed in depth in the EIR, the requirement to make detailed findings on the feasibility of alternatives and mitigation measures to reduce or avoid the significant effects, and when found to be feasible, the making of changes in the project to lessen the adverse environmental impacts." Discussion following CEQA Guidelines § 15065. The drafters of the guidelines realized that this section was necessary to assure agencies follow the concerns of the Legislature to determine whether effects are significant. <u>Id</u>. 10
Courts have determined that impacts to aquatic habitat for rare flora and fauna are significant under section 15065 and require full evaluation and recirculation prior to approval. *Mira Monte Homeowners Association v. Ventura County* 165 Cal.App.3d 357, 363-364.

The project has the potential to reduce the numbers or restrict the range of an endangered 11
species. The Project would decrease flows in the Santa Ana River on non-storm days between Seven Oaks Dam and Riverside Narrows, and no feasible mitigation measures were identified to alleviate that impact. Draft EIR at S-3. Sucker habitat is present above the Riverside narrows and would be impacted by the reduction in flows. Draft EIR 3.3-63. There is no analysis of how the impacts will affect aquatic habitat for the species. The Draft EIR simply concludes that the impact is less than significant. This analysis is contrary to federal agency opinions on the importance of flow for aquatic species. For example, the United States Fish and Wildlife Service emphasizes that the temporary 12
reduction of flows can significantly reduce the amount of habitat for suckers and could potentially strand them in dewatered sections of the stream. Exhibit 2, *Biological Opinion for the Prado Dam Water Conservation and Supply Study, Orange, Riverside, and San Bernardino Counties, California*, at 13. The reduction and quantification of cfs is not a valid indicator, by itself, of the effects on sucker numbers and habitat. In order for the analysis to be valid the Draft EIR must assess how the reduction in flow will affect the minimum viable population and the amount of occupied habitat. Studies on 13
sucker reintroduction have shown that the establishment of multiple independent, viable populations or subpopulations of a species is an effective buffer against species extinction and is a frequently used measure of species recovery. Exhibit 3, *Results of the Year 3 Implementation of the Santa Ana Sucker*

13 *Conservation Program For the Santa Ana River, Final Report*, at 4. The Draft EIR must analyze the impacts of reduced flows on the minimum viable population and habitat in order to determine the level of significance.

14 Further, the Draft EIR concludes that the loss of critical habitat for a federally endangered species will be less than significant. Draft EIR at Table 3.3-2 (page 5 of 5). Nevertheless the Draft EIR dismisses these impacts as insignificant. *Id.* Regardless of the adequacy of these conclusions, this analysis is invalid as a matter of law. The impacts must be analyzed in depth, as a significant impact, because of their potential to reduce the numbers and restrict the range of the sucker.

15 The Draft EIR does not discuss the impacts on potential movement of the Santa Ana sucker upstream to reproduce in critical habitat within the project area. The Santa Ana sucker belongs to the family Castostimidae. Other species in the Castostimidae family are known to undertake spawning migrations. Tyrus and Karp 1990. Although it is not known whether the Santa Ana sucker follows similar reproductive behavior, Swift reported that Santa Ana sucker juveniles detected downstream of River Road in the Santa Ana River were likely the progeny of adults reproducing upstream. Swift 2000. These suckers may need to return upstream to spawn. The Draft EIR does not analyze the impacts to sucker reproduction or fecundity due to the decreased flows in the Santa Ana.

16 The Draft EIR also fails to address the impacts to other rare aquatic species. The arroyo chub (*Gila orcutti*) and Santa Ana speckled dace (*Rhinichthys osculus* ssp.) are both state and federal species of special concern that exist within the project area between Seven Oaks Dam and the Prado Flood Control Basin. Draft EIR at 3.3-5, Table E5-2 (page 2 of 7). The Draft EIR admits these species exist within the project area, yet neglects to analyze the impacts to these species. As rare species, per CEQA Guidelines § 15065, the project's impacts to these species must be addressed.

17 The project will negatively impact habitat and populations of the Arroyo Chub. The primary water quality threat to the arroyo chub in the Santa Ana River in western Riverside County is the long-term security of base flows within the river downstream of the Rapid Infiltration and Extraction Plant (RIX) outlet. Exhibit 4, *Final Multiple Species Habitat Conservation Plan. Volume II-B* F-13. The flow within the river is subject to frequent drops downstream of the Rialto Drain and the RIX plant, which are the origination sources of flow for the river below the Seven Oaks Dam in San Bernardino County. Id. Swift indicates that every few weeks the flow drops by more than 50 percent for a few hours or more during maintenance and Clean Water Act (CWA) requirements, dramatically reducing the shallow water habitats favored by native fishes downstream to Riverside Avenue and potentially limiting the number of fish that may inhabit the upstream areas of the river. Swift 2001. A portion of these flows may be subject to sale in the future, potentially reducing the flow volume available to the
18 arroyo chub in the river. Exhibit 4. In addition, water pollution from non-point sources including heavy metals, high-levels of bacteria, and low levels of protozoa and viruses has been identified as a potential threat. Egan *et. al.* 1992. These factors are not mentioned, analyzed or addressed in the Draft EIR. The project's impacts on a State Species of Special Concern must be analyzed for the EIR to be valid.

19 The project's threats on the Santa Ana speckled dace were not addressed or analyzed. The Santa Ana speckled dace occupies only remnants of its native range because of water diversions, urbanization of watersheds, introduction of nonnative species, and a myriad other factors associated

with expanding human populations in the Los Angeles region. Exhibit 5, *Fish Species of Special Concern in California, Santa Ana Speckled Dace*. It is considered to be one of the rarest native fishes in coastal southern California. Id. The remaining populations of Santa Ana speckled dace in the Los Angeles River were extirpated during the past ten years and dace in the Santa Ana River system are in imminent danger of extinction. Id. In order to maintain the remaining dace population the California Department of Fish and Game recommends that immediate steps should then be taken to protect the remaining habitats in all the San Gabriel and Santa Ana drainages, including measures to secure enough water for the fish to live in. Id. The appropriation of water from the Santa Ana river will reduce flows between the Seven Oaks dam and the Riverside narrows. The elimination of water from speckled dace habitat must be analyzed in the Draft EIR. 19 20

The Draft EIR states negative surveys for rare, sensitive, threatened and endangered species in viable habitat constitute a less than significant impact because the species do not exist on the project site. Draft EIR 3.3-21, 3.3-22, 3.3-24, 3.3-26. This is simply incorrect. Negative surveys do not mean that the species does not utilize the habitat on the project site; it simply means that the species was not present at the time of the survey. The project will eliminate suitable habitat for sensitive species and contribute to continued habitat fragmentation, and destruction. The elimination of marginal or immature habitat because it presently does not meet the ideal habitat for sensitive species will prevent the species from ever using that habitat in the future during dispersal and/or colonization. These impacts must be addressed and mitigated. 21

Impacts to sensitive species and their habitat should be fully analyzed and mitigated. Species are categorized as sensitive because of their potential to become threatened or endangered in the future. Impacts from human development, urbanization, habitat alternation and fragmentation, are some of the biggest threats to fish and wildlife. As discussed above CEQA requires a mandatory finding of significance if a project has the potential to reduce the numbers or restrict the range of an endangered, rare or threatened species. CEQA Guidelines § 15065. Direct mortality of sensitive species is a significant impact and must be analyzed in depth as a significant impact. The Draft EIR repeatedly claims that impacts to sensitive species resulting from habitat loss, disturbance and direct mortality are less than significant. Draft EIR 3.3-48, 3.3-50, 3.3-51. In order to determine the significance of the impact to sensitive species, the EIR should disclose a quantified analysis of impacts to species populations resulting from project activities. Additionally, the results of numerous individual projects eliminating small habitat fragments are cumulatively considerable. The project cannot rationalize impacts to sensitive species and their habitat as insignificant without mitigation. The Draft EIR must mitigate the impacts of habitat destruction. 22 23

In general, the Draft EIR fails to disclose or minimizes the impacts to the endangered, threatened, and sensitive species that will be impacted by the project. Having done so, the Draft EIR then fails to propose adequate avoidance or mitigation measures. 24

II. THE DRAFT EIR'S ANALYSIS OF GROWTH INDUCING AND GROWTH RELATED IMPACTS IS INADEQUATE

CEQA requires complete analysis of a project's growth inducing and cumulative impacts. The Draft EIR's treatment of these vitally important topics is inadequate. The Draft EIR admits that the 25

25 project will remove an obstacle to population growth by providing additional water supplies for the area. Draft EIR at 4-2. This availability of additional water will inevitably facilitate and fuel further sprawl style development with all of its attendant environmental impacts. These impacts must be disclosed, quantified, avoided where possible, and mitigated.

26 The Draft EIR repeatedly refers to the County of San Bernardino General Plan Final EIR and the County of Riverside General Plan Draft EIR instead of fully analyzing the growth related impacts resulting from the project. The lead agencies rely on CEQA Guidelines Section 15091(a)(2) "to find that mitigation for growth related impacts is the responsibility of other public agencies, which either have adopted or should adopt such mitigation during the course of project-specific CEQA analysis." Draft EIR at 4-2. Unfortunately, the lead agencies interpretation is contrary to the legislative intent of
27 the governing guidelines. The lead agencies combined with the local municipalities share the burden of addressing growth related impacts. The guidelines clearly state the legislature intended CEQA to address "the problem of agencies deferring to each other, with the result that no agency deals with the problem." Discussion following CEQA Guidelines § 15091. Shifting the responsibility for analysis and mitigation of environmental impacts is contrary to the purpose of CEQA that "*all* agencies... which are found to affect the quality of the environment, *shall* regulate such activities so that major consideration is given to preventing environmental damage, while providing a decent home and satisfying living environment for every Californian." Pub. Resources Code § 21000 [emphasis added].

28 The lead agencies' reliance on the EIRs drafted by San Bernardino and Riverside counties compounds the problem because the counties' underlying EIRs declare significant unavoidable impacts, i.e., impacts unable to be mitigated to a less than significant level, are identified for the following resources: Air Quality; Agricultural Resources; Biological Resources; Cultural and Paleontological Resources; Geology, Soils and Mineral Resources; Hydrology and Water Quality; Noise; and Public Services, Utilities and Transportation. The EIR must identify potential mitigation measures to reduce the project's impacts.

29 The problem of shifting mitigation responsibilities is exemplified by Muni's failure to adopt adequate water conservation measures. To date Muni has not implemented conservation measures comparable to Western. Draft EIR at 5-14. Muni fails to address conservation related alternatives that would result in less adverse impacts by shifting the responsibility to localities that have demonstrated they are unwilling to presently address the issue. Id. Shifting the responsibility of addressing conservation related activities to the localities perpetuates "the problem of agencies deferring to each
30 other, with the result that no agency deals with the problem." Yet alternative 2 considers conservation related activities representing that the agency itself can and has considered conservation related concerns. Muni/Western cannot simultaneously analyze the viability of conservation related alternatives, and dismiss those alternatives as beyond their jurisdiction. Mitigation in the form of contractual requirements for conservation related activities could be included in agreements between lead agencies and the localities they service, in consideration for the services that Muni/Western provide.

31 In addition, the Draft EIR fails to adopt binding mitigation for the growth related impacts resulting from the project as required by CEQA section 21081. CEQA requires the adoption of binding mitigation in order to reduce a project's environmental impacts. "Passing references to the mitigation measures are insufficient to constitute a finding," because nothing binds the agency "to

follow these measures." *Citizens for Quality Growth v. Mount Shasta* 198 Cal.App.3d 433, 442. The Draft EIR continually makes a passing reference to non-binding mitigation: "impacts... *would* be reduced *should* local governments implement the following policies of the San Bernardino County and Riverside County General Plans." Draft EIR at 4-9, 4-11, 4-13, 4-14, 4-16, 4-19, 4-20, 4-21, 4-24, 4-25 [emphasis added]. This type of non-binding boilerplate analysis violates the spirit and letter of CEQA. The agency is required to adopt mandatory mitigation for significant environmental impact through the EIR process-- not simply defer to alternative potential mitigation. The Draft EIR should analyze environmental effects with, and without, mitigation. 31

III. THE DRAFT EIR'S ANALYSIS OF AIR QUALITY IMPACTS IS INADEQUATE

The Draft EIR's air quality section falls far short of CEQA's requirements. The Draft EIR does not address the project's impacts on existing levels of non-attainment for criteria pollutants in the South Coast Air Basin. The project will lead to significant growth inducement. Draft EIR at 4. The area served by Muni/Western is experiencing severe air quality problems. The growth inducement resulting from the project will exacerbate air quality problems in the community. The project's indirect impacts to decreasing air quality should be fully evaluated and disclosed within the EIR. Without proper analysis of air quality the Draft EIR is invalid. A revised EIR is required to properly analyze the projects' direct, indirect, and cumulative contribution to deteriorating air quality. 32

1. SIGNIFICANT AIR QUALITY PROBLEMS IN SAN BERNARDINO AND RIVERSIDE COUNTY

The project lies within the South Coast Air Basin ("SCAB") in San Bernardino and Riverside County. The 2003 Air Quality Management Plan produced by the South Coast Air Quality Management District ("SCAQMD") lists the South Coast Air Basin as the U.S. location with the highest number of days exceeding the federal ozone standard. Exhibit 6, *Final 2003 AQMP Appendix II- Current Air Quality*, II-S-1. In addition the Basin also continued to rank among the areas of the U.S. with high carbon monoxide (CO) and particulate matter concentrations. *Id.* The federal ozone standard was exceeded most frequently in the SCAB (36 days), and the more stringent state standard was exceeded on 121 days. *Id* at II-2-3, II-2-4. The significance of this problem was not properly addressed within the Draft EIR. Avoidance of an issue of significance is a violation of CEQA. The increased mobile source emissions from construction and operation facilities will increase ozone pollution in the South Coast Air Basin, further violating the non- attainment status for the SCAB. 33

Ozone (O_3) is the chief component of the common pollutant known as "smog." Ozone is formed when emissions including reactive organic gases (ROG) and oxides of nitrogen (NOx) undergo photochemical reactions in sunlight and are transformed to O_3. Ozone irritates lung airways and causes inflammation much like a sunburn. Ozone causes wheezing, coughing, pain when taking a deep breath, and breathing difficulties during outdoor activities. The American Lung Association focuses on ozone as one of the most hazardous of the common air pollutants. American Lung Association, 2002 at 18. Repeated exposure to ozone pollution for several months may cause permanent lung damage. Children, the elderly, and those with respiratory problems are most at risk, but anyone who spends time outdoors may be affected. Even at very low levels, ozone triggers a variety of health problems including aggravated asthma, reduced lung capacity, and increased susceptibility to 34

34 35 pneumonia and bronchitis. Ozone also interferes with the ability of plants to produce and store food, which makes them more susceptible to disease, insects, and weather, and damages the leaves of trees and plants, ruining the appearance of cities, national parks, and recreation areas. Ozone also reduces
36 crop yields, and is, in fact, responsible for 98% of air quality related crop damage in California. A revised EIR must discuss the proposed project's production of ozone precursor emissions and the direct, indirect, and cumulative impact both on human health and on vegetation and wildlife habitat, especially habitat for threatened, endangered, and sensitive species.

37 Particulate matter (PM) is a category of pollutant which includes the respirable particles suspended in the the air. PM is classified into "coarse" particles, PM_{10}, or those under 10 microns in diameter, and "fine" particles, $PM_{2.5}$, or those under 2.5 microns in diameter, and comes from a variety of sources including diesel exhaust, windblown dust from agriculture and construction and motor vehicles. Because the human respiratory system's ability to filter out harmful particles decreases as particles size decreases, the smallest particles lodge deepest in the lungs and are especially dangerous. PM can contain at least 40 toxic chemicals including heavy metals, nitrates, sulfates, and aerosols, as well as soot, soil, and dust.

38 PM is associated with extreme health consequences. PM causes premature death, aggravates asthma, increases coughing, painful breathing, and chronic bronchitis, and decreases lung function. Lung inflammation caused by inhaling PM can also lead to changes in heart rhythm, constriction of blood vessels, blood coagulation, and increased risk of heart attacks. Unlike what is believed about some other air pollutants, there is no "safe" level of PM pollution: even very low levels of PM lead to health impacts, as described in more detail in *Particle Civics, How Cleaner Air in California Will Save Lives and Save Money* at 25.

39 A wealth of information on the environmental and health ramifications of the SCAB's poor air quality is readily available. These reports and others contain critical information on the health and environmental impacts of air quality. One study found that in San Bernardino County alone, 486 deaths per year are due to current $PM_{2.5}$ levels, and 231 deaths and 34,127 asthma attacks per year are
40 due to current PM_{10} levels. Environmental Working Group at 19. The Draft EIR's conclusion that air quality impacts cannot be mitigated without including any basic information on the link between air quality, health impacts, and impacts to biological resources render it inadequate. This and other information must be analyzed in a revised EIR so that the project's air quality impacts can be analyzed in the full environmental context.

41 The Air Quality Section of Appendix G of the CEQA Guidelines (Environmental Checklist Form) specifically calls out a project's potential to conflict with or obstruct implementation of any applicable air quality plan as an impact to be discussed. The Draft EIR contains no discussion of the proposed project's contribution to this problem. Failure to meet regulatory deadlines have serious economic, environmental, and health ramifications for the SCAB, all of which should be discussed.

42 The Draft EIR has also omitted an adequate discussion of the project's cumulative air quality impacts. Air quality is an area where the always important cumulative impacts analysis is particularly crucial, because major air quality problems are created by a vast number of small sources which may appear individually insignificant. A revised EIR must be prepared to discuss the project's cumulative impacts to air pollution, including impacts to human health and impacts to biological resources.

III. THE DRAFT EIR'S ANALYSIS OF CUMULATIVE IMPACTS IS INADEQUATE

The cumulative impacts analysis in the Draft EIR is inadequate and requires further analysis and 43
recirculation. Courts have emphasized that the cumulative impacts analysis is an integral part of the
EIR process.

> [It] is vitally important that an EIR avoid minimizing the cumulative impacts. Rather, it must 44
> reflect a conscientious effort to provide public agencies and the general public with adequate
> and relevant detailed information about them. [Citation.] A cumulative impact analysis which
> understates information concerning the severity and significance of cumulative impacts
> impedes meaningful public discussion and skews the decisionmaker's perspective concerning
> the environmental consequences of the project, the necessity for mitigation measures, and the
> appropriateness of project approval. An inadequate cumulative impact analysis does not
> demonstrate to an apprehensive citizenry that the governmental decisionmaker has in fact fully
> analyzed and considered the environmental consequences of its actions.

Citizens to Preserve the Ojai v. County of Ventura, 176 Cal. App. 3d 421, 431. A proper cumulative
impacts analysis must be prepared "before a project gains irreversible momentum." *City of Antioch v.
City Council,* 187 Cal.App.3d 1325, 1333. The cumulative impacts analysis does not address all 45
additional projects which will impact the Santa Ana river, and does not adequately address the
cumulative impacts on flows, habitat and species.

In order for the cumulative impacts analysis to be valid the lead agencies must evaluate all 46
reasonably foreseeable projects and their synergistic impacts on the environment in relation to the
project. The Draft EIR does not even contain a valid list of cumulative projects, as required by CEQA.
All reasonably foreseeable projects with similar impacts must be listed, their impacts briefly
summarized, and the <u>cumulative</u> impacts analyzed, avoided, and mitigated. The cumulative impacts
section of the Draft EIR does not even approach this standard. As a starting point, all Santa Ana river- 47
related projects by other water agencies in the region, and all other agencies (including, but not limited
to flood control districts), that undertake projects that impact the Santa Ana River and its watershed
must be compiled in a list of cumulative projects and addressed. The Draft EIR does not address all
reasonably foreseeable projects. For example, the Draft EIR makes no mention of the Prado Basin
Water Supply Feasibility Study ("Prado Basin project") by the United States Army Corps of Engineers
and Orange County Water District. The Prado Basin project will impact the Santa Ana River
downstream of the project area. Notice for the availability of Prado Basin project Draft EIR was
released in August of last year. 69 Fed. Reg 51639 (Aug. 20, 2004). The Draft EIR cumulative
impacts analysis must include the Prado Basin project.

The Draft EIR concludes, without justification or analysis, that the cumulative impacts on riparian 48
habitat, acquatic habitat, and aquatic species would be less than significant. This conclusory analysis
violates CEQA. A lead agency "shall briefly describe its basis for concluding that the incremental
effects is not cumulatively considerable." CEQA Guidelines § 15130(a). Courts have upheld this
standard to find that where an EIR concludes that cumulative impacts are not significant, it should
explain the basis for that conclusion. *Citizens to Preserve the Ojai v. County of Ventura*, 176 Cal.
App. 3d 421, 432. The Draft EIR does not meet this standard in determining the effects on riparian
habitat, aquatic habitat, and aquatic species downstream of Seven Oaks Dam. The Draft EIR states:

49 "The RIX Water Recycling Project would reduce flows by approximately 30 to 35 cfs. However, the impact analysis [RIX impact analysis] for that project did not identify significant impacts on biological resources. The Project would add an increment to the reduction caused by the RIX Water Recycling Project, but cumulative impacts in this reach would remain less than significant. Cumulative impacts on aquatic species, riparian habitat, and sensitive riparian plants and animals in the SAR downstream of Project diversions are expected to be less than significant. No mitigation is required."

Draft EIR at 6-34.

50 This analysis is wholly inadequate. First, the Draft EIR cannot rely on the RIX impact analysis for a justification that the cumulative impacts from this project would not be significant. The RIX impact analysis did not consider the current project. The Draft EIR admits that the "Project would *add* an increment of reduction." Id. The Draft EIR cannot justify a less than significant impact upon an analysis that did not even consider the impacts resulting from the project. Relying upon another impact analysis without addressing the current project's impacts turns the cumulative impact analysis
51 on its head. Secondly, the EIR must describe the basis for determining that a cumulative impact is less than significant. The EIR provides no such basis but simply concludes "cumulative impacts in this reach would remain less than significant." Id. Finally, even incremental increases to existing problems can be significant and must be analyzed. Where a current project would add only a small increment to an existing problem, the current project's effects may nonetheless be considered significant. *Los Angeles Unified School District v. City of Los Angeles* 58 Cal.App.4th 1019, 1025-1026. Consulting agencies recognize the dire situation of the Santa Ana's reduced flows for aquatic
52 species. The United States Fish and Wildlife Service emphasizes that the temporary reduction of flows can significantly reduce the amount of habitat for suckers and could potentially strand them in dewatered sections of the stream. Exhibit 2, *Biological Opinion for the Prado Dam Water Conservation and Supply Study, Orange, Riverside, and San Bernardino Counties, California* at 13 The lead agencies must fully consider the cumulative impacts resulting from this and other projects on riparian and aquatic species, and their attendant habitat.

53 The Draft EIR inadequately analyzes the cumulative impacts resulting from water diversion applications pending on the Santa Ana River. The following water right applications and projects will impact flow within the Santa Ana: San Bernardino Valley Water Conservation District Water Right Application (Conservation District Application) requests 174,545 af in any year, Draft EIR at 6-13; City of Riverside Water Right Application (Riverside Application) requests to 41,400 afy, Draft EIR at 6-14; Chino Basin Watermaster Water Right Application (Chino Application) up to 97,000 afy, Draft EIR at 6-15; Orange County Water District Water Right Application (OCWD Application) 42,000 afy baseflow plus any additional storm flows reaching Prado Dam, Draft EIR at 6-15; RIX Facility Recycled Water Use Project (RIX Water Recycling) approximately 18,000 afy of tertiary effluent would be eliminated from discharge into the Santa Ana river, Draft EIR at 6-16; Pilot Dewatering Program for the Bunker Hill Basin Area of Historic High Groundwater (Pilot Dewatering) pumping a maximum of 25,000 afy out of existing groundwater basins that could affect flow in the Santa Ana river, Draft EIR at 6-17.

These applications and projects have the potential to eliminate 597,945 afy from a fully 54
appropriated river.[1] The combined total diversions exceed both the median and maximum flows that exist within the Santa Ana river. Draft EIR at 3.1-3. Indeed, the total diversions are 74 times greater
than the annual median annual flow. The potential impacts from the cumulative impacts are not 55
addressed in the Draft EIR. The Draft EIR only addresses the cumulative impacts to flows from the project and Conservation District Application. Draft EIR at 6-22. There is no analysis of the cumulative impacts of the 5 other projects on flows, habitat, ground water and riparian resources within the Santa Ana. The Draft EIR must account for the cumulative impacts that may potentially result from these reasonably foreseeable projects. The Santa Ana River is dying from a host of projects and impacts, many of which might be considered individually insignificant but which cumulatively are destroying the river environment. CEQA explicitly requires that a Draft EIR vigorously explore these issues. The Draft EIR fails to do so.

IV. THE DRAFT EIR'S ANALYSIS OF UNAVOIDABLE SIGNIFICANT IMPACTS IS INVALID

A draft EIR must describe those significant adverse environmental impacts that cannot be 56
avoided because there are not feasible mitigation measures or because feasible mitigation measures cannot mitigate the impacts to a less than significant level. CEQA Guidelines §§ 15126(b); 15126.2(b). The Draft EIR lists numerous significant unavoidable impacts to air quality, public safety, hydrology and water quality, groundwater hydrology, and biological resources. Draft EIR at 3.8-12,
3.13-27, 4-8, 6-28, 6-32, 6-36. If the lead agency nevertheless decides not to require such design 57
changes, then the EIR must describe the "implications" of impacts involved and the agency's reasons for choosing to tolerate them rather than requiring an alternative design." CEQA Guidelines §15126.2(b); Pub. Resources Code § 21100(b)(2)(A). These issues must be addressed in an EIR section that also addresses significant effects "that would be irreversible if the project is implemented." Pub. Resources Code § 21100(b)(2). The implications and reasoning for the acceptance of significant unavoidable impacts is noticeably absent. The Draft EIR's omission of the required analysis of unavoidable significant impacts makes it deficient.

V. THE DRAFT EIR SHOULD BE RECIRCULATED FOR PUBLIC REVIEW AND COMMENT

A lead agency must recirculate an EIR for further public comment under any of four 58
circumstances:

(1) When the new information shows a new, substantial environmental impact resulting either from the project or from a mitigation measure;
(2) When the new information shows a substantial increase in the severity of an environmental impact, except that recirculation would not be required if mitigation that reduces the impact to insignificance is adopted;

[1] The combined application and diversions can be calculated for the five 174,545 (Conservation District Application), + 41,400 (Riverside Application), + 97,000 (Chino Application), +42,000 (OCWD Application), +18,000 (RIX Water Recycling), + 2,000 (Pilot Dewatering), + 200,000 (Project Application) = 597,945 afy

58 (3) When the new information shows a feasible alternative or mitigation measure that clearly would lessen the environmental impacts of a project and the project proponent declines to adopt the mitigation measure; or

(4) When the draft EIR was "so fundamentally and basically inadequate and conclusory in nature" that public comment on the draft EIR was essentially meaningless.

CEQA Guidelines §15088.5.

59 Based on the comments above, it is clear that the EIR must be re-drafted and recirculated. Conditions (1), (2), and (3) above will be met by meaningful and adequate discussion of the project's impacts to biological resources, as well as a discussion of growth inducing and cumulative impacts. The combined effect of these omissions makes it clear that the fourth condition has also been met.

VI. THE PROJECT MUST COMPLY WITH THE ENDANGERED SPECIES ACT

60 The project is subject to the Endangered Species Act ("Act"), and must fully comply with the Act's provisions. Section 9 of the Endangered Species Act of 1973, and Federal regulations issued pursuant to section 4(d) of the Act, prohibit take of endangered and threatened species without a special exemption. 16 U.S.C. 1531 *et seq*. Section 7 of the Act requires Federal agencies to consult with the United State Fish and Wildlife Service ("USFWS") should it be determined that their actions may affect federally listed threatened or endangered species. Take is defined as harass, harm, pursue,
61 hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by USFWS to include significant habitat modification or degradation that actually kills or injures a listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by USFWS as an action that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), such incidental taking is not considered to be a prohibited taking under the Act provided that such taking is in compliance with the Incidental Take Statement.

62 The project is subject to the Endangered Species Act, and consultation with the USFWS, regarding impacts to threatened and endangered species, must occur. The project requires approval from the U.S. Army Corps of Engineers for the following activities: approval for any alterations to Seven Oaks Dam and its operations; approval for new pipelines to connect to facilities of Seven Oaks Dam; permits/approvals per Section 404 of the Clean Water Act (for the discharge of dredged and fill material into waters of the United States); and permits/approvals per Section 10 of the Rivers and Harbors Act (for construction in waterways) The project also requires approval from the U.S. Forest Service for access agreements/permits for construction within the San Bernardino National Forest. Draft EIR at 2-9.

63 The project will harm and harass listed species including, but not limited to: Marsh Sandwort *(Arenaria paludicola)*, Gambel's Water Cress *(Rorippa gambelii)*, Stephen's Kangaroo Rat (*Dipodomys stephensi)*, Arroyo Toad (*Bufo californicus)*, California Red-Legged Frog (*Rana aurora draytonii)*, Southwestern Willow Flycatcher (*Empidonax trailii extimus)*, Coastal California Gnatcatcher (*Polioptila californica californica)*, Least Bell's Vireo (*Vireo bellii pusillus)*, Santa Ana

Sucker *(Catostomus santaanae)*, The Santa Ana River Woolly-Star (*Eriastrum densifolium* ssp. *sanctorum)*, Slender-Horned Spineflower (*Dodecahema leptoceras)*, and San Bernardino Kangaroo Rat *(Dipodomys merriami parvus)*. The construction related activities and removal of additional water from the Santa Ana river will negatively impact delicate desert ecosystems, riparian habitats and streambed ecosystems. Consultation with the USFWS must occur as soon as possible to identify and mitigate any potential take of all federally threatened and endangered species impacted by the project. 63

VII. CONCLUSION

In summary, the current Draft EIR has not adequately disclosed, analyzed, minimized, and mitigated the environmental impacts of the proposed project. Because of the document's shortcomings, the public and decision makers cannot make informed decisions about the proposed project's costs in areas including biological diversity, cumulative impacts and growth inducement. 64

We appreciate the several extensions granted by your agencies of the draft EIR comment period which have enabled us to provide you with these comments in a timely fashion. The magnitude and complexity of this project is immense, and we encourage your agencies to provide adequate time for the public to review and comments on projects of this nature. Due to the importance and complexity of the issues, we request a minimum 60 day public comment period on the FEIR. 65

Should your agencies wish to move forward with the proposed project, the Center hopes to receive a revised Draft EIR. Please add the Center for Biological Diversity, P.O. Box 493, Idyllwild, CA 92549, Attn: Kassie Siegel, to all mailing lists for all information about this project. If you have any questions please do not hesitate to contact Peter Galvin, Conservation Director, at (415) 436-9682. Thank you very much for your consideration of these comments. 66

Sincerely,

/s/
Jonathan Evans
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CC without exhibits:

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Attn: Terry Foreman, Senior Biologist – Supervisor, Region 6

LIST OF EXHBITS AND REFERENCES

EXHIBITS

Exhibit 1: Draft EIR Appendix D, NOP comment list and references, at 2-3, 54-101.

Exhibit 2: United States Fish and Wildlife Service, *Biological Opinion for the Prado Dam Water Conservation and Supply Study, Orange, Riverside, and San Bernardino Counties, California*. July 1, 2002.

Exhibit 3: Baskin, Jonathan N., Haglund, Thomas R. and Swift, Camm C. 2003. *Results of the Year 3 Implementation of the Santa Ana Sucker Conservation Program For the Santa Ana River, Final Report.* Prepared for: Santa Ana Sucker Conservation Team. San Marino Environmental Associates.

Exhibit 4: Riverside County Integrated Project. *Final Multiple Species Habitat Conservation Plan. Volume II-B.* June 2003. F-1 – F-18.

Exhibit 5: California Department of Fish and Game. *Fish Species of Special Concern in California, Santa Ana Speckled Dace*. 1995.

Exhibit 6: South Coast Air Quality Management District, *Final 2003 AQMP Appendix II- Current Air Quality.*

REFERENCES:

American Lung Association. *American Lung Association State of the Air: 2002.*

Egan, J.T., S.P. Canton, T.F. Moore, G.Y. Michael, M.M. Grimes, and A.P. Rochette. 1992. *Tailoring Requirements to reality: The Santa Ana River Use Attainability Analysis.* Water Environment Federation, Alexandria, VA. AC92-036-006.

Tyus, H. M. and Karp, C.A. 1990. *Spawning and movement of razorback sucker in the Green River, Utah, 1979-1986.* Southwestern Naturalist 35:427-433

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Swift, C.C. 2000. *Informal data report on Santa Ana sucker surveys and reproduction by suckers in spring, 2000: activities and update since 22 April meeting.* Report submitted to Ad-Hoc Santa Ana discussion team, May 23, 2000.

Swift, C. C. 2001. *The Santa Ana sucker in the Santa Ana River: distribution, relative abundance, spawning areas, and impact of exotic predators.* Submitted to the Santa Ana Water Project Authority, Riverside CA. 94 pp.

Note to reader: Exhibits 1 through 6 referenced by the Center for Biological Diversity Comment Letter dated January 11, 2005 are provided in the compact disc version of the Final EIR.

CENTER FOR BIOLOGICAL DIVERSITY 2 (CBD2)

CBD2 Comment 1

This is a statement of opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD2 Comment 2

Comment noted.

CBD2 Comment 3

Please see the Draft EIR section 3.3 and Thematic Responses section 2.3.4 for a discussion of the general impacts of the Project on biological resources.

CBD2 Comment 4

See Response to CBD 2 Comment 3.

CBD2 Comment 5

Those comments are included in the administrative record of the Project. All comments provided on the NOP are included in Appendix D of the Draft EIR.

CBD2 Comment 6

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

Muni/Western believe that the analysis of the impacts of the Project on biological resources contained in section 3.3 of the Draft EIR and in Thematic Responses section 2.3.4 fully complies with CEQA.

CBD2 Comment 7

Please see section 3.3 of the Draft EIR and Thematic Responses section 2.3.4. These discussions show that the Project would not affect the Santa Ana sucker by water diversion or loss of connectivity. The Santa Ana sucker is not present at the diversion location, and thus, no direct loss of individuals would occur as a result of the diversion. The proposed diversion would not increase the amount of river that has intermittent flow, which currently extends from Cuttle Weir to the RIX-Rialto Drain. Perennial flows would remain downstream of RIX-Rialto. The small changes in storm flows due to the Project would not affect the competition or predation effects of introduced species because storm peaks that non-native species are less adapted to than native species would still occur. The diversion also would not increase the distribution or abundance of non-native predators. In the absence of land use planning and natural resource preservation that is intended to preserve the sucker (measures that are not within the authority of Muni/Western or the State Water Resources Control Board), future growth-related indirect effects on the Santa Ana sucker may contribute to declines of the sucker. Growth related impacts to biological resources are disclosed in the Draft EIR (see Chapter 5 and Cumulative Impact BIO-7 in Chapter 6).

CBD2 Comment 8

Muni/Western have conducted extensive analyses to evaluate the effects of the Project on surface water, groundwater, and biological resources. No substantial reduction in habitat or movement pathways is predicted for the reasons discussed in Thematic Responses section 2.3.4 and Draft EIR section 3.3. These discussions clearly show why effects of the Project on the Santa Ana sucker would be less than significant. CEQA Guidelines §15065 has been amended to state that "… substantially reduce the number or restrict the range of endangered, rare, or threatened species." As described in Thematic Responses section 2.3.4, the Project would not have a substantial effect on the Santa Ana sucker.

CBD2 Comment 9

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD2 Comment 10

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD2 Comment 11

Muni/Western have evaluated the Project effects on the Santa Ana sucker within occupied habitat between the RIX-Rialto outfall and Prado Flood Control Basin and found no significant impacts based on hydrologic analyses. Please see Thematic Responses section 2.3.4 for a description of these analyses and responses to CBD2 Comments 6, 7 and 8, and CDFG Comments 3 and 22.

CBD2 Comment 12

Muni/Western concur that a simple evaluation of the change in flow by itself is not sufficient to completely analyze the impacts of a project on aquatic habitats. Such an analysis should consider a variety of factors that produce 'habitat'. However, if flow in occupied habitat is not affected by the Project during critical times of the year, such as low flows in the summer, and is minimally affected at other times of the year, then significant impacts on aquatic habitat for this species would not be expected. Please see the Draft EIR section 3.3 and Thematic Responses section 2.3.4 for a more detailed discussion of why the Project would not affect flows in occupied Santa Ana sucker habitat during the dry season and what minimal effects would occur at other times of the year.

CBD2 Comment 13

Muni/Western agree that establishing multiple independent, viable populations of a species can be an effective means to reduce the potential for extinction of a species. Please see response to CBD2 Comment 12 regarding impacts of the Project on flows for the Santa Ana sucker.

CBD2 Comment 14

Table 3.3-2 in the Draft EIR provides baseline information for threatened and endangered species; it does not assess impacts. Furthermore, critical habitat for the Santa Ana sucker was revised on January 4, 2005 (FR 70(2):425-458) and no longer includes the Project area. Please see Thematic Responses section 2.3.4 for a description of why the Project would not reduce the numbers or restrict the range of the sucker.

CBD2 Comment 15

The Project would have no significant impacts on occupied Santa Ana sucker habitat as described in Thematic Responses section 2.3.4. The Santa Ana sucker is limited from moving upstream of the RIX-Rialto outfall for spawning due to lack of water most of the year and existing barriers to movement within the river channel. The minor reduction in flows in occupied habitat would not affect reproduction or fecundity of the sucker. Known reproduction sites are located in tributaries to the river, which would not be affected by the Project. Fecundity is related to size and health of the females, neither of which would be affected by the minor variations in flow resulting from the Project in occupied habitat.

CBD2 Comment 16

Impact BIO-18, on page 3.3-62 of the EIR, addresses effects of changes in non-storm flows on aquatic habitats and associated biota. Although not specifically addressed, Santa Ana speckled dace and arroyo chubs are included in this analysis. Both species occur primarily in tributaries to the SAR, and the Project would not affect their populations at those locations. The speckled dace is known to be present in the SAR at the confluence of San Timoteo Creek (see Thematic Responses section 2.3.4), but minor changes in storm flows at that location would not adversely affect that species. The perennial flows at that location are due primarily to rising groundwater and not releases from Seven Oaks Dam.

CBD2 Comment 17

The Project would not adversely affect the arroyo chub habitat and populations downstream of the RIX-Rialto Drain because the Project would have minimal effects on flows in that portion of the river as described in the Draft EIR section 3.3 and in Thematic Responses section 2.3.4. The drop in flow caused by operation of the RIX facility are not related to the Project. The effects of sale of water from the RIX facility have been addressed in the cumulative impact analysis of the Draft EIR (see Chapter 6).

CBD2 Comment 18

Existing pollution is a part of the baseline conditions, and the Project would not affect these levels. Consequently, effects of pollutants was not part of the impact analysis. The Draft EIR and Thematic Responses section 2.3.4 fully analyze the impacts of the Project on species of special concern. Please see response to CBD2 Comment 16.

CBD2 Comment 19

Please see response to CBD2 Comment 16.

CBD2 Comment 20

The Project would not eliminate water from speckled dace habitat. Please see response to CBD2 Comment 16 and Thematic Responses section 2.3.4.

CBD2 Comment 21

Negative surveys for species can have more than one meaning. One of these meanings is that no individuals were present at the time of the survey, as noted in the comment. Another meaning is that the species does not use the areas surveyed due to unsuitability or lack of individuals in the area (i.e., sparse or limited distribution). Agencies such as the US Fish and Wildlife Service and California Department of Fish and Game accept negative surveys as evidence that species are not present when specific protocols or numbers of surveys are performed by qualified biologists. The areas described in the EIR as not having sensitive species due to negative surveys are pipeline construction corridors where disturbance of potential habitat would be short term and restored after construction is complete. Thus, if the species are not present during construction, they could use the habitat after restoration without impacts. For wildlife species, the short duration of the disturbance, small area affected (narrow linear corridor), and subsequent restoration would keep impacts less than significant. For plants, negative surveys during appropriate times of year are adequate to determine lack of present in the area surveyed.

CBD2 Comment 22

The Draft EIR and Thematic Responses section 2.3.4 describe the thresholds of significance used to assess the impacts of the Project on biological resources (e.g., Draft EIR, Table 3.3-4).

As discussed in response to CBD2 Comment 8, CEQA Guidelines § 15065 has been revised to only require a mandatory finding of significance if a project has the potential to "substantially reduce" the range of a species, not just to "reduce" the range of that species. Rare, threatened, and endangered are specific designation categories, and many "sensitive" species are not included in these designations. Furthermore, impacts that are not "substantial" do not trigger a finding of significance. Impacts to non-listed sensitive species and their habitats were addressed in the Draft EIR in Impact BIO-4, 6, 8, 10, 12, and 14.

CBD2 Comment 23

The impacts addressed on pages 3.3-48, 50, and 51 of the Draft EIR are for construction of pipeline segments, a narrow linear corridor. Based on the best available information, sensitive species are not likely to be present in these corridors. Considering this, the short duration of the disturbance, and subsequent restoration, impacts were assessed as less than significant. CEQA does not require an absolute worst case analysis. Cumulative effects of many projects were addressed in the cumulative analysis section, 6.2 of the Draft EIR, and found to be significant (pages 6-33 and 6-35). Mitigation measures were included for the cumulative impacts.

CBD2 Comment 24

As described in responses to other comments by the Center for Biological Diversity, the impact analysis has not minimized or failed to disclose impacts to threatened, endangered, or sensitive species. Mitigation measures in the EIR are adequate to avoid or compensate for impacts identified as significant.

CBD2 Comment 25

The impacts of the removal of an obstacle to future growth (in this case the additional water available to users in the service area) are disclosed in Chapter 4 (Growth-Inducing Impacts and Growth-Related Impacts). Specifically from page 4-2, starting on line 14:

> "The Project, even though consistent with local and regional population projections and plans, would remove an obstacle to population growth by providing additional local water within the Muni/Western service areas. See section 4.1.1 (Historic Population and Housing Growth in the Muni/Western Service Areas). Because it would remove such an obstacle, the Project may indirectly foster economic or population growth or the construction of additional housing within the Muni/Western service area. Potential environmental impacts from growth that could result from the Project are addressed in section 4.2 (Growth-Related Indirect Impacts) below."

Where possible these impacts are quantified and mitigation is proposed. Where such quantification is not possible (or overly speculative) a qualitative assessment of impacts is provided. The Project, by making water supplies more reliable and providing a supplemental long-term water supply, would indirectly contribute to these growth-related impacts. The San Bernardino County General Plan Final EIR and the County of Riverside General Plan Draft EIR, provide the comprehensive overview of environmental impacts resulting from projected growth in large portions of San Bernardino and Riverside counties, including the Muni and Western service areas. These EIRs have identified growth-related significant impacts to the following environmental resources: Aesthetics; Agricultural Resources; Air Quality; Biological Resources; Cultural and Paleontological Resources; Geology, Soils, and Mineral Resources; Hazardous Materials; Hydrology and Water Quality; Land Use and Planning; Noise; Population and Housing; Public Services, Utilities, and Transportation; and Recreation. Significant unavoidable impacts were identified for the following resources: Air Quality; Agricultural Resources; Biological Resources; Cultural and Paleontological Resources; Geology, Soils and Mineral Resources; Hydrology and Water Quality; Noise; and Public Services, Utilities and Transportation.

Since the specific location of future development that may be supported with the new water provided by the Project is unknown and dependent on a variety of decisions made by applicants and the land use planning agencies in the future, site-specific identification of impacts to environmental resources is not possible at this time. When actual applications for development are filed, project-specific CEQA evaluations will identify these impacts and specify appropriate mitigation measures to reduce or eliminate such impacts.

CBD2 Comment 26

Since the specific location of future development that may be supported with the new water provided by the Project is unknown and dependent on a variety of decisions made by applicants and the land use planning agencies, site-specific identification of impacts to environmental resources is not possible at this time. When actual applications for development are filed, project-specific CEQA evaluations will identify these impacts and specify appropriate mitigation measures to reduce or eliminate such impacts.

CBD2 Comment 27

Please see the responses to CBD2 Comments 25 and 26. The Draft EIR acknowledged that the Project would have a significant and unavoidable growth-inducing impact by improving the reliability of water supplies to the Muni/Western service area. Such an improvement of water supply reliability is a part of the purpose of the Project. Muni/Western have not deferred the identification or mitigation of effects to other public agencies. Given the fact that such impacts occur over time and are within the control of local land-use authorities, it would be speculative for Muni/Western to attempt to identify specific growth inducement impacts in this environmental analysis.

CBD2 Comment 28

Muni/Western have the responsibility to comply with CEQA and to provide water to users (including retail purveyors) in their respective service area. Muni/Western have not been granted land-use authority; that power lies with the cities and counties within the Muni/Western service area. For this reason, it is appropriate for Muni/Western to identify as mitigation measures for the growth induced by the Project, the measures relied upon by San Bernardino and Riverside Counties. Any additional mitigation planning by Muni/Western would be speculative and would overstep the authority granted to Muni/Western.

CBD2 Comment 29

Muni, as a wholesaler of State Water Project water, can and does attempt to limit its sales of water to those retail purveyors that are willing to agree to reasonable water conservation measures. However, under the terms of the *Western* Judgment, each of the Non-Plaintiff parties, which includes all of the water purveyors in the San Bernardino Valley, may pump a quantity of groundwater sufficient to meet its needs as long as those extractions are otherwise consistent with the terms of that judgment. In light of these provisions of the *Western* Judgment, Muni has limited ability to compel retail water purveyors within its service area to adopt additional water conservation measures.

CBD2 Comment 30

The comment is correct in recognizing that the Draft EIR considered conservation as an alternative to the Project.

The comment notes that Muni could consider requiring enhanced conservation measures as part of agreements for services provided. There are two problems with this suggestion, either of which would make it infeasible as a mitigation measure. First, if retail water purveyors were to see such agreements as unreasonably onerous, they would simply expand their ability to extract groundwater from the SBBA. Under the terms of the *Western* Judgment, Muni would then be required to import additional water (probably SWP water from the Sacramento-San Joaquin River Delta) to maintain the safe yield of the SBBA. Under these conditions, retail customers would continue to use the same quantities of water and the attempted use of agreements to mandate conservation would be ineffective. Second, if retail water purveyors were willing to enter into such agreement, Chapter 5 of the Draft EIR notes that obtaining the same quantity of water from conservation as from the Project would require a reduction of about 60 percent in water use (over and above the amount of water presently being conserved by low-flush toilets, low-flow showerheads and other similar devices) from new homes built within Muni's service area. Given the difficulties that other agencies in Southern California have had in achieving much lower levels of conservation, such water conservation seems impractical. The comment provides no evidence to the contrary.

CBD2 Comment 31

Please see the responses to CBD2 Comments 25 through 29. The CEQA Guidelines state that it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment (CEQA Guidelines 15126.2(d)). The results of the removal of an obstacle to growth are identified in Draft EIR Chapter 4. Section 4.1 identifies the historic, projected and Project –related changes to population in the service area. Section 4.2 describes the potential impacts of the Project to the full suite of environmental resources. The adoption of mitigation measures that would avoid or reduce the impacts of growth is not within the authority of Muni/Western; instead, it is within the authority of cities and San Bernardino and Riverside Counties. It is for that reason that the mitigation measures analysis in the Draft EIR uses the language quoted in the comment. Because the Project will have significant growth-inducing impacts, and because Muni/Western have taken all actions within their respective authorities to mitigate for those impacts, this environmental analysis fully complies with CEQA.

CBD2 Comment 32

The Draft EIR fully discussed and evaluated the Project's impacts on air quality. The Draft EIR used as a basis for its significance criteria the general criteria found in Appendix G of the CEQA Guidelines and the specific emissions thresholds adopted by the South Coast Air Quality Management District, which is the regulatory agency charged with improving air quality and protecting public health from air pollution in Southern California.

The Draft EIR found that while the Project would have a less than significant impact on ambient air quality (Impact AQ-1, discussed in the Draft EIR at p. 3.8-11), it would have a significant and unavoidable impact by exceeding daily and quarterly emissions limits for construction equipment (Impact AQ-2, discussed in the Draft EIR at p. 3.8-12) due to the Project area's non-attainment status. The Draft EIR also identified the cumulative impacts of the Project, with all other reasonably foreseeable projects, as cumulatively significant for ROC, CO and NOx emissions (these impacts are discussed in the Draft EIR on p. 6-43). Even with mitigation, this impact is likely to be significant and unavoidable.

The Draft EIR also evaluated the Project's indirect impacts on air quality in the context of impacts related to growth. See pp. 4-18 through 4-20 of the Draft EIR. These impacts were identified as significant and unavoidable, even after mitigation. See p. 4-8 of the Draft EIR.

CBD2 Comment 33

The Draft EIR recognized and acknowledged that the Project would contribute to the air quality problem in the South Coast Air Basin, despite the implementation of mitigation measures. Please see response to CBD2 Comment 32.

CBD2 Comment 34

Comment noted. The comment does not identify an impact of the Project on the environment and so no further response is necessary.

CBD2 Comment 35

Comment noted. The comment does not identify an impact of the Project on the environment and so no further response is necessary.

CBD2 Comment 36

The Draft EIR fully discussed the potential impacts of the Project's production of ozone precursor emissions on air quality. The Draft EIR used as its threshold of significance the thresholds of significance developed by the South Coast Air Quality Management District for the South Coast Air Basin, in which the Project will be located. Those thresholds are used to assess the effects of a myriad of projects in the South Coast Air Basin and represent that agency's conclusions as to the emission standards necessary to protect public health and public welfare, including the protection against damage to crops and vegetation. The Draft EIR analyzed the potential direct effects of the Project on air quality in section 3.8. The analysis concluded that the Project would have significant and unavoidable impacts due to the operation of construction equipment. Chapter 4 of the Draft EIR also analyzed the indirect impacts of the Project on air quality in its discussion of growth inducement, concluding that those impacts would also be significant and unavoidable. Finally, the Draft EIR analyzed the cumulative impacts of the Project on air quality in Chapter 6, concluding that those impacts would be significant and unavoidable. The comment does not provide any reason that these analyses are inadequate and so no further response is necessary.

CBD2 Comment 37

Comment noted. The comment does not identify an impact of the Project on the environment and so no further response is necessary.

CBD2 Comment 38

Comment noted. The comment does not identify an impact of the Project on the environment and so no further response is necessary.

CBD2 Comment 39

Comment noted. The comment does not identify an impact of the Project on the environment and so no further response is necessary.

CBD2 Comment 40

See response to CBD2 Comments 32 and 36.

CBD2 Comment 41

The Draft EIR specifically addressed this potential impact on pages 3.8-11 to 3.8-12 and concluded that the impacts of the Project would be less than significant. The Draft EIR further identified cumulatively significant impacts associated with emissions that would exceed the significance thresholds adopted by SCAQMD and so interfere with an applicable air quality plan. Again, this impact was considered to be significant and unavoidable after mitigation.

CBD2 Comment 42

This comment is incorrect. Please see responses to CBD2 Comments 32, 33 and 41. The Draft EIR did address the cumulative impacts of the Project on air quality.

CBD2 Comment 43

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. Specific responses to elements of this opinion are set forth below.

CBD2 Comment 44

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD2 Comment 45

The Draft EIR analyzes the cumulative impacts of 14 related projects that might interact with the impacts of the Project on the environment. Those projects are shown at Figure 6.1-1 and are described in section 6.1.2. Additional details are provided in Thematic Responses section 2.5.

This comment (and subsequent comments on this subject) have not identified any project that should have been included in the cumulative impacts analysis and was not so included.

CBD2 Comment 46

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. However, in the interest of providing as much information as possible about the Project, Muni/Western note that Chapter 6 of the Draft EIR did contain, at section 6.1.2, a list of projects and each project's anticipated impacts on the environment. Section 6.2 then analyzed the cumulative impacts of these projects by resource and by geographic area. Muni/Western believe that this analysis of cumulative projects, particularly as amplified by Thematic Responses section 2.5, fully complies with CEQA.

CBD2 Comment 47

Please see the response to CBD2 Comment 45.

The Project does not have impacts to non-storm day flows below Riverside Narrows. Therefore there is no cumulative effect. However, in the interest of providing more information Muni/Western have included additional information about cumulative effects in Thematic Responses section 2.5. To the extent that the Prado Basin Project may assist Orange County Water District in diverting and storing water in the local groundwater basin, those effects are indistinguishable from and included within the effects of the Orange County Water District project, which was included in the Draft EIR's cumulative impact analysis. The Prado Basin Project was included as a near-term project within the Orange County Water District, Application to Appropriate Santa Ana River Water Recirculated Final Program Environmental Impact Report (July 2006). Thus, those effects, if any, are already included in the Draft EIR's cumulative impacts analysis. For this reason, there is no need to augment the cumulative impact analysis to include the Prado Basin Project.

CBD2 Comment 48

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD2 Comment 49

Comment noted.

CBD2 Comment 50

Contrary to the comment, the Draft EIR did consider the cumulative effects of the RIX project and the Riverside water right application. Draft EIR Tables 6.2-1 and 6.2-2 show the reduction of flows from Cuttle Weir to the MWD Crossing due to the Project, the Conservation District's water right application, the RIX Project and the Riverside water right application. Those tables also show the cumulative impact of these projects, by river reach, on TDS and TIN. The accompanying discussion in section 6.2.1.5 of the Draft EIR states that cumulative impact SW-8 (reduction in non-storm day flows) would be significant and unavoidable for those river segments from the Cuttle Weir to Riverside Narrows. This analysis does not understate the cumulative impacts of the Project and provides substantial evidence for its impact conclusions. Accordingly, it fully complies with CEQA.

CBD2 Comment 51

Please see response to CBD2 Comment 50. The Draft EIR used the same criteria for evaluating Project impacts and cumulative impacts. These are contained in each resource analysis in section 3 of the Draft EIR.

CBD2 Comment 52

The Draft EIR fully discussed the potential impacts of the Project and other cumulative projects on all environmental resources including the Santa Ana sucker and other aquatic species. In areas where sufficient water is available for a perennial stream (e.g. above the Cuttle Weir or below RIX) there will continue to be perennial flows sufficient to maintain these populations. In the area between these two reaches, where the SAR is now intermittent and does not provide habitat for aquatic resources, that condition will also continue. Riparian resources in all areas are adapted to conditions of extreme fluctuation in water availability and so will not be affected by the cumulative impacts of these projects.

CBD2 Comment 53

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. As noted by the references to the Draft EIR in the comment, the Draft EIR included each of these projects in its cumulative impacts analysis. Please see also Thematic Responses section 2.5.

CBD2 Comment 54

The SAR is not fully appropriated; Muni/Western and Orange County Water District demonstrated that there was a significant quantity of unappropriated water in the SAR system and based on that evidence the State Water Resources Control Board accepted the Muni/Western and Orange County Water District applications for processing.

It is not appropriate to add the face values of these applications in order to determine the cumulative impacts of projects on the SAR. Thematic Responses section 2.5 shows a schematic that illustrates this point for a specific year.

More generally, the Conservation District's application has been reduced, via the terms of a settlement agreement with Muni/Western, to a maximum of 39,600 afy. The Riverside application is only to divert its own treated wastewater some of which will only occur with growth and therefore has yet to be received by the SAR, and so does not represent an additional demand on the native water in the SAR.

The Chino application is for stormwater and duplicates a program already in effect; again, there will be no new demand on the SAR mainstem. The RIX project is like the Riverside project in that the water for the project is treated wastewater and does not represent a new demand on the SAR. Finally, the Pilot Dewatering project is based on pumping groundwater into the SAR and so adds water to the system. For these reasons, the comment very much overstates the cumulative impacts of these projects on the environment.

CBD2 Comment 55

Please see the response to CBD2 Comment 50 for a discussion of the Draft EIR's analysis of the cumulative impact of the Project and other related projects on water flows. The potential impacts of the Project and other related projects on groundwater resources within the SBBA were discussed at pages 6-29 through 6-32 of the Draft EIR. The cumulative impacts of the Project and other related projects on biological resources were discussed in pages 6-32 through 6-36 of the Draft EIR. Please see the response to CBD2 Comment 48. In these ways, the Draft EIR addressed each of the areas identified in the comment. and so complies with CEQA.

CBD2 Comment 56

Comment noted.

CBD2 Comment 57

The Draft EIR identifies the "implications" of unavoidable impacts by describing the effect of the impacts on the environment. If the Boards of Directors determine to approve the Project with these significant effects, they will provide a statement that explains the reason that the Lead Agencies have decided to tolerate these impacts rather than requiring an alternate design. A list of unavoidable impacts can be found in section 7.1 of the Draft EIR while the discussion of each of these impacts is found in the main discussions of impacts in Chapters 3 and 6 of the Draft EIR.

CBD2 Comment 58

Comment noted.

CBD2 Comment 59

Please see responses to CBD2 Comments 1 through 58. No information has been identified that would require recirculation under CEQA Guidelines §15088.5 .

CBD2 Comment 60

Muni/Western will acquire all required permits and approvals prior to Project implementation. Please see responses to comments US Army Corp of Engineers, California Department of Fish and Game, and page 2-9 of the Draft EIR.

CBD2 Comment 61

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD2 Comment 62

The Draft EIR states that the Project will need to comply with all applicable laws and regulations. A list of necessary permits/regulatory compliance is found in section 2.5 of the Draft EIR. Muni/Western has already engaged in informal consultation with USFWS regarding the Project and expects to continue those discussions in the future.

CBD2 Comment 63

Please see Thematic Responses section 2.3.4 for a general discussion of the impacts of the Project on biological resources. Also, please see the responses to CBD2 Comments 3, 22 and 23. Muni/Western have already consulted informally with USFWS and will continue such consultation throughout the permitting process. As noted on page 2-9, permits from USFWS may be required in order to comply with the federal Endangered Species. If such permits are required, Muni/Western will obtain those permits prior to implementing the Project.

CBD2 Comment 64

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD2 Comment 65

Please see the response to CBD2 Comment 1. Muni/Western provided interested parties with a 91-day comment period on the Draft EIR. Muni/Western will comply with CEQA in the distribution of the Final EIR, which does not require a second comment period.

CBD2 Comment 66

The Center for Biological Diversity was included in the distribution of the Draft EIR and will be included in the distribution of the Final EIR.

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CENTER FOR BIOLOGICAL DIVERSITY

CALIFORNIA AND PACIFIC OFFICE

protecting and restoring natural ecosystems and imperiled species through science, education, policy, and environmental law

May 25, 2005

VIA CERTIFIED MAIL; RETURN RECEIPT REQUESTED

Robert L. Reiter
General Manager and Chief Engineer
San Bernardino Valley Municipal Water District
1350 South "E" Street
POB 5906
San Bernardino, CA 92412-5906

Re: Water Right Applications A031165 and A031370 and Draft EIR for the Santa Ana River Water Right Applications for Supplemental Water Supply for San Bernardino Valley Municipal Water District and Western Municipal Water District of Riverside County SCH #2002071062

Dear Mr. Reiter,

This letter is submitted on behalf of the Center for Biological Diversity ("Center") regarding the draft Environmental Impact Report ("DEIR") for the Santa Ana River Water Right Applications for Supplemental Water Supply for San Bernardino Valley Municipal Water District and Western Municipal Water District of Riverside County ("the project"). The Center is a non-profit environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 13,000 members throughout California and the western United States, including in San Bernardino and Riverside counties where the project is located.

I. INTRODUCTION.

The Center's comments herein are based on a review of the DEIR, the State Water Resources Control Board ("SWRCB") comment letter on the DEIR dated January 14, 2005 ("SWRCB Comment Letter 1"), the SWRCB letter to Mr. Aladjem dated March 14, 2005 ("SWRCB Comment Letter 2"), the protest to Application A031165 and A031170 filed by the United States Department of Agriculture, Forest Service ("USFS") dated March 7, 2003 ("FS

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Protest), and the protest filed by the California Department of Fish and Game dated November 5, 2002 ("DFG Protest). Attached hereto as Exhibits A, B, C & D. The Center's earlier comments on the DEIR submitted on January 11, 2005, ("Center Comment Letter 1") are incorporated herein by reference.

As the project proponents are aware, comments submitted before an EIR is certified are
timely and must be considered by the lead agency. Pub. Res. Code § 21177(a),(b); *Galante*
Vineyards v. Monterey Peninsula Water Management District, 60 Cal. App. 4th 1109, 1117-
1 1121 (1997). Therefore, the Center hopes and expects that the San Bernardino Valley Municipal
Water District ("Muni") and Western Municipal Water District of Riverside County ("Western")
will give full consideration to all comments submitted regarding this project.

II. THE DEIR FAILS TO MEET THE REQUIREMENTS OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT.

As detailed below, in the Center's previous comments, and in comments and protests
2 submitted by others, the DEIR was inadequate in many ways. In response, the project
proponents must add significant additional information to the EIR. When significant new
information is added to an EIR, CEQA requires that the EIR be re-circulated. *See* Pub. Res.
Code §21092.1; CEQA Guidelines §15088.5, 14 CCR §15088.5. In this instance, once the DEIR
is revised in response to the significant issues raised in comments on the DEIR and protests, the
DEIR must be re-circulated to the public for review and comment.

A. The DEIR Improperly Fails to Coordinate State and Federal Environmental Review and Project Approvals.

CEQA requires that:

> Local agencies integrate the requirements of [CEQA] with planning and environmental
> review procedures otherwise required by law or by local practice so that all those
> 3 procedures, to the maximum feasible extent, run concurrently, rather than consecutively.

Pub. Res. Code §21003. The CEQA Guidelines §15124(d)(1)(C), similarly provide that: "To the fullest extent possible, the lead agency should integrate CEQA review with these related environmental review and consultation requirements." 14 CCR §15124(d)(1)(C). The DEIR provides no explanation for failing to coordinate the federal environmental review pursuant to NEPA with the CEQA process.

The CEQA Guidelines require that an EIR contain a list of permits and approvals
required to implement the project and a "list of related environmental review and consultation
requirements required by federal, state, or local laws, regulations, or policies." CEQA Guidelines
4 §15124(d), 14 CCR §15124(d). The DEIR notes that additional permits, approvals and
consultations will be needed in order for the project to be carried out. DEIR at 2-8 to 2-10.
These include: several required approvals from the Army Corps of Engineers; permits, approvals
and consultations from the Fish and Wildlife Service; and access agreements and permits from

the Forest Service. DEIR at 2-8 to 2-10. The DEIR acknowledges that the approvals from 4
federal agencies will require environmental review pursuant to NEPA. DEIR at 2-10.
Nonetheless, the DEIR provides no explanation why the federal environmental review is not
running concurrently with the CEQA review as provided by CEQA §21003, Public Resources 5
Code §21003. Indeed, without the federal approvals the project cannot go forward and the
SWRCB cannot properly consider the pending applications to appropriate water.

For example, the Forest Service points out that seasonal storage of water behind Seven
Oaks Dam will require the project proponents to obtain a special use permit from the Forest
Service. FS Protest at 2. Without this permit, the project proponents will not have the right to 6
store water within the San Bernardino National Forest and thus, it will be impossible to actually
store the water that the proponents claim can be "conserved" behind the dam. To date, the
project proponents have not filed an application for a special use permit. *But for* the issuance of
a special use permit from the Forest Service, there is quite simply no water to appropriate.
Without first obtaining approvals from the Forest Service, and completing the required NEPA
review and FWS consultation, it is premature for the SWRCB to consider the applications to 7
appropriate water. Thus, by failing to coordinate the required State and Federal approvals and
the required CEQA and NEPA review, the project proponents have made it impossible for the
SWRCB to properly review and consider the pending applications.

B. The DEIR Fails to Adequately Identify, Analyze, Avoid or Mitigate the Environmental Impacts Related to Seasonal Water Storage at the Seven Oaks Dam. 8

1. The DEIR improperly relies on an eight year old Feasibility Study EIR/EIS produced by the Corps that was not certified.

As the SWRCB points out, the DEIR fails to properly identify or analyze the
environmental impacts related to seasonal water storage at the Seven Oaks Dam ('SOD"). 9
SWRCB Comment Letter 2 at 2. On that basis, the SWRCB requested that the project
proponents submit CEQA documentation addressing the biological impacts of the project related
to seasonal water conservation at Seven Oaks Dam by June 1, 2005. SWRCB Comment Letter 2
at 2. The information requested by the SWRCB is significant new information that was not
contained in the DEIR.

The DEIR contains the bare assertion that "[u]pstream from Seven Oaks Dam, impacts
related to seasonal water conservation storage were evaluated USACE's 1997 report, Seven
Oaks Dam Water Conservation Feasibility Study Final EIS/EIR." DEIR at 3.3-1. The only
further discussion related to upstream impacts is a bare reference to the environmental impacts of
the reservoir in the immediate vicinity of the dam that was analyzed for flood control purposes 10
only as part of the Seven Oaks Dam approval process. *See* DEIR at 3.3-55. However, as the
SWRCB points out, the DEIR's reliance on the U.S. Army Corps of Engineers'1997, Seven
Oaks Dam Water Conservation Feasibility Study Final EIS/EIR ("Feasibility Study EIS/EIR") is
improper. *See* SWRCB Comment Letter 2 at 2. The Feasibility Study EIS/EIR was not properly

incorporated by reference nor can the project proponents rely on it as a first "tier" environmental document.

10 The DEIR did not properly incorporate the Feasibility Study EIS/EIR by reference. First,
the DEIR failed to provide a summary or a description of the information relied on from the
Feasibility Study EIR/EIS and failed to analyze whether any information in the document needs
to be updated eight years after it was produced. CEQA Guidelines §15150(b), 14 CCR
11 §15150(b). Second, the Feasibility Study EIS/EIR is not generally available to the public. *See*
CEQA Guidelines §15150(a), 14 CCR §15150(a). Third, it is inappropriate to rely on
12 incorporation by reference for *analysis* of impacts to biological resources and other impacts.
CEQA Guidelines §15150(f), 14 CCR §15150(f).

Moreover, the Feasibility Study EIS/EIR cannot be relied on by the project proponents
because it was not a first-tier CEQA document and was not certified as such by either of the
13 project proponents. CEQA Guidelines §15152, 14 CCR § 15152. Indeed, according to the
Seven Oaks Dam Water Control Manual no record of decision was signed by the Corps for this
document. *See* U.S. Army Corps of Engineers, September 2003, Water Control Manual Seven
Oaks Dam and Reservoir ("Water Control Manual") at 8-8. There was also no FWS section 7
14 consultation for the Feasibility Study EIR/EIS and no biological opinion was issued by FWS
taking into account the impacts to rare, threatened, and endangered species resulting from
seasonal storage of water behind the Seven Oaks Dam. Most importantly, the DEIR fails to
demonstrate that the Feasibility Study EIR/EIS adequately identified or analyzed all of the
potential environmental impacts of storing water behind the dam (including the biological
15 impacts and the cumulative impacts), analyzed alternatives that would avoid those impacts, or
identified and adopted specific enforceable mitigation measures to minimize impacts as required
by CEQA. CEQA Guidelines §15152(f)(3), 14 CCR §15152(f)(3).

2. The DEIR improperly ignores project impacts within the San Bernardino National Forest

16

As the Forest Service points out, the project would inundate lands within the San
Bernardino National Forest and result in "a larger pool for a longer period of time" than use of
the SOD for flood control alone. FS Protest at 4. The DEIR fails to adequately address direct
17 and indirect impacts within the forest related to water storage or to evaluate consistency with the
San Bernardino National Forest LMRP. FS Protest at 4, 4-6 (list of potential impacts). The
potential upstream impacts identified by the Forest Service include, but are not limited to,
impacts due to: increased size and duration of the lake resulting in exotic fish, frogs, and other
species being established and moving upstream; increased fishing and other uses by humans and
18 the resulting wildlife disturbance; impacts to upstream habitat including spawning gravels;
establishment of riparian vegetation along the storage pool; acceleration of sediment, erosion,
and bank sloughing from the shoreline due to saturation of the soil with longer periods of
standing water; and establishment of exotic weeds due to fluctuating water levels. FS Protest at
4-5.

Oddly, the only mention of these impacts in the DEIR is in the cumulative impacts section regarding the Santa Ana River upstream of the Seven Oaks Dam. *See* DEIR at 6-20 to 6-21. The DEIR's perfunctory discussion fails to meet the requirements of CEQA, that the direct, 19
indirect and cumulative impacts be identified, analyzed, avoided or mitigated in the DEIR. Moreover, as discussed above, to date, the project proponents have not filed an application for a special use permit from the Forest Service or prepared federal environmental review documents 20
for the project as required by NEPA.

3. The DEIR improperly fails to describe or analyze the direct, indirect and cumulative impacts to biological resources. 21

The DEIR's cumulative impacts analysis states that "nearly all of the loss or modification of biological resources [within the Seven Oaks Dam and reservoir area] have been previously mitigated as part of the Seven Oaks Dam project." DEIR at 6-32. However, the DEIR improperly ignores the fact that many of the mitigation measures required for construction of the Seven Oaks Dam remain unfulfilled. It is critical that the DEIR accurately identify the current status of the biological resources taking into account only the actual mitigation that has occurred, because the proposed project will have additional impacts on many of the same biological 22
resources as those impacted by the construction and operation of the Seven Oaks Dam for flood control purposes. As noted above, at the time that the Seven Oaks Dam was constructed, the there was no ESA section 7 consultation with FWS regarding the impacts to rare, threatened, and endangered species from seasonal storage of water behind Seven Oaks Dam. The biological opinion issued by the FWS for the Seven Oaks Dam in December 2002 ("SOD BO 2002") only evaluates flood control operation of the Dam. *See* SOD BO 2002. The only non-flood control related water storage authorized at the Seven Oaks Dam is for mitigation measures to benefit the Santa Ana Woolly Star Preserve Area ("WSPA"). The Corps operations manual provides that water within the pool behind the dam may be "held longer so that additional head will be available for releases greater than what is schedule[d] in the water control plan." Water Control 23
Manual at 7-05(h).

To date, the Corps has not yet implemented the proposed flood-related mitigation measures outlined in the SOD BO 2002 for the Woolly Star Preserve Area, although the Woolly Star population continues to decline within the Preserve. *See* "Santa Ana River Woolly Star Report of Biological Studies For the Preserve Management Program, Years 4 through 9," April 2004 at 17-18 (indicating overall decline in number of plants at all sites from 1996 to 2003). Indeed, the recent winter, 2004- 2005, is the first time since the construction of the Seven Oaks 24
Dam that there has been sufficient rainfall to test the flood control functions of the dam and the Corps has determined that no water will be stored behind the dam this year (not even the amounts that might be used for mitigation for the WSPA) because the dam requires repairs. The DEIR's assumption that the mitigation measures have been fulfilled is erroneous and thus, the 25
cumulative impacts analysis is flawed. Moreover, the failure to analyze the additional direct, indirect, and cumulative impacts of *this* project on biological resources in is improper.

Although construction of the dam was completed more than five years ago, and the SOD BO 2002 anticipated completion of a comprehensive Multi-Species Habitat Management Plan 26

26 ("MSHMP") within 2 years of the issuance of the BO, no comprehensive species management plan has yet been developed or implemented that includes the required mitigation for the Seven Oaks Dam's impacts to the endangered San Bernardino Kangaroo Rat ("SBKR"). For rare, threatened, and endangered species, delayed and deferred mitigation measures often increase a
27 project's impacts and, thus, fail to minimize impacts as they were intended. While the DEIR acknowledges that the MSHMP is "still in the early planning stages," DEIR at 3.5-9, the DEIR completely fails to identify and analyze the direct, indirect, and cumulative impacts to the species that have resulted from this delay and which may be further exacerbated by the proposed project. The DEIR also identifies but fails to properly analyze the impacts from activities that will likely be facilitated by the development of the MSHMP including ground disturbance from
28 development of additional recharge basins, sand and gravel mining, and road expansions and alterations that in turn may cause additional impacts to biological and other resources in the area.
29 DEIR at 6-3. Because the cumulative impacts analysis begins from an erroneous baseline, its analysis is fundamentally flawed.

As noted above, the DEIR erroneously assumes that the required mitigation for the SOD
30 construction has already been completed, this mistaken assumption also renders the DEIR's discussion of additional mitigation measures for impacts to the Santa Ana River inadequate. *See* DEIR at 6-35, MM BIO-9 and BIO-10. Indeed, the proposed mitigation measures closely
31 parallel those that were required in the SOD BO 2002 but have not yet been carried out to improve and restore habitat for the SBKR and the Santa Ana River Woolly Star. Thus, there is no basis for the DEIR's assumption that such measures will be effective or sufficient.

The DEIR must analyze the condition of the rare, threatened, and endangered *as they currently exist* it cannot simply assume that these resources have benefited from as yet
32 unfulfilled mitigation measures. As the Department of Fish and Game ("DFG") noted, the project proponents must "quantify the loss of resources that have occurred, and that will occur, as a result of the diversion amounts and timing set forth in the application." DFG Protest at 4.
33 By improperly identifying the baseline condition of the biological resources, the DEIR fails to meet the requirements of CEQA and the new mitigation measures it identifies cannot fairly be presumed to mitigate the impacts of the project on these resources.

34 Moreover, the DEIR fails to provide a comprehensive assessment of in-stream needs and proposals for by pass flows. *See* DFG Protest at 4. DFG specifically requested that the project proponents provide "[a] habitat-based stream needs assessment that incorporates habitat, species, and life history criteria specific to the Santa Ana River, the tributaries and downstream reaches," and "[a] specific proposal to provide minimum bypass flows for maintenance of aquatic habitat,
35 fish, and wildlife resources including, but not limited to, Santa Ana sucker, Santa Ana speckled dace, arroyo chub, arroyo toad, western spadefoot toad, least Bell's vireo, southwestern willow flycatcher and southwestern pond turtle. The starting point for determining the minimum bypass flow should be the estimated unimpaired February median flow at the points of diversion." DFG Protest at 4. Because the DEIR fails to provide the required information, it fails to comply with CEQA.

4. The DEIR must be revised to include new information regarding the poor water quality of flood water stored and released from Seven Oaks Dam. 36

The DEIR must be supplemented or revised and reissued to account for the new information regarding the quality of the water that is held behind the dam for flood control. As the project proponents are well aware, the water that was released from Seven Oaks Dam this spring was of very poor quality – containing large amounts of silt and sand. Indeed, several local agencies have called for the Corps to conduct a multi-million dollar study into the causes of the 37
poor water quality and ways to improve the water quality. Until that study is completed, it will remain unclear whether or not the proposed project is even feasible and the project proponents' applications are, thus, premature.

C. The Water Availability Analysis and Project Description in the DEIR are Inadequate. 38

The DEIR's analysis of the surface hydrology and water availability is inadequate. These inadequacies include, but are not limited to the following: using an incorrect baseline; underestimating the amount of water that may be needed for species conservation, restoration 39
and recovery; ignoring other in-stream beneficial uses; underestimating the need to release water for flood control purposes; underestimating the uncertainty of water storage in any given year; and on these bases, overestimating the amount of water available for appropriation.

Flood control is, and will remain, the primary purpose of the Seven Oaks Dam. Whether or not the SOD can be used to store water in any given year will be entirely dependent on the timing of winter storms and predictions regarding future storms. Thus, the availability of the 40
SOD for water storage storage will vary widely in different years, and the amount of water that may be stored in any given year is completely speculative. The DEIR recognizes that the water available in even an *average* year is far less than the 200,000 afy of water the applicants seek and 41
estimates a range of availability of additional water from 11,000 afy to 28,000 afy. Appx. A at 4.2-5. However, the DEIR completely fails to take into account dry years, consecutive dry years, or to account for seasonal variability and the uncertainty that storage will be available in any year due to flood control needs. Ignoring these factors, the project proponents have applied to 42
appropriate the maximum amount of water that could possibly be made available on a cumulative basis. As SWRCB requested, an adequate water availability analysis must consider the amount of water available for appropriation based on median water year flows or long-term averages that take into account the frequency of dry years. SWRCB Comment 1 at 7-8; 43
SWRCB Comment 2 at 1-2. The DEIR must be revised using a correct median or long-term average baseline and taking into account the uncertainties of storage that are created by the use of the SOD for flood control.

Although the DEIR acknowledges that stored water must first be made available for mitigation measures that were imposed to mitigate impacts of the construction SOD, it assumes 44
that only 1,000 cfs of water will be used over two days for these purposes in any given six month

period. DEIR Appx. A at A-4-9. Because FWS has not yet determined the amount of water that
will be required for mitigation from construction of the SOD — mitigation that is intended to
44 simulate flood conditions for several rare, threatened, and endangered species in the Santa Ana
Wash Area — any estimate of how much water will be needed for the environmental habitat
release is entirely speculative. The project itself may also require additional mitigation measures
45 for impacts to many of the same species that have already suffered as a result of construction of
the SOD and from other projects in the area. Further, as SWRCB pointed out, additional water
46 may be required to support other in-stream beneficial uses for recreation and wildlife including
fisheries and other riparian needs. SWRCB Comment 1 at 8; *see also* DFG Protest at 4. None of
these other water uses were properly taken into account in the DEIR and, thus, the water
47 availability assessment is essentially flawed. It is entirely inappropriate for the SWRCB to
approve appropriations for the *maximum* speculative amount of water that may be available in
very wet years and after an as yet unknown amount of water has been dedicated to mitigation
measures for rare, threatened, and endangered species and for beneficial in-stream uses.

The DEIR also fails to properly identify and analyze the project's proposed use of stored
48 SAR water for export/exchange. Under this proposal, high quality SAR water will be exported
from the area via the State Water Project ("SWP"). At a later time, other water, of unknown
quality, may be imported and used for distribution or recharged. The DEIR fails to identify
impacts that may occur from the end-use of the exported water (which will likely be growth
inducing and may impact water and air quality and biological resources), as well as the impacts
to water quality in the SAR region from recharge and/or distribution of imported water. As the
49 Court of Appeal recently stated, the SWRCB cannot properly determine the amount of water
required for a specific beneficial use without knowing the actual, intended use or uses of the
water to be appropriated. *Central Delta Water Agency v. SWRCB*, 124 Cal. App. 4th 245, 264
(2004). The Court expressly rejected specifying the service area generally as the area served by
the SWP noting that "the Board has done little more than say the water should be used in
California." *Id.* at 263. The Court also found that CEQA review based on inadequate project
information regarding the end user of the appropriated water was inadequate. *Id.* at 271-272.

Because the project proponents have failed to properly identify and analyze the amount
50 of water available for appropriation and failed to properly identify the end user of the water that
they seek to appropriate, the project description is inadequate and the DEIR based upon it is
fundamentally flawed.

D. The Alternatives Analysis in the DEIR Is Inadequate.

The DEIR provides an inadequate description and analysis of the Enhanced Conservation
51 Alternative (Alternative 2), and over emphasizes the difficulties of implementing conservation
measures in the Muni service area and the potential impacts to water quality and biological
resources due to reduced wastewater flows. *See* DEIR at 5-13 to16.

The DEIR attempts to justify the project's increased impacts on biological resources in
52 the upper Santa Ana Wash Area and the lack of water conservation measures in the Muni service
area by reference to the threatened Santa Ana sucker. DEIR at 5-14 to 15. Due to the over-

appropriation of the Santa Ana River which leaves essential Santa Ana sucker habitat in the Santa Ana River mainstem through the Santa Ana Wash Area dry much of the year, the Santa Ana sucker's range has been reduced to areas of the Santa Ana River with year-round wastewater flows from treatment plants. The DEIR's attempt to justify the lack of comprehensive water conservation measures in the Muni service area and the project's proposed additional appropriations from the Santa Ana River by claiming that conservation measures may 52
adversely impact the sucker is both cynical and absurd. The sucker has been reduced to surviving on wastewater flows because of over-appropriation of the Santa Ana River, it makes no sense to justify appropriation of additional water, and failure to conserve, by reference to the sucker. Because the DEIR's description and analysis of the Enhanced Conservation Alternative is inadequate the DEIR fails to meet the requirements of CEQA.

Further, the DEIR improperly fails to provide a reasonable range of alternatives. The DEIR provides three alternatives and the no project alternative. There is no effort to include any 53
water conservation measures in the project itself or in Alternative 1 or 3 even though water conservation measures in the Muni service area could easily be included in the project as well as in any of the project alternatives. Because including water conservation measures in the Muni service area would minimize or avoid the environmental impacts of the project, water 54
conservation measures should be evaluated as mitigation measures for the project, and in each of the alternatives, and where feasible, must be adopted as mitigation measures for the project.

The project proponents' failure to identify the Enhanced Conservation Alternative as the 55
preferred Alternative is unsupportable. The additional water appropriations sought would 56
significantly impact environmental resources in an already heavily impacted area. Moreover, the failure to implement comprehensive water conservation efforts within the Muni service area to date or to include *any* water conservation measures in the project description, as mitigation 57
measures, or in either of the other alternatives, calls into question whether Muni's existing water appropriations are being put to beneficial use.

The waters of the state of California are a public trust resource subject to Constitution Article X, §2, in which it is

> ....declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that *the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the* 58
> *people and for the public welfare*. The right to water or to the use or flow of water in or from any natural stream or water course in this State is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and *such right does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water*."

Cal. Const. Art. X, §2 (emphasis added). The SWRCB is charged with ensuring that all water 59
appropriations are put to beneficial use and not wasted. While the domestic use of water is a

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beneficial use, the waste of water is not. Muni's bald assertion that it cannot impact the implementation of water conservation measures because it is a water wholesaler, does not
60 provide adequate justification for failing to identify and analyze conservation measures as mitigation for the projects impacts and as the preferred alternative. Even a water wholesaler must assure that the water it appropriates is put to beneficial use and not wasted by the end users. The lack of comprehensive conservation efforts within the Muni service area is untenable and the SWRCB is unlikely to grant Muni additional water appropriations in such circumstances.

III. CONCLUSION.

In light of the issues raised by the Center in these comments and our previous comments, as well as the issues raised in other comments on the DEIR and protests, it is clear that the DEIR
61 is inadequate and must be revised an re-circulated before the pending water appropriations applications can be heard by the SWRCB. We look forward to reviewing the revised DEIR. If you have any questions regarding these comments please feel free to contact me at (415) 436-9683 ext. 307.

Sincerely,

Lisa Belenky

Lisa Belenky
Center for Biological Diversity

List of Exhibits:

Exhibit A:
State Water Resources Control Board, Division of Water Rights ("SWRCB") comment letter on the DEIR dated January 14, 2005 ("SWRCB Comment Letter 1"),

Exhibit B:
SWRCB letter to Mr. Aladjem dated March 14, 2005("SWRCB Comment Letter 2")

Exhibit C:
Protest to Application A031165 and A031170 filed by the United States Department of Agriculture, Forest Service ("USFS") dated March 7, 2003.

Exhibit D:
Protest filed by the California Department of Fish and Game dated November 5, 2002 ("DFG Protest)

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Note to reader: Exhibits A through D of the Center for Biological Diversity Comment Letter dated May 25, 2005 are included in the compact disc version of the Final EIR.

CENTER FOR BIOLOGICAL DIVERSITY 3 (CBD3)

CBD3 Comment 1

Muni/Western will consider all comments received on the EIR in its decision to approve all CEQA documents as well as the Project itself. In particular, Muni/Western have fully reviewed and considered the three comment letters submitted by the Center for Biological Diversity as part of the environmental review process for the Project.

CBD3 Comment 2

See response to CBD2 Comment 59.

CBD3 Comment 3

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD3 Comment 4

Comment noted.

CBD3 Comment 5

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD3 Comment 6

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD3 Comment 7

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD3 Comment 8

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD3 Comment 9

Please see Thematic Responses section 2.2 and the responses to USACE Comment 6, SWRCB Comment 24, and Flood Control Districts Comments 6 and 17, all of which discuss the manner in which the Draft EIR used information from the 1997 Feasibility Study, updated that information, and performed its own analysis of the potential impacts of the Project on the environment. The information requested by the SWRCB, a copy of which is attached as

Appendix B, does not contain significant new information regarding the environmental impacts of the Project. That analysis concluded, as did the Draft EIR, that it would not be feasible to provide bypass flows that would create hydraulic connectivity between Seven Oaks Dam and various downstream locations. The analysis also reviewed the impacts of the Project on biological resources and came to conclusions similar to those in the Draft EIR. The analysis requested by the SWRCB did provide additional detail regarding the impacts of the Project, but that additional detail does not constitute significant new information under CEQA.

CBD3 Comment 10

Please see the response to CBD3 Comment 9. The Draft EIR did not incorporate the 1997 Feasibility Study by reference but, instead, used information from that study as background information that became part of Muni/Western's independent analysis of the impacts of the Project's impacts on the environment in the Draft EIR. For this reason, the facts that USACE did not complete a record of decision or complete consultation with USFWS are irrelevant to the question of the adequacy of the Draft EIR under CEQA. The comment does not identify any specific ways in which the Draft EIR fails to comply with CEQA, instead relying entirely on conclusory statements without support in the record.

CBD3 Comment 11

Please see the response to CBD3 Comment 10. The Feasibility Report is available at San Bernardino Valley Municipal Water District headquarters.

CBD3 Comment 12

Please see the responses to CBD3 Comments 10 and 11, Flood Control Districts 17, and Thematic Responses section 2.2.

CBD3 Comment 13

Please see the responses to CBD3 Comment 10, Flood Control Districts 17, and Thematic Responses section 2.2.

CBD3 Comment 14

Please see the response to CBD3 Comment 10.

CBD3 Comment 15

Please see the response to CBD3 Comment 10, Flood Control Districts 17, and Thematic Responses section 2.2.

CBD3 Comment 16

The Draft EIR, at page 3.1-34 stated that the Project would change the quantity of water impounded behind Seven Oaks Dam and the duration of such impoundment. The Draft EIR also identified such changes as a potential cumulative impact on pages 6-20 and 6-21. Thematic Responses section 2.2 demonstrates that, most of the time, the Project would have no impact on the quantity or duration of water impounded behind Seven Oaks Dam. Thematic Responses section 2.2 demonstrates that conservation storage operations would have a limited effect on water levels in Seven Oaks; water levels would never exceed the highest stage that would occur with the No Project. But on some days (approximately 7 percent of days), with seasonal storage (e.g., Project Scenario A) water levels could be higher than would occur under the No Project condition. Please also see the responses to CDFG Comment 48 and RWQCB Comment 6.

CBD3 Comment 17

Please see response to CBD3 Comment 16. As described in the Draft EIR at page 3.3-55, there is no evidence to suggest that seasonal water conservation storage will have impacts greater than those occurring with flood control. The analysis contained in Thematic Responses section 2.2 confirms that analysis. There is not evidence to suggest that the increased water level in Seven Oaks Reservoir on 7 percent of days will create the impacts described in the comment.

CBD3 Comment 18

See response to Flood Control Districts Comments 16 and 17 for effects of erosion and water quality degradation. The size of the pool behind Seven Oaks Dam in the summer under flood control operations is large enough to support exotic aquatic species, and a larger pool with conservation storage would not increase the potential for such species to be present, particularly since the pool would be drawn down as the stored water is used each summer to fall. Increased human use for fishing would only occur if the pool were to contain fish at a density that could support recreational fishing and if access is available. Effects of human activity on wildlife would likely be minimal since vegetation that provides habitat for wildlife within the winter inundation zone has been lost during the winter of 2004-05 and any vegetation that may recolonize that area would be lost during the next winter storage event(s). No riparian vegetation is expected to become established along the margin of the storage pool because the level would drop as water is used, not allowing time for such vegetation to establish. Non-native weeds are likely to become established in this area due to the winter inundation disturbances, and summer storage would not increase that potential.

Because water levels with the Project will be within the operating levels established for flood control operations, USACE has (or will) mitigate for all of these effects on the environment. Nothing in CEQA requires Muni/Western to duplicate those efforts.

CBD3 Comment 19

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD3 Comment 20

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD3 Comment 21

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD3 Comment 22

Muni/Western are entitled to rely on mitigation adopted by USACE as part of the regulatory baseline and are entitled to assume that USACE will fully comply with its mitigation requirements as established by USFWS in the Biological Opinion for the operation of Seven Oaks Dam for flood control.

As noted above, USACE was required to mitigate for the loss of all biological resources within the inundation area below the 50-year flood pool elevation. The Project's inundation area will be within the 50-year flood inundation area and so will not create any new impacts to biological resources. Please see the response to Flood Control Districts Comment 16. Also, please see page 6-32 of the Draft EIR, discussing cumulative impact BIO-1.

CBD3 Comment 23

Comment noted.

CBD3 Comment 24

Comment noted.

CBD3 Comment 25

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

In the interest of providing the public with additional information, please see Thematic Responses section 2.5, the response to CBD3 Comments 22 and 32.

CBD3 Comment 26

This comment does not identify an environmental impact associated with the Project; therefore, no response is necessary.

CBD3 Comment 27

The MSHMP is a mitigation measure imposed by USFWS on USACE for flood control operations of Seven Oaks Dam. It is part of the regulatory baseline for the Project, and so is not part of the Project. Thus, to the extent the delay discussed in the comment creates an impact on the environment, the responsibility for mitigating that impact lies with USACE. It should be noted that the comment lacks any data or evidence to substantiate the alleged impact on the environment from the delay in the MSHMP. The Draft EIR evaluates impacts of the Project on the San Bernardino Kangaroo Rat. Please see Draft EIR, MM BIO-1, Impact BIO-5, Impact BIO-17, Cumulative Impact BIO-5, and Cumulative Impact BIO-6.

CBD3 Comment 28

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

In the interest of providing the public with additional information, Muni/Western note that page 6-3 of the Draft EIR describes the potential impacts of the Wash Plan but does not purport to describe the cumulative impacts of the Wash Plan and the Project on biological resources. Section 6.2.3.2 of the Draft EIR identifies cumulative impacts on biological resources from the Project, the Wash Plan and other projects. That discussion states that the cumulative impacts of these projects on common species would be less than significant while the cumulative impacts of these projects on sensitive species (including state and federally listed species) and RAFSS habitat would be significant and unavoidable after mitigation.

CBD3 Comment 29

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD3 Comment 30

Muni/Western have proposed mitigation to offset impacts of their Project, irrespective of whether the Corps of Engineers has completed implementation of mitigation for impacts of constructing Seven Oaks Dam. Lack of implementation of the latter does not make the Muni/Western proposed mitigation measures inadequate. See also Thematic Responses section 2.4.

CBD3 Comment 31

The residual impact discussion on page 6-35 of the Draft EIR acknowledges that the measures proposed are not proved to be effective. However, as discussed in Thematic Responses section 2.4, Muni/Western have agreed to a revised mitigation measure (revised MM BIO-10) which commits Muni/Western to a specific performance standard. Thus, this mitigation measure fully complies with CEQA.

CBD3 Comment 32

The regulatory baseline in the EIR includes the implementation of measures agreed to by another public agency. The EIR evaluated impacts of the Project against both existing conditions and future existing conditions without the Project, and noted that some effects from other projects such as the construction of Seven Oaks Dam and implementation of the MSHMP have yet to fully manifest themselves on environmental resources. The regulatory baseline in the EIR did not forecast other agencies' mitigation measures as the comment suggests; rather, the EIR based existing conditions in part on mitigation measures that have already been carried out.

CBD3 Comment 33

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD3 Comment 34

Please see the response to California Department of Fish and Game Comment 24 and the discussion of bypass flows in Thematic Responses section 2.4.

CBD3 Comment 35

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

It is noted that the comment references a document that was received as part of the water rights application process and not a part of the CEQA process. Consistent with CEQA, the Draft EIR evaluates impacts to biological resources in section 3.3. In any case, a response to the request can be found in Thematic Responses sections 2.3.4 and 2.4.

CBD3 Comment 36

Please see the responses to State Water Resources Control Board Comment 14 and San Bernardino Conservation District Comment 45. The quality of water from Seven Oaks under present operations is not a result of the Project and hence is not the responsibility of Muni/Western. The Lead Agencies are, however, cooperating with other public agencies to resolve this problem in the interest of the public.

CBD3 Comment 37

See response to CBD3 Comment 36. The comment speculates on the feasibility or infeasibility of the Project without offering any information or analysis to substantiate that speculation.

CBD3 Comment 38

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. A water availability analysis (WAA) is not required by CEQA. As part of the water rights application process Muni/Western prepared a formal WAA and in the interest of providing more information a copy of the WAA is provided in Appendix B.

CBD3 Comment 39

The comment is incorrect. Please see the discussion of the Project baseline in Thematic Responses section 2.1. The remaining contentions in the comment are not supported by any information or analysis and so are purely speculative. Appendix A of the Draft EIR explains the modeling used as part of the EIR. Thematic Responses section 2.4 describes the possibility of using a portion of the unappropriated water in the SAR to support native fishes, riparian vegetation and birds. The sum of these analysis yields, in Muni/Western's opinion, a reasonable basis to estimate the quantity of water available for appropriation.

CBD3 Comment 40

The Draft EIR (pages 3.03, A-4-13) acknowledges that water available for Muni/Western capture varies from year to year. However, it is possible to estimate the potential amount of water available based on historic gage records and a repetition of past hydrology (see Draft EIR Appendix A, Chapters 3 and 4) and so it is not "completely speculative." Indeed, this technique is routinely used by water agencies, including the Department of Water Resources, to evaluate water development /management projects. It is also consistent with the principles and guidelines used by the United States to evaluate water resources projects.

CBD3 Comment 41

Comment noted.

CBD3 Comment 42

The comment is incorrect. The analysis of unappropriated water contained in section 3.0 of the Draft EIR uses a 39-year period of analysis that is representative of long-term Santa Ana hydrology in the vicinity of Seven Oaks Dam. Muni/Western have applied for the maximum quantity of water that may be available in a given year in order to be able to place that amount of water to reasonable and beneficial use, thereby fulfilling the mandate of article X, section 2 of the California Constitution.

CBD3 Comment 43

Please see response to SWRCB Comment 34.

CBD3 Comment 44

We acknowledge that environmental habitat releases were estimated and if greater this could reduce Muni/Western capture, see Draft EIR page 3.0-3. However estimates of water needed for environmental habitat releases were not "entirely speculative" as suggested by the comment but were based on multiple technical studies and information provided by the USACE in coordination with the USFWS (see pages A-4-8 and A-4-9 of Appendix A of the Draft EIR). It should also be noted that one of the mitigation options proposed for mitigation of Seven Oaks Dam construction would rely on other means besides water releases to facilitate habitat regeneration and if this mitigation option is chosen more water would be available for Muni/Western diversion.

CBD3 Comment 45

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. Muni/Western believe that the Draft EIR identifies mitigation measures that are sufficient to mitigate for all of the impacts of the Project on the environment.

CBD3 Comment 46

Please see Thematic Responses section 2.4, which evaluates the potential availability of water to create bypass flows and whether such flows would have a beneficial impact on biological resources.

CBD3 Comment 47

Fish and wildlife uses of water were considered in the Draft EIR at pages 3.3-21, 3.3-33 to 55, 3.3-60, 3.3-62, 3.3-63 and at page 6-34. The remainder of this comment is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. Muni/Western note that it is entirely appropriate for the SWRCB to grant applications to appropriate water during a maximum year when those applications are supported by a sound technical analysis, as here, and where the project proponents agree only to divert water after water is provided to existing regulatory efforts to promote fish and wildlife uses.

CBD3 Comment 48

The proposed exchange of water is fully analyzed in Draft EIR Appendix A. It is anticipated that the water returned by Muni/Western's exchange partner(s) will be State Water Project water, which has a long-term average quality of about 250 mg/l TDS. Please see the response to Conservation District Comment 6.

CBD3 Comment 49

Please see the response to Conservation District Comment 8, which discusses the *Central Delta* decision. The Draft EIR states that the Project (including the use of water returned after an exchange) will be growth inducing (Draft EIR at page 4-2), will have adverse impacts on air quality (Draft EIR at pages 4-18 to 4-19), biological resources (Draft EIR at pages 4-10 to 4-12) and the quality of ground and surface water (Draft EIR at pages 4-8 and 4-9).

CBD3 Comment 50

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary. Please see responses to CBD3 Comments 39 to 49.

CBD3 Comment 51

Chapter 5 was prepared in compliance with CEQA Guidelines Section 15126.6. This Chapter describes a range of reasonable alternatives to the Project which feasibly attain most of the basic objectives of the Project and would avoid or substantially lessen significant impacts of the Project. The analysis evaluates the comparative merits of the alternatives - both positive and negative. Enhanced conservation requires actions by water agencies and water users that are not currently mandated, funded and/or implemented. The effectiveness of each potential action would vary between locations, installation, ease-of-use, as well as the technical effect. Since the comment does not provide specific examples of the inadequacy of the description of the analysis it would be speculative to attempt to respond further to this comment.

CBD3 Comment 52

The Draft EIR does not identify a significant effect of the Project on Santa Ana sucker. In compliance with CEQA Guidelines section 15126.6, alternatives were not developed to reduce any less than significant impacts. Changes in the hydrologic nature of the SAR watershed that may have occurred over the last 150 years are not impacts of this Project and are not the responsibility of this Project to mitigate. For a discussion of the Enhanced Conservation Alternative, please see response to CBD3 Comment 54.

CBD3 Comment 53

The process for developing alternatives and the screening of those alternatives is described in some detail in pages 5-1 through 5-3 of the Draft EIR. The three alternatives evaluated in detail (including an alternative using water conservation techniques over and above those currently mandated by legislative actions, building codes, - Enhanced Conservation) each met the screening criteria - (1) avoid the Project's direct significant effects while not adding new significant impacts; (2) meet most of the Project objectives; and (3) be feasible to implement. Muni/Western are entitled to define the Project without including additional water conservation measures over and beyond existing mandates; evaluating whether to include such additional water conservation measures in the implementation of the Project is the purpose of the analysis of alternatives to the Project and mitigation measures for the significant effects of the Project on the environment.

CBD3 Comment 54

The comment states that water conservation measures should be evaluated as mitigation measures for the Project. However, the comment does not specify *which* significant environmental impacts of the Project such water conservation measures would minimize or avoid. Therefore, it is difficult to evaluate whether or how water conservation would reduce or eliminate environmental impacts of the Project.

Further, the comment misunderstands the use of water conservation measures in the Muni/Western service areas. Retail water purveyors in the Muni/Western service areas already include measures in new developments and retrofits, and have incorporated state-of-the-art water conservation. As discussed in the Draft EIR, a demand reduction of about 8-10% is already included in the Project and in future demand forecasts through the implementation of sustainable conservation programs by the water agencies and mutual water companies in the Muni service area. These water conservation actions include water demand management actions as described by SAWPA (2002) and in the SBVMWD Regional Water Facilities Master Plan EIR (SBVMWD 2001). Water conservation measures are mandated for retail water purveyors and development standards in all new development in the Muni and Western service areas.

Assuming that Muni/Western were to implement water conservation measures in excess of the measures described above, and that retail water purveyors were to implement those measures successfully, though, such measures are likely to have significant adverse effects on the environment. Extraordinary conservation will, as described in the discussion of the Enhanced Conservation Alternative in the Draft EIR, result in increased salt concentrations within the Santa Ana River watershed. Disposal of such additional salt would either create a new adverse impact on the groundwater basins within the Muni/Western service area or would create additional demand for the Santa Ana River Interceptor (SARI) brine line. Because there is little additional capacity in the SARI line, increased water conservation would accelerate the need for a second brine line, with all of the attendant construction effects. Finally, the discharge of additional salts to the Pacific Ocean from a brine line may, itself, have significant adverse effects on marine ecology.

CBD3 Comment 55

The Enhanced Conservation Alternative would result in:

- Avoidance of all direct construction-related impacts associated with the Project.
- Adverse impacts to surface water quality associated with reduced effluent flows from wastewater treatment facilities and attendant increased salt concentrations.

Since the impacts would be greater than for the Project, this alternative was not identified as the environmentally preferred alternative.

CBD3 Comment 56

The existing environmental conditions in the Project area and the impacts of the proposed Project, some of which are significant, some of which are less than significant, and some of which are beneficial, are identified in Chapter 3 of the Draft EIR and amplified in sections 2.2 and 2.3 of the Thematic Responses.

CBD3 Comment 57

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD3 Comment 58

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

CBD3 Comment 59

Agreed. One of the chief purposes of the Project is to place water that is the subject of the Muni/Western applications to reasonable and beneficial use and avoid the waste of water.

CBD3 Comment 60

See response to CBD3 Comments 53-59.

Comment 61

This is a statement of legal opinion with no information suggesting an impact on the environment; therefore, no response is necessary.

Lockheed Martin Corporation
Corporate Energy, Environment, Safety & Health
2550 North Hollywood Way, Suite 301
Burbank, CA 91505
Facsimile 818-847-0256

LOCKHEED MARTIN

December 17, 2004

San Bernardino Valley Municipal Water District
1350 South "E" Street
San Bernardino, California 92408

Attn: Mr. Robert L. Reiter, General Manager and Chief Engineer

Subject: Comments Regarding the Adequacy of the Draft Environmental Impact Report
Santa Ana River Water Rights Applications for Supplemental Water Supply
October 2004

Dear Sir:

Please find attached a table listing comments from Lockheed Martin Corporation regarding the adequacy of the subject draft Environmental Impact Report. There are several issues that we believe require addressing in the Final Impact Report for this project in accordance with CEQA guidelines.

Should you have any questions regarding this submittal, please address them to the undersigned.

Sincerely,

Chris Ingalls

Chris Ingalls
Senior Manager

Attachment

c: Bob Holub
John V. Rossi

Lockheed Martin Comments
Draft Environmental Impact Report
Santa Ana Water Rights Applications for Supplemental Water Supply

	Section	Issue area	Comment
1	Appendix B	Affected Environment – Water quality	Appendix B, Section 4.2.3 discusses perchlorate as an industrial application. The EIR should be revised to include its occurrence also as a result of agricultural activities.
2	Section 2	Project Design/ Alternatives	Increased groundwater extraction (with water quality treatment) from impacted areas of the SBBA should be considered as a Project water supply alternative. This would both increase water production while mitigating groundwater quality impacts from plume areas. Muni should consider entering into water supply agreements with existing water purveyors and evaluate impacts of new pipeline routes from existing well fields to the water conveyance system network.
3	Section 2	Project Design/ Alternatives	Several applications exist for appropriations of excess Santa Ana River overlap and compete for the same water while others are independent and seek to appropriate different water. This application for water should be compared and contrasted to existing water rights and pending applications in the EIR.
4	Section 3.12	Impacts - hazards and hazardous materials	The groundwater flow model and transport model used for the EIR are too simplistic for the task of predicting changes in groundwater chemistry and contaminants. The predicted impacts to groundwater concentration conditions are derived from the USGS (Danskin) flow model for the basin. The objective of this model is to simulate general flow and water balance conditions in the basin. In this model, groundwater flow conditions are simulated using only two layers. The Bunker Hill Basin has numerous aquifers and confining layers, and heads and flow directions are functions of pumping from specific layers at specific locations, so the USGS model is inappropriately scaled to address movement of specific plumes and contaminants. The groundwater transport model, which is based on the two-layer flow model, has the same shortcomings.
5	Section 3.12	Impacts - hazards and hazardous materials	The locations and degrees to which contaminant concentrations will change are not shown in the EIR. Tables are provided that show how concentrations of nitrate and TDS will change through time, but no similar tables are provided for perchlorate or TCE.
6	Section 3.12	Impacts - hazards and hazardous materials	The need to clean up the aquifers and control the movement of the contaminant plumes should be elevated in the EIR process to the level of a conjunctive basin management objective. The document does not acknowledge the fact that there are Water Board Clean-up and Abatement Orders and an EPA Consent Decree operating in the basin, the performance of which may be jeopardized by the proposed action.

Section 3.12	Impacts - hazards and hazardous materials	No mechanism is provided by which WMWD and SBVMWD will gather data with respect to plume clean-up and containment, or solicit and apply guidance from agencies and parties responsible for clean-up and containment to assure that WMWD/SBVMWD actions do not negate these state and federally mandated projects.	7
Section 3.12	Impacts - hazards and hazardous materials	In this section, it is stated that PCE is present within the Crafton-Redlands Plume and that this was caused by disposal of industrial solvents. PCE is not significantly associated with this Plume, thus revision of this statement is warranted.	8
Section 3.12	Impacts - hazards and hazardous materials	It is noted on Table 3.12-2 that from 9 to 19 acres and from 11 to 21 additional wells will become impacted from perchlorate under various project scenarios. The acreage estimate should be revisited, as the number of acres would be much greater in most areas of the basin to correspond with the number of impacted wells. This impact is correctly labeled as significant; however, the corresponding mitigation measures (MM HAZ-4) are inadequate in several respects. It is stated that, to the extent feasible, Muni/Western will direct water spreading to limit adverse plume movements. It is further stated that perchlorate impacts would be significant and unavoidable following this mitigation measure. The EIR should elaborate on which wells are projected to become impacted, and specify how Muni/Western will provide well treatment to mitigate the hazard to unimpacted wells that the project causes.	9
Section 3.13	Impacts – utilities	The Project will utilize the Mill Creek Spreading Grounds, Devil Canyon, Sweetwater Basins and other facilities that may be planned for other projects, including the Riverside-Corona Pipeline Project, potentially resulting in conflicts between the projects. The EIR should be revised to discuss this impact and propose mitigation.	10
Section 3.2	Affected environment – Water quality	The San Bernardino perchlorate Plume is not defined or mentioned in Project documents. This plume is impacting several potable wells and analysis of the Project on affected wells is required.	11
Section 3.2	Impacts – Water quality	Water recharge in some areas, such as the Patton Basin, could accelerate flow of San Bernardino plume into potable wells causing degradation of potable water sources and adverse effects to existing and planned remedial efforts.	12
Section 3.2	Impacts – Water quality	Other planned recharge areas, such as San Timoteo Basin, could cause additional influent of perchlorate and other chemicals into the SBBA (Bunker Hill Basin). Analysis of this possibility is needed.	13

14	Section 3.2	Impacts – Water quality	Reduction in flows in the Santa Ana River could result in spreading of the Crafton-Redlands perchlorate and TCE Plumes to the north in Hydrostratigraphic Unit 2 (HSU-2), potentially causing additional areas to become impacted and additional wells to require treatment. The EIR should be revised to reflect this possibility.
15	Section 3.2	Impacts – water quality	As a result of the Project, intermittent and local exceedance of water quality objectives for total dissolved solids and nitrates could occur which could limit the use of existing wells for blending to attain potable standards and/or cause placement of additional treatment on wells. The EIR should be revised to discuss this impact and propose mitigation.
16	Section 3.2	Impacts – water quality	The Project could influence the extent, direction, and rate of movement of groundwater contamination in the Bunker Hill Basin, causing the modification of existing and planned treatment of the plumes under various agreements and regulatory orders, and potentially limiting purveyor options for potable supply. These impacts must be carefully evaluated and the potential benefits of the Project balanced against the drawbacks to plume management. The EIR should be revised to discuss this impact and propose mitigation.
17	Section 3.2	Impacts – Water quality	The footprint of perchlorate in the Redlands-Crafton Plume is forecast by Project modeling to increase. This will increase treatment costs and limit blending options. Modeling of the SBBA plumes is technically very difficult and requires consideration of multiple hydrostratigraphic layers, variations in precipitation and pumping, and recharge. The EIR fails to adequately discuss the impacts of the Project on exacerbating the plume footprints or on remediation of the Crafton-Redlands Plume. The San Bernardino Plume (not mentioned), the Norton and Newmark/Muscoy TCE Plumes have likely not been adequately modeled, nor adequate mitigating measures addressed.
18	Section 3.2	Impacts – Water quality	With the change of groundwater levels, subsidence may occur. An analysis with the PRESS model was done for the location with the highest decrease in groundwater levels (Well Raub #8). The average subsidence increased by 0.27 feet in the worst case due to the Project, compared to subsidence during No Project. The potential for the subsidence to affect Riverside production wells and associated plume treatment systems require evaluation.
19	Section 3.2, Page 3.2-12	Affected Environment – Water quality	In Table 3.2-7, of the EIR, PCE is noted to be part of the Crafton-Redlands Plume - this is not the case.

LOCKHEED MARTIN

Lockheed Martin Comment 1

This is a statement of opinion with no information suggesting an impact on the environment resulting from the Project; therefore, no response is necessary. Please see the response to Lockheed Martin Comment 8 for a change in the language of the Draft EIR.

Lockheed Martin Comment 2

Please see CBD2 Comment 29 for a description of the provisions of the *Western* Judgment. The proposed increase in extraction would, in all likelihood, trigger an obligation on the part of Muni to import additional SWP water when such supplies are already oversubscribed. For this reason this proposal is infeasible. Furthermore, the Project will result in recharging the SBBA with high quality native water which, if properly managed, should enhance remediation efforts.

Lockheed Martin Comment 3

The Draft EIR's discussion of the cumulative impacts of the Project contains the requested analysis (see Chapter 6). That discussion is detailed in Thematic Responses section 2.5.

Lockheed Martin Comment 4

An exhaustive analysis of potential groundwater change due to Project operations was performed for the Draft EIR. Muni/Western completed a groundwater analysis of the SBBA that relies on a groundwater model initially developed by the USGS. The USGS SBBA groundwater flow model is a two-layer model conceptualized based on the hydrogeologic setting and hydrogeologic units of the SBBA. Although the groundwater model cannot be as detailed or as complex as the real system, the model is useful to estimate aquifer properties, recharge, discharge and water levels.

The transport model was developed to be consistent with the conceptual model of groundwater flow. Transport model calibration was performed for PCE and TCE for the period 1986 to 2000. In general, the model-generated MCL plume boundary closely matches the MCL plume boundary contoured from observed data. The model relative error (standard deviation of the water quality residuals divided by the observed range) is 8 percent and 9 percent for PCE and TCE concentrations, respectively. It is common modeling practice to consider a relative error of less than 10 percent to be a good fit (Spita and Moreno 1996; Environmental Simulations, Inc. 1999). The transport model calibration demonstrates that the model can address the movement of plumes.

It should be emphasized that the models are designed to provide accurate indications of the potential for impacts (in both space and time) given the regional attributes of the groundwater basins to which they apply. They are not designed to provide precise estimates of changes in groundwater levels, nor the spatial extent and level of concentration of groundwater contaminants that would be required for remediation purposes.

Lockheed Martin Comment 5

Please see Thematic Responses section 2.3.2 and response to RWQCB Comments 3 and 5.

Lockheed Martin Comment 6

Muni/Western intend to develop groundwater management plans that avoid, to the extent feasible, adverse impacts on contaminant plumes. Those plans will, of course, incorporate all applicable legal constraints. Both the settlement agreement between Muni/Western and the Senior Water Right Claimants (the "Seven Oaks Accord") and the settlement agreement between Muni/Western and the San Bernardino Valley Water Conservation District call for parties to develop and implement a groundwater management plan consistent with all applicable legal requirements.

Lockheed Martin Comment 7

Please see the response to Lockheed Martin Comment 6.

Lockheed Martin Comment 8

Comment noted. Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
3.12-2	19-22	A regional groundwater contamination plume (the Redlands-Crafton plume), consisting primarily of ~~tetrachloroethylene (PCE) (also known as perchloroethylene) and~~ trichloroethylene or trichloroethene (TCE), is located approximately 1.5 miles hydrologically downgradient of the SAR construction area (Figure 3.12-1).
3.12-5	3-8	Perchlorate, a chemical used in the production of solid rocket fuel, has adversely impacted groundwater supplies in the Redlands area (Figure 3.12-1). TCE~~, PCE,~~ and dibromochloropropane (DBCP) are also present within this groundwater contaminant plume. DBCP is a soil fumigant previously used in agricultural areas. The TCE ~~and PCE~~ contamination was caused by the disposal of industrial solvents, which are present in the upper 300 to 400 feet of groundwater.

Lockheed Martin Comment 9

Please see Thematic Responses section 2.3.2, which provides a more detailed analysis of the impacts of the Project on contaminant plumes. Groundwater impacts were evaluated in the Draft EIR using two methodologies (1) comparisons of acreages of contaminated plume footprint and (2) the number of wells contaminated. There is not an exact correlation between these two methodologies, nor is a correlation necessary to accurately identify impacts. Please see page 3.12-9 of the Draft EIR. Also, Muni/Western have adopted MM HAZ-5, which requires the provision of an alternative water supply or treatment for affected wells for the duration of the contamination caused by the Project.

Lockheed Martin Comment 10

The potential to use these facilities are described in Chapter 2 of the DEIR. The Project's use of these facilities would be within the current operational constraints and on an "as available" basis. No new impacts are anticipated.

Lockheed Martin Comment 11

A thorough analysis of the effect of the Project on all perchlorate contamination in the San Bernardino Basin Area was performed, and the results are shown on Figures B76-B83 Appendix B of the Draft EIR and in Thematic Responses section 2.3.2. The area and concentration of the perchlorate plume in 2000 is shown on Figure 6.4-11 Appendix B of the Draft EIR.

Lockheed Martin Comment 12

Please see Thematic Responses section 2.3.2 and responses to RWQCB Comments 3 and 5.

Lockheed Martin Comment 13

See also response to Lockheed Martin Comment 12. Garden Air Creek spreading ground is the planned recharge area in the San Timoteo Basin. Garden Air Creek is a tributary of San Timoteo Wash located approximately 10 miles upstream where the San Timoteo Wash enters the SBBA. The increase in groundwater elevation due to Project was calculated using the analytical Hantush Equation. Results show that the impacts are restricted to a limited area (See Figures B84-B87 in Appendix B of the Draft EIR). Due to the remote distance of the spreading ground to the SBBA, the Project is not expected to significantly increase inflow from the San Timoteo Basin to the SBBA and so it is unlikely that this recharge will serve to be a vehicle for additional contamination

Lockheed Martin Comment 14

An exhaustive analysis of groundwater impacts of the Project was performed and subjected to substantial peer review (see Response to Lockheed Martin Comment 4). The groundwater model results for TCE and perchlorate contamination are shown on Figures B66-B73 and B76-B83 (Appendix B of the Draft EIR), respectively.

Lockheed Martin Comment 15

Please see the response to RWQCB Comment 3.

Lockheed Martin Comment 16

The discussions of groundwater and hazardous materials in the Draft EIR and in Thematic Responses section 2.3 acknowledge that the specific changes in recharge location and rate (while not affecting the long-term, total storage of groundwater in the SBBA), could influence the extent, direction, and rate of movement of groundwater contamination in the SBBA. Those impacts have been evaluated using a state-of-the-art groundwater model and Muni/Western are proposing substantial mitigation measures (most notably MM HAZ-5) to substantially reduce the effects of the Project on the environment. No further analysis is needed to comply with CEQA.

Lockheed Martin Comment 17

Please see response to Lockheed Martin Comments 4, 14 and 16. The modeling used by Muni/Western is fully adequate for the purpose of complying with CEQA and the mitigation measures proposed (including but not limited to MM HAZ-5) substantially reduce the effects of the Project on the environment.

Lockheed Martin Comment 18

The comment states: "the average subsidence increased by 0.27 feet in the worst case due to the Project, compared to subsidence during No Project." The increase in subsidence of 0.27 ft (or about 3 inches) for the worst case (Scenario A) is the total cumulative increase in the difference in predicted subsidence (between project and no project conditions) over the 39-year base period (0.007 ft/yr). As shown in Draft EIR, Appendix B, Table 6.6-1, the average subsidence rates under No Project Condition and Scenario A were predicted as 0.0083 ft/yr and 0.0158 ft/yr, respectively. These subsidence rates are within the acceptable range of groundwater basin management, but because of the conservative threshold of significance, are still considered significant and unavoidable even after mitigation (see Draft EIR page 3.4-25). In addition, well location Raub #8 was chosen for this analysis because it is located in the Pressure Zone nearest to the area of maximum historical subsidence and upon review of geophysical logs, appeared to have the largest cumulative thickness of clay layers. It is expected then for other wells in the area with less historical subsidence and lower cumulative thickness of layers that subsidence would be less than that shown in the Raub #8 well.

As shown in Section 3.4 on page 3.4-29 of the Draft EIR, the mitigation measure (MM GEO-8) states: "Muni/Western will implement a groundwater level monitoring program using data from Index Wells (see Figure 3.4-5). This information will be used, in conjunction with forecasts of groundwater levels derived from Muni/Western integrated surface and groundwater models, to identify trends in groundwater levels and isolate changes attributable to the Project. To the extent feasible given existing infrastructure, and consistent with meeting other basin management objectives, Muni/Western will direct Project water spreading to limit the potential for subsidence in the Pressure Zone area of the SBBA."

Lockheed Martin Comment 19

Comment noted. Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
3.2-12	15	*In Table 3.2-7 delete the "x" that denotes the presence of PCE within the Redlands-Crafton Contamination Plume*

Upper Santa Ana Water Resources Association
P.O. Box 920
Rialto, CA 92376

December 17, 2004

Mr. John V. Rossi
General Manager
Western Municipal Water District
450 Alessandro Boulevard
Riverside, CA 92508-2449

Robert L. Reiter
General Manager and Chief Engineer
San Bernardino Valley Municipal Water District
P.O. Box 5906
San Bernardino, CA 92412-5906

RE: Draft Environmental Impact Report (EIR) for Santa Ana River Water Right Applications for Supplemental Water Supply

At its meeting on December 9, 2004, the Upper Santa Ana Water Resources Association (USAWRA) adopted the following resolution regarding the Draft Environmental Report (EIR) for Santa Ana River Water Rights application for Supplemental Water Supply, which we hereby submit as our only joint comment.

> Whereas, there are numerous unforeseen circumstances concerning water quality, containment plumes, water levels and future water demands that cannot be adequately studied or forecasted utilyzing water hydrology models; and 1
>
> Whereas the Application for Supplemental Water Supply was submitted by SBVMWD and Western MWD largely for the benefit of the USAWRA members and their ultimate retail customers; now therefore
>
> The USAWRA supports the Application as presented, with the caveat that San Bernardino Municipal Water District and Western jointly develop a process whereby all proposed policies, programs or projects associated with implementing this Application be first brought to the USAWRA for review and approval.

We appreciate your attention to this request and look forward to working with you to develop a process in the best interest of the ultimate retail customer.

Sincerely,

Anthony W. "Butch" Araiza, President
Upper Santa Ana Water Resources Association

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UPPER SANTA ANA WATER RESOURCES ASSOCIATION

Upper Santa Ana Water Resources Association Comment 1

This comment does not identify an impact on the environment that is the result of the Project; therefore no further response is necessary.

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4.0 ERRATA

The following errata are incorporated into the Final EIR. Added language is shown as underlined text. Omitted language is shown as strike-out text.

Errata #	Page	Line(s)	Edit
1	3.1-2	26	…Gage 11066460) located at RM ~~45.7~~ 45.2 near Riverside Narrows.
2	3.1-4	4	*Make the following corrections to Table 3.1-2:* Mill Creek, ~~68.67~~ 68.59 City Creek and Plunge Creek (Combined), ~~62.87~~ 62.66 East Twin Creek, ~~58.14~~ 58.10
3	3.1-4	16	…in the City of Rialto discharge directly to the SAR via a discharge channel at RM ~~53.46~~ 53.49…
4	3.1-6	15	Beginning in June and continuing through ~~September~~ August, the …
5	3.1-9	10	*Make the following correction to Table 3.1-6:* Pre-Seven Oaks Dam Discharge in the SAR Channel Below Mill Creek Confluence under 100-Year Flood conditions, ~~75,00 cfs~~ 75,000 cfs
6	3.1-21 and Figure 3.1-6 and A-2-22 and App A Figure 2.3-1 and A-6-1	18-26	• Segment B – Seven Oaks Dam to just above Cuttle Weir (RM 70.93 to RM ~~69.9~~ 70.46); • Segment C – Cuttle Weir to just above the confluence with Mill Creek (RM ~~69.9~~ 70.46 to RM ~~67.89~~ 68.59); • Segment D – Mill Creek confluence to just above "E" Street (RM ~~67.89~~ 68.59 to RM 57.69); • Segment E – "E" Street to just above the RIX and Rialto Effluent Outfall (RM 57.69 to RM 53.4~~6~~9); • Segment F – RIX and Rialto Effluent Outfall to just above Riverside Narrows (RM 53.4~~6~~9 to RM ~~45.7~~ 45.2); and • Segment G – Riverside Narrows to Prado Flood Control Basin (RM ~~45.7~~ 45.2 to RM 35.5).
7	3.1-22	29	Segment B of the SAR extends between RM 70.93 and RM ~~69.9~~, 70.46 is in…
8	3.1-22 and 3.1-23	34, 1	~~The major water diversions in this segment are those made by the Conservation District.~~
9	3.1-23	25-26	Segment C of the SAR is between RM ~~69.9~~ 70.46 and RM ~~67.89~~ 68.59, in USACE Sub-Area 2 and SARWQCB Reach 5.

Errata #	Page	Line(s)	Edit
10	3.1-23	27	There are no major tributaries ~~or water control features~~ in this segment of the SAR. The major water diversions in this segment are those made by the Conservation District.
11	3.1-24	8	Segment D of the SAR is between RM ~~67.89~~ 68.59 and RM 57.69, is in both USACE Sub-Areas 2
12	3.1-25	22	Segment F of the SAR (between RM 53.46 and RM ~~45.7~~ 45.2) is entirely…
13	3.1-26	2	Segment G extends from Riverside Narrows at RM ~~45.7~~ 45.2 to Prado ~~Dam~~ Flood Control Reservoir at RM ~~30.5~~ 35.5.
14	3.1-35	9-10	…additional impoundment of water during the warm summer months under Scenarios A and B, thus increasing the amount of water subject to anaerobic conditions, a significant impact. This impact would not occur under Scenarios C and D, which do not include seasonal storage.
15	3.1-35	29	…implementation as a result of the greater volume of water stored for Project uses (under Scenarios A and B which include seasonal storage), compared to…
16	3.1-35	35	…mitigation is required. Scenarios C and D which do not include seasonal storage would have no impact on seiche potential.
17	3.2-31	10	**MM GW-~~1~~ 2:** Using available data, Muni/Western will, on an annual basis, evaluate impacts of the Project on nitrate concentrations in the SBBA.
18			*Replace Figure 3.2-14 (replacement figure on following page)*
19	3.4-23	12-14	Project operations, under Scenarios A through D, would result in beneficial impacts ~~no impacts~~ to groundwater levels throughout most of the modeling period (2000 to 2039) as can be seen in Index Well 25 in Figure 3.4-9 through 3.4-12 ~~the hydrograph of Figure 3.4-8~~.
20	3.4-26	7	*In Table 3.4-1 in the Row entitled "Scenario C, Percent Reduction" and Column entitled "Extent Outside Pressure Zone" change (1%) to (10%).*
21	3.4-27	3	*In Table 3.4-2 in the Row "City Creek" and Column "Average Annual Inflow to SBBA" change 6,400 to 8,400. In the Row "Mill Creek at Yucaipa" and Column "Average Annual Inflow to SBBA" change 1,200 to 27,700. In the Row "San Timoteo Creek" and Column "Average Annual Inflow to SBBA" change 146,600 to 1,200.*
22	3.4-27	3	*In Table 3.4-2 add the following footnote:* Source: USGS

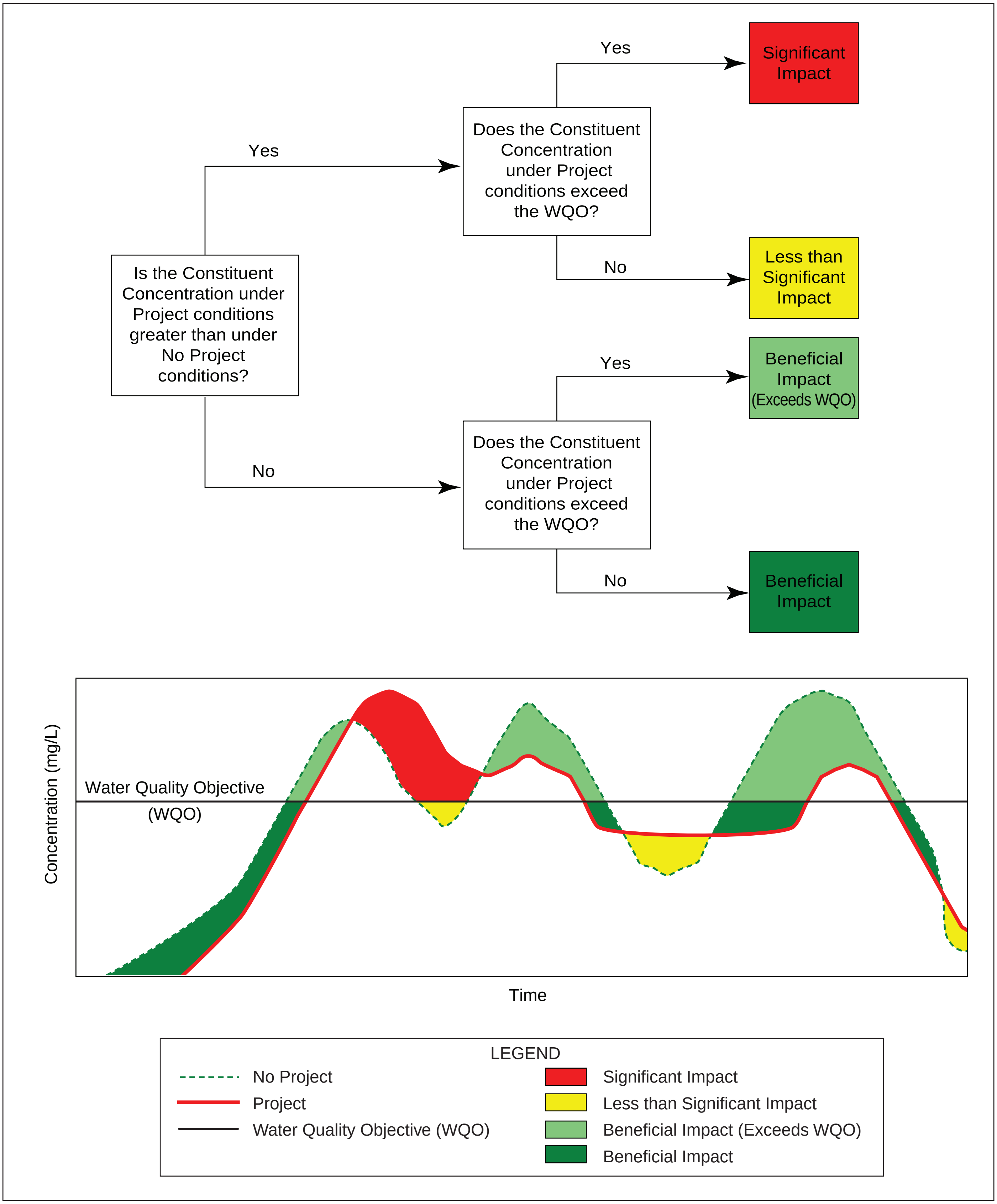

Figure 3.2-14. General Schematic for Groundwater Quality Impact Methodology Decision Flow Chart

Errata #	Page	Line(s)	Edit
23			*Replace Figure 3.4-4 (replacement figure on following pages)*
24			*In Figure 3.4-9 replace "(Exceeds WQO)" with "<50 feet bgs" from the legend*
25			*In Figure 3.4-9 replace "(Exceeds WQO)" with "<50 feet bgs" from the legend*
26			*In Figure 3.4-9 replace "(Exceeds WQO)" with "<50 feet bgs" from the legend*
27			*In Figure 3.4-9 replace "(Exceeds WQO)" with "<50 feet bgs" from the legend*
28	3.12-10	2	*In Table 3.12-2, under the Row "TCE, Project Scenario D, Column for "Difference in Footprint Area" change -82 to -81. Under Row "PCE, Project Scenario B", Column for "Difference in Footprint Area", change -153 to -152. In Row "PCE, Project Scenario C", Column "Difference in Footprint Area" change -53 to -52. In Row "PCE, Project Scenario D" , Column "Difference in Footprint Area" change -37 to -36.*
29	3.12-15	38	…under both Project and No Project conditions. The average extent of the footprint is between ~~37~~ 36…
30	4-6	8	…recycled water (SAWPA ~~2002~~ 2002a).
31	4-8	2	…27,000 ~~29,000~~ af. This additional source of water would be shared between Muni (72 percent) and…
32	6-22	17-21	Other related projects would further reduce flow. In Table 6.2-1, ~~the volume of~~ water diverted by the Project and related projects was removed ~~subtracted~~ from baseflow and the concentration of TDS and TIN was re-calculated based on the adjusted flow. Representative values for ~~flow and~~ TDS and TIN concentrations for points along the SAR were taken from USGS data and data provided by the San Bernardino Municipal Water Department.
33	6-23 and 6-24	1	*Replace Table 6.2-1 and 6.2-2 with Table 6.2-1 on following pages*

Revised Table 6.2-1. Potential Cumulative Impacts on Santa Ana River TDS and TIN

Location	*Segment*	*Related Project Influence*	TDS		TIN		*Effects due to Project and Related Projects*	*Water Quality Objective Violated*
			Measured Concentration (mg/L)	*Water Quality Objective (mg/L)*	*Measured Concentration (mg/L)*	*Water Quality Objective (mg/L)*		
Above Seven Oaks Dam	A	_	NA	300	NA	5	None	No
Below Seven Oaks Dam, Above Cuttle Weir	B	Conservation District	230 [1]	300	0.3 [1]	5	None	No
Below Cuttle Weir	C	Conservation District	NA	300	NA	5	None	No
Mill Creek Confluence	D	Conservation District	NA	300	NA	5	None	No
"E" Street Gage	E	Conservation District	~470 [2]	550	~0.4 [2]	5	Possible increase in TDS up to 470 mg/L	No
RIX-Rialto Outfall	F	Conservation District and RIX	~520 [3]	700	~8.5 [3]	10	Possible increase in TDS up to 520 mg/L and TIN up to 8.5 mg/L	No
Riverside Narrows	G	RIX and Riverside	560 [1]	700	7.3 [1]	10	None	No
Below Prado		RIX and Riverside	600 [1]	650	5.2 [1]	10	None	No

[1] From USGS WRI 03-4326, median baseflow TDS in 1998-2001.
[2] The median TDS, TIN of the Warm Creek inflow, not of the SAR.
[3] Maximum Monthly Mean TDS, TIN of the RIX Facility Outfall during 2001-2002 (RIX PEIR 2003), not SAR.

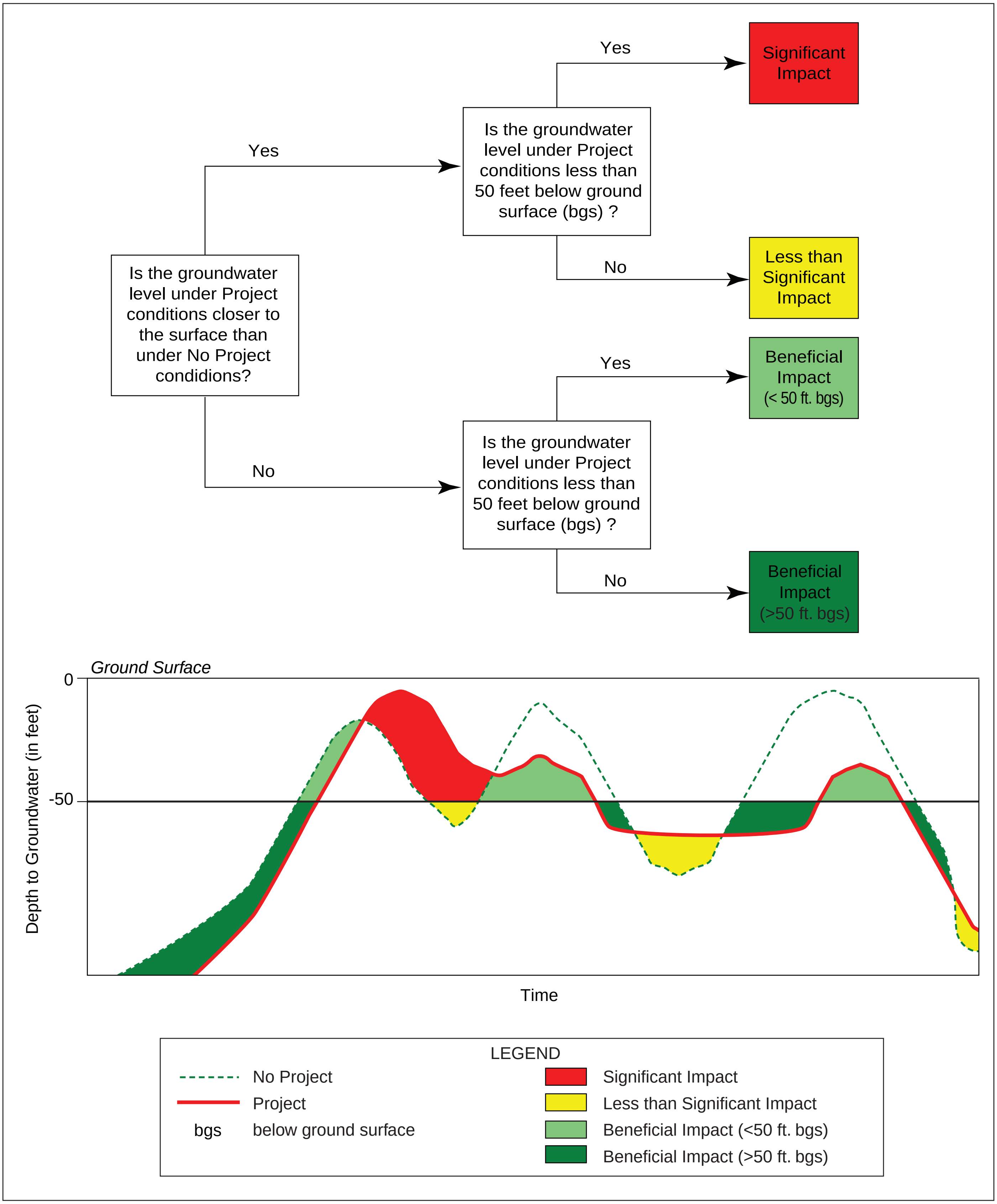

Figure 3.4-4. Groundwater Levels and Liquefaction Impact Determination Methodology

Errata #	Page	Line(s)	Edit
34	6-25	18-29	**Cumulative Impact SW-9,** a less than significant impact to sediment transport trends due to decreased flow in the river, also applies to this river segment. It is estimated that peak flow under the No Project during a 100-year flood event would be 25,000 cfs in the river segment from Mill Creek to "E" Street. With diversions per the Project and Conservation District Application, up to 1,500 cfs would be diverted from the SAR and up to 90 cfs would continue to be diverted from Mill Creek per the Conservation District Application (because the 90 cfs diversion already takes place it does not reduce peak flow). See Appendix A page 6-7. Because the Project and Conservation District Application would decrease flow from the upper Santa Ana Canyon, it is possible that the frequency with which sand, cobble, and gravel is mobilized and transported in this river segment could decline slightly. But the effect would be minor since Mill Creek (which is not affected ~~only minimally affected~~) dominates sediment contribution and transport in this river segment (EIP 2004). Therefore, this is a less than significant impact, and no mitigation is required.
35	A-2-2	27	~~RM 45.7~~ RM 45.2 (in a geographic area called the Riverside Narrows). Table 2.2-1 provides the annual
36	A-2-4	5	*In Table 2.2-2 change River Mile 68.67 to 68.59 and change 58.14 to 58.10.*
37	A-2-7	6-7	Beginning in June and continuing through ~~September~~ August, the debris pool is emptied.
38	A-2-24	31	Segment B of the SAR extends between RM 70.93 and RM ~~69.9~~ 70.46, in SARWQCB Reach 5 and is in
39	A-2-25	2-5	Segment C of the SAR is between RM ~~69.9~~ 70.46 and RM ~~67.89~~ 68.59, in SARWQCB Reach 5, and is in USACE Sub-Area 2. There are no major tributaries ~~or water control features~~ in this segment of the SAR. Like its upstream segment, the SAR slope is fairly steep and bed material is generally coarse throughout.
40	A-2-25	18	Segment D of the SAR is between RM ~~67.89~~ 68.59 and RM 57.69, in SARWQCB Reach 5, and is in both…
41	A-2-26	35	Segment F of the SAR is between RM 53.46 and RM ~~45.7~~ 45.2 and is evenly divided, with about half
42	A-2-27	11	Segment G extends from Riverside Narrows at RM ~~45.7~~ 45.2 to Prado Dam at RM 30.5.
43			*Replace Appendix A Figure 2.5-1 (see replacement figure on following pages)*
44			*Replace Appendix A Figure 4.2-2 (see replacement figure on following pages)*

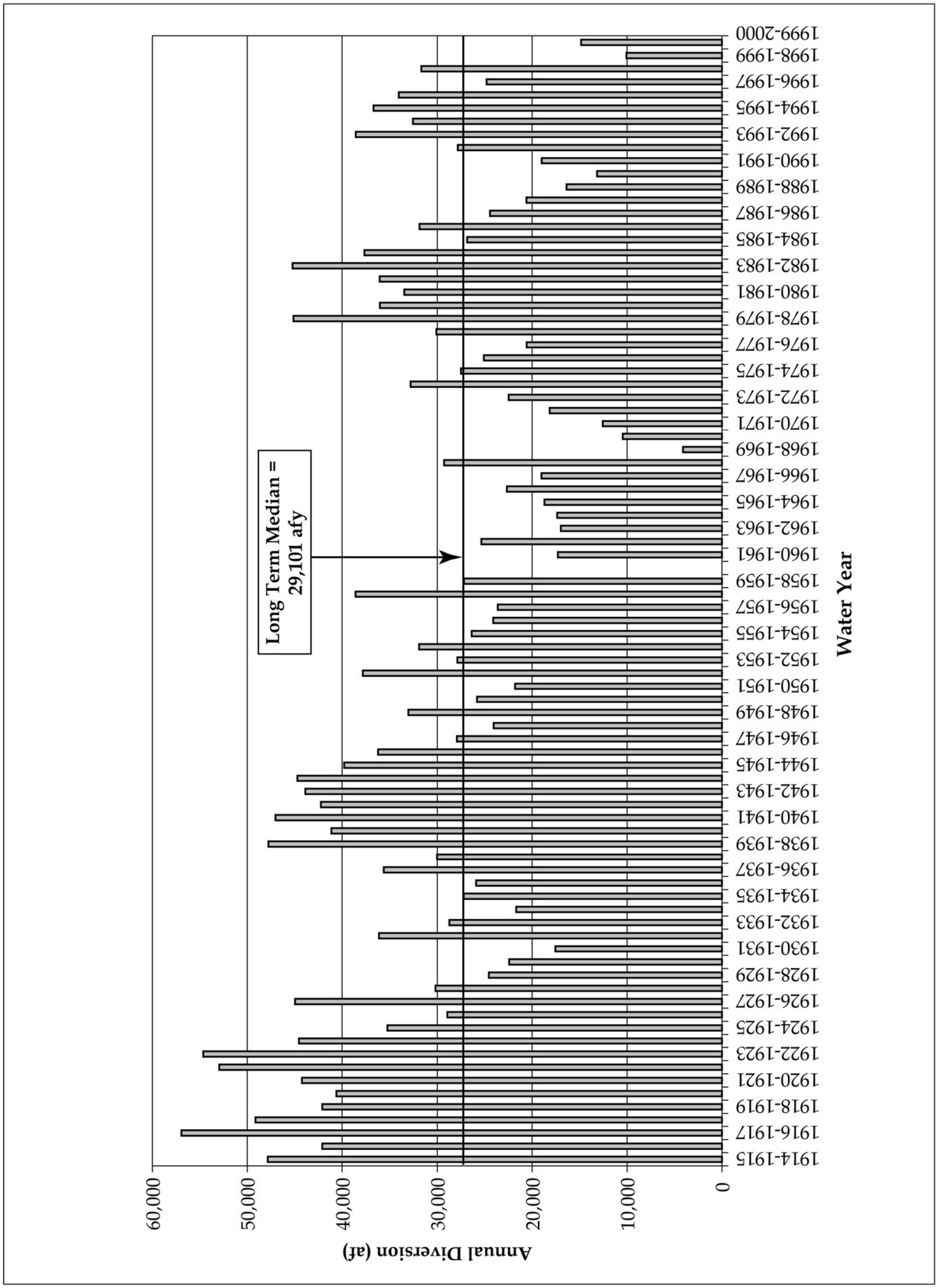

Figure 2.5-1. Southern California Edison Company Canal USGS Gaging Station 11049500, WY 1914-15 through 1999-00

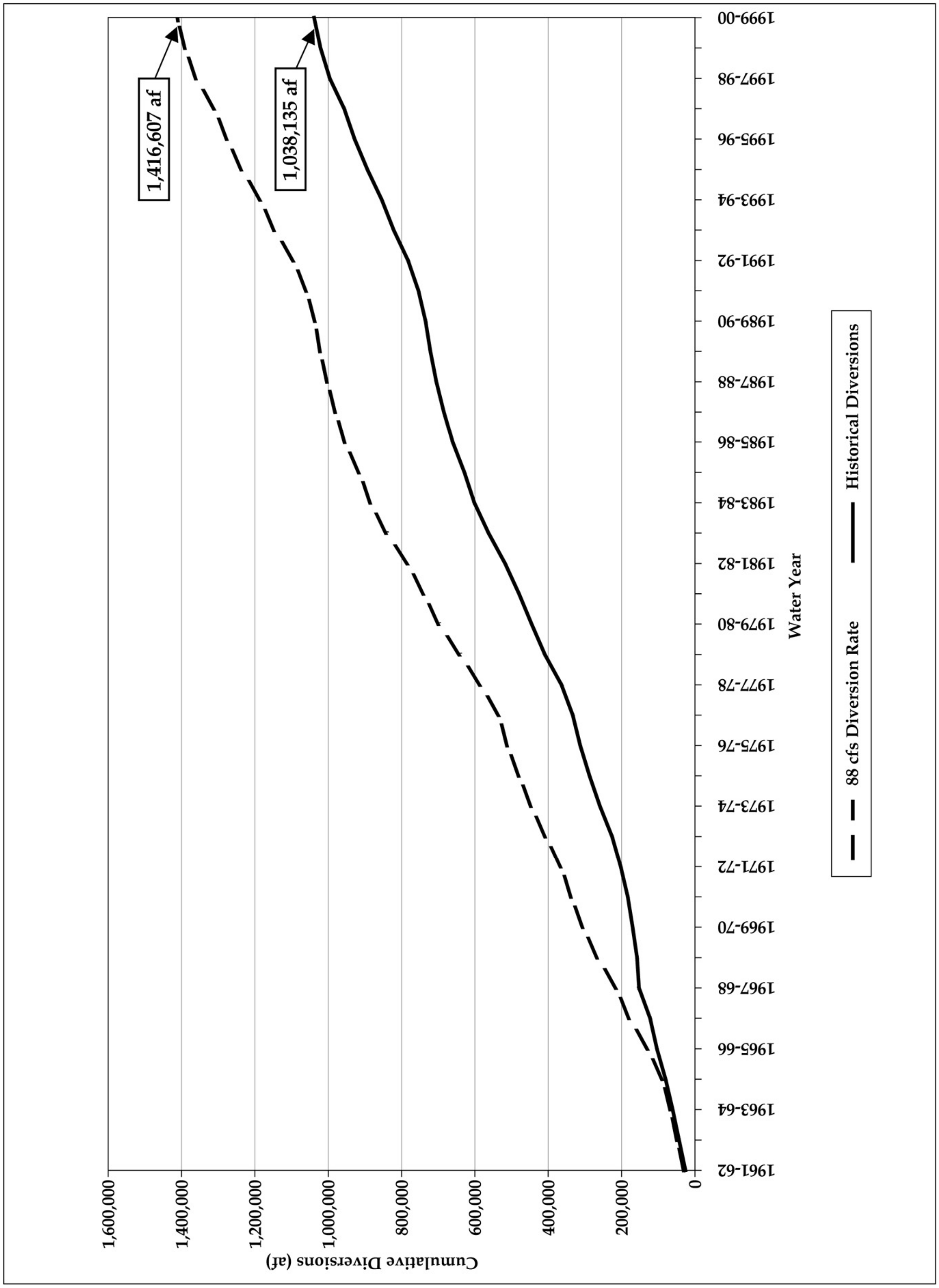

Figure 4.2-2. Cumulative Diversions by Senior Water Rights Claimants from the Santa Ana River, WY 1961-62 through WY 1999-2000

Errata #	Page	Line(s)	Edit
45	A-5-11	35-36	The capacity of the Foothill Pipeline, in reverse flow, is 300 cfs from the SARC westward to the inter-tie with the Inland Feeder and is 200 cfs between the inter-tie of the Inland Feeder and the Devil Canyon By-Pass Pipeline.
46	A-5-13	11-13	It is assumed in the model that the Foothill Pipeline (Reverse Flow) from the SARC westward to the Inland Feeder could carry as much as 300 cfs and 200 cfs beyond the inter-tie of the Inland Feeder.
47	A-5-24	28-29	The information presented in Figures 5.5-17 and 5.5-18 show how under Scenarios A and B water is delivered in all ~~but two~~ of the 39 years.
48	A-5-26	11-15	Seasonal storage, (given the assumptions of Scenario ~~A~~ B), adds about 45,700 af (over the 39-year base period) to total capture by Muni/Western. The maximum annual quantity of water added by seasonal storage in any given year, again given the assumptions of Scenario ~~A~~ B, would be 11,500 af.
49	A-5-26	24-31	In order to evaluate the effects of seasonal water conservation storage on Muni/Western SAR water capture, according to DOP results, the ~~two~~ largest ~~storm~~ runoff ~~events~~ year in the base period ~~were~~ was analyzed with and without seasonal water conservation storage. This evaluation indicated seasonal water conservation storage increased the amount of ~~the available~~ SAR diversions that Muni/Western was able to divert by ~~23,102 af~~ 5,606 af during the storm runoff event occurring in WY 1968-69 ~~1979-80 (storm runoff event from February 13, 1980 to April 6, 1980) and a total of 16,182 af during the storm runoff event occurring in WY 1968-69 (storm runoff event from January 19, 1969 to March 31, 1969)~~ given the assumptions of Scenario B.
50	A-5-27	3-6	– Direct Delivery (Priority 1) ~~5 to 10~~ 11 cfs – Recharge within SBBA (Priority 2) 0 to 31cfs – Recharge Outside SBBA (Priority 3) ~~21~~ 57 cfs – Exchanges (Priority 4) 1,371 cfs
51	A-5-27	9-17	Based on the DOP results, during the months of December, January, and February, over the 39-year base period, there would be 8 ~~14~~ days with a peak unappropriated flow of 1,500 cfs given the assumptions of Scenario A ~~or B~~, and 4 ~~8~~ days with a peak unappropriated flow of 1,500 cfs ~~would be occur~~ given the assumptions of Scenario C ~~or D~~. In both cases, almost all of the potential diversion days occurred in the month of February 1969. With a maximum absorptive capacity of 1,400 cfs available during these 3 months, 60 ~~100~~ cfs (approximately 120 ~~200~~ af per day) would not be diverted or delivered to beneficial uses during these days, or approximately 480 ~~1,600~~ af and 960 ~~2,800~~ af, over the base period. Thus the potential loss of Muni/Western diversion, based on the above conditions, ranges from 480 af to 960 ~~1,600 af to 2,800~~ af over the 39-year base period (or 12 to 25 ~~41 to 72~~ afy). ~~In both cases, at least half of the potential loss occurred in the month of February.~~

Errata #	Page	Line(s)	Edit
52	A-6-5	2	*In Table 6.1-2 change 40.3 to 40.4, change 12.938 to 14.09, change 67.9 to 68.59, change 5.0 to 4.5*
53	A-6-11	17-19	For scenarios where historical data is not used, the minimum of ~~88~~ 85 cfs or the historical flow rate in the SAR at Mentone is used to estimate the total diversions made from the river by the senior water rights claimants.
54	A-6-13	2	~~The model is limited to a release duration of 2 days.~~
55	B-6-14	22	The right to export for the Plaintiffs was adjusted based on ~~three~~ four items:
56	B-6-15	1-4	~~1) the Plaintiffs' share of the newly conserved water,~~ ~~2) the Plaintiffs' share of the sub-basin exchange water (captured SAR water that is delivered outside of the SBBA but within Muni's service area), and~~ 3) ~~the Conservation District adjustment.~~ 1) Plaintiffs' portion of the diverted SAR water delivered outside the SBBA (but not exchanged). 2) Plaintiffs' portion of the Conservation District replenishment adjustment. 3) Plaintiffs' portion of the diverted SAR water delivered to the SBBA. 4) Plaintiffs' portion of the estimated change in natural river recharge based on SAR water diversions under each Project scenario in comparison to the No Project condition.
57			*Replace Appendix B Figure B50 (replacement figure on following pages)*
58			*Replace Appendix B Figure B51 (replacement figure on following pages)*
59			*Replace Appendix B Figure B52 (replacement figure on following pages)*
60			*Replace Appendix B Figure B53 (replacement figure on following pages)*
61			*Replace Appendix B Figure B54 (replacement figure on following pages)*
62			*Replace Appendix B Figure B55 (replacement figure on following pages)*

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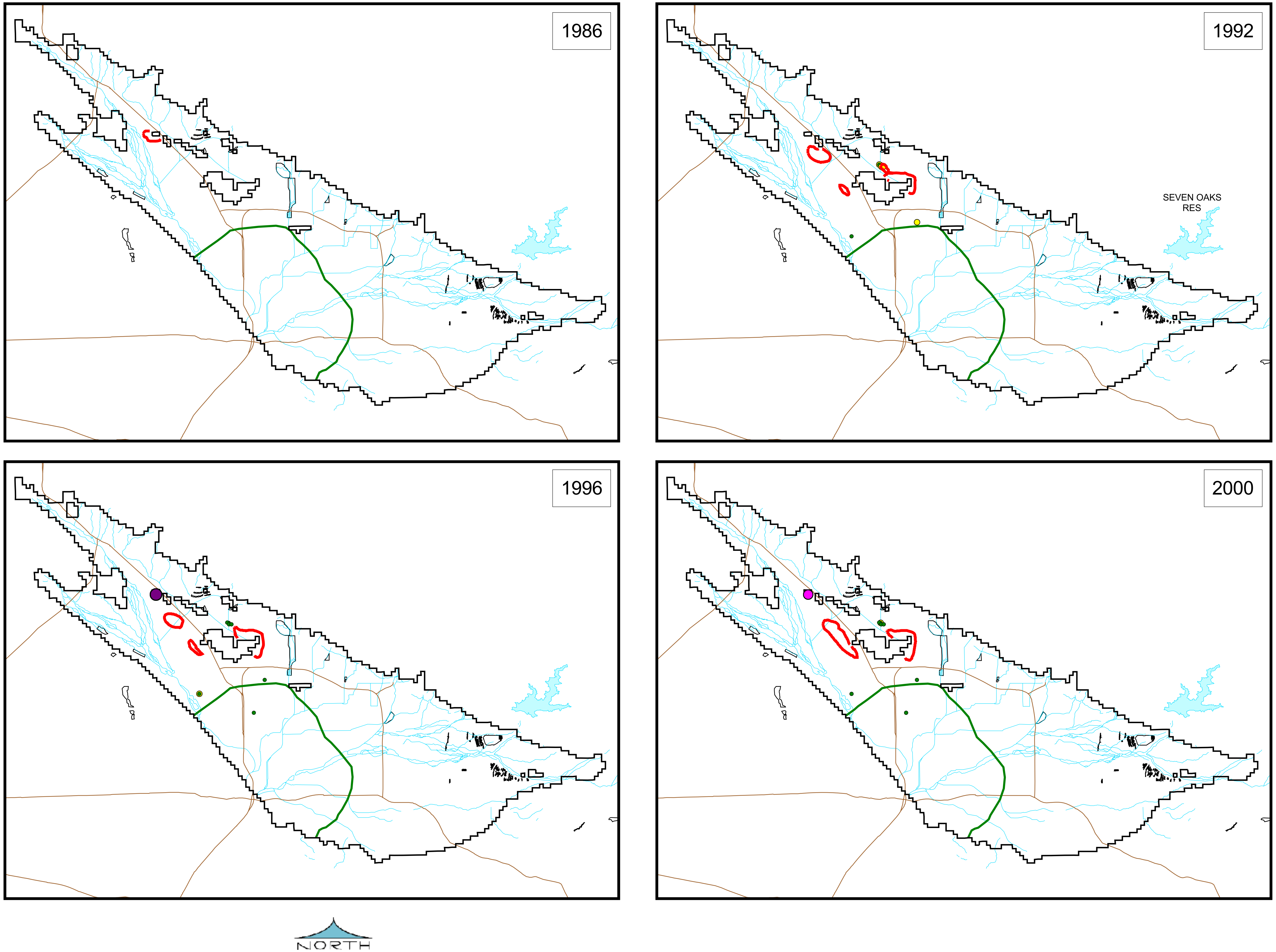
MEASURED AND MODEL-GENERATED PLUME BOUNDARIES FOR PCE MODEL LAYER 1



EXPLANATION

Measured PCE Concentration (ug/L)

- 0
- <5
- 5 - 10
- 10 - 50
- 50 - 500
- >500

Model-Generated PCE Plume (5 ug/L)

2000 Model Year

Pressure Zone

Model Grid of the San Bernardino Basin Area Groundwater Model

Streams or Rivers Within Groundwater Basin Boundary

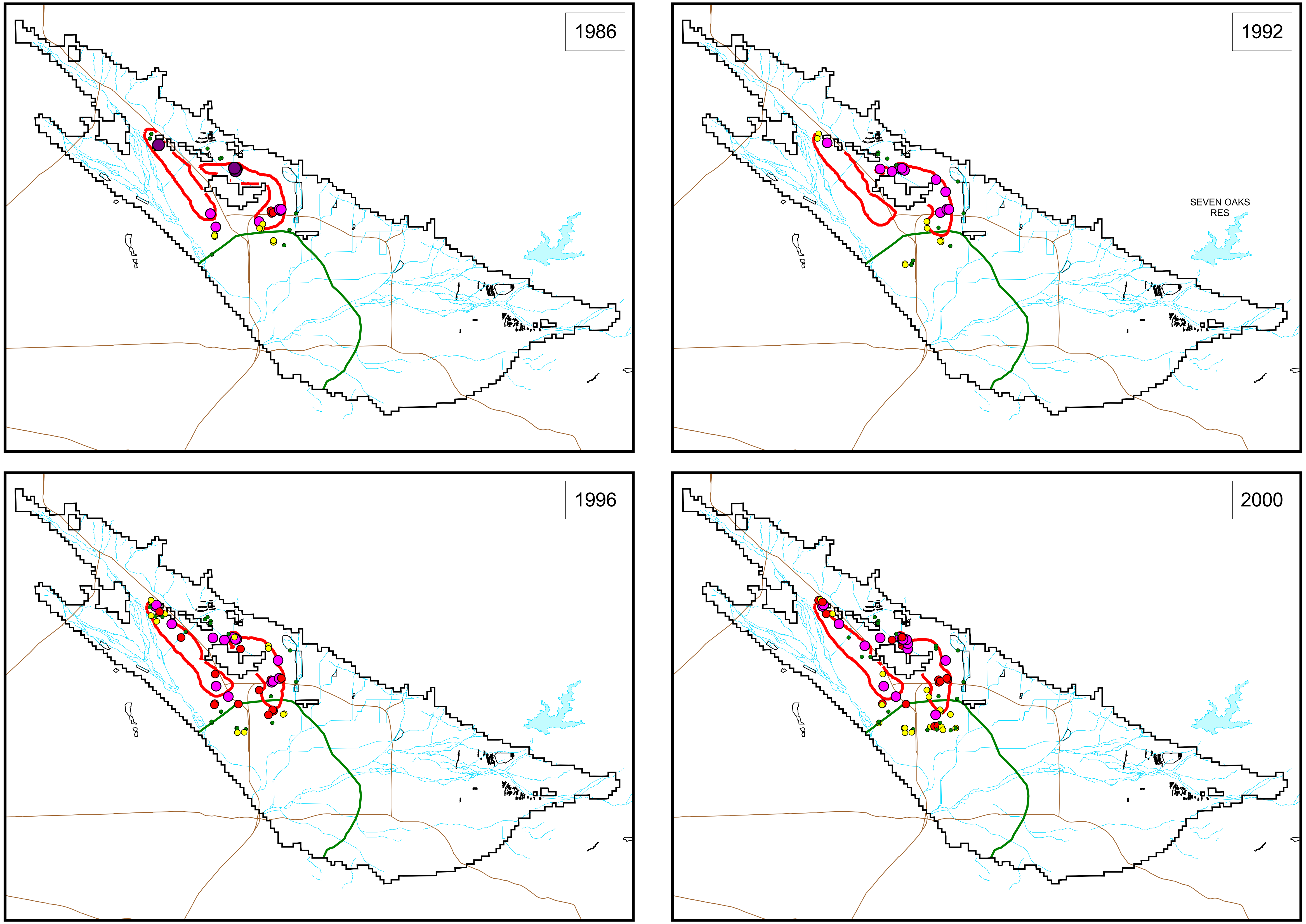
Spreading Grounds or Basins

Freeway

Map Projection:
State Plane 1927 (California Zone V)

Figure B 50

MEASURED AND MODEL-GENERATED PLUME BOUNDARIES FOR PCE MODEL LAYER 2



EXPLANATION

Measured PCE Concentration (ug/L)

- 0
- <5
- 5 - 10
- 10 - 50
- 50 - 500
- >500

Model-Generated PCE Plume (5 ug/L)

2000 Model Year

Pressure Zone

Model Grid of the San Bernardino Basin Area Groundwater Model

Streams or Rivers Within Groundwater Basin Boundary

Spreading Grounds or Basins

Freeway

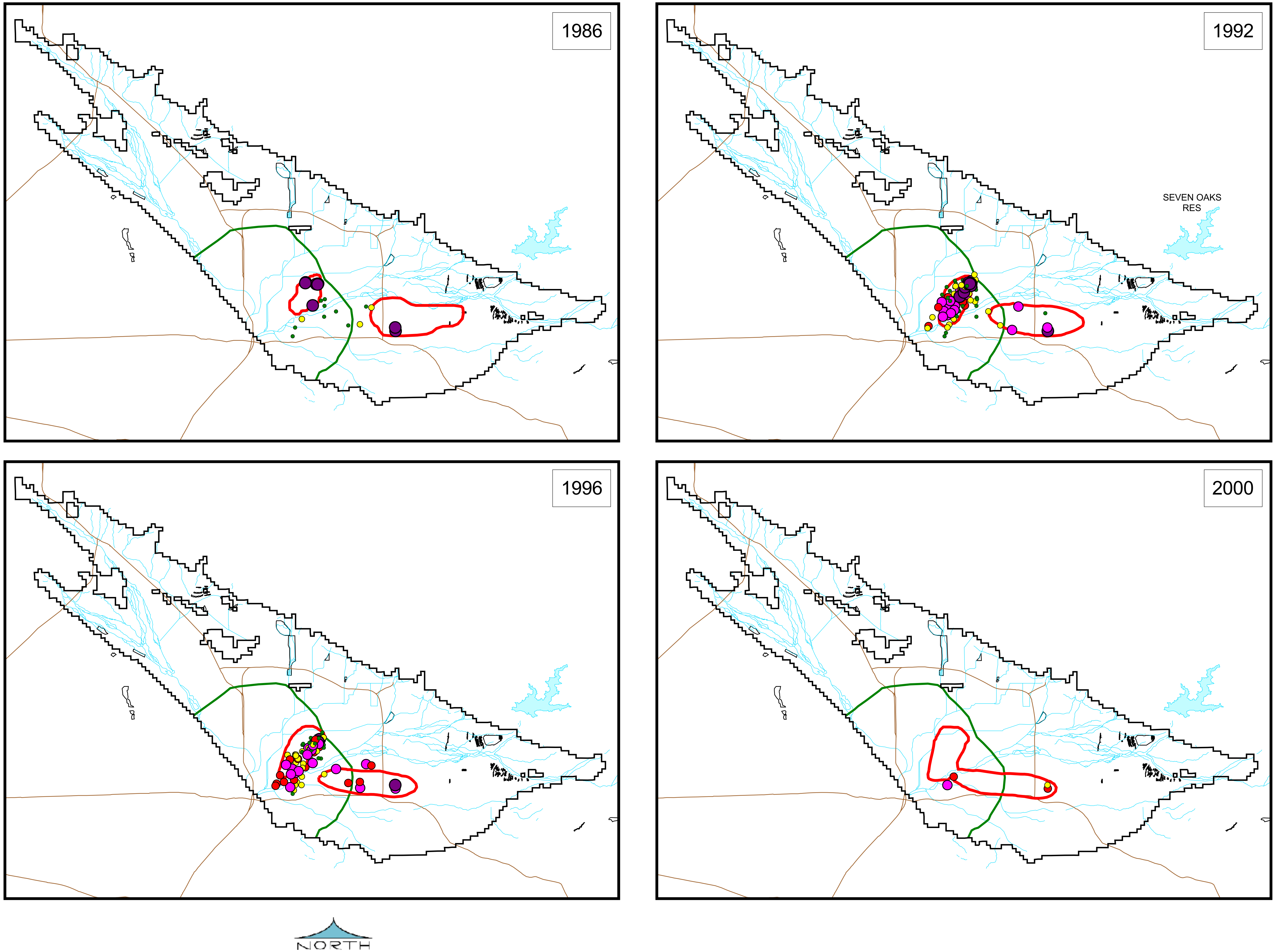
NORTH

0 3 6 Miles

Map Projection:
State Plane 1927 (California Zone V)

Figure B 51

MEASURED AND MODEL-GENERATED PLUME BOUNDARIES FOR TCE MODEL LAYER 1



EXPLANATION

Measured TCE Concentration (ug/L)

- 0
- <5
- 5 - 10
- 10 - 50
- 50 - 500
- >500

Model-Generated TCE Plume (5 ug/L)

2000 Model Year

Pressure Zone

Model Grid of the San Bernardino Basin Area Groundwater Model

Streams or Rivers Within Groundwater Basin Boundary

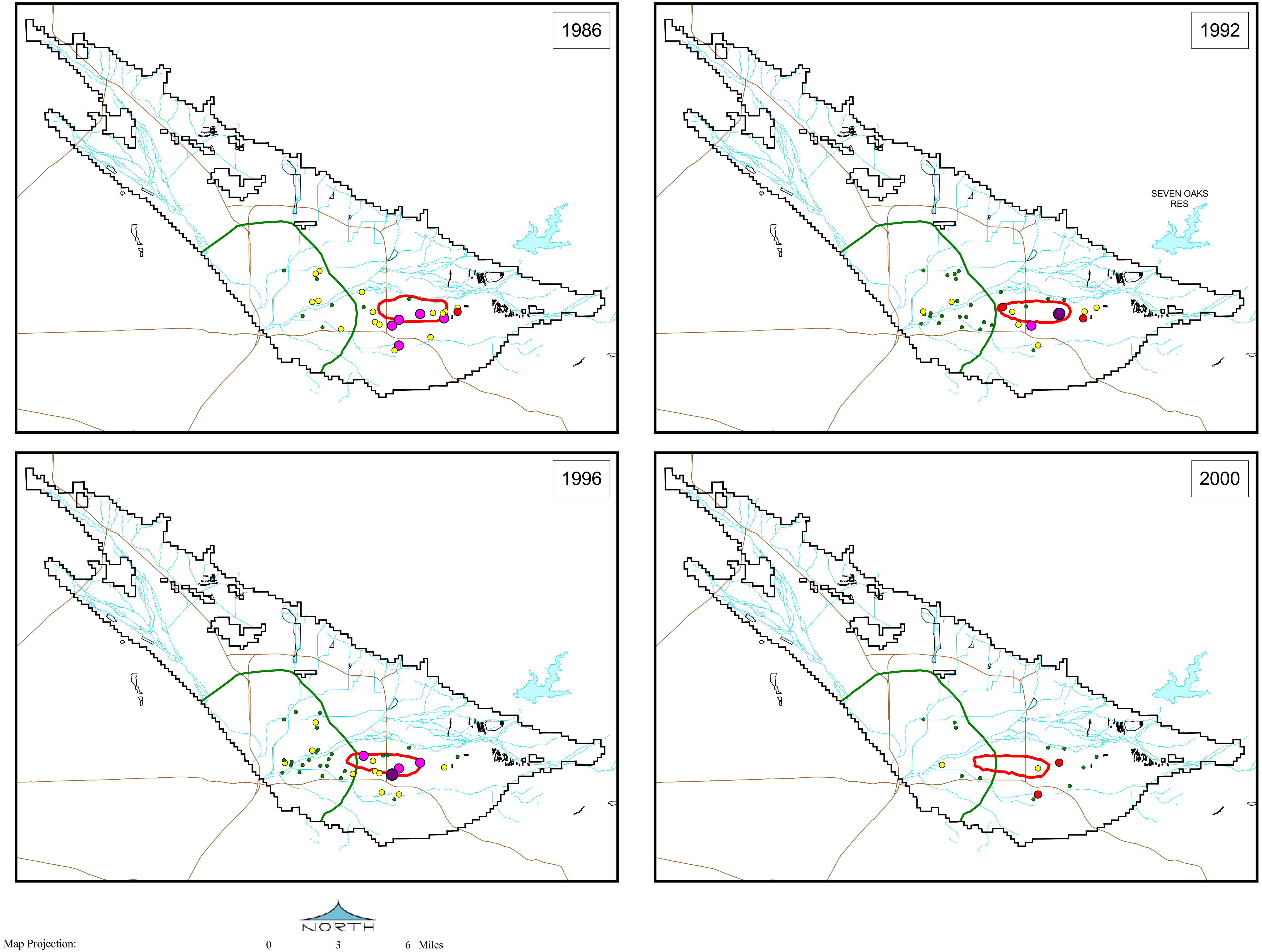
Spreading Grounds or Basins

Freeway

Map Projection:
State Plane 1927 (California Zone V)

Figure B 52

MEASURED AND MODEL-GENERATED PLUME BOUNDARIES FOR TCE MODEL LAYER 2



EXPLANATION

Measured TCE Concentration (ug/L)

- 0
- <5
- 5 - 10
- 10 - 50
- 50 - 500
- >500

Model-Generated TCE Plume (5 ug/L)

2000 Model Year

Pressure Zone

Model Grid of the San Bernardino Basin Area Groundwater Model

Streams or Rivers Within Groundwater Basin Boundary

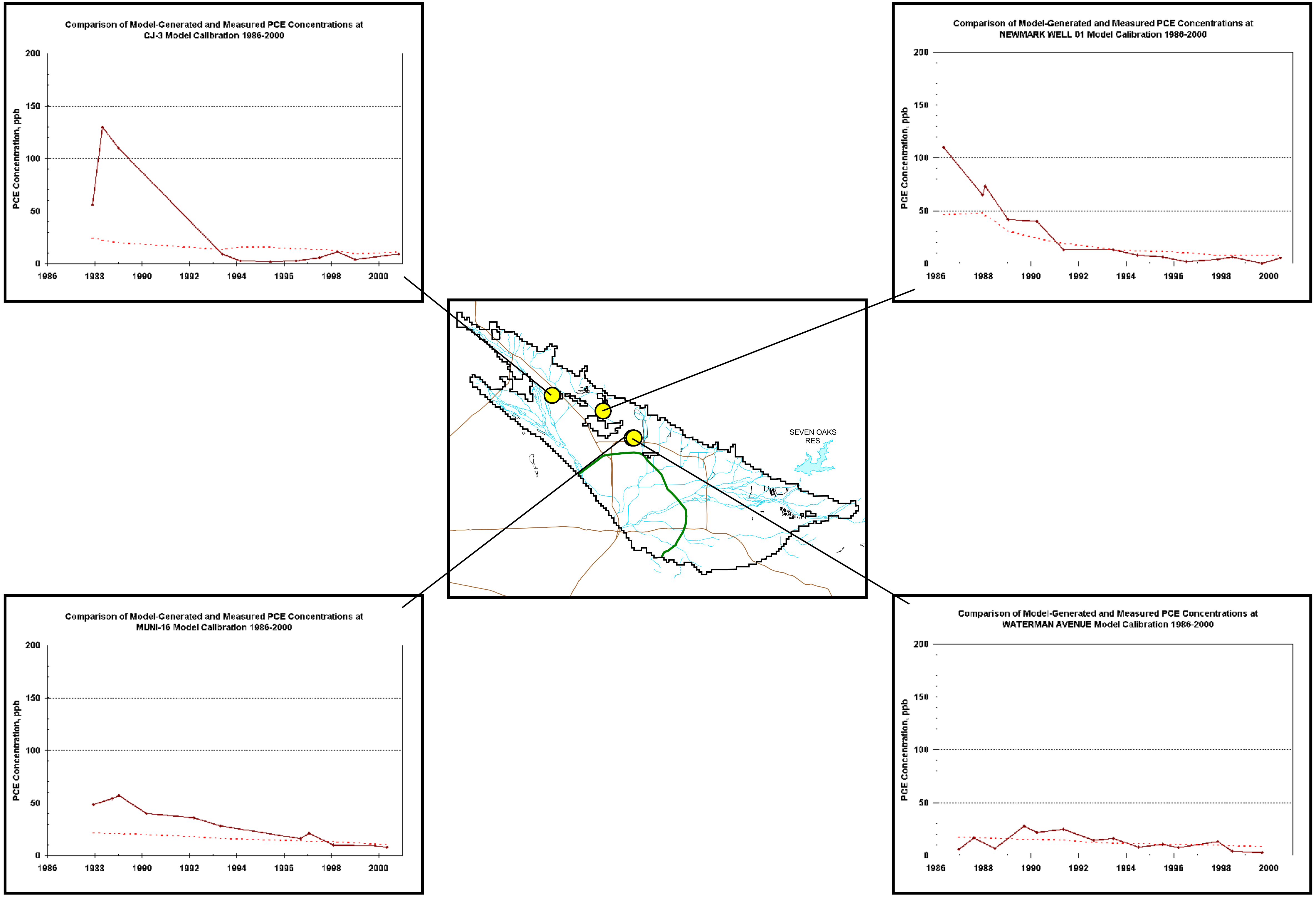
Spreading Grounds or Basins

Freeway

Map Projection:
State Plane 1927 (California Zone V)

Figure B 53

MEASURED VERSUS MODEL-GENERATED PCE CONCENTRATIONS AT SELECTED LOCATIONS



EXPLANATION

- Selected Well
- Measured PCE Concentration (ug/L)
- Model-Generated PCE Concentration (ug/L)
- Pressure Zone
- Model Grid of the San Bernardino Basin Area Groundwater Model
- Streams or Rivers Within Groundwater Basin Boundary
- Spreading Grounds or Basins
- Freeway

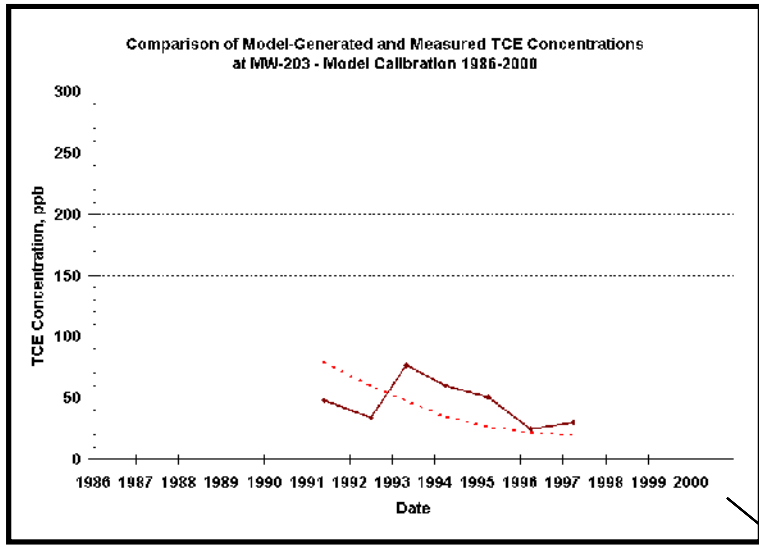
NORTH

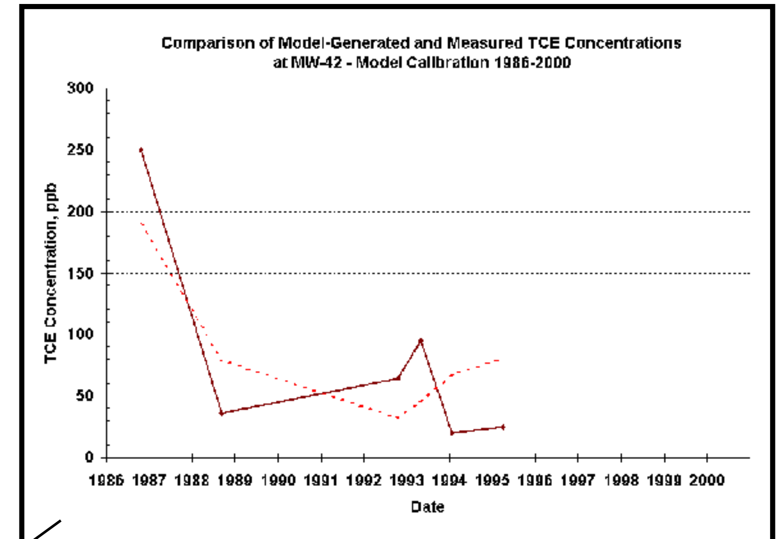
0 5 10 Miles

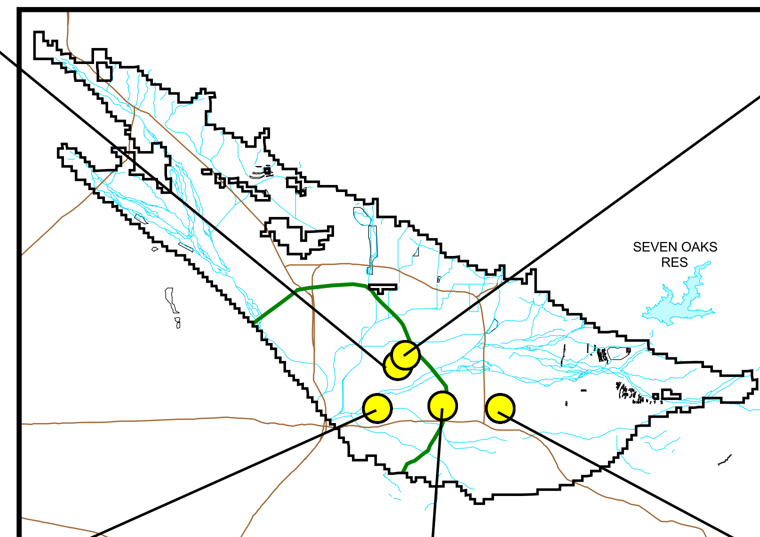
Map Projection:
State Plane 1927 (California Zone V)

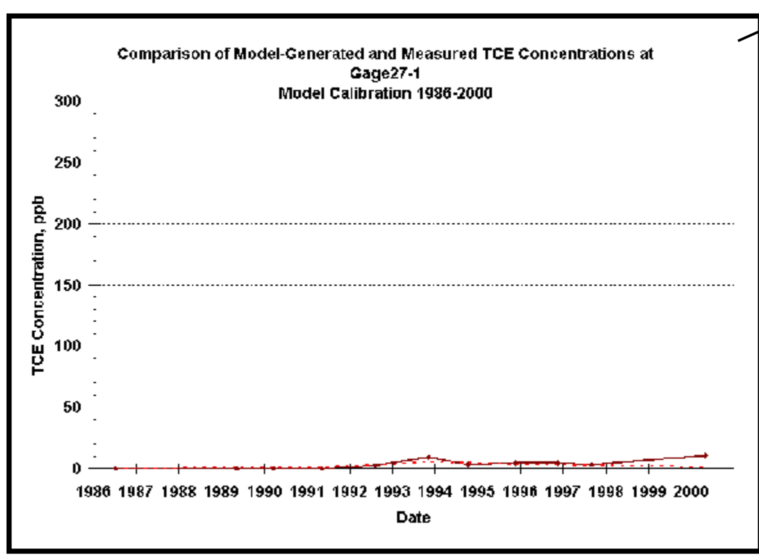
Figure B 54

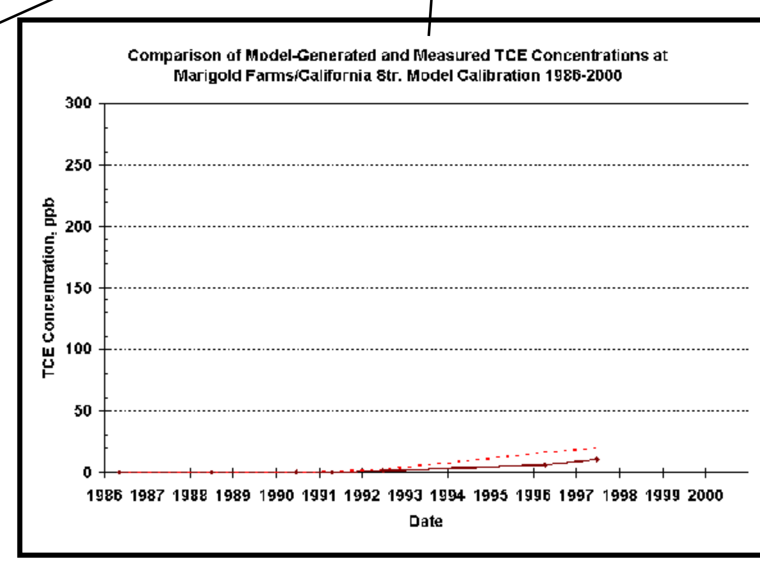
MEASURED VERSUS MODEL-GENERATED TCE CONCENTRATIONS AT SELECTED LOCATIONS

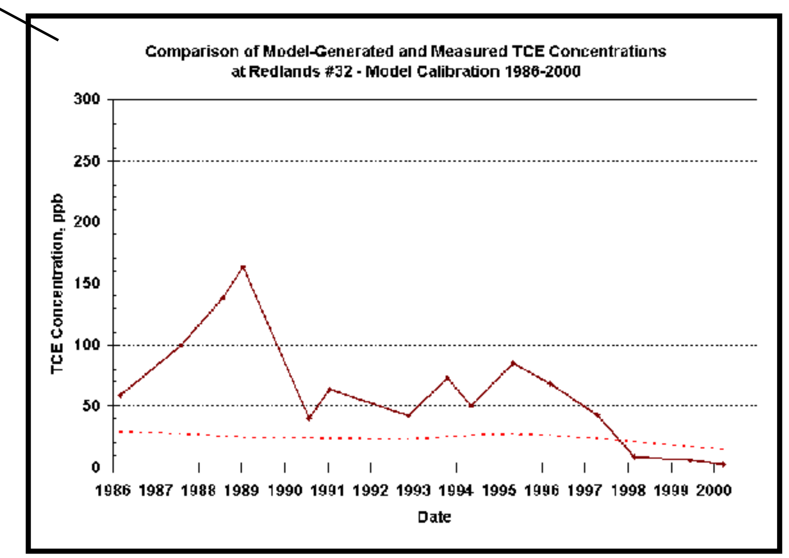












EXPLANATION

- Selected Well
- Measured TCE Concentration (ug/L)
- Model-Generated TCE Concentration (ug/L)
- Pressure Zone
- Model Grid of the San Bernardino Basin Area Groundwater Model
- Streams or Rivers Within Groundwater Basin Boundary
- Spreading Grounds or Basins
- Freeway

NORTH

0 5 10 Miles

Map Projection:
State Plane 1927 (California Zone V)

Figure B 55

5.0 REFERENCES AND ACRONYMS

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5.3 ACRONYMS

µg/L	micrograms per liter
°C	degrees Celsius
°F	degrees Fahrenheit
µg/m3	micrograms per cubic meter
ACEC	Area of Critical Environmental Concern
af	acre foot
AFB	Air Force Base
afy	acre feet per year
AHHG	Area of Historic High Groundwater
BA	Biological Assessment
BLM	U.S. Bureau of Land Management
BMP	Best Management Practice
BO	Biological Opinion
CAGN	California gnatcatcher
CBD	Center for Biological Diversity
CCR	California Code of Regulations
CDC	California Department of Conservation
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second

CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Conservation District	San Bernardino Valley Water Conservation District
CSS	coastal sage scrub
DBCP	dibromochloropropane
DCE	1,2-dichloroethylene
DOF	California Department of Finance
DSOD	Division of Safety of Dams
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
EBX	East Branch Extension Project
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act (Federal)
EVWD	East Valley Water District
FERC	Federal Energy Regulatory Commission
FSEIS	Final Supplemental Environmental Impact Statement
ft/s	feet per second
GDM	General Design Memorandum
IFIM	instream flow incremental methodology
kafy	thousand acre feet per year
maf	million acre feet
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
MOU	Memorandum of Understanding
MSHMP	Multi-Species Habitat Management Plan
msl	mean sea level
Muni	San Bernardino Valley Municipal Water District
Muni/Western	San Bernardino Valley Municipal Water District/ Western Municipal Water District of Riverside County
MWD	Metropolitan Water District
NAHC	Native American Heritage Commission
NED	National Economic Development
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
OCWD	Orange County Water District

PCBs	polychlorinated biphenyls
PCE	tetrachloroethylene
PEIR	Programmatic Environmental Impact Report
PEIS	Programmatic Environmental Impact Statement
PM10	particulate matter less than 10 microns in diameter
PM2.5	particulate matter less than 2.5 microns in diameter
ppb	parts per billion
ppm	parts per million
RAFSS	Riversidian alluvial fan sage scrub
RHWC	Riverside Highland Water Company
RIX	Rapid Infiltration and Extraction
RM	River Mile
RSS	Riversidian sage scrub (in non-alluvial habitats)
SAF	San Andreas Fault
SAR	Santa Ana River
SARI	Santa Ana River Interceptor
SARMP	Santa Ana River Mainstem Project
SARWQCB	Santa Ana Regional Water Quality Control Board
SAWPA	Santa Ana River Watershed Project Authority
SBBA	San Bernardino Basin Area
SBDPW	San Bernardino County Department of Public Works
SBKR	San Bernardino Kangaroo Rat
SBVMWD	San Bernardino Valley Municipal Water District
SBVWCD	San Bernardino Valley Water Conservation District
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCEC	Southern California Earthquake Center
SWP	California State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TCE	trichloroethylene
TDS	total dissolved solids
TIN	total inorganic nitrogen
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

WAA	Water Availability Analysis
WCM	Water Control Manual
Western	Western Municipal Water District of Riverside County
WQO	water quality objective
WSPA	Woolly Star Preserve Area
WTP	water treatment plant
WWTP	waste water treatment plant
WY	water year

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Appendix A

Modifications to the Draft EIR Due to Refined Surface Water Modeling

APPENDIX A MODIFICATIONS TO THE DRAFT EIR DUE TO REFINED SURFACE WATER MODELING

The Draft EIR was released in October 2004. At that time the only cross-sectional data for the Santa Ana River applicable to the diversion locations was from the US Army Corps of Engineers. New cross-sectional data were collected during the summer of 2005. The refined cross-sectional data in turn resulted in slight revisions to channel loss estimates. Use of the refined cross-sectional data had the primary effect of decreasing estimates of water that would flow from the damsite location to river segments E and downstream, under low flow conditions, under both the No Project and Project. The overall effect was to decrease the difference between the Project and No Project in river segments E and downstream.

The refinement to the modeling did not change the impact calls for surface water or water quality in the Draft EIR but did change some of the data presented therein. Based on the refinements to the Daily River Analysis Modeling, Muni/Western hereby make the following changes to the Draft EIR:

Page	Line(s)	Edit
3.1-23	20	…operation, daily discharge is at least 3 cfs, and about ~~60~~ 55 percent of the time discharge…
3.1-23	22	…equaled or exceeded approximately ~~45~~ 40 percent of the time, while for flows of 100 cfs…
3.1-23	23	…the frequency drops to less than ~~10~~ 12 percent (Figure 3.1-7)…
3.1-24	26-27	~~…48~~ 58 percent of the time there is no discharge in this river segment, flow above 10 cfs is equaled or exceeded just over ~~40~~ 34 percent of the time,…
3.1-25	18-19	Currently, approximately ~~42~~ 54 percent of the time there is no flow in this river segment, flows above 10 cfs are equaled or exceeded approximately ~~48~~ 33 percent of the time,…
3.1-37	26-34	As shown in Table 3.1-11 and Figure 3.1-14, there is a change in median non-storm flow from ~~5~~ 4 cfs under the No Project Scenario to 3 cfs under Project scenarios. Figure 3.1-14 shows daily discharge for non-storm days under the No Project and Project Scenarios A and C, as well as the measurement error bands. [Only Project Scenarios A and C are described here because these scenarios are applicable to Phase III of the Plunge Pool Pipeline.] As can be seen in this figure, flow under the Project (under either Scenario A or C) differs from the No Project for a range of daily discharge values between 3 cfs and ~~500~~ 250 cfs ~~(except between 20 cfs to 30 cfs under Scenario A when there is no measurable difference)~~. Thus, a measurable change in non-storm day flows is attributable to the Project, and this is a significant impact.
3.1-38		*Replace Table 3.1-11 (see replacement table on following pages)*

Table 3.1-11. Project Effect on Non-Storm Days Above Cuttle Weir (River Segment B) - Monthly Summary for WY 1966-67 through WY 1999-00[1,2,3]

	Base Period		January		February		March		April		May		June		July		August		September		October		November		December	
	Days	*% of Total Days*	*Days*	*% of Jan Days*	*Days*	*% of Feb Days*	*Days*	*% of Mar Days*	*Days*	*% of Apr Days*	*Days*	*% of May Days*	*Days*	*% of Jun Days*	*Days*	*% of Jul Days*	*Days*	*% of Aug Days*	*Days*	*% of Sep Days*	*Days*	*% of Oct Days*	*Days*	*% of Nov Days*	*Days*	*% of Dec Days*
HISTORICAL CONDITIONS																										
Total Days	12,419		1,054		961		1,054		1,020		1,054		1,020		1,054		1,054		1,020		1,054		1,020		1,054	
Storm Days	4,044	33%	577	55%	565	59%	698	66%	588	58%	341	32%	224	22%	122	12%	79	7%	126	12%	146	14%	203	20%	375	36%
Non-Storm Days	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Zero Flow Days	4,014	32%	172	16%	79	8%	45	4%	88	9%	223	21%	422	41%	553	52%	606	57%	543	53%	525	50%	455	45%	303	29%
Minimum Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
Median Flow for Non-Storm Day (cfs)	1		4		5		6		5		2		0		0		0		0		0		0		2	
NO PROJECT																										
Non-Storm Days with Zero Flow	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Flow	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Minimum Flow on Non-Storm Days (cfs)	3		3		3		3		3		3		3		3		7		3		3		3		3	
Median Flow on Non-Storm Days (cfs)	4		3		3		7		8		4		3		26		27		3		3		3		3	
PROJECT SCENARIO A OR B[1,2]																										
Non-Storm Days with Zero Flow	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Flow	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Non-Storm Days with Project Diversion	2,928	24%	0	0%	25	3%	25	2%	68	7%	159	15%	336	33%	872	83%	975	93%	400	39%	20	2%	8	1%	40	4%
Median Flow for Non-Storm Days (cfs)	3		3		3		6		5		3		3		3		3		3		3		3		3	
PROJECT SCENARIO C OR D[1,2]																										
Non-Storm Days with Zero Flow	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Flow	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Non-Storm Days with Project Diversion	821	7%	6	1%	10	1%	1	0%	4	0%	31	3%	24	2%	210	20%	295	28%	110	11%	107	10%	22	2%	1	0%
Median Flow for Non-Storm Days (cfs)	3		3		3		3		3		3		3		3		4		3		3		3		3	
NO PROJECT versus SCENARIO A OR B																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	-1	-17%	0	0%	0	0%	-1	-14%	-3	-37%	-1	-27%	0	0%	-23	-88%	-24	-89%	0	0%	0	0%	0	0%	0	0%
NO PROJECT versus SCENARIO C OR D																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	-1	-17%	0	0%	0	0%	-4	-57%	-5	-60%	-1	-27%	0	0%	-23	-88%	-23	-85%	0	0%	0	0%	0	0%	0	0%

Notes:

[1] Results for 500 cfs and 1,500 cfs diversion rate differ by less than 1%

[2] Only Phase III of the Plunge Pool Pipeline, a 1,500 cfs Muni/Western diversion pipeline at the plunge pool, affects this river segment.

[3] This segment's base period is limited by the available gage data at the USGS E-Street Gage from WY 1966-67 to WY 1999-00.

Page	Line(s)	Edit
3.1-39	7-10	~~The maximum volume of water diverted under the Project was subtracted from baseflow (as defined by SARWQCB) at points downstream and the concentration of TDS was calculated based on the adjusted flow (see Table 3.1-12). Representative values for flow and TDS concentrations for points along the SAR were derived from data from the USGS and the City of San Bernardino Municipal Water Department.~~ The Project could degrade water quality in segments of the SAR, where wastewater effluent and rising groundwater contribute to the baseflow. The Project diverts high-quality, mountain water with low total dissolved solids (TDS). If the mountain water flowed downstream, it would dilute the higher TDS groundwater inflow and wastewater effluent. The potential reduction of the mountain water flow could cause a decrease in dilution and thereby degrade water quality in the downstream segment of the SAR. Each segment is analyzed to show, if any, the potential decrease in water quality and if water quality objectives are still met (see Table 3.1-12). Representative values for TDS concentrations along the SAR were derived from data from the USGS and the City of San Bernardino Municipal Water Department.
3.1-39	18-19	…downstream, in other river segments, change in TDS would be minor. ~~As far down as the MWD Crossing Gage the change is less than 2 percent.~~
3.1-39	25-26	found no change in TIN above Cuttle Weir (in Segment B)~~, and as far down as the MWD Crossing Gage the change is less than 3 percent~~.
3.1-40		*Replace Table 3.1-12 (see replacement table on following pages)*
3.1-40		*Replace Table 3.1-13 (see replacement table on following pages)*
3.1-41	11-15	As can be seen in Table 3.1-14 and Figure 3.1-15, under No Project conditions, flows below Cuttle Weir are typically low. Under Pre-Dam conditions 65 percent of all days had zero flow (see Figure 3.1-8). With Seven Oaks Dam in place, median non-storm day flow is zero (Table 3.1-14 and Figure 3.1-15) and in only about ~~25~~ 22 percent of non-storm days is there flow in River Segment C (Figure 3.1-15).
3.1-42		*Replace Table 3.1-14 (see replacement table on following pages)*
3.1-43	8-9	As can be seen in Table 3.1-15 and Figure 3.1-16, under No Project conditions, flows below Mill Creek are typically low. Under Pre-Dam conditions ~~46~~ 56 percent of all days had zero flow and with Seven Oaks Dam in place median non-storm day flow is zero (Table 3.1-15 and Figure 3.1-16). Generally, there is only detectable flow about ~~40~~ 30 percent of non-storm days~~, and even then it is small, typically less than 10 cfs~~ (see Figure 3.1-16 ~~Table 3.1-15~~).
3.1-44		*Replace Table 3.1-15 (see replacement table on following pages)*

Table 3.1-12. Potential Impact of the Project on Santa Ana River Total Dissolved Solids (TDS) Level

Location	*Segment*	*Representative TDS conc. (mg/L)*	*Water Quality Objective (mg/L)*	*Increase in TDS due to the Project*	*Water Quality Objective Exceeded*
Above Seven Oaks Dam	A	NA	300	none	no
Below Seven Oaks Above Cuttle Weir	B	230 [1]	300	none	no
Below Cuttle Weir	C	NA	300	none	no
Mill Creek Confluence	D	NA	300	none	no
E-Street Gage	E	~470 [2]	550	potential increase in TDS concentration[4]	no
RIX-Rialto	F	~520 [3]	700	potential increase in TDS concentration[5]	no
Riverside Narrows	G	560 [1]	700	none	no
Below Prado	-	600 [1]	650	none	no

[1] From USGS WRI 03-4326, median baseflow TDS in 1998-2001

[2] The median TDS of the Warm Creek inflow just above E Street gage, TDS of the SAR is not available at this point

[3] Maximum Monthly Mean TDS of the RIX Facility Outfall during 2001-2002 (RIX DEIR 2003), TDS of the SAR is not available at this point

[4] The potential increase in the worst case scenario would be an increase up to 470mg/L, the inflow TDS of Warm Creek

[5] The potential increase in the worst case scenario would be an increase up to 520 mg/L, the RIX Facility Outflow entirely comprising the baseflow of the SAR.

Table 3.1-13. Potential Impact of the Project on Santa Ana River Total Inorganic Nitrogen (TIN) Level

Location	*Segment*	*Representative TIN conc. (mg/L)*	*Water Quality Objective (mg/L)*	*Increase in TIN due to the Project*	*Water Quality Objective Exceeded*
Above Seven Oaks Dam	A	NA	5	none	no
Below Seven Oaks Above Cuttle Weir	B	0.3 [1]	5	none	no
Below Cuttle Weir	C	NA	5	none	no
Mill Creek Confluence	D	NA	5	none	no
E-Street Gage	E	~0.4 [2]	5	none	no
RIX-Rialto	F	~8.5 [3]	10	potential increase in TIN concentration [4]	no
Riverside Narrows	G	7.3 [1]	10	none	no
Below Prado	-	5.2 [1]	10	none	no

[1] From USGS WRI 03-4326, median baseflow TIN in 1998-2001

[2] The median TIN of the Warm Creek inflow just above E Street gage, TDS of the SAR is not available at this point

[3] Maximum Monthly Mean TIN of the RIX Facility Outfall during 2001-2002 (RIX DEIR 2003), TDS of the SAR is not available at this point

[4] The potential increase in the worst case condition would be an increase up to 8.5mg/L, the RIX Facility Outflow entirely comprising the baseflow of the SAR.

Table 3.1-14. Project Effect on Non-Storm Days Downstream from Cuttle Weir (River Segment C) - Monthly Summary for WY 1966-67 through WY 1999-00[1,2]

	Base Period		January		February		March		April		May		June		July		August		September		October		November		December	
	Days	*% of Total Days*	*Days*	*% of Jan Days*	*Days*	*% of Feb Days*	*Days*	*% of Mar Days*	*Days*	*% of Apr Days*	*Days*	*% of May Days*	*Days*	*% of Jun Days*	*Days*	*% of Jul Days*	*Days*	*% of Aug Days*	*Days*	*% of Sep Days*	*Days*	*% of Oct Days*	*Days*	*% of Nov Days*	*Days*	*% of Dec Days*
HISTORICAL CONDITIONS																										
Total Days	12,419		1,054		961		1,054		1,020		1,054		1,020		1,054		1,054		1,020		1,054		1,020		1,054	
Storm Days	4,044	33%	577	55%	565	59%	698	66%	588	58%	341	32%	224	22%	122	12%	79	7%	126	12%	146	14%	203	20%	375	36%
Non-Storm Days	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Zero Flow Days	5,813	47%	210	20%	172	18%	209	20%	281	28%	436	41%	606	59%	801	76%	798	76%	752	74%	786	75%	455	45%	307	29%
Minimum Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
Median Flow for Non-Storm Day (cfs)	0		1		1		0		0		0		0		0		0		0		0		0		1	
NO PROJECT																										
Non-Storm Days with Zero Flow	6,506	52%	426	40%	309	32%	284	27%	315	31%	493	47%	668	65%	515	49%	521	49%	749	73%	786	75%	810	79%	630	60%
Non-Storm Days with Flow	1,869	15%	51	5%	87	9%	72	7%	117	11%	220	21%	128	13%	417	40%	454	43%	145	14%	122	12%	7	1%	49	5%
Minimum Flow on Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
Median Flow on Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
PROJECT SCENARIO A OR B[1]																										
Non-Storm Days with Zero Flow	8,374	67%	477	45%	395	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Non-Storm Days with Flow	1	0%	0	0%	1	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Project Diversion	3,440	28%	0	0%	25	3%	25	2%	68	7%	159	15%	350	34%	877	83%	975	93%	891	87%	22	2%	8	1%	40	4%
Median Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
PROJECT SCENARIO C OR D[1]																										
Non-Storm Days with Zero Flow	8,374	67%	477	45%	395	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Non-Storm Days with Flow	1	0%	0	0%	1	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Project Diversion	693	6%	1	0%	8	1%	0	0%	4	0%	31	3%	26	3%	201	19%	381	36%	39	4%	1	0%	0	0%	1	0%
Median Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
NO PROJECT versus SCENARIO A OR B																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
NO PROJECT versus SCENARIO C OR D																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%

Notes:

[1] Results for 500 cfs and 1,500 cfs diversion rate differ by less than 1%

[2] This segment's base period is limited by the available gage data at the USGS E-Street Gage from WY 1966-67 to WY 1999-00.

Table 3.1-15. Project Effect on Non-Storm Days below Mill Creek Confluence (River Segment D) - Monthly Summary for WY 1966-67 through WY 1998-99[1,2]

	Base Period		January		February		March		April		May		June		July		August		September		October		November		December	
	Days	*% of Total Days*	*Days*	*% of Jan Days*	*Days*	*% of Feb Days*	*Days*	*% of Mar Days*	*Days*	*% of Apr Days*	*Days*	*% of May Days*	*Days*	*% of Jun Days*	*Days*	*% of Jul Days*	*Days*	*% of Aug Days*	*Days*	*% of Sep Days*	*Days*	*% of Oct Days*	*Days*	*% of Nov Days*	*Days*	*% of Dec Days*
HISTORICAL CONDITIONS																										
Total Days	12,053		1,023		932		1,023		990		1,023		990		1,023		1,023		990		1,023		990		1,023	
Storm Days	3,989	33%	568	56%	544	58%	690	67%	574	58%	341	33%	224	23%	122	12%	79	8%	126	13%	146	14%	201	20%	374	37%
Non-Storm Days	8,064	67%	455	44%	388	42%	333	33%	416	42%	682	67%	766	77%	901	88%	944	92%	864	87%	877	86%	789	80%	649	63%
Zero Flow Days	5,679	47%	223	22%	154	17%	204	20%	262	26%	488	48%	642	65%	708	69%	747	73%	679	69%	729	71%	491	50%	352	34%
Minimum Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
Median Flow for Non-Storm Day (cfs)	0		0		1		2		1		0		0		0		0		0		0		0		0	
NO PROJECT																										
Non-Storm Days with Zero Flow	5,624	47%	337	33%	234	25%	224	22%	267	27%	525	51%	643	65%	387	38%	434	42%	678	68%	735	72%	675	68%	485	47%
Non-Storm Days with Flow	2,440	20%	118	12%	154	17%	109	11%	149	15%	157	15%	123	12%	514	50%	510	50%	186	19%	142	14%	114	12%	164	16%
Minimum Flow on Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
Median Flow on Non-Storm Days (cfs)	0		0		0		0		0		0		0		12		12		0		0		0		0	
PROJECT SCENARIO A OR B[1]																										
Non-Storm Days with Zero Flow	6,436	53%	337	33%	239	26%	224	22%	305	31%	554	54%	658	66%	717	70%	773	76%	692	70%	777	76%	675	68%	485	47%
Non-Storm Days with Flow	1,628	14%	118	12%	149	16%	109	11%	111	11%	128	13%	108	11%	184	18%	171	17%	172	17%	100	10%	114	12%	164	16%
Non-Storm Days with Project Diversion	3,348	28%	0	0%	25	3%	25	2%	68	7%	159	16%	350	35%	846	83%	944	92%	861	87%	22	2%	8	1%	40	4%
Median Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
PROJECT SCENARIO C OR D[1]																										
Non-Storm Days with Zero Flow	6,436	53%	337	33%	239	26%	224	22%	305	31%	554	54%	658	66%	717	70%	773	76%	692	70%	777	76%	675	68%	485	47%
Non-Storm Days with Flow	1,628	14%	118	12%	149	16%	109	11%	111	11%	128	13%	108	11%	184	18%	171	17%	172	17%	100	10%	114	12%	164	16%
Non-Storm Days with Project Diversion	693	6%	1	0%	8	1%	0	0%	4	0%	31	3%	26	3%	201	20%	381	37%	39	4%	1	0%	0	0%	1	0%
Median Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
NO PROJECT versus SCENARIO A OR B																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	-12	-100%	-12	-100%	0	0%	0	0%	0	0%	0	0%
NO PROJECT versus SCENARIO C OR D																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	-12	-100%	-12	-100%	0	0%	0	0%	0	0%	0	0%

Page	Line(s)	Edit
3.1-45	11-22	As can be seen in Table 3.1-16 and Figure 3.1-17, under No Project conditions, flows below "E" Street are low. With Seven Oaks Dam in place, median non-storm day flow is ~~4~~ 0 cfs (Table 3.1-16 and Figure 3.1-17). Generally there is only detectable flow about ~~50~~ 28 percent of non-storm days, and during these days flow is small, typically no more than 25cfs. Under the Project, up to 1,500 cfs would be diverted from flows upstream of this river segment and median non-storm day flow would be zero (see Table 3.1-16 and Figure 3.1-17). Figure 3.1-17 shows the No Project and Project scenarios, as well as the measurement error bands. With the Project there would still be flow in the river on non-storm days, but it would be less flow and occur less frequently than under No Project conditions. As can be seen in the figure, the decline in non-storm flows is greater than could be attributed to measurement accuracy for flows less than ~~150~~ 4 cfs for all Project Scenarios ~~A and B and 10 13 cfs for Scenarios C and D~~. Thus, a measurable change in non-storm day flows is attributable to the Project and this is a significant impact.
3.1-46		*Replace Table 3.1-16 (see replacement table on following pages)*
3.1-47	11-30	As can be seen in Table 3.1-17 and Figure 3.1-18, in the SAR below the RIX and Rialto Effluent Outfall, water flows are continuous, even on non-storm days. With Seven Oaks Dam in place median non-storm day flow is ~~74~~ 76 cfs (Table 3.1-17 and Figure 3.1-18). Under all Project scenarios, flows, even in low flow periods on non-storm days, would be similar to the No Project. The only noticeable difference between the Project (Scenario A or B) and No Project below the RIX and Rialto Effluent Outfall during low flow periods would occur in high flows (above 700 cfs) ~~the 200 to 300 cfs range~~. Figure 3.1-19 shows a detail of mean daily discharge for the No Project and Project Scenarios A or B. Scenarios C and D are not shown because there is no measurable difference between these scenarios and the No Project. Figure 3.1-19 illustrates that, for a small percentage of non-storm days (~~approximately 0.8percentl~~ less than 0.1 percent), the decline in non-storm flows with Scenarios A or B, relative to the No Project, is greater than could be attributable to the measurement error, albeit for only a very limited flow range. Thus, a measurable change in non-storm day flows is attributable to the Project and this is a significant impact.
3.1-48		*Replace Table 3.1-17 (see replacement table on following pages)*
		Replace Draft EIR Figure 3.1-7 (see replacement figure on following pages)
		Replace Draft EIR Figure 3.1-8 (see replacement figure on following pages)
		Replace Draft EIR Figure 3.1-9 (see replacement figure on following pages)
		Replace Draft EIR Figure 3.1-10 (see replacement figure on following pages)
		Replace Draft EIR Figure 3.1-11(see replacement figure on following pages)
		Replace Draft EIR Figure 3.1-14 (see replacement figure on following pages)

Table 3.1-16. Project Effect on Non-Storm Days below "E" Street (River Segment E) - Monthly Summary for WY 1966-67 through WY 1999-00[1,2]

	Base Period		January		February		March		April		May		June		July		August		September		October		November		December	
	Days	*% of Total Days*	*Days*	*% of Jan Days*	*Days*	*% of Feb Days*	*Days*	*% of Mar Days*	*Days*	*% of Apr Days*	*Days*	*% of May Days*	*Days*	*% of Jun Days*	*Days*	*% of Jul Days*	*Days*	*% of Aug Days*	*Days*	*% of Sep Days*	*Days*	*% of Oct Days*	*Days*	*% of Nov Days*	*Days*	*% of Dec Days*
HISTORICAL CONDITIONS																										
Total Days	12,419		1,054		961		1,054		1,020		1,054		1,020		1,054		1,054		1,020		1,054		1,020		1,054	
Storm Days	4,044	33%	577	55%	565	59%	698	66%	588	58%	341	32%	224	22%	122	12%	79	7%	126	12%	146	14%	203	20%	375	36%
Non-Storm Days	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Zero Flow Days	521	4%	5	0%	0	0%	29	3%	42	4%	66	6%	59	6%	70	7%	66	6%	66	6%	50	5%	49	5%	19	2%
Minimum Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
Median Flow for Non-Storm Day (cfs)	27		26		25		23		24		25		30		30		31		32		28		27		28	
NO PROJECT																										
Non-Storm Days with Zero Flow	5,930	48%	327	31%	264	27%	213	20%	312	31%	495	47%	526	52%	604	57%	651	62%	601	59%	714	68%	666	65%	557	53%
Non-Storm Days with Flow	2,445	20%	150	14%	132	14%	143	14%	120	12%	218	21%	270	26%	328	31%	324	31%	293	29%	194	18%	151	15%	122	12%
Minimum Flow on Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
Median Flow on Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
PROJECT SCENARIO A OR B[1]																										
Non-Storm Days with Zero Flow	6,120	49%	327	31%	269	28%	215	20%	316	31%	507	48%	541	53%	651	62%	721	68%	632	62%	716	68%	666	65%	559	53%
Non-Storm Days with Flow	2,255	18%	150	14%	127	13%	141	13%	116	11%	206	20%	255	25%	281	27%	254	24%	262	26%	192	18%	151	15%	120	11%
Non-Storm Days with Project Diversion	3,440	28%	0	0%	25	3%	25	2%	68	7%	159	15%	350	34%	877	83%	975	93%	891	87%	22	2%	8	1%	40	4%
Median Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
PROJECT SCENARIO C OR D[1]																										
Non-Storm Days with Zero Flow	6,004	48%	327	31%	267	28%	212	20%	312	31%	495	47%	531	52%	620	59%	696	66%	604	59%	716	68%	666	65%	558	53%
Non-Storm Days with Flow	2,371	19%	150	14%	129	13%	144	14%	120	12%	218	21%	265	26%	312	30%	279	26%	290	28%	192	18%	151	15%	121	11%
Non-Storm Days with Project Diversion	693	6%	1	0%	8	1%	0	0%	4	0%	31	3%	26	3%	201	19%	381	36%	39	4%	1	0%	0	0%	1	0%
Median Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
NO PROJECT versus SCENARIO A OR B																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
NO PROJECT versus SCENARIO C OR D																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%

Notes:

[1] Results for 500 cfs and 1,500 cfs diversion rate differ by less than 1%

[2] This segment's base period is limited by the available gage data at the USGS E-Street Gage from WY 1966-67 to WY 1999-00.

Table 3.1-17. Project Effect on Non-Storm Days below RIX and Rialto Effluent Outfall (River Segment F) - Monthly Summary for WY 1966-67 through WY 1999-00[1,2]

	Base Period		January		February		March		April		May		June		July		August		September		October		November		December	
	Days	*% of Total Days*	*Days*	*% of Jan Days*	*Days*	*% of Feb Days*	*Days*	*% of Mar Days*	*Days*	*% of Apr Days*	*Days*	*% of May Days*	*Days*	*% of Jun Days*	*Days*	*% of Jul Days*	*Days*	*% of Aug Days*	*Days*	*% of Sep Days*	*Days*	*% of Oct Days*	*Days*	*% of Nov Days*	*Days*	*% of Dec Days*
HISTORICAL CONDITIONS																										
Total Days	12,419		1,054		961		1,054		1,020		1,054		1,020		1,054		1,054		1,020		1,054		1,020		1,054	
Storm Days	4,044	33%	577	55%	565	59%	698	66%	588	58%	341	32%	224	22%	122	12%	79	7%	126	12%	146	14%	203	20%	375	36%
Non-Storm Days	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Zero Flow Days	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Minimum Flow for Non-Storm Days (cfs)	9		17		16		14		17		15		11		9		9		10		10		10		11	
Median Flow for Non-Storm Day (cfs)	39		40		36		37		32		40		39		40		40		40		39		39		38	
NO PROJECT																										
Non-Storm Days with Zero Flow	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Flow	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	713	70%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Minimum Flow on Non-Storm Days (cfs)	70		71		71		71		70		71		72		73		71		72		77		79		73	
Median Flow on Non-Storm Days (cfs)	76		72		74		74		72		72		73		74		71		72		77		79		73	
PROJECT SCENARIO A OR B[1]																										
Non-Storm Days with Zero Flow	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Flow	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Non-Storm Days with Project Diversion	3,440	28%	0	0%	25	3%	25	2%	68	7%	159	15%	350	34%	877	83%	975	93%	891	87%	22	2%	8	1%	40	4%
Median Flow for Non-Storm Days (cfs)	75		72		74		74		72		72		73		73		71		72		77		79		73	
PROJECT SCENARIO C OR D[1]																										
Non-Storm Days with Zero Flow	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Flow	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Non-Storm Days with Project Diversion	693	6%	1	0%	8	1%	0	0%	4	0%	31	3%	26	3%	201	19%	381	36%	39	4%	1	0%	0	0%	1	0%
Median Flow for Non-Storm Days (cfs)	75		72		74		74		72		72		73		73		71		72		77		79		73	
NO PROJECT versus SCENARIO A OR B																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	-1%	0	0%	0	0%	0	0%	0	0%	0	0%	-1	-1%	-1	-1%	0	0%	0	0%	0	0%	0	0%	0	0%
NO PROJECT versus SCENARIO C OR D																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	-1	-1%	-1	-1%	0	0%	0	0%	0	0%	0	0%	0	0%

Notes:

[1] Results for 500 cfs and 1,500 cfs diversion rate differ by less than 1%

[2] This segment's base period is limited by the available gage data at the USGS E-Street Gage from WY 1966-67 to WY 1999-00.

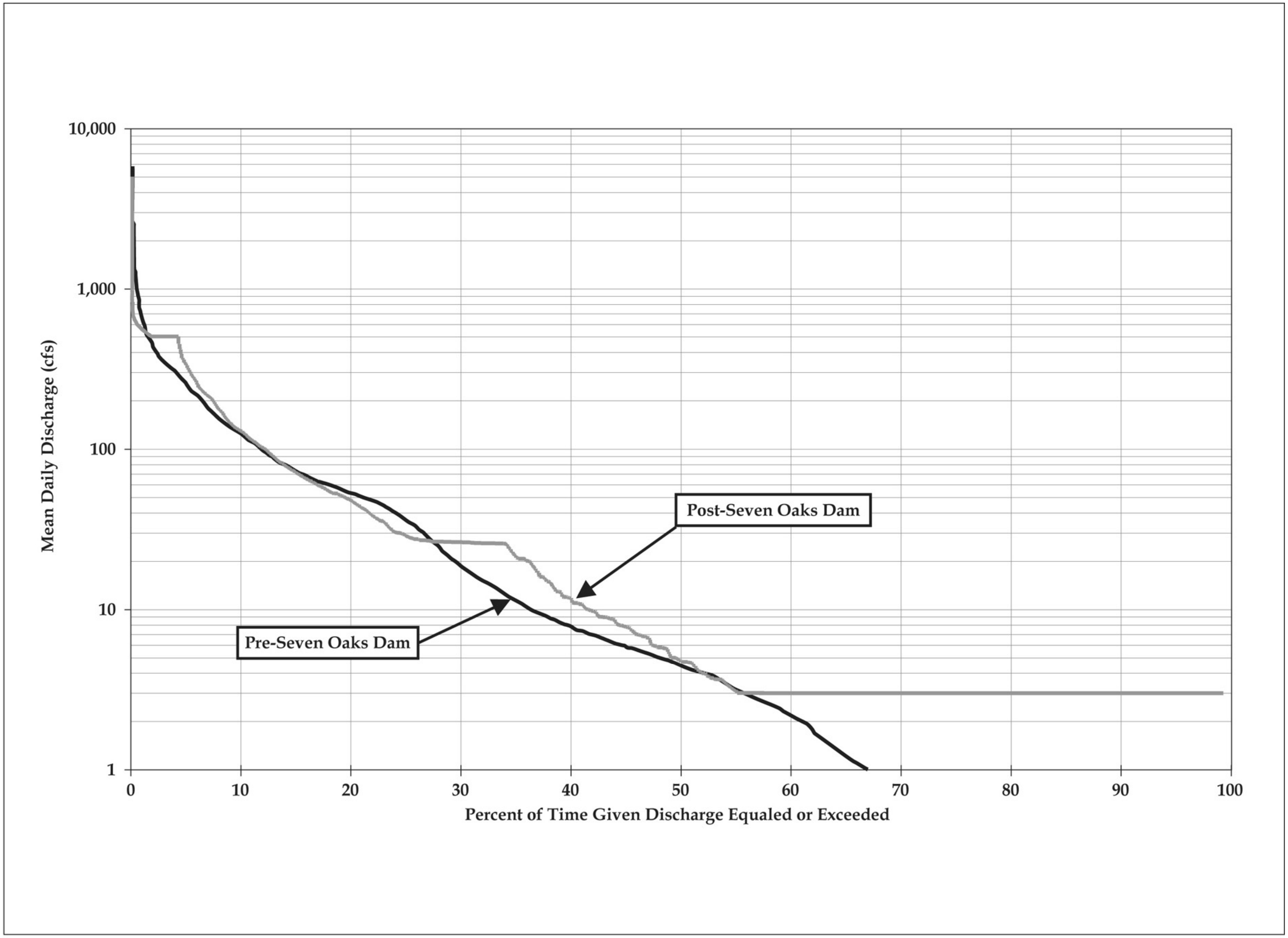

Figure 3.1-7. Probability of Daily Discharge for SAR Segment B, above Cuttle Weir, WY 1966-67 through WY 1999-2000

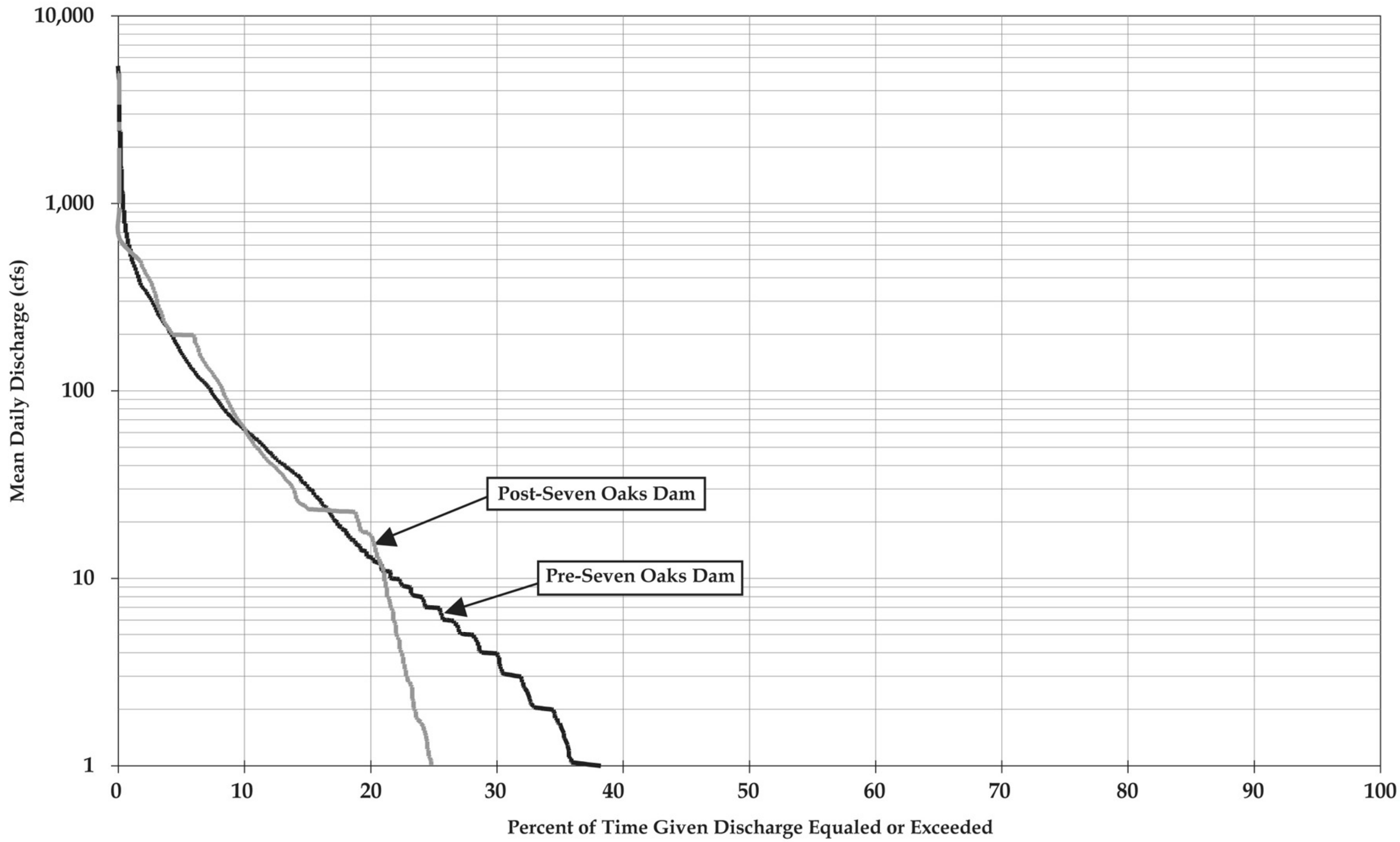

Figure 3.1-8. Probability of Daily Discharge for SAR Segment C, below Cuttle Weir, WY 1966-67 through WY 1999-2000

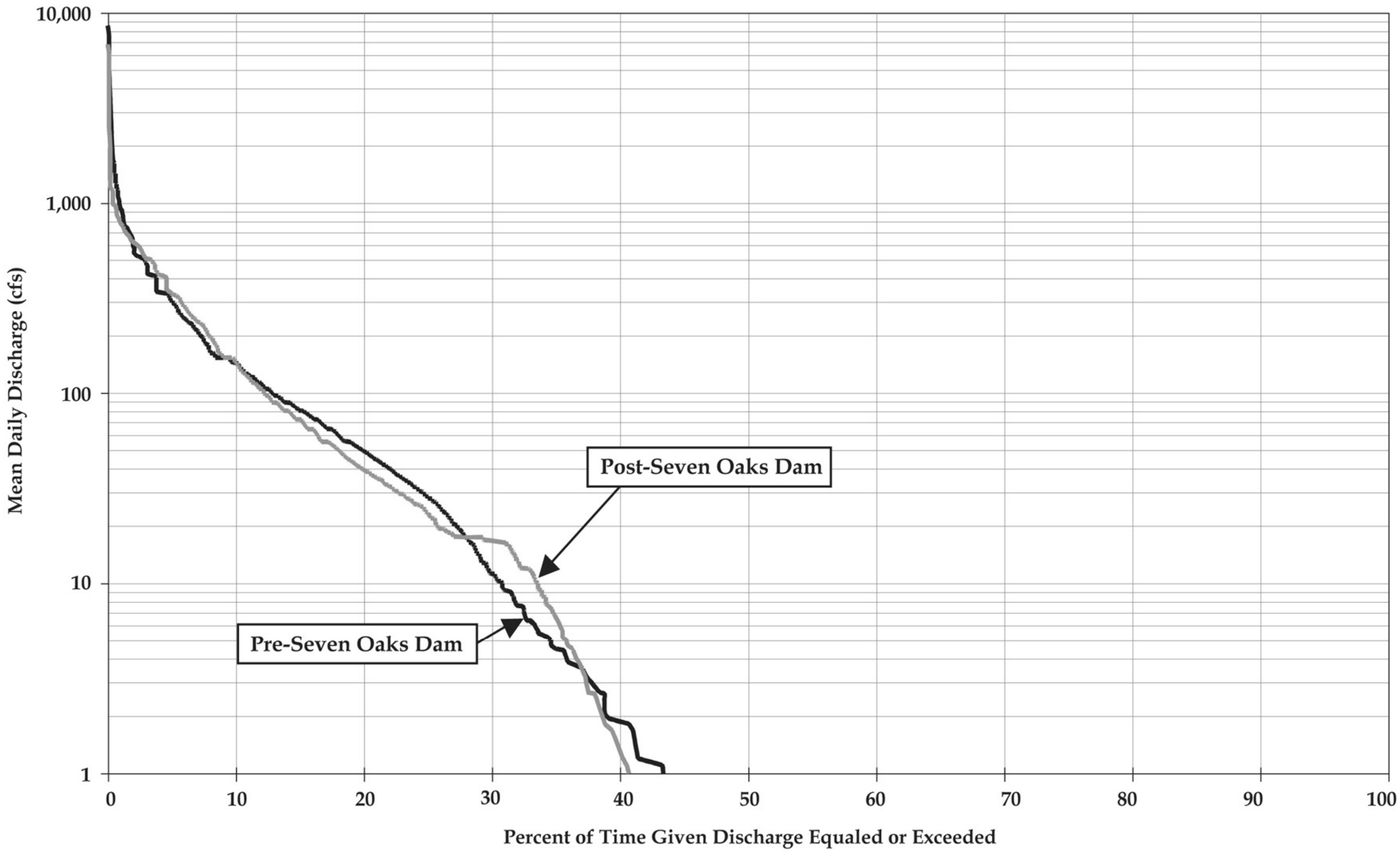

Figure 3.1-9. Probability of Daily Discharge for SAR Segment D, below Mill Creek, WY 1966-67 through WY 1999-2000

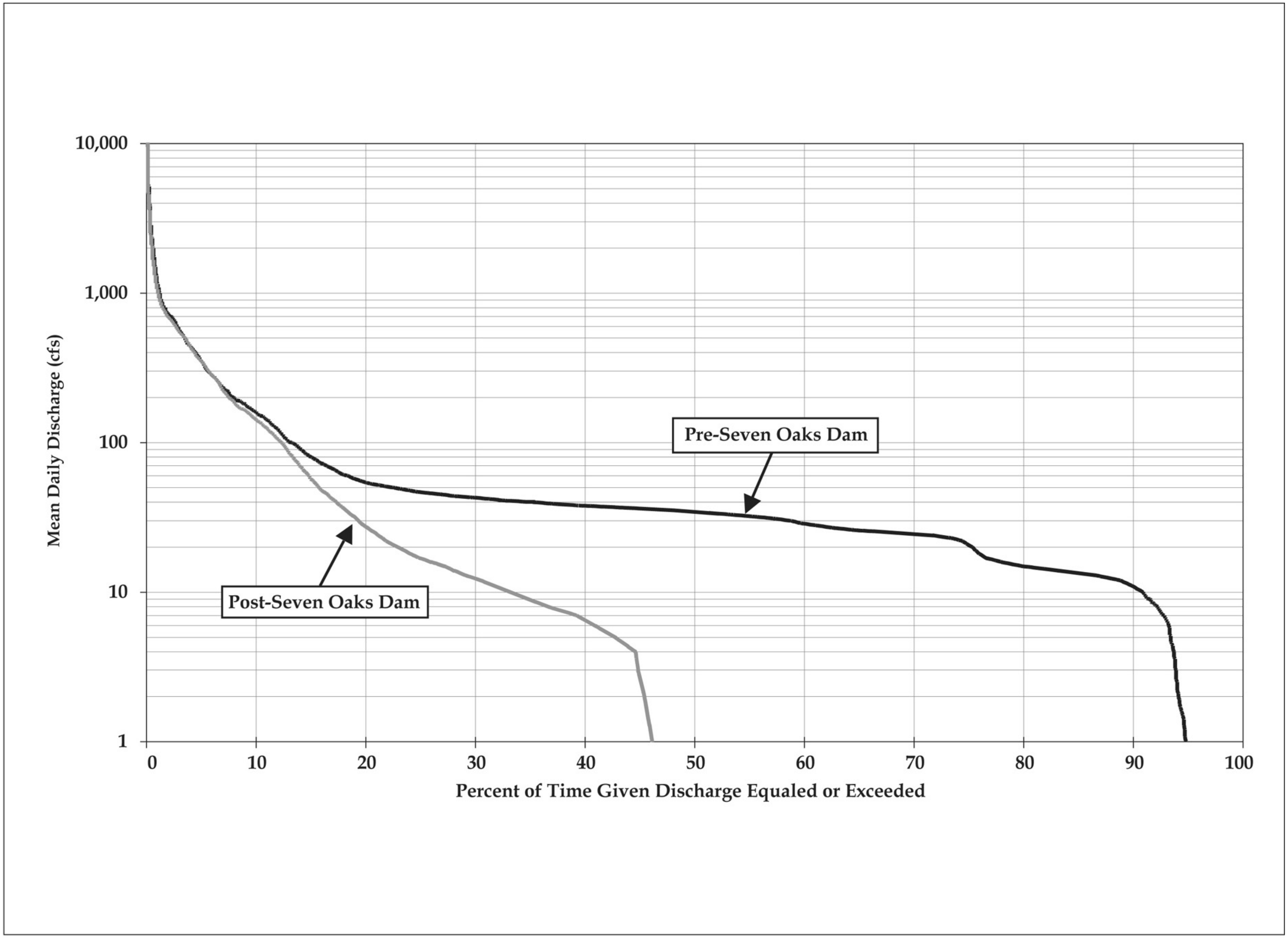

Figure 3.1-10. Probability of Daily Discharge for SAR Segment E, below "E" Street Gage, WY 1966-67 through WY 1999-2000

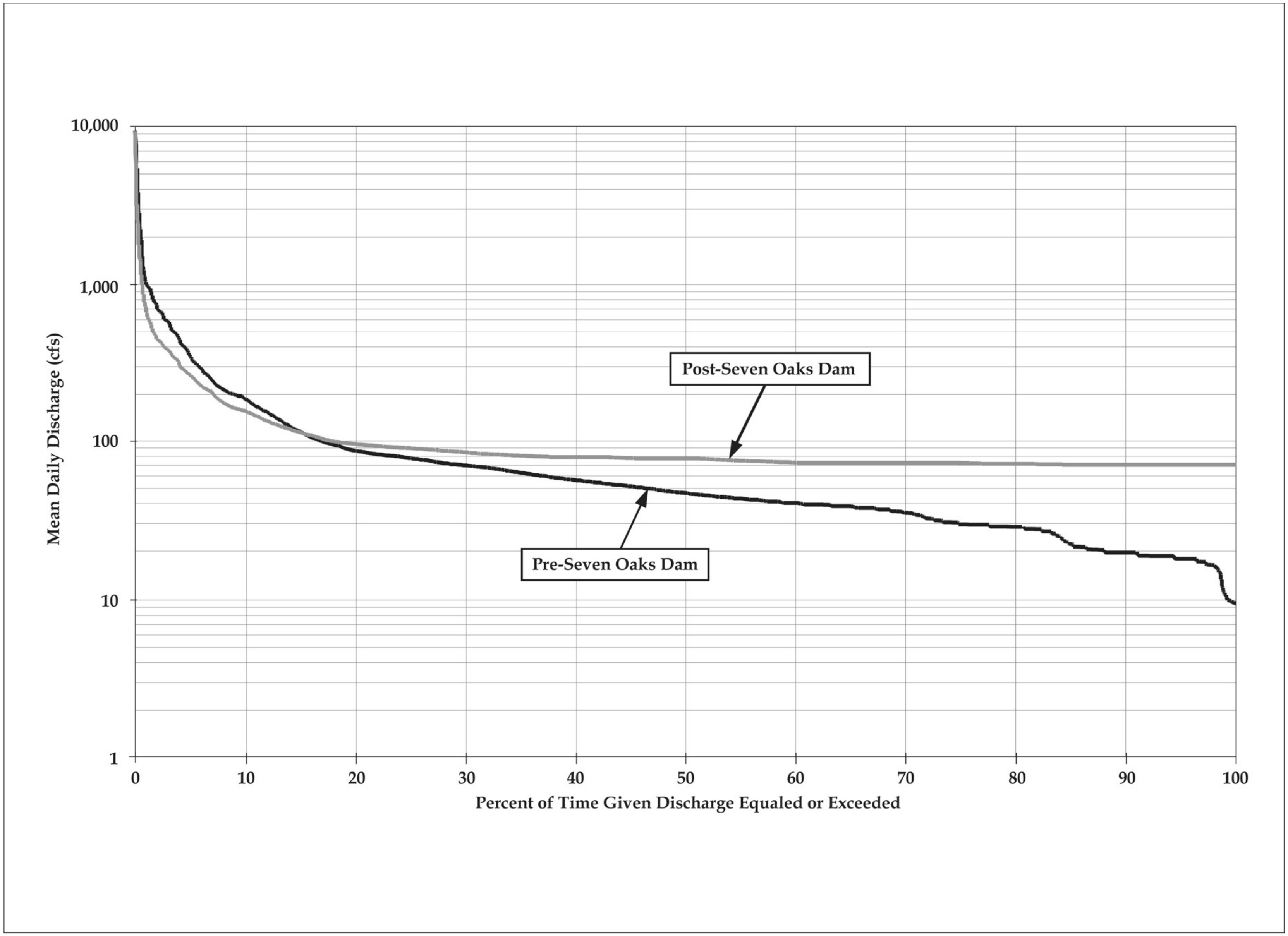

Figure 3.1-11. Probability of Daily Discharge for SAR Segment F, below RIX and Rialto Effluent Outfall, WY 1966-67 through WY 1999-2000

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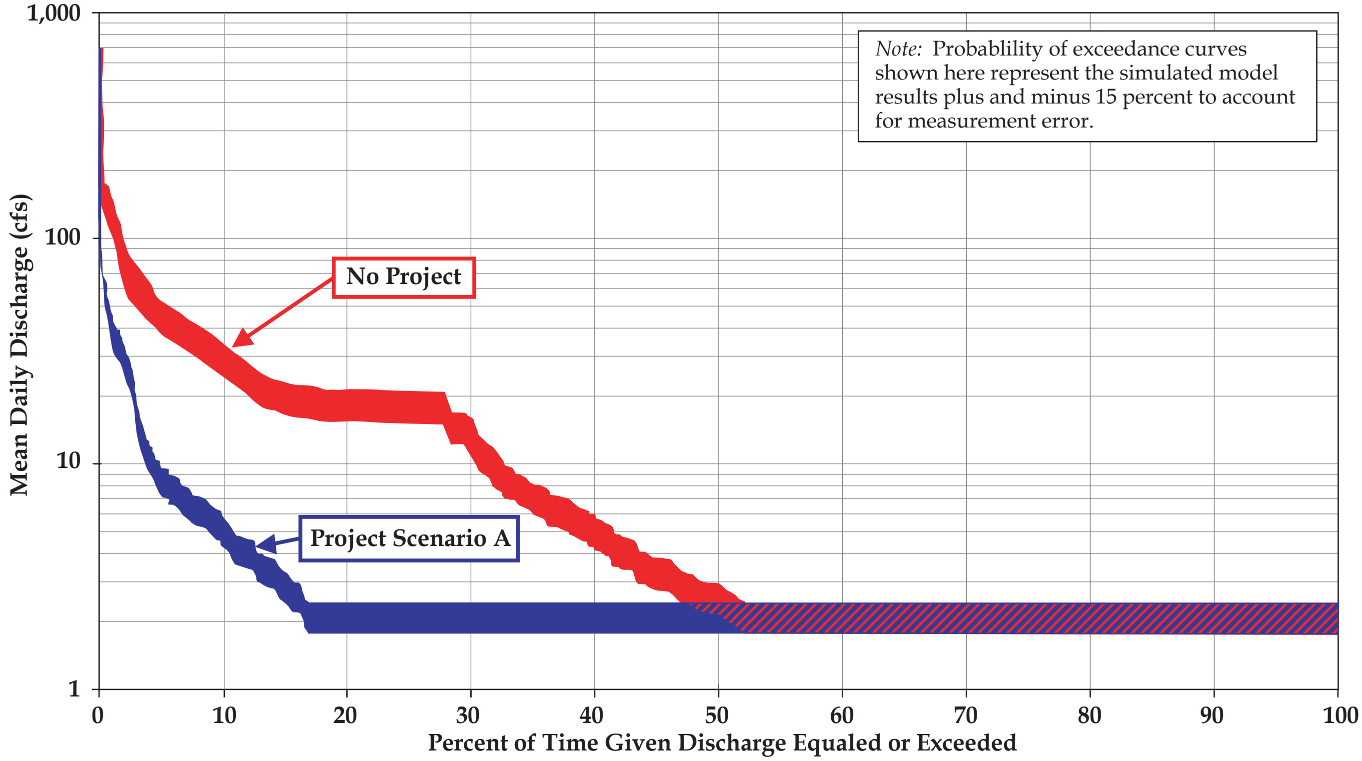

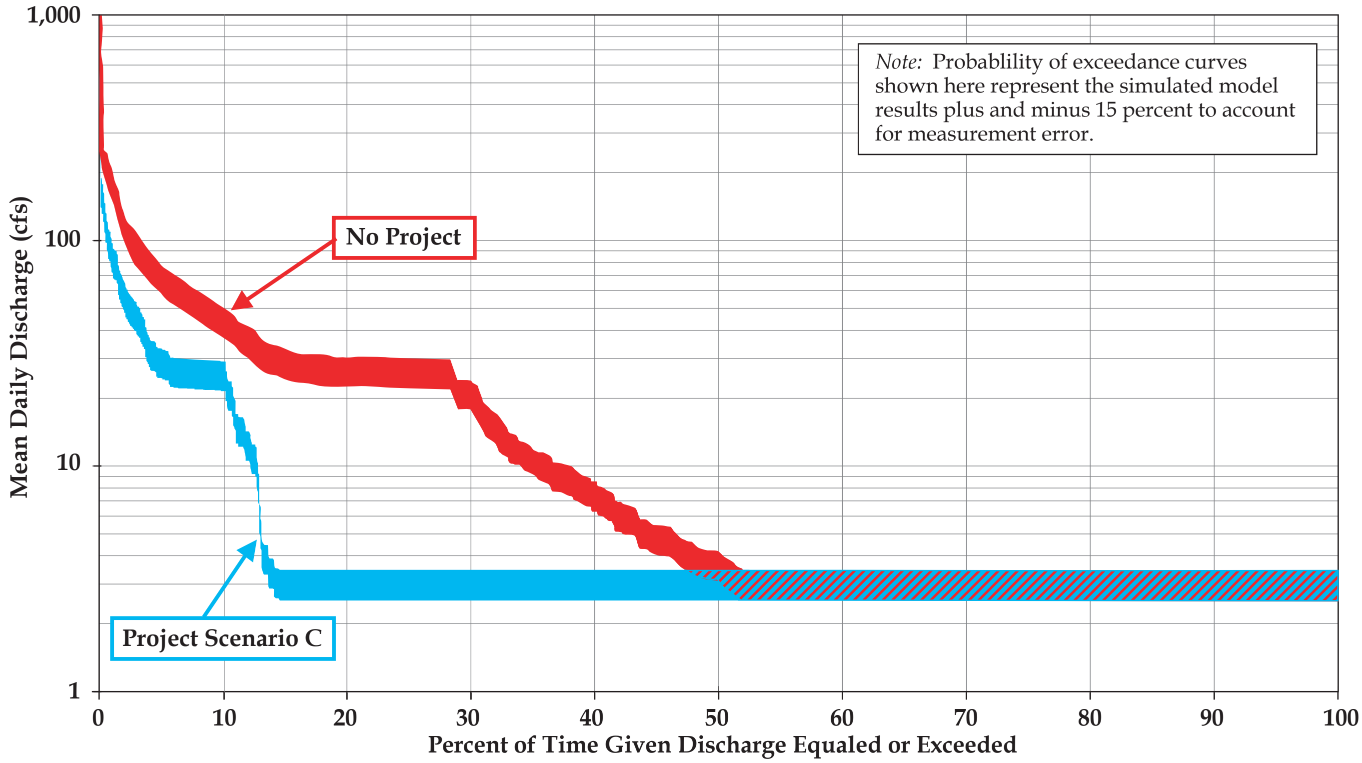

Phase III of the Plunge Pool Pipeline has a diversion rate of 1,500 cfs. Only Phase III affects this segment of the SAR, i.e., Scenarios A and C. These simulated probability of exceedance curves assume a repeat of hydrologic conditions for the WY 1966-67 through WY 1999-2000.

Figure 3.1-14. Probability of Exceedance (Non-Storm Days) for SAR Segment B, above Cuttle Weir

Page	Line(s)	Edit
		Replace Draft EIR Figure 3.1-15 (see replacement figure on following pages)
		Replace Draft EIR Figure 3.1-16 (see replacement figure on following pages)
		Replace Draft EIR Figure 3.1-17 (see replacement figure on following pages)
		Replace Draft EIR Figure 3.1-18 (see replacement figure on following pages)
		Replace Draft EIR Figure 3.1-19 (see replacement figure on following pages)
3.3-57	2	*In Table 3.3-5 make the following correction:* The largest breakout point has historically occurred just below the confluence with Mill Creek (Figure 3.3-8). Based on historical records and modeling analysis (USACE 2000), flows of approximately 15,500 cfs or greater at the confluence would be expected to result in overbank flooding and inundation of approximately 764 ~~684~~ acres without Project diversions. With Project diversions, the area of inundation would be reduced by about 29 acres to approximately ~~655~~ 735 acres. In a 100-year flood, the reduction would be roughly 21 acres.
3.3-58	2	*In Table 3.3-5 make the following correction:* Table 3.1-11 in section 3.1 (Surface Water Hydrology) provides estimates of flows within this segment of the SAR under historical (pre-Seven Oaks Dam), No Project (post-Seven Oaks Dam), and Project (Phase III of the Plunge Pool Pipeline) conditions on non-storm days. As indicated, median non-storm daily flows under No Project conditions within this segment range from 3 to 8 cfs in all months except those of July and August~~, and September~~ when they reach up to 27 ~~23~~ cfs. Higher flows in these ~~three~~ months are a direct result of the draining of the debris pool behind Seven Oaks Dam to meet USACE operating criteria. With the Project, flows in all but two months would have a median of 3 cfs. The largest changes, when compared to No Project, would occur in July and August~~, and September~~ (~~20~~ 24 cfs reduction in flow attributable to diversions by Muni/Western) with minor changes in the remaining months.
3.3-58	2	*In Table 3.3-6 make the following correction:* No Project non-storm daily median flows within this segment are non-existent in most months, except in July and August when the median flow is 12 ~~10~~ cfs, (see Table 3.1-15). The increased flows in these months are attributable to releases made from Seven Oaks Dam in order to drain the debris pool. With Project diversions, the largest reduction in flows occurs in July-and August with a reduction of 12 ~~10~~ cfs. Aside from the months of July and August, non-storm day flow in this segment is due to flow from Mill Creek.

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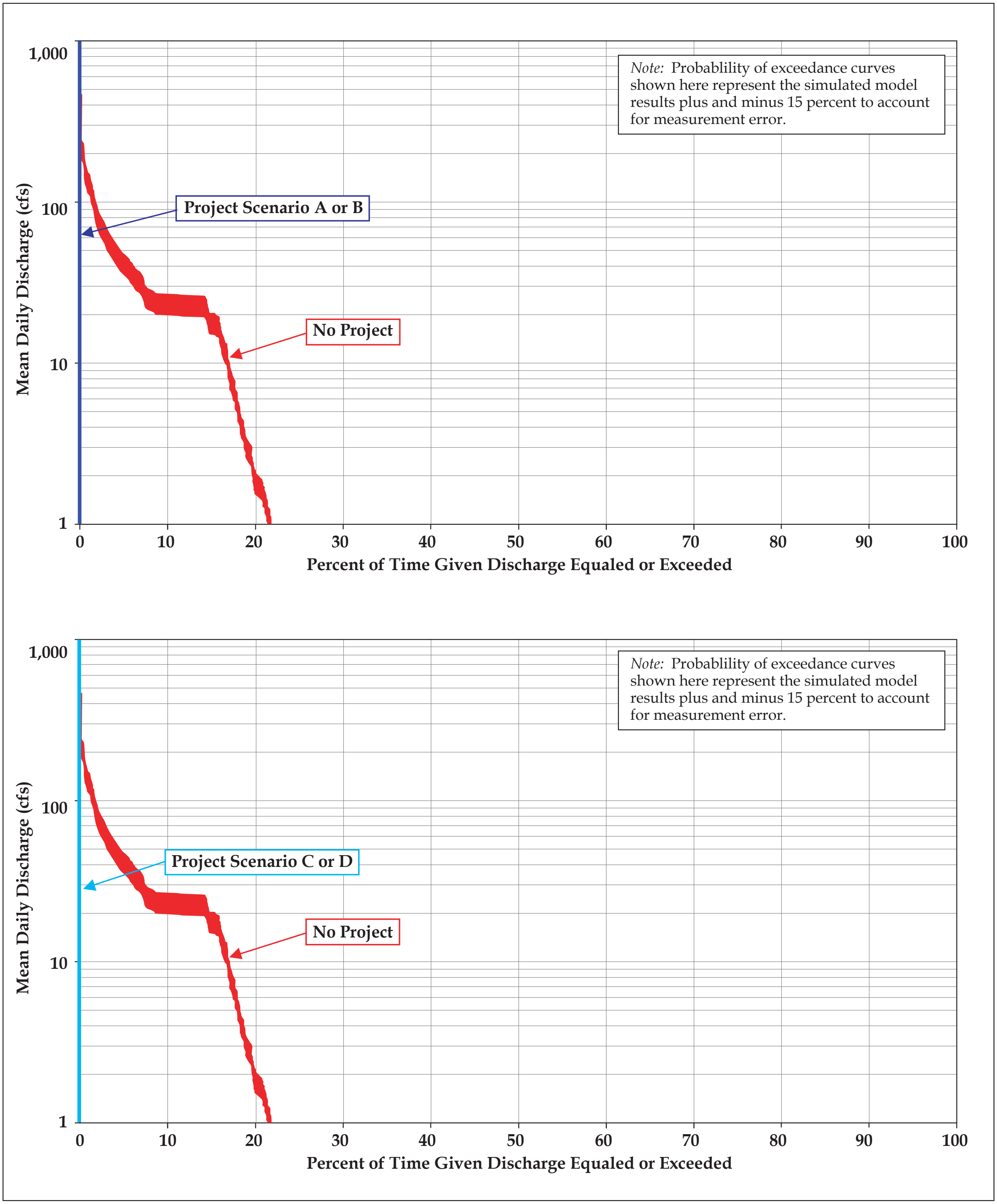
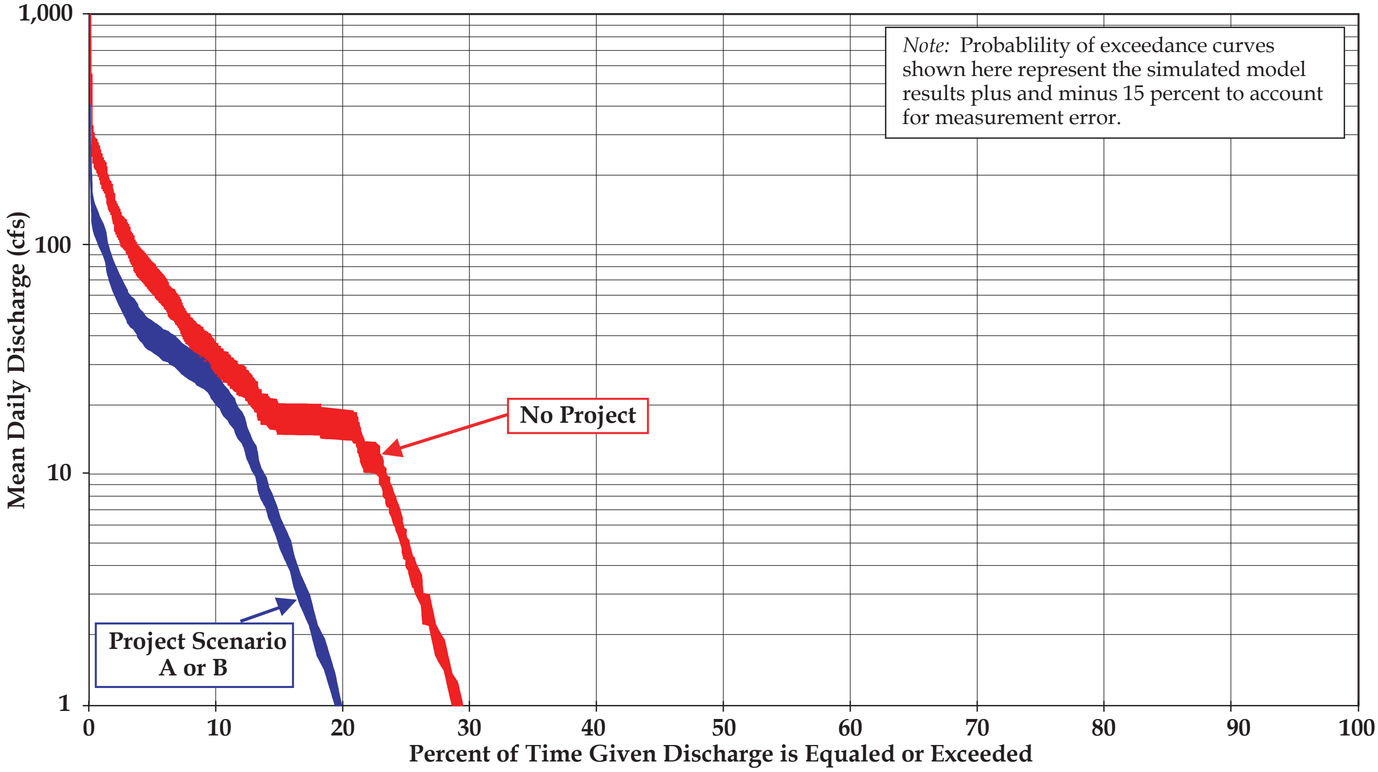


Figure 3.1-15. Probability of Exceedance (Non-Storm Days) for SAR Segment C, below Cuttle Weir



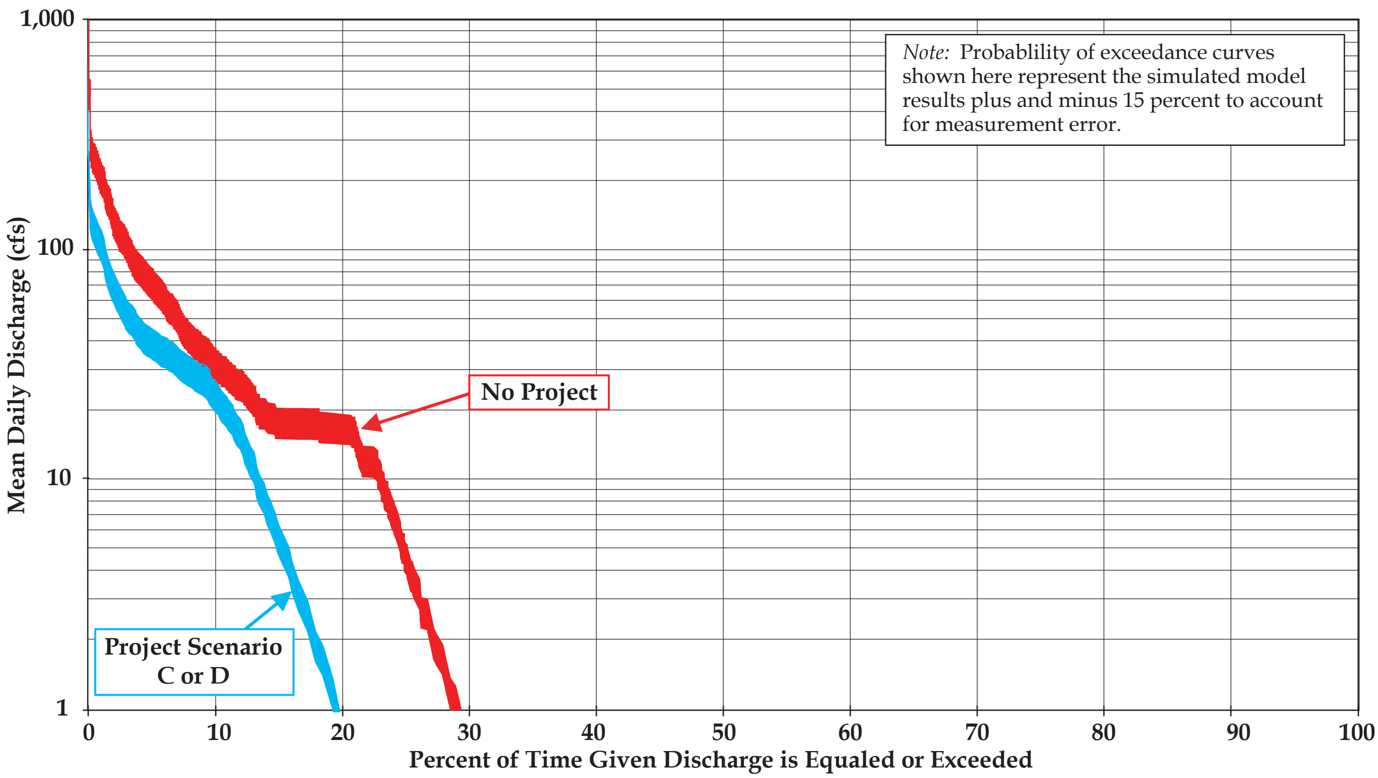
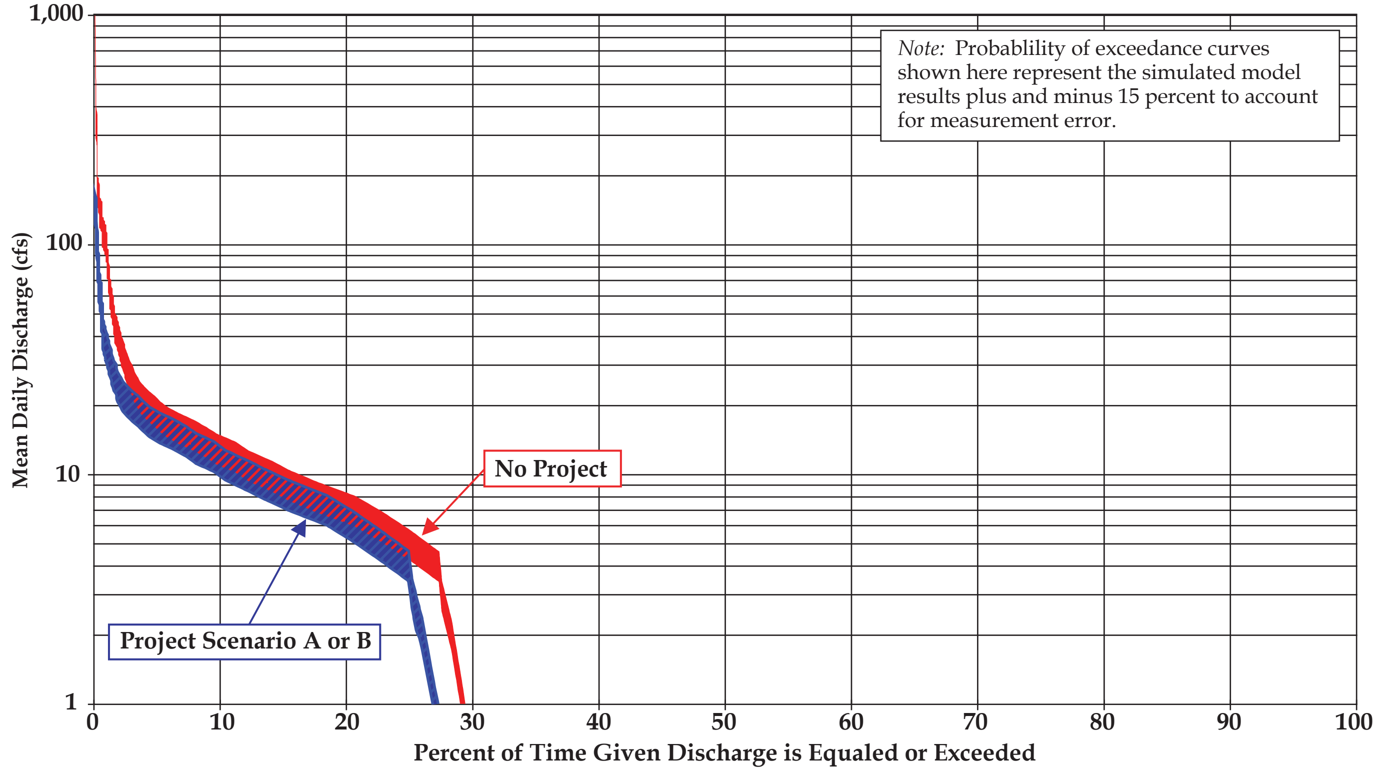


Figure 3.1-16. Probability of Exceedance (Non-Storm Days) for SAR Segment D, below Mill Creek Confluence



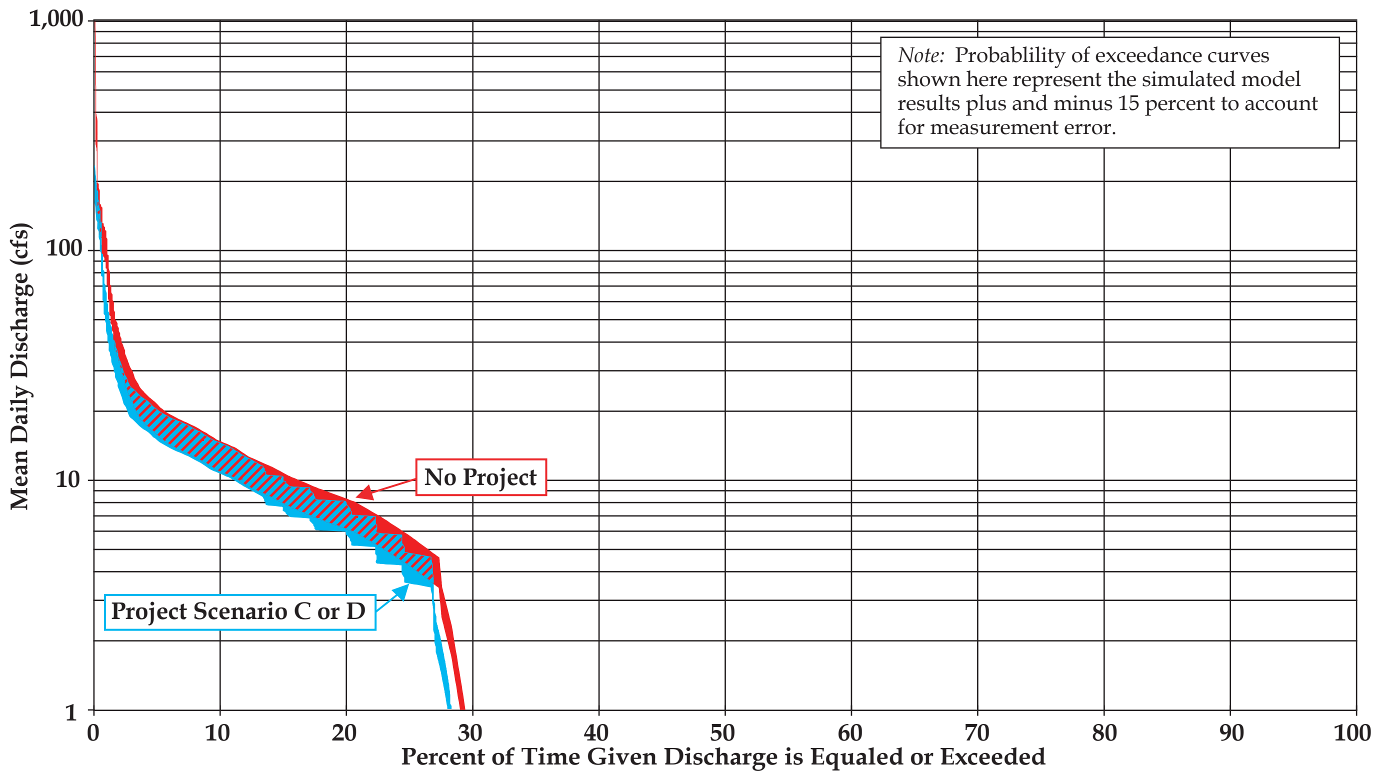
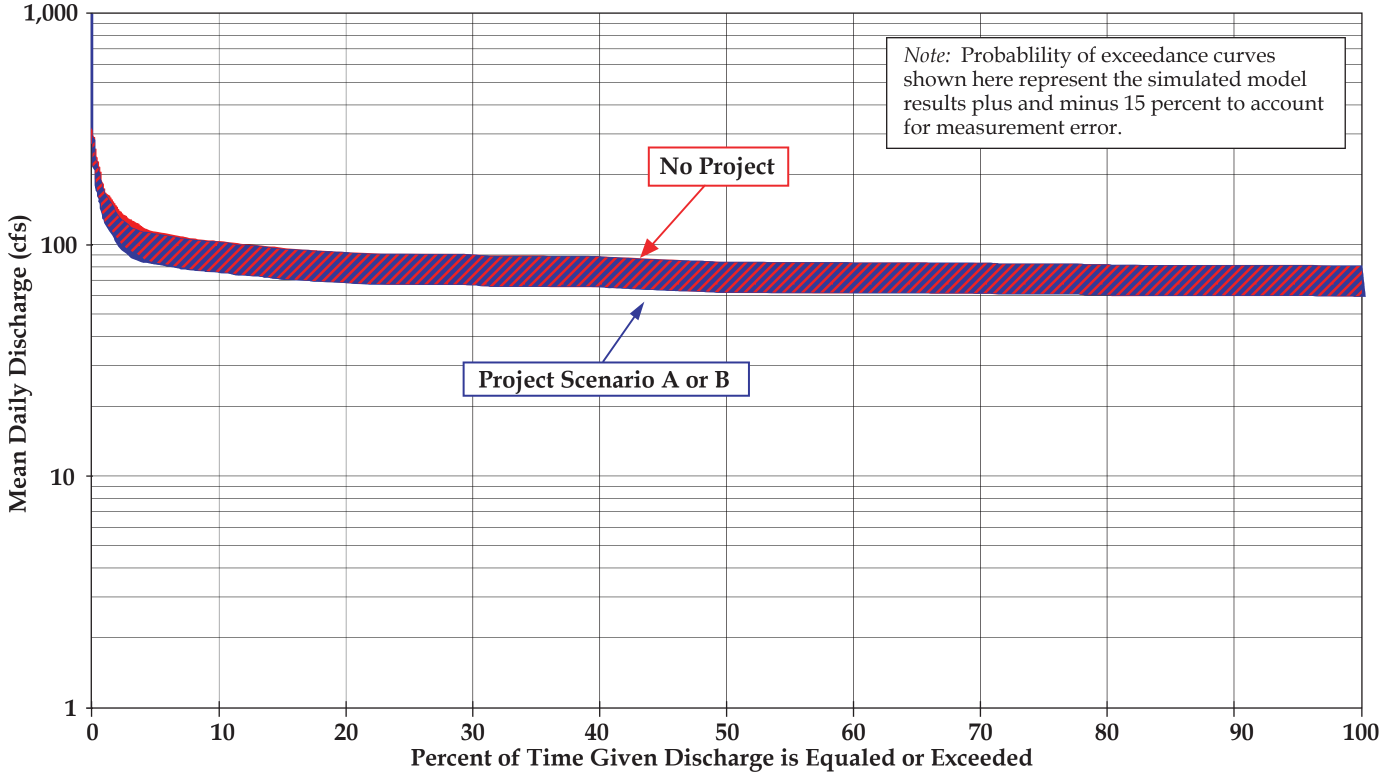


Figure 3.1-17. Probability of Exceedance (Non-Storm Days) for SAR Segment E, below "E" Street



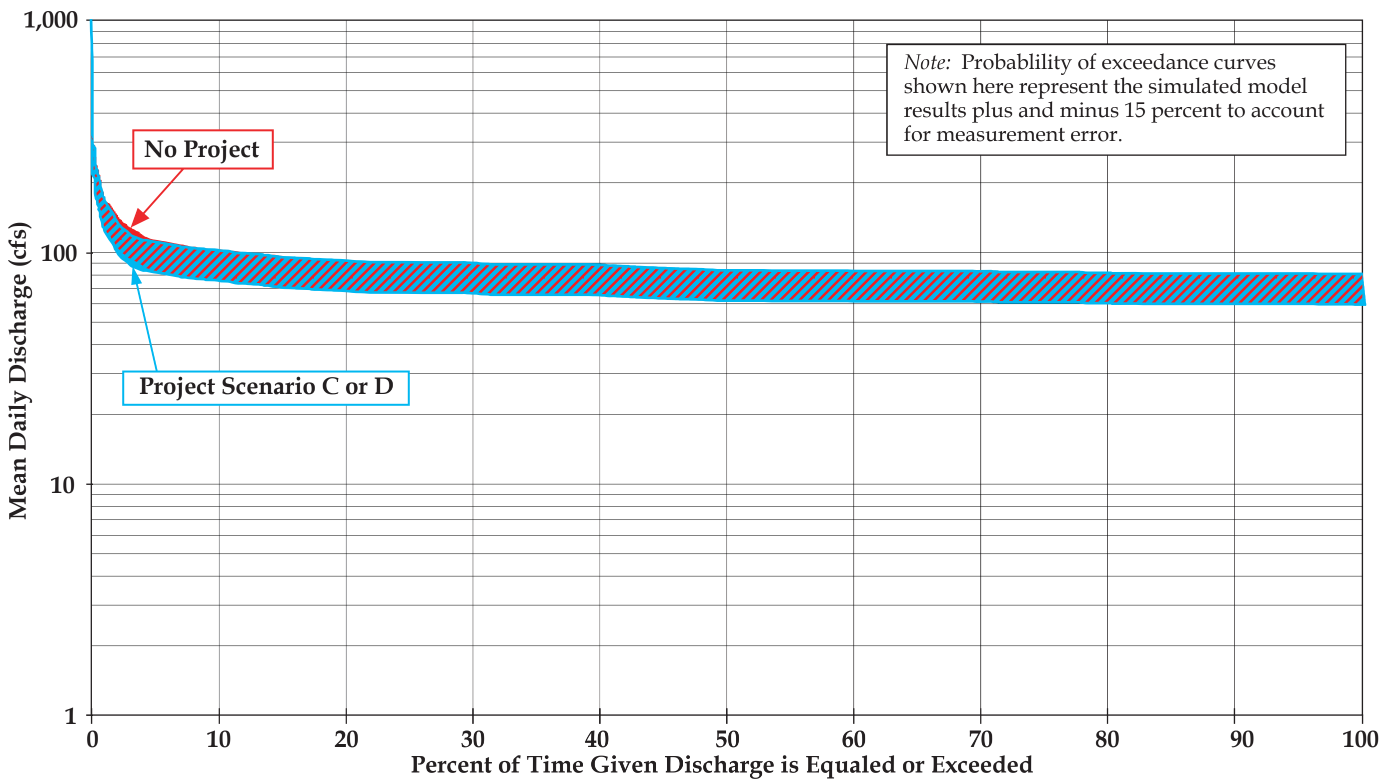


Figure 3.1-18. Probability of Exceedance (Non-Storm Days) for SAR Segment F, below RIX and Rialto Effluent Outfall

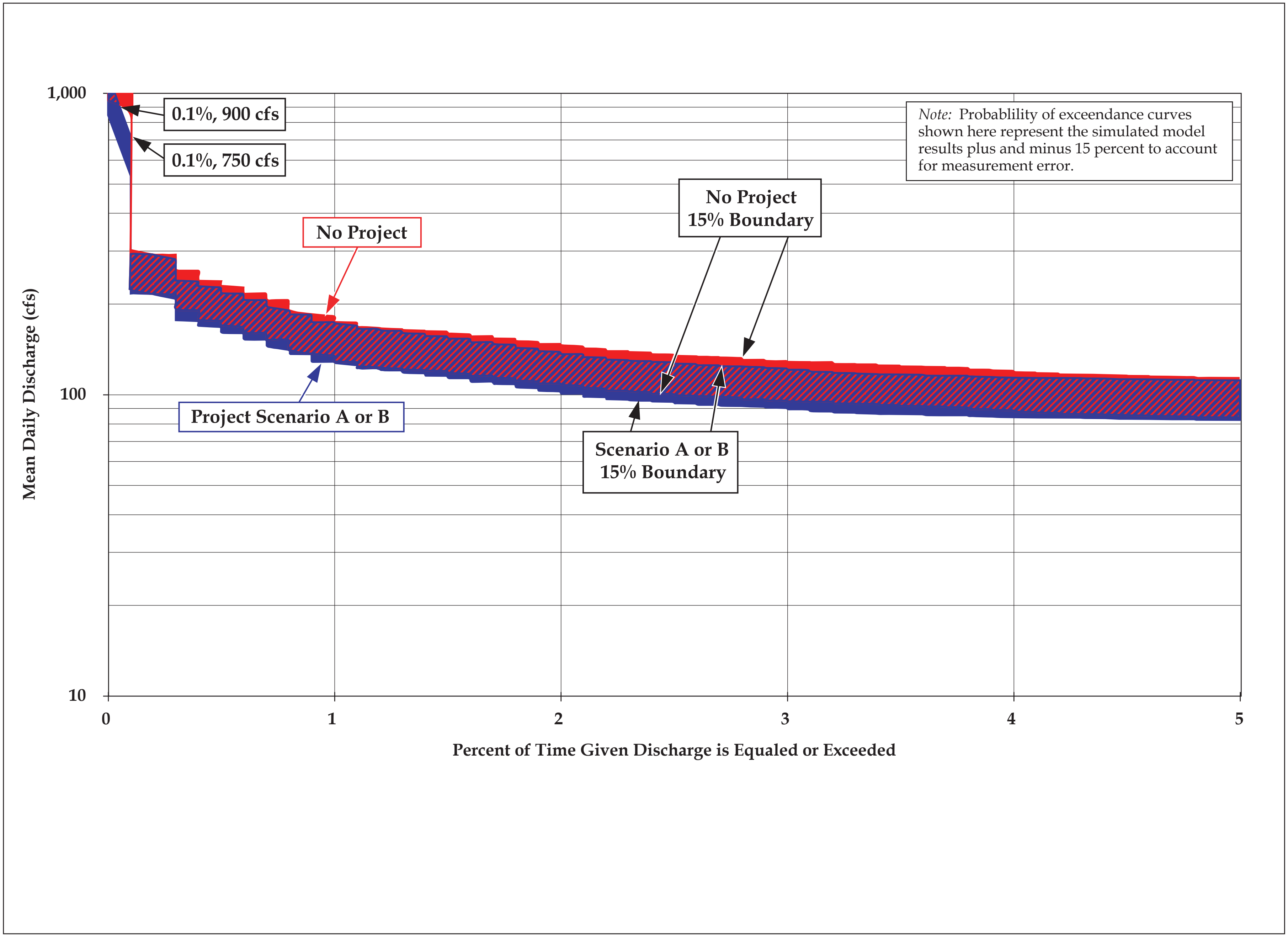


Figure 3.1-19. Detail of Probability of Exceedance (Non-Storm Days) for SAR Segment F, below RIX and Rialto Effluent Outfall

Page	Line(s)	Edit
3.3-59	2	*In Table 3.3-6 make the following correction:* ~~Median daily non-storm flows within this segment are present under No Project conditions and range from 6 to 17 cfs from June to September with a small median flow of 1 cfs in January (see Table 3.1-16). All other months exhibit zero median daily non-storm flows.~~ ~~Project-related reductions in non-storm flows within this segment are limited to the high flow months. Project diversions would result in reductions of up to 3 cfs in June, up to 16 cfs in July, up to 17 cfs in August, and up to 12 cfs in September. These reductions coincide with the Project diversion of releases from Seven Oaks Dam that are made to meet operating criteria and that would otherwise increase SAR flows within these months in this segment of the SAR.~~ As shown in Table 3.1-16 and Figure 3.1-17 there is no measurable difference between daily median flows with the Project and under No Project conditions at "E" Street. Median flow for non-storm days for all months under any Project scenario and the No-Project condition is 0 cfs.
3.3-59	2	*In Table 3.3-6 make the following correction:* Median non-storm day flows within the SAR at a point just below the RIX and Rialto discharge remain relatively constant throughout the year, ranging from ~~61~~ 71 to ~~83~~ 79 cfs (see Table 3.1-17). ~~A peak in median daily non-storm flows occurs in the summer months and tapers off by September.~~ With Project diversions, SAR flow reductions within this segment are relatively minor. ~~Throughout most of the year~~, In July the estimated flow reductions resulting from Project diversions are ~~less than~~ 1 cfs, representing no more than a 2 percent change. ~~Exceptions occur from July to September, where reductions are up to 15 cfs. These changes represent up to an 18 percent reduction. With the Project, median daily flows would consistently measure between 61 and 70 cfs year-round.~~
6-22	25-30	But, as shown in Table 6.2-1, this "worst-case" analysis found very little change in concentration levels. No impact is detectable upstream of Cuttle Weir and the only detectable changes are in segment E and F ~~change is less than 3 percent as far downstream as the MWD Crossing gage~~. At Prado reservoir, because of the large inflows, no change in flow or water quality concentration would be detectable. The potential increases in TDS and TIN would ~~approach, but~~ not exceed basin plan objectives (see Table 3.1-9).
6-23	1	*Replace Table 6.2-1 (replacement table on following pages)*
6-24	1	*Replace Table 6.2-2 (replacement table on following pages)*
6-50	18-22	This section of river has many pleasing aesthetic qualities, such as an extensive area of riparian vegetation. This river segment is also very visible by the general population because it runs through a highly urbanized section of Riverside County. The Project very minimally and other projects could cause baseflow in this segment of the river to decline. ~~As shown in Table 6.2-1, with related projects, median non-storm day baseflow in this river segment could decrease from 74 cfs to 46 cfs (about 38 percent).~~ This is a significant aesthetic impact.

Table 6.2-1. Potential Cumulative Impacts on Santa Ana River TDS and TIN

Location	*Segment*	*Related Project Influence*	TDS		TIN		*Effects due to Project and Related Projects*	*WQ Objectives Violated*
			Measured Concentration (mg/L)	*Water Quality Objective (mg/L)*	*Measured Concentration (mg/L)*	*Water Quality Objective (mg/L)*		
Above Seven Oaks Dam	A	-	NA	300	NA	5	none	no
Below Seven Oaks Above Cuttle Weir	B	Conservation District	230[1]	300	0.3[1]	5	none	no
Below Cuttle Weir	C	Conservation District	NA	300	NA	5	none	no
Mill Creek Confluence	D	Conservation District	NA	300	NA	5	none	no
E-Street Gage	E	Conservation District	~470[2]	550	~0.4[2]	5	Possible increase in TDS up to 470 mg/L	no
Rix-Rialto	F	Conservation District and RIX	~520[3]	700	~8.5[3]	10	Possible increase in TDS up to 520 mg/L and TIN up to 8.5 mg/L	no
Riverside Narrows	G	RIX and Riverside	560[1]	700	7.3[1]	10	none	no
Below Prado	-	RIX and Riverside	600[1]	650	5.2[1]	10	none	no

[1] From USGS WRI 03-4326, median baseflow TDS in 1998-2001

[2] The median TDS, TIN of the Warm Creek inflow, *not of the SAR*

[3] Maximum Monthly Mean TDS, TIN of the RIX Facility Outfall during 2001-2002 (RIX PEIR 2003), *not of SAR*

Table 6.2-2. Potential Cumulative Impacts on Santa Ana River TDS and TIN

Location	*Segment*	*Related Project Influence*	TDS		TIN		*Effects due to Project and Related Projects*	*WQ Objectives Violated*
			Measured Concentration (mg/L)	*Water Quality Objective (mg/L)*	*Measured Concentration (mg/L)*	*Water Quality Objective (mg/L)*		
Above Seven Oaks Dam	A	-	NA	300	NA	5	none	no
Below Seven Oaks Above Cuttle Weir	B	Conservation District	230 [1]	300	0.3 [1]	5	none	no
Below Cuttle Weir	C	Conservation District	NA	300	NA	5	none	no
Mill Creek Confluence	D	Conservation District	NA	300	NA	5	none	no
E-Street Gage	E	Conservation District	~470 [2]	550	~0.4 [2]	5	Possible increase in TDS up to 470 mg/L	no
Rix-Rialto	F	Conservation District and RIX	~520 [3]	700	~8.5 [3]	10	Possible increase in TDS up to 520 mg/L and TIN up to 8.5 mg/L	no
Riverside Narrows	G	RIX and Riverside	560 [1]	700	7.3 [1]	10	none	no
Below Prado	-	RIX and Riverside	600 [1]	650	5.2 [1]	10	none	no

[1] From USGS WRI 03-4326, median baseflow TDS in 1998-2001

[2] The median TDS, TIN of the Warm Creek inflow, *not of the SAR*

[3] Maximum Monthly Mean TDS, TIN of the RIX Facility Outfall during 2001-2002 (RIX PEIR 2003), *not of SAR*

Page	Line(s)	Edit
A-2-24	24-32	Figure 2.5-2 shows probability of exceedance curves for flow above Cuttle Weir; these curves are estimated based on nearby gage data with adjustments made for diversions. It is evident from this figure that prior to the construction of Seven Oak Dam, more than 30 percent of the time there was no flow in this segment, flows above 10 cfs occurred approximately 35 percent of days, and flows above 100 cfs were rare, occurring only about 10 percent of the time. With the dam in operation, mean daily discharge is at least 3 cfs, and about ~~60~~ 55 percent of the time discharge is greater than 3 cfs. For this segment of the SAR, with the dam in operation a mean daily discharge of 10 cfs is equaled or exceeded approximately ~~45~~ 40 percent of the time, while for flows of 100 cfs and higher, the frequency drops to less than ~~10~~ 12 percent (Figure 2.5-2).
A-2-25	10-13	Prior to the construction of Seven Oak Dam, more than ~~65~~ 60 percent of the time there was no flow in this segment, flows above 10 cfs occurred only about 20 percent of days, and flows above 100 cfs occurred less than 10 percent of the time.
A-2-25 and A-2-26	28-36,1-2	Figure 2.5-4 shows probability of exceedances curves for flow below the confluence of Mill Creek; these curves are estimated based on nearby gage data with adjustments made for diversions and other losses as well as inflow. This figure shows that prior to the construction of Seven Oak Dam, about 55 percent of the time there was no flow in this segment, flows above 10 cfs occurred approximately ~~35~~ 30 percent of days, and flows above 100 cfs occurred approximately 15 percent of the time. With the dam in operation flows are similar to those of pre-dam conditions, demonstrating that the inflow from Mill Creek lessens the influence of flows from the Project area in this segment. With the dam in operation approximately ~~48~~ 58 percent of the time there is no discharge in this river segment, flow above 10 cfs is equaled or exceeded approximately ~~40~~ 35 percent of the time, while for flows of 100 cfs and higher, the frequency drops to about ~~17~~ 14 percent (Figure 2.5-4).
A-2-26	25-33	Figure 2.5-5 presents probability of exceedance curves for flow downstream of "E" Street. Prior to the construction of Seven Oak Dam, about 5 percent of the time there was no flow in this segment, flows above 10 cfs occurred approximately 90 percent of days, and flows above 100 cfs occurred approximately 13 percent of the time. Since December 1999 (with the dam in operation) flows are consistently lower than pre-dam conditions, but this effect is due largely to the loss of WWTP effluent that, prior to 1996, was discharged in this river reach but has since been discharged in Segment F. Currently, approximately ~~42~~ 54 percent of the time there is no ~~discharge~~ flow in this river segment, flows above 10 cfs are equaled or exceeded approximately ~~48~~ 33 percent of the time, while for flows of 100 cfs and higher, the frequency drops to about 12 percent (Figure 2.5-5).
A-6-16	28-33	~~This analysis was performed for seven SAR flow rates (5, 10, 20, 60, 100, 1,000, 2,000 cfs) for each of the two SAR channel segments. Loss of instantaneous SAR flow due to infiltration ranges between 8 and 12 cfs for low flows between the USGS "E" Street Gage and the RIX and Rialto Effluent Outfall point.. Based on this data, a representative flow loss of 11 cfs is assumed for non-storm flows in the SAR channel segment between "E" Street and RIX and Rialto Effluent Outfall..~~

Page	Line(s)	Edit
A-6-17	11-13	Over the base period, prior to the construction of Seven Oaks Dam, it is estimated that there were ~~4,012~~ 4,014 days (or approximately 32 percent of the time) in which there was no flow in the channel, i.e. zero-flow days.
A-6-17	17-20	Over the base period, prior to the construction of Seven Oaks Dam, it is estimated that there were ~~5,966~~ 5,813 days (or approximately ~~48~~ 47 percent of the time) without flow in this segment of the river. Under No Project conditions with the Seven Oaks Dam in place, the number of zero-flow days increases to ~~6,183~~ 6,506(~~50~~ 52 percent of the total days).
A-6-17	24-28	Over the base period, prior to the construction of Seven Oaks Dam, it is estimated that there were ~~5,499~~ 5,679 zero-flow days (approximately ~~46%~~ 47 percent of the time) at the Mill Creek confluence. With Seven Oaks Dam in place, the number of zero-flow days is ~~4,661~~ 5,624, about ~~40~~ 47percent of the total days for the period. With the Project diversion in place, the number of days with no flow increases to ~~5,504~~ 6,436 days, about ~~46~~ 53 percent of the total days (see Table 6.2-3).
A-6-17	30-35	Over the base period, prior to the construction of Seven Oaks Dam, it is estimated that there were 521 zero-flow days, about 4 percent of the total days in the period at "E" Street. Under No Project conditions, the number of zero-flow days increases to ~~4,371 (35~~ 5,930 (48 percent of the total days). The increase in zero-flow days with Seven Oaks Dam in place is due, in large part, to the filling of the debris pool in the early winter months and maintaining target storage. With implementation of Scenario C or D, the number of zero-flow days increases to ~~5,289 (43~~ 6,004 (48 percent of total days).
A-6-18		*Replace Table 6.2-1 (replacement table on following pages)*
A-6-19		*Replace Table 6.2-2 (replacement table on following pages)*
A-6-20		*Replace Table 6.2-3 (replacement table on following pages)*
A-6-21		*Replace Table 6.2-4 (replacement table on following pages)*
A-6-22		*Replace Table 6.2-5 (replacement table on following pages)*
A-6-23		*Replace Table 6.2-6 (replacement table on following pages)*
A-6-24	3	*Replace Table 6.2-7 (replacement table on following pages)*
A-6-24	1-2	Muni/Western diversions and the number of zero-flow days increases to ~~6,212 (50~~ 6,120 (49 percent of total days).

Table 6.2-1. Project Effect on Non-Storm Days Above Cuttle Weir (River Segment B) - Monthly Summary for WY 1966-67 through WY 1999-00[1,2,3]

	Base Period		January		February		March		April		May		June		July		August		September		October		November		December	
	Days	*% of Total Days*	*Days*	*% of Jan Days*	*Days*	*% of Feb Days*	*Days*	*% of Mar Days*	*Days*	*% of Apr Days*	*Days*	*% of May Days*	*Days*	*% of Jun Days*	*Days*	*% of Jul Days*	*Days*	*% of Aug Days*	*Days*	*% of Sep Days*	*Days*	*% of Oct Days*	*Days*	*% of Nov Days*	*Days*	*% of Dec Days*
HISTORICAL CONDITIONS																										
Total Days	12,419		1,054		961		1,054		1,020		1,054		1,020		1,054		1,054		1,020		1,054		1,020		1,054	
Storm Days	4,044	33%	577	55%	565	59%	698	66%	588	58%	341	32%	224	22%	122	12%	79	7%	126	12%	146	14%	203	20%	375	36%
Non-Storm Days	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Zero Flow Days	4,014	32%	172	16%	79	8%	45	4%	88	9%	223	21%	422	41%	553	52%	606	57%	543	53%	525	50%	455	45%	303	29%
Minimum Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
Median Flow for Non-Storm Day (cfs)	1		4		5		6		5		2		0		0		0		0		0		0		2	
NO PROJECT																										
Non-Storm Days with Zero Flow	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Flow	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Minimum Flow on Non-Storm Days (cfs)	3		3		3		3		3		3		3		3		7		3		3		3		3	
Median Flow on Non-Storm Days (cfs)	4		3		3		7		8		4		3		26		27		3		3		3		3	
PROJECT SCENARIO A OR B[1,2]																										
Non-Storm Days with Zero Flow	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Flow	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Non-Storm Days with Project Diversion	2,928	24%	0	0%	25	3%	25	2%	68	7%	159	15%	336	33%	872	83%	975	93%	400	39%	20	2%	8	1%	40	4%
Median Flow for Non-Storm Days (cfs)	3		3		3		6		5		3		3		3		3		3		3		3		3	
PROJECT SCENARIO C OR D[1,2]																										
Non-Storm Days with Zero Flow	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Flow	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Non-Storm Days with Project Diversion	821	7%	6	1%	10	1%	1	0%	4	0%	31	3%	24	2%	210	20%	295	28%	110	11%	107	10%	22	2%	1	0%
Median Flow for Non-Storm Days (cfs)	3		3		3		3		3		3		3		3		4		3		3		3		3	
NO PROJECT versus SCENARIO A OR B																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	-1	-17%	0	0%	0	0%	-1	-14%	-3	-37%	-1	-27%	0	0%	-23	-88%	-24	-89%	0	0%	0	0%	0	0%	0	0%
NO PROJECT versus SCENARIO C OR D																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	-1	-17%	0	0%	0	0%	-4	-57%	-5	-60%	-1	-27%	0	0%	-23	-88%	-23	-85%	0	0%	0	0%	0	0%	0	0%

Notes:

[1] Results for 500 cfs and 1,500 cfs diversion rate differ by less than 1%

[2] Only Phase III of the Plunge Pool Pipeline, a 1,500 cfs Muni/Western diversion pipeline at the plunge pool, affects this river segment.

[3] This segment's base period is limited by the available gage data at the USGS E-Street Gage from WY 1966-67 to WY 1999-00.

Table 6.2-2. Project Effect on Non-Storm Days Downstream from Cuttle Weir (River Segment C) - Monthly Summary for WY 1966-67 through WY 1999-00[1,2]

	Base Period		January		February		March		April		May		June		July		August		September		October		November		December	
	Days	*% of Total Days*	*Days*	*% of Jan Days*	*Days*	*% of Feb Days*	*Days*	*% of Mar Days*	*Days*	*% of Apr Days*	*Days*	*% of May Days*	*Days*	*% of Jun Days*	*Days*	*% of Jul Days*	*Days*	*% of Aug Days*	*Days*	*% of Sep Days*	*Days*	*% of Oct Days*	*Days*	*% of Nov Days*	*Days*	*% of Dec Days*
HISTORICAL CONDITIONS																										
Total Days	12,419		1,054		961		1,054		1,020		1,054		1,020		1,054		1,054		1,020		1,054		1,020		1,054	
Storm Days	4,044	33%	577	55%	565	59%	698	66%	588	58%	341	32%	224	22%	122	12%	79	7%	126	12%	146	14%	203	20%	375	36%
Non-Storm Days	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Zero Flow Days	5,813	47%	210	20%	172	18%	209	20%	281	28%	436	41%	606	59%	801	76%	798	76%	752	74%	786	75%	455	45%	307	29%
Minimum Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
Median Flow for Non-Storm Day (cfs)	0		1		1		0		0		0		0		0		0		0		0		0		1	
NO PROJECT																										
Non-Storm Days with Zero Flow	6,506	52%	426	40%	309	32%	284	27%	315	31%	493	47%	668	65%	515	49%	521	49%	749	73%	786	75%	810	79%	630	60%
Non-Storm Days with Flow	1,869	15%	51	5%	87	9%	72	7%	117	11%	220	21%	128	13%	417	40%	454	43%	145	14%	122	12%	7	1%	49	5%
Minimum Flow on Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
Median Flow on Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
PROJECT SCENARIO A OR B[1]																										
Non-Storm Days with Zero Flow	8,374	67%	477	45%	395	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Non-Storm Days with Flow	1	0%	0	0%	1	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Project Diversion	3,440	28%	0	0%	25	3%	25	2%	68	7%	159	15%	350	34%	877	83%	975	93%	891	87%	22	2%	8	1%	40	4%
Median Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
PROJECT SCENARIO C OR D[1]																										
Non-Storm Days with Zero Flow	8,374	67%	477	45%	395	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Non-Storm Days with Flow	1	0%	0	0%	1	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Project Diversion	693	6%	1	0%	8	1%	0	0%	4	0%	31	3%	26	3%	201	19%	381	36%	39	4%	1	0%	0	0%	1	0%
Median Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
NO PROJECT versus SCENARIO A OR B																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
NO PROJECT versus SCENARIO C OR D																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%

Notes:

[1] Results for 500 cfs and 1,500 cfs diversion rate differ by less than 1%

[2] This segment's base period is limited by the available gage data at the USGS E-Street Gage from WY 1966-67 to WY 1999-00.

Table 6.2-3. Project Effect on Non-Storm Days below Mill Creek Confluence (River Segment D) - Monthly Summary for WY 1966-67 through WY 1998-99[1,2]

	Base Period		January		February		March		April		May		June		July		August		September		October		November		December	
	Days	*% of Total Days*	*Days*	*% of Jan Days*	*Days*	*% of Feb Days*	*Days*	*% of Mar Days*	*Days*	*% of Apr Days*	*Days*	*% of May Days*	*Days*	*% of Jun Days*	*Days*	*% of Jul Days*	*Days*	*% of Aug Days*	*Days*	*% of Sep Days*	*Days*	*% of Oct Days*	*Days*	*% of Nov Days*	*Days*	*% of Dec Days*
HISTORICAL CONDITIONS																										
Total Days	12,053		1,023		932		1,023		990		1,023		990		1,023		1,023		990		1,023		990		1,023	
Storm Days	3,989	33%	568	56%	544	58%	690	67%	574	58%	341	33%	224	23%	122	12%	79	8%	126	13%	146	14%	201	20%	374	37%
Non-Storm Days	8,064	67%	455	44%	388	42%	333	33%	416	42%	682	67%	766	77%	901	88%	944	92%	864	87%	877	86%	789	80%	649	63%
Zero Flow Days	5,679	47%	223	22%	154	17%	204	20%	262	26%	488	48%	642	65%	708	69%	747	73%	679	69%	729	71%	491	50%	352	34%
Minimum Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
Median Flow for Non-Storm Day (cfs)	0		0		1		2		1		0		0		0		0		0		0		0		0	
NO PROJECT																										
Non-Storm Days with Zero Flow	5,624	47%	337	33%	234	25%	224	22%	267	27%	525	51%	643	65%	387	38%	434	42%	678	68%	735	72%	675	68%	485	47%
Non-Storm Days with Flow	2,440	20%	118	12%	154	17%	109	11%	149	15%	157	15%	123	12%	514	50%	510	50%	186	19%	142	14%	114	12%	164	16%
Minimum Flow on Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
Median Flow on Non-Storm Days (cfs)	0		0		0		0		0		0		0		12		12		0		0		0		0	
PROJECT SCENARIO A OR B[1]																										
Non-Storm Days with Zero Flow	6,436	53%	337	33%	239	26%	224	22%	305	31%	554	54%	658	66%	717	70%	773	76%	692	70%	777	76%	675	68%	485	47%
Non-Storm Days with Flow	1,628	14%	118	12%	149	16%	109	11%	111	11%	128	13%	108	11%	184	18%	171	17%	172	17%	100	10%	114	12%	164	16%
Non-Storm Days with Project Diversion	3,348	28%	0	0%	25	3%	25	2%	68	7%	159	16%	350	35%	846	83%	944	92%	861	87%	22	2%	8	1%	40	4%
Median Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
PROJECT SCENARIO C OR D[1]																										
Non-Storm Days with Zero Flow	6,436	53%	337	33%	239	26%	224	22%	305	31%	554	54%	658	66%	717	70%	773	76%	692	70%	777	76%	675	68%	485	47%
Non-Storm Days with Flow	1,628	14%	118	12%	149	16%	109	11%	111	11%	128	13%	108	11%	184	18%	171	17%	172	17%	100	10%	114	12%	164	16%
Non-Storm Days with Project Diversion	693	6%	1	0%	8	1%	0	0%	4	0%	31	3%	26	3%	201	20%	381	37%	39	4%	1	0%	0	0%	1	0%
Median Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
NO PROJECT versus SCENARIO A OR B																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	-12	-100%	-12	-100%	0	0%	0	0%	0	0%	0	0%
NO PROJECT versus SCENARIO C OR D																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	-12	-100%	-12	-100%	0	0%	0	0%	0	0%	0	0%

Notes:

[1] Results for 500 cfs and 1,500 cfs diversion rate differ by less than 1%

[2] This segment's base period is limited by the available gage data at the USGS Mill Creek Gage from WY 1966-67 to WY 1998-99.

Table 6.2-4. Project Effect on Non-Storm Days below "E" Street (River Segment E) - Monthly Summary for WY 1966-67 through WY 1999-00[1,2]

	Base Period		January		February		March		April		May		June		July		August		September		October		November		December	
	Days	*% of Total Days*	*Days*	*% of Jan Days*	*Days*	*% of Feb Days*	*Days*	*% of Mar Days*	*Days*	*% of Apr Days*	*Days*	*% of May Days*	*Days*	*% of Jun Days*	*Days*	*% of Jul Days*	*Days*	*% of Aug Days*	*Days*	*% of Sep Days*	*Days*	*% of Oct Days*	*Days*	*% of Nov Days*	*Days*	*% of Dec Days*
HISTORICAL CONDITIONS																										
Total Days	12,419		1,054		961		1,054		1,020		1,054		1,020		1,054		1,054		1,020		1,054		1,020		1,054	
Storm Days	4,044	33%	577	55%	565	59%	698	66%	588	58%	341	32%	224	22%	122	12%	79	7%	126	12%	146	14%	203	20%	375	36%
Non-Storm Days	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Zero Flow Days	521	4%	5	0%	0	0%	29	3%	42	4%	66	6%	59	6%	70	7%	66	6%	66	6%	50	5%	49	5%	19	2%
Minimum Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
Median Flow for Non-Storm Day (cfs)	27		26		25		23		24		25		30		30		31		32		28		27		28	
NO PROJECT																										
Non-Storm Days with Zero Flow	5,930	48%	327	31%	264	27%	213	20%	312	31%	495	47%	526	52%	604	57%	651	62%	601	59%	714	68%	666	65%	557	53%
Non-Storm Days with Flow	2,445	20%	150	14%	132	14%	143	14%	120	12%	218	21%	270	26%	328	31%	324	31%	293	29%	194	18%	151	15%	122	12%
Minimum Flow on Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
Median Flow on Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
PROJECT SCENARIO A OR B[1]																										
Non-Storm Days with Zero Flow	6,120	49%	327	31%	269	28%	215	20%	316	31%	507	48%	541	53%	651	62%	721	68%	632	62%	716	68%	666	65%	559	53%
Non-Storm Days with Flow	2,255	18%	150	14%	127	13%	141	13%	116	11%	206	20%	255	25%	281	27%	254	24%	262	26%	192	18%	151	15%	120	11%
Non-Storm Days with Project Diversion	3,440	28%	0	0%	25	3%	25	2%	68	7%	159	15%	350	34%	877	83%	975	93%	891	87%	22	2%	8	1%	40	4%
Median Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
PROJECT SCENARIO C OR D[1]																										
Non-Storm Days with Zero Flow	6,004	48%	327	31%	267	28%	212	20%	312	31%	495	47%	531	52%	620	59%	696	66%	604	59%	716	68%	666	65%	558	53%
Non-Storm Days with Flow	2,371	19%	150	14%	129	13%	144	14%	120	12%	218	21%	265	26%	312	30%	279	26%	290	28%	192	18%	151	15%	121	11%
Non-Storm Days with Project Diversion	693	6%	1	0%	8	1%	0	0%	4	0%	31	3%	26	3%	201	19%	381	36%	39	4%	1	0%	0	0%	1	0%
Median Flow for Non-Storm Days (cfs)	0		0		0		0		0		0		0		0		0		0		0		0		0	
NO PROJECT versus SCENARIO A OR B																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
NO PROJECT versus SCENARIO C OR D																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%

Notes:

[1] Results for 500 cfs and 1,500 cfs diversion rate differ by less than 1%

[2] This segment's base period is limited by the available gage data at the USGS E-Street Gage from WY 1966-67 to WY 1999-00.

Table 6.2-5. Project Effect on Non-Storm Days below RIX and Rialto Effluent Outfall (River Segment F) - Monthly Summary for WY 1966-67 through WY 1999-00[1,2]

	Base Period		January		February		March		April		May		June		July		August		September		October		November		December	
	Days	*% of Total Days*	*Days*	*% of Jan Days*	*Days*	*% of Feb Days*	*Days*	*% of Mar Days*	*Days*	*% of Apr Days*	*Days*	*% of May Days*	*Days*	*% of Jun Days*	*Days*	*% of Jul Days*	*Days*	*% of Aug Days*	*Days*	*% of Sep Days*	*Days*	*% of Oct Days*	*Days*	*% of Nov Days*	*Days*	*% of Dec Days*
HISTORICAL CONDITIONS																										
Total Days	12,419		1,054		961		1,054		1,020		1,054		1,020		1,054		1,054		1,020		1,054		1,020		1,054	
Storm Days	4,044	33%	577	55%	565	59%	698	66%	588	58%	341	32%	224	22%	122	12%	79	7%	126	12%	146	14%	203	20%	375	36%
Non-Storm Days	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Zero Flow Days	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Minimum Flow for Non-Storm Days (cfs)	9		17		16		14		17		15		11		9		9		10		10		10		11	
Median Flow for Non-Storm Day (cfs)	39		40		36		37		32		40		39		40		40		40		39		39		38	
NO PROJECT																										
Non-Storm Days with Zero Flow	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Flow	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	713	70%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Minimum Flow on Non-Storm Days (cfs)	70		71		71		71		70		71		72		73		71		72		77		79		73	
Median Flow on Non-Storm Days (cfs)	76		72		74		74		72		72		73		74		71		72		77		79		73	
PROJECT SCENARIO A OR B[1]																										
Non-Storm Days with Zero Flow	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Flow	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Non-Storm Days with Project Diversion	3,440	28%	0	0%	25	3%	25	2%	68	7%	159	15%	350	34%	877	83%	975	93%	891	87%	22	2%	8	1%	40	4%
Median Flow for Non-Storm Days (cfs)	75		72		74		74		72		72		73		73		71		72		77		79		73	
PROJECT SCENARIO C OR D[1]																										
Non-Storm Days with Zero Flow	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Flow	8,375	67%	477	45%	396	41%	356	34%	432	42%	713	68%	796	78%	932	88%	975	93%	894	88%	908	86%	817	80%	679	64%
Non-Storm Days with Project Diversion	693	6%	1	0%	8	1%	0	0%	4	0%	31	3%	26	3%	201	19%	381	36%	39	4%	1	0%	0	0%	1	0%
Median Flow for Non-Storm Days (cfs)	75		72		74		74		72		72		73		73		71		72		77		79		73	
NO PROJECT versus SCENARIO A OR B																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	-1%	0	0%	0	0%	0	0%	0	0%	0	0%	-1	-1%	-1	-1%	0	0%	0	0%	0	0%	0	0%	0	0%
NO PROJECT versus SCENARIO C OR D																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Days (cfs)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	-1	-1%	-1	-1%	0	0%	0	0%	0	0%	0	0%	0	0%

Notes:

[1] Results for 500 cfs and 1,500 cfs diversion rate differ by less than 1%

[2] This segment's base period is limited by the available gage data at the USGS E-Street Gage from WY 1966-67 to WY 1999-00.

Table 6.2-6. Project Effect on Non-Storm Days at Riverside Narrows (River Segment G) - Monthly Summary for WY 1969-70 through WY 1999-00[1,2]

	Base Period		January		February		March		April		May		June		July		August		September		October		November		December	
	Days	*% of Total Days*	*Days*	*% of Jan Days*	*Days*	*% of Feb Days*	*Days*	*% of Mar Days*	*Days*	*% of Apr Days*	*Days*	*% of May Days*	*Days*	*% of Jun Days*	*Days*	*% of Jul Days*	*Days*	*% of Aug Days*	*Days*	*% of Sep Days*	*Days*	*% of Oct Days*	*Days*	*% of Nov Days*	*Days*	*% of Dec Days*
HISTORICAL CONDITIONS																										
Total Days	11,164		930		848		953		930		961		930		961		961		930		930		900		930	
Storm Days	3,683	33%	516	55%	519	61%	632	66%	526	57%	310	32%	194	21%	119	12%	79	8%	126	14%	140	15%	181	20%	341	37%
Non-Storm Days	7,481	67%	414	45%	329	39%	321	34%	404	43%	651	68%	736	79%	842	88%	882	92%	804	86%	790	85%	719	80%	589	63%
Zero Flow Days	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Minimum Flow for Non-Storm Days (cfs)	38		40		44		43		41		42		43		41		38		42		40		43		46	
Median Flow for Non-Storm Days (cfs)	86		73		75		89		96		103		96		87		81		82		84		89		87	
NO PROJECT																										
Non-Storm Days with Zero Flow	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Flow	7,481	67%	414	45%	329	39%	321	34%	404	43%	651	68%	736	79%	842	88%	882	92%	804	86%	790	85%	719	80%	589	63%
Minimum Flow on Non-Storm Days (cfs)	38		40		44		43		41		42		43		41		38		42		40		43		46	
Median Flow on Non-Storm Days (cfs)	87		73		78		89		96		103		96		87		83		82		84		89		87	
PROJECT SCENARIO A OR B[1]																										
Non-Storm Days with Zero Flow	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Non-Storm Days with Flow	7,481	67%	414	45%	329	39%	321	34%	404	43%	651	68%	736	79%	842	88%	882	92%	804	86%	790	85%	719	80%	589	63%
Non-Storm Days with Project Diversion	3,022	27%	0	0%	9	1%	19	2%	67	7%	128	13%	317	34%	787	82%	882	92%	801	86%	4	0%	0	0%	8	1%
Median Flow for Non-Storm Days (cfs)	86		73		75		89		96		103		96		87		81		82		84		89		87	
PROJECT SCENARIO C OR D[1]																										
No difference between the No Project and Scenario C and D was detectable and thus data for Scenarios C and D are not presented.																										
NO PROJECT versus SCENARIO A OR B[2]																										
				% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change		% Change
Median Flow for Non-Storm Day (cfs)	-1	-1%	0	0%	-3	-4%	0	0%	0	0%	0	0%	0	0%	-1	-1%	-2	-2%	0	0%	-1	-1%	0	0%	0	0%
NO PROJECT versus SCENARIO C OR D[1]																										
No difference between the No Project and Scenario C and D was detectable.																										

Notes:

[1] Results for 500 cfs and 1,500 cfs diversion rate differ by less than 1%

[2]This segment's base period is limited by the available gage data at the USGS MWD Gage at Riverside Narrows from March 9, 1970 to WY 1999-00.

Table 6.2-7 Summary Results of Zero-Flow Day Analysis (WY 1966-67 to WY 1999-2000)

	Above Cuttle Weir	*Below Cuttle Weir*	*Mill Creek Confluence*	*"E" Street*	*RIX & Rialto*	*Riverside Narrows*
PRE-SEVEN OAKS DAM						
Number of Zero-Flow Days	4,014	5,813	5,679	521 (2)	0	0
Percent of Total Days (1)	32 %	47 %	47 %	4 %	0 %	0 %
NO PROJECT (POST-SEVEN OAKS DAM)						
Number of Zero-Flow Days	0	6,506	5,624	5,930	0	0
Percent of Total Days (1)	0 %	52 %	47 %	48 %	0 %	0 %
PROJECT SCENARIO A OR B						
Number of Zero-Flow Days	0	8,374	6,436	6,120	0	0
Percent of Total Days (1)	0 %	67 %	53 %	49%	0 %	0 %
PROJECT SCENARIO C OR D						
Number of Zero-Flow Days	0	8,374	6,436	6,004	0	0
Percent of Total Days (1)	0 %	67 %	53 %	48 %	0 %	0 %
PERCENT CHANGE FROM NO PROJECT						
Scenario A or B minus No Project	0 %	+15 %	+6 %	+1 %	0 %	0 %
Scenario C or D minus No Project	0 %	+15 %	+6 %	+0 %	0 %	0 %

Notes:

1. For all locations except Mill Creek Confluence and Riverside Narrows, gage records are available for WY 1966-67 through WY 1999-2000, with 12,419 total days in the base period record and 8,375 non-storm days in the base period record. At Mill Creek Confluence the gage record is WY 1966-67 through WY 1998-99 and total days in the base period are 12,053 and total non-storm days in the base period are 8,064. At Riverside Narrows the available gage record is 1969-70 to WY 1999-2000 and total days in the base period are 11,164 and total non-storm days in the base period are 7,481.
2. The small number of zero-flow days is attributable to effluent inflow from City of San Bernardino WWTP.

Page	Line(s)	Edit
A-6-25	10-21	Flows in this segment have a median annual value of ~~5~~ 4 cfs for the period of record under the No Project condition (see Table 6.2-1 and Figure 6.2-2). Median flows in the spring months, up to 8 cfs in the month of April, are due to rainfall in these months. In the late summer months a median flow of ~~23~~ 27 cfs occurs in the months of ~~July,~~ August~~, and September~~. This is due to the draining of the debris pool, which is limited to a rate of 20 cfs plus inflow to the dam. Generally median flows are small under the Project Scenarios A, B, C, and D, generally about 3 cfs attributable to the 3 cfs release of captured groundwater. The greatest difference between median flows in this segment between the No Project and Project Scenarios A, B, C, and D occurs in the summer months of July and August ~~through September~~; under the No Project in these months this reach would receive water drained from the debris pool, but with the Project (assuming Phase III of the Plunge Pool Pipeline is completed and diversions occur upstream at the plunge pool) this water would be diverted.
A-6-25	28-31	Under No Project conditions, the median flow for this segment is 0 cfs over the base period, a median flow of ~~10~~ 12 cfs occurs in the months of July and August due to the draining of the debris pool, and minimal median flows of 1 cfs to 2 cfs occur in February, March, and April (these flows relate to Mill Creek adding flow to this river segment during spring months).
A-6-26 and A-6-27	35-39, 1-2	As shown in Table 6.2-4 and Figure 6.2-5 there is no measurable difference between daily median flows with the Project and under No Project conditions at "E" Street. Median flow for non-storm days for all months under any Project scenario and the No-Project condition is 0 cfs. ~~Change in daily median flow is less marked at "E" Street than at upstream locations as can be seen from the information presented in Table 6.2-4. The difference in monthly median flows between the No Project and Scenarios A or B is greatest in the month of August with a reduction from 17 cfs under the No Project to zero cfs for Scenarios A or B, a 100 percent reduction. The greatest difference between median flows under No Project and Scenarios C or D is in September with 12 cfs under No Project and 0 cfs under Scenarios C or D. This also represents a reduction of 100 percent. See Table 6.2-4 and Figure 6.2-5.~~
		Replace for Draft EIR Appendix A Figure 2.5-2 *(replacement figure on following pages)*
		Replace for Draft EIR Appendix A Figure 2.5-3 *(replacement figure on following pages)*
		Replace for Draft EIR Appendix A Figure 2.5-4 *(replacement figure on following pages)*
		Replace for Draft EIR Appendix A Figure 2.5-5 *(replacement figure on following pages)*
		Replace for Draft EIR Appendix A Figure 2.5-6 *(replacement figure on following pages)*

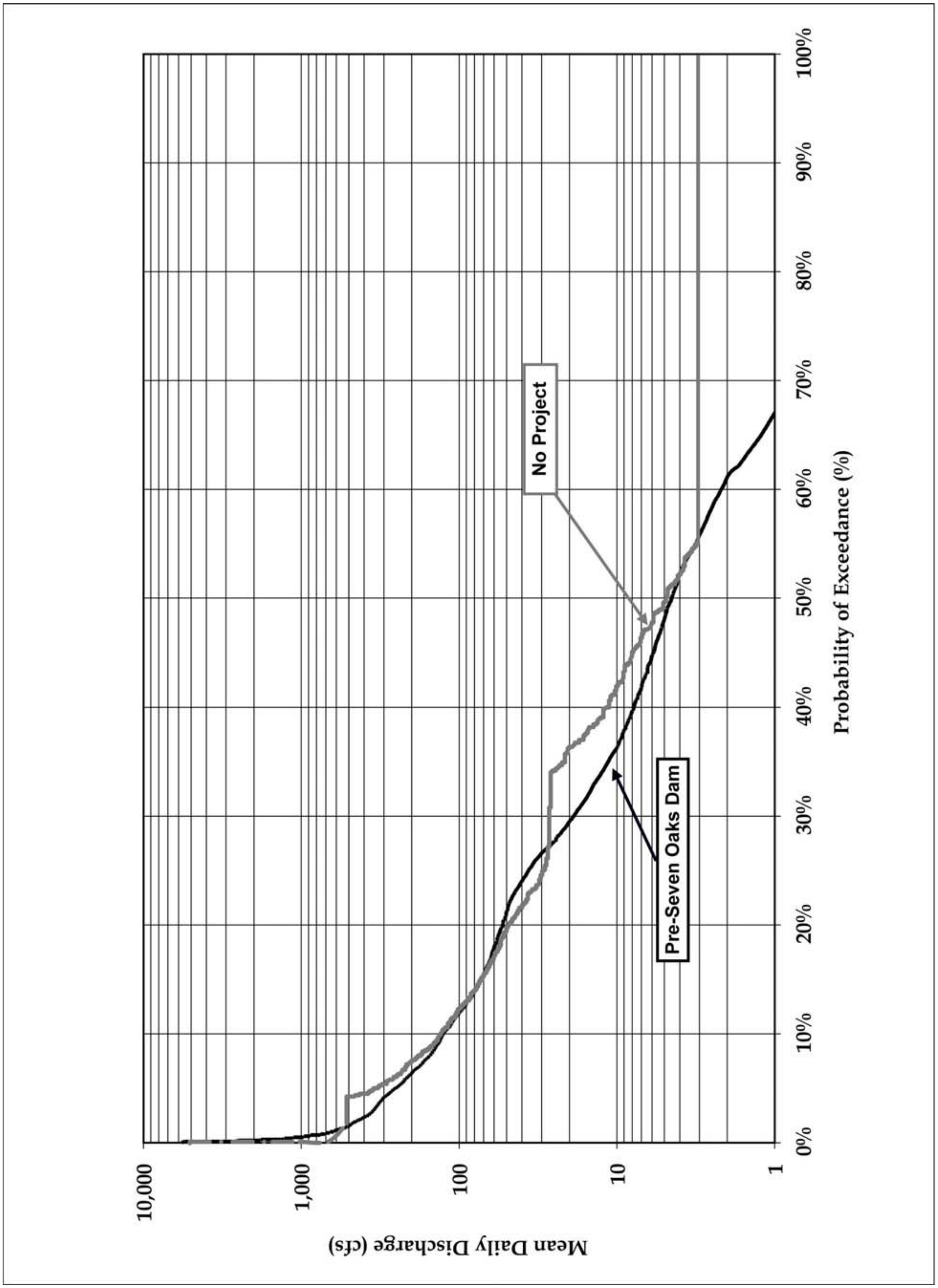


Figure 2.5-2. Probability of Daily Discharge for SAR Segment B, above Cuttle Weir, WY 1966-67 through WY 1999-2000

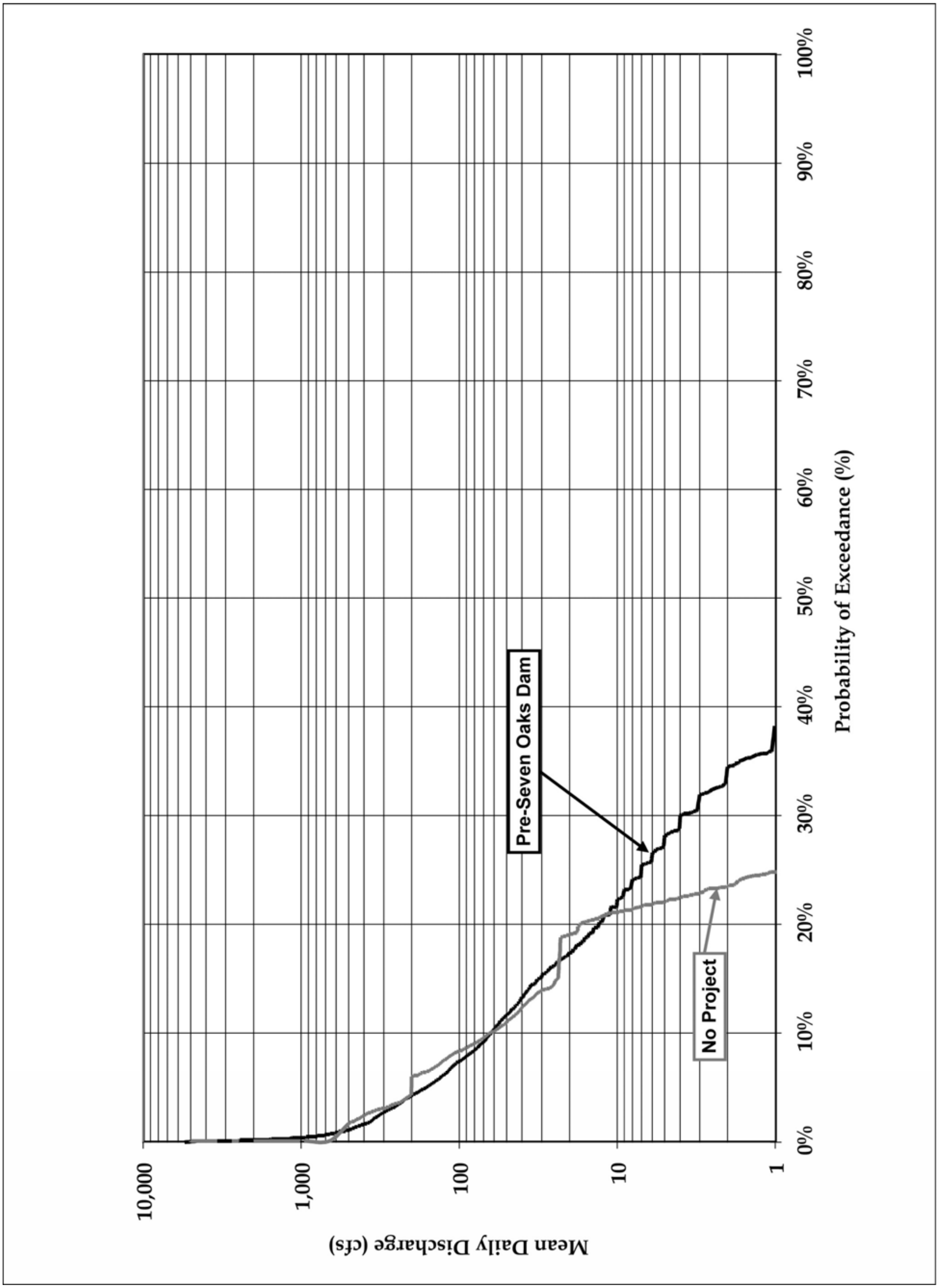


Figure 2.5-3. Probability of Daily Discharge for SAR Segment C, below Cuttle Weir, WY 1966-67 through WY 1999-2000

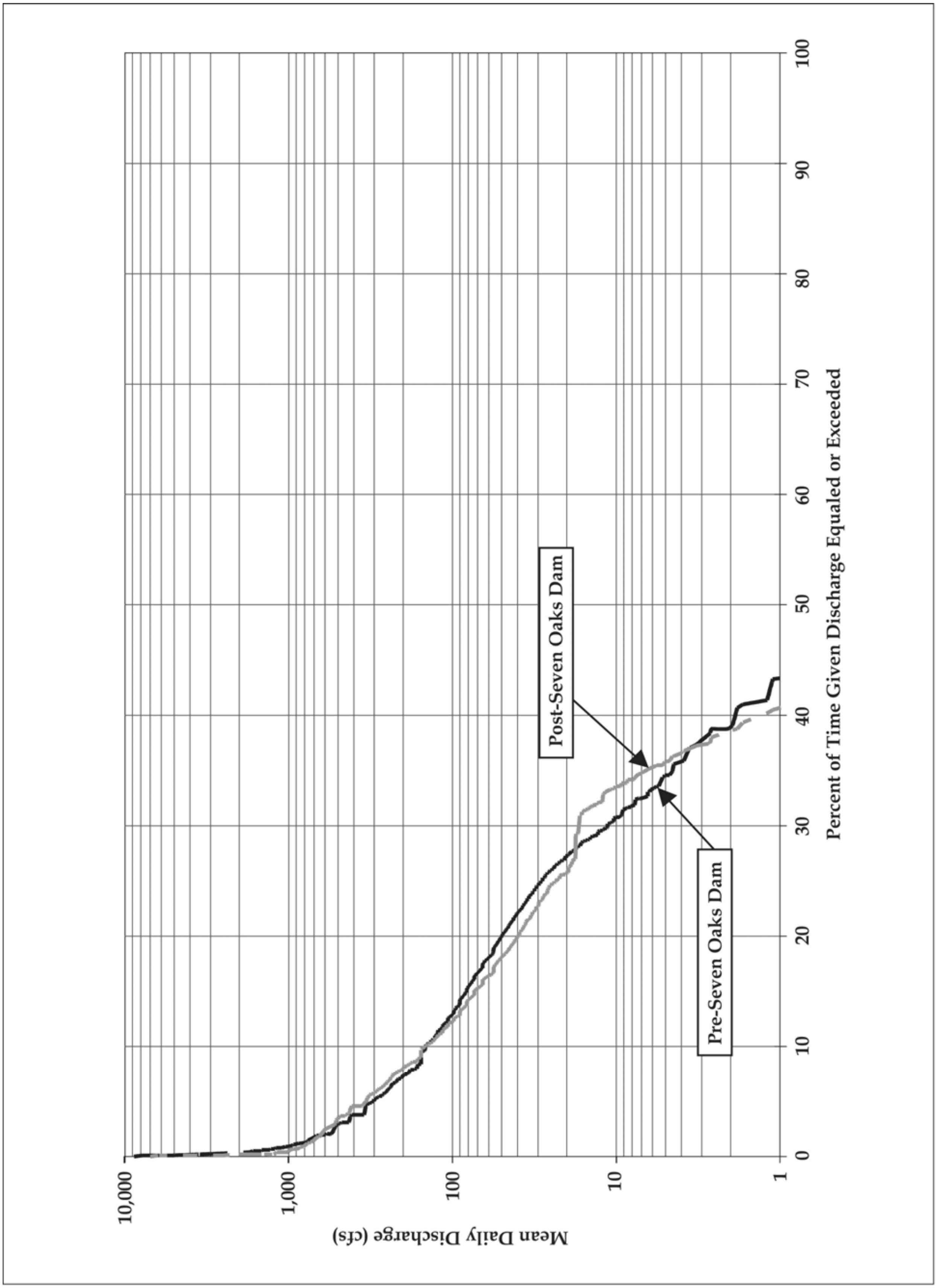


Figure 2.5-4. Probability of Daily Discharge for SAR Segment D, below Mill Creek, WY 1966-67 through WY 1999-2000

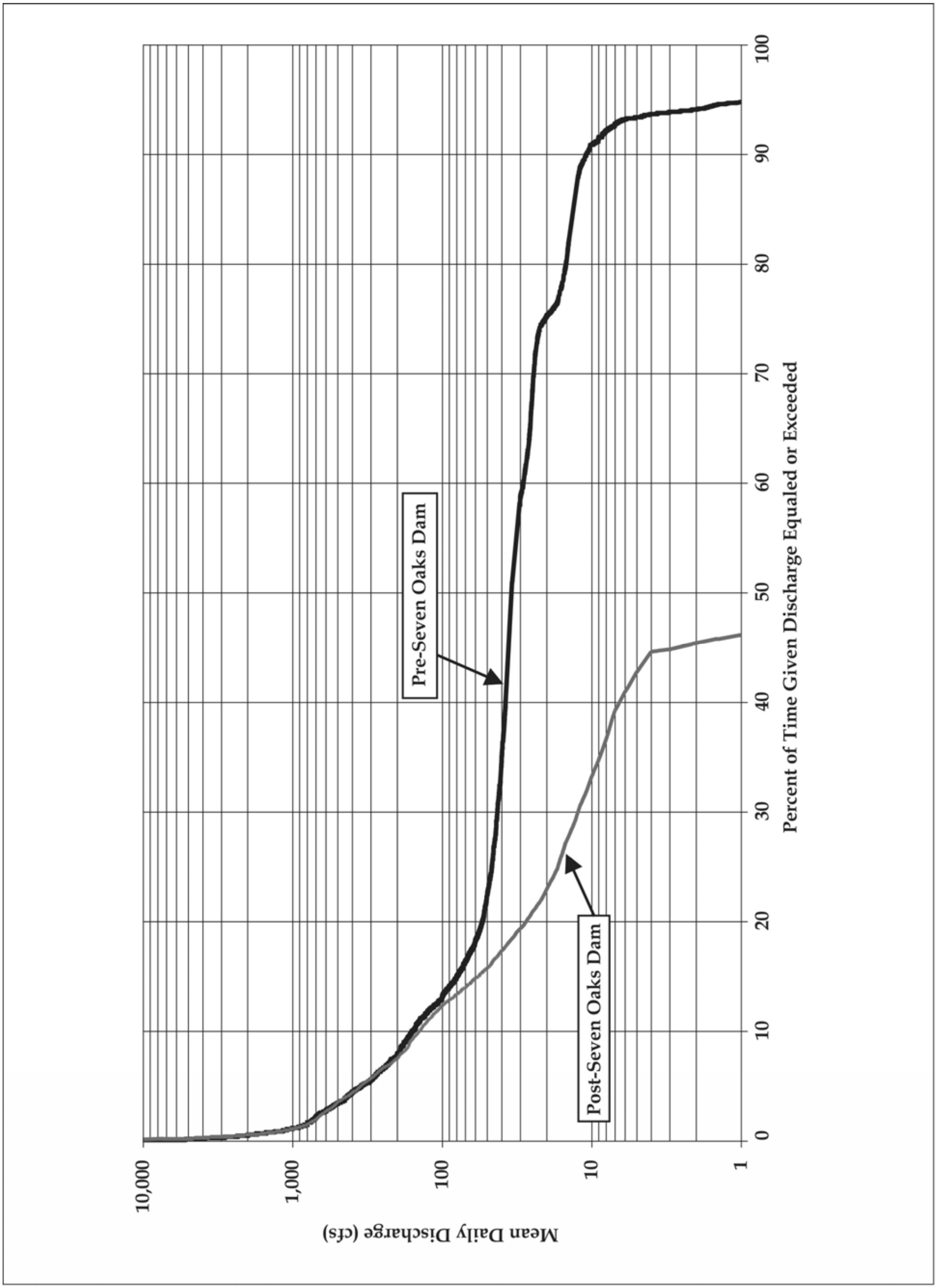


Figure 2.5-5. Probability of Daily Discharge for SAR Segment E, below "E" Street Gage, WY 1966-67 through WY 1999-2000

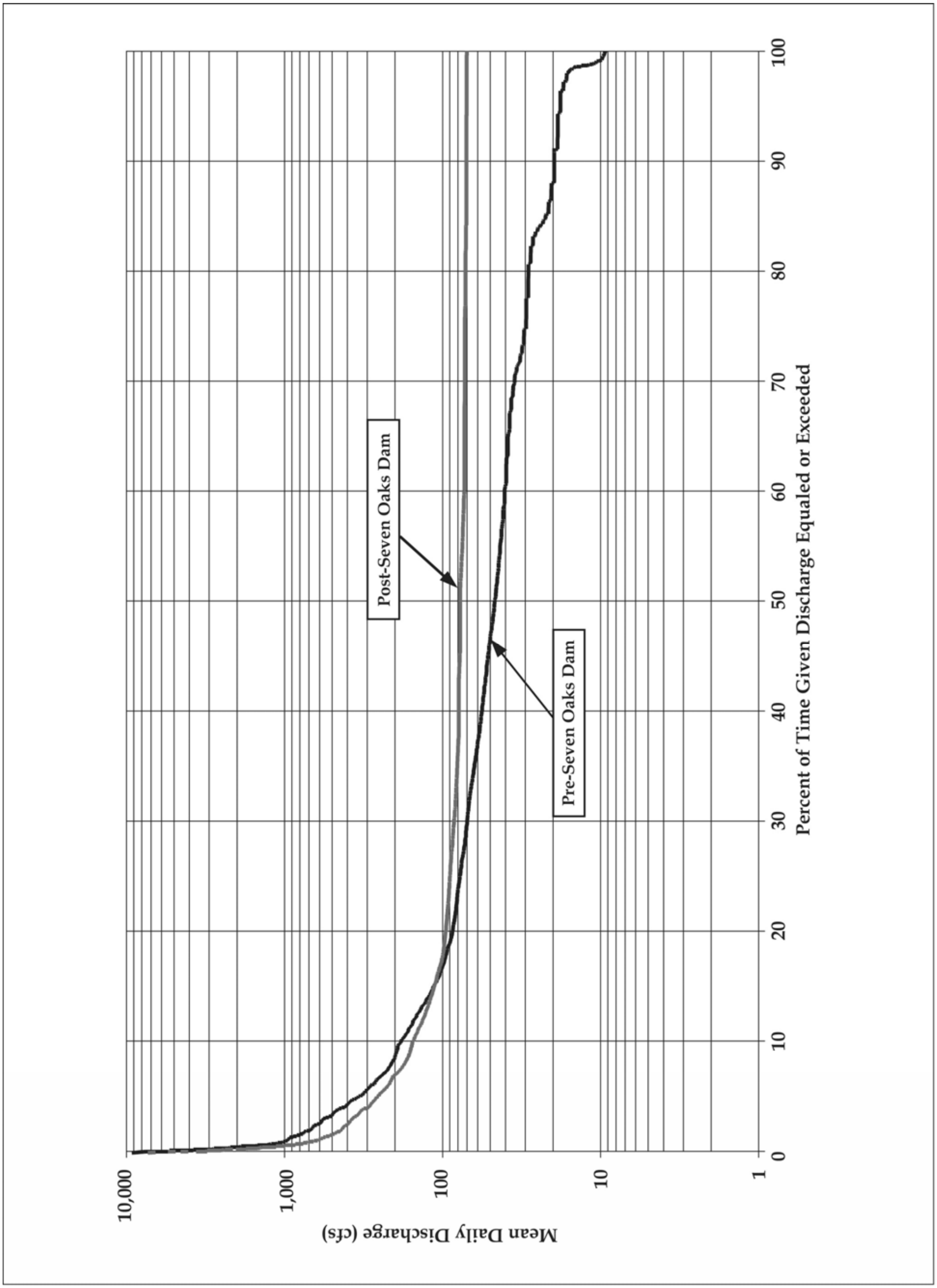
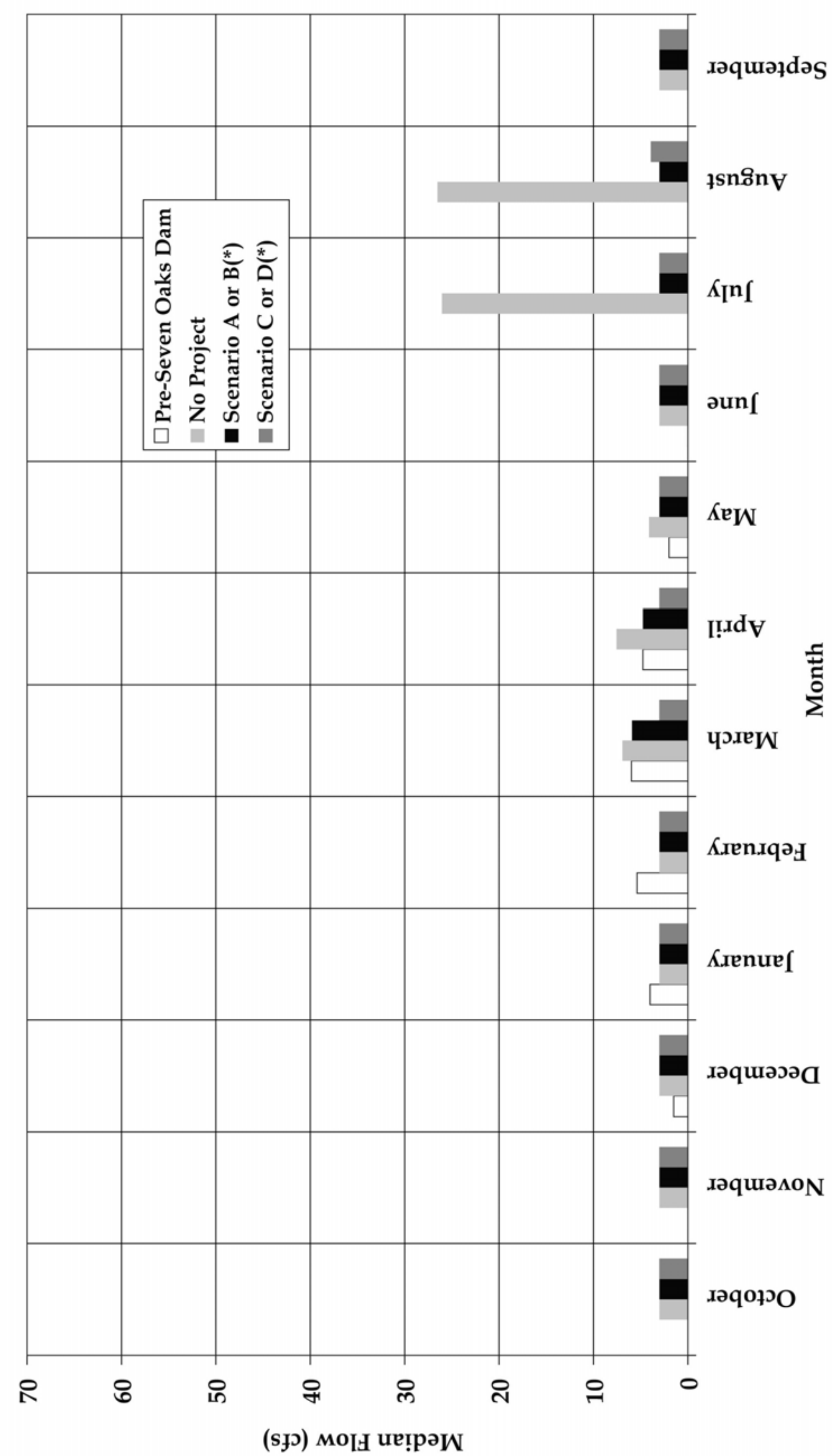


Figure 2.5-6. Probability of Daily Discharge for SAR Segment F, below RIX and Rialto Effluent Outfall, WY 1966-67 through WY 1999-2000

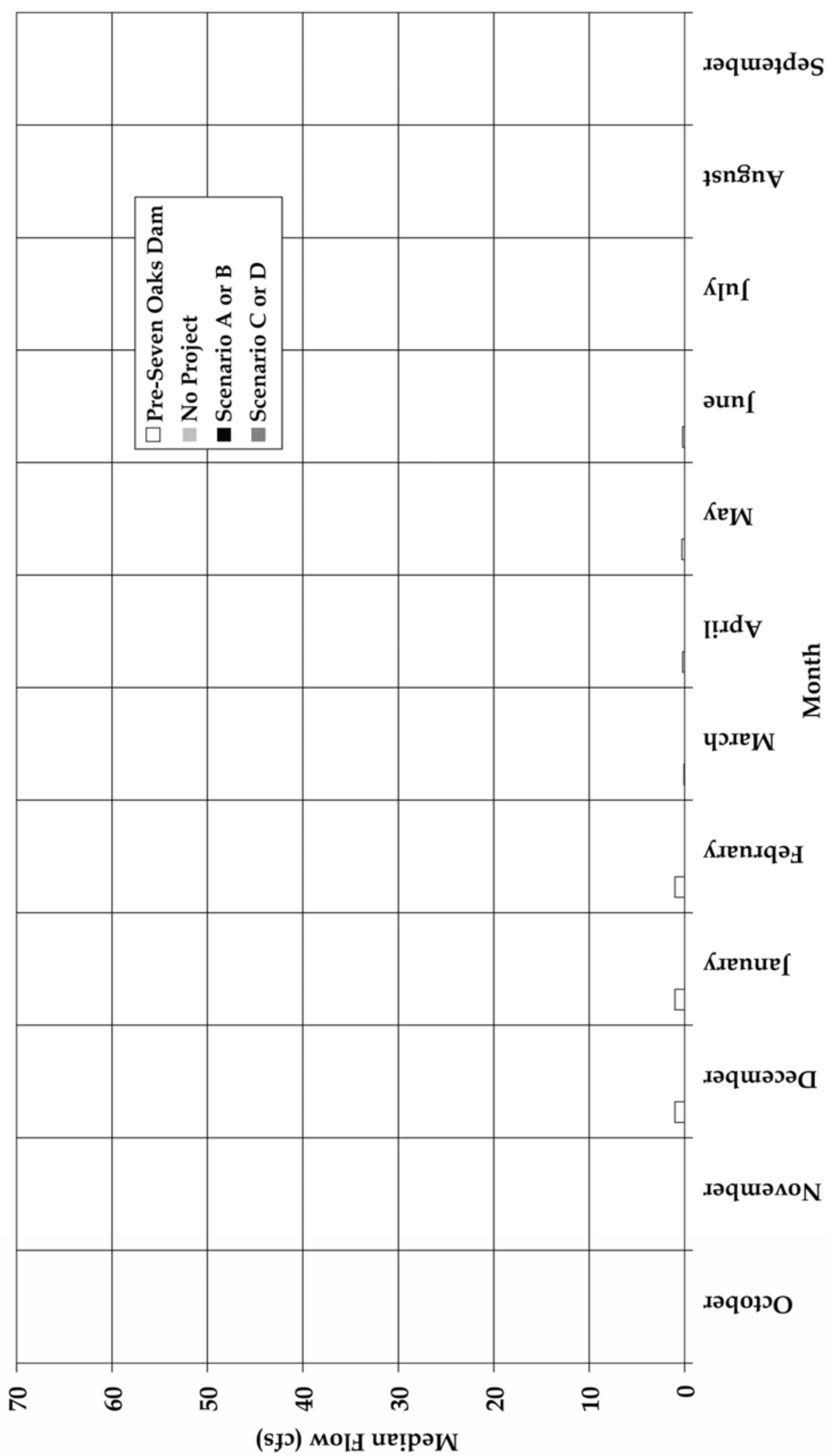
Page	Line(s)	Edit
A-6-26	~~4~~-9	Change in median daily flow at the RIX and Rialto Effluent Outfall is still more attenuated as can be seen from the information presented in Table 6.2-5 and Figure 6.2-6. The difference in median daily flows between No Project and <u>Project</u> Scenarios ~~A or B~~ <u>is never greater than 1 cfs or 1 percent</u> ~~the greatest in the month of August with a reduction of 18 percent from 81 cfs under No Project to 67 cfs for Scenarios A or B. There is a reduction of 16 percent in the month of September from 75 cfs under No Project to 63 cfs under Scenario C or D.~~
A-6-26	11-15	<u>Change in median daily flow below Riverside Narrows is minor as can be seen from the information presented in Table 6.2-6 and Figure 6.2-7. In the month of February Project Scenario A and B differ from the No Project by – 3 cfs (about 4 percent), but in all other months the difference in median daily flows between No Project and Project Scenarios A or B is never greater than 2 cfs or 2 percent</u>. ~~A slight reduction in flows at this location occurs in the months of February, July, and November when comparing No Project conditions to Scenario A or B. The maximum change in flows for these months is a drop from 77 cfs in February under No Project conditions to 75 cfs under Scenario A or B, a reduction of 3 percent. No change from the No Project was detected with Scenarios C or D. See Table 6.1-6 and Figure 6.2-7.~~
A-6-26	21-28	Figure 6.2-8 shows characteristics of flow above Cuttle Weir. Prior to Seven Oaks Dam, flow occurred in this segment only 50 percent of the time. Under both Project and No Project conditions, a constant flow of 3 cfs occurs. This is attributable to the release from Seven Oaks Dam that is diverted by the senior water rights claimants. Under the No Project and Scenarios C and D, a sustained flow at ~~23~~ <u>27</u> cfs is noticeable. This is due to the draining of the debris pool which causes a sustained release of 20 cfs in the late summer months plus <u>inflow to Seven Oaks Dam and</u> the 3 cfs for diversion by the senior water rights claimants. Under Scenarios A or B, the flows attributable to the draining of the debris pool are captured by the Project diversion.
A-6-26	29-35	Figure 6.2-9 shows the probability of daily discharge below Cuttle Weir. Prior to Seven Oaks Dam, flow only occurred in this segment about ~~25~~ <u>30</u>percent of the time. ~~Similarly, u~~<u>U</u>nder No Project conditions flows only occur in this segment about ~~25~~ <u>22</u> percent of the time. A sustained flow at ~~20~~ <u>22</u> cfs under No Project conditions is due to the draining of the debris pool. Under both Project scenarios, flows do not occur in this segment. Any flows released by Seven Oaks Dam in excess of senior water rights claimants and Conservation District requirements are captured by the Project diversion.
A-6-26	36-39	Figure 6.2-10 shows the probability of daily discharge at the Mill Creek confluence. Prior to Seven Oaks Dam, flow occurred in this segment about ~~30~~ <u>27</u> percent of the time. Under No Project conditions, flows exists about ~~40~~ <u>29</u> percent of the time. A sustained flow of ~~10~~ <u>18</u> cfs occurs due to the annual draining of the debris pool in the late summer months.

Page	Line(s)	Edit
A-6-27	3-11	Figure 6.2-11 shows the probability of daily discharge at the "E" Street Gage. Prior to Seven Oaks Dam flow occurred in this segment about 93 percent of the time. This is attributable to the San Bernardino Water Reclamation Plant which historically discharged effluent upstream of the gage. Currently, the San Bernardino Water Reclamation Plant effluent is conveyed to the RIX facility and this has substantially decreased flows in this segment. Under the No Project condition, flow~~s~~ occurs in this segment only about ~~50~~ 29 percent of the time. When comparing No Project and Project conditions, a noticeable difference in flows only occurs for flow less than ~~30~~ 100 cfs. Scenarios A or B would create lower flows at all times compared to the Scenarios C or D and No Project conditions.
A-6-27	15-17	A difference of less than 1 percent is noticeable when comparing No Project, and Scenarios A, B, C, and D. ~~For flows less than 70 cfs, the No Project, and Project curves converge.~~
		Replace Appendix A Figure 6.2-2 (replacement figure on following pages)
		Replace Appendix A Figure 6.2-3 (replacement figure on following pages)
		Replace Appendix A Figure 6.2-4 (replacement figure on following pages)
		Replace Appendix A Figure 6.2-5 (replacement figure on following pages)
		Replace Appendix A Figure 6.2-6 (replacement figure on following pages)
		Replace Appendix A Figure 6.2-7 (replacement figure on following pages)
		Replace Appendix A Figure 6.2-8 (replacement figure on following pages)
		Replace Appendix A Figure 6.2-9 (replacement figure on following pages)
		Replace Appendix A Figure 6.2-10 (replacement figure on following pages)
		Replace Appendix A Figure 6.2-11 (replacement figure on following pages)
		Replace Appendix A Figure 6.2-12 (replacement figure on following pages)
		Replace Appendix A Figure 6.2-13 (replacement figure on following pages)



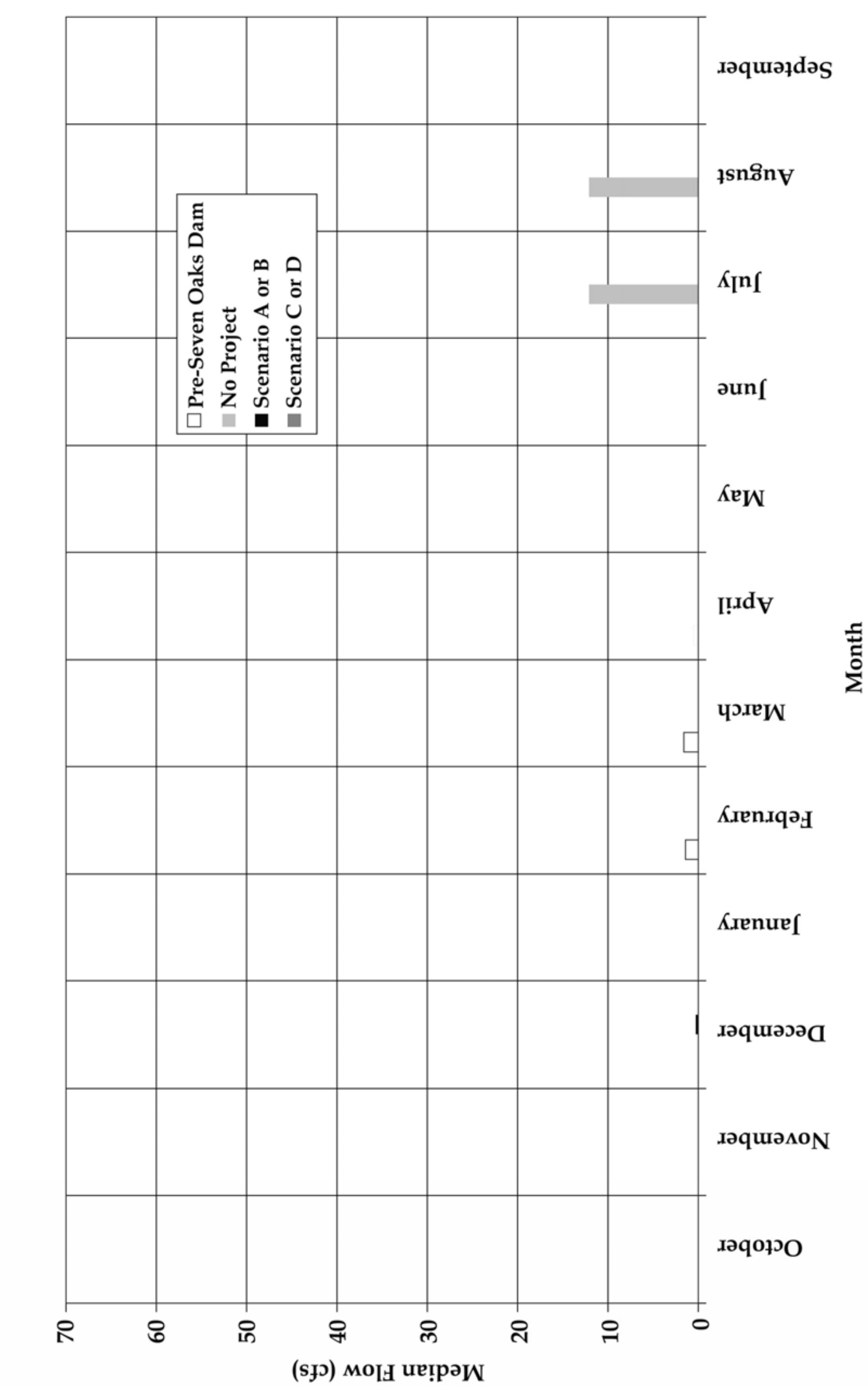
Notes:
* - Assuming Phase II of the Plunge Pool Pipeline Complete for Project scenarios
- No vertical line indicates zero median monthly flow

Figure 6.2-2. Median Monthly Flows (Non-Storm Days) for SAR Segment B, just above Cutter Wier, WY 1966-67 through WY 1999-2000



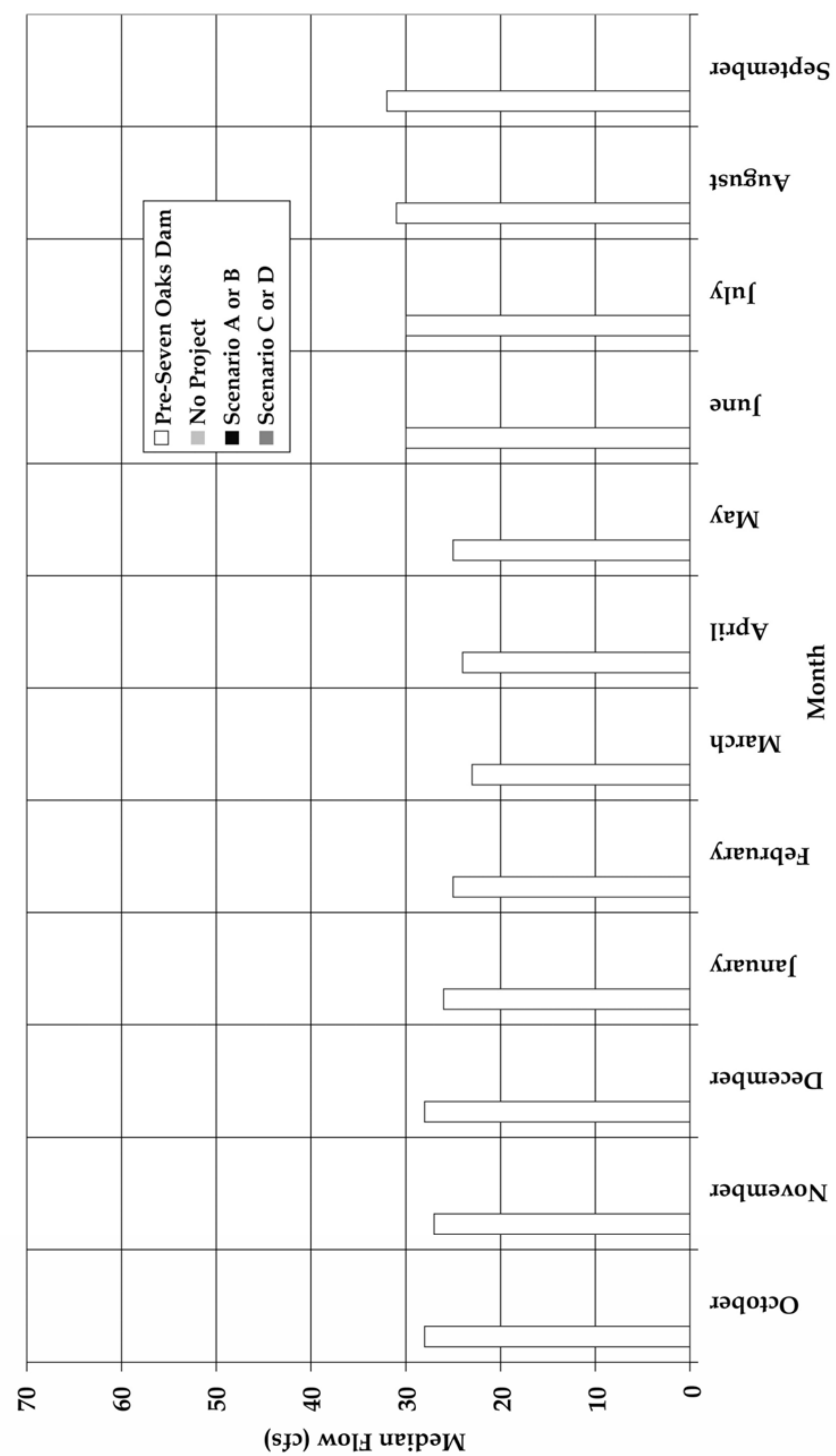
Notes:
- No vertical line indicates zero median monthly flow

Figure 6.2-3. Median Monthly Flows (Non-Storm Days) for SAR Segment B, below Cuttle Wier, WY 1966-67 through WY 1999-2000



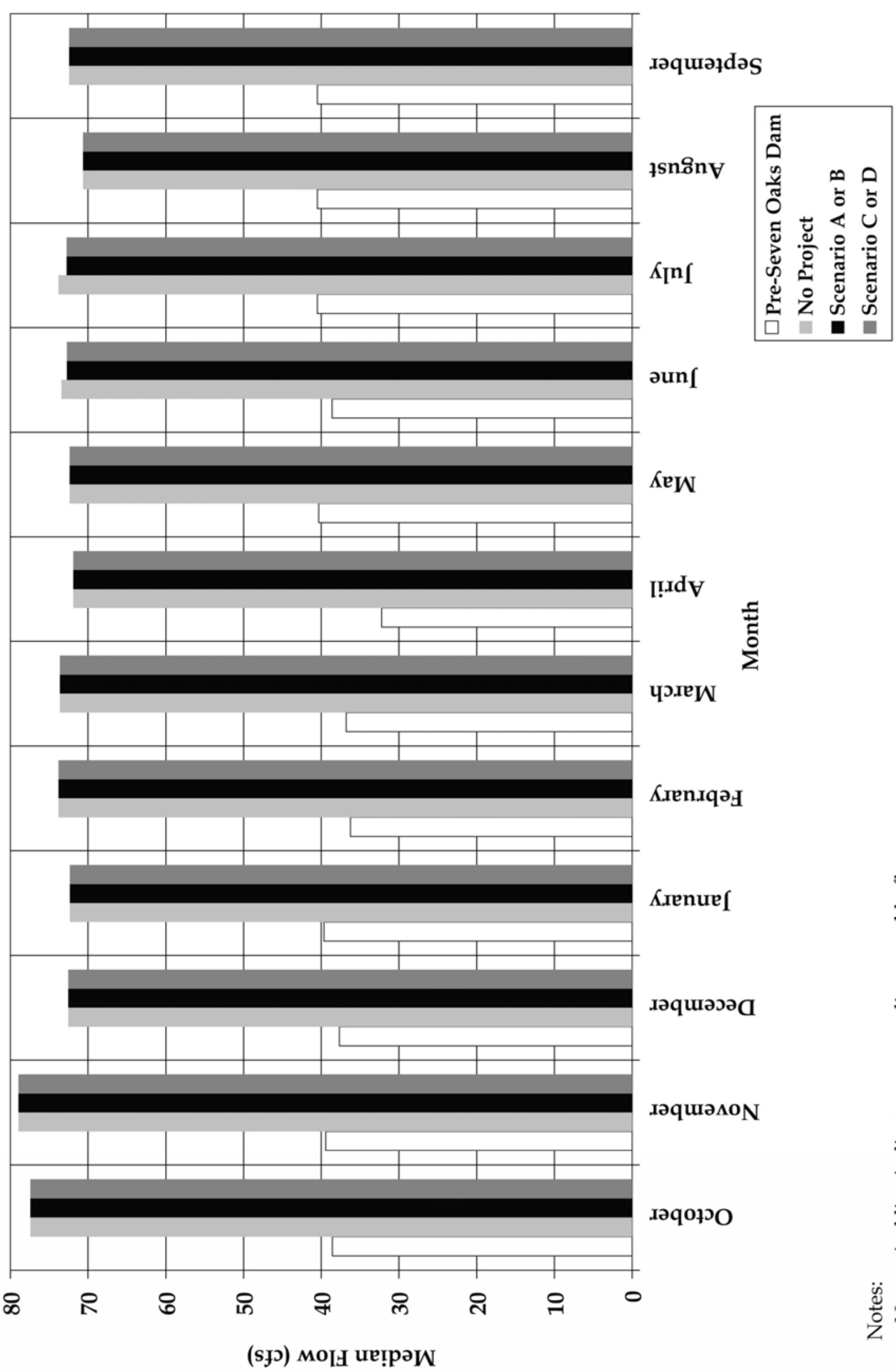
Notes:
- No vertical line indicates zero median monthly flow

Figure 6.2-4. Median Monthly Flows (Non-Storm Days) for SAR Segment D, below Mill Creek Confluence, WY 1966-67 through WY 1999-2000



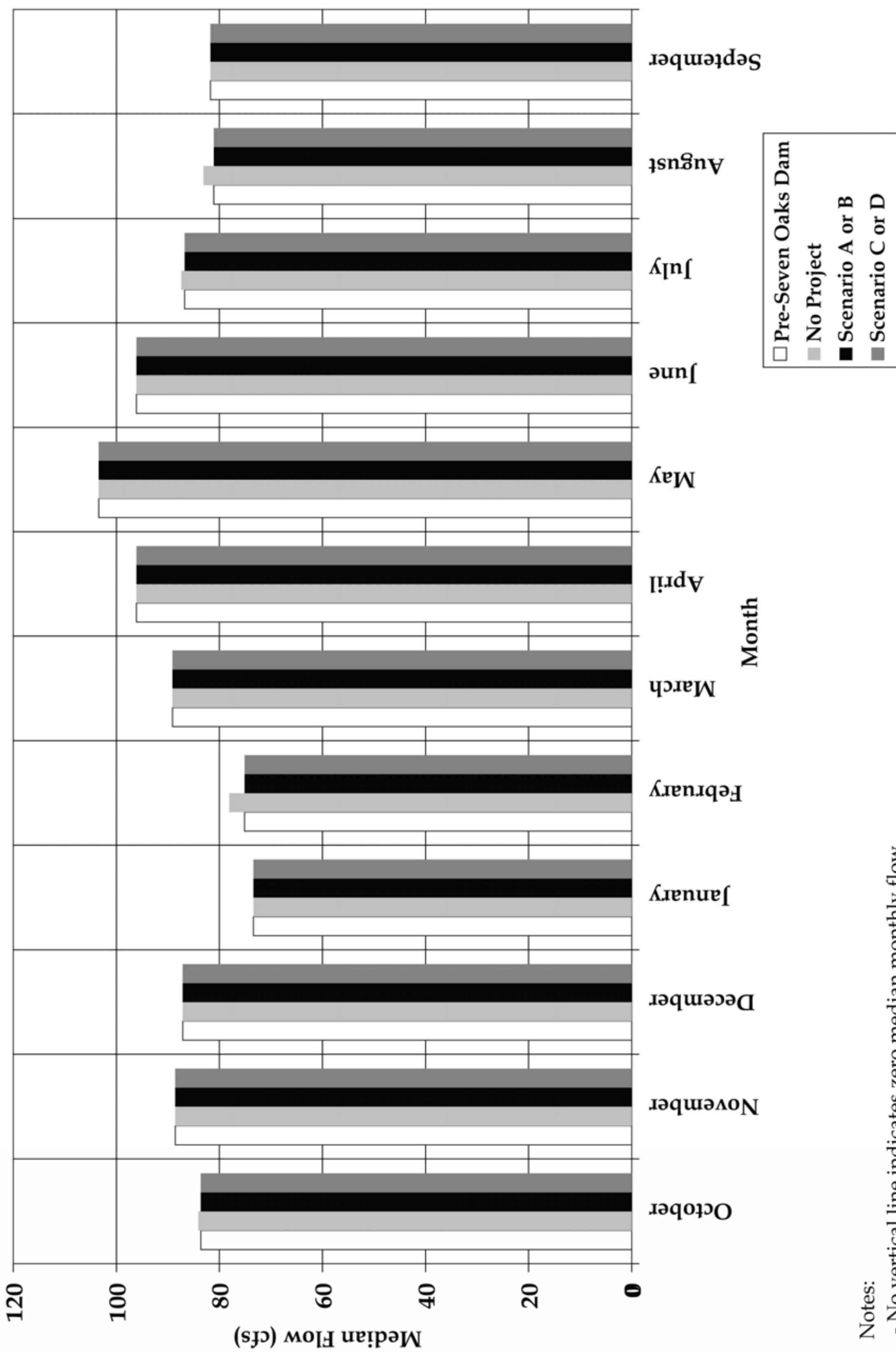
Notes:
- No vertical line indicates zero median monthly flow

Figure 6.2-5. Median Monthly Flows (Non-Storm Days) for SAR Segment E, below "E" Street, WY 1966-67 through WY 1999-2000



Notes:
- No vertical line indicates zero median monthly flow

Figure 6.2-6. Median Monthly Flows (Non-Storm Days) for SAR Segment F, below RIX and Rialto Effluent Outfall, WY 1966-67 through WY 1999-2000



Notes:
- No vertical line indicates zero median monthly flow

Figure 6.2-7. Median Monthly Flows (Non-Storm Days) for SAR Segment G, at Riverside Narrows, WY 1966-67 through WY 1999-2000

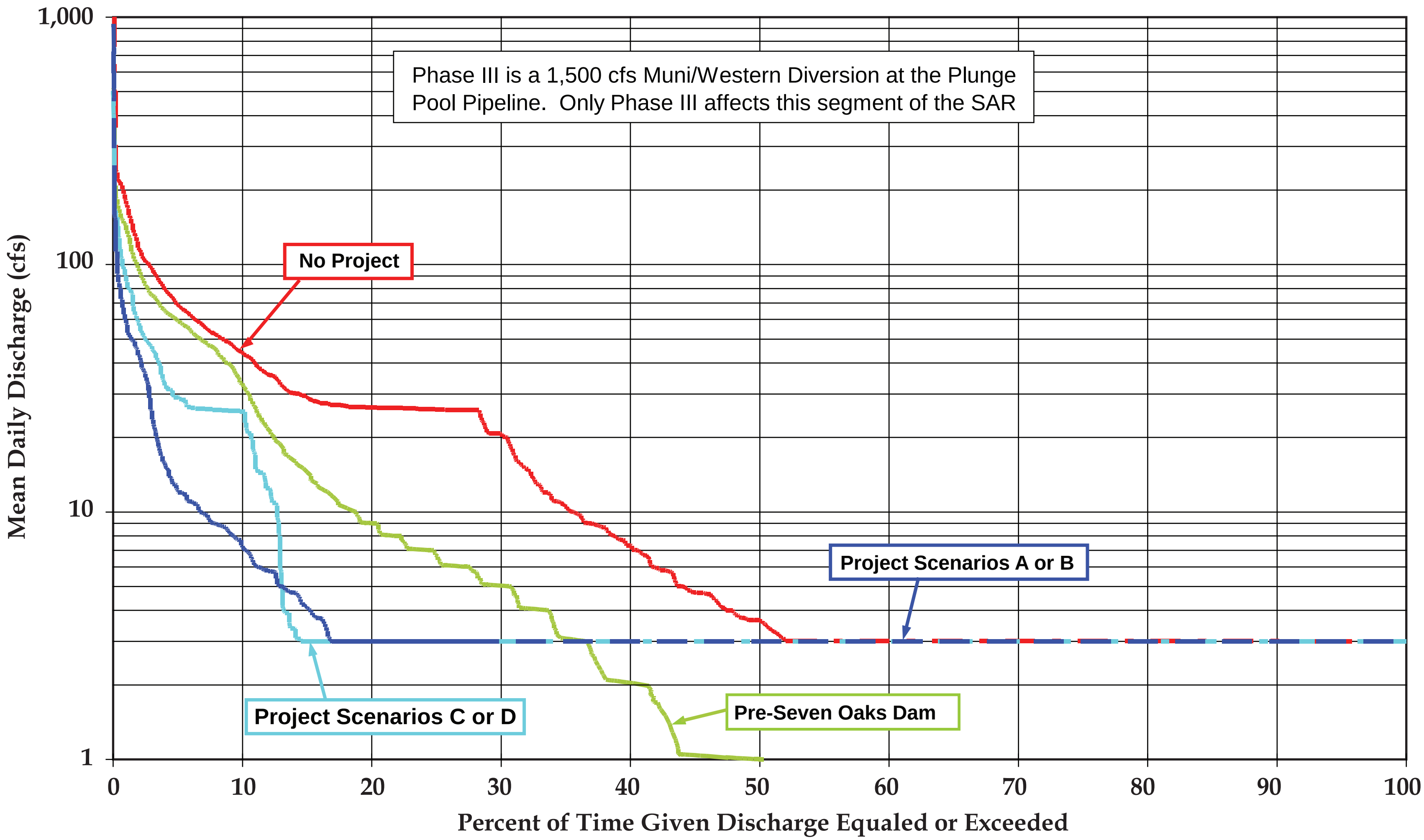
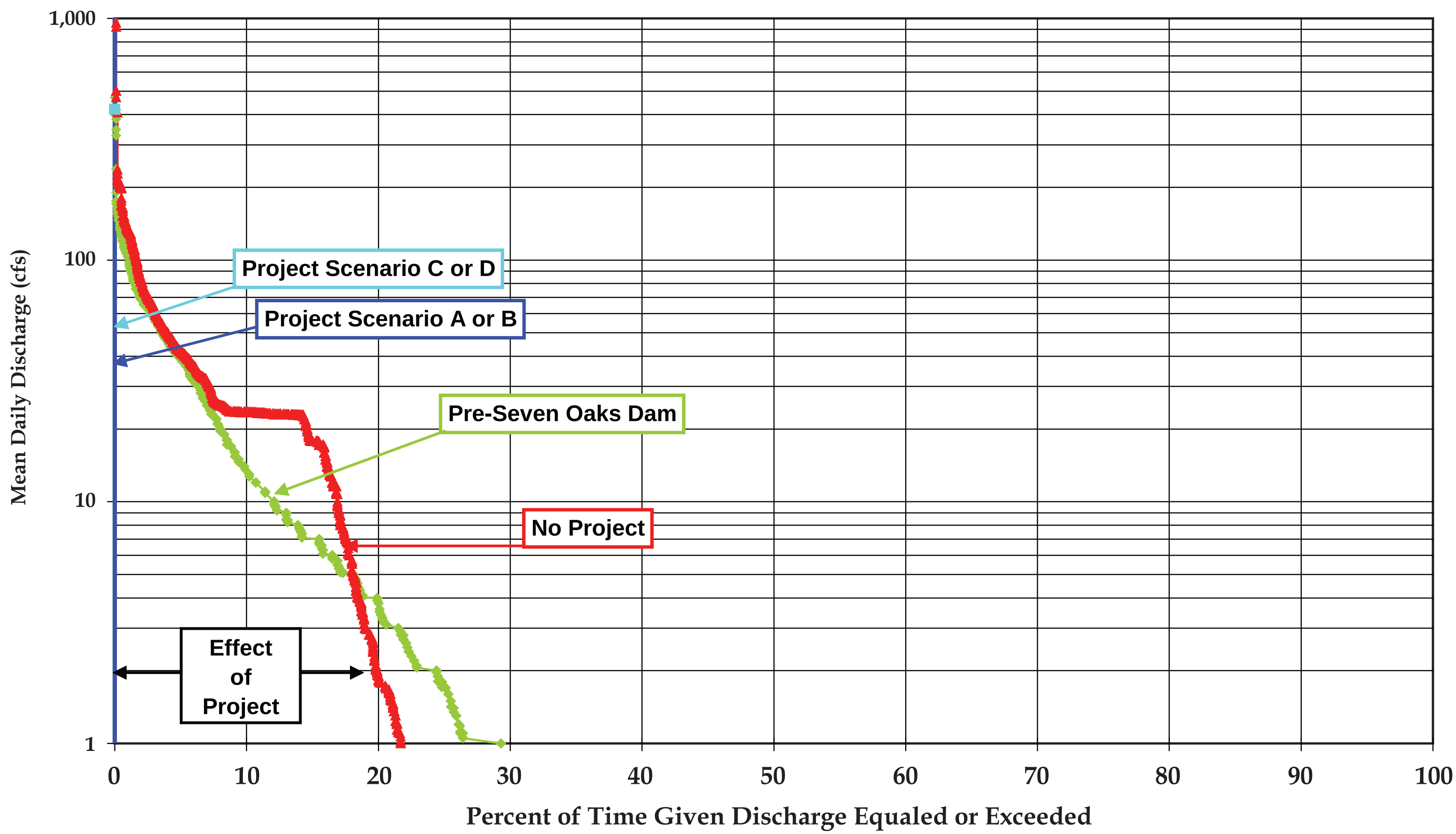
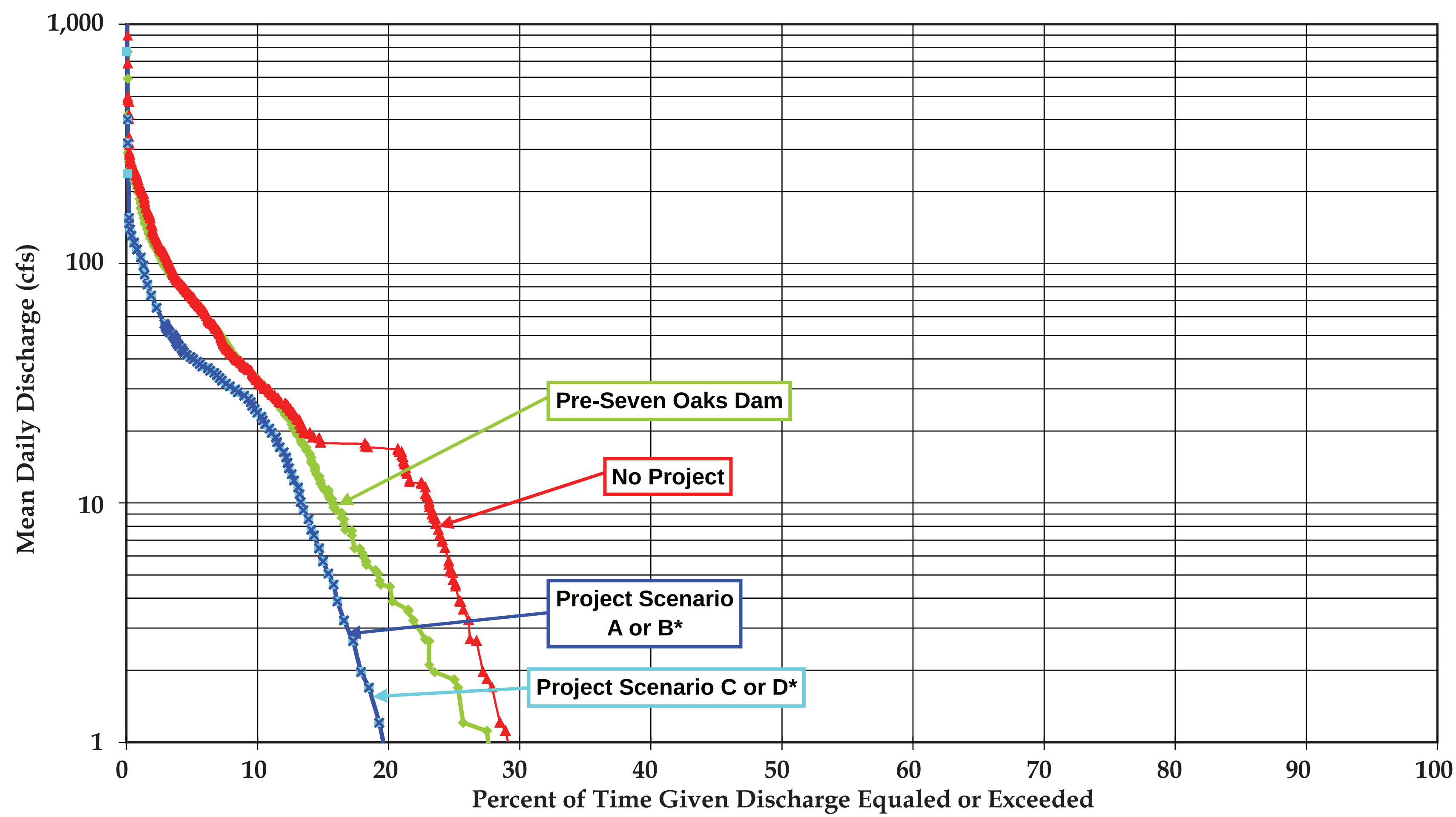


Figure 6.2-8. Probability of Daily Discharge (Non-Storm Days) for SAR Segment B, just above Cuttle Weir* WY 1966-67 through WY 1999-2000



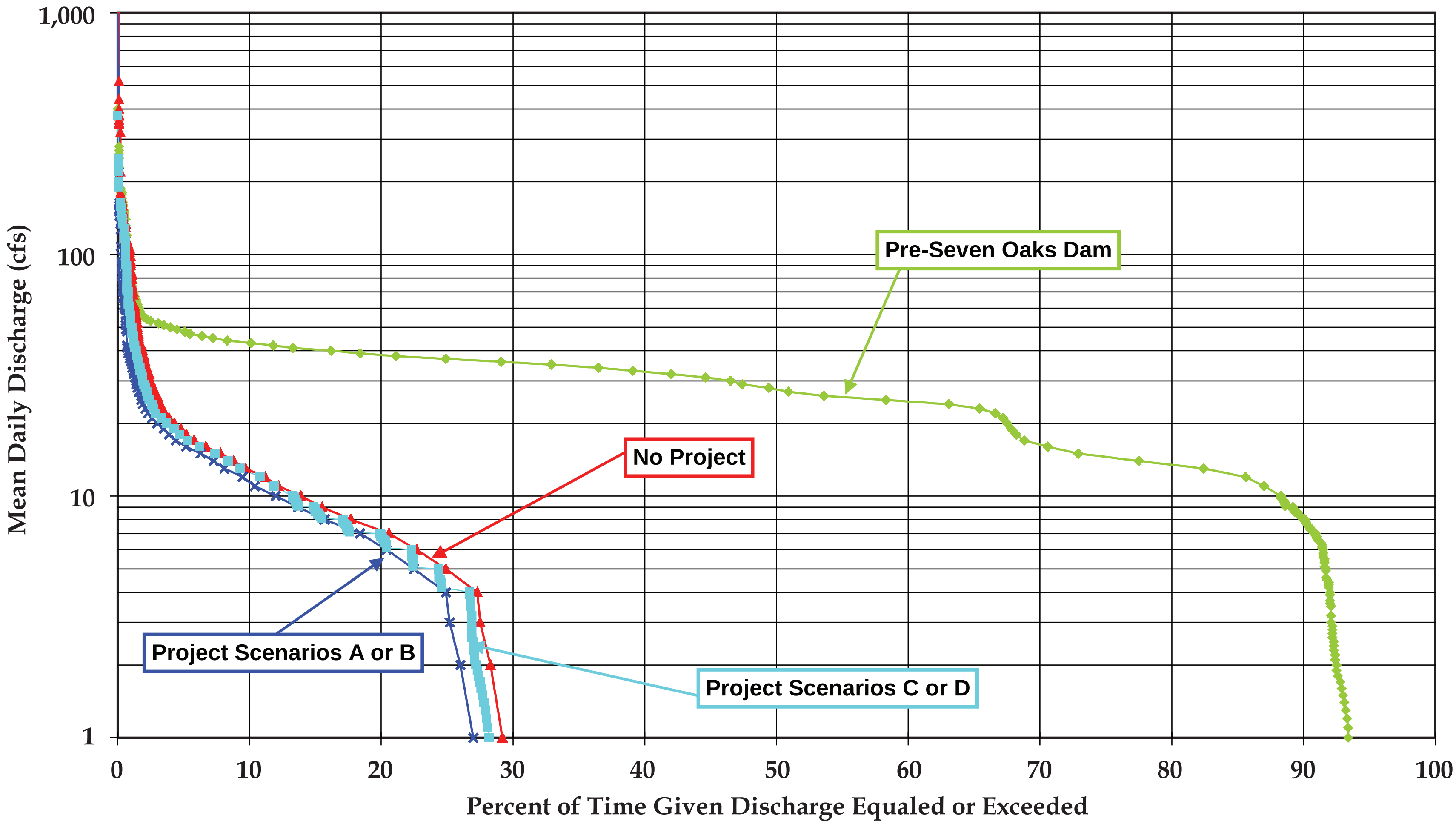
* Results for 500 cfs and 1,500 cfs diversion rates differ by less than 1% for flows higher than 500 cfs.

Figure 6.2-9. Probability of Daily Discharge (Non-Storm Days) for SAR Segment C, below Cuttle Weir* WY 1966-67 through YW 1999-2000



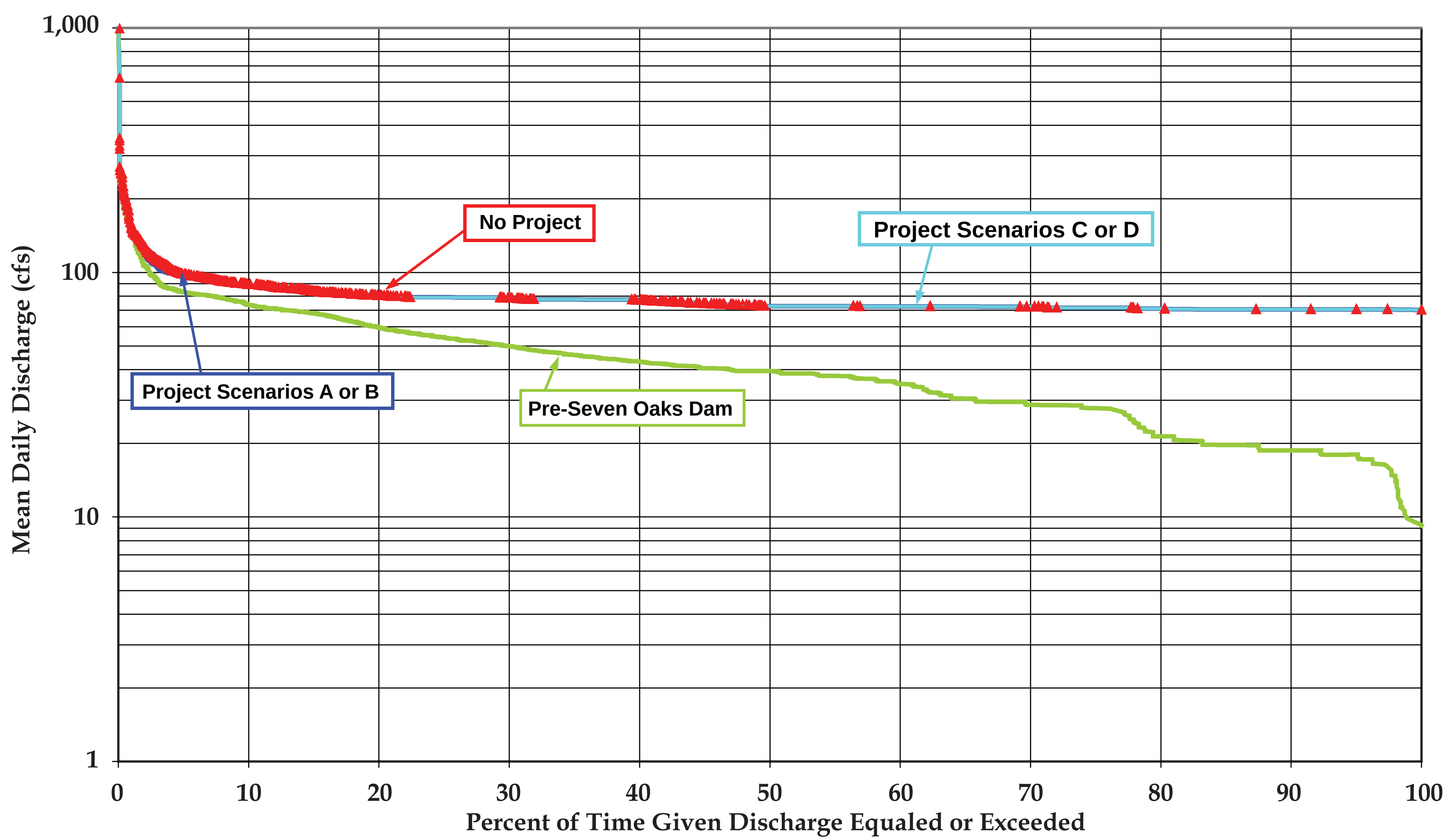
* Results for 500 cfs and 1,500 cfs diversion rates differ by less than 1% for flows higher than 500 cfs.

Figure 6.2-10. Probability of Daily Discharge (Non-Storm Days) for SAR Segment D, below Mill Creek Confluence, WY 1966-67 through YW 1999-2000



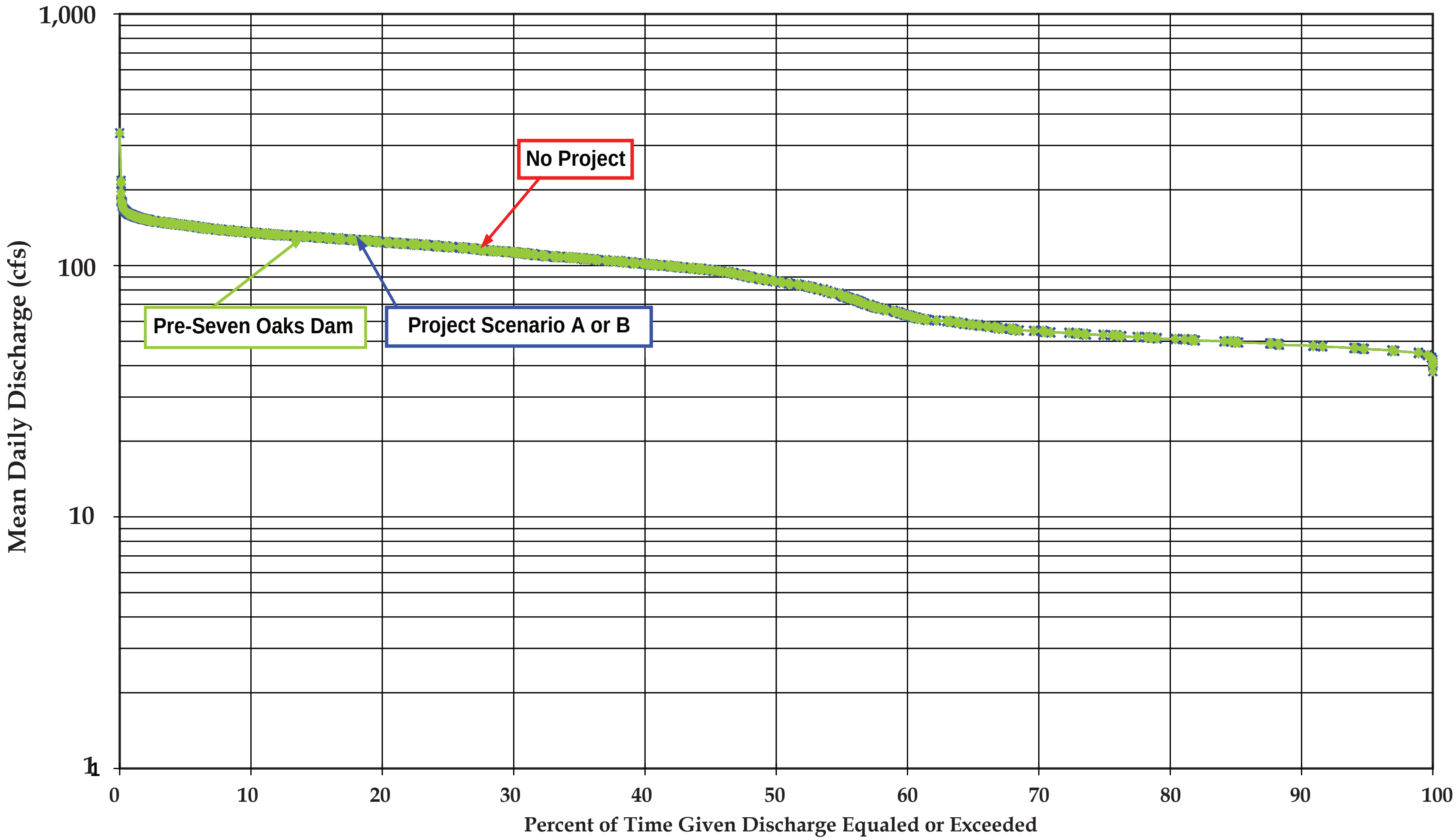
* Results for 500 cfs and 1,500 cfs diversion rates differ by less than 1% for flows higher than 500 cfs.

Figure 6.2-11. Probability of Daily Discharge (Non-Storm Days) for SAR Segment E, below "E" Street, WY 1966-67 through YW 1999-2000



* Results for 500 cfs and 1,500 cfs diversion rates differ by less than 1% for flows higher than 500 cfs.

Figure 6.2-12. Probability of Daily Discharge (Non-Storm Days) for SAR Segment F, below RIX and Rialto Effluent Outfall, WY 1966-67 through YW 1999-2000



portrayed because effects of Scenarios C and D undetectable.

Figure 6.2-13. Probability of Daily Discharge (Non-Storm Days) for SAR Segment G, below Riverside Narrows, WY 1966-67 through YW 1999-2000

Appendix B

Water Availability Analysis

APPENDIX B INTRODUCTION TO THE WATER AVAILABILITY ANALYSIS

Muni/Western prepared a water availability analysis (WAA) and submitted it to the State Water Resources Control Board on June 1, 2005. That WAA is provided in the following pages. Within the WAA the feasibility of providing a bypass flow was evaluated. The bypass flow analysis in the WAA used the Corps of Engineers' cross-sectional data for the Santa Ana River, which were the best data then available. Muni/Western recognized, however, that the focus of the Corps of Engineer's study was high flows that would occur during periods of flooding and that the high-flow cross-sectional data could usefully be supplemented by additional data specifically focused on the low-flow channel of the Santa Ana River.

To obtain such data on the low-flow channel configuration, Muni/Western surveyed the low-flow channel of the Santa Ana River during the summer of 2005. Muni/Western obtained 63 cross-sections in the low-flow channel of the Santa Ana River and measured flows in the river at 17 locations during periods when the Corps of Engineers was releasing water at specified rates from Seven Oaks Dam. The locations of the cross-sections are shown in the following figure as green dots and the water measurement locations are shown as red dots. Using the Corps of Engineers' HEC-RAS model with these new data, Muni/Western were able to estimate the minimum flows needed to establish hydraulic connectivity between Seven Oaks Dam and various locations downstream.

In brief, the June 1, 2005 water availability analysis concluded that, under current conditions, releases of 5, 50 and 65 cfs from Seven Oaks Dam would be necessary to create hydraulic connectivity (e.g., a bypass flow) from Seven Oaks Dam to the confluence of the Santa Ana River with Mill Creek, the Santa Ana River at "E" Street, and the Santa Ana River at the RIX-Rialto Outfalls, respectively. The updated modeling, using low-flow channel cross-sectional data, indicates that releases of 4, 38 and 41 cfs, respectively, would be sufficient to create such hydraulic connectivity. Additional details on the updated modeling and its implications for the feasibility and effectiveness of bypass flows are provided in Thematic Responses section 2.4 of the Final EIR.

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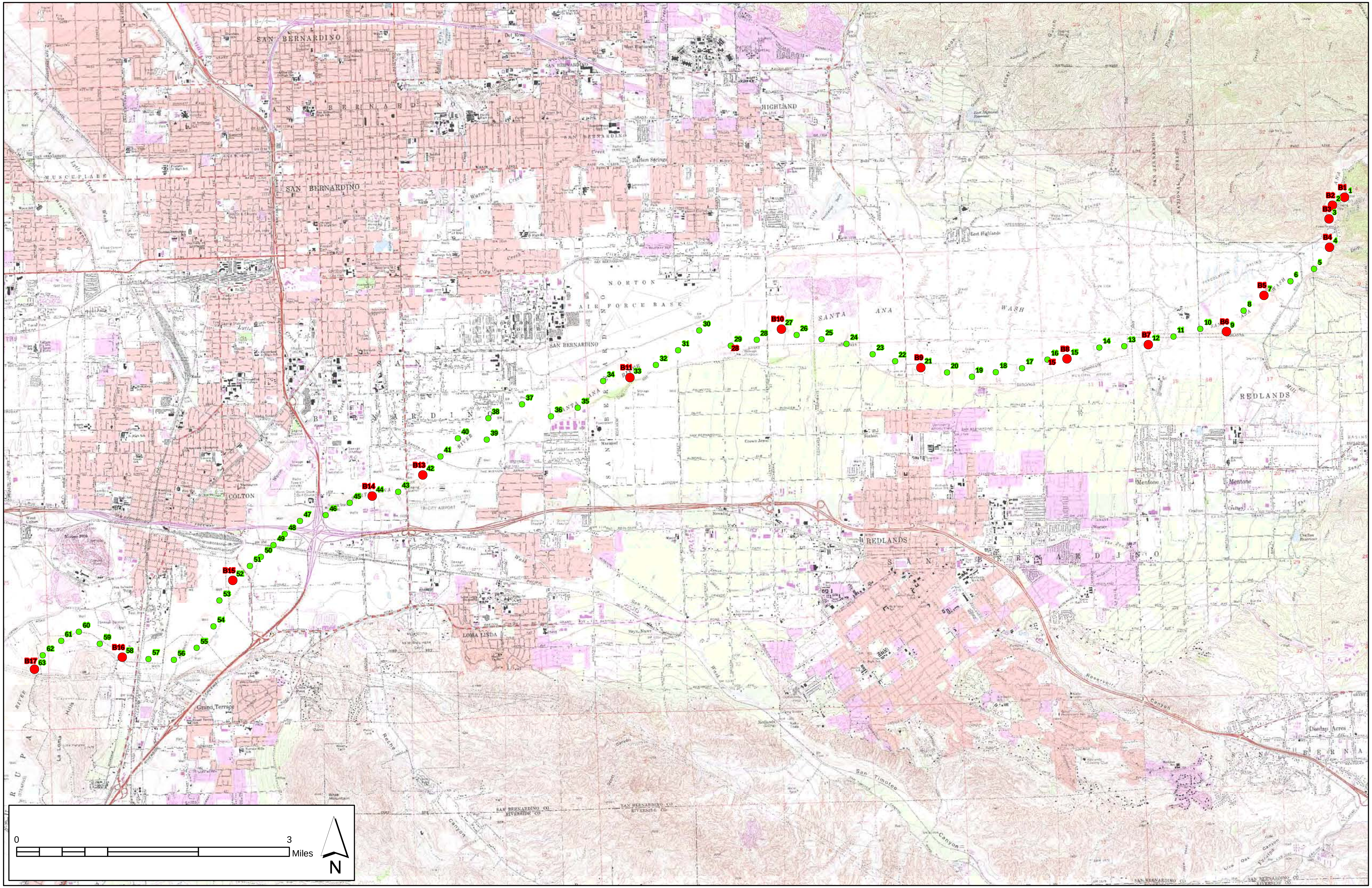

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June 1, 2005

VIA HAND DELIVERY

Victoria Whitney
Chief, Division of Water Rights
State Water Resources Control Board
1001 I Street, 14th Floor
Sacramento, California 95814

Re: Request for Information – Water Right Application Nos. 31165 and 31370
Santa Ana River, San Bernardino and Riverside Counties

Dear Ms. Whitney:

San Bernardino Valley Municipal Water District and Western Municipal Water District of Riverside County ("Muni/Western") are pleased to respond to the March 14, 2005 letter from the State Water Resources Control Board (the "SWRCB") requesting additional information relating to Water Right Application Nos. 31165 and 31370 (the "Applications"). In its March 14 letter, the SWRCB requested that Muni/Western provide the SWRCB with a water availability analysis that specifically addressed whether and to what extent bypass flows could be used to lessen the impacts to biological resources, specifically the Santa Ana sucker, of diverting water from the Santa Ana River. The SWRCB also requested Muni/Western provide the SWRCB with an analysis of the potential impacts of seasonal water conservation on biological resources upstream of Seven Oaks Dam.

1. *Water Availability Analysis*

As you know, Seven Oaks Dam and Reservoir was constructed by the United States Army Corps of Engineers as a flood control facility and is currently being operated by the San Bernardino County Flood Control District for the sole purpose of flood protection. The Applications propose to reoperate Seven Oaks Dam and Reservoir to achieve seasonal water conservation in addition to flood protection. Enclosed for your review as Exhibit A is an expanded water availability analysis for the Applications. This analysis elaborates and clarifies the water availability analysis contained in the Draft EIR.

The water availability analysis relies on gaged data and uses a 39-year base period that is representative of long-term hydrology on the Santa Ana River. The analysis shows that the maximum annual unimpaired flow in the Santa Ana River is approximately 269,000 af, the median annual unimpaired flow is approximately 34,000 af and the average annual unimpaired flow is approximately 59,000 af.* The water availability analysis concludes that there is up to 200,000 afy of unappropriated water in the Santa Ana River system.

The water availability analysis analyzes in some depth whether the release of bypass flows could have the effect of reducing the impacts of the project on biological resources. Releasing water for bypass flows would reduce the number of days when there is no surface flow in the stream channel below Cuttle Weir but, even reoperating Seven Oaks Dam and Reservoir to conserve the water that would be used as bypass flows, there is not sufficient water in the Santa Ana River system to provide permanent, year-round, hydraulic connectivity below the Cuttle Weir to the confluence with Mill Creek, E Street, or RIX. Intermittent releases of water and the porous nature of the Santa Ana River channel substrate combine to limit the biological benefits of any bypass flows. Although such flows might benefit native plant species to some degree, they would also promote the growth of non-native invasive species such as tamarisk and arundo. Instream percolation of bypass flows could also increase static groundwater levels in the Pressure Zone of the Bunker Hill Basin above the levels associated with the project and so could increase the risk of liquefaction as compared to the risk of liquefaction associated with the project.

2. *Effects on Biological Resources Upstream of Seven Oaks Dam*

Enclosed for your review as Exhibit B is an analysis of the effects on biological resources of implementing seasonal water conservation at Seven Oaks Dam as proposed in the Applications. As with the water availability analysis, Exhibit B elaborates and clarifies the discussion of the impacts of water conservation on biological resources contained in the Draft EIR.

Exhibit B begins by summarizing the differences in the proposed operation of Seven Oaks Dam for seasonal water conservation as compared to the present operation of Seven Oaks Dam solely for flood control purposes. Exhibit B also provides an inventory of biological resources present upstream of Seven Oaks Dam prior to the construction of the dam and an analysis of the mitigation obligations of the United States Army Corps of Engineers that have resulted from the construction and operation of Seven Oaks Dam for

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* The information request and the form of a water availability analysis found at the SWRCB website suggest that unappropriated water is to be determined based on the average flows in a specific stream. While the average quantity of water available may be a useful measure of unappropriated water for coastal streams in Northern California, average flows are not particularly representative of conditions in a highly variable river system like the Santa Ana River system. In the interest of providing the SWRCB with all potentially relevant information, though, Muni/Western have provided information on maximum, average and median flows throughout the water availability analysis.

flood control. The Applications call for the seasonal conservation of up to 50,000 af of water at Seven Oaks Dam. The construction needed for such conservation and the operation of the reservoir for such conservation would be contained entirely within the 50-year inundation area. The United States determined that the operation of Seven Oaks Dam for flood control would destroy all biological resources within the 50-year inundation area. Using that analysis and other data, Exhibit B explains the reasons that Muni/Western believe that the construction of the additional facilities needed for seasonal water conservation at Seven Oaks Dam and the operation of Seven Oaks Dam for seasonal water conservation would have no additional impacts on biological resources upstream of the dam over and above the impacts of operating Seven Oaks Dam for flood protection.

3. *Conclusion*

Muni/Western would be pleased to meet with you and your staff in the near future to answer any questions that the SWRCB may have regarding our response to your information request. I will call in the next few days to schedule that meeting. In the meantime, please feel free to call if you have any questions.

Very truly yours,

David R.E. Aladjem

cc: Robert L. Reiter, San Bernardino Valley Municipal Water District
John V. Rossi, Western Municipal Water District of Riverside County
Robert G. Beeby/Christopher Clayton, SAIC
Robert D. Thomson, CH2MHill
Kevin M. O'Brien/Jennifer L. Harder (firm)

EXHIBIT A

EXHIBIT A

TO: Chief, Division of Water Rights, State Water Resources Control Board

FROM: San Bernardino Valley Municipal Water District and Western Municipal Water District of Riverside County

DATE: June 1, 2005

SUBJECT: WATER AVAILABILITY ANALYSIS FOR APPLICATIONS 31165 AND 31370 OF SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT AND WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY

1.0 INTRODUCTION

The purpose of this report is to summarize the results of the Water Availability Analysis (WAA), including a Cumulative Flow Impairment Index (CFII) evaluation, performed for the two water right applications (Numbers 31165 and 31370) submitted to the State Water Resources Control Board (SWRCB) by San Bernardino Valley Municipal Water District (Muni) and Western Municipal Water District of Riverside County (Western).

This State Water Resources Control Board (SWRCB) requires that a WAA accompany every water right application and include "sufficient information to demonstrate a reasonable likelihood that unappropriated water is available for appropriation." (Water Code section 1260(k)). The Water Code further stipulates that, "in determining the amount of water availability for appropriation, the SWRCB shall take into account, whenever it is in the public interest, the amounts of water needed to remain in the source for protection of beneficial uses…." Instream beneficial uses include, but are not limited to, recreation and the preservation of fish and wildlife habitat. (Water Code section 1243). Before the SWRCB can grant a water right permit, it must find that there is "unappropriated water available to supply the applicant." (Water Code section 1375(d)). This report provides the results of a WAA conducted for the subject water right applications located within the Santa Ana River (SAR) watershed in San Bernardino and Riverside counties. The objectives of the WAA analysis are to:

- Determine whether water is available for appropriation in accordance with California Water Code sections 1200 *et seq.*; and

- Determine the impact of implementing the applications on streamflow in order to evaluate the impacts to fishery resources as required by the California Environmental Quality Act (CEQA), the California Endangered Species Act (CESA), and the federal Endangered Species Act (ESA).

Also included in this WAA is an evaluation of cumulative impacts to the natural hydrology of existing and pending projects at a specified point of interest (POI). The method for evaluating cumulative effects on natural hydrology is the CFII. The CFII expresses (as a percent) water demand in terms of supply at a specified POI, for a specified time period.

1.1 History

In 1989 (WR 89-25) and again in 1998 (WR 98-08), the SWRCB included the SAR in its Declaration of Fully Appropriated Streams (Declaration). In accordance with this Declaration, the SAR was considered fully appropriated year-round.

In 1991, Muni submitted an application (No. 31165) ("First Application") on behalf of itself and Western to appropriate up to 100,000 acre-feet (af) annually from the SAR. At that time the SAR was categorized as "fully appropriated" by the SWRCB. However, in May 1995, the SWRCB adopted procedures for reviewing the fully appropriated stream status of the Santa Ana River and Muni/Western subsequently submitted a petition to revise the Declaration of Fully Appropriated Stream Status for the Santa Ana River, together with the 1991 application.

The petition to revise the Declaration of Fully Appropriated Stream Status for the SAR submitted in 1995 by Muni and Western was followed in 1999 by a similar petition by Orange County Water District (OCWD). The SWRCB held hearings on the petitions in December 1999. Muni/Western provided evidence which demonstrated that flows in the SAR watershed had increased due to urbanization and the attendant increased runoff and increased releases of treated wastewater to the river channel. Additionally, completion and subsequent operation of Seven Oaks Dam would increase availability of water during wet years because of the attenuating effects of the dam on high flows. Based on evidence in the hearing record, the SWRCB amended the Declaration in Order WR 2000–12, to allow for the processing of the water right applications submitted by Muni/Western and OCWD (SWRCB 2000). Order WR 2000-12 did not determine the specific amount of water available for appropriation by petitioners. SWRCB Order 2000-12 is included as Attachment 1 to this WAA.

In May 2001 Muni and Western jointly submitted a second application (No. 31370) to appropriate 100,000 af of water annually ("Second Application") in addition to the 100,000 acre-feet per year (afy) previously requested under the First Application, along with a second petition to revise the Fully Appropriated Streams Declaration for the SAR ("Second Petition"). The Second Petition and Second Application were based on updated hydrologic analyses submitted during the 1999 hearings that indicated, in certain years, there is in excess of 200,000 af of water available for appropriation. Based on the hydrologic evidence, in Order WR 2002-06 the SWRCB revised the Declaration pursuant to Muni/Western's Second Petition (and similar petitions by other parties) and accepted the following applications for processing:

- Muni/Western Second Application;
- Chino Basin Watermaster application requesting a right to divert 97,000 afy to groundwater storage;
- San Bernardino Valley Water Conservation District (Conservation District) application proposing groundwater and surface storage of 174,545 afy;
- City of Riverside application proposing direct diversion of 75 cfs throughout the year for a total maximum direct diversion of 41,400 afy; and

- Four minor applications for diversion of up to 102 afy from the West and East Forks of Cable Creek within the SAR watershed.

Order WR 2002-06 did not determine the specific amount of water available for appropriation or whether the amount of water available for appropriation is sufficient to approve the applications. SWRCB Order WR 2002-06 is included as Attachment 2 to this WAA.

1.2 SWRCB Guidance

This WAA has been prepared using SWRCB guidance as provided in (1) the *Example Format for a WAA/CFII Report*, dated August 21, 2002 (available at www.waterrights.ca.gov/Application/WAfiles/3_WAA-CFII%20ReportFormat_%208-21-02.doc) and (2) a SWRCB workshop held May 1, 2002 (presentation slides available at www.waterrights.ca.gov/Application/WAfiles/4_swrcbpresmay2002.pdf).

The remainder of the WAA is divided into the following sections:

2.0 Project Description

3.0 Methods

4.0 Annual Unimpaired Flow

5.0 Unimpaired Flow During the Project's Diversion Season

6.0 Bypass Flow (Habitat Release)

7.0 Cumulative Flow Impairment Index

Attachment 1	SWRCB Order WR 2000-12
Attachment 2	SWRCB Order WR 2002-6
Attachment 3	Description of Data Used in the Water Availability Analysis
Attachment 4	Inventory of Public Trust Resources, Santa Ana River Water Right Applications for Supplemental Water Supply EIR
Attachment 5	Impacts to Public Trust Resources, Santa Ana River Water Right Applications for Supplemental Water Supply EIR

2.0 PROJECT DESCRIPTION

SWRCB guidance recommends this part of the WAA provide information on:

- the county and nearby towns/communities in which the project is located;
- the volume of water the application seeks to store and divert;
- the proposed season of diversion; and

- purposes of the diversion.

The Project includes: (a) applications that seek to directly divert or divert to storage a maximum annual 200,000 af of water from the SAR in the vicinity of Seven Oaks Dam; and (b) placing water diverted from the SAR to beneficial use. Beneficial uses would include deliveries to: water treatment plants; groundwater recharge of the San Bernardino Basin Area (SBBA); groundwater recharge outside the SBBA but in the Muni service area; and exchange with other agencies. Diversions are proposed during the season of October through September each year. All water diverted would be used for municipal and industrial or for agricultural uses within the Muni/Western service areas. Applications 31165 and 31370 request diversion to storage and direct use for the purposes of increasing water supply reliability (reducing the dependence of Muni/Western on imported water), delivering additional local high quality water, and improving operational flexibility.

The Project would be located in the Muni and Western service areas. Diversions for the Project would occur in the vicinity of Seven Oaks Dam located in the lower part of the Santa Ana Canyon about 8 miles northeast of the City of Redlands, in San Bernardino County, California. **Figure 1** shows the location of the Santa Ana River watershed, the Muni and Western service areas, and the general location of the Project relative to San Bernardino and Riverside counties. **Figure 2** is a topographic map showing the Santa Ana River upstream and downstream of Seven Oaks Dam and the points of diversion and rediversion proposed in Water Right Applications 31165 and 31370.

As shown in Figure 2, water diverted at a number of points of diversion (PODs) upstream of Seven Oaks Dam is currently conveyed (after being used for power generation) through the existing Southern California Edison (SCE) Canal for delivery to senior water right claimants. These claimants are the Bear Valley Mutual Water Company, Lugonia Water Company, North Fork Water Company, and Redlands Water Company. Water that is diverted upstream of Seven Oaks Dam is conveyed downstream in the SCE Canal to the Head Breaking Structure that is located west of, and at a lower elevation than, the spillway of Seven Oaks Dam. At the Head Breaking Structure (designed to reduce pressure in the pipeline) the SCE Canal bifurcates, delivering water to (a) the SCE Santa Ana River Powerhouse No. 2/3 via the New SCE Conduit; and (b) the Greenspot Forebay via the Old SCE Conduit. As part of the 1976 Santa Ana River-Mill Creek Cooperative Water Project Agreement, water diverted upstream of Seven Oaks Dam is physically taken by Muni downstream of the dam at the existing Greenspot Forebay and conveyed through the Greenspot Pipeline for delivery by gravity to locations which would otherwise require the use of the Greenspot Pump Station. Under the Project, Muni/Western would divert water at the foregoing PODs above Seven Oaks Dam in addition to water already taken in accordance with the Santa Ana-River Mill Creek Cooperative Water Project, and would initiate new PODs downstream of Seven Oaks Dam**.**

Downstream of Seven Oaks Dam, unappropriated water would be diverted at a number of PODs utilizing existing and new facilities (see Figure 2). Most of the water captured from the SAR would be conveyed through the proposed Plunge Pool Pipeline and Low Flow Connector Pipeline. Construction of these pipelines would occur in three phases.

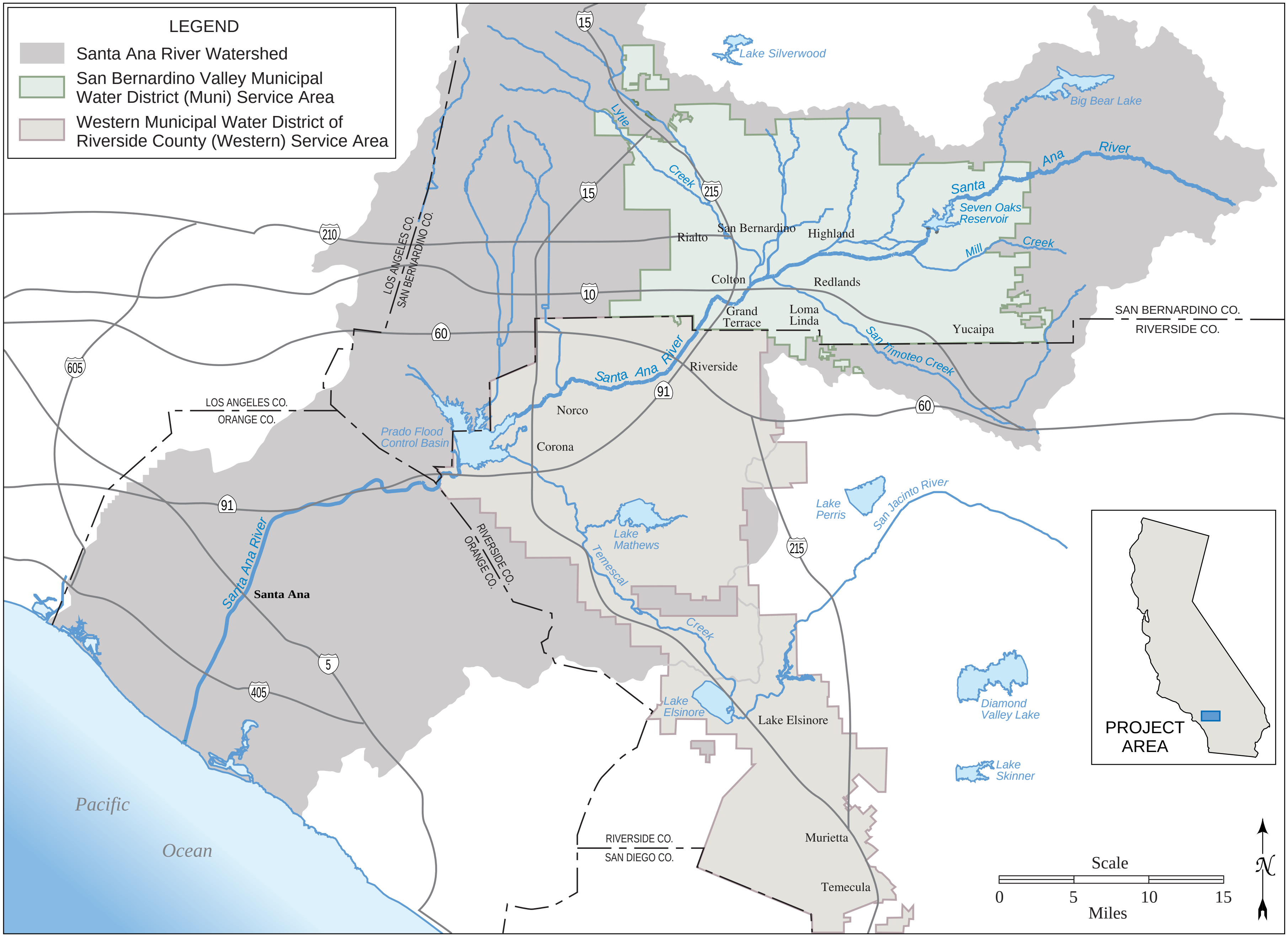

Figure 1. Muni and Western Service Areas

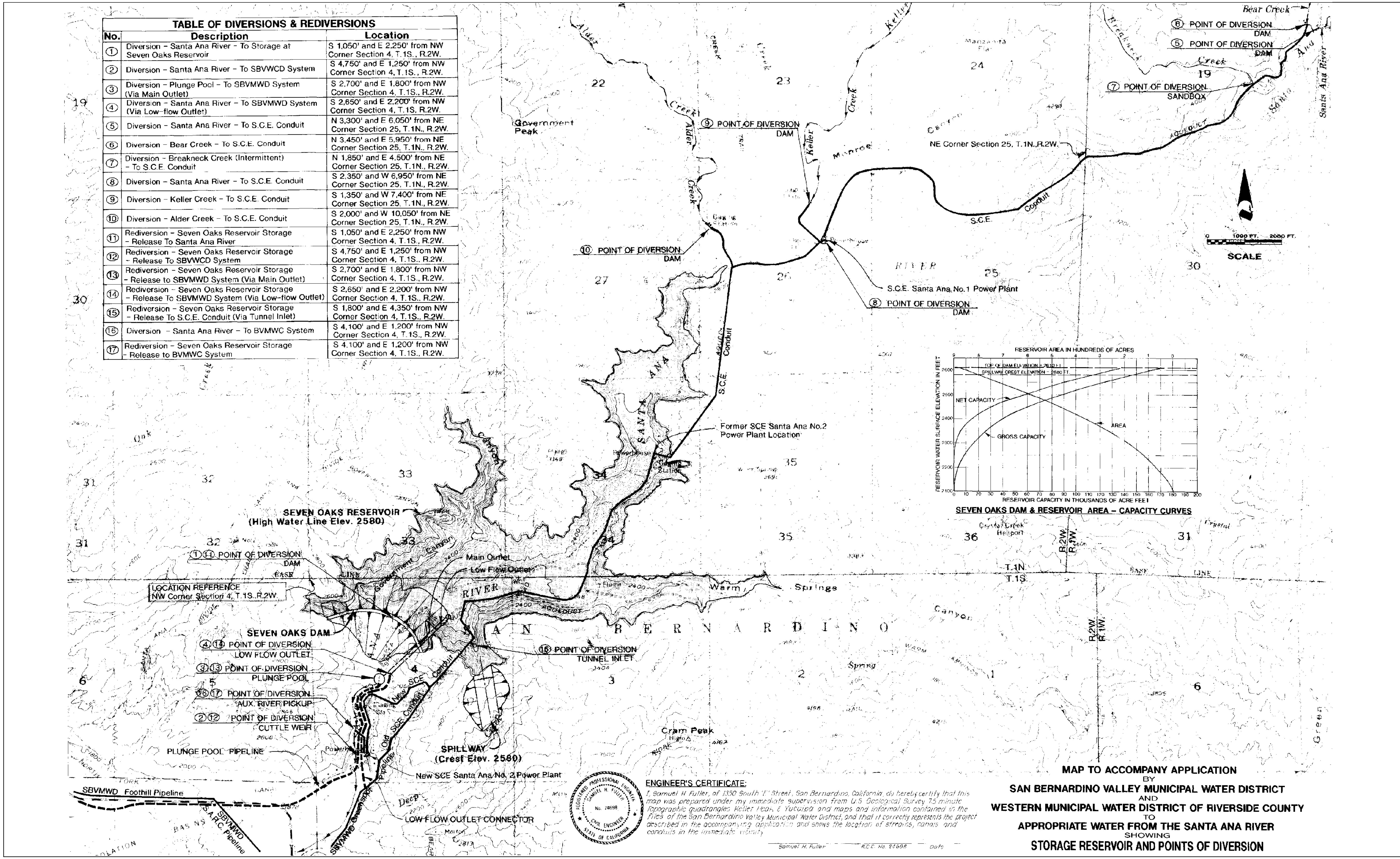

Figure 2. Points of Diversion and Rediversion

Depending on the phase, diversions would take place either at a point in the Santa Ana River channel just west of the existing Cuttle Weir or from the plunge pool of Seven Oaks Dam, both potential diversion points in the Santa Ana River Canyon immediately downstream of Seven Oaks Dam (see **Figures 2** and **3**).

3.0 METHODS

3.1 Methods for Calculating Runoff

In its guidance on preparation of WAA's, the SWRCB provides examples of two methods, which may be used to estimate runoff:

- The rainfall-runoff method (an adaptation of the Rational Method), estimating runoff based on average annual precipitation, watershed area, and a runoff-coefficient (percent of water that will run off the watershed area during a storm event given the soil type, relief, vegetation and surface storage).

- Proration of US Geological Survey Streamflow data. In this method, runoff records from gaged sites are adapted based on drainage area ratios and applied to ungaged basins.

These two methods are typically applied when data on runoff are not available. There are limitations associated with using these two methods[1]. Typically the Rational Method is used to estimate peak flow for the purposes of designing flood control facilities. The Rational Method is not the best tool for estimating average annual runoff. The SWRCB guidance for WAA's cautions against using the Rainfall-Runoff method in large watersheds where rainfall is unlikely to be uniform, e.g., "For estimation of peak flows the rational method should not be used for areas larger than 0.5~1mi^2 (321~640 acres)". The drainage area of the Santa Ana River upstream of Seven Oaks Dam is approximately 177 square miles (113,280 acres)[2]. Use of the Proration Method is unnecessary in the case of the SAR because stream flow data exists for the SAR itself.

SWRCB guidance allows other methods to be used to estimate runoff other than the two described above. For this WAA, runoff estimates are made using OPMODEL. OPMODEL is a spreadsheet model that was developed to estimate the quantity of unappropriated Santa Ana River water available for diversion after accounting for diversions by prior water rights holders. OPMODEL's primary input is data from US Geological Survey (USGS) stream

[1] "The SWRCB WAA method appears to be adequate for a preliminary analysis; however, when water availability is close to the screening criteria it may not be 'good enough' and additional refinements may be needed." MBK Engineers. *Evaluation of State Water Resources Control Board Water Availability Analysis*. June 2001.

[2] US Army Corps of Engineers. *Santa Ana River Design Memorandum No. 1. Phase II GDM on the Santa Ana River Mainstem including Santiago Creek. Volume 7, Hydrology*. August 1988.

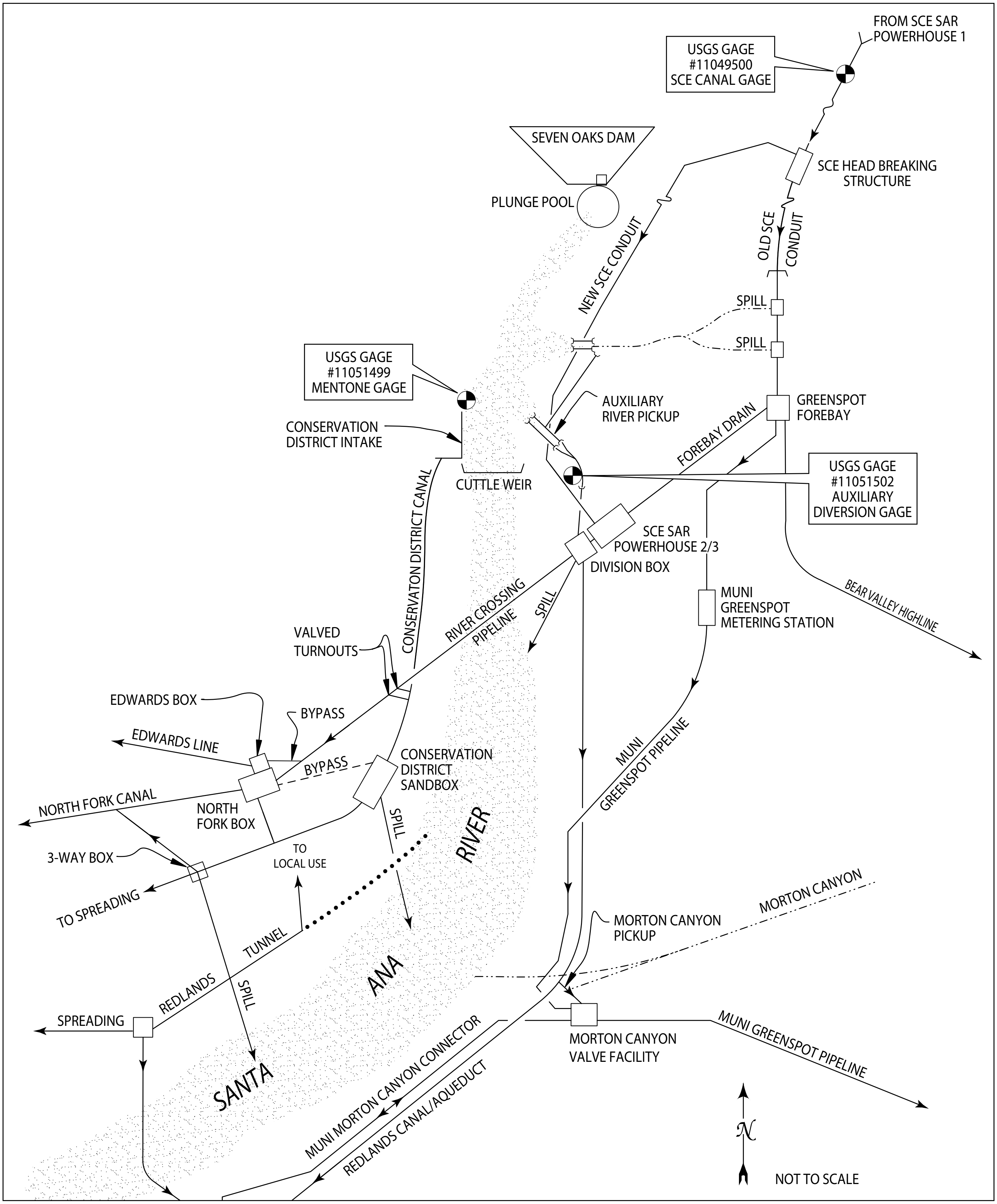

Figure 3. Schematic of Water Control Features and Gages in the Lower Santa Ana River Canyon

gages that record inflow to Seven Oaks Dam. Within OPMODEL, historical runoff is used to represent future runoff with and without the proposed Project diversions. Within OPMODEL contributing runoff from Big Bear Lake area is estimated using a monthly water balance model of current operations of that reservoir[3].

3.1.1 Gage Data Used in the Analysis

As shown in Figure 3, three USGS gaging stations are located within the SAR canyon:

- The SCE Canal Gage (USGS Gage 11049500) records flow that is diverted into the SCE Canal above Seven Oaks Dam;
- The Auxiliary Canal Gage (USGS Gage 11051502) records flow diverted from the SAR into the Auxiliary Canal above Cuttle Weir which ultimately enters the Division Box; and
- The Mentone Gage (USGS Gage 11051500) located on the SAR, just upstream of Cuttle Weir, accounts for water flowing in the main channel of the SAR just below Seven Oaks Dam.

The combination of all three gages is referred to as the "Combined Flow" Mentone Gage (USGS record 11051501) and represents the sum of stream flow recorded in the River at the Mentone Gage, the Auxiliary Canal Gage, and flow that would have been in the river at this location had it not been diverted upstream for use in the SCE hydroelectric system and at other points of diversion. The "River Only" Mentone Gage (USGS record 11051499) is the sum of the Mentone Gage and Auxiliary Canal Gage and is representative of SAR flow immediately downstream of Seven Oaks Dam.

Releases and spills from Big Bear Lake, located at the headwaters of Bear Creek, contribute tributary flow to the SAR above Seven Oaks Dam. Historically, releases for irrigation were made from Big Bear Lake to meet the demand of Bear Valley Mutual Water Company and the Lake spilled only during extremely wet years. Although most of the irrigation releases were diverted into the SCE Canal, at times some water remained in the SAR and contributed to historical SAR flow. Irrigation releases made from Big Bear Lake during dry periods sometimes resulted in low water levels in the reservoir, to the detriment of recreational uses of the lake. As recreational uses increased, litigation ensued, which was resolved through a settlement in 1977, and a revised reservoir operating policy implementing that settlement was enacted in 1987.

In accordance with the revised reservoir operations policy, Bear Valley Mutual Water Company receives State Water Project (SWP) water from time to time (from Muni) in lieu of water from

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[3] For additional information on OPMODEL refer to San Bernardino Valley Municipal Water District and Western Municipal Water District. *Santa Ana River Water Right Applications for Supplemental Water Supply. Draft Environmental Impact Report. Appendix A.* October 2004.

Big Bear Lake. The resulting decrease in releases from Big Bear Lake helped stabilize lake elevations but, at the same time, generally reduced the amount of water that Big Bear Lake contributes to flow in the SAR and the SCE Canal. Runoff estimates used for the Project within OPMODEL account for these changes in the operation of Bear Valley Dam and SAR hydrology through the use of a "synthesized hydrology." In the synthesized hydrology, for flows prior to 1987, a monthly water balance model developed by Big Bear Municipal Water District was used to estimate the change from historical outflow from Big Bear Lake.

For specific information on each gage used to calculate runoff, including the complete period of record, and period of record used in the analysis, see Attachment 3. This attachment provides a list of all the data contained on the compact disc accompanying this WAA.

3.1.2 Selection of the Hydrologic Base Period

For the purposes of estimating runoff and inflow to Seven Oaks Dam, this analysis uses hydrologic data representative of long-term average hydrologic conditions, e.g., a base period. The base period was selected after examination of rainfall and runoff records, to find a period with the following characteristics:

- Average precipitation of the base period is approximately equal to the average precipitation of the entire period of record;
- Average runoff of the base period is approximately equal to the average runoff of the entire period of record;
- Contains periods of wet, dry, and average hydrologic conditions;
- Is sufficiently long to contain data representative of the averages, deviations from the averages, and extreme values of the entire historical period (typically a 20- to 30-year period[4]);
- Contains a dry trend at both the beginning and end of the period in order to minimize the difference between the amount of water in transit in the soil at either end of the base period[5]; and
- Is representative of recent environmental and cultural conditions (e.g., land use, extent of urbanization, urban runoff) for the purpose of using the base period in forecasting models.

[4] Mann, J.F., University of California, Berkley. Lecture Notes. 1968

[5] Nevada Division of Water Planning. Dictionary of Technical Water, Water Quality, Environmental, and Water-Related Terms. 2000.

Determining the Appropriate Base Period Using Rainfall Data

For purposes of assessing potential base periods relative to historic rainfall conditions, data describing average annual precipitation at the San Bernardino County Hospital recording station for WYs 1883-84 to 2001-02 was used.

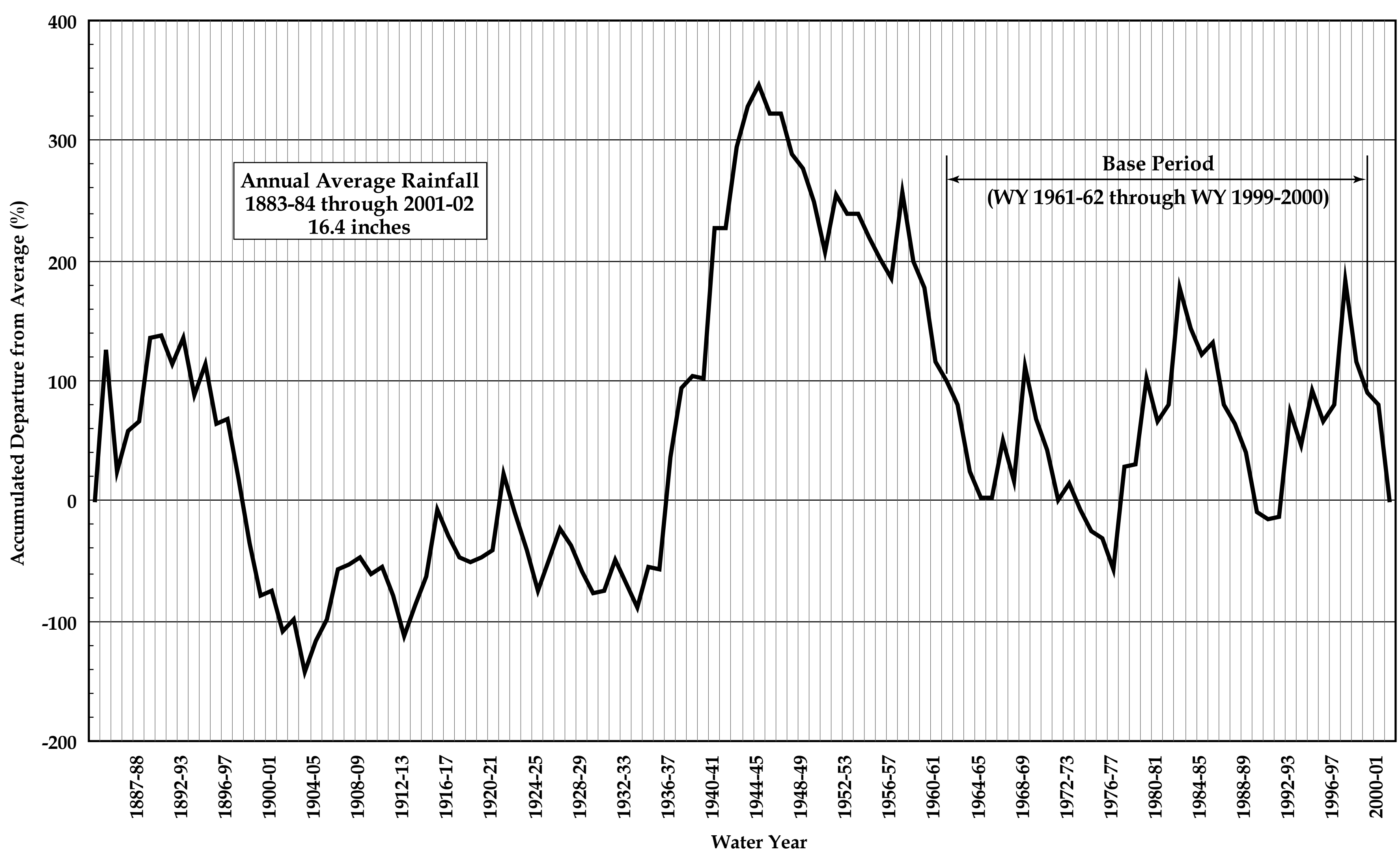
A useful way of illustrating trends and possible cycles in time series data is to plot the annual cumulative departure from the long-term average (mean). **Figure 4** illustrates the cumulative departure from the long-term average annual rainfall over the period WY 1883-34 to WY 2001-02 at the San Bernardino County Hospital recording station. The cumulative departure can be viewed as a running total: in a succession wet years the curve trends upward; in a succession of dry years the curve trends downwards. Examples of periods with above average rainfall are WY 1933-34 through WY 1943-44 and WY 1976-77 through WY 1981-82. Conversely, a declining segment of the curve represents years of below-average rainfall, e.g., WY 1889-90 through WY 1902-03, WY 1957-58 through WY 1963-64, WY 1981-82 through WY 1988-89, and WY 1997-98 through WY 2001-02. For example, in Figure 4, the value for WY 1945 indicates that the cumulative average annual departure from the mean from the beginning of the record was more than 300 percent, i.e., over three times the long-term average annual rainfall.

Points where the graphed line crosses zero percent on the vertical axis represent a point in time where the cumulative departure from the mean has "balanced out", i.e., above-average and below-average precipitation years equal each other. As can be seen in Figure 4, over the period WY 1963-64 through WY 2001-02, the graphed line deviates relatively little from zero percent, and crosses zero percent on five different occasions.

Determining the Appropriate Base Period Using Runoff Data

For purposes of base period determination, runoff is represented by historic measurement of flows in the SAR near Seven Oaks Dam. The runoff is based on data from the USGS Combined Flow Mentone River Gage (USGS Gage Number 11051501) for the period WY 1913-14 to 2000-01. As described previously, this record includes data from three gages near the Seven Oaks Dam site that, additively, best describe flows in the SAR near Seven Oaks Dam.

Using data from the Combined Flow Mentone River Gage for the period WY 1913-14 to WY 2000-01, **Figure 5** illustrates the cumulative departure from the long-term average. As shown, the cumulative departure from the average annual runoff in WY 1926-27 and again in WY 1942-43 is more than 700 percent. This indicates that the years leading up to both these peaks had higher than average stream flow. Over the period WY 1962-63 to WY 2000-01, the graph oscillates above and below zero percent. The beginning and ending points of the base period are slightly above zero percent and the cumulative departure from the average of the beginning and end points of the base period differ by 6 percent. This indicates an approximately equal number of above-average and below-average periods of runoff.



Source: San Bernardino County Flood Control District

Figure 4. Accumulated Departure from Average Annual Precipitation at San Bernardino County Hospital Recording Station, WY 1883-84 through WY 2001-02

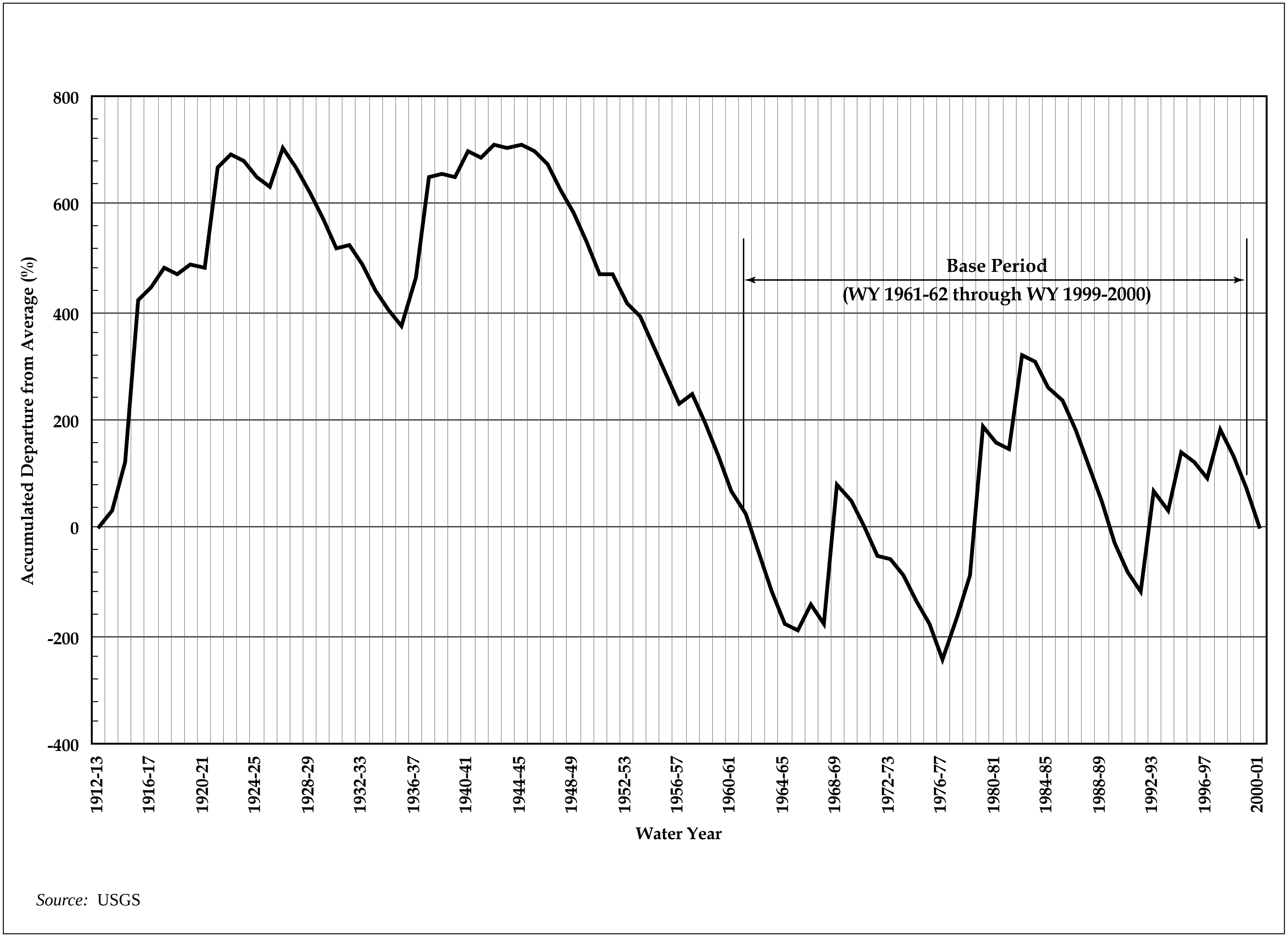


Figure 5. Accumulated Departure from Average Annual Runoff at Combined Flow Mentone Gage for WY 1913-14 through WY 2000-01

Final Selection of a Hydrologic Base Period

Based on the analyses of precipitation and runoff, a series of potential base periods were examined, all of which ended in WY 1999-2000 so as to reflect recent environmental and cultural conditions (WY 1999-2000 is the latest year for which verified groundwater pumping data was available) (see **Table 1**).

Table 1. Potential Base Periods

Potential Base Period [a]	Number of Years	Percent Difference from Long-Term Average Precipitation *San Bernardino County Hospital Recording Station*	Percent Difference from Long-Term Average Runoff *USGS Combined Record at Mentone Gage*
WY 1959-60 to 1999-2000	41	-88	-122
WY 1960-61 to 1999-2000	40	-25	65
WY 1961-62 to 1999-2000	39	-10	6
WY 1962-63 to 1999- 2000	38	11	48
WY 1963-64 to 1999- 2000	37	66	118
WY 1964-65 to 1999- 2000	36	88	187
WY 1965-66 to 1999- 2000	35	88	252
WY 1966-67 to 1999- 2000	34	41	261

Notes:
a. There was no verified pumping data for WY 2000-01 at the time of base period selection (February 2003). This information is required for groundwater modeling.

The potential base periods selected ranged from WY 1959-60 through WY 1999-2000 to WY 1967-68 through WY 1999-2000. Because of limitations in verified pumping data (data needed for groundwater analyses performed for the Project), the base period could not extend past WY 1999-2000. As shown in Table 1, of the potential base periods assessed, WY 1961-62 to WY 1999-2000 had the best fit for both consistency with long-term average precipitation and consistency with long-term average runoff. The difference from the mean precipitation for the base period WY 1961-62 to WY 1999-2000 is only 10 percent from the long-term average at the San Bernardino County Hospital recording station. Values for other potential base periods vary between +88 and -88 percent. The same base period (WY 1961-62 to WY 1999-2000) has the lowest difference for the long-term average runoff (6 percent). This period, WY 1961-62 to WY 1999-2000, is long enough to contain data representative of wet, dry, and average hydrologic conditions. This period also begins and ends at the conclusion of a dry trend, meaning the difference between the amount of water in transit in soil at either end of the base period is minimal. Weighing the results of the analyses of both precipitation and runoff patterns, the period WY 1961-62 to WY 1999-2000 was selected as the best base period.

As noted above, in general the base period for analysis is WY 1961-62 to WY 1999-2000. However, due to data limitations at some gages, the base period selected for use in the analysis of bypass flows had to be shorter. Such data limitations have required that Muni/Western use a 34-year period, WY 1966-67 to WY 1999-2000, in the analysis of bypass flows and existing conditions for the river segment between Cuttle Weir and Mill Creek and the river segment between "E" Street and the RIX-Rialto Effluent Outfall. For similar reasons, a 33-year period, WY 1966-67 to WY 1998-99, was used for the analysis of bypass flows and existing conditions for the river segment between Mill Creek and "E" Street.

4.0 ANNUAL UNIMPAIRED FLOW

As defined by the SWRCB, "Annual unimpaired flow is the total volume of water, on average, that would flow past a particular point of interest on an annual basis if no diversions (impairments) were taking place in the watershed above that point." For the purposes of this analysis the point of interest is immediately downstream of Cuttle Weir (see Figure 3). This location was chosen as the point of interest because it is the furthest downstream diversion point identified in the proposed applications.

4.1 Data and Assumptions

Gage data and the resulting synthesized hydrology described in Part 3.0 (above) was used to estimate the annual unimpaired flow. It should be noted that the synthesized hydrology used in the estimate assumes no diversions but does assume current operations of Big Bear Lake and current operations of Seven Oaks Dam.

For specific information on each gage used to calculate unimpaired flow, including period of record, and period of record used in the analysis, see Attachment 3. Data and other information listed in Attachment 3 is provided on the compact disc accompanying this WAA.

4.2 Calculations

Data from the "Combined Flow" Mentone Gage [USGS record 11051501]), which represents the sum of stream flow recorded in the river at the Mentone Gage, in addition to flow that would have been in the river at this location had it not been diverted upstream for use in the SCE hydroelectric system was modified for the period water year 1961-62 through 1986-1987 to account for changes in operation of Big Bear Lake. Within OPMODEL, the synthesized monthly flows were then summed annually for each year and the average taken for the 39-year base period (water year 1961-62 through 1999-2000). An annual estimate of reservoir evaporation, resulting from operation from Seven Oaks Dam was subtracted to account for the current operations of Seven Oaks Dam. The calculated average, median, and maximum annual flow for the base period are shown below. The variation between these measures of central tendency illustrate how the average annual unimpaired flow is influenced by large flow years.

Average Annual Unimpaired Flow = 58,476 af

Median Annual Unimpaired Flow = 33,807 af

Maximum Annual[6] Unimpaired Flow = 268,753 af

An example of OPMODEL output illustrating the assumptions and parameters within the model that arrive at these values for unimpaired flow are shown in **Figure 6**.

5.0 UNIMPAIRED FLOW DURING THE PROJECT'S DIVERSION SEASON

According to the SWRCB guidance, "Unimpaired flow during the project's diversion season is the total volume of water, on average, that would flow past a selected point of interest on a seasonal basis if no diversions (impairments) were taking place in the watershed above that point." The proposed diversion season is all year, based on a water year from October 1 through September 30. The unimpaired flow described in Part 4.0 is applicable to the Project's diversion season.

6.0 BYPASS FLOW (HABITAT RELEASE)

According to the SWRCB guidance, "The bypass flow is the instantaneous flow rate to be maintained past a project's point of diversion, in units of cubic feet per second. The appropriate bypass is developed on a case-by case basis. For projects located in the 'coastal' watersheds in the counties of Mendocino, Sonoma, Marin and Napa, where the flow characteristics are perennial, not ephemeral, the National Marine Fisheries Service (NMFS), the California Department of Fish and Game (DFG) and Division staff have recommended that in most cases, a bypass that is equal to the February median flow be used where needed to protect fish habitat.[7]" Specific guidance for bypass flows outside of the counties identified has yet to be developed. After accounting for the bypass flow during the season of diversion, the SWRCB guidance suggests that the WAA provide information on the volume of water remaining for applicant diversion.

The proposed diversion is located in San Bernardino County and does not qualify as a coastal watershed in the counties listed above. Thus the median February flow is not an appropriate bypass flow applicable to the proposed Project. In fact, the SAR watershed does not have

[6] The maximum year diversion was estimated to occur in Water Year 1969 when there was unusually high rates of runoff. Guidance for the WAA requires that information on long-term averages be provided, but in arid zones like Southern California, maximum flows and diversions are orders of magnitude different than averages, and need to be considered along with the average. The Muni/Western application requests permission to divert the maximum year diversion in order to capture adequate water in the most extreme runoff year.

[7] Based on *Guidelines for Maintaining Instream Flows to Protect Fisheries Resources Downstream of Water Diversions in Mid-California Coastal Streams* by the California Department of Fish and Game and the National Marine Fisheries Service, dated June 17, 2002, it is understood that the February median flow guideline is based partly on flows necessary to protect salmonids. The February median flow is a conservatively high bypass flow because it includes winter flows to which native fishes are adapted. The Santa Ana River, below Seven Oaks Dam, does not support salmonids.

Notes

1. Tributary flow to the Santa Ana River includes releases and spills from Big Bear Lake. Lake operations were altered in 1987. A "yes" answer to this parameter means OPMODEL has been set to use the synthesized hydrology accounting for the change in Big Bear Lake operations.
2. Estimates of water available for appropriation by applicants Muni and Western assume that before water would be available, pre-existing water rights, including those of the senior water right claimants and the San Bernardino Valley Water Conservation District would first have to be satisfied. However, there is existing controversy over the authorized and future amounts of water associated with these pre-existing water rights. In addition, releases designed to accomplish habitat restoration as prescribed by the US Fish and Wildlife Service Biological Opinion for flood control operations of Seven Oaks Dam, would also take priority over Muni/Western diversions. However, these releases, if any, have yet to occur or be fully defined. OPMODEL therefore can be configured to consider a range of different pre-existing water uses.
3. The senior water right claimants are a group of purveyors who claim pre-1914 rights on the Santa Ana River. They are Bear Valley Mutual Water Company, Lugonia Water Company (and shareholders including City of Redlands), North Fork Water Company (and shareholders including East Valley Water District), and Redlands Water Company. Senior water right claimants' future diversions could vary from historic diversions up to 88 cfs. A "0" answer to this parameter means OPMODEL has been set to assume historic senior water claimant diversions, a "88 cfs" answer to this parameter means OPMODEL has been set to assume maximum diversions by senior waterright claimants.
4. The grout curtain of Seven Oaks Dam intercepts groundwater. Three cfs is released from the dam to compensate for this intercepted groundwater.
5. OPMODEL has been designed to simulate Seven Oaks Dam operations under two different assumptions, operations with seasonal storage and operations without seasonal storage. These assumptions affect dam operations, including target storage, evaporation, and releases.
6. Future diversions by the San Bernardino Valley Water Conservation District could vary between their licensed right and their historical diversions. The Conservation District holds two licenses to divert and spread up to 10,400 afy of Santa Ana River water. But in addition the Conservation District also claims pre-1914 water rights and has diverted water in excess of 10,400 af in some years. OPMODEL has been configured to assume either "historical" or "licensed" diversions by the Conservation District.
7. OPMODEL allows the model user to specify a rate for Conservation District diversions. For the purposes of modeling existing conditions, the rate is assumed to be 300 cfs, the capacity of the Conservation District Canal.
8. OPMODEL can be set to assume a bypass flow is released from Seven Oaks Dam, when available, after accounting for pre-existing water uses.
9. Environmental restoration activities designed to mitigate impacts from flood control operations of Seven Oaks Dam are proposed in the US Army Corps of Engineers 2000 Biological Assessment and US Fish and Wildlife Service 2002 Biological Opinion (BO). Environmental habitat releases outlined in the BO could vary from zero (mitigation accomplished without water releases) up to 1,000 cfs for 2 days at 6-month intervals (when water is available).
10. OPMODEL can be set to assume diversion by the applicants, up to 200,000 afy, or no diversion by the applicants. When OPMODEL is set to assume diversions by the applications diversions are limited by available unappropriated water and capacity of proposed diversion facilities.
11. Flood Target Storage from US Army Corps of Engineers Interim Water Control Plan (2000). Conservation Target Storage from US Army Corps of Engineers Seven Oaks Dam Water Conservation Feasibility Study Final EIS/EIR (1997).
12. Conservation Target Storage not used if seasonal storage set to "no".
13. Net evaporation from US Army Corps of Engineers Seven Oaks Dam Water Conservation Feasibility Study Final EIS/EIR (1997).
14. Demand applies only when Seven Oaks Dam is being operated with seasonal storage. Demand refers to demand for releases from water held in seasonal storage.
15. Total Unimpaired Flow is the sum of all water that otherwise would have gone to diversions less reservoir evaporation.

Average

Senior Water Right Claimants	26,619
San Bernardino Valley Water Conservation District	10,384
Environmental Habitat Releases	915
Applicant Diversions	-
Undiverted	20,704
Reservoir Evaporation	144
Total Unimpaired Flow [15]	58,478

Median

Senior Water Right Claimants	25,772
San Bernardino Valley Water Conservation District	5,587
Environmental Habitat Releases	-
Applicant Diversions	-
Undiverted	2,581
Reservoir Evaporation	133
Total Unimpaired Flow [15]	33,807

Maximum

Senior Water Right Claimants	45,245
San Bernardino Valley Water Conservation District	48,152
Environmental Habitat Releases	3,967
Applicant Diversions	0
Undiverted	171,389
Reservoir Evaporation	368
Total Unimpaired Flow [15]	268,385

Hydrology [1]	Hydrology based on reoperation of Big Bear Lake (yes/no)	yes
Senior Water Right Claimants [2,3]	Existing Water Users Rights (0 = historical)	- cfs
Seven Oaks Operations [4,5]	Minimum Release at Seven Oaks	3 cfs
	Seasonal Storage (yes/no)	no
	Coefficient for monthly inflow release	100%
San Bernardino Valley Water Conservation District [2,6,7]	Historical Accounting (yes/no)	yes
	(License 2831) Jan 1-May 31	- af/y
	(License 2832) Oct 1 - Dec 31	- af/y
	Other Rights Assumed	- af/y
	Divertion Capacity	300 cfs
Santa Ana River [8]	Constant SAR Flow	- cfs
Environmental Habitat Releases [9]	Release Rate	1000 cfs
	Release Duration	2 days
	Release Frequency (No more than every….)	6 month(s)
	Max percent of years that releases are made	100%
Diversion by Applicants [2,10]	Maximum Annual Diversion	- af/y
	Diversion Capacity 1	- cfs
	Diversion Capacity 2	- cfs
	Coefficient for percent undivertable	0%
Miscellaneous	Conversion Factor from cfs to af/day	1.983
	Base Period	39 years

Target Storage [5]

Month	Days	Flood Target Storage (af) [11]	Conservation Target Storage (af) [12]	Evaporation (in./month) [13]	Demand (af) [14]
October	31	73	-	3.64	-
November	30	2,966	-	1.58	-
December	31	2,966	-	0.01	-
January	31	2,966	-	0.17	-
February	28	2,966	-	0.21	-
March	31	2,966	-	1.11	-
April	30	2,966	-	3.07	-
May	31	2,966	-	4.88	-
June	30	2,966	-	5.7	-
July	31	1,166	-	7.93	-
August	31	73	-	7.34	-
September	30	73	-	5.22	-

Figure 6. OPMODEL Assumptions and Parameters

characteristics typical of coastal watersheds and the Santa Ana River is typically dry for extended periods of time. As the historical gage data demonstrate, most annual precipitation and runoff occurs during the period December through March and rainless periods of several months are common in the summer. This flow regime results in many consecutive days in which there is no surface flow in the channel below Seven Oaks Dam.

The dry nature of the SAR is well documented. Even under pre-diversion conditions, i.e., prior to 1819, the Santa Ana River was intermittent with little or no flow at some locations in the alluvial valleys during the summer and fall dry season, particularly during years with below average precipitation[8]. Recent official publications have reached the same conclusion. As an example, the Biological Assessment for Seven Oaks Dam[9] characterizes the SAR as an ephemeral stream with flows related only to storms and generally with flow only during the months of November to April (pg. 47). The Santa Ana Regional Water Quality Control Board notes in the Basin Plan[10] that: "Most of this reach [Reach 5, Seven Oaks Dam to the City of San Bernardino] tends to be dry, except as a result of storm flows, and the channel is largely operated as a flood control facility" (pg. 1-6).

As part of examining bypass flows for this WAA, an investigation was undertaken by Muni/Western to determine:

1. The possibility of creating bypass flows sufficiently large to produce hydrologic connectivity (a continuous flow) from the proposed point of diversion to various points downstream;

2. The biological benefits that might be derived from such bypass flows; and

3. Implications to the amount of unappropriated water captured by the proposed Project of implementing such bypass flows.

6.1 Methodology

In order to study the feasibility of bypass flows, an assessment of flow loss between Seven Oaks Dam and the RIX-Rialto Outfall, focusing on groundwater infiltration, was conducted (see **Figure 7**). The RIX-Rialto Outfall was chosen as the furthest downstream point for the analysis because: (1) downstream of the RIX-Rialto Outfall the Santa Ana River has flow

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[8] EIP Associates. Santa Ana Integrated Watershed Plan. Volume 2. Environmental and Wetlands Component. Appendix G (Aquatic Resources Assessment of the Santa Ana River Watershed), and Pages 1 and 2 (The Historical Hydrological Cycle). Prepared for the Santa Ana Watershed Project Authority, Riverside, CA. 2003.

[9] US Army Corps of Engineers. Final Biological Assessment Seven Oaks Dam, Santa Ana River Mainstem Project, San Bernardino County, California. August 2000.

[10] Santa Ana Regional Water Quality Control Board. *Water Quality Control Plan Santa Ana River Basin*. 1995

year round, attributable to the effluent discharge in addition to rising water, and urban and agricultural runoff[11]; and (2) physical changes in flow in the SAR due to Project diversions are not detectable downstream of this location.

The base period for the bypass flow analysis is 1966-67 through 1999-2000, 34-years, the period of available data for the "E" Street stream flow gage. The difference between the 34-year period used in the evaluation of bypass flows and the longer 39-year hydrologic base period is due to lack of data at "E" Street for the first five years of the longer period but because the channel is dry most of the time, has little affect on the evaluation. The assessment of flow loss to the river channel includes three primary variables:

- Flow rate. A flow rate measured in cubic feet per second (cfs) is directly related to the wetted area of a channel. For any flow rate, the wetted area of the channel can be calculated. As a simplifying assumption and for the purposes of this analysis, it is assumed that within a given 1 mile section of the river the given flow rate is uniform and continuous.

- Wetted area. The wetted area of a given river segment determines the area over which infiltration could take place. Wetted area is based on flow rate and channel characteristics such as geometry, slope, and roughness. For this analysis, wetted area is calculated by summing the wetted areas between a series of river cross-sections using the HEC-RAS program developed for the Santa Ana River by the USACE[12].

- Infiltration rate. Infiltration rates are based on the nature of the channel materials and the depth to groundwater underlying a given channel segment. Available data indicate that from Seven Oaks Dam to "E" Street, the rate of infiltration is approximately 2 cubic feet (ft^3) per day for every square foot of wetted area. This estimate is consistent with calculations used by the USACE[13]. From "E" Street to the RIX-Rialto Outfall, the infiltration rate is assumed to be ten times lower, approximately 0.2 ft^3 per wetted square foot per day[14]. This lower infiltration rate is due to finer grained sediment in the alluvial channel than the cobbles and gravel of the upper reaches of the SAR.[15]

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[11] US Army Corps of Engineers 2000.

[12] U.S. Army Corps of Engineers. HEC-RAS Version 3.1.1. Hydrologic Engineering Center. 2003.

[13] US Army Corps of Engineers. Seven Oaks Dam Water Conservation Feasibility Study EIS/EIR. June 1997.

[14] SAIC. 2003. "K Values Aquifer Fill: 'E' Street to Riverside Narrows". November 19, 2003. Memorandum by Wolfgang, C.

[15] It should be noted that the HEC RAS model does not include losses due to evapotranspiration and so the estimates of needed flows are conservative (i.e., they underestimate the needed flows to provide hydraulic continuity).

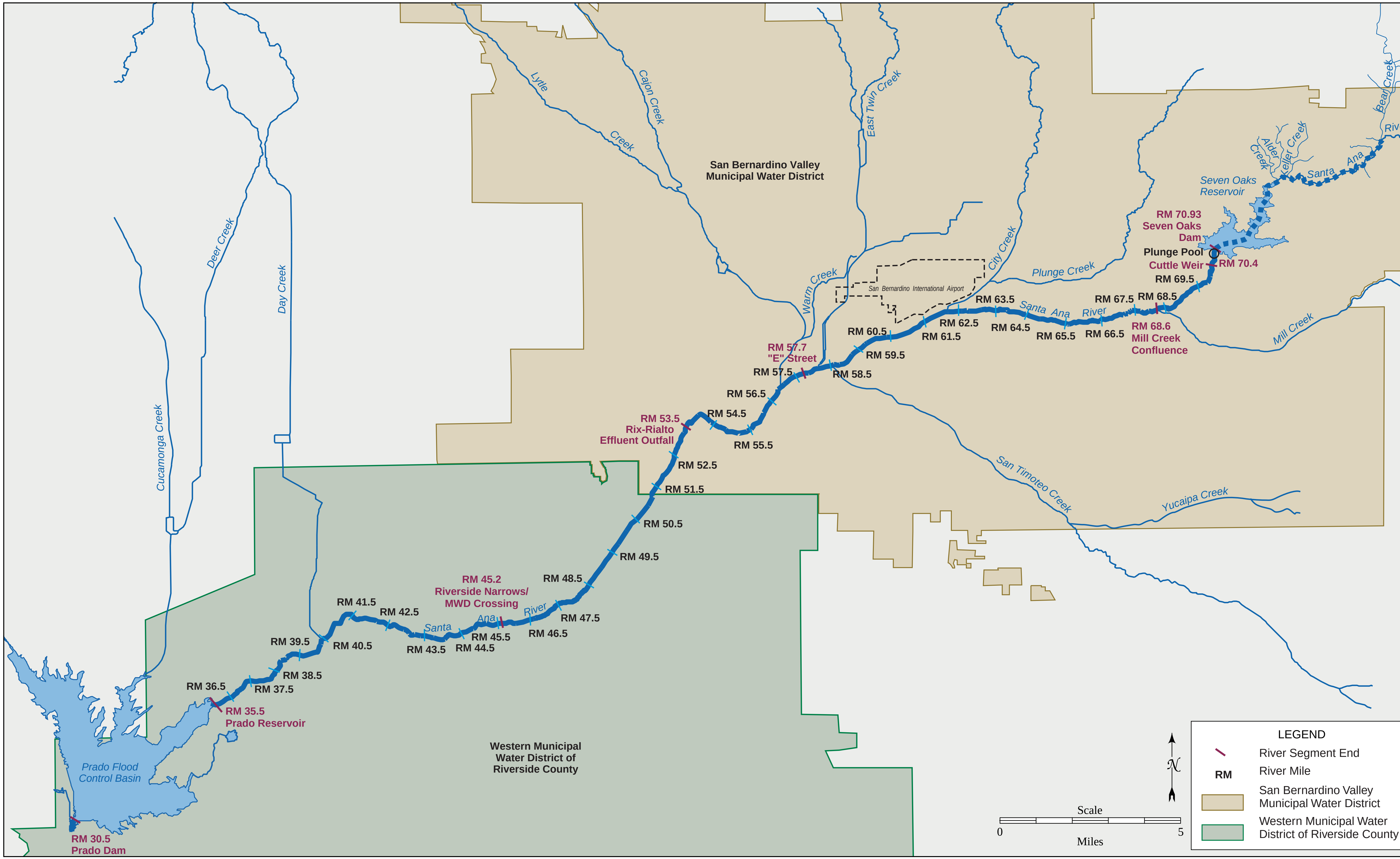

Figure 7. Santa Ana River, Tributaries, by River Mile between Seven Oaks Dam and Prado Flood Control Basin

6.2 Bypass Flows Necessary to Create Hydraulic Connectivity between Cuttle Weir and Mill Creek

As a first step it must be determined how much flow is necessary to create hydraulic connectivity to the location of the next possible inflow of water, i.e., Mill Creek. Based on field observations it is known that the continuous 3 cfs released from Seven Oaks Dam, in accordance with the operational criteria for the Dam, does not reach Mill Creek. These field observations are confirmed by gage records and modeling. Based on modeling of existing diversions and conditions (No Project conditions), the median non-storm day flow from Cuttle Weir to Mill Creek is zero cfs. Over the 34-year record of available data used in the analysis, there were 6,506 of days when there was no surface flow in the channel, i.e., with zero flow between Cuttle Weir and Mill Creek. This constitutes 52 percent of all days in the 34-year period. As can be seen in **Figure 8**, the number of consecutive days with no flow has frequently exceeded 10 and has exceeded 301 days 9 times over a 34-year period, i.e., there have been 9 occurrences nearly a year in duration without flow in the channel. Because there is no flow in the SAR in the reach between the Cuttle Weir and Mill Creek on 52 percent of all days and often for more than a week at a time, the proposed bypass flow must be greater than channel losses to create hydraulic connectivity to Mill Creek (e.g., no other flows are available to supplement bypass flows or decrease losses[16]).

Table 2 shows stream flows remaining in the channel at locations progressively downstream from Cuttle Weir for a given release at Seven Oaks Dam. From Table 2 it is evident that a minimuim continuous flow rate of 5 cfs must pass Cuttle Weir to create hydraulic connectivity to the Mill Creek confluence (a distance of approximately 2 miles). For hydraulic connectivity to be achieved to "E" Street (a distance of approximately 13 miles) a minimum flow rate of 50 cfs must be bypassed. For hydraulic connectivity to the RIX-Rialto outfall (approximately 17 miles distant) minimum bypass flows would need to be approximately 65 cfs. **Table 3** shows river losses for different releases from the dam downstream to Mill Creek. Conclusions that can be drawn from the information presented in Tables 2 and 3 are that it would take approximately 5 cfs of bypass flow to create hydraulic connectivity to Mill Creek, at which point over 4 cfs or 90 percent of the bypassed flow would have been lost to infiltration.

6.2.1 Availability of Bypass Flow to Mill Creek

Having determined the flow rate needed to create hydraulic connectivity, it is necessary to determine the availability of such bypass flows. **Table 4** below considers the availability of a 5 cfs bypass flow under six different sets of conditions:

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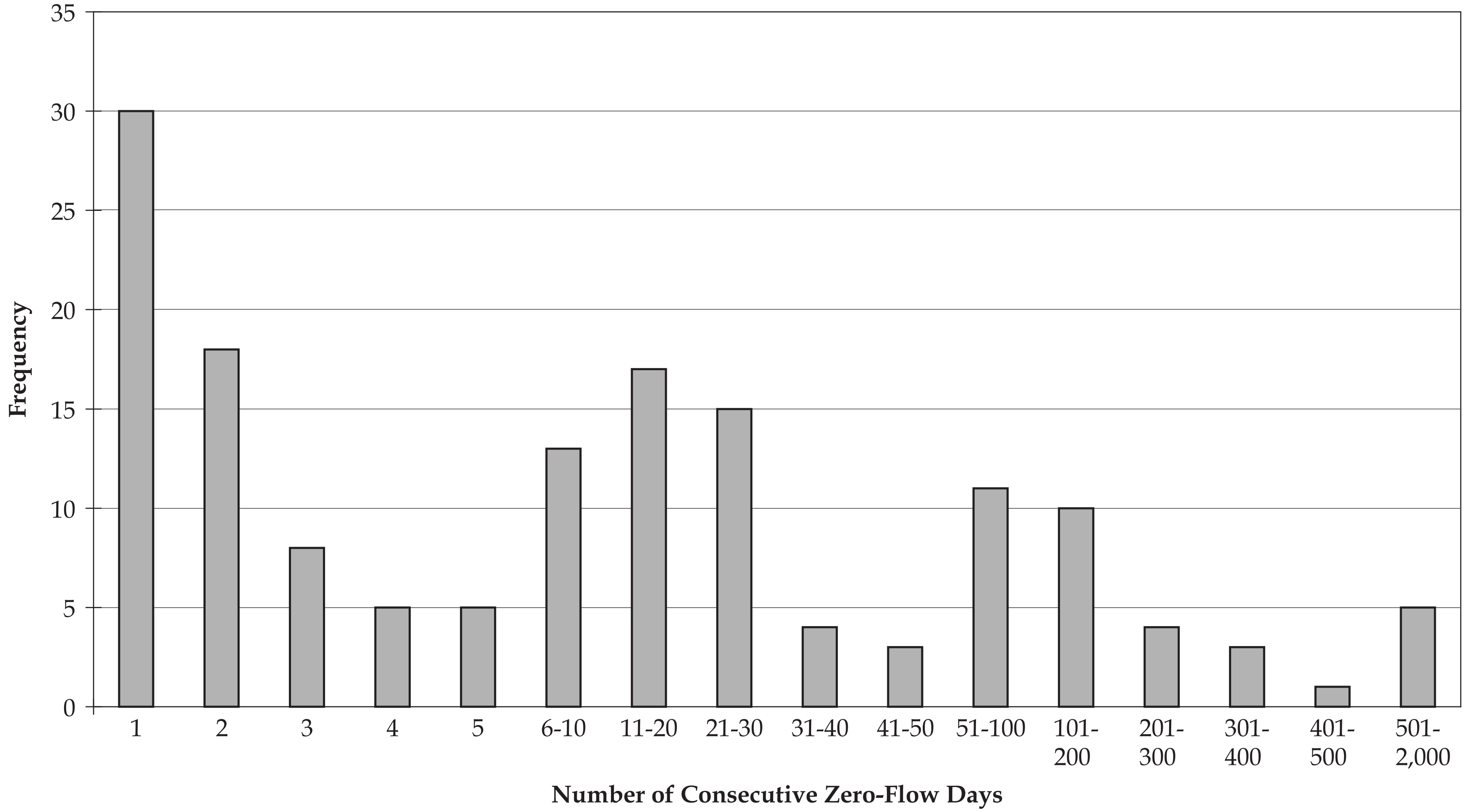
[16] Gage data used in the analysis would reflect any inflow from tributaries.



Based on the 34-year period from October 1, 1966 to September 30, 2000.

Figure 8. Frequency of Consecutive Zero-Flow Days in the Santa Ana River below Cuttle Wier Under Existing Conditions

Table 2. Surface Flow Remaining in the Santa Ana River Downstream of Cuttle Weir under Different Dam Release Rates

River Mile	*Distance Downstream of Seven Oaks Dam*	Release from Seven Oaks Dam (cfs)									
		5	*10*	*20*	*30*	*40*	*50*	*55*	*60*	*65*	*70*
68.6 (Mill Creek Confluence)	2.3	0.5	4.3	12.7	21.8	31.1	40.3	44.9	49.5	54.1	58.8
67.0	3.9	-	0.6	7.8	16.0	24.7	33.4	37.6	42.0	46.4	50.9
66.0	4.9	-	-	5.4	13.0	21.1	29.5	33.3	37.5	41.8	46.1
65.0	5.9	-	-	3.1	10.1	17.9	26.1	29.8	33.9	38.0	42.1
64.0	6.9	-	-	0.8	7.2	14.7	22.4	25.9	29.8	33.9	37.8
63.0	7.9	-	-	-	4.5	11.1	18.4	21.7	25.5	29.4	33.2
62.0	8.9	-	-	-	2.4	8.6	15.5	18.6	22.3	26.1	29.7
61.0	9.9	-	-	-	0.7	6.0	12.3	15.3	18.7	22.2	25.3
60.0	10.9	-	-	-	-	3.5	9.3	11.9	15.0	18.3	21.3
59.0	11.9	-	-	-	-	1.3	6.5	8.9	11.8	14.8	17.6
57.7 ("E" Street)	13.2	-	-	-	-	-	1	1.8	4.0	6.3	8.6
57.0	13.9	-	-	-	-	-	-	1.4	3.5	5.7	7.9
56.0	14.9	-	-	-	-	-	-	-	1.4	3.6	5.7
55.0	15.9	-	-	-	-	-	-	-	0.1	2.1	4.1
54.0	16.9	-	-	-	-	-	-	-	-	0.9	2.9
53.5 RIX-Rialto Outfall	17.4	-	-	-	-	-	-	-	-	0.6	1.9

Notes:

Calculations in this table assume an infiltration rate per wetted area (ft^3/ft^2-day) of 2.0 from Seven Oaks Dam to "E" Street and 0.2 from "E" Street to the RIX-Rialto Outfall.

This table assumes tributary inflow is negligible, that bypass flows released from Seven Oaks Dam are the only source of flow available to create hydraulic connectivity.

Seven Oaks Dam is located at River Mile 70.93.

Table 3. River Losses for Different Flow Rates, Seven Oaks Dam to Mill Creek

	Release from Seven Oaks Dam (cfs)									
	5	***10***	***20***	***30***	***40***	***50***	***55***	***60***	***65***	***70***
Wetted Area (ft^2)	194,000	246,000	315,000	354,000	384,000	419,000	436,000	454,000	471,000	484,000
Losses (cfs) to the channel	4.5	5.7	7.3	8.2	8.9	9.7	10.1	10.5	10.9	11.2
Percent Loss	90	57	36.5	27.3	22.2	19.4	18.4	17.5	16.8	16
Flow remaining at Mill Creek (cfs)	0.5	4.3	12.7	21.8	31.1	40.3	44.9	49.5	54.1	58.8
Percent Remaining	10	43	63.5	72.7	77.8	80.6	81.6	82.5	83.5	84

Notes:

Assumed infiltration rate from Seven Oaks Dam to Mill Creek is 2.0 ft^3/ft^2-day.

Table 4. Availability of Water Necessary to Create Bypass Flows to Mill Creek

	Existing Condition	Existing Condition with Seasonal Storage	Licensed Diversions Only	Licensed Diversions with Seasonal Storage	Unimpaired Flow	Unimpaired Flow with Seasonal Storage
All Days						
Days 5 cfs unavailable	11,297	10,129	9,981	8,845	1,799	1,681
Percent	*79.3*	*71.1*	*70.1*	*62.1*	*12.6*	*11.8*
Days 5 cfs or more available	2,948	4,116	4,264	5,400	12,446	12,564
Percent	*20.7*	*28.9*	*29.9*	*37.9*	*87.4*	*88.2*
Non-Storm Days						
Days 5 cfs unavailable	8,216	7,307	7,174	6,178	1,312	1,323
Percent	*83.2*	*74.0*	*72.6*	*62.5*	*13.3*	*13.4*
Days 5 cfs or more available	1,662	2,571	2,704	3,700	8,566	8,555
Percent	*16.8*	*26.0*	*27.4*	*37.5*	*86.7*	*86.6*

Notes:

14,245 days in 34-year base period
9,878 non-storm days in 34-year base period

- Existing Conditions. The existing historical diversions by upstream diverters (such as the senior water rights claimants[17] and San Bernardino Valley Water Conservation District) and the existing operations at Big Bear Lake and Seven Oaks Dam. This assumes no diversions by the Project.

- Existing Conditions with Seasonal Storage. Under this set of assumptions, existing historical diversions would occur and Big Bear Lake would operate per existing operations policy. However, Seven Oaks Dam would be operated in a manner that allowed seasonal storage, up to 50,000 af, from March through September. The seasonal storage pool would be operated in a manner to maximize the availability of bypass flows. Water would only be released from the seasonal storage pool: (1) for bypass flows; (2) if reservoir storage was going to exceed target storage; and (3) to insure the seasonal storage pool is drained by the end of September, which is required by the U.S. Army Corps of Engineers for flood safety reasons. This set of conditions assumes no diversions by the Project.

- Licensed Diversions Only. There is a recognized controversy over whether or not some diversions by the San Bernardino Valley Water Conservation District are authorized. As such, this analysis has examined the availability of bypass flows assuming diversions by the Conservation District are limited to their currently licensed right and season. This scenario assumes no diversions by the Project.

- Licensed Diversions with Seasonal Storage. Senior water right claimants take their historic diversions, diversions by the Conservation District are limited to their currently licensed right and season and there are no diversions by the Project. However, Seven Oaks Dam would be operated in a manner that allowed seasonal storage, up to 50,000 af, from March through September.

- Unimpaired Flow. The condition assuming a discontinuation of diversions by senior water right claimants and the San Bernardino Valley Water Conservation District. No diversions by the Project would occur.

- Unimpaired Flow with Seasonal Storage. The condition assuming a discontinuation of diversions by senior water right claimants and the San Bernardino Valley Water Conservation District and no diversions by the Project. However, Seven Oaks Dam would be operated in a manner that allowed seasonal storage, up to 50,000 af, from March through September.

The availability of necessary flows has been evaluated for all days in the period of analysis and separately for non-storm days[18]. Three of scenarios, or sets of conditions, include seasonal

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[17] The senior water right claimants are a group of purveyors who claim pre-1914 rights on the Santa Ana River. They are Bear Valley Mutual Water Company, Lugonia Water Company (and shareholders including City of Redlands), North Fork Water Company (and shareholders including East Valley Water District), and Redlands Water Company.

[18] Non-storm days are days where flow is not directly attributable to runoff events. Storm and non-storm days are defined by the Santa Ana River Watermaster each year based on rainfall and flow in the Santa Ana River channel at Riverside Narrows.

storage. The purpose of analyzing scenarios that include seasonal storage is to determine if it would be possible to operate or re-operate Seven Oaks Dam in a manner that could increase the availability of bypass flows and so benefit public trust resources located downstream of Seven Oaks Dam.

Under existing conditions, bypass flow necessary to maintain hydraulic connectivity to Mill Creek would only be available about 21 percent of the time; on non-storm days bypass flows of this magnitude could be provided only about 17 percent of days. Under existing conditions, on the majority of days, particularly non-storm days, it would not be possible to provide bypass flows of sufficient magnitude to reach Mill Creek. Operating Seven Oaks Dam to include seasonal storage increases the availability of the 5 cfs bypass flow somewhat. Assuming existing conditions, but operating Seven Oaks Dam with seasonal storage for bypass flows, 5 cfs would be available 29 percent of all days and 26 percent of non-storm days.

If all existing diversions were halted the ability to provide bypass flows would improve: water would be available on about 87 percent of all days and non-storm days. However, even in the absence of any diversions, it would not be possible to provide a bypass flow of 5 cfs on approximately 13 percent of days. Assuming the most optimal conditions for bypass flows, Unimpaired Flow with Seasonal Storage, a 5 cfs bypass flow would be available more than 88 percent of all days and 86 percent of non-storm days.

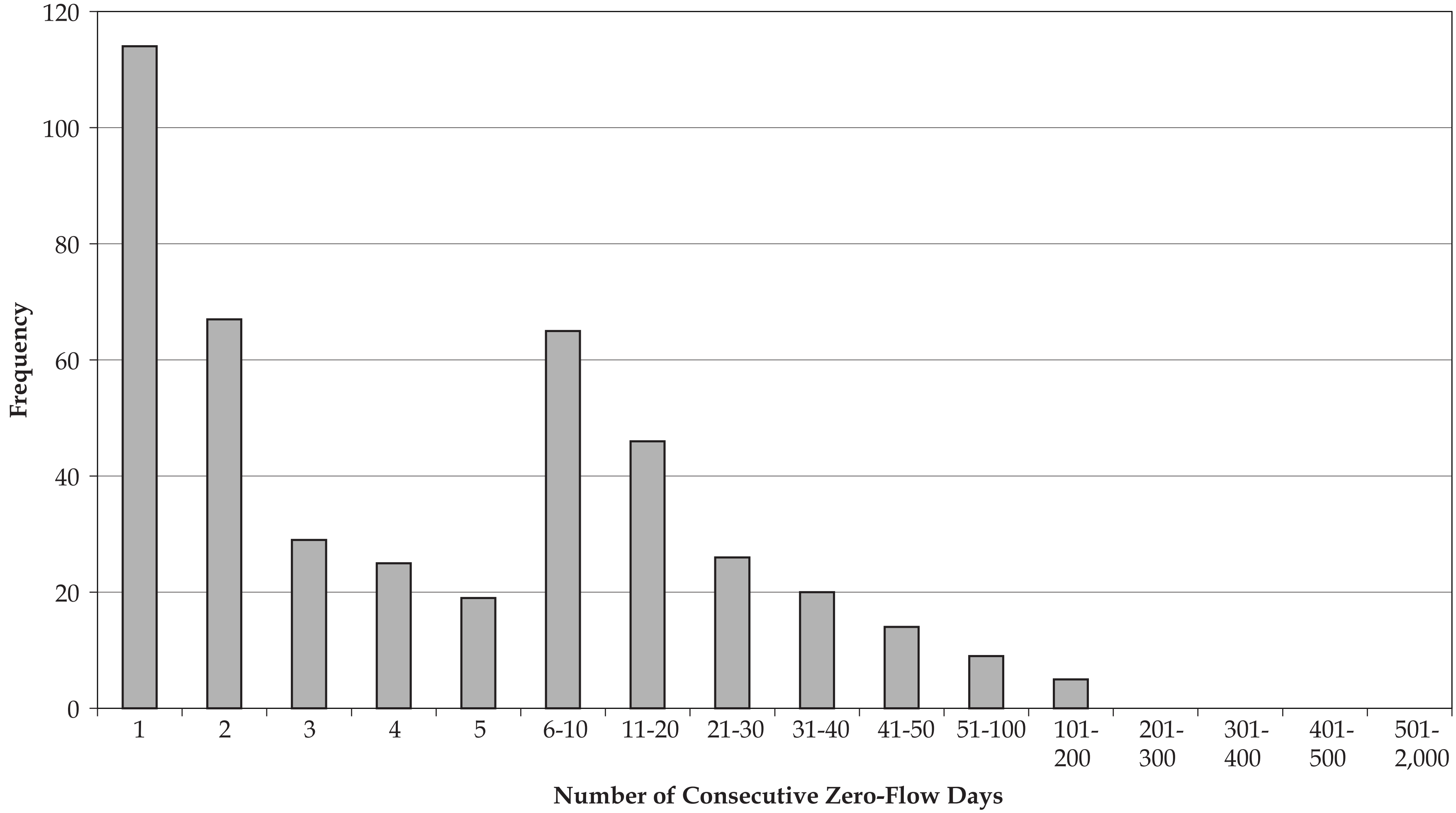
6.3 Bypass Flows Necessary to Create Hydraulic Connectivity between Cuttle Weir and "E" Street

An assessment of bypass flow necessary to create hydraulic connectivity from Cuttle Weir to "E" Street and the confluence of San Timoteo Creek (see Figure 7) was undertaken for the following reasons:

- Providing hydraulic connectivity only as far as Mill Creek has little biological benefit as described in section 6.5.1.

- Providing flows to the confluence of San Timoteo, which is roughly at "E" Street could have some biological benefits as there is existing riparian habitat in this area. See also section 6.5.2

Gage records and modeling for the Project demonstrate that below Mill Creek the Santa Ana River is typically dry. Assuming a continuation of historical diversions and other existing conditions, the median non-storm day flow between Mill Creek and "E" Street is zero cfs. Over the 33-year period used in the model, there are 4,860 days with zero flow between Mill Creek and "E" Street. As can be seen in **Figure 9**, the number of consecutive days



Based on the 34-year period from October 1, 1966 to September 30, 2000.

Figure 9. Frequency of Consecutive Zero-Flow Days in the Santa Ana River below "E" Street Under Existing Conditions

where there was no flow below "E" Street frequently exceeds 10 and has exceeded 101 days 5 times over a 33-year period, i.e., there have been 5 occurrences of time periods 101 days or longer without flow in the channel between Mill Creek and "E" Street. Because there is no flow in the SAR in the reach between Mill Creek and "E" Street on approximately 40 percent of all days and often for more than a week at a time the proposed bypass flow in and of itself must be sufficient to overcome stream losses (primarily infiltration) and create hydraulic connectivity to "E" Street (e.g., no other flows are available to supplement bypass flows or decrease losses).

Table 2 shows stream flows remaining in the channel at locations progressively downstream from Cuttle Weir for a given release at Seven Oaks Dam. **Table 5** shows river losses for different releases from the dam downstream to "E" Street. Conclusions that can be drawn from the information presented in Tables 2 and 5 are that it would take a minimum of approximately 50 cfs of bypass flow to create hydraulic connectivity to "E" Street, at which point 98 percent of the bypassed flow would have been lost to infiltration.

6.3.1 Availability of Bypass Flow to "E" Street

Table 6 presents information regarding the availability of water that would be required to create a 50 cfs the bypass flow to "E" Street. The information demonstrates that under existing conditions water necessary to maintain surface flow to "E" Street would only be available about 10 percent of the time. On low flow days (non-storm days), the frequency at which bypass flows could be provided is only about 4 percent. Under existing conditions, on the majority of days, particularly non-storm days, it would not be possible to provide sufficiently large bypass flows to maintain hydraulic connectivity to "E" Street. Assuming existing conditions, but operating Seven Oaks Dam with seasonal storage for bypass flows, 50 cfs would be available 18 percent of all days and 12 percent of non-storm days.

If existing diversions were suspended, the ability to provide bypass flows would improve. Water would be available on more than 44 percent of all days, and approximately 33 percent of non-storm days. However, even in the absence of any diversions, it would not be possible to provide necessary bypass flows of 50 cfs on approximately 55 percent of days. Assuming the most optimal conditions for bypass flows, Unimpaired Flow with Seasonal Storage, a 50 cfs bypass flow would be available approximately 66 percent of all days and 61 percent of non-storm days.

Table 5. River Losses for Different Flow Rates, Seven Oaks Dam to "E" Street

	Release from Seven Oaks Dam (cfs)									
	5	***10***	***20***	***30***	***40***	***50***	***55***	***60***	***65***	***70***
Wetted Area (ft^2)	216,000	432,000	864,000	1,296,000	1,728,000	2,117,000	2,298,00	2,419,000	2,536,000	2,652,000
Losses (cfs) to the channel	5	10	20	30	40	49	53.2	56	58.7	61.4
Percent Loss	*100*	*100*	*100*	*100*	*100*	*98*	*96.7*	*93.3*	*90.3*	*87.7*
Flow remaining at "E" Street (cfs)	0	0	0	0	0	1	1.8	4	6.3	8.6
Percent Remaining	*0*	*0*	*0*	*0*	*0*	*2*	*3.3*	*6.7*	*9.7*	*12.3*

Notes:

Assumed infiltration rate from Seven Oaks Dam to "E" Street is 2.0 ft^3/ft^2-day.

Table 6. Availability of Water Necessary to Create Bypass Flows to "E" Street

	Existing Condition	Existing Condition with Seasonal Storage	Licensed Diversions Only	Licensed Diversions with Seasonal Storage	Unimpaired Flow	Unimpaired Flow with Seasonal Storage
<u>All Days</u>						
Days 50 cfs unavailable	12,833	11,678	12,276	10,854	7,948	4,778
Percent	*90.1*	*82.0*	*86.2*	*76.2*	*55.8*	*33.5*
Days 50 cfs or more available	1,412	2,567	1,969	3,391	6,297	9,467
Percent	*9.9*	*18.0*	*13.8*	*23.8*	*44.2*	*66.5*
<u>Non-Storm Days</u>						
Days 50 cfs unavailable	9,535	8,669	9,314	8,047	6,622	3,808
Percent	*96.5*	*87.8*	*94.3*	*81.5*	*67.0*	*38.6*
Days 50 cfs or more available	343	1,209	564	1,831	3,256	6,070
Percent	*3.5*	*12.2*	*5.7*	*18.5*	*33.0*	*61.4*

Notes:

14,245 days in 34-year base period
9,878 non-storm days in 34-year base period

6.4 Bypass Flows Necessary to Create Hydraulic Connectivity between Cuttle Weir and the RIX-Rialto Outfall

Creating hydraulic connectivity from Cuttle Weir to the RIX-Rialto Outfall (see Figure 7) could have benefits to biological resources between "E" Street and the RIX-Rialto Outfall. See section 6.5.3.

Gage records and modeling for the Project demonstrate that downstream of "E" Street the Santa Ana River is typically dry. Assuming a continuation of historical diversions and other existing conditions, the median non-storm day flow between "E" Street and the RIX-Rialto Outfall is zero cfs. Over the 34-year period used in this analysis, there are 4,753 days with zero flow from "E" Street to the RIX-Rialto Outfall. Because there is no flow in the SAR in the reach between "E" Street and the RIX-Rialto Effluent Outfall on 38 percent of all days it is reasonable to assume that the proposed bypass flow in and of itself must be sufficient to overcome stream losses (primarily infiltration) and create hydraulic connectivity to the RIX-Rialto Outfall (e.g., no other flows are available to supplement bypass flows or decrease losses).

Table 2 shows stream flows remaining in the channel at locations progressively downstream from Cuttle Weir for a given bypass flow at Cuttle Weir. **Table 7** shows river losses for different releases from the dam downstream to the RIX-Rialto Outfall. Conclusions that can be drawn from the information presented in Tables 2 and 7 are that it would take a minimum of approximately 65 cfs of bypass flow to create hydraulic connectivity to the RIX-Rialto Outfall, at which point 99 percent of the bypassed flow would have been lost to infiltration.

6.4.1 Availability of Bypass Flow to RIX-Rialto Outfall

Table 8 presents information describing the availability of flows of 65 cfs, the bypass flow required to maintain hydraulic connectivity to the RIX-Rialto Outfall.

The information presented in Table 8 demonstrates that under existing conditions water necessary to maintain surface flow to the RIX-Rialto Outfall would only be available about 9 percent of the time. On low flow days (non-storm days) the frequency with which bypass flows could be provided is only about 2 percent. Under existing conditions, on the majority of days, particularly non-storm days, it would not be possible to provide sufficiently large bypass flows to maintain hydraulic connectivity the RIX-Rialto Outfall. Assuming existing conditions, but operating Seven Oaks Dam with seasonal storage for bypass flows, 65 cfs would be available 16 percent of all days and 10 percent of non-storm days. If existing diversions were suspended (the unimpaired flow condition) the ability to provide bypass flows would improve, water would be available on approximately 29 percent of all days, and approximately 17 percent of non-storm days. However, even without any diversions, on approximately 71 percent of days it would not be possible to provide a bypass flow of 65 cfs. Assuming the most optimal conditions for bypass flows, Unimpaired Flow with Seasonal Storage, a 65 cfs bypass flow would be available approximately 54 percent of all days and 48 percent of non-storm days.

6.5 Biological Benefits Resulting from Bypass Flows

In order to evaluate whether the release of bypass flows could benefit public trust resources located downstream of Seven Oaks Dam, Muni/Western considered the available scientific literature and developed an inventory of such resources. Enclosed as Attachment 4 is a table that shows, by reach of the Santa Ana River, the presence or absence of biological resources. Enclosed as Attachment 5 is a further table that describes the manner in which the Project could have an effect on such biological resources. These tables were used as background information to determine whether the release of bypass flows from Seven Oaks Dam could substantially lessen the impacts of the Project on biological resources.

6.5.1 Benefits of Bypass Flows to Mill Creek

Wetland Habitat, Riparian Vegetation, and Migratory Bird Habitat

*A*s described earlier, this portion of the river is typically dry for extended periods of time. Under current conditions, the main channel of this river segment supports sparse if any riparian vegetation. Some narrow, linear patches of tamarisk (Tamarix spp., an invasive non-native) and mulefat (Baccharis salicifolia) are present. Providing perennial flow in this portion of the river would likely result in a narrow band of riparian vegetation along the perennial flow channel. Both native and non-native species would be expected, and the non-native tamarisk and giant cane (Arundo donax) would likely proliferate under these conditions. This vegetation would be removed periodically by high flows when stormwater is released from Seven Oaks Dam, resulting in a riparian corridor that remains in early successional stages. This type of riparian habitat can be used briefly by migrating birds, but would not provide nesting habitat.

Locations along the Santa Ana River that are hydrologically "losing" reaches (such as all of the areas below Seven Oaks Dam) are characterized by wide alluvial cross sections over deep alluvium. Without access to groundwater in these losing reaches during the hot months of the growing season, riparian vegetation is dependent upon the narrow saturation zone immediately adjacent to the active channel (i.e., the "vadose zone"). Based on the principles of three-dimensional flow derived from Darcy's Law[19] the zone of saturation extends at most only a few feet away from the channel and only to a depth of about three feet. Greater flow releases from Seven Oaks Dam would not significantly increase the size of the saturated zone adjacent channel, or the lateral extent of riparian vegetation. Groundwater hydrology expert, Dr. Gary Guymon (Professor Emeritus, University of California, Irvine), who has written a textbook on vadose zones[20] discusses lateral transmissivity of water. His research on nearby Mill Creek

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[19] See Freeze R.A. and J.A. Cherry. 1979. Groundwater. Prentice-Hall, Inc., Englewood Cliffs, NJ, pages 34-35.
[20] Guymon, G.L. 1994. Unsaturated Zone Hydrology. Prentice Hall, Inc., Englewood Cliffs, NJ.

Table 7. River Losses for Different Flow Rates, Seven Oaks Dam to RIX-Rialto Outfall

	Release from Seven Oaks Dam (cfs)									
	5	*10*	*20*	*30*	*40*	*50*	*55*	*60*	*65*	*70*
Wetted Area (ft^2)	216,000	432,000	864,000	1,296,000	1,728,000	2,549,000	3,076,000	4,147,000	4,826,000	5,546,000
Losses (cfs) to the channel	5	10	20	30	40	50	55	60	64	68.1
Percent Loss	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*99*	*97.3*
Flow remaining at Rix-Rialto Outfall (cfs)	0	0	0	0	0	0	0	0	0.6	1.9
Percent Remaining	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*2.7*

Notes:

Assumed infiltration rate from Seven Oaks Dam to "E" Street is 2.0 ft^3/ft^2-day. Infiltratin rate from "E" Street to RIX-Rialto Outfall assumed to be 0.2 ft^3/ft^2-day.

Table 8. Availability of Water Necessary to Create Bypass Flows to RIX-Rialto Outfall

	Existing Condition	Existing Condition with Seasonal Storage	Licensed Diversions Only	Licensed Diversions with Seasonal Storage	Unimpaired Flow	Unimpaired Flow with Seasonal Storage
<u>All Days</u>						
Days 65 cfs unavailable	12,990	11,954	12,569	11,193	10,107	6,481
Percent	*91.2*	*83.9*	*88.2*	*78.6*	*71.0*	*45.5*
Days 65 cfs or more available	1,255	2,291	1,676	3,052	4,138	7,764
Percent	*8.8*	*16.1*	*11.8*	*21.4*	*29.0*	*54.5*
<u>Non-Storm Days</u>						
Days 65 cfs unavailable	9,638	8,904	9,500	8,335	8,203	5,119
Percent	*97.6*	*90.1*	*96.2*	*84.4*	*83.0*	*51.8*
Days 65 cfs or more available	240	974	378	1,543	1,675	4,759
Percent	*2.4*	*9.9*	*3.8*	*15.6*	*17.0*	*48.2*

Notes:

14,245 days in 34-year base period
9,878 non-storm days in 34-year base period

indicates that under hydrologically losing conditions, the expected near-stream zone of saturation should be on the order of a foot or less lateral to the wetted channel, based on the expected ratio of horizontal to vertical "hydraulic conductivity" of 1:1 in an alluvial system similar to the Santa Ana River[21].

Thus, any benefit to riparian vegetation and migratory bird habitat from additional, but intermittent flows is uncertain. Given the extensive and frequent dry periods shown in Figure 8, any riparian vegetation that became established during the wet season would not be able to produce the type of large or dense riparian vegetation needed by migratory birds in spring or summer for nesting, and would also make it likely that any vegetation established in the wet period would die before the fall migration.

To the extent that any riparian vegetation is able to become established in a single year, it is highly likely that such vegetation would not be able to survive over multiple years in light of the recurrence of flooding in the Santa Ana River channel. The return interval of channel changes has not been determined in detail for the Santa Ana River, but winter flooding has occurred every few years between periods of drought. For example, significant floods occurred in 1992, 1994, 1998, and 2004, based on the observations of SCE hydropower staff[22]. It is also known that catastrophic floods have occurred within the reach of the Santa Ana River above Seven Oaks Dam approximately once every 10 years since 1811[23].

Recent observations provide insight into the cycle of periodic flooding and riparian vegetation dynamics. There are three cienegas located on the Santa Ana River upstream of Seven Oaks Dam (Warm Springs Canyon, Alder Creek, and Crystal Creek). The dominant vegetation communities within the cienegas are white alder and cottonwood-sycamore forest. Although dense stands of white alder have bordered the Santa Ana River upstream of Seven Oaks Dam as recently as 1993, most of the riparian community along this reach of the river was scoured away during the large flood event of 1993-1994. The riparian community was again damaged or completely eliminated in some locations this past winter due to the intense precipitation and flooding in the southern California region (i.e., 2004-2005). It seems likely that any riparian vegetation that might be able to develop based on bypass flows would be destroyed by periodic flooding in the same fashion as the area immediately below Seven Oaks Dam was scoured by flood flows this past winter.

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[21] Guymon, G.L. 2001. Memorandum on Mill Creek groundwater hydrology to E.Read of Psomas, dated April 18, 2001.

[22] J. Irwin, SCE, pers. comm., February 28, 2005.

[23] Leidy and Spranza 2001 states: "One hydrology report prepared in 1946 reviewed hydrologic records and historical accounts extending as far back as 1811 and found that major floods occurred in the region in 1811, 1815, 1822, 1825, 1833, 1842, 1850, 1859, 1862, 1867, 1874, 1876, 1884, 1886, 1888, 1890, 1891, 1893, 1894, 1900, 1903, 1905, 1906, 1907, 1909, 1910, 1911, 1914, 1915, 1916, 1918, 1920, 1921, 1922, 1926, 1927, 1931, 1932, 1934, 1937, 1938, 1939, 1940, 1941, and 1943 (U.S. Engineer Office 1946). Of these floods 11 where catastrophic in magnitude. These large floods occurred in 1825, 1842, 1862, 1867, 1884, 1889, 1891, 1910, 1916, 1927, and 1938, or about once every ten years on average (i.e., the one-in-ten year flood event). The largest flood in the written history of California occurred during the winter of 1861-62, when the Santa Ana River swelled to more than triple the highest estimated discharge in this century (Engstrom 1996). The probable maximum peak discharge at Mentone from this flood has been estimated to be 130,000 cubic feet per second (cfs)."

Native Fishes

There are no isolated pools of standing water to provide refugia for fish during periods of intermittent flow, and the reach, due to stream incision, does not provide suitable physical habitat to sustain all life stages of the Santa Ana sucker or other native fishes. The low flow channel in the river bed from Cuttle Weir to Mill Creek has a very porous substrate of sand, gravel, cobbles, and boulders that allows rapid infiltration of water. Boulders and cobbles dominate the substrate size classes, and the gradient averages 2.9 percent (2.5 percent to Greenspot Road and 3.1 percent from there to Mill Creek). If bypass flows of 5 cfs were released from Seven Oaks Dam to keep flow (1 cfs) in the river to Mill Creek, physical habitat suitable for sustaining a population of Santa Ana sucker would not likely be present due to shallow water depths, absence of spawning habitat, absence of juvenile rearing habitat, lack of riparian cover, and high water temperatures during the summer through fall.

If higher bypass flows (i.e., 50-65 cfs) were released to maintain flow to “E” Street or the RIX-Rialto outfall, more water would be present that could potentially provide suitable water depths and water temperatures, but such flows would still not create suitable spawning habitat or juvenile rearing habitat for the Santa Ana sucker and other native fishes. Higher flows (e.g., flood flow releases from Seven Oaks Dam up to 7,000 cfs) in this reach will increase water velocities above that preferred by the different life stages of native fishes.

Additional, but intermittent flows, in this river segment would provide no sustained benefit to aquatic species that require water for their entire life cycle (e.g., fish). No pools of standing water exist in this river segment during the dry season due to the porous substrate in the channel that allow water to rapidly infiltrate. Without a constant supply of water this river segment would provide no perennial aquatic habitat.

6.5.2 Benefits of Bypass Flows to “E” Street

Wetland Habitat, Riparian Vegetation, and Migratory Bird Habitat

As described earlier, the SAR between Mill Creek and “E” Street is dry much of the year under existing conditions. Overall, little riparian vegetation occurs between Mill Creek and “E” Street. Just below the Mill Creek confluence, tamarisk is common but does not form a dense stand along the margin of the low flow channel. The river supports some riparian vegetation, dominated by willows (Salix spp.) with some cottonwoods (Populus sp.), from approximately 1.3 miles upstream of the confluence of San Timoteo Creek to “E” Street due to rising groundwater and surface water inflows and subsurface flows from San Timoteo Creek. Southwestern willow flycatchers (Empidonax traillі extimus) and least Bell’s vireos (Vireo bellii pusillus) are known to occur and nest between the San Timoteo Creek confluence and “E” Street[24]. Suitable habitat for both species is present in patches upstream from “E” Street for

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[24] US Army Corps of Engineers 2000.

about 4 miles and suitable habitat for arroyo toads (Bufo californicus) is present for about 2 miles[25].

Increasing the amount of water between Mill Creek and "E" Street to provide perennial flow would likely provide limited benefits to riparian vegetation, even at the downstream end of the segment where groundwater is already high. An increase in riparian woodland would provide more habitat for southwestern willow flycatchers and least Bell's vireos during migration and for nesting. Perennial water in the upper portion of this segment, however, could result in proliferation of non-native species such as giant cane and tamarisk along the channel. Perrenial flow and increased riparian vegetation may or may not increase the amount of suitable habitat for the arroyo toad. This species is not currently known to be present in this area[26]. Perennial water has the potential to support non-native aquatic predators such as crayfish (*Procambarus* spp.), bullfrogs (*Rana catesbeiana*), and green sunfish (*Lepomis cyanellus*) that could increase the threats to arroyo toads.

As noted above in the context of the reach from the Cuttle Weir to Mill Creek, the benefit to riparian vegetation and migratory bird habitat from additional, but intermittent flows is uncertain due to the loss of water from the vadose zone. Given the extensive and frequent dry periods shown in Figure 8, any riparian vegetation that became established during the wet season would not be able to produce the type of large or dense riparian vegetation needed by migratory birds in spring or summer for nesting, and would also make it likely that any vegetation established in the wet period would die before the fall migration. Because shallow groundwater occurs at "E" Street, increasing percolation may incidentally lead to an increased area of shallow groundwater and allow riparian habitat in the vicinity of "E" Street to expand, thereby providing some small additional area of habitat for migratory birds. However, again as noted above, winter flooding may limit the extent and duration of any benefits from bypass flows.

Native Fishes

The wetted area of the Santa Ana River at the confluence with San Timoteo Creek is isolated by dry river bed upstream and downstream under existing conditions. Santa Ana suckers found downstream near the RIX-Railto outfall cannot reach this location even if perennial flows were provided because of the water velocity dissipation barriers found downstream of E Street. Consequently, this location does not currently support a population of Santa Ana sucker, but it does support the Santa Ana speckled dace[27].

A flow release from Seven Oaks Dam of 50 cfs would be needed to create flow in this reach. Such flows have the potential to provide suitable physical habitat for the Santa Ana sucker and other native fishes, but the actual amount of habitat would depend on the spatial distribution of

[25] US Army Corps of Engineers 2000.

[26] US Army Corps of Engineers 2000.

[27] Swift, C. C. T*he Santa Ana sucker in the Santa Ana River: distribution, relative abundance, spawning areas, and impact of exotic predators. Final Report.* Submitted by Larry Munsey international to Santa Ana Water Project Authority (SAWPA). 2001.

suitable water velocities, water depths, substrates, and water temperatures for all life stages. In addition, intermittent flows in this river reach could support non-native aquatic species such as bullfrogs, crayfish, and a number of exotic fish species. These non-native species are documented to compete with the native species for space and food resources, and they may also prey upon native species. Because shallow groundwater exists at "E" Street, increasing percolation may incrementally expand the existing water surface area in the vicinity of "E" Street. This in turn could provide some increased habitat for the speckled dace but would not be expected to increase the suitability of this area for Santa Ana sucker due to its continued isolation from the downstream population of this species by energy dissipation structures in the river.

6.5.3 Benefits of Bypass Flows to RIX-Rialto Outfall

Wetland Habitat, Riparian Vegetation, and Migratory Bird Habitat

From "E" Street to the RIX-Rialto Outfall, riparian vegetation is essentially absent along the active river channel. This area does not provide habitat for southwestern willow flycatchers or least Bell's vireos, and has only one small area of habitat suitable for the arroyo toad[28]. Bypass releases from Seven Oaks Dam to the RIX-Rialto Outfall would result in low flows through this reach. A small amount of riparian vegetation could develop along the margins of the perennial flow channel, but the amount would probably not be large and thus would not provide suitable habitat for nesting birds.

As was the case in upstream river segments, the benefit from additional, but intermittent flows is uncertain due to the loss of water from the vadose zone. Given the extensive and frequent dry periods shown in Figure 9, any riparian vegetation that became established during the wet season would not be able to produce the type of large or dense riparian vegetation needed by migratory birds in spring or summer for nesting, and would also make it likely that any vegetation established in the wet period would die before the fall migration. However, again as noted above, winter flooding may limit the extent and duration of any benefits from bypass flows.

Native Fishes

As described previously, the river reach from "E" Street to the RIX-Rialto Outfall is dry for much of the year. This 4.2-mile reach also contains barriers to upstream fish movement caused by energy dissipation structures and drop structures. Under existing conditions, this reach does not support a population of Santa Ana sucker or other native fishes due to lack of water for part of the year.

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[28] US Army Corps of Engineers 2000.

Releases from Seven Oaks Dam of 65 cfs are required to provide perennial minimum flows in this river segment. Flows of this magnitude would have the potential to provide physical habitat for the Santa Ana sucker and other native fishes. However, sustainable populations could not be supported because 65 cfs is not perennially available. When the river reach reverted from perennial to intermittent, any native fishes occupying this reach would perish. In addition, there is no connectivity to upstream river reaches with the potential to support Santa Ana suckers. Should native fishes become established upstream of the barriers they could not return upstream should they be passively washed downstream of the barriers during winter high flow events. The concern regarding non-native aquatic species described previously for the Mill Creek to "E" Street river reach would also apply between "E" Street and the RIX-Rialto Outfall.

Additional, but intermittent flows, in this river reach would provide no benefit to aquatic species that require water for their entire life cycle. No pools of standing water to potentially provide refugia exist in this river reach during the dry season due to the porous substrate in the channel that allows water to rapidly infiltrate.

6.6 Water Available to Applicant, With and Without Implementation of Bypass Flows

Estimates of water available for appropriation by Muni and Western assume that before water would be available to Muni/Western, pre-existing water rights would first have to be satisfied. Thus estimates of unappropriated water available to Muni/Western are influenced by:

- Diversions by senior water rights claimants;
- Diversions by the San Bernardino Valley Water Conservation District; and
- Environmental releases designed to accomplish habitat restoration as prescribed by the USFWS Biological Opinion (BO)[29] for flood control operations of Seven Oaks Dam; and

However, as described earlier, there is existing controversy over the authorized and future amounts of water associated with these pre-existing water rights.

Senior water right claimants' future diversions could vary from historical diversions up to 88 cfs. During the period Water Year 1961-62 to Water Year 1999-2000, average annual senior water right claimant diversions are estimated to have been approximately 26,619 afy. However, the senior water rights claimants assert pre-1914 water rights of more than this amount. In July 2004 Muni, Western, the City of Redlands, East Valley Water District, Bear Valley Mutual Water Company, Lugonia Water Company, North Fork Water Company, and the Redlands Water Company signed a settlement agreement known as the Seven Oaks Accord. In the Seven Oaks Accord, Muni/Western have agreed not to object to diversions by the senior claimants up to 88 cfs. Therefore in the future it is anticipated that the amount of water taken

[29] U.S. Fish and Wildlife Service. *Section Seven Consultation for Operations of Seven Oaks Dam, San Bernardino County, California (1-6-02-F-1000.10) (Biological Opinion)*. December 2002.

by the senior water rights claimants will vary between their historical amount and 88 cfs (or about 36,323 afy on average).

Future diversions by the San Bernardino Valley Water Conservation District could vary between their licensed right and their historical diversions. The Conservation District holds two licenses issued by the SWRCB to divert water from the SAR (Licenses 2831 and 2832). License 2831 grants the Conservation District the right to divert and spread 8,300 af of water annually during the period January 1 to May 31. License 2832 grants the Conservation District the right to divert and spread 2,100 af annually from October 1 to December 31. The total of the two licenses is 10,400 afy. But in addition to these licensed diversions the Conservation District also claims pre-1914 water rights and has diverted water in excess of 10,400 af in some years, e.g., from Water Year 1970-71 to 1999-2000 diversions averaged 14,896 af per year.

Environmental releases outlined in the BO could vary from zero (mitigation accomplished without water releases) up to 1,000 cfs for 2 days at 6-month intervals (when water is available). Environmental restoration activities designed to mitigate impacts from flood control operations of Seven Oaks Dam are proposed in the US Army Corps of Engineers 2000 Biological Assessment (BA) and USFWS 2002 BO. One of the methods suggested to accomplish habitat restoration is through periodic release of water from the dam. This water would be directed to specific habitat areas through the use of temporary dikes constructed across the main channel of the SAR, downstream of the confluence with Mill Creek[30]. Other mitigation methods proposed in the BA and BO do not use water releases from Seven Oaks Dam.

To account for the uncertainty of the future amounts of water associated with pre-existing water rights, estimates of unappropriated water available to the Project examined various combinations of potential future water right conditions. **Table 9** illustrates the amounts of water available to the Project assuming various potential combinations of future pre-existing water rights, without the implementation of bypass flows. **Table 10** presents information on how average annual water available to Muni/Western would be reduced by bypass flows of 5, 50 and 65 cfs. **Table 11** presents information on how median annual water available to

[30] The BA suggests (in Table 38 of the document) a magnitude for the habitat release of between 1,000 cfs and 2,000 cfs for a few days occurring every 5 to 10 years for 10-acre parcels. The BA also states that construction of the necessary SAR dikes and a dike to protect the Woolly Star Preserve area would take 3 to 5 months to prepare with additional time needed for habitat surveys prior to construction. This implies that habitat releases must be made at least 6 months apart. Modeling for the Project determined that to have an environmental habitat release every 5 to 10 years, the volume of water associated with the release would have to be 1,000 cfs for 2 days (4,000 af) or less, and Seven Oaks Dam would have to be operated to allow for temporary or seasonal storage. Based on these results, environmental habitat releases have been assumed to be 1,000 cfs for a duration of 2 days, with at least 6 months elapsed time between releases. Modeling for the Project and estimates of unappropriated water assume a habitat release is made only when: (1) there is a sufficient volume of water available above that needed for Conservation District diversions; (2) when reservoir elevation is great enough to sustain the specified release rate (1,000 cfs); and (3) when there has not been a release within the specified interval, i.e., the past 6 months.

Muni/Western would be affected by bypass flows. Finally, **Table 12** presents information on how maximum annual[31] water available to Muni/Western would be affected by bypass flows.

Table 10 demonstrates that bypass flows decrease annual average capture by as little as 4 percent for a 5 cfs flow, but as much as 35 percent for a 65 cfs bypass flow. Table 11 demonstrates that bypass flows would decrease median annual capture by 0 percent for a 5 cfs flow (under a diversion scenario where unappropriated water available to Muni/Western in a median year is zero), up to 100 percent for a 65 cfs bypass flow. Table 12 demonstrates that bypass flows would decrease maximum annual capture by less than 2 percent for a 5 cfs flow, up to 23 percent for a 65 cfs flow.

[31] The maximum year diversion was estimated to occur in water year 1969 when there was unusually high rates of runoff. It is during this unusual year that Muni/Western could capture nearly 200,000 af as requested in the water rights application. In the arid zones like Southern California, maximum flows and diversions are magnitudes different than averages, and need to be considered with the average. The Muni/Western application requests permission to divert the maximum year diversion to be adequate for the most extreme runoff year.

Table 9. Potential Amounts of Future Unappropriated Water Available to Muni/Western

Assumption about future senior water right claimant diversions	Up to 88 cfs	Historical	Historical
Assumption about future San Bernardino Valley Water Conservation District Diversions	Historical	Historical	Licensed Right
Assumption about future Environmental Habitat Releases	1,000 cfs for 2 days	1,000 cfs for 2 days	Other Habitat Treatment
Assumption about Seasonal Storage in Seven Oaks Reservoir	No	No	Yes
Estimate of Average Annual Unappropriated Water Available to Muni/Western (acre-feet)	11,432	20,704	27,042
Estimate of Median Annual Unappropriated Water Available to Muni/Western (acre-feet)	0	2,581	3,265
Estimate of Maximum Annual Unappropriated Water Available to Muni/Western (acre-feet)	121,026	171,389	198,317
Other	This combination of pre-existing water rights represents the minimum potential amount of water available for Muni/Western diversion. This scenario of pre-existing water rights is consistent with Project Scenario C analyzed in the *Santa Ana River Water Rights Applications for Supplemental Water Supply Draft EIR*.	This combination of pre-existing water rights represents the potential amount of water available for Muni/Western diversion if existing historical water diversions were to continue into the future. This scenario of pre-existing water rights is consistent with the No Project Scenario analyzed in the *Santa Ana River Water Rights Applications for Supplemental Water Supply Draft EIR*.	This combination of pre-existing water rights represents the maximum potential amount of water available for Muni/Western diversion. This scenario of pre-existing water rights is consistent with Project Scenario A analyzed in the *Santa Ana River Water Rights Applications for Supplemental Water Supply Draft EIR*.

Table 10. Change in Potential Amounts of Future Unappropriated Water Available to Muni/Western with Implementation of Bypass Flows (Average Annual)

Future senior water right claimant diversions	Up to 88 cfs	Historical	Historical
Future San Bernardino Valley Water Conservation District Diversions	Historical	Historical	Licensed Right
Future Environmental Habitat Releases	1,000 cfs for 2 days	1,000 cfs for 2 days	Other Habitat Treatment
Assumption about Seasonal Storage in Seven Oaks Reservoir	No	No	Yes
Estimate of Average Annual Unappropriated Water Available to Muni/Western (acre-feet)	11,432	20,704	27,042
Change in Average Annual Unappropriated Water Available with:			
5 cfs Bypass Flow	Decrease of 3.6%	Decrease of 4.2%	Decrease of 4.4%
50 cfs Bypass Flow	Decrease of 26.7%	Decrease of 29.3%	Decrease of 30.1%
65 cfs Bypass Flow	Decrease of 67.6%	Decrease of 50.3%	Decrease of 35.4%
Seasonal Storage Operated for 5 cfs Bypass Flow	NA (no seasonal storage)	NA (no seasonal storage)	Decrease of 5.3%
Seasonal Storage Operated for 50 cfs Bypass Flow	NA (no seasonal storage)	NA (no seasonal storage)	Decrease of 33.7
Seasonal Storage Operated for 65 cfs Bypass Flow	NA (no seasonal storage)	NA (no seasonal storage)	Decrease of 40.4
Other	This combination of pre-existing water rights represents the minimum potential amount of water available for Muni/Western diversion. This scenario of pre-existing water rights is consistent with Project Scenario C analyzed in the *Santa Ana River Water Rights Applications for Supplemental Water Supply Draft EIR*.	This combination of pre-existing water rights represents the potential amount of water available for Muni/Western diversion if existing historical water diversions were to continue into the future. This scenario of pre-existing water rights is consistent with the No Project Scenario analyzed in the *Santa Ana River Water Rights Applications for Supplemental Water Supply Draft EIR*.	This combination of pre-existing water rights represents the maximum potential amount of water available for Muni/Western diversion. This scenario of pre-existing water rights is consistent with Project Scenario A analyzed in the *Santa Ana River Water Rights Applications for Supplemental Water Supply Draft EIR*.

Table 11. Change in Potential Amounts of Future Unappropriated Water Available to Muni/Western with Implementation of Bypass Flows (Median Annual)

Future senior water right claimant diversions	Up to 88 cfs	Historical	Historical
Future San Bernardino Valley Water Conservation District Diversions	Historical	Historical	Licensed Right
Future Environmental Habitat Releases	1,000 cfs for 2 days	1,000 cfs for 2 days	Other Habitat Treatment
Assumption about Seasonal Storage in Seven Oaks Reservoir	No	No	Yes
Estimate of Median Annual Unappropriated Water Available to Muni/Western (acre-feet)	0	2,581	3,265
Change in Median Annual Unappropriated Water Available with:			
5 cfs Bypass Flow	Decrease of 0%	Decrease of 16.4%	Decrease of 30.4%
50 cfs Bypass Flow	Decrease of 0%	Decrease of 73.8%	Decrease of 100%
65 cfs Bypass Flow	Decrease of 0%	Decrease of 76.1%	Decrease of 100%
Seasonal Storage Operated for 5 cfs Bypass Flow	NA (no seasonal storage)	NA (no seasonal storage)	Decrease of 30.7%
Seasonal Storage Operated for 50 cfs Bypass Flow	NA (no seasonal storage)	NA (no seasonal storage)	Decrease of 100%
Seasonal Storage Operated for 65 cfs Bypass Flow	NA (no seasonal storage)	NA (no seasonal storage)	Decrease of 100%
Other	This combination of pre-existing water rights represents the minimum potential amount of water available for Muni/Western diversion. This scenario of pre-existing water rights is consistent with Project Scenario C analyzed in the *Santa Ana River Water Rights Applications for Supplemental Water Supply Draft EIR*.	This combination of pre-existing water rights represents the potential amount of water available for Muni/Western diversion if existing historical water diversions were to continue into the future. This scenario of pre-existing water rights is consistent with the No Project Scenario analyzed in the *Santa Ana River Water Rights Applications for Supplemental Water Supply Draft EIR*.	This combination of pre-existing water rights represents the maximum potential amount of water available for Muni/Western diversion. This scenario of pre-existing water rights is consistent with Project Scenario A analyzed in the *Santa Ana River Water Rights Applications for Supplemental Water Supply Draft EIR*.

Table 12. Change in Potential Amounts of Future Unappropriated Water Available to Muni/Western with Implementation of Bypass Flows (Maximum Annual)

Future senior water right claimant diversions	Up to 88 cfs	Historical	Historical
Future San Bernardino Valley Water Conservation District Diversions	Historical	Historical	Licensed Right
Future Environmental Habitat Releases	1,000 cfs for 2 days	1,000 cfs for 2 days	Other Habitat Treatment
Assumption about Seasonal Storage in Seven Oaks Reservoir	No	No	Yes
Estimate of Maximum Annual Unappropriated Water Available to Muni/Western (acre-feet)	121,026af	171,389 af	198,317 af
Change in Maximum Annual Unappropriated Water Available with:			
5 cfs Bypass Flow	Decrease of 1.8%	Decrease of 1.7%	Decrease of 1.4%
50 cfs Bypass Flow	Decrease of 18.0%	Decrease of 17.0%	Decrease of 14.3%
65 cfs Bypass Flow	Decrease of 23.2%	Decrease of 22.1%	Decrease of 18.5%
Seasonal Storage Operated for 5 cfs Bypass Flow	NA (no seasonal storage)	NA (no seasonal storage)	Decrease of 1.4%
Seasonal Storage Operated for 50 cfs Bypass Flow	NA (no seasonal storage)	NA (no seasonal storage)	Decrease of 14.3%
Seasonal Storage Operated for 65 cfs Bypass Flow	NA (no seasonal storage)	NA (no seasonal storage)	Decrease of 18.5%
Other	This combination of pre-existing water rights represents the minimum potential amount of water available for Muni/Western diversion. This scenario of pre-existing water rights is consistent with Project Scenario C analyzed in the *Santa Ana River Water Rights Applications for Supplemental Water Supply Draft EIR*.	This combination of pre-existing water rights represents the potential amount of water available for Muni/Western diversion if existing historical water diversions were to continue into the future. This scenario of pre-existing water rights is consistent with the No Project Scenario analyzed in the *Santa Ana River Water Rights Applications for Supplemental Water Supply Draft EIR*.	This combination of pre-existing water rights represents the maximum potential amount of water available for Muni/Western diversion. This scenario of pre-existing water rights is consistent with Project Scenario A analyzed in the *Santa Ana River Water Rights Applications for Supplemental Water Supply Draft EIR*.

6.7 Impacts of Bypass Flows on Liquefaction Hazard

There is a known relationship between flows in that portion of the Santa Ana River below Seven Oaks Dam upstream of "E" Street, groundwater recharge, and high groundwater conditions/liquefaction potential in the San Bernardino area which must be considered along with providing bypass flows.

Liquefaction is a form of seismically induced ground failure. Soil liquefaction is a major cause of damage during earthquakes. Major factors contributing to liquefaction include:

- Geotechnical properties of near-surface sediments;
- Topography
- Depth to groundwater (particularly groundwater less than 50 feet from ground surface) [32, 33] and;
- Intensity and duration of ground shaking.

The San Bernardino Basin Area (SBBA) is susceptible to all of these factors. The groundwater basin that underlies the SBBA (and the Santa Ana River) is composed of unconsolidated and partly consolidated, water-bearing deposits[34,35]. In the area between Warm Creek and the SAR, the upper confining member of this aquifer acts to restrict vertical flow, causing semi-confined conditions in the upper 50 to 100 feet of saturated materials. Historically, the area has suffered from perched, very shallow groundwater conditions, at times rising to ground surface level, which locally flooded buildings in the City of San Bernardino. Groundwater pumping since the early 1900s increased the minimum depth to groundwater in this area to 50 feet by the 1960s but, during the 1970s and 1980s, groundwater was locally within 10 feet of the ground surface beneath the City of San Bernardino[36,37]. As can be seen in **Figure 10**, the San Bernardino area is crisscrossed by a number of active faults. **Figure 11** illustrates the liquefaction potential in the SBBA.

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[32] Southern California Earthquake Center. Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California. 1999.

[33] California Division of Mines and Geology. *Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117*. 1997.

[34] California Division of Mines and Geology. *Geologic Hazards in Southwestern San Bernardino County, California, Special Report 113*. Prepared by Fife, D.L., Rodgers, D.A., Chase, G.W., Chapman, R.H. and Sprotte, E.C..

[35] Matti, J.C. and Carson, S.E. Liquefaction Susceptibility in the San Bernardino Valley and Vicinity, Southern California – A Regional Evaluation, U.S. Geological Survey Bulletin 1898. 1991.

[36] California Division of Mines and Geology.

[37] Matti and Carson 1991.

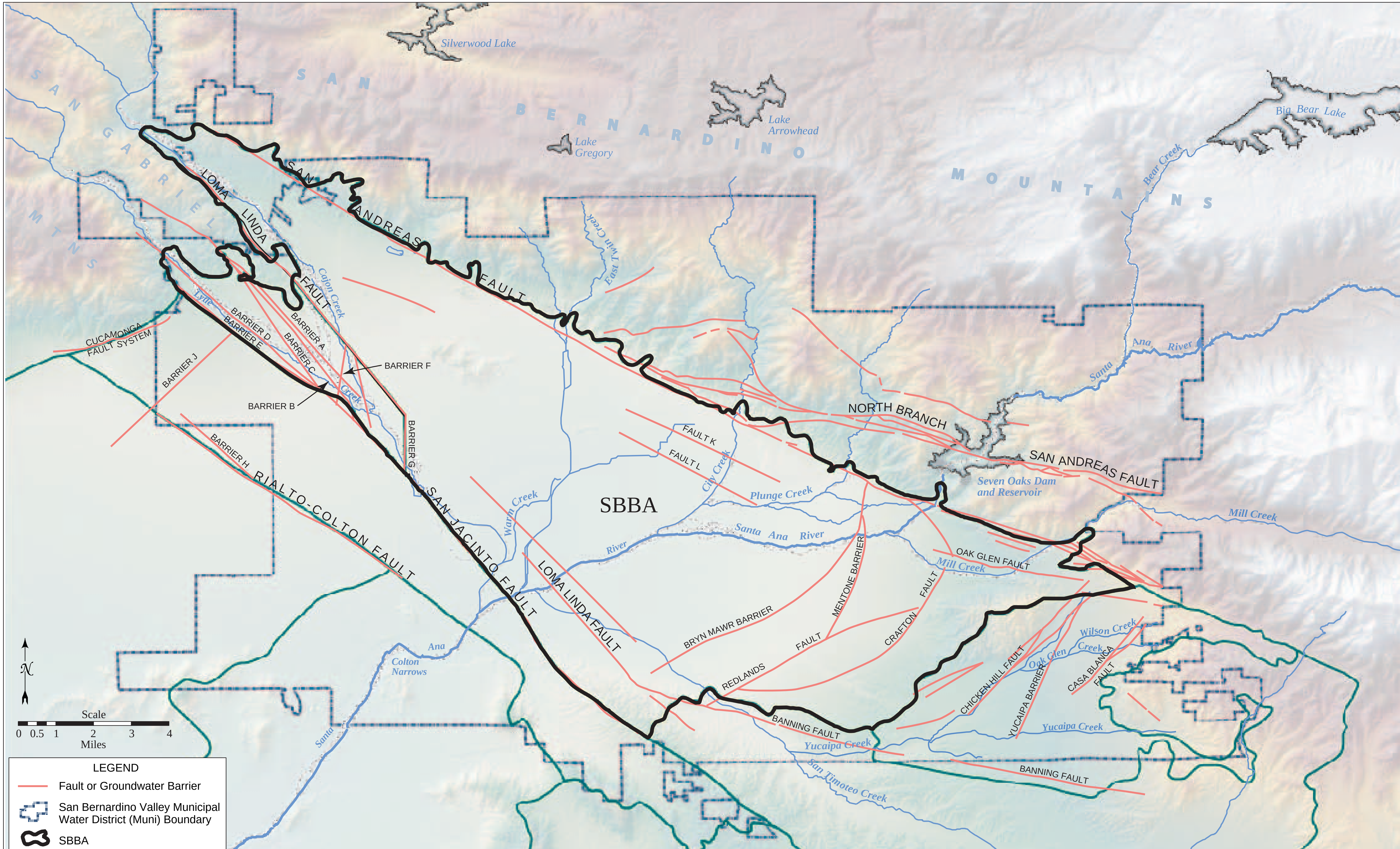

Figure 10. Faults and Groundwater Barriers in the Vicinity of the San Bernardino Basin Area (SBBA)

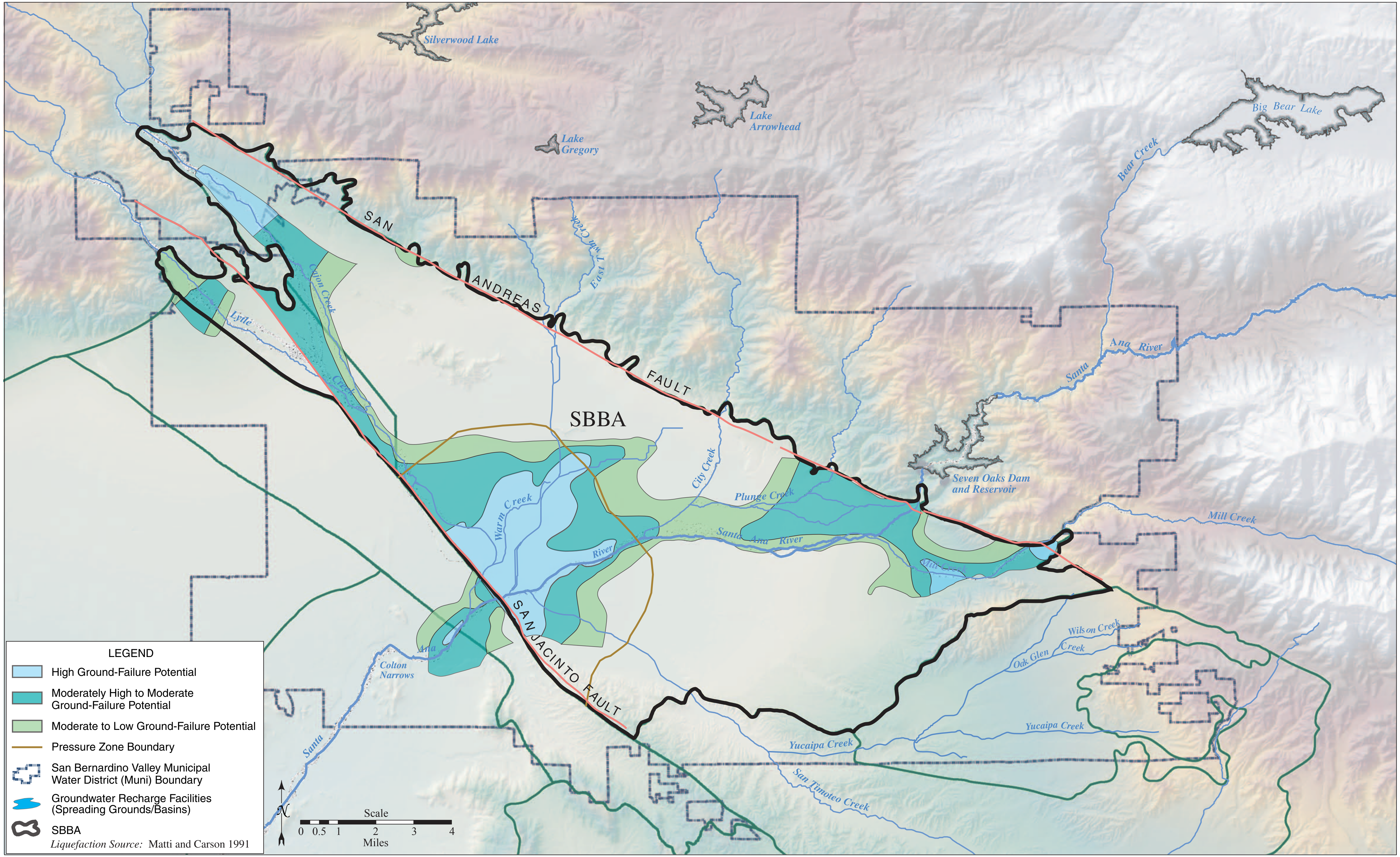

Figure 11. Liquefaction Potential in the San Bernardino Basin Area (SBBA)

One of the beneficial impacts identified by the Draft Environmental Impact Report for the proposed Project was a reduced liquefaction potential in the pressure zone of the SBBA relative to No Project conditions[38]. Depending on the amount of unappropriated water made available to Muni/Western, the area (acres) susceptible to liquefaction (based on depth to groundwater) could be reduced by 35 to 79 percent relative to No Project conditions[39]. The reduction in liquefaction occurs because the Project would divert water out of the river near Seven Oaks Dam and recharge this water in areas less prone to creating high groundwater in the pressure zone. As stated in *Santa Ana River Water Right Applications for Supplemental Water Supply, Draft Environmental Impact Report*. (San Bernardino Valley Municipal Water District and Western Municipal Water District, October 2004):

> "…the more spreading that takes place in the Santa Ana River Spreading Grounds [e.g., spreading in the vicinity of the Santa Ana River near Seven Oaks Dam and immediately adjacent], the greater the area susceptible to liquefaction in the Pressure Zone. There are other variables that contribute to the liquefaction area, such as spreading in other locations." [pg. 3.4-26]

In the vicinity of the Santa Ana River and Mill Creek, the combination of aquifer parameters (e.g. transmissivity, storativity and leakance), and abundant recharge contributes to high groundwater levels in the pressure zone. Providing a bypass flow in the SAR below Seven Oaks Dam would lessen the benefits of the Project on liquefaction hazards in the SBBA. **Table 13** below illustrates that bypass flows in place of Project diversions increases the area (acres) subject to liquefaction, by as little as 1 percent for a 5 cfs bypass flow, up to 33 percent for a 65 cfs bypass flow, relative to what would occur if the Project were implemented without bypass flows.

In short, providing additional recharge, in the form of a bypass flow, to an area prone to shallow groundwater could increase the extent of the geographic area prone to liquefaction as compared to conditions with the Project and could increase the duration that this area is prone to liquefaction, again compared to conditions with the Project.

[38] See section 3.4.2.4.2 of, San Bernardino Valley Municipal Water District and Western Municipal Water District. *Santa Ana River Water Right Applications for Supplemental Water Supply. Draft Environmental Impact Report*. October 2004.

[39] These results are for model year 2022. Assuming a repeat of the base period, model year 2022 is the year of highest anticipated precipitation and the year of greatest spatial extent of area subject to liquefaction.

Table 13. Change in Area Susceptible to Liquefaction in the Pressure Zone of the SBBA due to Average Annual Bypass Flow Relative to Proposed Project

Future senior water right claimant diversions	Up to 88 cfs	Historical	Historical
Future San Bernardino Valley Water Conservation District Diversions	Historical	Historical	Licensed Right
Future Environmental Habitat Releases	1,000 cfs for 2 days	1,000 cfs for 2 days	Other Habitat Treatment
Assumption about Seasonal Storage in Seven Oaks Reservoir	No	No	Yes
Estimate of Average Annual Unappropriated Water Available to Muni/Western Before Bypass Flow (acre-feet)	11,432	20,704	27,042
Change in Area (acres) Susceptible to Liquefaction, Relative to Project without Bypass Flows:			
5 cfs Bypass Flow	Increase of 1%	Increase of 3%	Increase of 4%
50 cfs Bypass Flow	Increase of 9%	Increase of 18%	Increase of 24%
65 cfs Bypass Flow	Increase of 23%	Increase of 31%	Increase of 29%
Seasonal Storage Operated for 5 cfs Bypass Flow	NA (no seasonal storage)	NA (no seasonal storage)	Increase of 4%
Seasonal Storage Operated for 50 cfs Bypass Flow	NA (no seasonal storage)	NA (no seasonal storage)	Increase of 27%
Seasonal Storage Operated for 65 cfs Bypass Flow	NA (no seasonal storage)	NA (no seasonal storage)	Increase of 33%
Other	This combination of pre-existing water rights represents the minimum potential amount of water available for Muni/Western diversion. This scenario of pre-existing water rights is consistent with Project Scenario C analyzed in the *Santa Ana River Water Rights Applications for Supplemental Water Supply Draft EIR*.	This combination of pre-existing water rights represents the potential amount of water available for Muni/Western diversion if existing historical water diversions were to continue into the future. This scenario of pre-existing water rights is consistent with the No Project Scenario analyzed in the *Santa Ana River Water Rights Applications for Supplemental Water Supply Draft EIR*.	This combination of pre-existing water rights represents the maximum potential amount of water available for Muni/Western diversion. This scenario of pre-existing water rights is consistent with Project Scenario A analyzed in the *Santa Ana River Water Rights Applications for Supplemental Water Supply Draft EIR*.

7.0 CUMULATIVE FLOW IMPAIRMENT INDEX

As described earlier, the CFII is an index that is used to evaluate the cumulative flow impairment demand of all existing and pending projects in a watershed of interest. The CFII is a percentage obtained by dividing the Demand in af by the Supply in af at a specified point of interest (POI), and for a specified time period.

According to the SWRCB guidance,

> Demand is the "face" value entitlements of all existing and pending water rights, under all bases of right, from October 1 through March 31, above the POI in acre-feet, using the Division's Water Rights Information Management System (WRIMS) database and water right files. Demand includes existing and pending water right applications for "Post-1914" appropriators, Statements of Water Diversion and Use for "Riparian" and "Pre-1914" appropriators, small domestic use registrations, stockpond registrations, and any other known authorized diversions; and
>
> Supply is the seasonal average unimpaired flow above the POI in acre-feet. For the "coastal" watersheds in the counties of Mendocino, Sonoma, Marin and Napa the season of December 15 through March 31 is used to compute supply.

SWRCB Guidance recommends that the POI be determined in consultation with staff of the Division, the National Marine Fisheries Service, and the California Department of Fish and Game. The POI selected for this study is in the SAR just below the Cuttle Weir and USGS Mentone Gage (see Figure 3). This location was chosen as the POI because it is the furthest possible downstream diversion point identified in the proposed Muni/Western water right applications 31165 and 31170.

Table 14 lists the water rights applications, permits, and licenses identified above the POI using the Division's WRIMS database. No pending water right applications above the POI were identified. **Table 15** represents how these demands have been translated into annual demands. The majority of diversions/diverters listed in WRIMS database in Table 14 are associated with either senior water rights claimants or San Bernardino Valley Water Conservation District. The Southern California Edison diversions listed in Table 14 are not for consumption, but for generating hydroelectric power and hence do not appear as demands in Table 15. Water in the Southern California Edison canal is assumed to go to historical demand for the senior water rights claimants for this analysis. Diversions by Weesha Country Club, Inc. (Water Right IDs S002856, S002857, and S002858), and the San Bernardino National Forest (Water Right IDs F005387S and F005388S) are small diversions. Diversions by Weesha Country Club are listed as 0 cfs by the WRIMS data base and the stated points of diversion are in a location upstream of any gages. Because of their location, diversions by Weesha Country Club, if any, have always

Table 14. Water Rights Applications, Permits, and Licenses above Point of Interest

A Water Right ID	B Source	C Season	D Maximum Year Face Value Demand Amount by Direct Diversion or Storage	E Adjustment to Maximum Year Face Value Demand Amount *
S014806 City of Redlands	SAR	Jan 1 to Dec 1	5 cfs Direct Diversion, 0.0 af Storage	No adjustments. Included within senior water claimants demands in Table 12.
S015005 City of Redlands	SAR	Jan 1 to Dec 1	4 cfs Direct Diversion, 0.0 af Storage	No adjustments. Included within senior water claimants demands in Table 12.
S014805 City of Redlands	SAR	Jan 1 to Dec 1	125 cfs Direct Diversion, 0.0 af Storage	No adjustments. Included within senior water claimants demands in Table 12.
A004807 SBVWCD	SAR	Oct. 1 to Dec 1	2,100 af Storage	No adjustments. Included within San Bernardino Valley Water Conservation District diversions in Table 12.
G360021 Bear Valley MWC	SAR	Not specified	0.0 cfs Direct Diversion, 0.0 af Storage	No adjustments. Included within senior water claimants demands in Table 12.
A002217 SBVWCD	SAR	Jan 1 to May 1	8,300 af Storage	No adjustments. Included within San Bernardino Valley Water Conservation District diversions in Table 12.
S001840 So. California Edison Co.	Alder Creek tributary to SAR	Jan 1 to Dec 1	5.4 cfs Direct Diversion, 0.0 af Storage	No adjustments. Non-consumptive use.
S001841 So. California Edison Co.	Keller Creek tributary to SAR	Jan 1 to Dec 1	3.5 cfs Direct Diversion, 0.0 af Storage	No adjustments. Non-consumptive use.
S007756 So. California Edison Co.	Breakneck Creek tributary to SAR	Jan 1 to Dec 1	1.9 cfs Direct Diversion, 0.0 af Storage	No adjustments. Non-consumptive use.
S007750 So. California Edison Co.	Bear Creek tributary to SAR	Jan 1 to Dec 1	93.3 cfs Direct Diversion, 0.0 af Storage	No adjustments. Non-consumptive use.
S002856 Weesha Country Club, Inc.	Mile Creek tributary to SAR	Mar 1 to Oct 1	0.0 cfs Direct Diversion, 0.0 af Storage	No adjustments
S002857 Weesha Country Club, Inc.	Forsee Creek tributary to SAR	Jan 1 to Dec 1	0.0 cfs Direct Diversion, 0.0 af Storage	No adjustments
S002858 Weesha Country Club, Inc.	Forsee Creek tributary to SAR	Jan 1 to Dec 1	0.0 cfs Direct Diversion, 0.0 af Storage	No adjustments
F005387S U.S. San Bernardino Natl. Forest	Bellyache Springs tributary to Mile Creek	May 1 to Oct. 1	169 gal per day Direct Diversion, 0.0 af Storage	Diversion season is outside of demand period (Oct. 1 to March 31) defined by SWRCB
F005388S U.S. San Bernardino Natl. Forest	Unspecified tributary to Keller Creek	May 1 to Oct. 1	215 gal per day Direct Diversion, 0.0 af Storage	Diversion season is outside of demand period (Oct. 1 to March 31) defined by SWRCB
		Total Face Value Demand:	**238.1 cfs Direct Diversion, 10,400 af storage**	

* No adjustment because seasonal diversions are included in annual values of Table 12.

Source: WRIMS database search performed May 10, 2005. http://165.235.31.51

Table 15. CFII Calculations Using Maximum and Median Demand of Historical Diversions and Anticipated Demands (afy)

Demand	MAXIMUM ANNUAL	AVERAGE ANNUAL	MEDIAN ANNUAL
Historical diversions by senior water rights claimants	45,245	26,619	25,772
Historical San Bernardino Valley Water Conservation District Diversions	48,152	10,384	5,587
Estimated Environmental Habitat Releases per the Biological Opinion*	3,967	915	0
Reservoir Evaporation*	368	144	133
Total Demand	*97,732*	*38,062*	*31,492*
Undiverted	171,389	20,704	2,581
Supply	268,753	58,476	33,807
CFII	**36%**	**65%**	**93%**

Notes:

*Demand created by future environmental habitat releases and reservoir evaporation have been estimated.

Additional information can be found in Table 4.2-8 of Appendix A, *Santa Ana River Water Rights Applications for Supplemental Water supply Draft Environmental Impact Report.*

been "subtracted" from estimates of inflow to the POI and therefore are not included in demand estimates. Diversions by the San Bernardino National Forest occur outside of the demand period (Oct. 1 to March 31) defined by SWRCB. Further, the stated points of diversion for the Forest Service are in a location upstream of any gages. Because of their location, diversions by the Forest Service have always been "subtracted" from estimates of inflow to the POI and therefore are not included in demand estimates.

In addition to the demands identified through use of the WRIMS database, Table 15 includes water demands associated with mitigation for flood control operations of Seven Oaks Dam as proposed in the US Army Corps of Engineers 2000 Biological Assessment (BA) and USFWS 2002 BO (see also section 6.6 of this WAA). Finally, Table 15 also accounts for reservoir evaporation which will to occur during operations of Seven Oaks Dam.

As shown in Table 15, based on a monthly hydrologic analysis of the upper Santa Ana River, and examination of the Division's WRIMS database, the maximum annual total entitlement of recorded water rights above the POI is estimated to be 97,732 af for historical water diversions by these entities. The average year demand is 38,062 af, the median demand is 31,492 af.

The total water supply available at the POI was estimated to be a maximum of 268,753 af, the average estimated at 58,476 afy, while the median is 33,807 af (see section 4.2 of this WAA). The CFII values were estimated as follows:

1. For maximum runoff conditions:

   CFII @ POI = Demand ÷ Supply x 100% → 97,732 af ÷ 268,753 af = 36%af =**36%**

2. For average runoff conditions:

   CFII@POI = Demand ÷ Supply x 100% → 38,062 af ÷ 58,467 af = **65%**

32. For median runoff conditions:

   CFII @ POI = Demand ÷ Supply x 100% → 31,492 af ÷33,807 af = **93%**

The CFII values range between 36 and 93 percent. In most years, the Santa Ana River has little available flows, i.e., the median supply is allocated to existing demand. However, during high runoff years, a much lower proportion of the potential supply (36 percent) is allocated. This leaves considerable flows available for diversion during high flow years.

ATTACHMENTS

Attachment 1	SWRCB Order WR 2000-12
Attachment 2	SWRCB Order WR 2002-6
Attachment 3	Description of Data Used in the Water Availability Analysis
Attachment 4	Inventory of Public Trust Resources, Santa Ana River Water Right Applications for Supplemental Water Supply EIR
Attachment 5	Impacts to Public Trust Resources, Santa Ana River Water Right Applications for Supplemental Water Supply EIR

ATTACHMENT 1

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER WR 2000-12

In the Matter of the Petitions to
Revise Declaration of Fully Appropriated Streams to Allow Processing Specified Applications to Appropriate Water From the Santa Ana River

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SOURCE: Santa Ana River

COUNTIES: Riverside, San Bernardino, Orange

ORDER AMENDING DECLARATION AND DIRECTING DIVISION OF WATER RIGHTS TO PROCEED WITH PROCESSING SPECIFIED APPLICATIONS

1.0 INTRODUCTION

Acting pursuant to Water Code sections 1205 through 1207, the State Water Resources Control Board (SWRCB) adopted a Declaration of Fully Appropriated Streams (Declaration) which was most recently updated on November 19, 1998. (SWRCB Order WR 98-05). The Declaration includes a list of stream systems found to be fully appropriated for all or part of the year. Water Code section 1206 provides that the SWRCB shall not accept any new applications to appropriate water from watercourses listed on the Declaration, except in accordance with the provisions of the Declaration and applicable regulations. The Declaration lists the Santa Ana River stream system as fully appropriated on a year-round basis.

The SWRCB has received two petitions requesting that the Declaration be revised to allow for processing two applications to appropriate water from the Santa Ana River. The first petition was submitted by the San Bernardino Valley Municipal Water District (Muni) and Western Municipal Water District of Riverside County (Western) on May 31, 1995. The petition and accompanying hydrologic data were filed to demonstrate that water previously lost as flood flows can now be stored or regulated by the new Seven Oaks Dam flood control project. The petition filed by Muni and Western was accompanied by a water right application to appropriate water from the Santa Ana River for municipal use by direct diversion and diversion to storage.

The second petition was filed by Orange County Water District (OCWD) on September 3, 1999. The petition and accompanying hydrologic information were submitted to demonstrate that flows in the lower reach of the Santa Ana River watershed have changed due to upstream urbanization and increased release of treated wastewater into the stream system. OCWD asks that the SWRCB modify the Declaration to allow the SWRCB to accept and ultimately approve a water right application that was previously submitted by OCWD on November 15, 1992.

Based on the evidence in the record discussed below, the SWRCB finds that the Declaration of Fully Appropriated Streams, as adopted in Order WR 98-05, should be revised to allow for processing the water right application submitted by Muni and Western and the water right application submitted by OCWD. All questions regarding the specific amount of water available for appropriation under the applications, the season of water availability, approval or denial of the applications, and the conditions to be included in any permit(s) that may be issued on the applications will be resolved in further proceedings on each application pursuant to applicable provisions of the Water Code. In concluding that the specified applications should be processed, this order makes no finding regarding the relative priority of any rights that may be acquired under the specified applications and other rights or applications for water rights in the Santa Ana River Basin.

2.0 BACKGROUND

Sections 2.1 through 2.3 below discuss the statutory provisions governing the appropriation of water in California, the classification of the Santa Ana River as fully appropriated, and the SWRCB hearing on the petitions to revise the Declaration of Fully Appropriated Streams to allow for processing the pending applications on the Santa Ana River.

2.1 Water Code Provisions

Following enactment of the Water Commission Act of 1913, new appropriations of water in California have been subject to the application and permitting system now set forth in the

California Water Code. Water Code section 1201 provides that all water flowing in any natural channel that is not needed for use under riparian rights and has not been previously appropriated is subject to appropriation pursuant to the provisions of the Water Code. Water Code section 1225 provides:

> "Except as provided in Article 2.5 (commencing with Section 1226) of this chapter, no right to appropriate or use water subject to appropriation shall be initiated or acquired except upon compliance with the provisions of this division."[1]

Thus, compliance with applicable Water Code provisions is now the exclusive way to establish a right to appropriate water subject to appropriation. The statutory requirements and procedure for establishing an appropriative water right are set forth in Water Code section 1250 et seq. Normally, the first step is to file an application to appropriate water which sets forth specified information including the proposed source, proposed quantity and rate of diversion, the proposed point of diversion, and the proposed place and purpose of use. (Water Code §§ 1250 and 1260.)

However, subdivision (a) of Water Code section 1206 prohibits the SWRCB from accepting for filing any application for a permit to appropriate water from a stream system that is listed on the Declaration of Fully Appropriated Streams established pursuant to Water Code section 1205. Notwithstanding the general prohibition on acceptance of applications to appropriate water from a fully appropriated stream, subdivision (b) of section 1206 provides that the SWRCB may allow for filing of applications to appropriate water from fully appropriated streams under specified conditions set forth in the Declaration. In addition, subdivision (c) of Water Code section 1205 provides:

[1] Article 2.5 establishes an alternative procedure for acquiring rights for stockponds for which a claim was filed with the SWRCB before January 1, 1998. That alternative procedure does not apply to the projects described in the applications submitted by petitioners in the present proceeding.

> "Upon its own motion or upon petition of any interested persons, and following notice and hearing, the board may revoke or revise a declaration that a stream system is fully appropriated."

The petitions under consideration in the present proceeding request that the SWRCB revise the provisions of the Declaration adopted in Order WR 98-05 to allow for processing the petitioners' applications to appropriate water. Approval of the petitions does not constitute approval of the applications, nor does it imply that the SWRCB believes the applications should be approved. Rather, approval of the petitions simply allows the SWRCB to accept the petitioners' applications for processing in accordance with the normally applicable procedures and requirements under the Water Code and applicable regulations.

Following acceptance of an application for filing and assignment of a priority date, the SWRCB provides public notice of the application, an opportunity for interested parties to file protests, an opportunity for the applicant and any protestants to negotiate a resolution of issues raised in the protests, and an opportunity for hearing if needed to resolve protest issues or to obtain information otherwise needed for action on the application. (Water Code §§1350-1375.) A permit to appropriate water is issued only if all statutory requirements are met, including the requirement that water is available for appropriation under the permit and that the intended use is beneficial. (Water Code §1375.) Permits to appropriate water are issued subject to such terms and conditions as the SWRCB concludes will "best develop, conserve, and utilize in the public interest the water" covered by the permit. (Water Code §1253.)

2.2 Findings Regarding Santa Ana River in Fully Appropriated Streams Declaration

The Santa Ana River stream system was included in the original Declaration adopted by the SWRCB in Order WR 89-25, and it remains listed on the most recent revised Declaration adopted by the SWRCB in Order WR 98-08. Order WR 89-25 refers to State Water Rights Board Decision 1194 as a basis for the finding that no unappropriated water is available from the Santa Ana River watershed. Based on review of the record from the hearing on Applications

11036 and 11037[2] in 1962 and 1963, and the Court of Appeal decision in *Orange County Water District v. City of Riverside et al.,* (1961) 188 Cal. App. 2d 566 [10 Cal. Rptr. 899],[3] the State Water Rights Board concluded that "[c]onsidering the Santa Ana River watershed as a whole, the record indicates that no unappropriated water is now available" for the applicants. (Decision 1194, p. 4.) Nevertheless, the State Water Rights Board approved Applications 11036 and 11037 based on a finding that the applicants could salvage or conserve water by eliminating consumptive uses attributed to phreatophytes along a 15-mile reach of the Santa Ana River. Decision 1194 limited the quantity of water that could be diverted under both applications to a combined total of 6,000 acre-feet per annum (AFA), subject to the requirement of no injury to prior rights. Decision 1194 does not contain a hydrologic analysis of the run-off of the Santa Ana River watershed and the amount of water that may be available in normal or wet years after meeting prior rights.

2.3 SWRCB Hearing on Petitions

Section 871 of Title 23 of the California Code of Regulations provides that the SWRCB may revoke or revise the Declaration of Fully Appropriated Streams upon its own motion or upon petition of any interested person. In this instance, the SWRCB held a public hearing on the petitions on December 7 and 8, 1999. The hearing provided an opportunity for the petitioners and all interested parties to present evidence and argument in support of their positions.

In addition to the petitioners, representatives of the following parties participated in the SWRCB hearing: United States Forest Service, San Bernardino Valley Water Conservation District, City of Ontario, Cucamonga Water District, City of Riverside, City of San Bernardino, East Valley

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[2] Application 11036 was filed by Santa Ana Valley Irrigation Company for a permit to appropriate 10 cubic feet per second (cfs) by direct diversion between March 1 and December 1 of each year and 2,000 acre-feet per annum (AFA) by underground storage between December 1of each year and March 1 of the succeeding year from the Santa Ana River in Orange County. Application 11037 was filed by OCWD for a permit to appropriate 75 cfs by direct diversion between March 1 and November 30 of each year and 4,000 acre-feet (AF) by underground storage between December 1 and February 28 of each season from the underflow of the Santa Ana River and Chino Creek within Riverside and San Bernardino Counties.

[3] The Court of Appeal decision referred to in Decision 1194 was entered in a declaratory judgment action brought by the OCWD against several cities in the Santa Ana River Basin. The decision discusses the imbalance between water demands and supplies in the Santa Ana River Basin, but was not entered in the context of an overall adjudication of basin water rights.

Water District, California Department of Fish and Game, Inland Empire Utilities Agency, Santa Ana River Local Sponsors, Big Bear Municipal Watermaster, Big Bear Municipal Water District, City of Corona, City of Chino, and the State of California agencies holding water rights in the Chino Basin.[4]

Following the evidentiary hearing, the SWRCB received legal briefs in support of their respective petitions from OCWD and from Muni and Western. The East Valley Water District submitted a brief in opposition to revising the fully appropriated stream status of the Santa Ana River. The San Bernardino Valley Water Conservation District submitted a brief that opposes changing the fully appropriated stream status of reaches 5 and 6 of the river. The City of Chino, City of Ontario, City of Pomona, Cucamonga County Water District and the Monte Vista Water District joined in the brief submitted by the Inland Empire Utilities Agency in opposition to revising the fully appropriated stream status of the river.[5] The City of San Bernardino submitted briefs both before and after the hearing supporting the petition filed by Muni and Western and opposing the petition filed by OCWD.

3.0 DESCRIPTION OF THE SANTA ANA RIVER WATERSHED

The Santa Ana River watershed includes approximately 2,450 square miles covering major portions of San Bernardino, Riverside, and Orange Counties. (Muni/Western 4-6.) During high flow periods, the Santa Ana River flows over 75 miles from Mount San Gorgonio in the San Bernardino Mountains to the Pacific Ocean at Newport Beach. During most years, the Santa Ana River has little or no surface flow from its confluence with Bear Creek in the San Bernardino Mountains to just upstream of the San Bernardino/Riverside County Line. From that point, there is continuous surface flow to the OCWD diversion points in Orange County. (Muni/Western 3-1, pp. 1 and 2.)[6]

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[4] The state agencies that hold water rights in the Chino Basin area of the Santa Ana River watershed are the Department of Corrections, the Department of Fish and Game, the Department of Transportation and the Department of Toxic Substances Control.

[5] In addition to the legal briefs submitted following the hearing, some of the parties also presented legal arguments in written submittals and policy statements presented at the time of the hearing.

[6] Exhibits are identified by the name of or abbreviation for the party submitting the exhibit, the exhibit number, and the page number or other location of the reference material within the exhibit.

The Santa Ana River watershed below the San Bernardino Mountains and San Gabriel Mountains consists of the Upper Area above Prado Dam and the Lower Area located downstream of Prado Dam. Most of the diversions within the Upper Area are made within the boundaries of the petitioners Muni and Western or within the boundaries of the Inland Empire Utilities Association (formerly the Chino Basin Municipal Water District). Petitioners Muni and Western seek to appropriate water which they believe will be made available due to the regulatory effects, and possible storage capacity, provided by the recently completed Seven Oaks Dam located downstream of the confluence of the Santa Ana River and Bear Creek. Most of the diversions within the Lower Area are made by OCWD for use within Orange County. There was extensive evidence presented by various parties establishing that water districts and other entities in both the Upper Area and Lower Area of the watershed have developed extensive wastewater treatment and reuse programs. (See e.g. RT pp. 89-90.)

4.0 COURT JUDGMENTS ADDRESSING WATER RIGHTS ON THE SANTA ANA RIVER

Water rights on the Santa Ana River have been addressed in a number of court judgments, two of which establish the overall framework for the division of rights and responsibilities among the major water users in the basin. The April 17, 1969, stipulated judgment of the Superior Court for Orange County in *Orange County Water District v. City of Chino* (Superior Court No. 117628, hereinafter *Orange County Water District*) provides a basis for the division of water between the upper and lower portions of the Santa Ana River based upon specified flows at Prado Dam and the Riverside Narrows. (Muni/Western 3-3).[7] In recognition of the complexity of the case and the difficulty in attempting to adjudicate the individual water rights of over 4,000 parties, the judgment states:

> "d. <u>Need for Physical Solution</u>. It is apparent to the parties and to the court that development of a physical solution based upon a formula for inter-basin allocation of obligations and rights is in the best interests of all the parties and is

[7] Muni/Western Exhibit 3-3 provides a compilation of judgments, court orders, stipulations and related settlement agreements concerning water rights in the Santa Ana River Basin.

> in furtherance of the water policy of the State. For purposes of such physical solution, it is neither necessary nor helpful to define individual rights of all claimants within the watershed…. Sufficient information and data of a general nature are known to formulate a reasonable and just allocation as between the major hydrologic sub-areas within the watershed, and such a physical solution will allow the public agencies and water users within each such major hydrologic sub-area to proceed with orderly water resources planning and development."

The judgment also states that OCWD, Chino Basin Municipal Water District (CBMWD), Western, and Muni were public districts overlying the major areas of water use within the watershed and had the authority and resources to implement a physical solution. All remaining parties to the suit were dismissed.

The judgment provides that the water users located above Prado Dam ("Upper Area users," i.e. CBMWD, Western, and Muni) must deliver an average of approximately 42,000 AFA of "base flows"[8] to Prado Reservoir. Of this amount, Muni is responsible for an average annual amount of 15,250 AFA at the Riverside Narrows upstream of Prado Dam. The judgment provides that the guaranteed flows are to be calculated over stated periods of time and are subject to adjustment for water quality. If water users downstream of Prado Dam receive the water to which they are entitled and all other provisions of the judgment are complied with, then paragraph 5(a) of the judgment provides that "[i]nsofar as Lower Area claimants are concerned, Upper Area water users and other entities may engage in unlimited water conservation activities, including spreading, impounding, and other methods, in the area above Prado Reservoir."

A second stipulated judgment affecting water rights on the Santa Ana River was entered on April 17, 1969, by the Superior Court for Riverside County in *Western Municipal Water District of Riverside County v. East San Bernardino County Water District, (*Superior Court No. 78426, Muni/Western 3-3.) The stated purpose of the judgment is to further implement the physical solution entered in the *Orange County Water District* action and to determine the rights of several specified plaintiffs (including Western) and the sole remaining defendant, Muni. The

[8] "Base flow" was defined to exclude high flows associated with storms.

judgment defines the respective rights of the named parties as against each other to the natural supply of the San Bernardino Basin Area, the Colton Basin Area and the portion of the Riverside Basin Area in San Bernardino County. The judgment also refers to new water conservation projects that may be undertaken by the parties.

Both of the 1969 stipulated judgments express the courts' recognition that there would be future water development projects within the basin. The judgments do not constitute a comprehensive adjudication of water rights in the Santa Ana River Basin. Rather, the net effect of the two 1969 stipulated judgments is to establish a framework governing the allocation of water in the Santa Ana River Basin among the parties to those proceedings.

All of the petitioners in the current proceeding have submitted a Memorandum of Understanding with the Inland Empire Utilities Association in which they acknowledge that they are bound by the provisions of the 1969 *Orange County Water District* judgment and that any additional water right which they obtain from the SWRCB must be consistent with the restrictions imposed by that judgment. (OCWD 8.)

5.0 DESCRIPTION OF PROJECTS PROPOSED BY PETITIONERS

The petition submitted by Muni and Western requests modification of the Declaration to allow for processing their application to appropriate: (1) up to 800 cfs by direct diversion; (2) 50,000 AFA by diversion to storage at Seven Oaks Dam; and (3) 100,000 AFA to underground storage with total diversions in any one year not to exceed 100,000 AF.[9] (Muni/Western 1-3, p.1.) The U. S. Army Corps of Engineers (Corps) constructed Seven Oaks Dam as a flood control project but has not yet authorized use of the dam for water storage. Even if water storage at the dam is not authorized, however, petitioners Muni and Western argue that the regulatory effect of the dam on high flows caused by storm events would make it feasible to divert water that previously would have flowed rapidly downstream.

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[9] A witness for Muni and Western testified that recent calculations showed that in some years, considerably more water may be available for their direct diversion without injury to prior rights, and that Muni and Western may seek to amend their application to include an increased annual limit on diversions in those years when the additional water is available. (RT pp. 64 and 117-121.)

The OCWD petition requests modification of the Declaration to allow for processing the district's application to appropriate: (1) up to 800 cfs by direct diversion; and (2) up to 146,900 AFA by diversion to storage in Prado Dam, Gypsum Canyon Reservoir, and Aliso Canyon Reservoir; and (3) storage in various groundwater basins. A November 1992 supplement to the OCWD application states that total combined diversions in one year would not exceed 507,800 AF. Of this amount, approximately 306,400 AFA are diverted by OCWD's existing projects. (OCWD 7, Supplement, p. 2; RT pp.166-167.) OCWD contends that its present diversions are authorized by a combination of water rights from various sources, but it submitted the petition and proposed application in the event that the SWRCB or other interested parties do not agree that OCWD has sufficient rights to cover its present and proposed diversions. (OCWD 6, Attachment 10-1.)

6.0 CHANGES IN THE SANTA ANA RIVER WATERSHED AFFECTING THE AMOUNT OF WATER AVAILABLE FOR APPROPRIATION

The evidence regarding changes in conditions that affect availability of water for appropriation in the Santa Ana River watershed and the potential ability of the petitioners to divert that water is discussed in Sections 6.1 through 6.5 below.

6.1 Seven Oaks Dam

Muni and Western contend that the major change in conditions that results in water being available for appropriation under the districts' application is the construction and completion of the 146,500 AF capacity Seven Oaks Dam built by the U.S. Army Corps of Engineers (Corps) as a flood control facility. (Muni/Western 1-2, pp. 5 and 6.) Based on USGS data, the Corps calculated that the average annual inflow to Seven Oaks Reservoir would be approximately 24,000 AF. Although the Corps has not approved operation of the reservoir for seasonal storage of water, a Corps feasibility study includes an estimate that operation of the dam using a water conservation pool of 50,000 AF could make an average of approximately 12,950 AFA of water available for use by downstream users. The Corps study also shows an estimate that operation of the reservoir using a water conservation pool of 16,000 AF would result in a net average annual yield of approximately 4,120 AF. (Muni/Western 3-1, p. 11; RT pp. 108-111.) Thus, the record establishes that operation of the Seven Oaks Reservoir for water storage would make more water potentially available for appropriation under the Muni/Western application for a water right permit. However, use of the reservoir for water storage would require federal approval, as well as a water right permit issued by the SWRCB.

In addition to the possibility of seasonal storage at Seven Oaks Dam, Muni and Western emphasize that the regulatory effect of the Seven Oaks Dam on high flows due to storm events represents a significant change in circumstances. By regulating the release of water downstream of the dam, the petitioners contend that the dam makes water available for appropriation that could not have feasibly been diverted previously. The districts presented expert testimony that 140,991 AF of water would be available for appropriation in one of 20 years, based on calculations using hydrologic data from the 20-year hydrologic period of 1971-72 through 1990-91. In all but two of the 20 years, however, the maximum amount of water available for direct diversion was less than 20,000 AFA, with no water at all being available in seven years. The total amount of water available for direct diversion over the 20-year period was estimated to be 302,338 AF.[10] If the Corps of Engineers maintains the present 500 cfs limit on releases from Seven Oaks Dam, the maximum amount available for direct diversion in any one year would decrease to 116,966 AF and the total amount available for direct diversion over the 20-year period was estimated to be 278,343 AF. Limiting maximum annual diversions to 100,000 AF as stated in the Muni/Western water right application would reduce the total estimated amount of water available for diversion over the 20-year period to 261,347 AF, or an average of 13,067 AFA. (RT pp.117-121; Muni/Western 4-16, columns 11-13.)

6.2 Discharge of Treated Wastewater

The Santa Ana River Watermaster Report for 1997-98 shows that treated wastewater discharges into the Santa Ana River upstream of Prado Dam have increased by 125,904 AFA from 1970-71

[10] The estimates on water availability set forth in column 11 of Muni/Western Exhibit 4-16 reflect the assumption that diversions would be limited by the 1969 *Orange County Water District* judgment.

to 1997-98, with 38,954 AFA of this increase occurring since 1990. (Muni/Western 3-4, Table 5.) The large contribution of treated wastewater to the base flows available below Prado Dam has led to an increase in base flows during the dry season of May through September. (OCWD 31, p. 6; OCWD 14.) Base flows in the Santa Ana River at Prado Dam have increased from approximately 30,000 AFA in water year 1963-64 to approximately 155,000 AFA in 1997-98. (OCWD 31, p. 5; OCWD 9.) By 2020, treated wastewater discharges above Prado Dam are projected to increase to 255,000 AFA. (OCWD 31, p. 5.) Based on the assumption that upstream water agencies will develop additional projects to reuse treated wastewater, the Santa Ana Water Project Authority (SAWPA) estimates that base flows reaching Prado will be 231,000 AFA by 2020. If the additional reuse projects are not developed to the extent anticipated by SAWPA, then the quantity of water provided by base flows at Prado Dam would be expected to be higher. (OCWD 31, p. 6.)

6.3 Effects of Urbanization

OCWD and Muni presented testimony that the amount of runoff entering the Santa Ana River has increased due to urbanization. The percent of impervious cover in the watershed upstream of Prado Dam has increased from 16 percent in 1970 to 28 percent in 1990. (OCWD 31, pp. 4, 7 and 8.) In addition, increased concrete lining of flood channel facilities has increased the rate of runoff. The result of changes due to urbanization is that a greater percentage of precipitation runs off the land and enters the stream system.

6.4 Increased Availability of Water During Wet Years

The average precipitation during the 26-year base period (1934-35 through 1959-60) used in developing the physical solution adopted in the 1969 *Orange County Water District* judgment was 17.98 inches per year. (Muni/Western 3-4, p. 4.) In some years, however, substantially higher precipitation results in more water being available in the river than was allocated under the judgment. For example, in water year 1997-98, precipitation totaled 33.41 inches or 186 percent of the average used in developing the physical solution reflected in the 1969 judgment. (Muni/Western 3-4, p. 4.)

Although above normal run-off during years of high precipitation cannot be relied upon in all years, the higher flows do make water available for diversion by projects which are designed to divert high flows when present but which do not depend upon large quantities of water being available for diversion in all years. In this instance, the record shows that the project proposed by the Muni and Western, in particular, is designed to capture high flows when available, but does not depend upon availability of water for diversion in every year.

6.5 Summary of Record Regarding Availability of Water for Appropriation

The purpose of the water availability analysis in this proceeding is not to determine the specific amount of water available for appropriation by the petitioners after satisfying prior rights and providing appropriate protection for instream uses and the environment. Rather, the purpose is to determine whether the record establishes that there is sufficient water available for appropriation to justify revision of the fully appropriated stream status of the Santa Ana River to allow for acceptance of the petitioners' water right applications for processing.

The evidence discussed above establishes that increased releases of treated wastewater and increased runoff due to urbanization have substantially increased flows present in the Santa Ana River since entry of the 1969 *Orange County Water District* judgment, and that it is reasonable to expect a further increase in flows in the future. Most of the increased flows occur below the points of diversion identified in the Muni/Western application. However, the availability of that water to satisfy downstream rights effectively increases the amount of water that is potentially available for diversion by Muni and Western, as well as the amount of water potentially available for diversion downstream by OCWD.

In addition, the construction of the Seven Oaks Dam is a significant change in conditions that will affect the pattern of flows below the dam following storm events and make it feasible to divert more water. The possibility of using Seven Oaks Reservoir for water storage if federal approval is obtained would further increase the quantity of water potentially available for appropriation by Muni and Western in some years.

The evidence that Upper Area water users have established large credits of water to which they are entitled under the *Orange County Water District* judgment supports the conclusion that Muni and Western could divert more water without interfering with prior rights or violating the provisions the judgment. Similarly, the evidence that, for many years, OCWD has been diverting a large portion of the water for which it seeks a water right permit is persuasive evidence that much of the water covered by OCWD's application is physically present and potentially available for appropriation.[11]

7.0 ENVIRONMENTAL ISSUES

In this instance, the California Department of Fish and Game and the United States Forest Service both expressed an interest in protection of environmental resources dependent upon flows in the Santa Ana River. (RT pp.18-19 and 81-87.) The environmental issues associated with the project proposed by the petitioners will be addressed by the SWRCB in the context of processing the water right applications. Prior to any potential approval or decision to proceed with a proposed project, the applicant water districts and the SWRCB must fulfill their obligations under the California Environmental Quality Act ("CEQA," Public Resources Code section 21000 et seq.) In addition to meeting statutory responsibilities under CEQA, the SWRCB will comply with its obligations to consider environmental and public interest issues under the Water Code and the public trust doctrine in the context of processing the water right applications submitted by the petitioners.[12] In addition, the SWRCB recognizes that the proposal of Muni and Western to use the Seven Oaks Dam as a water storage facility is also subject to

[11] As discussed in Section 5.0 above, OCWD presently diverts approximately 300,000 AFA of the water for which the district seeks an appropriative water right permit from the SWRCB.

[12] Neither Order WR 89-25 nor subsequent revisions of the Declaration provide an extensive explanation of the basis for classifying the Santa Ana River as fully appropriated. However, there is no indication that the classification of the Santa Ana River as fully appropriated was based upon a need to reserve or retain water in the river or its tributaries for instream uses. Neither Order WR 89-25, nor Decision 1194 addresses the subject of retaining water in the river to meet instream needs. In an instance in which instream or environmental considerations were not relied upon as a basis for classifying a watercourse as fully appropriated, a decision to revise the fully appropriated designation to allow for processing new water right applications need not involve consideration and analysis of instream or other environmental uses of the water sought to be appropriated. Those issues can properly be addressed in the context of processing the applications once they are accepted for filing.

obtaining all necessary federal approvals and compliance with the federal environmental review process.

8.0 CONCLUSION

The parties to the hearing introduced a large amount of evidence regarding the hydrology of the Santa Ana River watershed, the history of water use and litigation over water rights in the watershed, the potential for future wastewater reclamation projects, the availability of water for appropriation by the petitioners, and numerous other issues. The SWRCB recognizes that processing petitioners' water right applications will require consideration of numerous issues not addressed in this order. However, as indicated in the hearing notice, the focus of our inquiry in this proceeding is on the relatively narrow task of determining if the evidentiary record supports revising the fully appropriated stream status of the Santa Ana River for the limited purpose of processing the water right applications submitted by the petitioners.[13] Based on our review of the record and the findings above, we conclude that the Declaration of Fully Appropriated Streams, as adopted by Order WR 98-08, should be revised to allow for processing the water right applications submitted by Muni/Western and OCWD in accordance with the provisions of the Water Code and other applicable law.[14]

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[13] The petition filed by Muni and Western refers to revising the fully appropriated stream status of the Santa Ana River "to permit the granting of the application accompanying this petition." (Muni/Western 1-2, p. 7.) In addition, the notice preceding the SWRCB hearing specified the key issue as whether the SWRCB should revise the Declaration for the limited purpose of processing "the water right applications submitted by the petitioners." Our finding that the evidence supports revising the Declaration to allow for processing petitioners' applications is limited to the rates of diversion and maximum quantities of water identified by the petitioners in their applications and supplemental material submitted prior to the date of the hearing notice.

[14] SWRCB files contain several other minor applications to appropriate water in the Santa Ana River watershed on which no action has been taken due to the fully appropriated status of the watershed. The parties who submitted those applications did not present evidence at the hearing and the status of the applications is not affected by this order. The provisions of Order WR 98-08, however, allow for processing applications in fully appropriated watersheds under specified limited conditions (e.g. diversions from sources lacking hydraulic continuity with the fully appropriated watercourse downstream). (Order WR 98-08, p. 26.)

ORDER

IT IS HEREBY ORDERED, based upon the foregoing findings, that:

1. The Declaration of Fully Appropriated Streams, as adopted by State Water Resources Control Board Order WR 98-08, is amended to allow for processing the following applications to appropriate water:
   (a) the application to appropriate water from the Santa Ana River filed by San Bernardino Valley Municipal Water District and Western Municipal Water District of Riverside County; and
   (b) the application to appropriate water from the Santa Ana River filed by Orange County Water District.

2. The State Water Resources Control Board Division of Water Rights shall process the specified water right applications in accordance with applicable law.

CERTIFICATION

The undersigned, Administrative Assistant to the Board does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on September 21, 2000.

AYE: Arthur G. Baggett, Jr.
Mary Jane Forster
John W. Brown

NO: None

ABSENT: Peter S. Silva

ABSTAIN: None

SIGNED BY:

____

Maureen Marché
Administrative Assistant to the

ATTACHMENT 2

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER WRO-2002 - 0006

In the Matter of the Petitions to
Revise Declaration of Fully Appropriated Streams
To Allow Processing Specified Applications to
Appropriate Water from the Santa Ana River

SOURCE: Santa Ana River
COUNTIES: Riverside, San Bernardino, Orange

ORDER AMENDING DECLARATION AND DIRECTING DIVISION OF WATER RIGHTS TO PROCEED WITH PROCESSING SPECIFIED APPLICATIONS

1.0 INTRODUCTION

In Order WR 2000-12, the SWRCB acted on two petitions to revise the Declaration of Fully Appropriated Streams (Declaration) to allow for processing two applications to appropriate water from the Santa Ana River.[1] Based upon the evidence in the record, the SWRCB found that the Declaration, as adopted in Order WR 98-08, should be revised to allow for processing Applications 31165 and 31174. The SWRCB has received additional petitions since it issued Order WR 2000-12, requesting that the SWRCB revise the Declaration to allow for processing applications to appropriate water from the Santa Ana River stream system.

The findings required to approve the current petitions before the SWRCB are essentially identical to the SWRCB's previous findings in Order WR 2000-12. The SWRCB held a pre-hearing conference at which all parties agreed that the evidentiary record for the proceeding on the pending petitions would be limited to Order WR 2000-12 and 1999 evidentiary record that served as the basis for Order WR 2000-12. This order summarizes and incorporates by reference the findings and conclusions of Order WR 2000-12.

[1] The petitions were submitted by the San Bernardino Valley Municipal Water District (Municipal Water District), Western Municipal Water District of Riverside County (Western), and the Orange County Water District (OCWD), accompanied with hydrologic data demonstrating that new water exists since the Santa Ana stream system was designated as fully appropriated. The additional water that is potentially available for appropriation consists of flood flows that may be stored or regulated by the new Seven Oaks Dam flood control project, increased run-off due to upstream urbanization, and increased releases of treated wastewater into the stream system in the lower reaches of the Santa Ana River. The water right applications have since been accepted for processing based on Order WR 2000-12, and assigned application numbers 31165 and 31174.

Based on the evidence in the record, the SWRCB finds that the Declaration of Fully Appropriated Streams, as adopted in Order WR 98-08, should be revised to allow processing the water right applications specified below. All questions regarding the specific amount of water available for appropriation under the applications, the season of water availability, approval or denial of the applications, and the conditions to be included in any permits that may be issued on the applications will be resolved in further proceedings on each application pursuant to applicable provisions of the Water Code. In concluding that the specified applications should be processed, this order makes no finding regarding the relative priority of any rights that may be acquired under the specified applications and other rights or applications for water rights in the Santa Ana River Basin.

2.0 BACKGROUND

Section 3.0 of Order WR 2000-12 fully describes the Santa Ana River watershed and is hereby incorporated by reference. The statutory provisions governing the appropriation of water in California and the classification of the Santa Ana River as fully appropriated are described in detail in Sections 2.1 and 2.2 of Order WR 2000-12, and these sections are incorporated herein, by reference. Pursuant to Water Code sections 1205 through 1207, the SWRCB adopted a Declaration,[2] which contains a list of stream systems found to be fully appropriated in previous water right decisions. The statute prohibits the SWRCB from accepting any new applications to appropriate water from watercourses listed on the Declaration, except in accordance with the provisions of the Declaration. The Declaration includes the Santa Ana River stream system as fully appropriated on a year-round basis, based on a number of court judgments, two of which establish the overall framework for the division of rights and responsibilities among the major water users in the basin.[3] The discussion of the Santa Ana River court judgments is contained in section 4.0 of Order WR 2000-12 and is incorporated by reference.

3.0 ORDER WR 2000-12

The focus of the SWRCB's inquiry in Order WR 2000-12 was the narrow task of determining whether the evidentiary record supported revising the fully appropriated stream status of the Santa Ana River for the limited purpose of processing two water right applications. Based on the SWRCB's review of the record and the findings contained in Order WR 2000-12, the SWRCB concluded that the Declaration, as adopted by Order WR 98-08, should be revised to allow for processing the water right applications submitted by the Municipal Water District, Western, and the Orange County Water District.

In section 6.5 of Order WR 2000-12, the SWRCB found that increased releases of treated wastewater, increased runoff due to urbanization, and increased availability of water during wet

[2] The Declaration was updated on November 19, 1998 in Order WR 98-05.

[3] In Order WR 89-25, the SWRCB cited State Water Rights Board Decision 1194 for the finding that no unappropriated water is available from the Santa Ana River watershed. Decision 1194 referred to the Court of Appeal decision in *Orange County Water Dist. v. City of Riverside* (1961) 188 Cal.App.2d 566 [10 Cal.Rptr. 899]. The subject of water rights was also addressed in two stipulated judgments entered into on April 17, 1969. (See *Orange County Water Dist. v. City of Chino et al.* (Super. Ct. Orange County, 1969, No. 117628); *Western Mun. Water Dist. v. East San Bernadino County Water Dist.* (Super. Ct. Riverside County, 1969, No. 78426).)

years, above the average used in developing the physical solution reflected in the 1969 *Orange County Water District* judgment, had substantially increased flows present in the Santa Ana River since entry of the 1969 judgment. The SWRCB also found that it was reasonable to expect a further increase in flows. In addition, the SWRCB found that the construction of the Seven Oaks Dam was a significant change in conditions that affect the flow patterns below the dam following storm events, making it feasible to divert more water for beneficial use. Finally, the SWRCB found that the possibility of using Seven Oaks Reservoir for water storage if federal approval can be obtained could further increase the quantity of water potentially available for appropriation in some years.

The hearing preceding Order WR 2000-12 focused narrowly on the issue whether to revise the Declaration to allow for processing the specified applications. Accordingly, Order WR 2000-12 states that all questions regarding the specific amount of water available for appropriation under the applications, the season of water availability, approval or denial of the applications, and the conditions to be included in any permits that may be issued on the applications will be resolved in further proceedings on each application pursuant to applicable provisions of the Water Code. In concluding that the specified applications may be processed, Order WR 2000-12 made no finding regarding the relative priority of the rights that may be acquired under the specified applications and other rights or applications for water rights in the Santa Ana River Basin.

4.0 DESCRIPTION OF PENDING PETITIONS AND APPLICATIONS

Following the hearing that resulted in Order WR 2000-12, the SWRCB received additional petitions requesting revision of the Declaration to allow for processing additional applications to appropriate water from the Santa Ana River stream system. The petitions cite the water availability information submitted in support of Order WR 2000-12 as the basis for revision of the Declaration. Each petitioner also submitted an application to appropriate the water identified in the petitions as follows:

1) Chino Basin Watermaster petition and application requesting a right to divert 97,000 acre-feet per annum (afa) to groundwater storage.

2) Municipal Water District and Western petition and application requesting a right to collect a maximum of 100,000 afa in surface and underground storage, and to directly divert at a maximum rate of 1,500 cubic feet per second (cfs). The maximum combined amount to be diverted for direct use and storage is 200,000 afa. The petition and application are in addition to the petition and application addressed in Order WR 2000-12

3) San Bernardino Valley Water Conservation District (Water Conservation District) petition and application proposing combined groundwater and surface storage of 174,545 afa, with the surface storage element not to exceed 150,065 afa.

4) City of Riverside petition and application proposing direct diversion of 75 cfs throughout the year, with a maximum direct diversion of 41,400 afa. The applicant seeks to divert treated wastewater from the applicant's Regional Water Quality Control Plant.

On its own motion, the SWRCB proposes a revision of the Declaration to allow for processing four minor applications that seek water from the West and East Forks of Cable Creek, which are located in the Santa Ana River watershed. Water is conveyed through an existing, common pipeline to the properties owned by the following four applicants:

1) Application 29216 of Eddie Evans filed March 17, 1988. The application requests: (a) direct diversion of 0.15 cfs throughout the year, with a maximum direct diversion of 45 afa; and (b) collection to storage of 2 afa from November 1 of each year through April 1 of the following year.

2) Application 29217 of Gloria Evans filed March 17, 1988. The application requests: (a) direct diversion of 4,000 gallons per day throughout the year; and (b) collection to storage of 4 afa from November 1 of each year through April 1 of the following year.

3) Application 29945 of Samual Kirtley filed June 27, 1988. The application requests: (a) direct diversion of 0.05 cfs throughout the year, with a maximum direct diversion of 24 afa; and (b) collection to storage of 1 afa from November 1 of each year through March 31 of the following year.

4) Application 29949 of James Quiroz filed March 26, 1990. The application requests direct diversion of 0.066 cfs throughout the year, with a maximum direct diversion of 26 afa.

5.0 HEARING ON PETITIONS

Section 871 of Title 23 of the California Code of Regulations provides that the SWRCB may revoke or revise the Declaration upon its own motion or upon petition of any interested person. In this instance, the SWRCB issued a Notice of Pre-Hearing Conference and Public Hearing dated March 19, 2002. The purpose of the pre-hearing conference was to determine whether the parties agree to rely solely upon the evidentiary record that served as the basis for Order WR 2000-12 as the evidentiary record for this proceeding. The March 19 notice states that the findings required to approve the current petitions before the SWRCB are essentially identical to the SWRCB's previous findings in Order WR 2000-12.

All parties that submitted Notices of Intent to Appear for the hearing attended the pre-hearing conference. Representatives of the following parties participated in the pre-hearing conference: Municipal Water District and Western, Orange County Water District, City of Riverside, Chino Basin Watermaster, Water Conservation District, East Valley Water District, Eddie Evans, Bear Valley Mutual Water Company, City of Redlands, California Sportfishing Protection Alliance, City of San Bernardino Municipal Water Department, Santa Ana River Local Sponsors, Department of Fish and Game.

All parties agreed that the 1999 evidentiary record for the December 7 and 8, 1999 hearing on petitions to revise the Declaration for the Santa Ana River stream system, and Order WR 2000-

12, shall comprise the entire evidentiary record for the July 3, 2002,[4] hearing on the pending petitions to revise the Declaration for the Santa Ana River stream system. (See Recorded Transcript at 26.) On this basis, the SWRCB waived further requirements to submit evidence and testimony for the July 3, 2002 hearing.[5]

6.0 EVIDENCE SUPPORTING REVISION OF FULLY APPROPRIATED STREAM DECLARATION

In Order WR 2000-12, the SWRCB found that the evidentiary record supported revising the fully appropriated stream status of the Santa Ana River for the limited purpose of processing two water right applications. The amount of water contemplated for appropriation by the water right applications in that hearing is less than the amount of water proposed for appropriation by the petitions currently before the SWRCB. Based on the combined diversion limits for each filing, the total amount of water proposed in the applications that accompanied the two petitions for the 1999 hearing was 607,800 afa (100,000 afa by Municipal Water District/Western and 507,800 afa by Orange County Water District). The total amount of water proposed in the applications accompanying the petitions before us is 413,027.2 afa (second Municipal Water District/Western filing for 100,000 afa; Chino Basin Watermaster for 97,000 afa; Water Conservation District for 174,545 afa; City of Riverside for 41,400 afa, and; SWRCB's motion on four applications for a total of 82.2 afa).[6] Moreover, the previous order expressly provided that it did not establish any priority among applications filed or other rights in the Santa Ana River Basin. Therefore, it is appropriate to rely on the findings made in Order WR 2000-12 for this proceeding, as the task and evidence before us are essentially identical. The evidence regarding changes in conditions that affect availability of water for appropriation in the Santa Ana River watershed is evaluated in section 6.0 of Order WR 2000-12 and the findings of that section are hereby incorporated by reference.

7.0 ENVIRONMENTAL ISSUES

The environmental issues associated with the projects proposed by Chino Basin Watermaster, Municipal Water District and Western, Water Conservation District, City of Riverside, Eddie Evans, Gloria Evans, Samual Kirtley and James Quiroz will be addressed by the SWRCB in the context of processing the water right applications. Prior to any potential approval or decision to proceed with a proposed project, these eight persons and entities and the SWRCB must fulfill their obligations under the California Environmental Quality Act ("CEQA," Public Resources Code section 21000 et seq.) In addition to meeting statutory responsibilities under CEQA, the

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[4] The hearing was originally noticed for July 3, 2002, and on June 17, 2002, the hearing date was changed to July 2, 2002.

[5] Three of the parties agreed to accept a written procedural stipulation in which the signatories also agreed to rely solely on the evidentiary record that served as the basis for water rights Order 2000-12 for the July 3, 2002 hearing. The SWRCB entered the stipulation into the record for the sole purpose of this cross-reference.

[6] The SWRCB made no finding in Order WR 2000-12 about the specific amount of water that may be available for appropriation under specific applications, and nor do we here. The amount of water referenced is relevant only to the extent that the prior proceeding was sufficiently similar to the present to rely on the previous findings.

SWRCB will comply with its obligations to consider environmental and public interest issues under the Water Code and the public trust doctrine in the context of processing the water right applications submitted by the petitioners.[7]

8.0 CONCLUSION

The task and evidence before us are virtually the same as that before the SWRCB when it issued Order WR 2000-12, which concluded that the evidentiary record supported revising the fully appropriated stream status of the Santa Ana River for the limited purpose of processing two water right applications. The amount of water proposed for appropriation by those two water right applications is similar to the amount contemplated by the petitions currently before us. The SWRCB has not approved either application, and Order WR 2000-12 does not commit the SWRCB to approve either application, it merely allows the applications to be processed. In addition, the SWRCB deferred any assignment of priority between water right applications or other rights to a later determination on the merits of any application. Therefore, our review of the current petitions involves essentially the same analysis as that conducted for Order WR 2000-12. If conditions have changed so as to support revisions of the Declaration of Fully Appropriated Streams to allow processing the two applications involved in Order WR 2000-12, those changed conditions should also allow processing of the applications involved in this proceeding, even if the SWRCB ultimately determines, in acting on the applications, that the total amount of water available for appropriation is insufficient to approve many of the applications. It is appropriate to rely on the SWRCB's findings in Order WR 2000-12 in this proceeding. Accordingly, we conclude that the Declaration, as adopted by Order WR 98-08, should be revised to allow for processing the water right applications submitted by Chino Basin Watermaster, Municipal Water District and Western, Water Conservation District, City of Riverside, Eddie Evans, Gloria Evans, Samual Kirtley and James Quiroz in accordance with the provisions of the Water Code and other applicable law. The SWRCB recognizes that processing the pending water right applications will require consideration of numerous issues not addressed in this order. However, as indicated in the hearing notice, the focus of our inquiry in this proceeding is on the relatively narrow task of determining if the evidentiary record supports revising the fully appropriated stream status of the Santa Ana River for the limited purpose of processing the water right applications identified in the Hearing Notice.

[7] Neither Order WR 89-25 nor subsequent revisions of the Declaration provide an extensive explanation of the basis for classifying the Santa Ana River as fully appropriated. However, there is no indication that the classification of the Santa Ana River as fully appropriated was based upon a need to reserve or retain water in the river or its tributaries for instream uses. Neither Order WR 89-25, nor Decision 1194 addresses the subject of retaining water in the river to meet instream needs. In an instance in which instream or environmental considerations were not relied upon as a basis for classifying a watercourse as fully appropriated, a decision to revise the fully appropriated designation to allow for processing new water right applications need not involve consideration and analysis of instream or other environmental uses of the water sought to be appropriated. Those issues can properly be addressed in the context of processing the applications once they are accepted for filing.

ORDER

IT IS HEREBY ORDERED, based upon the foregoing findings, that:

1. The Declaration of Fully Appropriated Streams, as adopted by SWRCB Order WR 98-08, is amended to allow for processing the following applications to appropriate water from the Santa Ana River stream system:

   (a) The application filed by Chino Basin Watermaster

   (b) The application filed by Municipal Water District and Western

   (c) The application filed by Water Conservation District

   (d) The application filed by City of Riverside

   (e) Application 29216 of Eddie Evans

   (f) Application 29217 of Gloria Evans

   (g) Application 29945 of Samual Kirtley

   (h) Application 29949 of James Quiroz

2. The SWRCB Division of Water Rights shall process the specified water right applications in accordance with applicable law.

CERTIFICATION

The undersigned, Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on July 2, 2002.

AYE:	Arthur G. Baggett, Jr. Richard Katz Gary M. Carlton
NO:	None
ABSENT:	Peter S. Silva
ABSTAIN:	None

Maureen Marché

Maureen Marché
Clerk to the Board

ATTACHMENT 3

DATA USED IN WATER AVAILABILITY ANALYSIS

GAGE DATA USED IN THE ANALYSIS

Informal Station Name	"Combined Flow" Mentone Gage
Formal Station Name	SANTA ANA R NR MENTONE CN + CN CA
Station Number	11051501
Agency Collecting Data	US Geological Survey
Period of Record at Station	July 1896 to September 2003
Period of Record Used in Analysis	October 1, 1961 to September 30, 2000
Notes	This record includes the Mentone Gage (Gage 11051500), the Southern California Edison Canal Gage (Gage 11049500), and the Auxiliary Canal Gage (Gage 11051502). Prior to September 3, 1917 non-recording gages at several sites used to create record. September 3, 1917 to May 27, 1969 record created using water-stage recorder at different datum.
Format provided	The daily and monthly records for this gage are provided as an Excel spreadsheet, included in the workbook entitled "11051501".

Informal Station Name	Southern California Edison Canal Gage
Formal Station Name	SANTA ANA R CN AB PP3 NR MENTONE CA
Station Number	11049500
Agency Collecting Data	Southern California Edison Company under supervision of US Geological Survey
Period of Record at Station	October 1, 1974 to September 30, 2003
Period of Record Used in Analysis	October 1, 1974 to September 30, 2000
Notes	Included within the "Combined Flow" Mentone Gage record.
Format provided	The daily and monthly records for this gage are provided as an Excel spreadsheet, included in the workbook entitled "11049500".

Informal Station Name	Auxiliary Canal Gage
Formal Station Name	SAR SUPP GAGE NR MENTONE CA
Station Number	11051502
Agency Collecting Data	US Geological Survey
Period of Record at Station	October 1, 1977 to September 30, 2003
Period of Record Used in Analysis	October 1, 1977 to September 30, 2000
Notes	Included within the "Combined Flow" Mentone Gage record and "River Only" Mentone Gage record.
Format provided	The daily and monthly records for this gage are provided as an Excel spreadsheet, included in the workbook entitled "11051502".

Informal Station Name	Mentone Gage
Formal Station Name	SANTA ANA R NR MENTONE
Station Number	11051500
Agency Collecting Data	US Geological Survey
Period of Record at Station	October 1, 1896 to September 30, 2003
Period of Record Used in Analysis	October 1, 1961 to September 30, 2000
Notes	Included within the "Combined Flow" Mentone Gage record and "River Only" Mentone Gage record.
Format provided	The daily and monthly records for this gage are provided as an Excel spreadsheet, included in the workbook entitled "11051500".

Informal Station Name	"River Only" Mentone Gage
Formal Station Name	SANTA ANA R NR MENTONE (RIVER ONLY) CA
Station Number	11051499
Agency Collecting Data	US Geological Survey
Period of Record at Station	October 1, 1994 to September 30, 2003
Period of Record Used in Analysis	October 1, 1994 to September 30, 2000
Notes	This record includes the Mentone Gage (Gage 11051500) and the auxiliary Cana Gage (Gage 11051502).
Format provided	The daily records for this gage are provided as an Excel spreadsheet, included in the workbook entitled "11051499".

Informal Station Name	"E" Street Gage
Formal Station Name	SANTA ANA R A E ST NR SAN BERNARDINO CA
Station Number	11059300
Agency Collecting Data	US Geological Survey
Period of Record at Station	March 1939 to September 1954 and October 1966 to September 30, 2000
Period of Record Used in Analysis	October 1, 1966 to September 30, 2000
Notes	
Format provided	The daily and monthly records for this gage are provided as an Excel spreadsheet, included in the workbook entitled "11059300".

Informal Station Name	MWD Crossing Gage
Formal Station Name	SANTA ANA R A MWD CROSSING CA
Station Number	11066460
Agency Collecting Data	US Geological Survey
Period of Record at Station	March 3, 1970 to September 30, 2000
Period of Record Used in Analysis	October 1970 to September 30, 2000
Notes	Prior to this gage going into operation, streamflow in this vicinity measured by USGS Gage 11066500.
Format provided	The daily and monthly records for this gage are provided as an Excel spreadsheet, included in the workbook entitled "11066460".

SYNTHESIZED HYDROLOGY USED IN THE ANALYSIS

Notes	The synthesized hydrology is based on accounting for the operations of Big Bear Dam in the years before Big Bear had been built.
Format provided	The synthesized monthly records are provided for river only flow (11051500) and combined flow (11051501) in an Excel spreadsheet, included in the workbook entitled "Synthesized".

ATTACHMENT 4

Project Area and Physical Characteristics	Public Trust Resources Inventory			
	Major Habitat Type	*Sensitive Vegetation Communities and Plant Species*	*Sensitive Wildlife Species and Wildlife Species Habitat*	*Other Biological Resources*
River Segment A **Upstream of Seven Oaks Dam** • The average gradient of the Santa Ana River (SAR) is 300 feet per mile, but tributaries have gradients ranging from 600 feet per mile to 1,900 feet per mile, illustrating the steep topography of the area. • The area susceptible to flood inundation is contained within River Segment A.	• Riparian vegetation and perennial stream habitat is restricted to two cienagas associated with the inflows of Warm Springs Creek (located within the 50-year inundation area) and Alder Creek (located upstream of the inundation area). • Riparian scrub, dominated by mulefat and shrubby willows, are associated with intermittent stream channels outside the cienegas. • Alluvial scrub vegetation exists in the upland parts of the floodplain. • Areas that would be affected by inundation were previously fully mitigated for as part of construction of Seven Oaks Dam. • Mixed chaparral is the prevailing vegetation type of the hillsides adjacent to the narrow floodplain above the Dam.	• Riparian vegetation, in a limited area of perennial flow associated with the inflow of Warm Creek, is dominated by white alders, various willows, and western sycamore. • No rare, threatened, or endangered plant species identified.	• Introduced populations of brown trout and rainbow trout present in a limited area of perennial flow associated with the inflow of Warm Creek. • No listed bird species known to be resident in the riparian habitat.	• Cienegas are present in the SAR upstream from the sediment pool and construction area. They support introduced brown and rainbow trout and riparian forest. Cienaga refers to a riparian marshland or permanently saturated "seep wetland". Cienegas are dominated by sedges and other herbaceous and woody wetland plants.

Project Area and Physical Characteristics	**Public Trust Resources Inventory**			
	Major Habitat Type	***Sensitive Vegetation Communities and Plant Species***	***Sensitive Wildlife Species and Wildlife Species Habitat***	***Other Biological Resources***
River Segment B **Seven Oaks Dam to Cuttle Weir** • Stream flow in this segment is perennial due to a required 3 cfs release from Seven Oaks Dam. • Slope is fairly steep, bed material is generally coarse, and the river is confined by canyon walls and is in a constructed channel throughout. • Immediately downstream of the plunge pool, the mainstem of the SAR is generally an engineered trapezoidal channel and the banks are also lined with loose boulders.	• Mixed Chaparral • Southern Cottonwood-Willow Riparian Woodland • Riversidean Alluvial Fan Sage Scrub (RAFSS) • Mulefat Scrub • Riparian Scrub • Wetland • Aquatic habitat	• Riparian scrub developing into riparian woodland immediately downstream of the plunge pool extending to Cuttle Weir (that portion of the channel reconstruction as part of Seven Oaks Dam construction). • Perennial aquatic habitat maintained by a perennial flow of at least 3 cfs. • No sensitive aquatic species expected to occur in this segment of the river.	• No resident southwestern willow flycatcher or least Bell's vireo are known or expected to occur. Either could occur as transient species. • No fish known to exist in this segment.	
River Segment C **Cuttle Weir to Mill Creek Confluence** • Slope is steep and bed material is coarse. Downstream of Cuttle Weir, the SAR exits the upper SAR canyon and enters the Santa Ana Wash (alluvial fan). • The channel is a sandy wash with smaller channels separated by vegetated bars or terraces. • The downstream portion of this segment is subject to overbank flooding.	Instream areas: • No wetland or riparian vegetation in channels, except for scattered mulefat and a few non-native tamarisk. Overbank areas: • RAFSS, pioneer, intermediate, and chamise subclimax stages on terraces adjacent to channels of braided	Instream areas: • No sensitive resources identified. Overbank areas: • RAFSS • Santa Ana River woolly-star • Slender-Horned Spineflower (possible on seldom flooded terraces) • Parry's Spineflower	Instream areas: • Habitat unsuitable for Southwestern willow flycatcher and least Bell's vireo. • No fish in this segment due to lack of flow during most of year. Overbank areas: • San Bernardino Kangaroo Rat (SBKR) • California Gnatcatcher	

Project Area and Physical Characteristics	**Public Trust Resources Inventory**			
	Major Habitat Type	***Sensitive Vegetation Communities and Plant Species***	***Sensitive Wildlife Species and Wildlife Species Habitat***	***Other Biological Resources***
	stream.	• Plummer's mariposa lily	critical habitat (CAGN)	
River Segment D **Mill Creek Confluence to "E" Street** • Intermittent flow at upper end and perennial flow at lower end due to groundwater upwelling and San Timoteo Creek inflow. • This river segment receives substantial tributary inflow during storm events. • At the upper end of this segment, river bed material is generally coarse, whereas downstream portions of the segment consist of a soft-bottom channel with uncompacted earthen berms on both banks. In the upstream portion, the channel is about 1,800 feet wide. In the downstream portion, the river is part of a broad wash, up to 5,000 feet wide, which includes part of the floodplain for City Creek and Plunge Creek. • Segment D includes multiple areas that could be subject to overbank flooding.	Instream areas: • Riparian scrub dominated by mulefat and shrubby willows. • Southern Cottonwood-Willow Riparian Woodland and marsh habitat associated with perennial flow at lower end of segment. Overbank areas: • RAFSS	Instream areas: • Sensitive riparian habitat at lower end of segment. Overbank areas: • RAFSS • Santa Ana River woolly-star • Slender-Horned Spineflower	Instream areas: • Riparian habitat at lower end supports nesting for Southwestern Willow Flycatcher and least Bell's vireo. • Santa Ana speckled dace present in aquatic habitat at lower end. Overbank areas: • SBKR • CAGN critical habitat	

Project Area and Physical Characteristics	**Public Trust Resources Inventory**			
	Major Habitat Type	***Sensitive Vegetation Communities and Plant Species***	***Sensitive Wildlife Species and Wildlife Species Habitat***	***Other Biological Resources***
River Segment E **"E" Street to RIX Facility** • River Segment E receives tributary inflow from Lytle Creek and Warm Creek. • The river has been channelized throughout the segment to confine flows and protect bridges and other structures. • This segment does not have overbank flooding areas.	• Aquatic, riparian, and wetland habitat limited due to intermittent stream flow. • Mostly sparse riparian scrub.	• No sensitive resources identified.	• Lacks suitable habitat for southwestern willow flycatcher or least Bell's vireo due to limited riparian habitat, restricted by intermittent stream flow.	
River Segment F **RIX Facility to Riverside Narrows** • Inflow from discharges from the RIX and Rialto wastewater treatment plants. • Generally, this river segment and downstream sections have year-round flow, attributable to effluent discharge, rising water, and urban and agricultural runoff. • This segment does not have overbank flooding areas.	• Well-developed riparian forest and aquatic habitat.	• Southern Cottonwood-Willow Riparian Forest, Woodland, and marsh habitat associated with perennial flow.	• least Bell's vireo • Southwestern Willow Flycatcher • Santa Ana sucker (located primarily in the Rialto drain).	

Project Area and Physical Characteristics	**Public Trust Resources Inventory**			
	Major Habitat Type	***Sensitive Vegetation Communities and Plant Species***	***Sensitive Wildlife Species and Wildlife Species Habitat***	***Other Biological Resources***
River Segment G **Riverside Narrows to Prado Flood Control Basin** • Stream flow is perennial throughout Segment G due to inflow from wastewater treatment plants and rising groundwater. • This segment does not have overbank flooding areas.	• Well-developed riparian forest, wetland and aquatic habitat.	• Southern Cottonwood-Willow Riparian Forest, Woodland, and marsh habitat associated with perennial flow.	• Significant breeding populations of riparian-dependent songbirds • least Bell's vireo critical habitat • Southwestern Willow Flycatcher critical habitat • Western yellow-billed cuckoo • Santa Ana sucker	
Seven Oaks Dam and Reservoir Construction Area • This area was previously disturbed as part of Seven Oaks Dam construction. • The construction area lies within the designated debris pool. The debris pool is seasonally filled and drained as part of Seven Oaks Dam operations.	• The debris pool provides aquatic habitat but is drained prior to the start of the flood season and this habitat dries out. The habitat supports aquatic invertebrates and some aquatic plants but does not sustain fish. • The construction area is bounded by steep slopes occupied by native, undisturbed chaparral. This habitat will be periodically inundated during flood control operations. • The relocation of Warm Springs road would have	• None in the construction area upstream of the dam	• None in the construction area upstream of the dam	

Project Area and Physical Characteristics	**Public Trust Resources Inventory**			
	Major Habitat Type	***Sensitive Vegetation Communities and Plant Species***	***Sensitive Wildlife Species and Wildlife Species Habitat***	***Other Biological Resources***
	affected chaparral and other upland habitats. However, following consultation with the US Forest Service, this aspect of the Project was eliminated.			
Santa Ana River Construction Area • Portions of this area were previously disturbed as part of Seven Oaks Dam construction.	• RAFSS is the dominant upland plant community on the alluvial fan. The adjacent hillsides support Riversidian sage scrub (RSS) or chaparral. • Riparian vegetation lines the active channel.	• RAFSS • Parry's Spineflower • Plummer's mariposa lily • Santa Ana River woolly-star • Slender-horned spineflower were not found within any of the proposed construction area.	Potentially occurring species include: • Arroyo toad • Western yellow-billed cuckoo • Southwestern willow flycatcher • CAGN • least Bell's vireo • SBKR Non-listed sensitive species potentially occurring include: • Loggerhead shrike • Black-chinned sparrow • San Bernardino mountain kingsnake	• Burrowing owl • San Diego horned lizard • San Diego woodrat • Native and non-native herbaceous and scrub species

Project Area and Physical Characteristics	**Public Trust Resources Inventory**			
	Major Habitat Type	***Sensitive Vegetation Communities and Plant Species***	***Sensitive Wildlife Species and Wildlife Species Habitat***	***Other Biological Resources***
Devil Canyon Construction Area • Devil Canyon Creek is a perennial stream. • This area was previously disturbed as part of Inland Feeder and other pipeline construction.	• Revegetated coastal sage scrub • The dominant riparian vegetation is alder	• No sensitive resources identified.	Potentially occurring species include: • Southwestern willow flycatcher • CAGN • Least Bell's vireo However, minimal habitat makes it improbable for these species to occur.	• RSS, chaparral, southern willow scrub, mulefat scrub, and ruderal grassland • Brittlebush, California buckwheat, deerweed, willows, cottonwoods, and alders • Riparian species- birds and amphibians • Rufous-crowned sparrow • Northern red-diamond snake Due to disturbance, minimal wildlife is expected in this area.
Lytle Creek Construction Area • Majority of construction area within or adjacent to city streets	• RAFSS predominates with scattered, small sycamores and very large birchleaf mountain mahogany. • Riparian community exists in the constructed drainage channel dominated by mulefat. • Most construction effects would be on previously disturbed areas with some effects on adjacent RAFSS habitat with varying	• No sensitive plant species are expected to occur at the construction sites. • Localized populations of Parry's spineflower are prevalent in nearby areas. • Occasional individuals of Plummer's mariposa lily are present in RAFSS habitat in the surrounding areas.	• least Bell's vireo • Southwestern willow flycatcher • CAGN • SBKR Non-listed sensitive wildlife species that may be present include: • Rufous crowned sparrow • Northern red-diamond rattlesnake	• Riparian community including: mulefat, arroyo willow, sandbar willow, mugwort, goldenrod, annual sunflower, grasses, and rushes. • Basin community including: coastal sagebrush, California buckwheat, scalebroom, matchweed, and deerweed. In addition, weedy non-native species

Project Area and Physical Characteristics	**Public Trust Resources Inventory**			
	Major Habitat Type	***Sensitive Vegetation Communities and Plant Species***	***Sensitive Wildlife Species and Wildlife Species Habitat***	***Other Biological Resources***
	degrees of disturbance.		• San Diego horned lizard • Coastal cactus wren	are present including: tocalote, filaree, red brome, ragweed, castor bean, and giant reed. • Typical riparian species – black phoebe, black-headed grosbeak, and yellow-rumped warbler. • Scrublands would be expected to support squirrels and deer mice.

Acronyms:

CAGN	California gnatcatcher
RAFSS	Riversidian alluvial fan sage scrub
RSS	Riversidian sage scrub (in non-alluvial habitats)
SAR	Santa Ana River
SBKR	San Bernardino Kangaroo Rat

ATTACHMENT 5

Project Area	Impacts to Public Trust Resources			
	Scenario A (seasonal storage, 1,500 cfs diversion)	Scenario B (seasonal storage, 500 cfs diversion)	Scenario C (no seasonal storage, 1,500 cfs diversion)	Scenario D (no seasonal storage, 500 cfs diversion)
River Segment A Upstream of Seven Oaks Dam	Change in hydrology from Baseline: 1. Peak 100-year flood flows: NA 2. Number of zero flow days: NA 3. Median non-storm day flow: NA	Change in hydrology from Baseline: 1. Peak 100-year flood flows: NA 2. Number of zero flow days: NA 3. Median non-storm day flow: NA	Change in hydrology from Baseline: 1. Peak 100-year flood flows: NA 2. Number of zero flow days: NA 3. Median non-storm day flow: NA	Change in hydrology from Baseline: 1. Peak 100-year flood flows: NA 2. Number of zero flow days: NA 3. Median non-storm day flow: NA
	Effects on public trust resources • Increased frequency of inundation up to elevation 2,418 ft msl during seasonal storage period, impacts to public trust resources similar to flood control operations. Impacts less than significant. Biological resources within the flood control reservoir pool (below elevation 2,425 ft msl) already permitted and mitigated for loss during flood control operations. Adverse effects associated with increased aquatic habitat and duration of inundation, such as establishment of introduced fish species are not expected due to the brevity of inundation as well as operating procedures that result in a dry segment of river between the reservoir and upper wetted reaches. DEIR page 3.3-55.	Effects on public trust resources • Increased frequency of inundation up to elevation 2,418 ft msl during seasonal storage period, impacts to public trust resources similar to flood control operations. Impacts less than significant. Biological resources within the flood control reservoir pool (below elevation 2,425 ft msl) already permitted and mitigated for loss during flood control operations. Adverse effects associated with increased aquatic habitat and duration of inundation, such as establishment of introduced fish species are not expected due to the brevity of inundation as well as operating procedures that result in a dry segment of river between the reservoir and upper wetted reaches. DEIR page 3.3-55.	Effects on public trust resources • No change from existing conditions.	Effects on public trust resources • No change from existing conditions.
River Segment B Seven Oaks Dam to Cuttle Weir	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 1,500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: – 1 cfs	Change in hydrology from Baseline: 1. Peak 100-year flood flows: - 500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: – 1 cfs	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 1,500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: – 1 cfs	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: – 1 cfs
	Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. Three cfs, which would remain in the river, considered sufficient to support aquatic community that exists. DEIR pages 3.3-62 to 3.3-63.	Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. Three cfs, which would remain in the river, considered sufficient to support aquatic community that exists. DEIR pages 3.3-62 to 3.3-63.	Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. Three cfs, which would remain in the river, considered sufficient to support aquatic community that exists. DEIR pages 3.3-62 to 3.3-63.	Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. Three cfs, which would remain in the river, considered sufficient to support aquatic community that exists. DEIR pages 3.3-62 to 3.3-63.

Project Area	**Impacts to Public Trust Resources**			
	Scenario A (seasonal storage, 1,500 cfs diversion)	**Scenario B (seasonal storage, 500 cfs diversion)**	**Scenario C (no seasonal storage, 1,500 cfs diversion)**	**Scenario D (no seasonal storage, 500 cfs diversion)**
River Segment C Cuttle Weir to Mill Creek	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 1,500 cfs 2. Number of zero flow days: +1,868 3. Median non-storm day flow: 0 cfs	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 500 cfs 2. Number of zero flow days: +1,868 3. Median non-storm day flow: 0 cfs	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 1,500 cfs 2. Number of zero flow days: +1,868 3. Median non-storm day flow: 0 cfs	Change in hydrology from Baseline: 1. Peak 100-year flood flows: –500 cfs 2. Number of zero flow days: +1,868 3. Median non-storm day flow: 0 cfs
	Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. This segment is generally dry and only limited resources are present. DEIR pages 3.3-62 to 3.3 -63. • Reduction in frequency and extent of flood flows hindering habitat renewal processes in RAFSS. Less than significant impact. Flood flows would be reduced by up to 1,500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 140 years, leading to RAFSS maturation. Maturation of RAFSS is a less than significant impact. DEIR pages 3.3-59 to 3.3-60. • Reduction in frequency and extent of overbank flooding leading to maturation to less suitable SBKR and Santa Ana River woolly-star habitat. Significant but mitigable impact. Flood flows would be reduced by up to 1,500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 140 years, leading to RAFSS maturation, an undesirable habitat for SBKR. Identified mitigation measures involve the removal of invasive non-native plant species that diminish the value of SBKR and Santa Ana River woolly-star habitats and development of a program of habitat manipulation that simulates the aftermath of natural flooding. DEIR pages 3.3-60 to 3.3-62. • Change in sediment transport. Less than significant impact. Diversions of 1,500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely effect critical habitat for the Santa Ana sucker. DEIR page 3.3-63.	Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. This segment is generally dry and only limited resources are present. DEIR pages 3.3-62 to 3.3 -63. • Reduction in frequency and extent of flood flows hindering habitat renewal processes in RAFSS. Less than significant impact. Flood flows would be reduced by up to 500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 80 years, leading to RAFSS maturation. Maturation of RAFSS is a less than significant impact. DEIR pages 3.3-59 to 3.3-60. • Reduction in frequency and extent of overbank flooding leading to maturation to less suitable SBKR and Santa Ana River woolly-star habitat. Significant but mitigable impact. Flood flows would be reduced by up to 500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 80 years, leading to RAFSS maturation, undesirable habitat for SBKR. Identified mitigation measures involve the removal of invasive non-native plant species that diminish the value of SBKR and Santa Ana River woolly-star habitats and development of a program of habitat manipulation that simulates the aftermath of natural flooding. DEIR pages 3.3-60 to 3.3-62. • Change in sediment transport. Less than significant impact. Diversions of 500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely effect critical habitat for the Santa Ana sucker. DEIR page 3.3-63.	Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. This segment is generally dry and only limited resources are present. DEIR pages 3.3-62 to 3.3 -63. • Reduction in frequency and extent of flood flows hindering habitat renewal processes in RAFSS. Less than significant impact. Flood flows would be reduced by up to 1,500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 140 years, leading to RAFSS maturation. Maturation of RAFSS is a less than significant impact. DEIR pages 3.3-59 to 3.3-60. • Reduction in frequency and extent of overbank flooding leading to maturation to less suitable SBKR and Santa Ana River woolly-star habitat. Significant but mitigable impact. Flood flows would be reduced by up to 1,500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 140 years, leading to RAFSS maturation, undesirable habitat for SBKR. Identified mitigation measures involve the removal of invasive non-native plant species that diminish the value of SBKR and Santa Ana River woolly-star habitats and development of a program of habitat manipulation that simulates the aftermath of natural flooding. DEIR pages 3.3-60 to 3.3-62. • Change in sediment transport. Less than significant impact. Diversions of 1,500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely effect critical habitat for the Santa Ana sucker. DEIR page 3.3-63.	Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. This segment is generally dry and only limited resources are present. DEIR pages 3.3-62 to 3.3 -63. • Reduction in frequency and extent of flood flows hindering habitat renewal processes in RAFSS. Less than significant impact. Flood flows would be reduced by up to 500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 80 years, leading to RAFSS maturation. Maturation of RAFSS is a less than significant impact. DEIR pages 3.3-59 to 3.3-60. • Reduction in frequency and extent of overbank flooding leading to maturation to less suitable SBKR and Santa Ana River woolly-star habitat. Significant but mitigable impact. Flood flows would be reduced by up to 500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 80 years, leading to RAFSS maturation, undesirable habitat for SBKR. Identified mitigation measures involve the removal of invasive non-native plant species that diminish the value of SBKR and Santa Ana River woolly-star habitats and development of a program of habitat manipulation that simulates the aftermath of natural flooding. DEIR pages 3.3-60 to 3.3-62. • Change in sediment transport. Less than significant impact. Diversions of 500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely effect critical habitat for the Santa Ana sucker. DEIR page 3.3-63.

Project Area	Impacts to Public Trust Resources			
	Scenario A (seasonal storage, 1,500 cfs diversion)	Scenario B (seasonal storage, 500 cfs diversion)	Scenario C (no seasonal storage, 1,500 cfs diversion)	Scenario D (no seasonal storage, 500 cfs diversion)
River Segment D Mill Creek Confluence to 'E' Street	Change in hydrology from Baseline: 1. Peak 100-year flood flows: –1,500 cfs 2. Number of zero flow days: +644 3. Median non-storm day flow: 0 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. This segment is generally dry and only limited resources are present. DEIR pages 3.3-62 to 3.3 -63. • Reduction in frequency and extent of flood flows hindering habitat renewal processes of RAFSS. Less than significant impact. Flood flows would be reduced by up to 1,500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 56 years, leading to RAFSS maturation. Maturation of RAFSS is a less than significant impact. DEIR pages 3.3-59 to 3.3-60. • Reduction in frequency and extent of overbank flooding leading to maturation to less suitable SBKR and Santa Ana River woolly-star habitat. Less than significant impact. Flood flows would be reduced by up to 1,500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 56 years. This small change in flood frequency would not have a noticeable or ecologically meaningful effect on vegetation/habitat. DEIR pages 3.3-60 to 3.3-62. • Change in sediment transport. Less than significant impact. Diversions of 1,500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely affect critical habitat for the Santa Ana sucker. DEIR page 3.3-63.	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 500 cfs 2. Number of zero flow days: +644 3. Median non-storm day flow: 0 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. This segment is generally dry and only limited resources are present. DEIR pages 3.3-62 to 3.3 -63. • Reduction in frequency and extent of flood flows hindering habitat renewal processes of RAFSS. Less than significant impact. Flood flows would be reduced by up to 500 cfs, resulting in a change in the return interval of the current 50-year flood flow by less than six years, leading to RAFSS maturation. Maturation of RAFSS is a less than significant impact. DEIR pages 3.3-59 to 3.3-60. • Reduction in frequency and extent of overbank flooding leading to maturation to less suitable SBKR and Santa Ana River woolly-star habitat. Less than significant impact. Flood flows would be reduced by up to 500 cfs, resulting in a change in the return interval of the current 50-year flood flow by less than six years, leading to RAFSS maturation. This small change in flood frequency would not have a noticeable or ecologically meaningful effect on vegetation/habitat. DEIR pages 3.3-60 to 3.3-62. • Change in sediment transport. Less than significant impact. Diversions of 500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely affect critical habitat for the Santa Ana sucker. DEIR page 3.3-63.	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 1,500 cfs 2. Number of zero flow days: +644 3. Median non-storm day flow: 0 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. This segment is generally dry and only limited resources are present. DEIR pages 3.3-62 to 3.3 -63. • Reduction in frequency and extent of flood flows hindering habitat renewal processes of RAFSS. Less than significant impact. Flood flows would be reduced by up to 1,500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 56 years, leading to RAFSS maturation. Maturation of RAFSS is a less than significant impact. DEIR pages 3.3-59 to 3.3-60. • Reduction in frequency and extent of overbank flooding leading to maturation to less suitable SBKR and Santa Ana River woolly-star habitat. Less than significant impact. Flood flows would be reduced by up to 1,500 cfs, resulting in a change in the return interval of the current 50-year flood flow from 50 years to 56 years, leading to RAFSS maturation. This small change in flood frequency would not have a noticeable or ecologically meaningful effect on vegetation. DEIR pages 3.3-60 to 3.3-62. • Change in sediment transport. Less than significant impact. Diversions of 1,500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely affect critical habitat for the Santa Ana sucker. DEIR page 3.3-63.	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 500 cfs 2. Number of zero flow days: +644 3. Median non-storm day flow: 0 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Less than significant impact. This segment is generally dry and only limited resources are present. DEIR pages 3.3-62 to 3.3 -63. • Reduction in frequency and extent of flood flows hindering habitat renewal processes in RAFSS. Less than significant impact. Flood flows would be reduced by up to 500 cfs, resulting in a change in the return interval of the current 50-year flood flow by less than six years, leading to RAFSS maturation. Maturation of RAFSS is a less than significant impact. DEIR pages 3.3-59 to 3.3-60. • Reduction in frequency and extent of overbank flooding leading to maturation to less suitable SBKR and Santa Ana River woolly-star habitat. Less than significant impact. Flood flows would be reduced by up to 500 cfs, resulting in a change in the return interval of the current 50-year flood flow by less than six years, leading to RAFSS maturation. This small change in flood frequency would not have a noticeable or ecologically meaningful effect on vegetation. DEIR pages 3.3-60 to 3.3-62. • Change in sediment transport. Less than significant impact. Diversions of 500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely affect critical habitat for the Santa Ana sucker. DEIR page 3.3-63.

Project Area	Impacts to Public Trust Resources			
	Scenario A (seasonal storage, 1,500 cfs diversion)	**Scenario B (seasonal storage, 500 cfs diversion)**	**Scenario C (no seasonal storage, 1,500 cfs diversion)**	**Scenario D (no seasonal storage, 500 cfs diversion)**
River Segment E 'E' Street to RIX Facility	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 1,500 cfs 2. Number of zero flow days: +1,548 3. Median non-storm day flow: 0 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. DEIR pages 3.3-62 to 3.3-63. • Change in sediment transport. Less than significant impact. Diversions of 1,500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely affect critical habitat for the Santa Ana sucker. DEIR page 3.3-63. • Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. A small amount of historically suitable Santa Ana sucker habitat exists in Segment E; however there has only been a single fish observation and the potential to support the species has been substantially reduced. DEIR pages 3.3-63 to 3.3-64.	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 500 cfs 2. Number of zero flow days: +1,548 3. Median non-storm day flow: 0 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. DEIR pages 3.3-62 to 3.3-63. • Change in sediment transport. Less than significant impact. Diversions of 500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely affect critical habitat for the Santa Ana sucker. DEIR page 3.3-63. • Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. A small amount of historically suitable Santa Ana sucker habitat exists in Segment E; however there has only been a single fish observation and the potential to support the species has been substantially reduced. DEIR pages 3.3-63 to 3.3-64.	Change in hydrology from Baseline: 1. Peak 100-year flood flows: -1,500 cfs 2. Number of zero flow days: +786 3. Median non-storm day flow: 0 cfs Effects on trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. DEIR pages 3.3-62 to 3.3-63. • Change in sediment transport. Less than significant impact. Diversions of 1,500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely affect critical habitat for the Santa Ana sucker. DEIR page 3.3-63. • Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. A small amount of historically suitable Santa Ana sucker habitat exists in Segment E; however there has only been a single fish observation and the potential to support the species has been substantially reduced. DEIR pages 3.3-63 to 3.3-64.	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 500 cfs 2. Number of zero flow days: +786 3. Median non-storm day flow: 0 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. DEIR pages 3.3-62 to 3.3-63. • Change in sediment transport. Less than significant impact. Diversions of 500 cfs would have no effect on sediment input from tributaries, and only minor changes to sediment transport in the SAR. Minor decreases in gravel and cobble transport would not adversely affect critical habitat for the Santa Ana sucker. DEIR page 3.3-63. • Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. A small amount of historically suitable Santa Ana sucker habitat exists in Segment E; however there has only been a single fish observation and the potential to support the species has been substantially reduced. DEIR pages 3.3-63 to 3.3-64.
River Segment F RIX Facility to Riverside Narrows	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 1,500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: -3 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. DEIR pages 3.3-62 to 3.3-63. • Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. Habitat in Segment F is suitable for the species, and populations have been detected there. Project effects within this segment are extremely small, and then the only measurable difference occurs in flow ranges of 200 to 300 cfs. DEIR pages 3.3-63 to 3.3-64.	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: -3 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. DEIR pages 3.3-62 to 3.3-63. • Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. Habitat in Segment F is suitable for the species, and populations have been detected there. Project effects within this segment are extremely small, and then the only measurable difference occurs in flow ranges of 200 to 300 cfs. DEIR pages 3.3-63 to 3.3-64.	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 1,500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: -2 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. DEIR pages 3.3-62 to 3.3-63. • Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. Habitat in Segment F is suitable for the species, and populations have been detected there. No measurable difference to non-storm day flow with Scenario C. DEIR pages 3.3-63 to 3.3-64.	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: -2 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. Change in flow negligible in this segment. DEIR pages 3.3-62 to 3.3-63. • Reduction in non-storm day flow affecting Santa Ana sucker. Less than significant impact. Habitat in Segment F is suitable for the species, and populations have been detected there. No measurable difference to non-storm day flow with Scenario D. DEIR pages 3.3-63 to 3.3-64.

Project Area	Impacts to Public Trust Resources			
	Scenario A (seasonal storage, 1,500 cfs diversion)	**Scenario B (seasonal storage, 500 cfs diversion)**	**Scenario C (no seasonal storage, 1,500 cfs diversion)**	**Scenario D (no seasonal storage, 500 cfs diversion)**
River Segment G Riverside Narrows to Prado Flood Control Basin	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 1,500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: - 1 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. No measurable impact. Change in flow in Segment G too small to be accurately measured. DEIR page 3.1-47. • Reduction in non-storm day flow affecting Santa Ana sucker. No measurable impact. Change in flow in Segment G too small to be accurately measured. DEIR page 3.1-47.	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: - 1 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. No measurable impact. Change in flow in Segment G too small to be accurately measured. DEIR page 3.1-47. • Reduction in non-storm day flow affecting Santa Ana sucker. No measurable impact. Change in flow in Segment G too small to be accurately measured. DEIR page 3.1-47.	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 1,500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: 0 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. No measurable impact. Change in flow in Segment G too small to be accurately measured. DEIR page 3.1-47. • Reduction in non-storm day flow affecting Santa Ana sucker. No measurable impact. Change in flow in Segment G too small to be accurately measured. DEIR page 3.1-47.	Change in hydrology from Baseline: 1. Peak 100-year flood flows: – 500 cfs 2. Number of zero flow days: 0 3. Median non-storm day flow: 0 cfs Effects on public trust resources • Reduction in non-storm day flow affecting aquatic, riparian, and wetland habitat. No measurable impact. Change in flow in Segment G too small to be accurately measured. DEIR page 3.1-47. • Reduction in non-storm day flow affecting Santa Ana sucker. No measurable impact. Change in flow in Segment G too small to be accurately measured. DEIR page 3.1-47.
Seven Oaks Dam and Reservoir Construction Area	• The DEIR identifies loss of native chaparral vegetation and common wildlife due to road-relocation, but road relocation has been removed as a Project component at the request of the Forest Service.	• The DEIR identifies loss of native chaparral vegetation and common wildlife due to road-relocation, but road relocation has been removed as a Project component at the request of the Forest Service.	• The DEIR identifies loss of native chaparral vegetation and common wildlife due to road-relocation, but road relocation has been removed as a Project component at the request of the Forest Service.	• The DEIR identifies loss of native chaparral vegetation and common wildlife due to road-relocation, but road relocation has been removed as a Project component at the request of the Forest Service.
Santa Ana River Construction Area	• Disturbance and temporary removal of riparian and wetland habitat, and mortality in common riparian wildlife species due to construction. This is a significant but mitigable impact. Construction would temporarily reduce wetted habitat by more than an acre. Identified mitigation measures would restore an equal or greater amount of riparian and wetland habitat compared to that impacted by construction. DEIR page 3.3-42. • Disturbance and removal of RAFSS and other upland habitats, mortality of common wildlife species due to construction. This is a less than significant impact for habitat affected by Low Flow Connector Pipeline and Morton Canyon Connector II Pipeline construction because most of the affected habitat has been recently disturbed and is of low quality, supporting only the most ubiquitous wildlife species. DEIR pages 3.3-49 to 3.3-50. This is a significant but mitigable impact for Plunge Pool Pipeline construction. The size of the affected area, the status of RAFSS as a CDFG highest priority community, its overall scarcity, and time	• Disturbance and temporary removal of riparian and wetland habitat, and mortality in common riparian wildlife species due to construction. This is a significant but mitigable impact. Construction would temporarily reduce wetted habitat by more than an acre. Identified mitigation measures would restore an equal or greater amount of riparian and wetland habitat compared to that impacted by construction. DEIR page 3.3-42. • Disturbance and removal of RAFSS and other upland habitats, mortality of common wildlife species due to construction. This is a less than significant impact for habitat affected by Low Flow Connector Pipeline and Morton Canyon Connector II Pipeline construction because most of the affected habitat has been recently disturbed and is of low quality, supporting only the most ubiquitous wildlife species. DEIR pages 3.3-49 to 3.3-50. This is a significant but mitigable impact for Plunge Pool Pipeline construction. The size of the affected area, the status of RAFSS as a CDFG highest priority community, its overall scarcity, and time	• Disturbance and temporary removal of riparian and wetland habitat, and mortality in common riparian wildlife species due to construction. This is a significant but mitigable impact. Construction would temporarily reduce wetted habitat by more than an acre. Identified mitigation measures would restore an equal or greater amount of riparian and wetland habitat compared to that impacted by construction. DEIR page 3.3-42. • Disturbance and removal of RAFSS and other upland habitats, mortality of common wildlife species due to construction. This is a less than significant impact for habitat affected by Low Flow Connector Pipeline and Morton Canyon Connector II Pipeline construction because most of the affected habitat has been recently disturbed and is of low quality, supporting only the most ubiquitous wildlife species. DEIR pages 3.3-49 to 3.3-50. This is a significant but mitigable impact for Plunge Pool Pipeline construction. The size of the affected area, the status of RAFSS as a CDFG highest priority community, its overall scarcity, and time	• Disturbance and temporary removal of riparian and wetland habitat, and mortality in common riparian wildlife species due to construction. This is a significant but mitigable impact. Construction would temporarily reduce wetted habitat by more than an acre. Identified mitigation measures would restore an equal or greater amount of riparian and wetland habitat compared to that impacted by construction. DEIR page 3.3-42. • Disturbance and removal of RAFSS and other upland habitats, mortality of common wildlife species due to construction. This is a less than significant impact for habitat affected by Low Flow Connector Pipeline and Morton Canyon Connector II Pipeline construction because most of the affected habitat has been recently disturbed and is of low quality, supporting only the most ubiquitous wildlife species. DEIR pages 3.3-49 to 3.3-50. This is a significant but mitigable impact for Plunge Pool Pipeline construction. The size of the affected area, the status of RAFSS as a CDFG highest priority community, its overall scarcity, and time

Project Area	Impacts to Public Trust Resources			
	Scenario A (seasonal storage, 1,500 cfs diversion)	**Scenario B (seasonal storage, 500 cfs diversion)**	**Scenario C (no seasonal storage, 1,500 cfs diversion)**	**Scenario D (no seasonal storage, 500 cfs diversion)**
	required to regenerate the plant community make disturbance and removal by Plunge Pool Pipeline construction a significant impact. Identified mitigation measures would realign pipelines to minimize the amount of RAFSS affected, and acquire and place in conservation easements, 1 acre of good quality habitat for every 1 acre RAFSS lost. DEIR pages 3.3-43 to 3.3-46. • Disturbance and removal of non-listed sensitive species such as Plummer's mariposa lily and Parry's spineflower due to construction. This is a significant but mitigable impact. Loss of individuals and habitat of Parry's spineflower and Plummer's mariposa lily would be a significant impact because of the substantial amount of habitat affected (more than 1 acre), the scarcity of the remaining suitable habitat, and the sensitive status of these species. Identified mitigation measures would realign pipelines to minimize the amount of habitat impacted as well as provide for habitat restoration after construction. DEIR pages 3.3-46 to 3.3-47. • Disturbance and removal of habitat potentially occupied by non-listed sensitive wildlife species due to construction. This is a less than significant impact. Populations of these species are generally not localized or rare, and loss of individuals is not expected to substantially affect regional populations. DEIR pages 3.3-48 to 3.3-52. • Disturbance and removal of habitat occupied by listed wildlife species including CAGN and SBKR due to construction. This is a less than significant impact. Habitat within the area to be impacted is low to moderate in quality due to past disturbance, continued disturbance by Greenspot Road traffic, and distance from the Santa Ana River. Surveys for the Project resulted in no observations or indications of CAGN or SBKR, in or adjacent to, the area that would be impacted, therefore impacts would be less than significant. DEIR pages 3.3-47 to 3.3-48.	required to regenerate the plant community make disturbance and removal by Plunge Pool Pipeline construction a significant impact. Identified mitigation measures would realign pipelines to minimize the amount of RAFSS affected, and acquire and place in conservation easements, 1 acre of good quality habitat for every 1 acre RAFSS lost. DEIR pages 3.3-43 to 3.3-46. • Disturbance and removal of non-listed sensitive species such as Plummer's mariposa lily and Parry's spineflower due to construction. This is a significant but mitigable impact. Loss of individuals and habitat of Parry's spineflower and Plummer's mariposa lily would be a significant impact because of the substantial amount of habitat affected (more than 1 acre), the scarcity of the remaining suitable habitat, and the sensitive status of these species. 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Project Area	Impacts to Public Trust Resources			
	Scenario A (seasonal storage, 1,500 cfs diversion)	**Scenario B (seasonal storage, 500 cfs diversion)**	**Scenario C (no seasonal storage, 1,500 cfs diversion)**	**Scenario D (no seasonal storage, 500 cfs diversion)**
Devil Canyon Construction Area	• Disturbance and removal of upland, wetland, and riparian vegetation and wildlife habitat and mortality of common wildlife species. Impacts are significant but mitigable. Identified mitigation measures would minimize construction disturbance and include actions designed to keep animals out of the construction area (removal of sedentary animals in the construction right of way prior to clearing, exclusionary fencing). DEIR pages 3.3-52 to 3.3-53. • Disturbance of habitat potentially occupied by listed and non-listed sensitive wildlife species. This is a less than significant impact. Habitat affected is sparsely vegetated and unlikely to support a wide diversity of wildlife. Non-listed sensitive species likely sparse in this poor habitat and resulting mortality during construction would be minimal. DEIR page 3.3-53.	• Disturbance and removal of upland, wetland, and riparian vegetation and wildlife habitat and mortality of common wildlife species. Impacts are significant but mitigable. Identified mitigation measures would minimize construction disturbance and include actions designed to keep animals out of the construction area (removal of sedentary animals in the construction right of way prior to clearing, exclusionary fencing). DEIR pages 3.3-52 to 3.3-53. • Disturbance of habitat potentially occupied by listed and non-listed sensitive wildlife species. This is a less than significant impact. Habitat affected is sparsely vegetated and unlikely to support a wide diversity of wildlife. Non-listed sensitive species likely sparse in this poor habitat and resulting mortality during construction would be minimal. DEIR page 3.3-53.	• Disturbance and removal of upland, wetland, and riparian vegetation and wildlife habitat and mortality of common wildlife species. Impacts are significant but mitigable. Identified mitigation measures would minimize construction disturbance and include actions designed to keep animals out of the construction area (removal of sedentary animals in the construction right of way prior to clearing, exclusionary fencing). DEIR pages 3.3-52 to 3.3-53. • Disturbance of habitat potentially occupied by listed and non-listed sensitive wildlife species. This is a less than significant impact. Habitat affected is sparsely vegetated and unlikely to support a wide diversity of wildlife. Non-listed sensitive species likely sparse in this poor habitat and resulting mortality during construction would be minimal. DEIR page 3.3-53.	• Disturbance and removal of upland, wetland, and riparian vegetation and wildlife habitat and mortality of common wildlife species. Impacts are significant but mitigable. Identified mitigation measures would minimize construction disturbance and include actions designed to keep animals out of the construction area (removal of sedentary animals in the construction right of way prior to clearing, exclusionary fencing). DEIR pages 3.3-52 to 3.3-53. • Disturbance of habitat potentially occupied by listed and non-listed sensitive wildlife species. This is a less than significant impact. Habitat affected is sparsely vegetated and unlikely to support a wide diversity of wildlife. Non-listed sensitive species likely sparse in this poor habitat and resulting mortality during construction would be minimal. DEIR page 3.3-53.
Lytle Creek Construction Area	• Disturbance and removal of upland vegetation and wildlife habitat and mortality of common wildlife species. This is a less than significant impact. Habitat affected would be small and has limited wildlife value and impacts would be temporary. DEIR page 3.3-54. • Disturbance and removal of habitat potentially occupied by non-listed sensitive wildlife species. This would be a less than significant impact. Populations of non-listed sensitive species are not typically as isolated as listed species and the amount of habitat to be affected is minimal and of low quality. DEIR pages 3.3-54 to 3.3-55.	• Disturbance and removal of upland vegetation and wildlife habitat and mortality of common wildlife species. This is a less than significant impact. Habitat affected would be small and has limited wildlife value and impacts would be temporary. DEIR page 3.3-54. • Disturbance and removal of habitat potentially occupied by non-listed sensitive wildlife species. This would be a less than significant impact. Populations of non-listed sensitive species are not typically as isolated as listed species and the amount of habitat to be affected is minimal and of low quality. DEIR pages 3.3-54 to 3.3-55.	• Disturbance and removal of upland vegetation and wildlife habitat and mortality of common wildlife species. This is a less than significant impact. Habitat affected would be small and has limited wildlife value and impacts would be temporary. DEIR page 3.3-54. • Disturbance and removal of habitat potentially occupied by non-listed sensitive wildlife species. This would be a less than significant impact. Populations of non-listed sensitive species are not typically as isolated as listed species and the amount of habitat to be affected is minimal and of low quality. DEIR pages 3.3-54 to 3.3-55.	• Disturbance and removal of upland vegetation and wildlife habitat and mortality of common wildlife species. This is a less than significant impact. Habitat affected would be small and has limited wildlife value and impacts would be temporary. DEIR page 3.3-54. • Disturbance and removal of habitat potentially occupied by non-listed sensitive wildlife species. This would be a less than significant impact. Populations of non-listed sensitive species are not typically as isolated as listed species and the amount of habitat to be affected is minimal and of low quality. DEIR pages 3.3-54 to 3.3-55.

Supporting Data for Water Availability Analysis

(See attached CD)

EXHIBIT B

SEASONAL CONSERVATION STORAGE AND PROJECT IMPACTS UPSTREAM OF SEVEN OAKS DAM

By letter dated March 14, 2005, the State Water Resources Control Board requested Muni/Western to describe and analyze the effects of its proposed project on biological resources located upstream of Seven Oaks Dam and Reservoir and to conduct its own analysis of such impacts. That analysis is contained in the Draft EIR and is explained in more detail in this document.

In preparing the Draft EIR, Muni/Western relied upon the prior analysis contained in the 1997 Seven Oaks Dam Water Conservation Feasibility Study Final EIS/EIR that was prepared by the U.S. Army Corps of Engineers (USACE) in consultation with Muni/Western. Evidence of that close coordination can be found in the statement in the Feasibility Study EIS/EIR that the objective of the project "is to develop a plan that will provide the maximum water conservation benefits to the Seven Oaks Dam exteneded study area which is defined as the service areas of the San Bernardino Valley Municipal Water District and the Western Municipal Water District." In addition, the Draft EIR's analysis relied upon other analyses of the biological resources upstream of Seven Oaks Dam and Reservoir, most notably the materials submitted by Muni and other water purveyors in connection with the relicensing of the Southern California Edison Santa Ana River 1/3 powerplants (Leidy & Spranza, *Aquatic Resources Assessment of the Santa Ana River 3 Reach of the Santa Ana River 1/3 Hydroelectric Project*, 2001) and the draft and final environmental assessments prepared by the Federal Energy Regulatory Commission in connection with that relicensing. The discussion of biological resources and impacts at pages 3.3-19 and 3.3.-55 (and similar discussions) and the discussion of cumulative impacts at page 6-32 of the Draft EIR were based on all of these documents, as well as the general professional literature relating to the biological resources of the Santa Ana River. The conclusions expressed in the Draft EIR and elaborated in this document represent the independent judgment of Muni/Western.

1.0 SEASONAL CONSERVATION STORAGE AT SEVEN OAKS

Seven Oaks Dam was completed in December, 1999 as one component of the Santa Ana River Mainstem Project implemented by USACE. The dam is specifically designed to provide flood protection to downstream communities and its operation is conducted in coordination with that of Prado Dam, located about 40 miles downstream. From June through October of each year the dam operates in "pass through" mode, i.e., all inflow to the reservoir is released downstream. From the beginning of November to the end of May, flows are detained until target debris pool storage of approximately 3,000 acre feet [af] is attained. Once debris pool target storage is obtained, the reservoir is generally operated so that outflow equals inflow. Releases from Seven Oaks Dam are held at 500 cubic feet per second (cfs) or less until the reservoir water surface begins to recede at Prado Dam. Water can then be released from Seven Oaks Dam at up to 7,000 cfs until target storage is again reached. Beginning in June and continuing through August, the debris pool is gradually emptied to allow for maintenance (USACE 2002). A minimum release from the dam of 3 cfs is maintained at all times to compensate for the effect of the dam on sub-surface flow.

In June of 1997, the USACE published the "Seven Oaks Dam Water Conservation Feasibility Report" which presents the findings of studies conducted to determine the feasibility of modifying the Seven Oaks Dam to allow for water conservation. Since the entire capacity of Seven Oaks Reservoir is needed for flood control operations during the flood season, the alternative water storage plans considered in the Feasibility Study were limited to the seasonal use of available storage capacity during the non-flood season. The Feasibility Study considered four Alternatives in addition to the No Action Plan. See Table 1 below. Each of the Alternatives was defined in terms of maximum surface water elevation (and seasonal storage capacity) of the seasonal conservation pool. Alternative 3 had a maximum seasonal storage of 50,000 af. Project scenarios for the Muni/Western EIR that include seasonal storage (Scenario A and B) incorporate the characteristics of the USACE Alternative 3.

Table 1: Water Surface Elevation and Water Storage by Alternative as contained in the USACE 1997 Feasibility EIS/EIR

USACE Alternative	Maximum Seasonal Storage (af)
No Action Plan	Not Applicable
Alternative 1	16,293
Alternative 2	35,000
Alternative 3	50,000
Alternative 4	10,270

Although the "Seven Oaks Dam Water Conservation Environmental Impact Statement/Environmental Impact Report" was finalized in June 1997 (State Clearing House No. 95091036), a Record of Decision (ROD) was never filed. This was because the USACE and U.S. Fish and Wildlife Service were unable to reach agreement concerning all the conclusions of the EIS/EIR. This lack of agreement focused especially on the San Bernardino kangaroo rat; a species that was listed as threatened and endangered shortly after completion of the EIS/EIR.

In order to develop the Project scenarios assessed in the EIR, it was necessary to simulate the manner in which Seven Oaks Dam and Reservoir would be operated for seasonal conservation storage. This was accomplished by computer modeling based on specifications contained in the interim Water Control Manual (WCM) issued by the USACE. Before the release of the draft EIR (DEIR) in October, 2004, the final version of the WCM, dated September 2003, was released. A comparison of model parameters taken from each of the versions of the manual did not identify differences that would affect model output and, hence, the environmental analysis presented in the DEIR.

Under Project Scenarios A and B (which incorporate seasonal conservation storage), water could be impounded up to 50,000 acre feet. This would be over 200 feet above the water surface of the debris pool. Operation of the dam for seasonal conservation storage as specified under the Project, however, involves normal flood operations in the winter flood season months. At the beginning of March each year, the seasonal conservation pool would be expanded linearly over 10 days to a target conservation storage of 50,000 af on March 10th. From March 10th through May, all inflow is released from the dam after the target storage elevation is reached. From June through September, all inflow plus a conservation pool release is made to ensure that the conservation pool would be drained by the end of September. Target conservation storage and outflow under Alternative 3 is shown in Table 2.

Table 2: Target Storage and Releases, Alternative 3 of USACE 1997 Feasibility EIS/EIR

Month	Maximum End-of-Month Target Storage (acre feet) [a]	Releases (cfs)
October	73	Equals Inflow [b]
November	2,966	Equals Inflow [b]
December	2,966	Equals Inflow [b]
January	2,966	Equals Inflow [b]
February	2,966	Equals Inflow [b]
March	50,000	Equals Inflow [b]
April	50,000	Equals Inflow [b]
May	50,000	Equals Inflow [b]
June	37,500	Equals Inflow + 208 [c]
July	25,000	Equals Inflow + 208 [c]
August	12,500	Equals Inflow + 208 [c]
September	73	Equals Inflow + 208 [c]

Notes:

[a] Based on Water Control Plan of January 2000, Plate 10.

[b] Except as modified by the Water Control Plan.

[c] Or as required to reach target storage. 208 cfs is based on dewatering a 50,000 af reservoir.

Currently, Seven Oaks Dam is operated solely for flood control purposes. In order to accommodate seasonal conservation storage, changes would be required to both facilities and operational procedures. Muni/Western would reach agreement to allow conservation storage in the Seven Oaks Reservoir with the Local Sponsors who operate the facility (Orange County Flood Control District, Riverside County Flood Control District, and San Bernardino County Flood Control District). Following assessment of the facility and operational changes requested, any changes approved by the USACE would be implemented through appropriate modifications to the Water Control Manual and Water Control Plan.

Prior to implementing any changes called for in a revised Water Control Manual, however, the USACE must comply with all applicable federal laws, including the National Environmental Policy Act and the federal Endangered Species Act. Compliance with those statutes would, in all likelihood, require USACE to prepare a supplement (e.g., an EA/FONSI) to the "Seven Oaks Dam Water Conservation Environmental Impact Statement/Environmental Impact Report" published in June 1997 and consult with the United States Fish & Wildlife Service as to potential impacts on listed species of approving any modifications to the Water Control Manual required by seasonal water conservation. Muni/Western would be responsible for costs associated with modifications required to Seven Oaks Dam and associated facilities in order to accommodate seasonal conservation storage.

2.0 PROJECT IMPACTS

Segment A of the SAR is upstream of the Seven Oaks Dam above RM 70.93 (within USACE Sub-Area 1, and in Reach 6 as defined by the Santa Ana Regional Water Quality Control Board) and the watershed above the dam comprises approximately 177 square miles (USACE 1997). The average gradient of the river is 300 feet per mile, but tributaries have gradients ranging from 600 feet per mile to 1,900 feet per mile, which illustrates the steep topography of this area. This segment of SAR has two major infrastructural features, Bear Valley Dam and the Southern California Edison (SCE) hydroelectric system.

Bear Valley Dam is the only major structure that affects runoff to Seven Oaks Dam. Big Bear Lake is a water conservation reservoir, operated by the Big Bear Municipal Water District. The lake has a drainage area of about 38 square miles and has surcharge storage of about 8,600 af between the top of the conservation pool and the top of the dam (USACE 1995).

SCE operates water conveyance and power generation facilities on the Santa Ana River. Santa Ana River Powerhouse 1 (SAR 1) is upstream of Seven Oaks Dam and Santa Ana River Powerhouse 2/3 (SAR 2/3) is downstream of the dam. The SCE system diverts water at concrete diversion dams on the SAR and its tributaries of Bear Creek, Breakneck Creek, Keller Creek, and Alder Creek. The SAR diversion dams and SCE conduit are capable of withdrawing and conveying water at a maximum rate of 93.3 cfs. The diverted water is conveyed, via the SCE conduit, along the canyon walls to a forebay where the water enters the SAR 1 Powerhouse. From the SAR 1 Powerhouse, the SCE conduit continues, collecting more water along the SAR and tributaries. The SCE conduit bypasses Seven Oaks Dam and Reservoir and delivers water to the SAR 2/3 Powerhouse.

The DEIR prepared by Muni/Western addresses potential impacts associated with implementation of the Project across a comprehensive range of resources and geographical locales. Analysis of impacts that might potentially occur upstream of Seven Oaks Dam takes advantage of information and analysis previously presented in the USACE 1997 Feasibility Study EIS/EIR. The analysis and impact determinations reported in the Muni/Western DEIR, however, are based on additional data collected specifically for the DEIR and independent analysis and assessment. For example, the original air quality impact assessment was updated and expanded for this Project.

Below is a summary of direct impacts to hydrology and biological resources upstream of Seven Oaks Dam associated with the Project as identified through independent analysis and reported in the Muni/Western DEIR.

Environmental Resource & Impact	Impact Determination	Mitigation Measure
Surface Water Hydrology and Water Quality		
Impact SW-1: Use of Seven Oaks Reservoir for seasonal water conservation storage would alter the amount of water in storage and height of the reservoir water surface. This would increase potential for erosion within the reservoir.	Less than significant	No mitigation required
Impact SW-2: Use of Seven Oaks Reservoir for seasonal water conservation storage could substantially degrade water quality as a result of additional impoundment of flows in Seven Oaks Reservoir.	Significant	MM SW-1: Because anaerobic conditions are a problem associated with current operations at Seven Oaks Dam, it is anticipated that the operators of the dam (San Bernardino, Riverside, and Orange county flood control districts, known as the 'Local Sponsors') will implement a program (such as water quality monitoring and aeration) to avoid and reverse anaerobic conditions so that water quality objectives are not exceeded. In those years when the Project results in seasonal water conservation storage behind Seven Oaks Dam, Muni/Western will participate in such a preventative program and provide funding, proportional to the volume of seasonal storage behind Seven Oaks Dam. Residual impact less than significant.
Impact SW-3: Use of Seven Oaks Reservoir for seasonal water conservation storage would increase potential damage from seiches.	Less than significant	No mitigation required
Impact SW-4: Use of Seven Oaks Reservoir for seasonal water conservation storage would increase the potential for mudflows in	Less than significant	No mitigation required

the reservoir		
Biological Resources		
Impact BIO-1: Construction related to realigning roads in the Seven Oaks Dam and Reservoir Area would result in loss of native vegetation and temporary effects on common wildlife	Less than significant	No mitigation required
Impact BIO-15: Seasonal water conservation storage could alter the ecology of the Seven Oaks Dam and Reservoir Area	Less than significant	No mitigation required

2.1 IMPACTS TO BIOLOGICAL RESOURCES UNDER FLOOD CONTROL COMPARED TO SEASONAL CONSERVATION STORAGE

In order to place potential Project-related impacts in perspective, a discussion of the impacts and related mitigation measures associated with construction of Seven Oaks Dam and Reservoir for flood control is presented. The following information is provided to aid in an understanding of the types of biological resources that were located in the project study area, impacts associated with construction and operation of the dam, and the approved programs to fully mitigate those impacts.

Any water conservation project proposed by Muni/Western would not commence until after completion of required modifications to the intake structure at Seven Oaks Dam. The proposed water conservation project differs from the dam construction in that the water conservation project could retain water behind the dam for longer periods during years of above-average runoff into the Seven Oaks Reservoir. Construction activities for the dam and their impacts are not associated with the water conservation project as the Seven Oaks Dam must be operational prior to the initiation of the water conservation project.

2.5.1 Impacts Associated With the Construction and Operation of the Seven Oaks Dam (Santa Ana River Mainstem Project)

Attachment 1 summarizes the biological resources that were found upstream of the Seven Oaks Dam location prior to the construction of the Dam. As described below, those resources have been modified by the construction and operation of the Dam. Nonetheless, Attachment 1 provides useful information on the status of biological resources before implementation of the Project.

The riverbed of Segment A (upstream of Seven Oaks Dam) is occupied by relatively sparse riparian scrub dominated by mule fat along dry secondary channels with riparian woodlands dominated by white alder (*Alnus rhombifolia*), sycamore (*Platanus racemosa*), three species of willow (*Salix lasiolepis*, *S. laevigata*, and *S. gooddingii*), Fremont and black cottonwoods (*Populus* *fremontii and P. trichocarpa*) and velvet ash (*Fraxinus velutina*) in the vicinity of inflows from Alder and Warm Springs creeks and intermittently along the active channels. Terraces in the floodplain are dominated by Riversidian sage scrub. See Photograph 1. This segment is marked by periodic flooding, which dramatically alters the woody riparian communities by stripping them from the banks of the stream, followed by episodes of regeneration.

According to Leidy and Spranza (2001), the only fish species in the segment between the Santa Ana River No. 1 Powerhouse downstream to Seven Oaks Dam are introduced brown trout (*Salmo trutta*) and rainbow trout (*Onchorhynchus mykiss*). These two fish are found in perennial segments, known as cienegas, associated with the inflows of Alder Creek and Warm Springs Creek, where groundwater is forced to the surface by shallow bedrock. Swift et al. (1993) show no extant populations of native fish species in this segment.

Photograph 1: *Riparian vegetation downstream of the confluence of the mainstem of the Santa Ana River and Warm Creek prior to any inundation following construction and operation of Seven Oaks Dam.*

The final Supplemental EIS for construction of the dam states that "Because of expected sedimentation conditions, it is anticipated that all of the floodplain (including riparian) vegetation upstream from the proposed dam to the 50-year floodline (258 acres) would be lost. Approximately 50 percent of the floodplain vegetation beyond the 50-year line to the maximum flood boundary (an additional 163 acres) would be similarly lost." Photograph 2 illustrates the surface water elevation with approximately 50,000 acre feet of water retained behind Seven Oaks Dam in April of 2005.

Photograph 2: *Seven Oaks Reservoir with approximately 50,000 acre feet of flood waters.*

Following the draining of the reservoir, the extent of sedimentation is evident in Photograph 3. Some of the riparian habitat is visible, but the large majority has been buried.

Photograph 3: *Sediment accumulation following draining of the reservoir.*

The 1988 FSEIS states that these losses are significant. The 50-year floodline is at a surface elevation of 2,425 feet and no sensitive vegetation, wildlife habitat, sensitive plant or wildlife species, or spawning grounds, and migration routes are expected to remain with implementation of the Seven Oaks Dam as a flood control facility. Therefore, the 1988 FSEIS included 100 percent mitigation for these losses of sensitive biological resources. In addition, the 1988 FSEIS stated that 50 percent of the biological resources located between the 50-year flood level elevation and 100-year flood level elevation from the construction of the Seven Oaks Dam would be lost. The 1988 FSEIS included mitigation to reduce all of the biological impacts above the 50-year flood level elevation to a level that is considered less than significant. Impacts to sensitive species that were newly listed or raised in status after the publication of the 1988 FSEIS and that were located between the proposed dam and the 50-year floodline (surface elevation 2,425 feet) would be significantly affected by the Santa Ana River Mainstem Project. Since no sensitive biological resources are expected to remain up to an elevation of 2,425 feet, the impoundment of water up to a maximum of 2,418 feet would not affect any sensitive biological resources. As noted earlier, 2,418 feet is the water surface elevation with 50,000 acre feet in storage behind the dam. Therefore, conservation storage scenarios as analyzed in the USACE 1998 Feasibility Study EIS/EIR would not result in any additional impacts to sensitive species.

Approximately 300 acres of chaparral (upland habitat) are expected to be directly impacted by the construction of Seven Oaks Dam, and 90 acres of upland habitat would be lost due to flooding within the footprint of the dam. Further, "The shoreline excursion during the rainy season would result in erosion and flooding which would damage all plants within the 10-year floodline and most of those present within the 10- to 50-year boundary." The 10-year floodline is at a surface elevation of 2,300 feet and the 50-year floodline is at a surface elevation of 2,425 feet.

Erosion and slope failure associated with the inundation that took place in the spring of 2005 and the characteristics "bathtub ring" is evident in Photograph 4.

Photograph 4: *Slope failure following inundation.*

The 1988 FSEIS indicated that significant wildlife habitat would be lost as a result of building the dam. Significant losses to wildlife habitat include the loss of herpetofauna, including sensitive species, due to drowning and habitat alteration; the loss of mule deer habitat and habitat for other mammals; the loss of breeding bird habitat; the loss of trout spawning habitat; and the creation of a barrier that would prohibit the movement of mule deer during migration.

2.5.2 Mitigation Associated With the Construction and Operation of the Seven Oaks Dam (Santa Ana River Mainstem Project)

During the planning process leading to the preparation of the 1988 FSEIS for the Santa Ana River Mainstem Project (SARMP), the USACE requested formal consultation with the USFWS as stipulated under Section 7 of the ESA for the following federal endangered and/or threatened species: least Bell's vireo *(Vireo bellii pusillus),* peregrine falcon *(Falco peregrinus anatum),* bald eagle *(Haliaeetus leucocephalus),* Santa Ana River woollystar *(Eriastrum densifolium ssp. sanctorum),* and the slender-horned spineflower *(Dodecahema leptoceras).*

Based on analysis of field and scientific data documented in the USACE's Phase II General Design Memorandum (GDM) Biological Assessment for the Santa Ana River Project (SARP), the USACE concluded and the USFWS concurred that the SARP was not likely to affect the peregrine falcon, the bald eagle, or the slender-horned spineflower; therefore, these species were not given further consideration in the USFWS Biological Opinion (BO), dated June 22, 1989. Furthermore, the BO concluded that the Santa Ana River Management Plan (SARMP), together with inclusion of the proposed mitigation/compensation plan included as part of the project design (and as detailed in the Opinion) would not likely jeopardize the continued existence of the least Bell's vireo or the Santa Ana River woollystar. As mitigation for the woollystar, the USACE and the USFWS agreed that 760 acres of woollystar habitat would be preserved in the Santa Ana River Wash.

As mitigation for loss of vegetation, riparian habitat, upland habitat, wildlife habitat, mule deer migration routes, and trout spawning habitat; two parcels of land (Filaree Flats [139 acres] and Section 5 [649 acres]) were to be acquired and turned over to the U.S. Forest Service (USFS). In addition, 60 acres of the Santa Ana River Wash between Greenspot Road and Seven Oaks Dam were to be acquired and improved after completion of the dam as compensation for riparian habitat losses (USACE 1988). This commitment has subsequently been eliminated at the request of the USFWS in exchange for providing funding for Arundo removal in the upper watershed.

2.5.3 Impacts of Seasonal Conservation

There are two Project scenarios that call for the use of seasonal conservation storage at Seven Oaks Dam and Reservoir: scenarios A and B. Each of those scenarios calls for the storage of up to 50,000 af of water in the Seven Oaks Reservoir and so are similar to Alternative 3 of the USACE 1997 Feasibility Study EIS/EIR. Inundation areas are shown in Attachment 2. The seasonal conservation of 50,000 af would inundate the Santa Ana River canyon up to an elevation of 2,418 feet MSL or about 7 feet below the area that would be inundated from a 50-year flood event. As noted above, one of the conditions for the approval of the construction and operation of Seven Oaks Dam and Reservoir for flood control was that USACE would fully mitigate for all impacts on biological resources in the Santa Ana River canyon below an elevation of 2,425 feet MSL. Further, as shown above in Photographs 3 and 4, the inundation of areas behind Seven Oaks Dam results in the destruction of all, or virtually all, biological resources. Thus, the use of Seven Oaks Reservoir for seasonal water conservation will have no additional impacts on biological resources as long as seasonal conservation is limited to the 50-year inundation area. Because the conservation of 50,000 af would inundate slightly less than the 50-year inundation area, such seasonal conservation has no incremental effect on biological resources and no mitigation is required.

2.2 REALIGNMENT OF UNITED STATES FOREST SERVICE (USFS) ROAD

Seasonal water conservation storage could cause periodic inundation of an almost 2-mile section of the upstream access road leading to SCE facilities (Forest Road 2N13) and a short (550 feet) section of existing Warm Springs Canyon Road. It was proposed in the Draft EIR that the sections of both roads be realigned and relocated. Although such realignment would not result in significant impacts, there would be loss of native vegetation and temporary effects on common wildlife.

In a meeting between Muni/Western and the USFS subsequent to circulation of the DEIR, the USFS suggested that the sections of road subject to inundation identified in the DEIR not be relocated. An unpaved section of Forest Road 2N13 is visible in Photograph 1. However, no trace of the roadway is visible following inundation and the resulting sedimentation as shown in Photograph 3. USFS expressed concern that the potential environmental impacts and operation and maintenance requirements of the relocated sections of road far outweighed the benefits derived from its continuous use. Alternative means of reaching upstream locations and facilities are available. Accordingly, this element of the proposed Project has been eliminated from the Project and the Final EIR will reflect this modification in the Project.

ATTACHMENT 1

Project Area and Physical Characteristics	Public Trust Resources Inventory			
	Major Habitat Type	*Sensitive Vegetation Communities and Plant Species*	*Sensitive Wildlife Species and Wildlife Species Habitat*	*Other Biological Resources*
Santa Ana River and Canyon Upstream of Seven Oaks Dam • The average gradient of the Santa Ana River (SAR) is 300 feet per mile, but tributaries have gradients ranging from 600 feet per mile to 1,900 feet per mile, illustrating the steep topography of the area. • The area susceptible to flood inundation is contained within River Segment A.	• Chaparral is found on the steep canyon walls of the upper Santa Ana River Canyon. It is a community of shrubs ranging from 2 to 4 meters in height that is typically found on steep and rocky slopes, and the vegetation is adapted to summer drought conditions. It is a common habitat in Southern California. The density of vegetation is variable and the dominance of different species varies with slope and aspect. Common species in the chaparral include: chamise, mountain mahogany, hoary-leaf ceanothus, and holly-leaf redberry. Understory species in the chaparral include: black sage, poison oak, and southern honeysuckle. Interior live oak and canyon live oak are found on some north-facing slopes and shady side draws.	• No rare, threatened, or endangered plant species identified. • In the 1985 botanical survey report, Plummer's mariposa lily, Humboldt lily, and Southern California black walnut are listed as being on the Seven Oaks Dam project site. These plants were not considered sensitive in 1988, but are considered sensitive in the 1994 CNPS Inventory. The exact location of these species, and whether or not they are still present or have been impacted by construction activities is unknown.	• Biological surveys for the Arroyo Southwestern Toad, California Red-Legged Frog, and the Santa Ana Sucker were conducted and completed within the project area both upstream and downstream of the dam. These surveys were conducted in response to concerns by the USFWS that the proposed water conservation project (and Mainstem flood control project) could have negative impacts on these listed species if they were present in the area. The result of these surveys was negative for the presence of these species.	• *Fish* Trout are believed to spawn in the Santa Ana River Canyon above the dam. Non-native brown trout are believed to have a self- sustaining population within the canyon, which is rare in Southern California. Rainbow trout has also been recorded from the upper Santa Ana River Canyon. • *Amphibians* Three species of amphibians have been observed in the upper Santa Ana River Canyon. The most common amphibian in this area is the California chorus frog. Pacific chorus frogs and western toads are also present. Other amphibians including the Pacific slender salamander may be present. • *Reptiles* Fifteen species of reptile have been observed in the upper Santa Ana River Canyon. The most common species are the western fence lizard and the side-blotched lizard. Coastal western whiptails, sagebrush

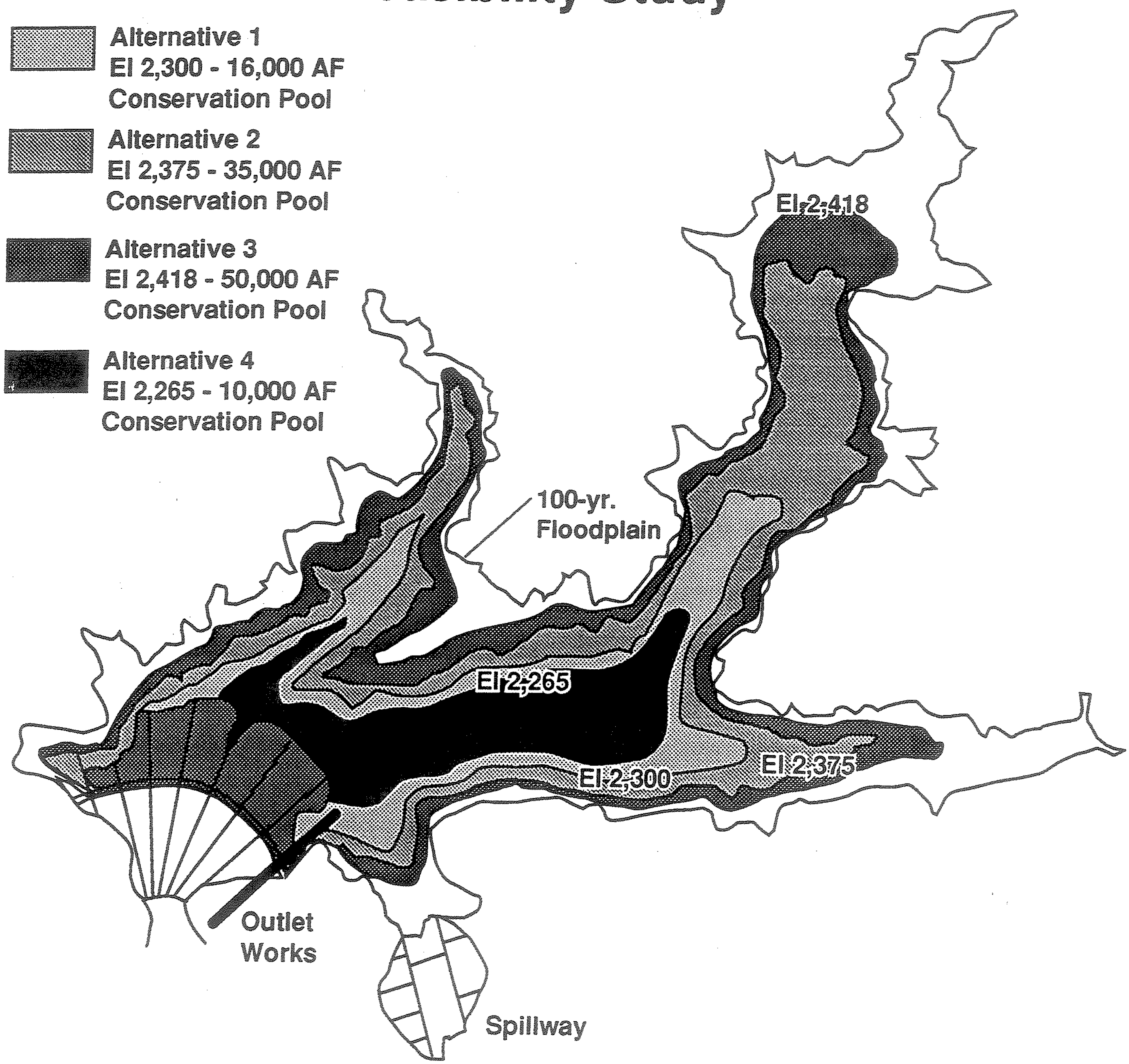
Project Area and Physical Characteristics	Public Trust Resources Inventory			
	Major Habitat Type	*Sensitive Vegetation Communities and Plant Species*	*Sensitive Wildlife Species and Wildlife Species Habitat*	*Other Biological Resources*
	Small areas of coastal sage scrub may be mixed in with the chaparral. Large areas of coastal sage scrub were not apparent during the reconnaissance-level survey of the canyon above the dam, and previously mapped (in 1988) coastal sage scrub may have matured into chaparral. • Alluvial scrub vegetation is typically found in washes and streambeds that receive periodic flooding during the rainy season and which are often dry during summer months. Vegetation consists of widely scattered trees or tall shrubs with an understory of sparse shrubs. Plants typical of alluvial scrub, chaparral, and desert habitats are common in this community. Alluvial scrub corresponds with the Riversidean alluvial fan sage scrub (RAFSS) which is considered sensitive by resource agencies because of the scarcity of the habitat, its riparian nature, and its rare flora and fauna.			lizards, and southern alligator lizards are locally common. The western rattlesnake, California whipsnake, and gopher snake are the most common snakes within the project area. • *Birds* Numerous species of birds have been observed in the Santa Ana River Canyon, and several additional species are expected to occur. Common breeding birds of the chaparral include Costa's humming bird, wrentit, western scrub-jay, lazuli bunting, and California towhee. Black phoebe and rock wren are common in the alluvial scrub. Common wintering species include ruby-crowned kinglet, yellow-rumped warbler, and dark-eyed junco. Several additional bird species are expected to use the site during migration. Raptors observed on the project site include Cooper's hawk, red-tailed hawk, golden eagle, and American kestrel. Turkey vultures have been observed foraging over the canyon.

Project Area and Physical Characteristics	Public Trust Resources Inventory			
	Major Habitat Type	*Sensitive Vegetation Communities and Plant Species*	*Sensitive Wildlife Species and Wildlife Species Habitat*	*Other Biological Resources*
	In the upper Santa Ana River Canyon, barren cobble occupies much of the canyon floor. The vegetation consists mainly of pioneer phase alluvial scrub and less commonly of intermediate phase alluvial scrub Common plant species in this community include scale-broom, and California buckwheat with California sagebrush, deerweed, and sweetbush among the other shrubs present. In more mature terraces, chamise and mountain mahogany are common. Trees are rare in this community, with Fremont's cottonwood and western sycamore found in small numbers throughout the drainage. Herbaceous species present include forget-me-not and mustang mint. Wetter areas in the channel are sparsely vegetated by mulefat, scarlet monkey-flower, and other wetland species.			• *Mammals* Over 30 species of mammal have been documented from the Santa Ana River Canyon. Small diurnal mammals noted in the area include California ground squirrel and desert cottontail. Small nocturnal mammals present in the canyon include deer mouse, brush mouse, and Pacific kangaroo rat. Large mammals observed in the canyon include raccoon, coyote, bobcat, and mule deer.

Project Area and Physical Characteristics	**Public Trust Resources Inventory**			
	Major Habitat Type	*Sensitive Vegetation Communities and Plant Species*	*Sensitive Wildlife Species and Wildlife Species Habitat*	*Other Biological Resources*
	• An alder woodland is present in the upper reaches of Santa Ana River Canyon at elevation 2,520 feet. This habitat is considered sensitive because of its riparian nature. Southern sycamore-alder woodlands are found in rocky streambeds that experience seasonal flooding and alders are the dominant tree in perennial streams. The alder woodland is small and narrow and is confined to the river channel. The woodland is approximately 1,000 feet in length and between 35 and 70 feet in canopy width. White alder is the most common tree, with willows, western sycamore, and Fremont's cottonwood present in small numbers. Understory species present include mugwort and mulefat.			

ATTACHMENT 2

Alternative Plans
Seven Oaks Dam Water Conservation Feasibility Study



Appendix C

EIP Sediment Transport Analyses

Evaluation of the Final Rule to Designate Critical Habitat for the Santa Ana Sucker

April 2004

Prepared for:
Best Best & Krieger LLP

Prepared by:
EIP Associates

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April 2004

TABLE OF CONTENTS

EVALUATION OF THE FINAL RULE
TO
DESIGNATE CRITICAL HABITAT FOR
THE
SANTA ANA SUCKER

Prepared By
Roy Leidy, C.F.S.
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Background and Purpose of the Evaluation

On 26 February 2004, the U.S. Fish and Wildlife Service (Service) issued a final rule (69 FR 8839-8861), effective immediately, designating critical habitat for the Santa Ana sucker (*Catostomus santaanae*), pursuant to a United States District Court order (California Trout v. DOI, No. 97-3779 (N.D.Cal.)). In the Santa Ana River basin, the final rule designated a significant reach of the Santa Ana River and portions of three tributaries as critical habitat that do not currently support the sucker, and excluded from critical habitat those reaches of the Santa Ana River and its tributaries known to currently support this species. The purpose of this evaluation is to:

- Review the rationale for excluding from critical habitat designation those reaches of the Santa Ana River and its tributaries that currently support the Santa Ana sucker within the geographic areas covered by the Western Riverside County Multiple Species Habitat Conservation Plan and the Santa Ana Sucker Conservation Program; and,

- Review the rationale for including as critical habitat those reaches of the Santa Ana River and its tributaries in Unit 1B (Santa Ana River wash) that currently do not support the Santa Ana sucker.

Summary of the Distribution of the Santa Ana Sucker in the Santa Ana River Basin

Mapping the Current Distribution of the Santa Ana Sucker

The first comprehensive surveys of the Santa Ana River for the Santa Ana sucker were conducted by Chadwick and Associates (1992) during 1989 and 1990. Their sampling continued at selected locations on an annual schedule through 1996 (Chadwick and Associates 1993-2000). Work funded by the U.S. Army Corps of Engineers (USCOE) from 1997 through1999 focused on the Santa Ana River between Norco and Prado Dam, with some specific locations downstream of Prado Dam (Swift 1998). In 1999 and 2000 the U.S. Geological Survey (USGS) sampled at the Metropolitan Water District's (MWD) pipeline crossing of the Santa Ana River between Van Buren Boulevard and Fremont Street, and downstream of Prado Dam. Saiki (2000) sampled in 1998 and1999 at the MWD pipeline crossing and at the Imperial Highway crossing (State Route 90) of the Santa Ana River. Snorkel, seining and electrofishing surveys were conducted in 2000, 2001 and 2002 at various locations between the Imperial Highway upstream to La Cadena Drive (Haglund *et al.* 2001; Haglund *et al.* 2002; Haglund *et al.* 2003). Observations of Santa Ana sucker spawning behavior were made by Haglund *et al.* (2002) and Allen (2003).

We reviewed these references on the distribution of the Santa Ana sucker and entered the distribution data into a Geographic Information System (GIS). The GIS also incorporated a data layer for the final designated critical habitat using data provided by Service. The GIS used USGS 7.5-minute topographic map quadrangles for the area between the Imperial Highway upstream to the limit of designated critical habitat as a base. Appendix A includes eight map sheets that cover the distribution of the Santa Ana sucker and the location of critical habitat units in the Santa Ana River watershed. Fish population surveys from the previously cited literature that resulted in observations of relatively few suckers, i.e., less that about 15 fish at a given location, were mapped as "sporadic." Observations of more than 15 fish, or where fish consistently were found, were mapped as "common." When a reference indicated that a tributary stream did not support Santa Ana suckers, and no geographic limits of the survey or other site-specific information was provided describing channel configuration, the upper end of the "absent" reach was mapped as the first major road crossing.

Current Santa Ana Sucker Distribution

Like many freshwater fish species in southern California, the Santa Ana sucker has had its historic range reduced through various anthropogenic impacts. Currently, the Rialto Drain at its confluence with the Santa Ana River near San Bernardino (Sheet 5) is the upstream limit of Santa Ana sucker distribution. In the spring of 2003, the discharge from the Rialto Drain was providing the only consistent flow of water in the Santa Ana River (Allen 2003). The Rialto Drain and the Rapid Infiltration/Extraction Facility (RIX Facility) outfall combine to contribute about 85 cubic-feet-per-second to the Santa Ana River (Allen 2003; Swift 2001).

Surveys upstream of the Rialto Drain have not located any Santa Ana suckers. No suckers were found during surveys in the vicinity of La Cadena Drive in August 1999 and February 2000 (Swift 2001). Swift (2001) reports that extensive seining on the river from "Interstate 210" [i.e., either Interstate 10 or State Highway 215] upstream about a half a kilometer (= 0.6 mile) in May 2000 and March 2001 did not locate any Santa Ana suckers (Sheet 5).

Downstream from the Rialto Drain to about the MWD pipeline crossing, a combination of snorkel, seining and electrofishing surveys indicate that the Santa Ana sucker is relatively common (Swift 2001; Haglund *et al.* 2002; Haglund *et al.* 2003) (Sheets 4 and 5). From the MWD pipeline crossing downstream to River Road, the Santa Ana sucker distribution becomes much more sporadic (Sheets 2 and 3). Suckers have been captured at the River Road crossing and associated diversion points. In August 2002, electrofishing surveys at the River Road crossing resulted in no suckers in one location and over 300 Santa Ana suckers in a comparable survey site just upstream of the sand mining operation (Haglund *et al.* 2003). Suckers are mapped as sporadic at this location because their abundance appears to be a one-time event that coincided with abundant reproduction in 2002, given that other surveys at this same location have not routinely captured large numbers of fish (Haglund *et al.* 2003; Swift 2001).

Downstream of River Road, Santa Ana suckers have been captured, but in much lower numbers and much less frequently. Surveys downstream of Prado Dam in 2000 resulted in capturing one Santa Ana sucker in eight surveys (Swift 2001). Saiki (2000) did not capture any suckers between 1998 and 1999 in routine surveys at the Imperial Highway Bridge. In September 2000 fish salvage efforts associated with construction of the USCOE's Santa Ana River Mainstem Project resulted in the capture of eight Santa Ana suckers in over three miles of river between Weir Canyon Road and the Imperial Highway (Baskin and Haglund 2001).

Most of the tributaries to the Santa Ana River between the Imperial Highway and the Rialto Drain are highly modified by human activities. Some of these tributaries contain water only because they are functioning as drains from urban water sources such as wastewater treatment plants, irrigated parks and golf courses, and artificial lakes. Only two tributaries are known to support Santa Ana sucker reproduction, Sunnyslope Creek and the Rialto Drain (Swift 2001; Haglund *et al.* 2002; Allen 2003). Adult suckers have also been observed in the RIX Facility outlet, Evans Lake Drain, and Mt. Rubidoux Creek. As noted for the Santa Ana River, adult suckers are not uniformly distributed within the creeks. For example, surveys of the Lake Evans Drain captured 15 adult suckers in February 2000, but surveys of the same area in May 2000 found no suckers (Swift 2001). This pattern is repeated in other tributaries. Chino and Mill-Cucamonga creeks do not appear to support suckers (Swift 1998; Swift 2001). There are no Santa Ana suckers reported from Santiago Canyon downstream of Interstate 5, Cajon Creek (tributary to Lytle Creek upstream of San Bernardino), or City Creek (Sheet 6) (Swift *et al.* 1993).

The Service states that City Creek supported the Santa Ana suckers as recently as 1982, but the stream had not been surveyed recently (69 FR 8845). It is our understanding that the California Department of Fish and Game (CDFG) has recently sampled City Creek and did not locate any suckers (Shay Lawrey, San Bernardino County Department of Public Works, *pers. comm.*, 2004). We have attempted to confirm the dates of fish sampling with CDFG, but have been unable to make contact.

Surveys in Mill Creek downstream of Mountain Home Village, Mountain Home Creek, and Mill Creek upstream of the designated critical habitat did not locate any Santa Ana suckers (Leidy *et al.* 2001) (Sheet 7).

Larval and juvenile Santa Ana suckers have been observed in Sunnyslope Creek, the Rialto Drain, and the Market Street Seep. Three other tributaries, Evans Lake Drain, Arroyo Tequesquite, and Anza Park Drain, have been found to support larval and juvenile suckers only near their confluence with the Santa Ana River (Swift 2001). There is evidence to suggest that the juvenile suckers invade these creeks, as water temperatures in the tributaries are lower, thus more favorable for the sucker, than water temperatures in the Santa Ana River (Swift 2001).

Seasonality of Reproduction and Spawning Habitat Characteristics of the Santa Ana Sucker

Laboratory work conducted by Greenfield *et al.* (1970) with Santa Ana suckers from the San Gabriel River provided the first detailed information about Santa Ana sucker reproduction. Santa Ana sucker eggs were 2.2 mm in diameter, demersal (placed on the bottom or sinking), and adhesive. Under laboratory conditions at 13°C eggs hatched in 360 hours (15 days) following fertilization (Greenfield *et al.* 1970). Hatching may occur in as little as 5 to 10 days at 15 to 20°C (Swift 2001).

Based on the occurrence of Santa Ana sucker larvae in the Santa Ana River and its tributaries, spawning occurs typically from mid-March through late April (Swift 2001). Adult suckers were observed spawning in the Rialto Drain on 31 March 2001, and in Sunnyslope Creek on 15 April 2001 (Haglund *et al.* 2002). In the Rialto Drain the chosen spawning location was over a gravel bar at the tail of a pool. Allen (2003) observed what was believed to be spawning behavior on the same gravel bar in the Rialto Drain. In Sunnyslope Creek the habitat is perhaps more properly classified as a run over gravel substrate. The depths and water velocities were similar at these two locations: the water ranged from 49 to 60 cm deep and the flow was 0.2 to 0.24 meters per second (Haglund *et al.* 2002). The Rialto Drain location is just downstream of a large relatively deep (2 m) pool, and there was an undercut bank with exposed willow roots along one edge of the Sunnyslope Creek location (Haglund *et al.* 2002). Adult Santa Ana suckers appeared to use these areas as a refuge between spawning episodes (Haglund *et al.* 2002).

The spawning substrate composition from these two known spawning locations (i.e., the Rialto Drain and Sunnyslope Creek) was similar. Based on standard mesh-size screening, most of the material was sand and gravel ranging from 1 to 64 mm in diameter (Haglund *et al.* 2002). Approximately 70 percent of the material from both sites was between 2 and 16 mm in diameter with 5.15 mm the most common size at both sites. Fines and cobble were absent from both sites (Haglund *et al.* 2002). Allen (2003) conducted a similar analysis for sites within the Rialto Drain, the RIX Facility outfall channel, and the mainstem Santa Ana River. Results of gravel sieving were similar to that reported by Haglund *et al.* (2002). The two samples within the Rialto Drain were 43 to 44 percent coarse gravel (26.67 mm), 53 to 55 percent fine and medium gravel (4.75 mm), 2.2 to 2.4 percent very fine gravel (2 mm), 1.2 to 1.3 percent sand (0.031 mm), and no silt (Allen 2003). Results were similar for the sample collected within the Santa Ana River downstream of the confluence with the RIX Facility outfall channel: 45.9 percent coarse gravel (26.67 mm), 48.1 percent fine and medium gravel (4.75 mm), 2.2 percent very fine gravel (2 mm), 2.4 percent sand (0.031 mm), and no silt (Allen 2003). A sample from the RIX Facility outfall pool was over 90 percent very fine, fine, and medium gravel (Allen 2003). The RIX Facility outfall channel was much more embedded than the other sampling locations and Allen (2003) found it virtually impossible to collect a sample for analysis. Allen (2003) concluded that despite changes in the river channel from year to year, gravels within the Santa Ana River were suitable for spawning and not a limiting resource.

Spawning is presumed to occur in the Santa Ana River itself based on the occurrence of larval Santa Ana suckers (Swift 2001). Efforts to identify locations have been hampered by low visibility (Haglund *et al.* 2002). Relatively higher capture rates of young-of-the-year fish was interpreted as indicating that there had been substantial mainstem reproduction in 2002 and 2003 (Haglund *et al.* 2003). It has also been proposed that the larvae in the mainstem originated in tributaries and drifted into the mainstem (Haglund *et al.* 2002). However, there does not appear to be any specific observational information on spawning locations within the main channel of the Santa Ana River.

Effects of Floods on the Santa Ana Sucker

The Santa Ana River, like most southern California streams, is characterized by extremes in hydrology. Review of USGS streamflow data for the gage at the MWD crossing between 1 October 1999 and 30 September 2002, indicated that over 94 percent of the mean daily flows in the Santa Ana River are less than 125 cubic feet per second (cfs). There were only five events during this time period when the flows ranged between 962 cfs and 1,960 cfs. These peak flows are all one or two day events between January and March. One example of how rapidly the streamflow of the Santa Ana River can change is presented by Allen (2003). He reported that on 14 April 2003, 1.5 inches of rain fell in about 12 hours. This relatively small amount of rain resulted in a peak flow of 3,177 cfs in the Santa Ana River at the E Street Bridge in San Bernardino. By the next morning flows in the river had dropped to 149 cfs, and within 24 hours the river was once again dry at the E Street Bridge. In the Santa Ana River high streamflows result in streambed movement and changes in channel configuration (Allen 2003).

High flows result in the flushing of fish from upstream to downstream locations. Additionally, movement of large amounts of gravel can result in loss of eggs if fish have recently spawned. In the Santa Clara River in 1969, sampling a week after a flood event resulted in the capture of 120 Santa Ana suckers, compared to 225 fish before the flood event (Greenfield *et al.* 1970). Santa Ana sucker capture rates remained low in routine sampling until June of that year (Greenfield *et al.* 1970).

A prolonged spawning season, young age at maturity, high number of eggs per female, and short incubation times are all adaptations of the Santa Ana sucker to this cycle of extreme flow fluctuation. Based on length-at-age work, 77 mm fish are likely to be 1 year old (Greenfield *et al.* 1970; Saiki 2000). This means that fish hatched one spring can spawn the next spring. Work by Greenfield *et al.* (1970) found that there was a linear relationship between fish mass and the number of eggs. The number of eggs per females ranged from 4,423 to 16,151, collected from 77.8 and 158.2 mm standard length females, respectively.

Santa Ana sucker have an incubation period of between 5 and 15 days depending on temperature. This is relatively short when compared to the frequency of scouring events indicating that eggs can be deposited, incubate and hatch between flood events. Santa Ana sucker larvae have been shown to use the extreme channel margins and shallow water within the Santa Ana River (Swift 2001; Haglund *et al.* 2002). These habitats offer more protection from extreme flow events resulting in a lower mortality rate than eggs in the gravel.

Rationale for Listing the Santa Ana Sucker as Threatened

On 12 April 2000, the U.S. Fish and Wildlife Service issued a final rule (65 FR 19686-19698) listing the Santa Ana sucker as "threatened" pursuant to the Endangered Species Act of 1973, as amended (Act). The listing afforded the sucker protection by the Act within the Los Angeles, San Gabriel, and Santa Ana River drainages. The factors identified as the basis for listing the Santa Ana sucker were:

- Potential habitat destruction;
- Natural and human-induced changes in streamflows;
- Urban development and related land use practices;
- Intensive recreation;
- Introduction of nonnative competitors and predators; and,
- Demographics associated with small populations.

Each of the foregoing topics is discussed in the final listing.

Critical habitat was not designated at the time of final listing because there was insufficient knowledge and understanding of the biological needs and environmental limitations of the sucker and the primary constituent elements of its habitat. The Service specifically recognized that the designation of critical habitat must be made on the basis of the best scientific data available (65 FR 19696).

Summary of the Basic Regulations for Designating Critical Habitat

The Act states that *critical habitat* means (50 CFR 424.02(d)):

- The specific areas within the geographic area currently occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical and biological features: 1) essential to the conservation of the species; and, 2) that may require special management considerations or protection; and,

- Specific areas outside the geographical area occupied by a species at the time it is listed upon a determination by the Secretary that such areas are essential for the conservation of the species.

In the final listing rule, the Service defined *essential habitat* as the stream and the associated riparian habitat (69 FR 8843).
The final designation of critical habitat must be made on the basis of the best scientific data available, after taking into consideration the probable economic and other impacts of making such a designation (50 CFR 424.12(a)). The Act further specifies the criteria the Service shall use in determining what areas are critical habitat. Specifically, such criteria include, but are not limited to the following (50 CFR 424.12(b)):

- Space for individual and population growth, and for normal behavior;

- Food, water, air, light, minerals, or other nutritional or physiological requirements;

- Cover or shelter;

- Sites for breeding, reproduction, or rearing of offspring; and,

- Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

In addition, when considering the designation of critical habitat the Service must focus on the principal biological or physical constituent elements within the defined area that are essential to the conservation of the species. These principal elements are referred to by the Service as *primary constituent elements*. In the final listing rule the Service recognized that some of the primary constituent elements for the Santa Ana sucker were spawning sites, food resources, and water quality and quantity (65 FR 19696).

The Service can designate critical habitat areas outside the presently occupied geographic area of a species *only* when a designation limited to its present range would be inadequate to ensure the conservation of the species (50 CFR 424.12(e)).

Final Critical Habitat Designation in the Santa Ana River Basin

In the final critical habitat designation the Service reviewed and discussed each of the primary constituent elements for the Santa Ana sucker. These elements are (69 FR 8844):

- A functioning hydrological system that experiences peaks and ebbs in the water volume throughout the year;

- A mosaic of sand, gravel, cobble, and boulder substrates in a series of riffles, runs, pools and shallow sandy stream margins;

- Water depths greater than 3 cm [centimeters; 3 cm = 1.2 inches] and water bottom velocities greater than 0.03 meters per second [= 0.1 feet per second];

- Non-turbid conditions or only seasonally turbid conditions;

- Water temperatures less than 30 °C [86 °F]; and,

- Stream habitat that includes algae, aquatic emergent vegetation, macro-invertebrates, and riparian vegetation.

The final rule states (69 FR 8844):

> "We [i.e., the Service] have designated three critical habitat units based on the geographical location of the three existing, listed populations of Santa Ana sucker. Major tributaries that are important for their role in contributing water, sediment, and improved water quality (components of the primary constituent elements) for the species are included."

As noted previously, map sheets 1 through 8 (Appendix A) illustrate the current distribution of the Santa Ana sucker in the Santa Ana River basin in relationship to the final critical habitat designation. Unit 1A includes portions of Chino and Cucamonga creeks which drain to the Prado Basin. Unit 1B includes the Santa Ana River wash from La Cadena Avenue upstream to the Greenspot Bridge, as well as portions of Mill and City creeks. All of the "occupied essential habitat" currently known to support the Santa Ana sucker was excluded from critical habitat designation.

Service Rationale for Designating Units 1A and 1B as Critical Habitat in the Santa Ana River Basin

The Service rationale for designating Units 1A and 1B as "essential for the conservation of the Santa Ana sucker" rests on four conclusions (69 FR 8845):

- The units provide and transport sediment necessary to maintain the preferred substrates utilized by this fish (i.e., gravel and small cobble);

- The units convey stream flows and flood waters necessary to maintain habitat conditions for the Santa Ana sucker (i.e., they maintain natural hydrographs);

- The units support riparian habitats that protect water quality in the downstream portions of the Santa Ana River occupied by the sucker; and,

- The units maintain habitat for the southernmost portion of the Santa Ana sucker population and so maintain the species' genetic adaptive potential and a well-distributed geographic range, both of which limit the species' vulnerability to fluctuating environmental conditions.

The Service concludes:

> "Protection of these unoccupied areas is essential to provide the downstream habitat conditions necessary to maintain the Santa Ana River population of the sucker."

Service Rationale for Excluding All Occupied Essential Habitat from Critical Habitat Designation in the Santa Ana River Basin

The Service relied on section 4(b)(2) of the Act to exclude all of the reaches occupied by the Santa Ana sucker from designation as critical habitat. This section of the Act states (50 CFR 424.19):

> "The Secretary shall identify any significant activities that would either affect an area considered for designation as critical habitat or be likely to be affected by the designation, and shall, after proposing designation of such an area, consider the probable economic and other impacts of the designation upon proposed or ongoing activities. The Secretary may exclude any portion of such an area from the critical habitat if the benefits of such exclusion outweigh the benefits of specifying the area as part of the critical habitat. The Secretary shall not exclude any such area if, based on the best scientific and commercial data available, he determines that the failure to designate that area as critical habitat will result in the extinction of the species concerned."

Based the Service's interpretation of the foregoing text, it decided to exclude from critical habitat designation the areas along the Santa Ana River and its tributaries because they are either within the planning area boundary for the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) or the Santa Ana Sucker Conservation Program (SAS Conservation Program).

The Service rationale for excluding the MSHCP area is:

- MSHCPs generally include management measures and protections designed to protect, restore, monitor, manage, and enhance the habitat to benefit the conservation of species. The MSHCP seeks to accomplish these goals for the Santa Ana sucker through the implementation of specific conservation measures.

- Before the Final MSHCP can be implemented the Service must issue an incidental take permit (ITP) pursuant to section 10 of the Act. The issuance of the ITP is a federal action; thus, the Service must complete an internal section 7 consultation for every species, including the Santa Ana sucker, proposed to be covered under the MSHCP and ITP. This internal consultation process will require the Service to analyze the impacts of the proposed ITP and MSHCP on the Santa Ana sucker and its essential habitat within the plan boundaries, whether or not that habitat has been officially designated as critical habitat.

- Therefore, including that portion of the Santa Ana River basin that is within the boundaries of the proposed MSHCP as critical habitat would provide little benefit to the sucker because the potential impacts to the species' essential habitat within the MSHCP area would already be addressed under the plan, and will be analyzed in the Service's internal section 7 consultation on the proposed ITP.

The logic for excluding the SAS Conservation Program is similar.

The Service states that the designation of critical habitat in the occupied essential habitat may have a potential negative regulatory effect that would discourage voluntary, cooperative and proactive efforts to conserve the Santa Ana sucker (69 FR 8847). The Service concludes that the only potential benefit of designating critical habitat within the areas covered by the MSHCP and SAS Conservation Program would be educational (69 FR 8848).

Evaluation of the Rationale for Excluding Occupied Essential Habitat from Designation as Critical Habitat

The Service excluded from critical habitat designation those areas included geographically within the MSHCP and the SAS Conservation Program based on the conclusion that the overlaying of a critical habitat designation on the areas covered by these two conservation programs would be redundant from a regulatory perspective, and may discourage participation in, and implementation of, such voluntary programs. We concur that the designation of critical habitat often provides little, if any, additional protection for listed species because the Act itself (section 7(a)(2)) requires all federal agencies to ensure that their actions, whether direct or indirect, are not likely to jeopardize the continued existence of a listed species. For example, if a company desired to extract sand and gravel from the floodplain of the Santa Ana River, whether or not the mining site was within established critical habitat for the sucker, it is probable that a Clean Water Act section 404 permit would be required. The U.S. Army Corps of Engineers is responsible for the issuance of 404 permits, with oversight by the Environmental Protection Agency. A finding by the Corps that sand and gravel extraction may adversely affect the Santa Ana sucker by removing gravel substrate potentially needed for sucker spawning would trigger section 7 consultations with the Service pursuant to the Act.

Both the MSHCP and the SAS Conservation Program focus on actions that will affirmatively conserve the Santa Ana sucker and these two plans should be considered in determining critical habitat for this fish. The specifics of each conservation plan are summarized in the following narratives.

Western Riverside County Multiple Species Habitat Conservation Plan

The MSHCP is a comprehensive, multi-jurisdictional HCP focusing on the conservation of species and their associated habitats in western Riverside County. The plan area encompasses approximately 1,996 square miles and includes all unincorporated Riverside County land west of the crest of the San Jacinto Mountains to the Orange County line, as well as the jurisdictional areas along the Santa Ana River within the cities of Norco, Corona and Riverside. The MSHCP will serve as an HCP pursuant to section 10(a)(1)(B) of the Act, as well as a Natural

Communities Conservation Plan (NCCP) under the California NCCP Act of 2001. The MSHCP will be used to allow the participating jurisdictions to authorize "incidental take" of plant and wildlife species identified within the plan area.

As a demonstration for support for the MSHCP, Riverside County voters approved a local bond measure on 5 November 2002, to provide funding for the acquisition of land for the MSHCP. On 17 June 2003, the Riverside County Board of Supervisors unanimously adopted the MSHCP, certified the EIR/EIS for the MSHCP, and authorized the Chairperson to sign the Implementing Agreement at such time as the Service and the California Department of Fish and Game complete their review and the Service issues an ITS permit for the MSHCP.

The conservation measures for the Santa Ana sucker included in the final MSHCP are based on the best available scientific information. In addition, monitoring and adaptive management programs are identified which will determine if the management actions to be implemented are producing the desired results. Five specific objectives are identified for the Santa Ana sucker in the MSHCP. These are:

- Objective 1. Include within the MSHCP Conservation Area 3,870 acres of the suitable habitat for the Santa Ana sucker, including the Santa Ana River within the natural river bottom and banks. Of this total acreage, approximately 3,480 acres (90 percent) of the potential habitat for the sucker in the plan area will be conserved (i.e., open water, freshwater marsh, riparian habitat, and alluvial scrub adjacent to the channel) (Western Riverside County Final MSHCP, Volume II-B 2003: F-21). Of this total acreage, 190 acres (97 percent) of the preferred habitat of the Santa Ana sucker (i.e., open water) in the plan area will be conserved.

- Objective 2. Include within the MSHCP Conservation Area the Core Areas the: 1) known spawning areas at Sunnyslope Creek and within the area just below Mission Boulevard upstream to the Rialto Drain; and, 2) refugia and dispersal areas, including the Market Street Seep, Mount Rubidoux Creek, Anza Park Drain, Arroyo Tequesquite, Hidden Valley Drain, and the Evans Lake Drain.

- Objective 3. Include within the MSHCP Conservation Area the natural river bottom and banks of the Santa Ana River from the Orange County line upstream to the upstream boundary of the plan area (i.e., the San Bernardino County line), including the adjacent upland habitat, where available, to provide shade and suitable microclimate conditions (e.g., alluvial terraces, riparian vegetation). This objective encompasses the entire reach of the Santa Ana River within Riverside County.

- Objective 4. Within the MSHCP Conservation Area, the Reserve Managers responsible for the areas identified in Objectives 2 and 3 will assess: 1) barriers to sucker movement; and, 2) the need for connectivity, and identify measures to restore connectivity to be implemented, as feasible.

- Objective 5. Within the MSHCP Conservation Area, the Reserve Managers responsible for the areas identified in Objectives 2 and 3 will assess: 1) threats to the sucker from degraded habitat (e.g., reduced water quality, loss of habitat, presence of non-native predators and vegetation); 2) identify areas of the watershed that are necessary to successful sucker spawning; 3) identify areas for creation of stream meanders, pool-riffle complexes and reestablishment of native riparian vegetation, as appropriate and feasible; and, 4) identify and implement management measures to address threats and protect critical areas.

As pointed out by the Service (69 FR 8846):

> "Although the Western Riverside MSHCP is not yet approved by the Service, significant progress has been achieved in the development of this HCP, including the preparation of the EIS/EIR, the solicitation of public review and comment, and the initiation of a consultation with us on the issuance of incidental take permits for those species identified for coverage in the draft plan."

We conclude that given the comprehensiveness of the MSHCP, and the commitment of the numerous jurisdictions to the MSHCP, that the MSHCP, when implemented, will provide a *de facto* critical habitat designation to the entire reach of the Santa Ana River within the boundaries of Riverside County, i.e., 90 percent of the occupied essential habitat remaining in the watershed. Following the approval of the HCP and the issuance of an ITP by the Service, the Santa Ana sucker and its remaining habitat within the plan area will be conserved, thus eliminating the need for an additional specific critical habitat designation by the Service.

In arriving at this conclusion we considered the same two basic criteria that the Service uses to evaluate conservation efforts when making listing decisions[1]: 1) the certainty that the conservation efforts will be implemented; and, 2) the certainty that the efforts will be effective.

The Certainty that the Conservation Effort will be Implemented

The Service applies the following nine criteria when considering conservation efforts when making listing decisions. We evaluated the MSHCP using the same criteria prior to arriving at our conclusions:

- The conservation effort, the parties to the agreement or plan that will implement the effort, and the staffing, funding level, funding source, and other resources necessary to implement the effort are identified;

- The legal authority of the parties to the agreement or plan to implement the formalized conservation effort, and the commitment to proceed with the conservation are described;

- The legal procedural requirements (e.g., environmental review) necessary to implement the effort are described, and information is provided indicating that fulfillment of these requirements does not preclude commitment to the effort;

- Authorizations (e.g., permits, landowner permission) necessary to implement the conservation effort are identified, and a high level of certainty is provided that the parties to the agreement or plan what will implement the effort will obtain these authorizations;

[1] See 68 FR 15100-15115, 28 March 2003. Policy for Evaluation of Conservation Efforts When Making Listing Decisions.

- The type and level of voluntary participation necessary to implement the conservation effort is identified, and a high level of certainty is provided that the parties to the agreement or plan that will implement the conservation effort will obtain that level of voluntary participation;

- Regulatory mechanisms (e.g., laws, regulations, ordinances) necessary to implement the conservation effort are in place;

- A high level of certainty is provided that the parties to the agreement or plan that will implement the conservation effort will obtain the necessary funding;

- An implementation schedule (including incremental completion dates) for the conservation effort is provided; and,

- The conservation agreement or plan that includes the conservation effort is approved by all parties to the agreement or plan.

A review of the MSHCP table of contents alone and the information contained in the certified final EIS/EIR makes it abundantly clear that all of the foregoing criteria have been met, or will be met by the parties to the plan. Budgeting has already been projected for a 25-year period.

The Certainty that the Conservation Effort will be Effective

Similarly, the Service applies the following six criteria when considering whether conservation efforts will be effective. Again, we evaluated the MSHCP using these criteria prior to arriving at our conclusions:

- The nature and extent of threats being addressed by the conservation effort are described, and how the conservation effort reduces the threats is described;

- Explicit incremental objectives for the conservation effort and dates for achieving them are stated;

- The steps necessary to implement the conservation effort are identified in detail;

- Quantifiable, scientifically valid parameters that will demonstrate achievement of objectives, and standards for these parameters by which progress will be measured, are identified;

- Provisions for monitoring and reporting progress on implementation and effectiveness of the conservation effort are provided; and,

- Principles of adaptive management are incorporated.

A review of the MSHCP and supporting documents indicates that these criteria are all met. In summary, we conclude that the MSHCP, when implemented, will adequately conserve the Santa Ana sucker and its essential habitat, thereby eliminating the need for a specific critical habitat designation in Riverside County. The determination by the Service to exclude the geographic area covered by the MSHCP from critical habitat will not result in the extinction of the Santa Ana sucker.

Santa Ana Sucker Conservation Program

The SAS Conservation Program was created in 2001 for an initial term of five years for the specific purpose of promoting the conservation (i.e., survival and recovery) of the Santa Ana sucker on a river-wide basis, while providing the necessary authorization, pursuant to the Act, to allow for the incidental take of a limited number of fish that is anticipated to occur when the participating agencies implement specific covered activities. The implementing authority is the Santa Ana Watershed Project Authority (SAWPA). In addition to SAWPA, participating agencies include: Riverside County Flood Control and Water Conservation District, Riverside County Transportation Department, San Bernardino County Flood Control District, Orange County Water District, Orange County Flood Control District, County of Orange Public Facilities and Resources Department, City of Riverside Regional Water Quality Control Plant, and the City of San Bernardino Municipal Water Department Rapid Infiltration and Extraction Facility (RIX Facility).

This significant collaboration of agencies conducts a wide variety of public services that may affect the Santa Ana River and its tributaries, including flood control, water conservation, water treatment and discharge, transportation, and wildlife conservation. Collectively, these agencies conduct activities that geographically include *all* of the Santa Ana River reaches and its tributary reaches known to support the Santa Ana sucker. Thus, the SAS Conservation Program encompasses the entire current range of the Santa Ana sucker in the Santa Ana River watershed.

The draft SAS Conservation Program, soon to be implemented subject to issuance of a Biological Opinion, is dated 24 February 2003. The SAS Conservation Program is based upon and incorporates the biological program developed by San Marino Environmental Associates, dated December 1999. The SAS Conservation Program documentation addresses, program administration, funding obligations, reporting requirements, research, and adaptive management. The SAS Conservation Program differs from the MSHCP in that it is focused exclusively on river-wide conservation of the sucker. Specific Santa Ana sucker research funded to date includes:

- Habitat affinities for the various life history stages of the sucker;
- Reproductive patterns of the sucker;
- Development of a population trend database;
- Evaluation of sucker migration in the Santa Ana River; and,
- Examination of the effects of temporary shutdowns of tertiary treated wastewater discharge on the hydrology of the Santa Ana River.

Research scheduled for 2004 includes:

- Development of habitat restoration methods;
- Characterization of the movement and diet of various life history stages of the sucker; and,
- Investigation of the effects of non-native adult fishes on larval and juvenile suckers.

As we did for the MSHCP, we reviewed the SAS Conservation Program using the same two basic criteria that the Service uses to evaluate conservation efforts when making listing decisions: 1) the certainty that the conservation efforts will be implemented; and, 2) the certainty that the efforts will be effective.

We conclude that the SAS Conservation Program overlaps the geographic area of the MSHCP and is specifically designed to benefit the sucker. Specific conservation efforts are currently being implemented and an adaptive management approach is included in the program to ensure that the measures being implemented will be effective. We conclude that the SAS Conservation Program will ensure that occupied essential habitat for the sucker and the attributes of that habitat will be protected and enhanced. Therefore, we further conclude that the designation of critical habitat within the boundaries of the SAS Conservation Program would provide little, if any, additional benefit, at the risk of discouraging an effective voluntary conservation program. We concur with the Service that critical habitat designation is not necessary in the geographic area covered by the SAS Conservation Program. Further, the exclusion of the geographic area covered by the SAS Conservation Program will not result in the extinction of the species.

Having concluded that it is not necessary to designate critical habitat within the geographic area covered by the SAS Conservation Program, we note that the Service's critical habitat map for Unit 1B (Santa Ana River wash) includes a reach of the Santa Ana River within the area covered by the SAS Conservation Program. The SAS Conservation Program extends upstream along the Santa Ana River to the Mission Channel (Sheet 5). The Service has included as critical habitat the reach from La Cadena Drive to the Mission Channel. We assume this is an error in mapping.

Whether it is an error in mapping or not, we recommend that this reach be deleted as critical habitat since it is within the geographic area covered by the SAS Conservation Program.

In summary, we believe that the decision of the Service to exclude from critical habitat designation those reaches of the Santa Ana River and its tributaries that fall within the geographic boundaries of the MSHCP and the SAS Conservation Program relies on the best available scientific information and is logically consistent with the approach the Service has previously taken when reviewing conservation plans as they apply to listing decisions. We recommend that the mapping error – if that its what it is - that includes as critical habitat that reach of the Santa Ana River from La Cadena Drive to the Mission Channel be corrected.

Evaluation of the Rationale for Including as Critical Habitat Unoccupied Reaches of the Santa Ana River and its Tributaries in Unit 1B

Our evaluation of the rationale for designating Unit 1B as critical habitat focuses on each of the conclusions relied upon by the Service that we previously listed.

Conclusion 1: Unit 1B Provides and Transports Sediment Necessary to Maintain the Preferred Substrates Utilized by the Santa Ana Sucker

The authorities for this conclusion are two brief personal communications to the Service in the form of e-mails from: 1) Dr. Jonathan Baskin, Professor Emeritus, California State Polytechnic University, Pomona, dated 12 February 2004; and, 2) Dr. Thomas Haglund, dated 12 February 2004. Both personal communications state that the gravels needed for Santa Ana sucker are derived principally from source areas upstream of the Rialto Drain (i.e., the upstream limit of current sucker distribution). The watershed upstream of the Rialto Drain also provides the higher flushing flows that not only clean sand from the spawning gravels, but also periodically replenish the gravel. Dr. Haglund states: "Loss of these gravel resources are potentially highly detrimental to the continued persistence of the sucker below Rialto drain."

We concur with the statements of Drs. Baskin and Haglund. Gravel and smaller cobbles are an important substrate, not only for Santa Ana sucker spawning, but also as a substrate for the growth of algae and benthic invertebrates that provide a food resource for the sucker. Neither of the personal communications to the Service, however, offered any quantitative or scientific analysis to demonstrate that sediment transport from upstream of the Rialto Drain to stream reaches inhabited by the Santa Ana sucker would be impaired in the future, thus necessitating designation of upstream areas of the Santa Ana River watershed as critical habitat. The communications simply recognized the importance of maintaining the fluvial processes that periodically replenish gravel and small cobble to the lower reaches of the river. Neither communication suggested that the upstream areas included in Unit 1B be designated as critical habitat to maintain sediment transport.

To address the issue of sediment transport using the best available science within the timeframe afforded to us by the Service to respond to the critical habitat designation, we completed an assessment of the influence of hydrology and sediment transport in the Santa Ana River on Santa Ana sucker habitat. Because of the length of the analysis, it is included as Appendix B to this report, and the results are summarized in the following narrative.

Summary of the Sediment Transport Analysis

The hydrological evaluation and the related sediment transport analysis using HEC-6 sediment transport modeling lead to several key conclusions:

- The operation of Seven Oaks Dam as a flood control facility using the historical hydrology of the Santa Ana River (1966-2002) will increase the magnitude of flows in the river by approximately 15 percent for flows in the range of 500 cfs to 4,000 cfs;

- The same operation of Seven Oaks Dam will decrease the magnitude of flows in the Santa Ana River by approximately 25 percent for flows over 4,000 cfs;

- Seven Oaks Dam effectively eliminates the downstream transport of sediment larger than sand from the upper Santa Ana River watershed;

- The pre-urbanization area of significant sediment-yielding mountain watersheds was approximately 467 square miles. Urbanization has reduced the effective contribution of sediment from these watersheds to the Santa Ana River by approximately 40 percent due to erosion reduction (impervious surfaces), construction of local debris basins, flood control structures, and water spreading basins;

- The remaining streams that provide significant sediment input to the Santa Ana River upstream of Prado Basin are Mill Creek, Plunge Creek, City Creek, Lytle Creek/Cajon Creek, and the Reche Canyon Channel;

- Before the construction of Seven Oaks Dam, the total sediment load carried by the Santa Ana River downstream of the energy dissipation structure near Interstate 10 (River Mile 26.5) was approximately 14,300 tons per year. With Seven Oaks Dam in operation the sediment load declined to 12,500 tons per year, a 13 percent reduction;

- Transport of gravel-sized materials from Mill, Plunge, City, Lytle/Cajon, and Reche Canyon creeks will continue downstream of Interstate 10 over a 10-mile reach, even with the reduced flood flows due to Seven Oaks Dam. This reach supports the occupied essential habitat for the Santa Ana sucker; and,

- All gravel sizes currently in the Santa Ana River occupied essential habitat will remain downstream of River Mile 23, and sand degradation in this reach will continue to make gravel-sized material available at the streambed surface.

The sediment transport analysis completed as part of this evaluation demonstrates that the fluvial processes will continue to provide suitable gravel and larger substrates to reaches of the Santa Ana River currently occupied by the Santa Ana sucker. The analysis also demonstrates that several other significant watersheds continue to provide sediment to the Santa Ana River in addition to Mill and City creeks. These streams are Plunge Creek, Lytle Creek/Cajon Creek, and the Reche Canyon Channel. Given that the best available scientific data indicate that substrates suitable for use by the Santa Ana sucker will continue to be amply provided for from a number of watersheds in the region, even with Seven Oaks Dam in place, and even accounting for the impacts of urbanization, flood control, water spreading basins, and other sediment sinks, there is no factual basis for designating the main channel of the Santa Ana River, Mill Creek or City Creek, or any other upstream tributary not occupied by the sucker, as critical habitat based on the need for sediment transport from source areas. We conclude that the standard that must be met to designate the main channel of the Santa Ana River, and Mill and City creeks, which are all located outside the area currently occupied by the sucker, has not been met. Specifically, the Secretary can *only* make such a critical habitat designation when a designation limited to the species current range would be inadequate to ensure species conservation. The available scientific data indicate that suitable substrates for the Santa Ana sucker will continue to be provided to the Santa Ana River downstream of Interstate 10 into the future. Further, as we previously reported, Allen (2003) concluded that despite changes in the river channel from year to year, gravels within the Santa Ana River reach occupied by the Santa Ana sucker were suitable for spawning and were *not* a limiting resource. We can discern no imminent or foreseeable threat to gravel recruitment to areas occupied by the sucker. Consequently, we would recommend that the main channel of the Santa Ana River, and Mill and City creeks be excluded as critical habitat for the Santa Ana sucker.

Related to the issue of gravel recruitment, we note that the only two *confirmed* spawning locations for the Santa Ana sucker are in the Rialto Drain and Sunnyslope Creek. Neither of these watercourses receives gravel from the Santa Ana River, but rather only obtain gravel from their local watersheds. If these two areas were to be determined to be the only locations for sucker spawning, then there would be no need to have the Santa Ana River supply gravels to the mainstem downstream of the Rialto Drain exclusively for spawning purposes. Given that there is some circumstantial evidence that the sucker may spawn in other locations along the mainstem, this issue requires further research to avoid adverse impacts (e.g., economic) from designating as critical habitat areas with no scientifically demonstrable linkage to the Santa Ana sucker (see the alternative hypotheses in Haglund *et al.* 2002 and Haglund *et al.* 2003).

Conclusion 2: The Unit Conveys Stream Flows and Flood Waters Necessary to Maintain Habitat Conditions for the Santa Ana Sucker

The Service states that Unit 1B is essential to the conservation of the sucker because it maintains a relatively natural hydrograph, and that this unit is essential to maintain the natural hydrograph of the Santa Ana River. The authority for this statement is attributed to the previously cited personal communication from Dr. Haglund.

This conclusion is not supported by the best available scientific data. Except in the case of flood events during the winter, neither of these streams support anything remotely resembling a natural hydrograph. Prior to settlement of the area, the streams in the Santa Ana River watershed typically flowed year-round with significant flood flows during the winter months and smaller, yet still important, peak flows during the summer months due to precipitation events (e.g., thunderstorms). Flows during the spring runoff period were variable, but often substantial if the mountain snowpack was significant. Flows during the summer and fall months (save as an immediate result of precipitation) were often quite limited, particularly during drier years.

By contrast, as the area was settled, Mill Creek was diverted in its entirety into the Mill Creek zanja[2] for agricultural irrigation by the Spanish missionaries in 1819 (Leidy *et al.* 2001). Thus, the flow in the stream during the summer irrigation season terminated at the zanja. Since that time, Mill Creek has been diverted for municipal and industrial water supply and hydroelectric power. During periods when the stream is not subject to flood events, *all* of the surface flow of Mill Creek is captured either at the Mill Creek 3 Diversion near Forest Falls or at the Highway 38 River Pickup at the mouth of Mill Creek Canyon (both facilities operated by Southern California Edison Company). No water reaches the lower reach of Mill Creek or the Santa Ana River. During flood events the existing diversion facilities typically shut down due to the heavy sediment load and the flood flows do reach the Santa Ana River and points downstream. It is these flood flows that transport the sediment from Mill Creek to the Santa Ana River (see the sediment transport analysis in Appendix B of this report).

[2] Zanja, pronounced /sánha/ in Spanish, is a water ditch or artificial canal, and particularly one used for purposes of irrigation.

The Service also does not address the issue of water rights, and neither does this evaluation. We simply point out that the Santa Ana River and all of its tributaries, including Mill Creek and City Creek are fully appropriated streams pursuant to the laws of the State of California, and federal agencies are precluded from interfering with water rights under the jurisdiction of the state.

The hydrology of City Creek, and for that matter all of the other tributaries to the Santa Ana River upstream of the Prado Basin, is similar to Mill Creek. As mentioned previously, all of these streams are fully appropriated and, except for flood events, little water reaches the Santa Ana River, which is typically dry throughout most of the reach upstream of the Mission Channel. For example, most of the water in City Creek is diverted at the mouth of City Creek Canyon. USGS stream gaging records indicate that only a small trickle of water (i.e., < 1 cfs), flows down the City Creek channel to the Santa Ana River during the summer period. Consequently, the hydrology of these streams is anything but "natural" and there is no scientific basis for the Service's conclusion that the designation of Unit 1B as critical habitat will maintain a "natural" hydrology.

Conclusion 3: The Unit Supports Riparian Habitats that Protect Water Quality in the Downstream Portions of the Santa Ana River Occupied by the Sucker

With respect to Unit 1B, Conclusion 3 has no basis in scientific fact. Neither Mill Creek nor City Creek provide a significant volume of water to the Santa Ana River, except during short periods of high precipitation and/or during major flood events. Floodwaters are characterized by poor water quality due to suspended sediments, urban runoff containing toxic chemicals, oil and grease, bank erosion, etc. During the low-flow period following snowmelt in the San Bernardino Mountains (typically spring through fall), little, if any, water from these streams reaches the Santa Ana River channel. Most of the local runoff that does reach the river is a combination of treated wastewater, some periodic agricultural runoff, and urban runoff (e.g., San Timoteo Creek, Mission Channel). The Santa Ana River is generally dry upstream of the Rialto Drain. Neither Mill or City creeks or the mainstem Santa Ana River have any positive impact on the water quality of the Santa Ana River during non-flood conditions.

Aside from the fact that Mill Creek does not normally discharge to the Santa Ana River except during floods, or for short intervals when the water diversions are shut off for maintenance, the stream does not support extensive riparian habitats that protect water quality (Leidy *et al.* 2001). Mill Creek has a very limited riparian plant community that is centered around several cienegas. Appendix C contains maps from Leidy *et al.* (2001) that illustrate the locations and extent of these riparian areas. While the cienegas do influence local water quality (i.e., water temperature) along short reaches of Mill Creek, their influence does not extend downstream to the Santa Ana River or to the occupied essential habitat over 20 miles downstream. Similar findings apply to City Creek.

Given the hydrology of Mill and City creeks (see previous discussion), there is no foundation for the assertion that these streams or the mainstem Santa Ana River "protect" water quality in the downstream occupied essential habitat. The Service has provided no scientifically-based data to support this claim. During the period of the year when water quality issues are of greatest importance to the sucker, i.e., spring spawning and summer low flow, little to no water enters the reach of the Santa Ana River occupied by the sucker from these two streams. We conclude that Conclusion 3 is not supported by the best available scientific evidence and, consequently, is not a legitimate basis for designating portions of Mill and City creeks and the mainstem Santa Ana River as critical habitat.

Conclusion 4: Population Viability

The Service states that Unit 1B is also essential because it maintains habitat for the southernmost of the existing Santa Ana sucker populations. The Service states (69 FR 8845):

> "Consequently, these units enhance the long-term sustainability of the sucker by maintaining its genetic adaptive potential and a well-distributed geographical range to buffer the sucker's particular vulnerability to environmental fluctuations and catastrophes because of its limited number of populations."

The authority for the foregoing statement appears to be the personal communication from Dr. Haglund. We point out that Unit 1B is *unoccupied* by the Santa Ana sucker and, therefore, has no influence or effect on the long-term viability of the sucker at this time. Further, there is *no* Recovery Plan, nor is there any conservation plan that identifies Unit 1B as an area appropriate for the introduction of the sucker as part of a conservation effort. While the Santa Ana sucker is known to have historically occurred in the canyon reach of City Creek and in the Santa Ana River as far upstream as the Greenspot Road Bridge[3], it has *never* been documented to have occurred in Mill Creek. While the sucker may have occurred in Mill Creek, we believe it is important to distinguish fact from speculation. In implementing the Act, the Service may only rely on the best available scientific information, not hypothetical speculation about what might have been the case two centuries ago.

Further, there has been no scientific demonstration that these two streams are essential for the long-term viability of the species. The Service has not demonstrated that the occupied essential habitat downstream of the Rialto Drain is inadequate for the conservation of the species, thus requiring that areas outside of the occupied essential habitat be included as critical habitat. Consequently, we do not believe that the Service has met the standard required to include Mill and City creeks, or the upper mainstem Santa Ana River, as critical habitat pursuant to 50 CFR 424.12(e).

Summary

Our review of the Service's critical habitat designation for the Santa Ana sucker indicates that:

- The rationale for excluding the currently occupied reaches of the Santa Ana River and its tributaries from critical habitat designation based on the protections afforded by the MSHCP and SAS Conservation Program is well-founded and consistent with the Service's established policy used to evaluate conservation programs when making listing decisions; however, that rationale should be applied consistently to all lands that are covered by the MSHCP and the SAS Conservation Program, including those lands between the Rialto Drain and the Mission Channel in San Bernardino County; and,

[3] The Service states that the Santa Ana sucker was known to occur upstream of the present location of Seven Oaks Dam. This is not correct. Several authors have misidentified a museum collection record from "Warm Creek" in San Bernardino as "Warm Springs Creek" which is located upstream of Seven Oaks Dam.

- The rationale for including currently unoccupied habitat in Unit 1B is not supported by the best available scientific evidence and relies on conclusionary conjecture that is not supported by the evidence in the available record. For this reason, we recommend that the Service withdraw the designation of Unit 1B as critical habitat for the Santa Ana sucker.

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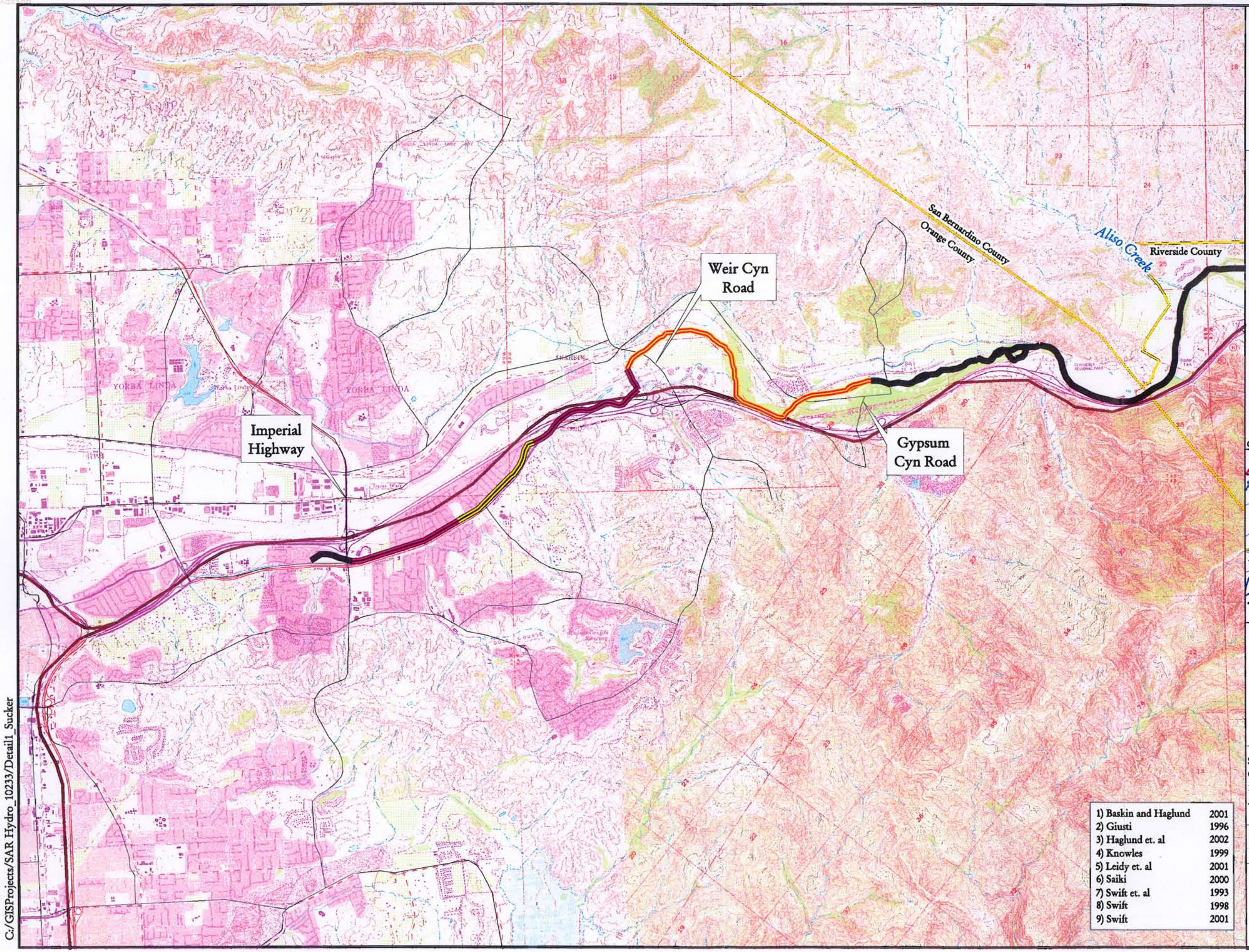
APPENDICES

Appendix A

Santa Ana Sucker Distribution Maps



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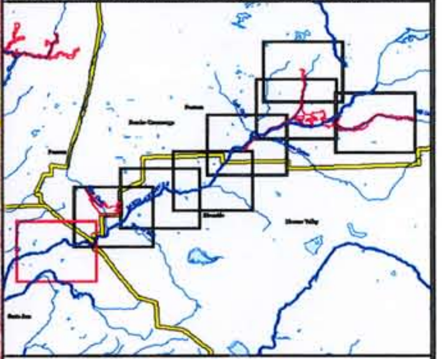
SAN BERNARDINO SANTA ANA SUCKER DISTRIBUTION AND CRITICAL HABITAT

Santa Ana River
SHEET 1

SAR1 - San Bernardino Valley
San Bernardino County, CA

- Critical Habitat
- Absent (2, 4, 5, 6, 7, 8)
- Adult Common (3, 9)
- Adult and Juvenile Common (3, 9)
- Adult Sporadic (1, 2, 8, 9)
- Adult and Juvenile Sporadic (1, 2, 8, 9)
- Juvenile Common (3, 9)
- Juvenile Sporadic (1, 2, 8, 9)

GIS Data Projection: Teale Albers, NAD 27, Units Meters.



N

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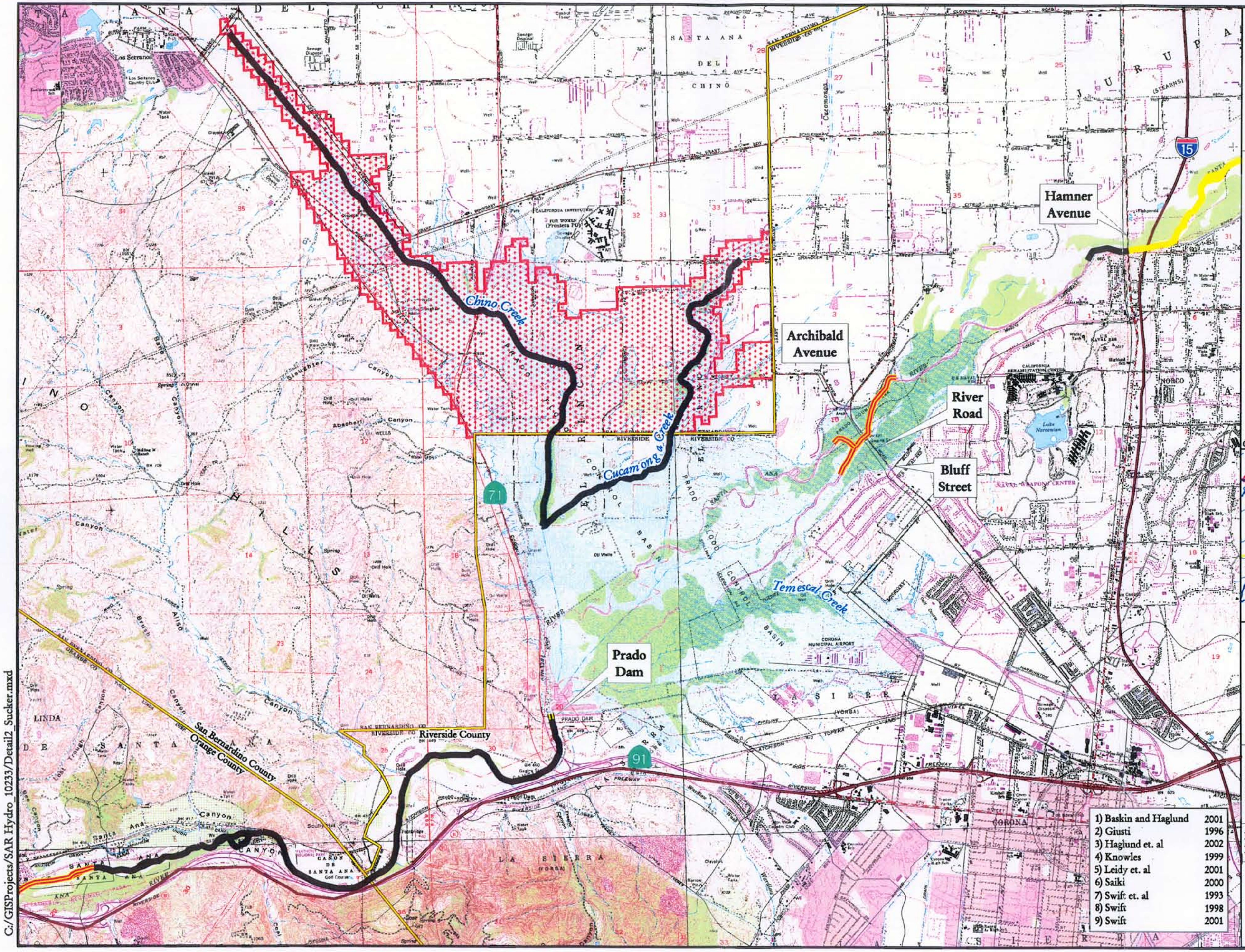
Feet

Source: USGS, 7.5-Minute Quads: Prado Dam, Orange, and Yorba Linda, 1981 & Black Star Canyon 1988;ESRI, Highways and Roads, 2001; and EIP Associates, GIS Program, 4/19/04.

PROJECT NUMBER: 10233-00-J
Requested by: RL Created by: PP Date: 04/15/04

EIP
ASSOCIATES



SAN BERNARDINO SANTA ANA SUCKER DISTRIBUTION AND CRITICAL HABITAT

Santa Ana River
SHEET 2

SAR1 - San Bernardino Valley

San Bernardino County, CA

- Critical Habitat
- Absent (2, 4, 5, 6, 7, 8)
- Adult Common (3, 9)
- Adult and Juvenile Common (3, 9)
- Adult Sporadic (1, 2, 8, 9)
- Adult and Juvenile Sporadic (1, 2, 8, 9)
- Juvenile Common (3, 9)
- Juvenile Sporadic (1, 2, 8, 9)

GIS Data Projection: Teale Albers, NAD 27, Units Meters.

N

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Feet

Source: USGS, 7.5-Minute Quads: Corona North & Prado Dam, 1980; ESRI, Highways and Roads, 2001; and EIP Associates, GIS Program, 4/19/04.

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Requested by: RL Created by: PP Date: 04/15/04

EIP ASSOCIATES

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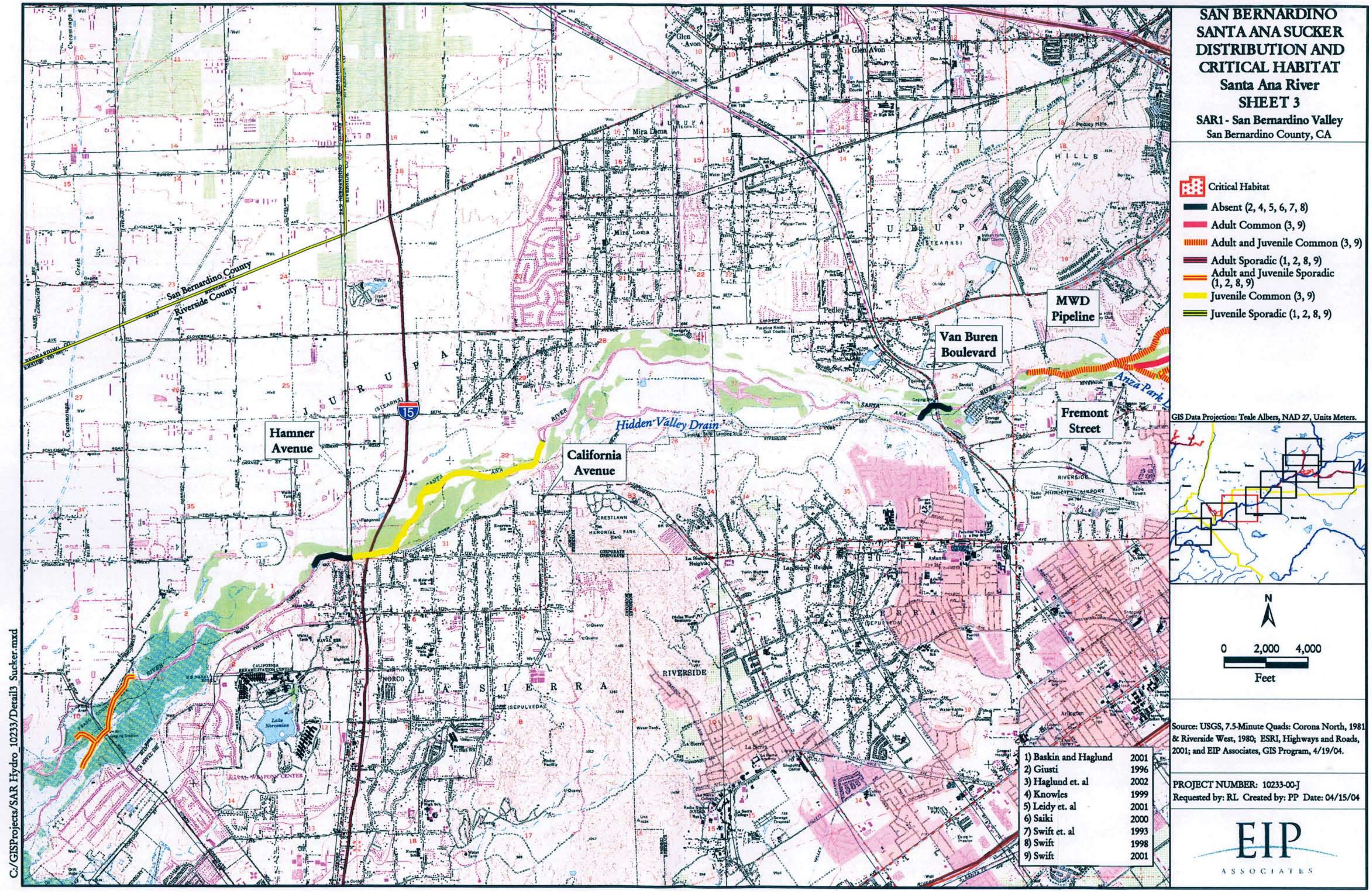

SAN BERNARDINO
SANTA ANA SUCKER
DISTRIBUTION AND
CRITICAL HABITAT
Santa Ana River
SHEET 3
SAR1 - San Bernardino Valley
San Bernardino County, CA
Critical Habitat
Absent (2, 4, 5, 6, 7, 8)
Adult Common (3, 9)
Adult and Juvenile Common (3, 9)
Adult Sporadic (1, 2, 8, 9)
Adult and Juvenile Sporadic (1, 2, 8, 9)
Juvenile Common (3, 9)
Juvenile Sporadic (1, 2, 8, 9)
GIS Data Projection: Teale Albers, NAD 27, Units Meters.
N
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Feet
Source: USGS, 7.5-Minute Quads: Corona North, 1981 & Riverside West, 1980; ESRI, Highways and Roads, 2001; and EIP Associates, GIS Program, 4/19/04.
PROJECT NUMBER: 10233-00-J
Requested by: RL Created by: PP Date: 04/15/04
EIP
ASSOCIATES
MWD Pipeline
Van Buren Boulevard
Fremont Street
Hamner Avenue
California Avenue
Hidden Valley Drain
San Bernardino County
Riverside County
JURUPA
LA SIERRA
RIVERSIDE
Mira Loma
Glen Avon
Anza Park
15
1) Baskin and Haglund 2001
2) Giusti 1996
3) Haglund et. al 2002
4) Knowles 1999
5) Leidy et. al 2001
6) Saiki 2000
7) Swift et. al 1993
8) Swift 1998
9) Swift 2001
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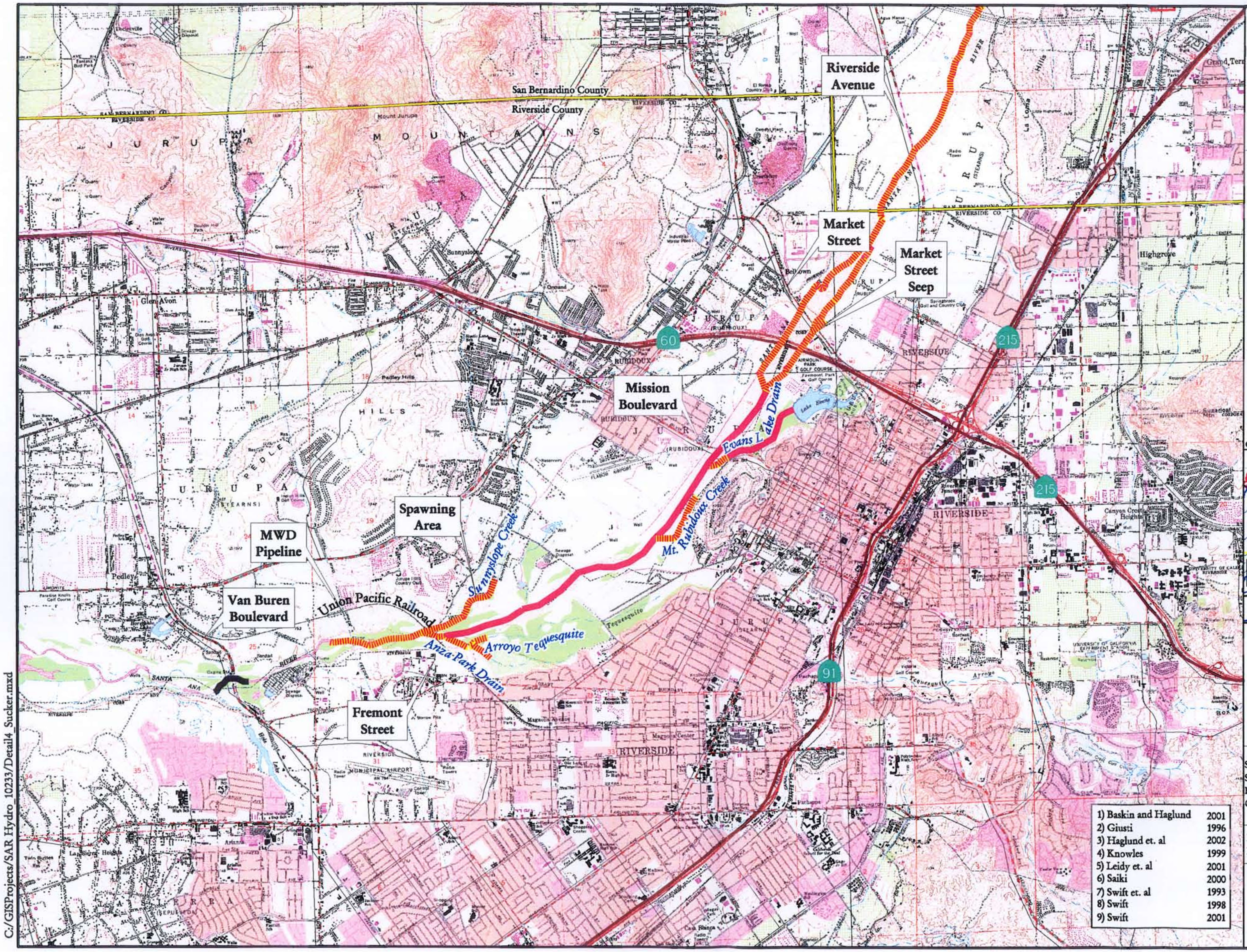
SAN BERNARDINO SANTA ANA SUCKER DISTRIBUTION AND CRITICAL HABITAT

Santa Ana River
SHEET 4

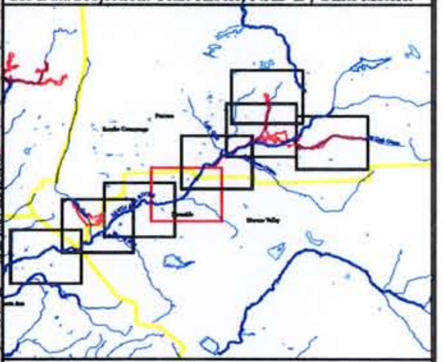
SAR1 - San Bernardino Valley

San Bernardino County, CA



- Critical Habitat
- Absent (2, 4, 5, 6, 7, 8)
- Adult Common (3, 9)
- Adult and Juvenile Common (3, 9)
- Adult Sporadic (1, 2, 8, 9)
- Adult and Juvenile Sporadic (1, 2, 8, 9)
- Juvenile Common (3, 9)
- Juvenile Sporadic (1, 2, 8, 9)

GIS Data Projection: Teale Albers, NAD 27, Units Meters.



N

0 2,000 4,000

Feet

Source: USGS, 7.5-Minute Quads: San Bernardino, South, Fontana, Riverside East & Riverside West, 1980; ESRI, Highways and Roads, 2001; and EIP Associates, GIS Program, 4/19/04.

1) Baskin and Haglund	2001
2) Giusti	1996
3) Haglund et. al	2002
4) Knowles	1999
5) Leidy et. al	2001
6) Saiki	2000
7) Swift et. al	1993
8) Swift	1998
9) Swift	2001

PROJECT NUMBER: 10233-00-J

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EIP ASSOCIATES

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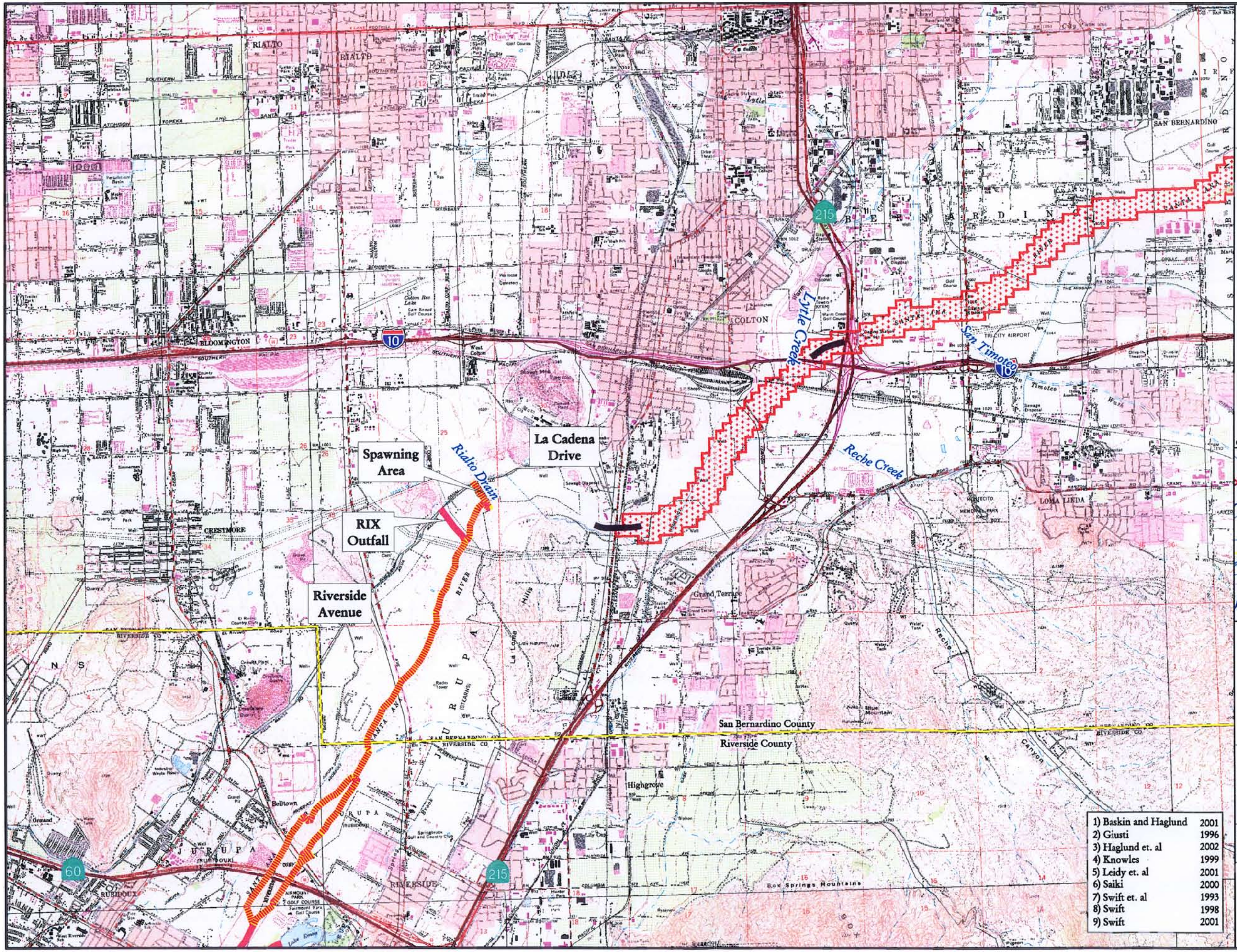


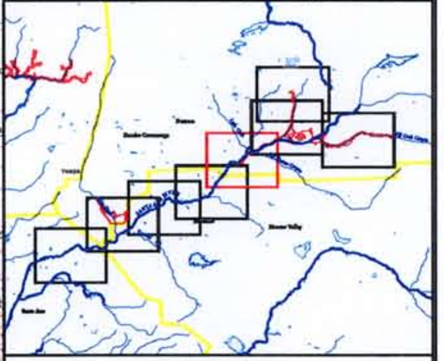
SAN BERNARDINO SANTA ANA SUCKER DISTRIBUTION AND CRITICAL HABITAT

Santa Ana River
SHEET 5

SAR1 - San Bernardino Valley
San Bernardino County, CA

- Critical Habitat
- Absent (2, 4, 5, 6, 7, 8)
- Adult Common (3, 9)
- Adult and Juvenile Common (3, 9)
- Adult Sporadic (1, 2, 8, 9)
- Adult and Juvenile Sporadic (1, 2, 8, 9)
- Juvenile Common (3, 9)
- Juvenile Sporadic (1, 2, 8, 9)

GIS Data Projection: Teale Albers, NAD 27, Units Meters.



N

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Feet

Source: USGS, 7.5-Minute Quads: Fontana, Redlands, 1988 & San Bernardino South, 1988; ESRI, Highways and Roads, 2001; and EIP Associates, GIS Program, 4/19/04.

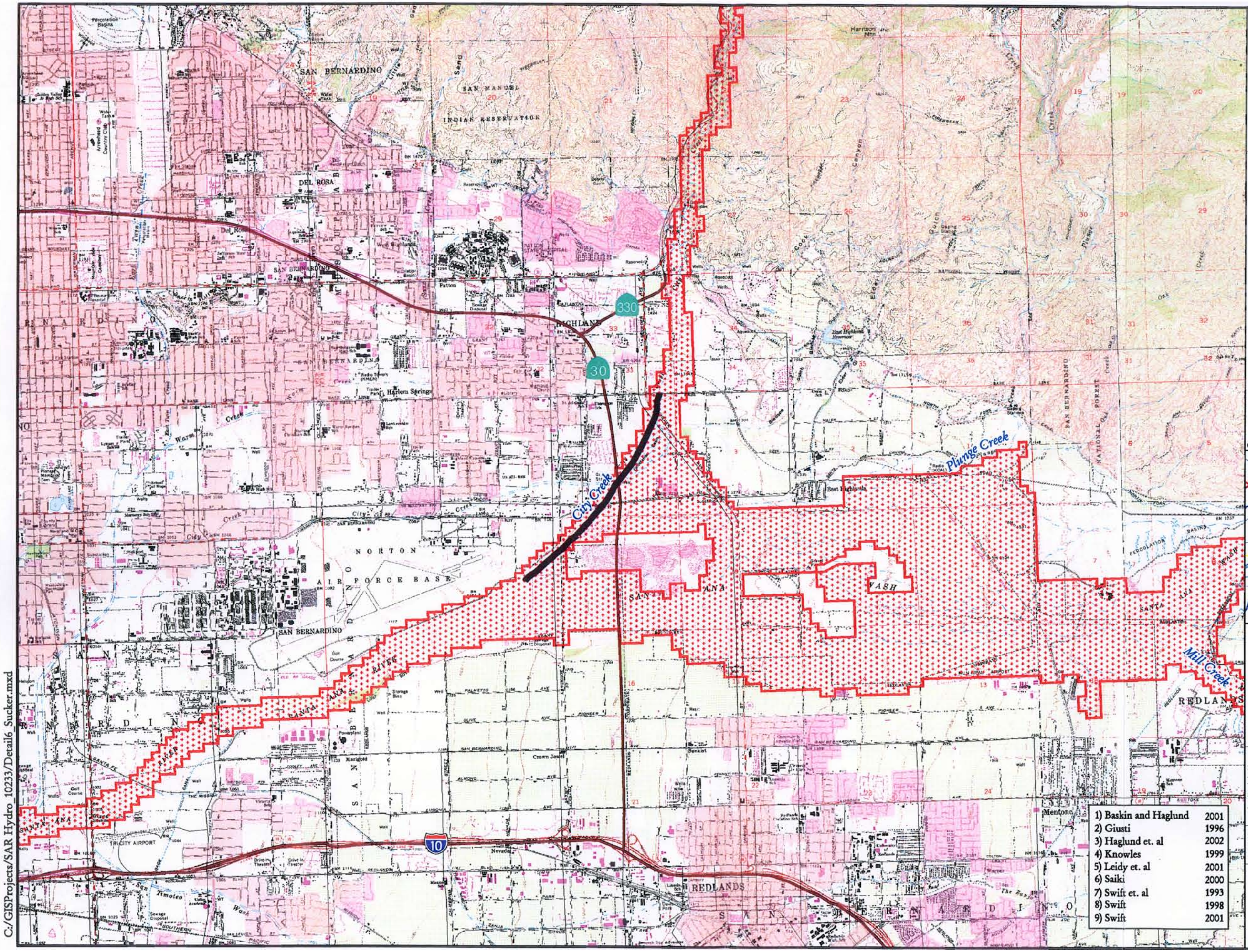
PROJECT NUMBER: 10233-00-J
Requested by: RL Created by: PP Date: 04/15/04

EIP ASSOCIATES

SAN BERNARDINO SANTA ANA SUCKER DISTRIBUTION AND CRITICAL HABITAT
Santa Ana River
SHEET 6

SAR1 - San Bernardino Valley

San Bernardino County, CA



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- Critical Habitat
- Absent (2, 4, 5, 6, 7, 8)
- Adult Common (3, 9)
- Adult and Juvenile Common (3, 9)
- Adult Sporadic (1, 2, 8, 9)
- Adult and Juvenile Sporadic (1, 2, 8, 9)
- Juvenile Common (3, 9)
- Juvenile Sporadic (1, 2, 8, 9)

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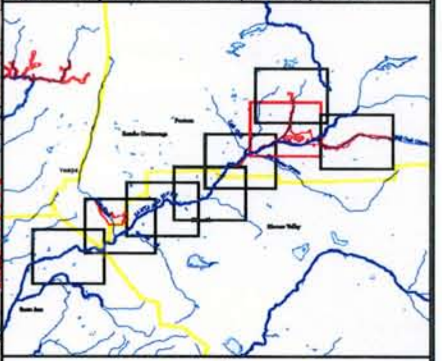

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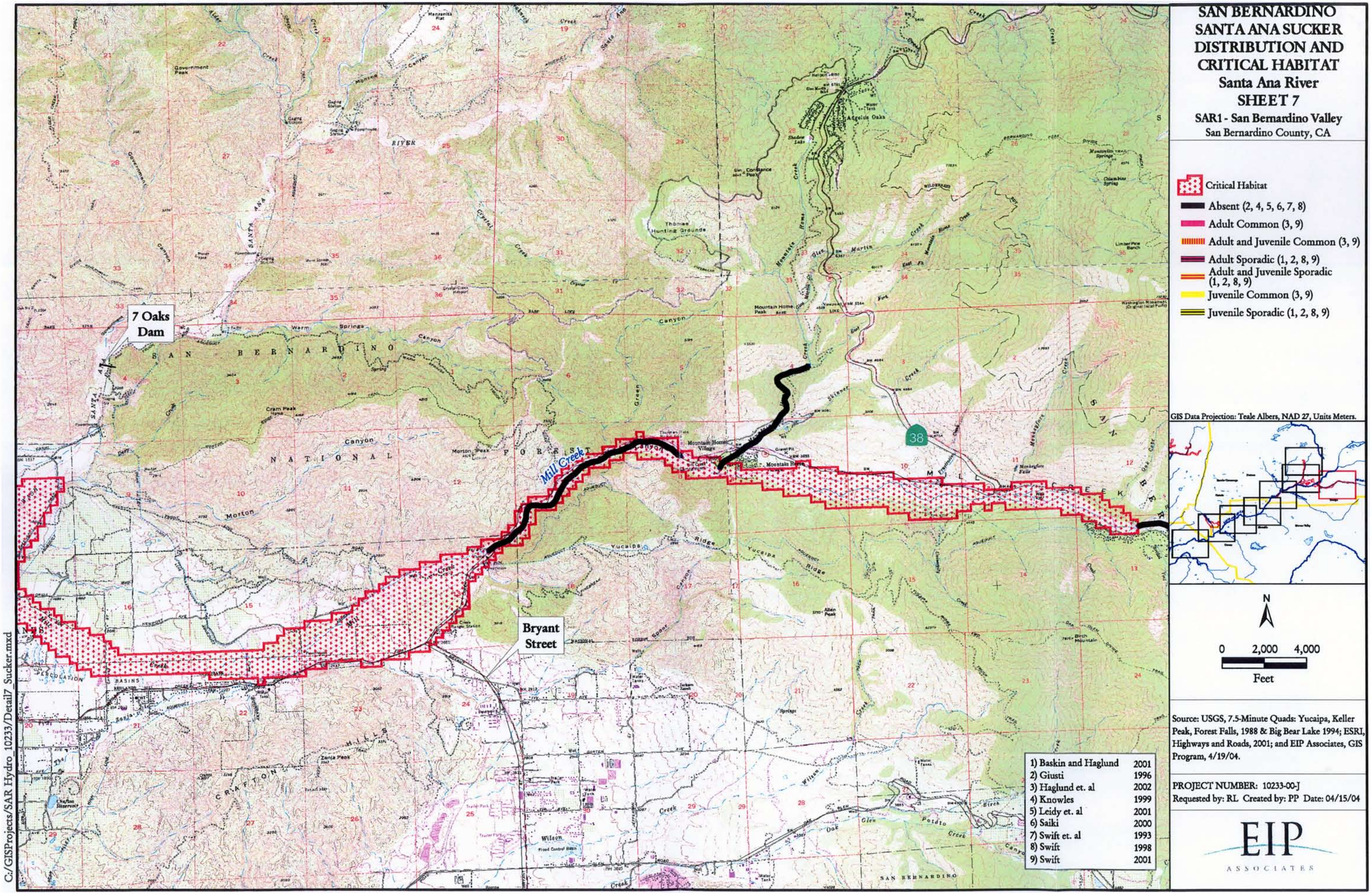
Feet

Source: USGS, 7.5-Minute Quads: Yucaipa, Redlands Harrison Mtn, & Keller Peak, 1988; ESRI, Highways and Roads, 2001; and EIP Associates, GIS Program, 4/19/04.

PROJECT NUMBER: 10233-00-J

Requested by: RL Created by: PP Date: 04/15/04

EIP ASSOCIATES



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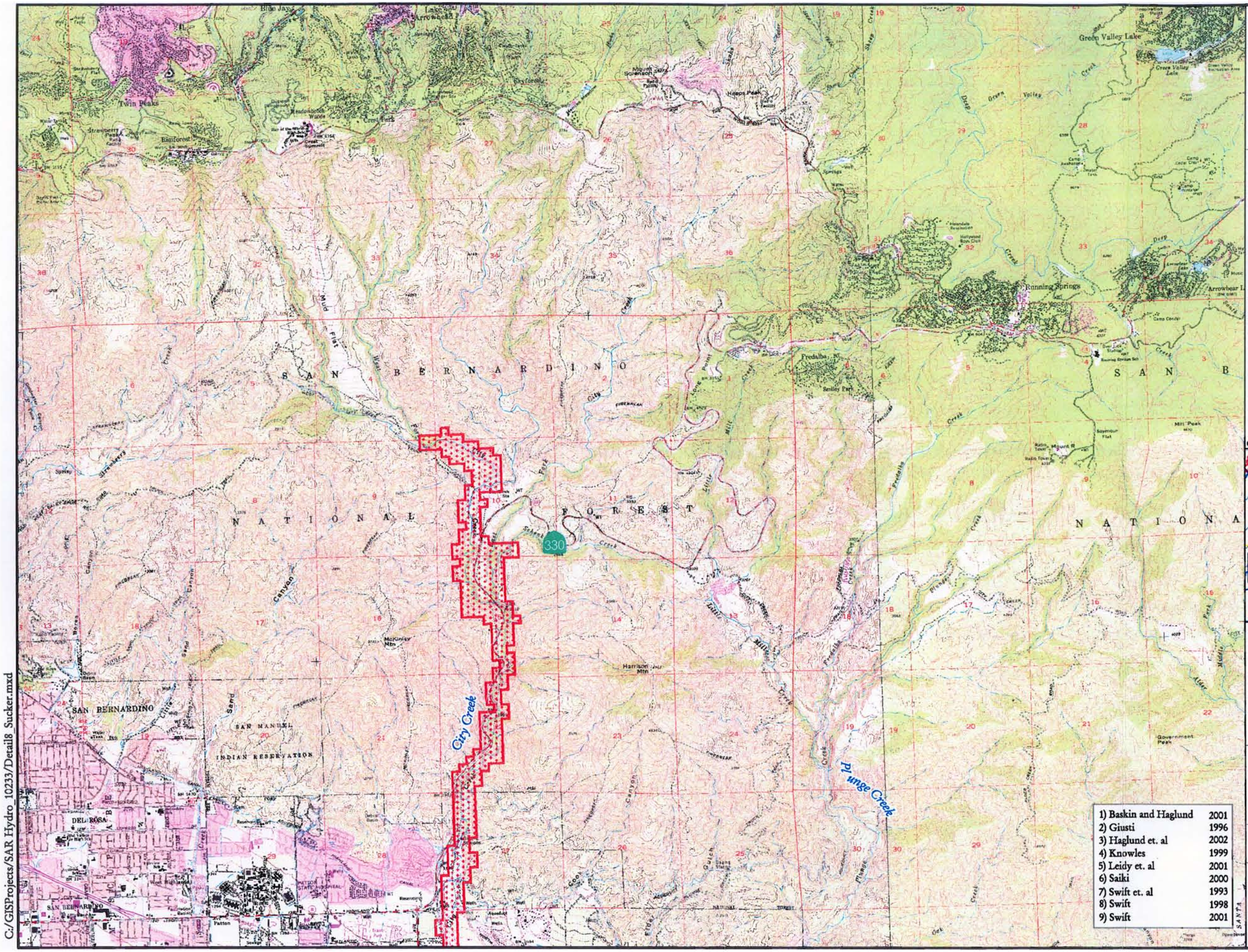
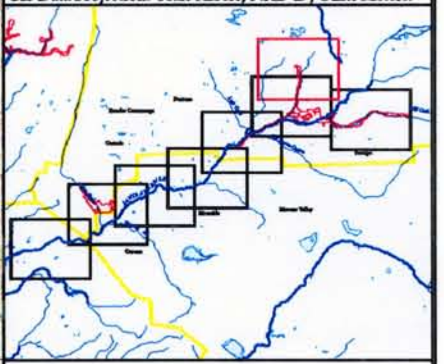


1) Baskin and Haglund	2001
2) Giusti	1996
3) Haglund et. al	2002
4) Knowles	1999
5) Leidy et. al	2001
6) Saiki	2000
7) Swift et. al	1993
8) Swift	1998
9) Swift	2001

SAN BERNARDINO SANTA ANA SUCKER DISTRIBUTION AND CRITICAL HABITAT
Santa Ana River
SHEET 8
SAR1 - San Bernardino Valley
San Bernardino County, CA

- Critical Habitat
- Absent (2, 4, 5, 6, 7, 8)
- Adult Common (3, 9)
- Adult and Juvenile Common (3, 9)
- Adult Sporadic (1, 2, 8, 9)
- Adult and Juvenile Sporadic (1, 2, 8, 9)
- Juvenile Common (3, 9)
- Juvenile Sporadic (1, 2, 8, 9)

GIS Data Projection: Teale Albers, NAD 27, Units Meters.



N

0 2,000 4,000
Feet

Source: USGS, 7.5-Minute Quads: San Bernardino, Harrison Mtn, & Keller Peak, 1988; ESRI, Highways and Roads, 2001; and EIP Associates, GIS Program, 4/19/04.

PROJECT NUMBER: 10233-00-J
Requested by: RL Created by: PP Date: 04/15/04

EIP ASSOCIATES

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Appendix B

Assessment of the Influence of Hydrology and Sediment Transport in the Santa Ana River on Santa Ana Sucker Habitat

Assessment of the Influence of Hydrology and Sediment Transport in the Santa Ana River on Santa Ana Sucker Habitat

Prepared for:

Best Best & Krieger LLP

Prepared by:

John H. Humphrey, Ph.D., P.E.
Wesley H. Blood, Ph.D.
Roy Leidy, C.F.S.

April 22, 2004

Assessment of the Influence of Hydrology and Sediment Transport in the Santa Ana River on Santa Ana Sucker Habitat

Prepared for:

Best Best & Krieger LLP

Prepared by:

John H. Humphrey, Ph.D., P.E.
Wesley H. Blood, Ph.D.
Roy Leidy, C.F.S.

April 2004

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Figure

Assessment of the Influence of Hydrology and Sediment Transport in the Santa Ana River on Santa Ana Sucker Habitat

Prepared By
John H. Humphrey, Ph.D., P.E.
Wesley H. Blood, Ph.D.
Roy Leidy, C.F.S.

Introduction

The U.S. Fish and Wildlife Service (Service) has designated selected reaches of the Santa Ana River and its tributaries as critical habitat for the threatened Santa Ana sucker (*Catostomus santaanae*) (69 FR 8839-8861). Upstream of the Prado Flood Control Basin (Prado Basin), reaches of the Santa Ana River main channel, City Creek channel, and Mill Creek channel have been designated as critical habitat (i.e., Unit 1B) presumably to protect potential sediment sources (i.e., gravel and cobble) necessary as spawning substrate in the downstream river reaches where the Santa Ana sucker actually occurs. This report uses available information to make an assessment of sediment transport of gravel and cobble substrates originating in upstream reaches of the Santa Ana River and its tributaries to downstream reaches of the river occupied by the Santa Ana sucker. The report covers various aspects of: 1) hydrologic changes due to Seven Oaks Dam and urbanization; 2) watershed sediment yield changes due to Seven Oaks Dam, debris basins, flood control basins, spreading basins, and channelization; and, 3) downstream Santa Ana River channel changes in sediment transport and resulting bed material changes resulting from 1) and 2).

Hydrology

Records at nine U.S. Geological Survey (USGS) streamflow gaging stations provided daily flow data for the Santa Ana River watershed upstream of Prado Dam. Three gages are located on the Santa River main channel and six gages are located on tributary streams. Table 1 summarizes information on each of these nine stations. Figure 1 illustrates the locations of the gaging stations. Table 2 summarizes the locations of tributary inflow to the Santa Ana River and

Table 1. USGS Streamflow Stations.						
USGS #	Name	Latitude	Longitude	Area	Begin	End
11051500	Santa Ana R nr Mentone	34.108	117.100	210	1896	2003
11054000	Mill C nr Yucaipa	34.091	117.037	42	1920	1986
11055500	Plunge C nr East Highlands	34.118	117.141	17	1919	2003
11055800	City C nr Highland	34.144	117.188	20	1919	2003
11057500	San Timoteo C nr Loma Linda	34.064	117.272	125	1954	2003
11059300	Santa Ana R at E St nr San Bernardino	34.065	117.299	541	1939	2003
11060400	Warm C nr San Bernardino	34.078	117.299	11	1964	2003
11065000	Lytle C at Colton	34.079	117.305	186	1957	2003
11066460	Santa Ana R at MWD Crossing	33.969	117.448	852	1970	2003

Table 2. Santa Ana River Tributary Inflow River Miles Above Prado Dam.				
River Mile Upstream of Prado Dam	Location Description	Watershed Area (sq. mi.)	Significant Sediment Source	Area Yielding Sediment (sq. mi.)
40	Seven Oaks Dam	182		139
39	**Santa Ana River nr Mentone USGS Gage**	**214**		144
	Mill Creek at USGS Gage	43	Yes	43
37	Lower Mill Creek	9		
	Plunge Creek at USGS Gage	17	Yes	17
35.5	Lower Plunge Creek	5		
	City Creek at USGS Gage	20	Yes	20
31	Lower City Creek	12		
28.5	Mission Channel	31		
28	San Timoteo Creek	126		
	Santa Ana River Local	17		
27.5	Twin Creek / Warm Creek Channel	57		
27	**Santa Ana River at E Street USGS Gage**	**541**		
	Cajon Wash	100	Yes	100
26	Lytle Creek / Cajon Wash	86	Yes	55
25	Reche Canyon Channel	14	Yes	14
23	Rialto Drain (upper perennial flow)	36		
	Santa Ana River Riverside Local	76		
16	Sunnyslope Creek	7		
15	**Santa Ana River at MWD Crossing**	**852**		
	Santa Ana River Local	16		
9	San Sevaine / Etiwanda Channel	72		
8	Day Creek	36		
5.5	Prado Dam Inundation Limit	12		
0	Prado Dam Local	988		700

identifies those tributaries that are currently considered to be *significant* sediment sources to the Santa Ana River. Figure 2 provides a schematic diagram of the Santa Ana River to better illustrate the geographic relationships of various tributaries and local features along the river.

The reach of the Santa Ana River most suitable for the Santa Ana sucker is downstream of the critical habitat, between the E Street USGS gage and the MWD Crossing USGS gage. Santa Ana suckers have been observed between the Rialto Drain (the beginning of perennial flow in the river) at River Mile 23 downstream to the inundation limit of the Prado Basin at River Mile 5.5.

Figure 1 also illustrates the principal tributaries contributing sediment to the Santa Ana River. Those tributaries which contribute most of the flow and nearly all of the sediment to the river have watersheds in the foothills and higher terrain of the San Bernardino Mountains, except for Reche Canyon Channel. The principal tributaries yielding high runoff and sediment historically included: Santa Ana River above Seven Oaks Dam (182 square miles, or 144 square miles excluding Baldwin Lake); Mill Creek (43 square miles); Plunge Creek (17 square miles); City Creek (20 square miles); Warm Creek/Twin Creeks (57 square miles); Cajon Wash (100 square miles); Lytle Creek (60 square miles); and, San Timoteo Creek (126 square miles).

The three Santa Ana River main channel USGS gages were used to derive pre-Seven Oaks Dam daily flow-duration statistics for a representative 36-year period when all three gages were operating simultaneously (1966-2002). Flows of a magnitude greater than 500 cubic feet per second (cfs) for the Mentone USGS gage have been influenced by Seven Oaks Dam storage since 1998. This circumstance has had a minor influence on the flow statistics since no major floods have occurred in the 1998-2002 period. Daily flow-duration curves for the three Santa Ana River gaging stations are illustrated in Figure 3.

Flood control operations at Seven Oaks Dam, as mandated by the U.S. Army Corps of Engineers (USCOE), require Seven Oaks Dam to store and release flows from the upper Santa Ana River watershed according to filling and release criteria specified for Prado Dam and the Prado Basin. Generally, during a flood event flows, less than or equal to 500 cfs are passed through Seven Oaks Dam, and flows in excess of 500 cfs are stored behind Seven Oaks Dam until the Prado Basin can accommodate the additional water. However, later releases from Seven Oaks Dam provide longer periods of flow in the Santa Ana River in the 1,000 to 5,000 cfs range than would have occurred naturally. Flow-duration statistics, as modified by Seven Oaks Dam flood control operations, were adjusted to account for these potential operations, in order to provide a representation of the influence of Seven Oaks Dam on the flow-duration curves used in the sediment transport model. Table 3 summarizes flow-duration statistics used to model Santa Ana River flows pre- and post-Seven Oaks Dam. The data indicate that there is consistently an approximate 15 percent increase in the magnitude of flows in the Santa Ana River downstream of Seven Oaks Dam in the 500 to 4,000 cfs range, and a decrease in magnitude of approximately 25 percent for flows over 4,000 cfs.

Table 3. Annual Flow Duration Data. Santa Ana River at MWD Crossing.

Percent Exceedance	Number of Days/Year	Flow Before Seven Oaks Dam (cfs)	Flow After Seven Oaks Dam (cfs)
96.00	4.0	500	600
97.00	4.0	600	700
98.00	4.0	800	800
99.00	2.0	1500	1700
99.50	0.4	2700	3100
99.60	0.4	3200	3300
99.70	0.4	4000	3500
99.80	0.3	5000	3800
99.90	0.3	7000	5300
99.95	0.2	8500	6400
99.99	0.1	15000	11000

Sediment Yield

The hydrological analysis for Seven Oaks Dam, prepared by the U.S. Army Corps of Engineers (Volume 7: Hydrology: Section VII, 1988a), states that the Seven Oaks Dam watershed has an annual sediment yield of approximately 320 acre-feet per year (ac-ft/yr) for the effective source area of 139 square miles. For Prado Dam, the corresponding value is 700 ac-ft/ yr (U.S. Army Corps of Engineers, Volume 2, Prado Dam, Design Memorandum No. 1, 1988b), for an effective source area of 700 square miles. However, both estimates are conservative design estimates and include a significant proportion of wash load (silt and clay sizes). The USCOE estimates cannot be compared to sediment transport estimates for sand and gravel.

A sediment transport study for Mill Creek (Leidy *et al.* 2001) estimated average annual sediment yield of 25,000 tons per year, for a 100-year record of daily flows. A large proportion of the Mill Creek sediment yield will deposit on the Mill Creek alluvial fan near Mentone. Chang (1999) estimated that sediment transport in the Santa Ana River downstream of River Mile 30 was 15,000 tons per year.

A comparison of pre-urbanization and present sediment source areas and potential watershed sediment yields to the Santa Ana River was made. The total pre-urbanization drainage area of significant sediment-yielding mountain watersheds was 467 square miles. This estimate includes the upper Santa Ana River upstream of Seven Oaks Dam, Mill Creek, City Creek, Plunge Creek, Warm Creek/Twin Creeks, and Cajon Creek/ Lytle Creek. Other tributaries, which produced lower yields include Day Creek, San Sevaine Creek, San Timoteo Creek, and Reche Canyon Creek (248 square miles).

The upper Santa Ana River sediment yield of gravel and coarser material was ended by the completion of Seven Oaks Dam. However, while there has been as much as a 40 percent reduction in sediment load reaching the Santa Ana River during the historical period, substantial sediment source areas continue to exist at Mill Creek, Plunge Creek, City Creek, Lytle/Cajon Creek, and the Reche Canyon Channel (280 square miles). Urbanized tributaries originating on the valley floor contribute relatively little sediment to the Santa Ana River.

Sediment Transport

The U.S. Army Corps of Engineers sediment transport model HEC-6[1] version 4.1 was used to assess the influence of changes in flow on sediment transport. HEC-6 is a one-dimensional sediment transport model designed to calculate water surface and sediment bed surface profiles by computing the interaction between sediment material in the streambed and flowing water sediment mixture. The model simulates the capability of a stream to transport sediment, given the yield from upstream sources. This computation of transport includes both bed and suspended load as described by Yang's stream power equation. HEC-6 computes the movement of sediment materials for a temporal sequence of flows and, through volume conservation of bed material, changes in channel dimensions. The HEC-6 model can be reviewed at http://www.hec.usace.army.mil/software/legacysoftware/hec6/hec6.htm.

[1] HEC = Hydraulic Engineering Center (Davis, California).

River cross-sections used in HEC-6 modeling were based on cross-sections used in the USCOE's studies of Seven Oaks Dam and Prado Dam (USCOE 1988b). Cross-sections for more recent years were not available for the Santa Ana River downstream of the Rialto Drain (River Mile 23).

Representative bed-material gradation curves were available from the USCOE investigations (USCOE 1988b). In general, the USCOE found cobble, gravel and coarse sand upstream of River Mile 33, gravel and sand between River Mile 16 and 33, and sand downstream of River Mile 16.

The staff at the Riverside County Flood Control and Water Conservation District have stated that several feet of degradation has occurred in the reach of the Santa Ana River between River Mile 26 to 16 since the river cross-sections were last surveyed in 1987. The USCOE study provided historic bed profiles for the Santa Ana River (USCOE 1988b: Appendix G). A comparison between bed profiles in 1967 and 1987 showed significant bed degradation downstream of E Street from Mile 27 to Mile 20, with a maximum degradation of 20 feet (USCOE 1988: Appendix G: Table 2.1). An energy dissipation and grade control structure (*aka* dissipaters), immediately downstream of Interstate 10, was designed by the USCOE to protect the Interstate 10 Bridge from further bed degradation.

The upstream boundary of the HEC-6 model was set at River Mile 30 where Dr. Howard Chang's Fluvial-12 sediment transport model ended (Chang 1999). An estimate of 15,000 tons of sediment per year (Chang 1999) was used in the HEC-6 modeling as the boundary condition.

The results of the HEC-6 modeling indicate that sediment deposition occurs upstream of where the Santa Ana River water velocity slows at the energy dissipation structure near Interstate 10 (i.e., sediment deposition between River Miles 30 to 27). Before Seven Oaks Dam was operational, the total sediment load carried by the Santa Ana River downstream of the energy dissipation structure was estimated to be 14,300 tons per year. After Seven Oaks Dam became operational, the total load carried by the river downstream of the energy dissipation structure was estimated to be 12,500 tons per year, a reduction in sediment load transport of 13 percent. In the modeling analyses, both pre- and post-Seven Oaks Dam, all of the gravel-sized sediment was deposited in the ten-mile-reach downstream of the energy dissipaters. The HEC-6 model showed that sediment reaching the Prado Basin was 44,000 tons per year for both pre- and post-Seven Oaks Dam cases. The primary difference between sediment downstream of the energy dissipaters and the sediment entering the Prado Basin was sand originating from degradation of the channel between the two locations. Gravel deposition in the reach between the Rialto Drain and Hamner Avenue was estimated to be 4,800 tons per year before Seven Oaks Dam was constructed, and 1,200 tons per year after Seven Oaks Dam became operational. The approximately 30,000 tons per year of additional sediment reaching Prado Basin was all sand, and was equivalent to a 0.05-foot per year degradation (= 0.6 inch per year) in the ten miles of floodplain downstream of Interstate 10 to approximately Fremont Street. This is considerably less than the average 0.2-foot per year (= 2.4 inches per year) observed by the USCOE between 1967 and 1987, and implies that the channel degradation process is approaching quasi-equilibrium.

Conclusions

Seven Oaks Dam flood control operations *reduce* flood flows by only 25 percent in the critical flow range over 4,000 cfs, which moves gravel and cobbles. Moreover, the flood operations *increase* flows 15 percent in the 500-4,000 cfs range, which primarily transports sand. Further, the transport of gravel sizes from the primary sediment source areas (Mill, City, Plunge, Lytle and Cajon creeks) will continue downstream of Interstate 10, *even with* reduced Santa Ana River flood flows due to Seven Oaks Dam operation. The result is that nearly 90 percent of the cobble and gravel that would have moved downstream prior to the construction of Seven Oaks Dam will continue to move downstream. Further, all gravel-size sediment moving past the energy dissipation structures downstream of Interstate 10 will be deposited over the next ten miles, within the reach supporting the best occupied essential habitat for the Santa Ana sucker. Even before Seven Oaks Dam became operational in 1998, observed degradation of the Santa Ana River channel downstream of Interstate 10 indicated that flood flows could transport more sediment than was available.

The HEC-6 modeling results indicate that for a repeat of flow conditions represented by the 1966-2002 hydrology, degradation downstream of Interstate 10 will become gradually less each year due to profile and water velocity adjustments. There eventually will be an approximate balance between sediment transport from upstream and the sediment transport capacity of the lower river. However, since Santa Ana River flows are expected to continue to increase in the sand transport range with future urbanization, there is likely to be several more feet of scour of sand-sized material in the lower river over the next several decades. Flood flows from urban impervious areas are not high enough to transport significant gravel-sized sediments in the lower river. This means that all gravel sizes currently in the Santa Ana sucker habitat reach downstream of River Mile 23 will remain. Sand degradation in this reach will continue to make gravel-sized material available at the surface.

In discussions with the San Bernardino County Flood Control District, we note that there are no sediment control facilities planned for Lytle, Cajon, City, Plunge and Mill creeks, the primary sources of gravel-sized sediment for the Santa Ana River. Existing water diversions and the small Mill Creek hydroelectric power facility have no influence on sediment transport because sediment transport of gravel-sized materials occurs during flood events when those facilities are not operating.

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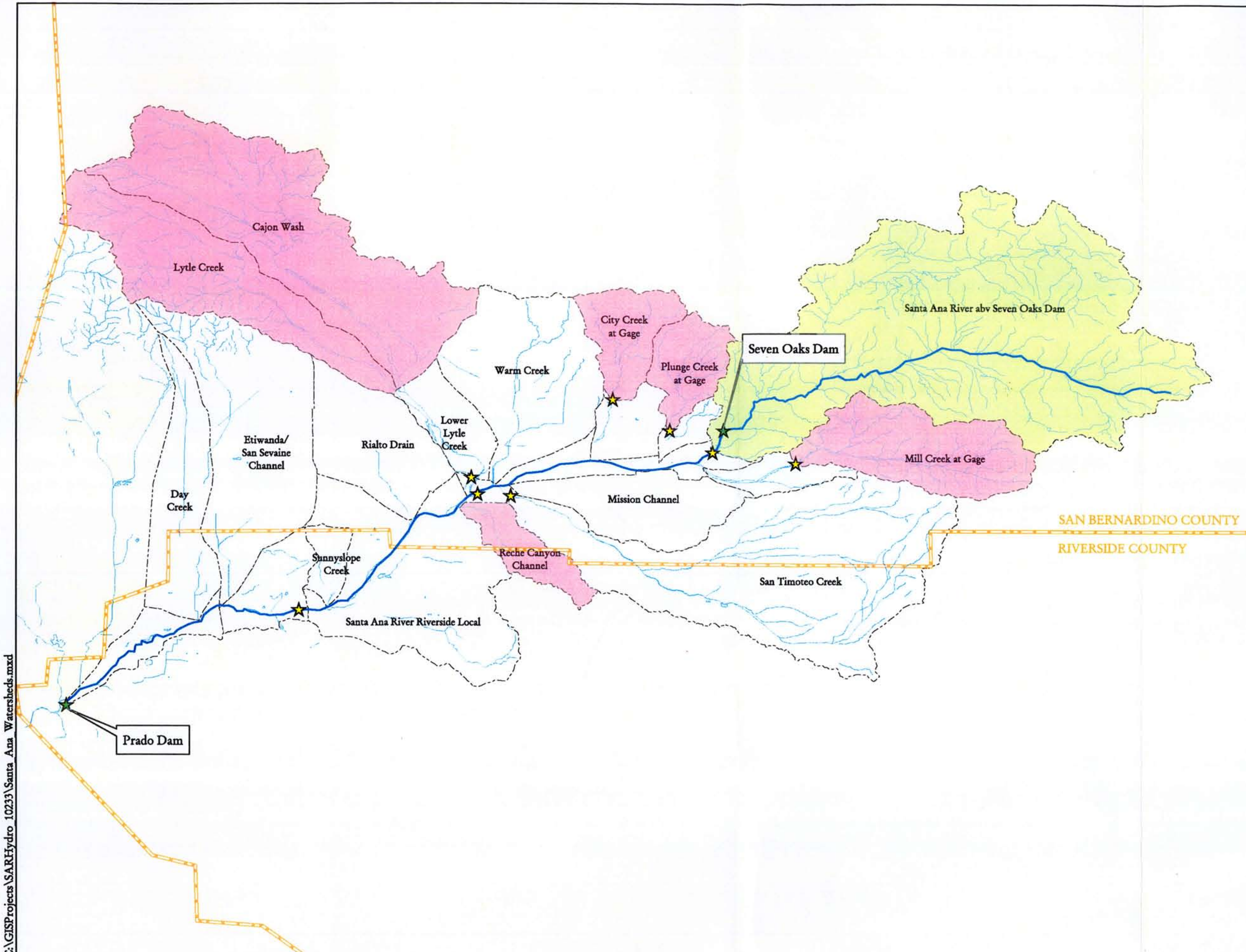

FIGURE 1

SANTA ANA RIVER WATERSHEDS

- USGS Gage Location
- Dam Location
- Existing Sediment Sources
- Controlled by Seven Oaks Dam
- County
- Santa Ana River
- Creek

GIS Data Projection: Geographic, NAD 27, Units Feet.

N

0 2.5 5 10

Miles

Source: Hydmet Inc, April 2004

PROJECT NUMBER: 10233-00-J
Requested by: RL Created by: MV Date: 04/20/04

EIP ASSOCIATES

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Figure 2a
Schematic of the Santa Ana River
from River Mile 0.0 to 21.0

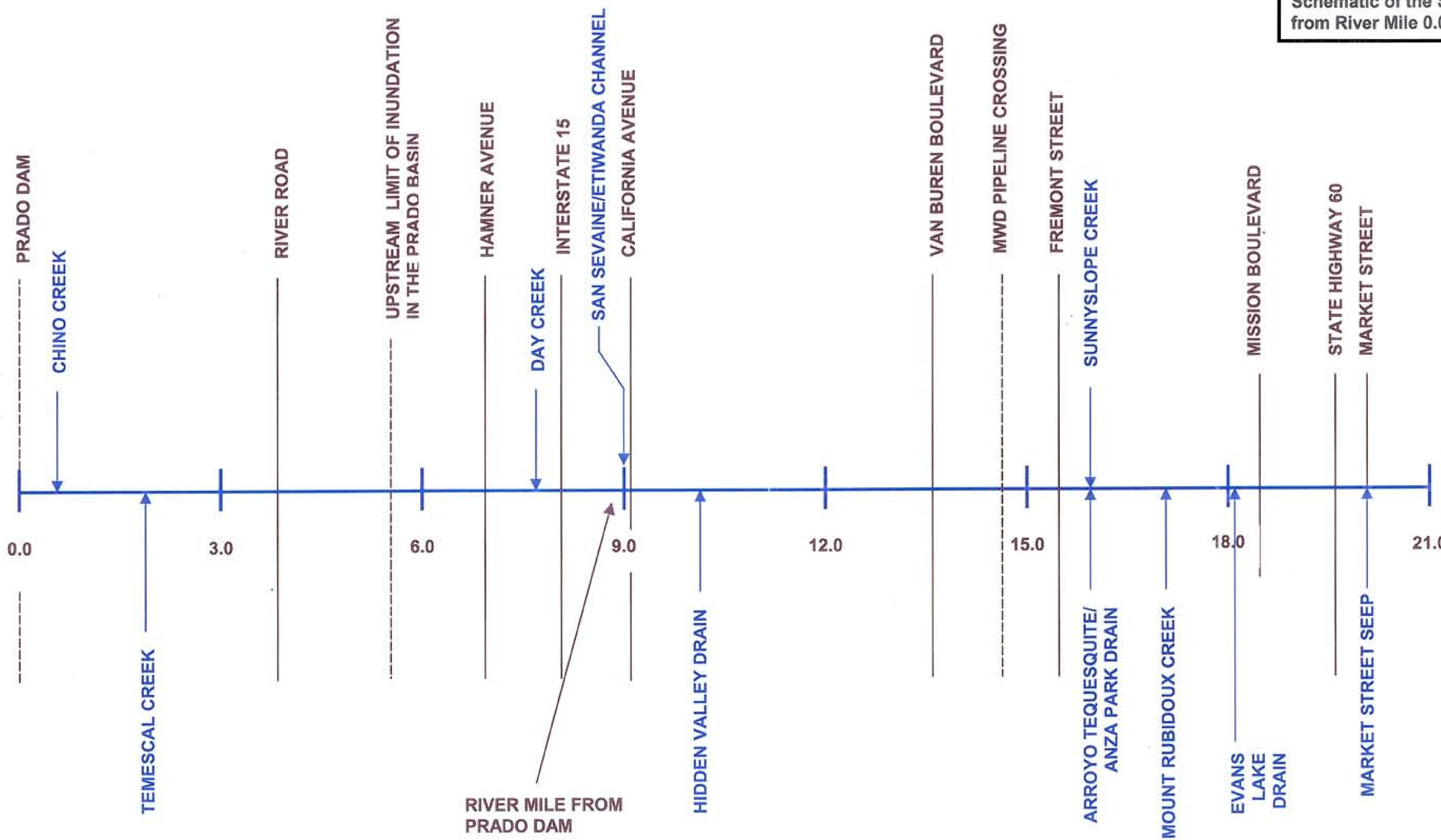

Figure 2b
Schematic of the Santa Ana River from River Mile 21.0 to 42.0

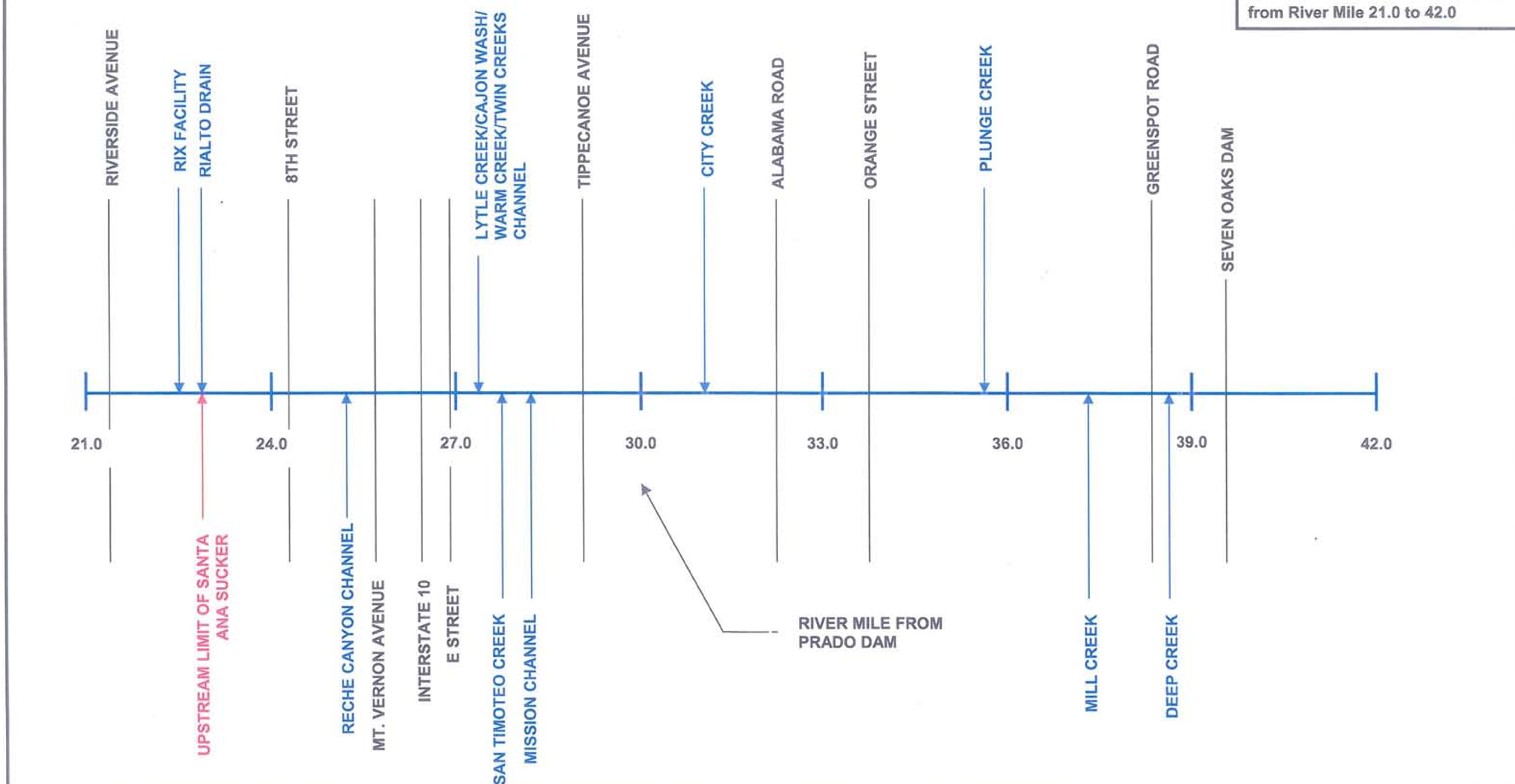

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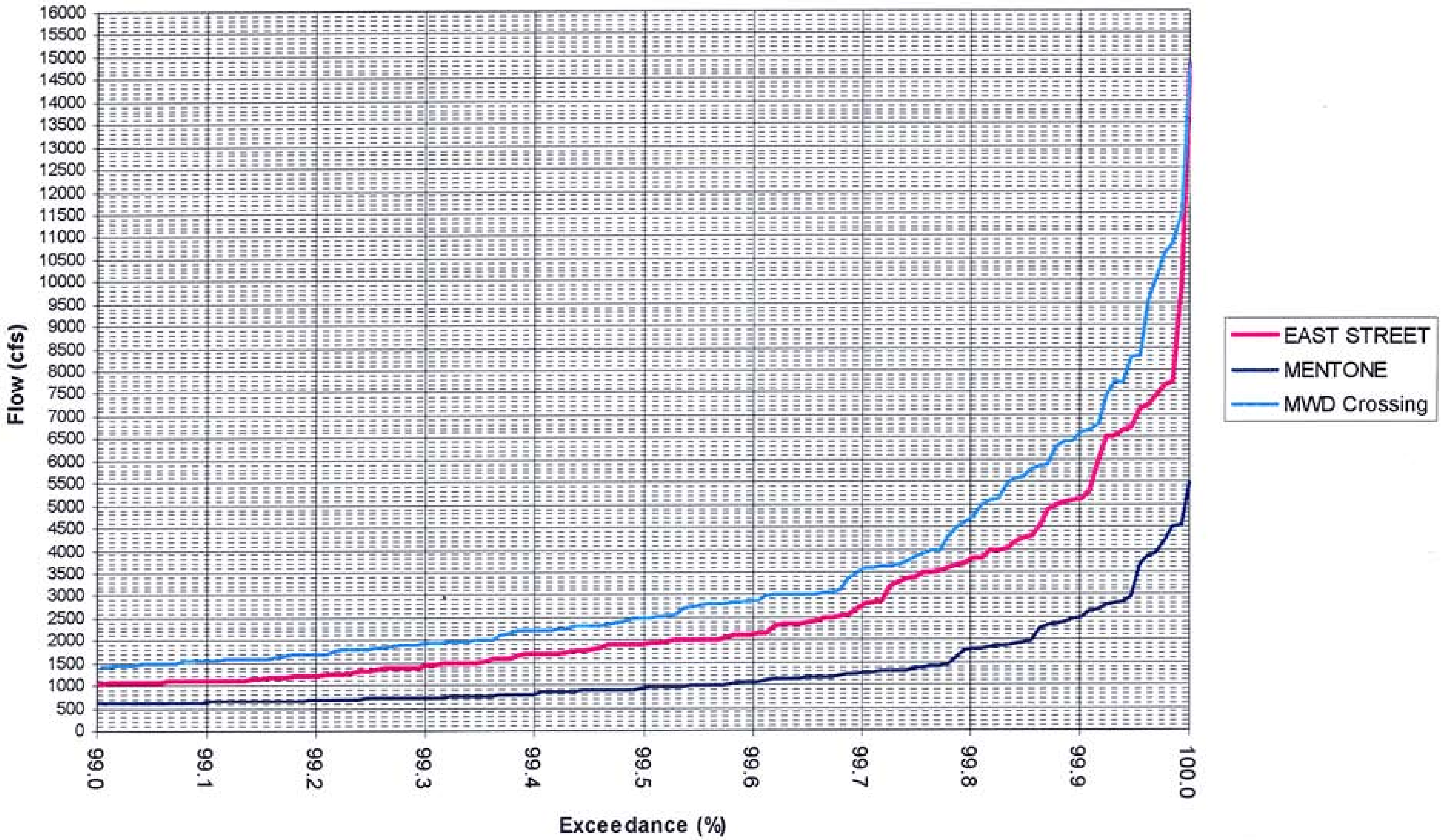
Figure 3
Santa Ana River Flow Duration Curves
Water Years 1966-2002 (36 years)



Appendix C

Mill Creek Riparian Habitat Maps

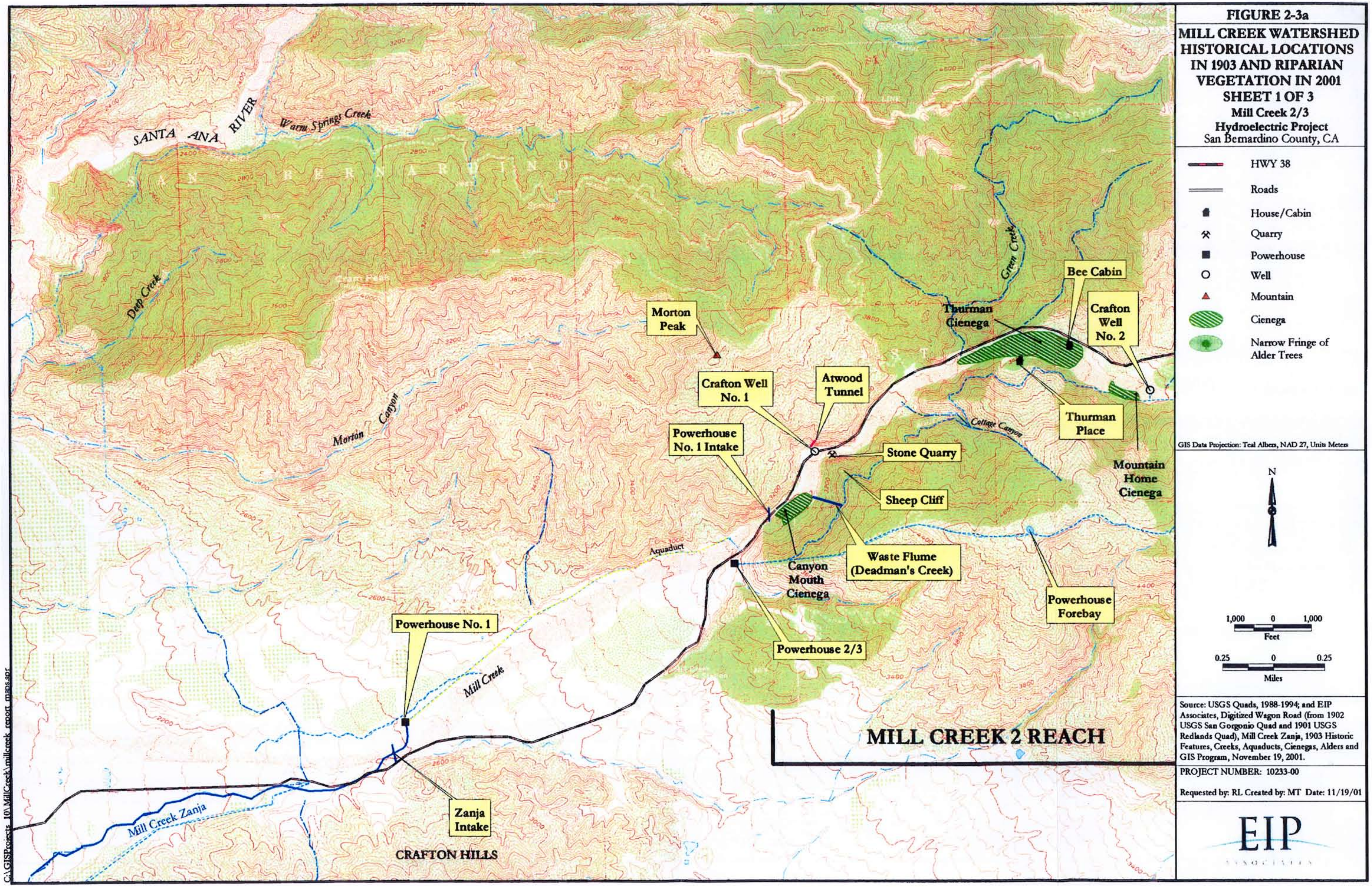


FIGURE 2-3a
MILL CREEK WATERSHED HISTORICAL LOCATIONS IN 1903 AND RIPARIAN VEGETATION IN 2001
SHEET 1 OF 3
Mill Creek 2/3 Hydroelectric Project
San Bernardino County, CA
HWY 38
Roads
House/Cabin
Quarry
Powerhouse
Well
Mountain
Cienega
Narrow Fringe of Alder Trees
GIS Data Projection: Teal Albers, NAD 27, Units Meters
N
1,000 0 1,000
Feet
0.25 0 0.25
Miles
Source: USGS Quads, 1988-1994; and EIP Associates, Digitized Wagon Road (from 1902 USGS San Gorgonio Quad and 1901 USGS Redlands Quad), Mill Creek Zanja, 1903 Historic Features, Creeks, Aquaducts, Cienegas, Alders and GIS Program, November 19, 2001.
PROJECT NUMBER: 10233-00
Requested by: RL Created by: MT Date: 11/19/01
EIP
SANTA ANA RIVER
Warm Springs Creek
SAN BERNARDINO
Deep Creek
Morton Canyon
Morton Peak
Crafton Well No. 1
Atwood Tunnel
Powerhouse No. 1 Intake
Stone Quarry
Sheep Cliff
Waste Flume (Deadman's Creek)
Canyon Mouth Cienega
Powerhouse 2/3
Powerhouse Forebay
Aquaduct
Powerhouse No. 1
Mill Creek
Zanja Intake
Mill Creek Zanja
CRAFTON HILLS
Green Creek
Thurman Cienega
Bee Cabin
Crafton Well No. 2
Thurman Place
Cottage Canyon
Mountain Home Cienega
MILL CREEK 2 REACH

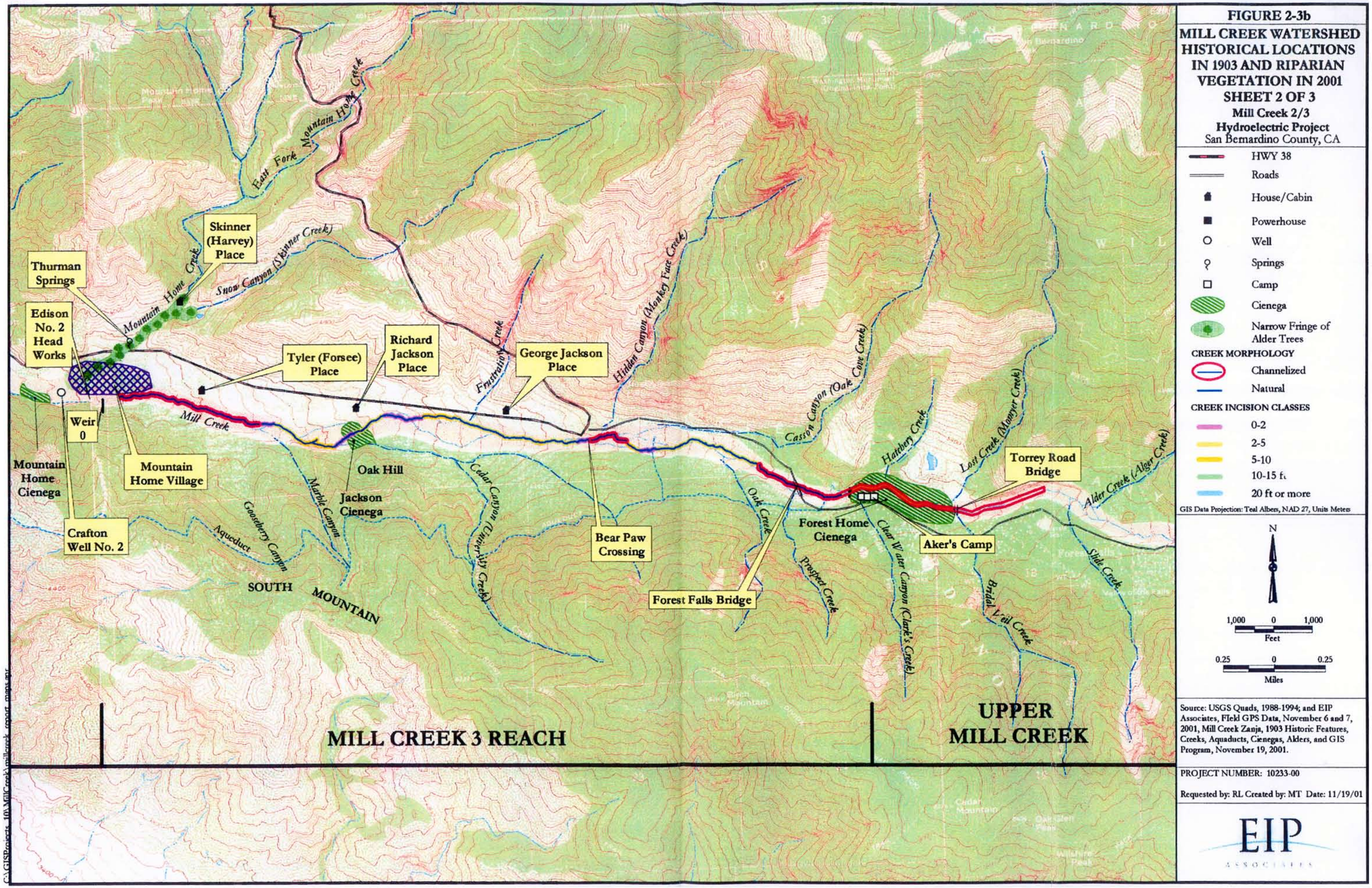
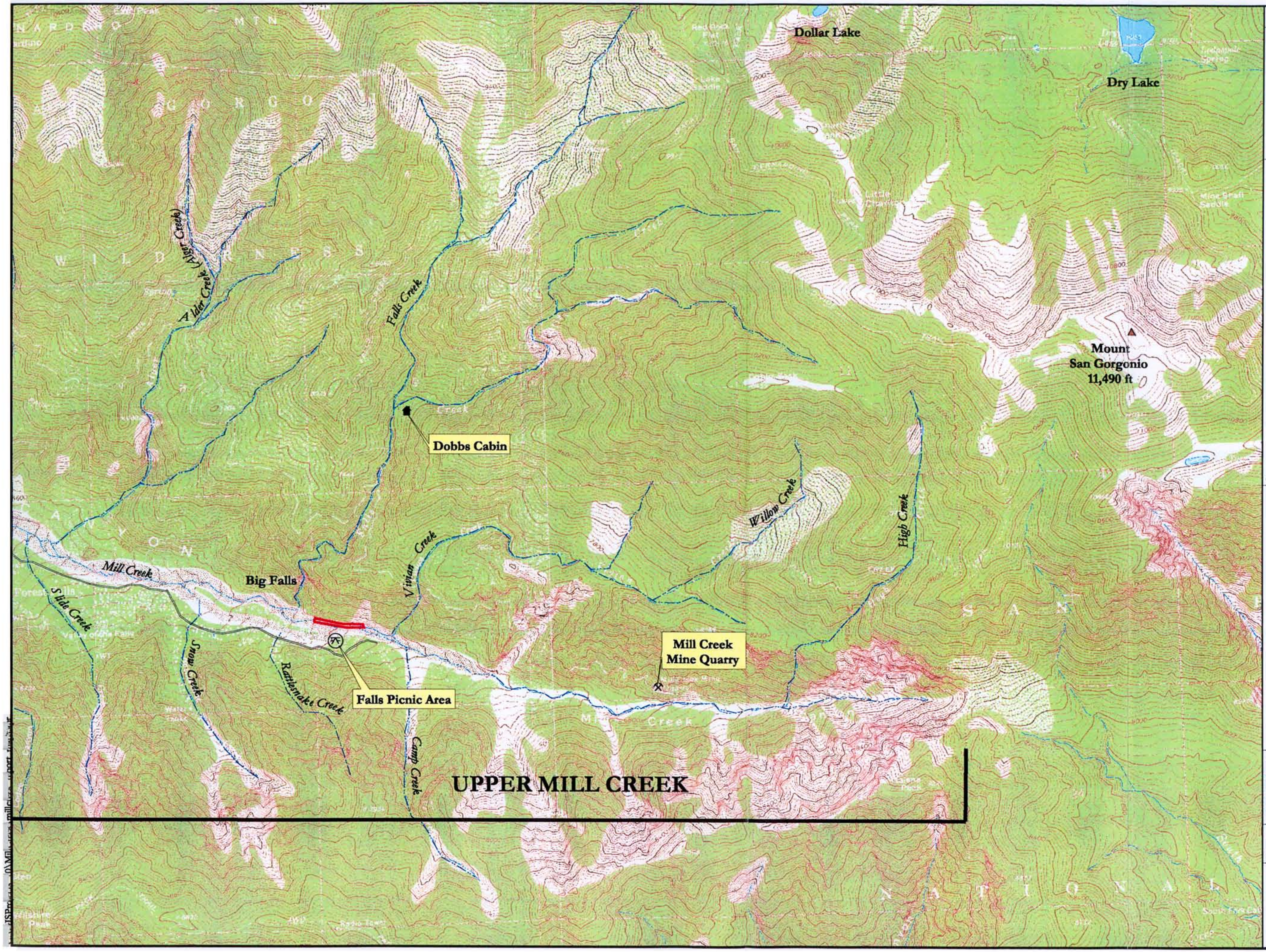


FIGURE 2-3b
MILL CREEK WATERSHED HISTORICAL LOCATIONS IN 1903 AND RIPARIAN VEGETATION IN 2001
SHEET 2 OF 3
Mill Creek 2/3 Hydroelectric Project
San Bernardino County, CA
HWY 38
Roads
House/Cabin
Powerhouse
Well
Springs
Camp
Cienega
Narrow Fringe of Alder Trees
CREEK MORPHOLOGY
Channelized
Natural
CREEK INCISION CLASSES
0-2
2-5
5-10
10-15 ft
20 ft or more
GIS Data Projection: Teal Albers, NAD 27, Units Meters
N
1,000 0 1,000
Feet
0.25 0 0.25
Miles
Source: USGS Quads, 1988-1994; and EIP Associates, Field GPS Data, November 6 and 7, 2001, Mill Creek Zanja, 1903 Historic Features, Creeks, Aquaducts, Cienegas, Alders, and GIS Program, November 19, 2001.
PROJECT NUMBER: 10233-00
Requested by: RL Created by: MT Date: 11/19/01
EIP
ASSOCIATES
Skinner (Harvey) Place
Thurman Springs
Edison No. 2 Head Works
Tyler (Forsee) Place
Richard Jackson Place
George Jackson Place
Weir 0
Mountain Home Cienega
Mountain Home Village
Oak Hill
Jackson Cienega
Crafton Well No. 2
Bear Paw Crossing
Forest Home Cienega
Aker's Camp
Torrey Road Bridge
Forest Falls Bridge
East Fork Mountain Home Creek
Mountain Home Creek
Snow Canyon (Skinner Creek)
Frustration Creek
Hidden Canyon (Monkey Face Creek)
Casson Canyon (Oak Cove Creek)
Hatchery Creek
Lost Creek (Monryer Creek)
Alder Creek (Alger Creek)
Mill Creek
Marble Canyon
Cedar Canyon (University Creek)
Gooseberry Canyon
Aqueduct
Oak Creek
Prospect Creek
Clear Water Canyon (Clark's Creek)
Bridal Veil Creek
Slide Creek
SOUTH MOUNTAIN
MILL CREEK 3 REACH
UPPER MILL CREEK

FIGURE 2-3c
MILL CREEK WATERSHED HISTORICAL LOCATIONS IN 1903 AND RIPARIAN VEGETATION IN 2001
SHEET 3 OF 3

Mill Creek 2/3 Hydroelectric Project
San Bernardino County, CA



HWY 38
Roads
House/Cabin
Quarry
Picnic Area
Mountain

CREEK MORPHOLOGY

Channelized

GIS Data Projection: Teal Albers, NAD 27, Units Meters

N

1,000 0 1,000
Feet

0.25 0 0.25
Miles

Source: USGS Quads, 1988-1994; and EIP Associates, Digitized Wagon Road (from 1902 USGS San Gorgonio Quad and 1901 USGS Redlands Quad), Mill Creek Zanja, 1903 Historic Features, Creeks, Aquaducts, Cienegas, Alders and GIS Program, November 19, 2001.

PROJECT NUMBER: 10233-00

Requested by: RL Created by: MT Date: 11/19/01

EIP

Appendix D

Coordinated Operating Agreement

ATTACHMENT 6

COORDINATED EXCHANGE AGREEMENT
BETWEEN
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
AND
SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT

Objective

The objective of this Attachment 6 to the Coordinated Operating Agreement for Conveyance Facilities and State Water Project Supplies between The Metropolitan Water District of Southern California ("**Metropolitan**") and San Bernardino Valley Municipal Water District ("**Valley District**") dated July 10, 2000 (the "**Coordinated Operating Agreement**") is to provide an institutional arrangement for the residents of Southern California to obtain the maximum benefits from water conserved as a result of the construction and operation of Seven Oaks Dam and Reservoir. Valley District and Metropolitan are each sometimes referred to below as a "**Party**" and are sometimes collectively referred to below as the "**Parties.**"

Recitals

A. Valley District, in conjunction with Western Municipal Water District of Riverside County ("**Western**"), has filed two water right applications with the State Water Resources Control Board. If granted in their entirety, these applications would permit Valley District and Western to conserve up to 200,000 afy of native (local) water from the Santa Ana River.

B. Valley District anticipates that, in wet years, it will deliver some portion of the water that is conserved from the Santa Ana River pursuant to the water right applications to Metropolitan in exchange for the subsequent delivery to Valley District of an equal quantity of water by Metropolitan, less reasonable Metropolitan system losses.

C. Such an exchange of conserved native Santa Ana River water for water from the State Water Project or other sources available to Metropolitan is anticipated to improve water supply reliability and the quality of water delivered to Metropolitan and its member agencies and is anticipated to improve water supply reliability and the use of local water for local needs within Valley District's service area.

D. Valley District intends to work cooperatively with the Watermaster Committee to determine the quantities of Conserved Water and Exchange Water, as defined below, delivered by or to Valley District pursuant to this Attachment 6. Valley District intends that the Watermaster Committee confirm, on an annual basis, that such quantities of Conserved Water and Exchange Water constitute "new conservation" as that term is defined in the Judgment pursuant to County of Riverside Superior Court Case 78426.

Terms

a. *Term.*

This Attachment 6 shall have a term identical to the Coordinated Operating Agreement.

2. *Exchange of Water.* Pursuant to paragraphs 1 and 3 of the Coordinated Operating Agreement and paragraph 10.2 of Attachment 2 to the Coordinated Operating Agreement, Metropolitan and Valley District agree to take the following actions:

a. If the water conserved from the Santa Ana River pursuant to the foregoing water right applications (**"Conserved Water"**) exceeds the immediate demand for such water within Valley District's service area for direct delivery or groundwater recharge and there is capacity available in Metropolitan's facilities to accept all or a portion of the Conserved Water directly, on an in-lieu basis, or via an exchange, for delivery to Metropolitan, Valley District may request that Metropolitan accept into Metropolitan's facilities all or a portion of the Conserved Water on mutually agreeable terms, conditions and locations. Absent other agreement of the Parties, Conserved Water will be delivered to Metropolitan at the Inland Feeder. Valley District shall consult with Metropolitan regarding the delivery of the Conserved Water on a real-time basis and, each October 1 shall prepare an operations plan for the delivery of Conserved Water, which plan shall be updated each April 1 to reflect precipitation, runoff and other relevant factors. The operations plan shall be subject to approval by Metropolitan, however, Metropolitan agrees to exercise its best efforts to accept the Conserved Water into its facilities to the extent that Metropolitan, in its sole discretion, determines that (1) sufficient capacity is available within Metropolitan's facilities to accept the Conserved Water and (2) that the Conserved Water is of adequate quality for Metropolitan's purposes. The Conserved Water will be delivered to Metropolitan for beneficial uses within Metropolitan's service area in quantities that will not exceed 200,000 afy.

b. Metropolitan shall, after consultation with Valley District, deliver to Valley a substitute quantity of water obtained by Metropolitan from the State Water Project ("**Exchange Water**") equal in quantity to the Conserved Water delivered to Metropolitan pursuant to paragraph 2(a) above, less reasonable Metropolitan system losses as determined by Metropolitan. Exchange Water shall be delivered to Valley District as promptly as practicable at times, locations and in manners mutually agreeable to Valley District and Metropolitan. Absent other agreement of the Parties, Exchange Water will be delivered by Metropolitan to Valley District at the Devil Canyon Afterbay. Exchange Water will be delivered to Valley District for beneficial uses in quantities that will not exceed 200,000 afy.

c. The Parties agree that they may benefit from this Attachment 6 by virtue of increased water supply reliability and improved water quality. Accordingly, neither Party shall pay the other for services provided under this Attachment 6.

3. *Disputes*. The Parties recognize that there may be disputes regarding the obligations of the Parties or the interpretation of this Attachment 6. The Parties agree that they will attempt to resolve disputes in an amicable fashion without the need for litigation.

4. *General Provisions.*

a. *Authority*. Each signatory of this Attachment 6 represents that s/he is authorized to execute this Attachment 6 on behalf of the Party for which s/he signs. Each

Party represents that it has legal authority to enter into this Attachment 6 and to perform all obligations under this Attachment 6.

b. *Amendment.* This Attachment 6 may be amended or modified only by a written instrument executed by each of the Parties to this Attachment 6.

c. *Partial Invalidity.* If, after the date of execution of this Attachment 6, any provision of this Attachment 6 is held to be illegal, invalid, or unenforceable under present or future laws effective during the term of this Attachment 6, such provision shall be fully severable. However, in lieu thereof, there shall be added a provision as similar in terms to such illegal, invalid or unenforceable provision as may be possible and be legal, valid and enforceable.

d. *Incorporation by Reference.* The provisions of paragraph 15 of Attachment 2 are hereby incorporated herein by reference as if set forth in full and shall apply to the Parties' performance of the terms of this Attachment 6.

Dated: December 21 2004.

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Ronald R. Gastelum
Chief Executive Officer

SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT

Robert L. Reiter
General Manager and Chief Engineer

Appendix E

Conservation District Settlement

Settlement Agreement
Among
San Bernardino Valley Water Conservation District,
San Bernardino Valley Municipal Water District and
Western Municipal Water District of Riverside County

This Settlement Agreement Among San Bernardino Valley Water Conservation District, San Bernardino Valley Municipal Water District and Western Municipal Water District of Riverside County ("**Agreement**") is entered into and effective this __ day of August, 2005. Each of the parties to this Agreement is referred to as "**Party**" and collectively the parties to this Agreement are referred to as the "**Parties**."

Recitals

A. San Bernardino Valley Municipal Water District ("**Valley District**") and Western Municipal Water District of Riverside County ("**Western**") have filed Water Right Application Nos. 31165 and 31370 with the State Water Resources Control Board (the "**State Board**"), which applications seek to divert for beneficial use the waters of the Santa Ana River.

B. San Bernardino Valley Water Conservation District ("**Conservation District**") has filed Water Right Application No. 31371 with the State Board, which application also seeks to divert for beneficial use the waters of the Santa Ana River.

C. Valley District and Western have filed a protest with the State Board against the Conservation District's application and the Conservation District has filed a protest with the State Board against Valley District and Western's applications.

D. The Parties now wish to resolve their respective protests on mutually agreeable terms and to memorialize those terms in this Agreement.

Agreements

The Parties agree as follows:

1. *Agreement to Exhibit A.* The Parties agree to implement the terms and conditions set forth in Exhibit A, which is attached hereto and incorporated herein by reference.

2. *Amendment to Seven Oaks Accord.* The Parties will seek to amend the Seven Oaks Accord to include the Conservation District as a party and to include the following provisions, as well as the provisions of paragraph 1 above, in an amended Seven Oaks Accord:

    a. Bear Valley *et al.* would not object to diversions made under the Conservation District's two licenses, and

b. Bear Valley *et al.* would support changing the period of diversion of the Conservation District's licenses so as to permit diversions under those licenses on a year-round basis.

3. *Indemnification.*

a. *Indemnification by Conservation District.* The Conservation District shall indemnify, defend and hold harmless Valley District and Western, their directors, officers, employees and agents from and against all damages, liabilities, claims, actions, demands, costs and expenses (including, but not limited to, costs of investigations, lawsuits and any other proceedings whether in law or in equity, settlement costs, attorneys' fees and costs), and penalties or violations of any kind, which arise out of, result from, or are related to the diversion and/or spreading of water by Conservation District from either the Santa Ana River or Mill Creek. In particular, and without limiting the scope of the foregoing indemnification, the Conservation District shall indemnify, defend and hold harmless Valley District and Western, their directors, officers, employees and agents from and against all damages, liabilities, claims, actions, demands, costs and expenses (including, but not limited to, costs of investigations, lawsuits and any other proceedings whether in law or in equity, settlement costs, attorneys' fees and costs), and penalties or violations of any kind, which arise out of, result from, or are related to any spreading of water in a manner that is not consistent with the requirements of the annual groundwater management plan described in Exhibit A.

b. *Indemnification by Valley District and Western.* Valley District and Western shall indemnify, defend and hold harmless the Conservation District, its directors, officers, employees and agents from and against all damages, liabilities, claims, actions, demands, costs and expenses (including, but not limited to, costs of investigations, lawsuits and any other proceedings whether in law or in equity, settlement costs, attorneys' fees and costs), and penalties or violations of any kind, which arise out of, result from, or are related to the diversion and/or spreading of water by Valley District and Western from the Santa Ana River. In particular, and without limiting the scope of the foregoing indemnification, Valley District and Western shall indemnify, defend and hold harmless the Conservation District, its directors, officers, employees and agents from and against all damages, liabilities, claims, actions, demands, costs and expenses (including, but not limited to, costs of investigations, lawsuits and any other proceedings whether in law or in equity, settlement costs, attorneys' fees and costs), and penalties or violations of any kind, which arise out of, result from, or are related to any spreading of water in a manner that is not consistent with the requirements of the annual groundwater management plan described in Exhibit A.

c. *Indemnification Procedures.* Any Party that is an indemnified party (the "**Indemnified Party**") that has a claim for indemnification against another Party (the "**Indemnifying Party**") under this Agreement, shall promptly notify the Indemnifying Party in writing, *provided, however,* that no delay on the part of the Indemnified Party in notifying the Indemnifying Party shall relieve the Indemnifying Party from any obligation unless (and then solely to the extent) the Indemnifying Party is prejudiced. Further, the Indemnified Party shall promptly notify the Indemnifying Party of the existence of any claim, demand, or other matter to which the indemnification obligations would apply, and shall give the Indemnifying Party a reasonable opportunity to defend the same at its own expense and with counsel of its own selection, *provided* that the Indemnified Party shall at all times also have the right to fully participate in the disputed matter at its own expense. If the Indemnifying Party, within a reasonable time after notice from the Indemnified Party, fails to defend a claim, demand or other matter to which the indemnification obligations would apply, the Indemnified Party shall have the right, but not the obligation, to undertake the defense of, and to compromise or settle (exercising reasonable business judgment), the claim or other matter, on behalf, or for the account, and at the risk, of the Indemnifying Party. If the claim is one that cannot by its nature be defended solely by the Indemnifying Party, then the Indemnified Party shall make available all information and assistance to the Indemnifying Party that the Indemnifying Party may reasonably request.

4. *Liquidated Damages*. The Parties recognize that it would be extremely difficult and impractical to ascertain the extent of detriment that could result from groundwater spreading in excess of or at times different from that called for in the annual groundwater management plan described in Exhibit A. The Parties have determined and agree that, in the event that a Party spreads water in excess of or at times different from that called for in the annual groundwater management plan, the Party engaged in such excess or untimely spreading shall pay the sum of $1,000 per acre-foot spread in violation of the annual groundwater management plan into a fund to be established and administered by Valley District for the development and implementation of the annual groundwater management plan under the auspices of the Seven Oaks Accord, including any amendment thereto, or successors thereto, or amendments to any successors thereto, which sum is believed by the Parties to be a reasonable estimate of the costs to water purveyors in the San Bernardino Valley of remedying such violation of the groundwater management plan. Nothing in the foregoing provision shall be construed in any manner to limit the amount of damages obtainable pursuant to an action to enforce the indemnification, defense or hold harmless provisions of paragraph 3 above.

Conservation District ____ Valley District ____ Western ____

5. *Term.* The terms and/or conditions of this Agreement, including those in Exhibit A hereto, shall continue in full force and effect until terminated by mutual agreement of all Parties hereto.

SAN BERNARDINO VALLEY WATER CONSERVATION DISTRICT

Cheryl Tubbs

By: Cheryl Tubbs
President, Board of Directors

SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT

By C. Patrick Milligan
President, Board of Directors

WESTERN MUNICIPAL WATER DISTRICT OF RIVERSIDE COUNTY

S.R. Al Lopez

By S.R. Al Lopez
President, Board of Directors

Exhibit A

1. The Conservation District would:

   a. withdraw its protest of the Valley District/Western applications and not object to diversions made pursuant to permits issued for those applications;

   b. in the same way as Bear Valley *et al.* support those applications before the SWRCB and other regulatory agencies;

   c. grant Valley District/Western an access agreement/easement to use the Conservation District's facilities (including the Cuttle Weir and other intake structures) on a "space-available" basis to divert water pursuant to the Valley District/Western applications;

   d. not object to the diversion of up to the first 88 cfs of natural flow of the Santa Ana River by Bear Valley *et al.*;

   e. amend Water Right Application No. 31371 to limit diversions from the Santa Ana River to a maximum of 39,600 afy, which diversions would be in addition to diversions under License Nos. 2831 and 2832;

   f. agree to limit the spreading of all water diverted from the Santa Ana River and/or Mill Creek (including water diverted under License Nos. 2831 and 2832, Application No. 31371, and any claims of pre-1914 appropriative rights or riparian rights) so as to conform with the requirements of an annual groundwater management plan to be developed by Valley District and Western after consultation with the Conservation District and Bear Valley *et al.* (see below);

   g. agree that any extraction, sale or transfer of water spread under its water rights or under the water rights of others within the San Bernardino Basin Area would only be undertaken pursuant to the terms of the Cooperative Water Project agreement;

   h. have no right to extract, sell, or transfer water spread under its water rights outside the San Bernardino Basin Area, save with the prior written approval of Valley District and Western; and

   i. not waive any claims to riparian or pre-1914 appropriative water rights to divert water from the Santa Ana River or Mill Creek.

2. Valley District and Western would:

   a. consult with Conservation District (in the same fashion we consult with Bear Valley *et al.*) in the development of an annual groundwater management plan for the SBBA (see below), *provided* that Valley District and/or Western shall have a veto over the groundwater management plan for the purpose of ensuring that the groundwater management plan allows for maintaining the safe yield of the San Bernardino Basin Area and to meet their respective obligations in the Colton, Riverside North and Riverside South Basins in accordance with the 1969 *Western* Judgment, and *provided further* that until the final groundwater model being developed as part of the San Bernardino Consent Decree process is completed, the Parties shall develop an interim groundwater management plan using existing knowledge and the existing Valley District/Western groundwater model;

b. attempt in the annual groundwater management plan simultaneously to satisfy several objectives:

(1) maximize the quantity of water spread each year at the Santa Ana River spreading grounds,

(2) establish and maintain a minimum 50-foot depth to groundwater in the Pressure Zone,

(3) maintain groundwater levels in the Forebay Area within 10 feet of the levels that would have occurred in the absence of the project, and

(4) otherwise avoid significant impacts on the environment;

c. subject to the Conservation District's agreement to comply with the annual groundwater management plan:

(1) withdraw our protest of the Conservation District's application as revised per paragraph 1(e) above and not object to diversions made pursuant to a permit issued for that application;

(2) support that application as revised per paragraph 1(e) above before the SWRCB and other regulatory agencies;

(3) not object to diversions made under the Conservation District's License Nos. 2831 and 2832, which diversions would be senior to any diversion of water by Valley District and Western under Water Right Application Nos. 31165 and 31370;

(4) support changing the period of diversion of the Conservation District's licenses so as to permit diversions under those licenses on a year-round basis;

x

3. All Parties would agree to the goal of coordinating the annual groundwater management plans developed by Valley District and Western under the Accord with the groundwater management program that is being developed by a number of parties (including Valley District and Western) to implement the consent decree in *City of San Bernardino v. United States*.

4. All Parties agree that all spreading will be as described in the groundwater management plan for that year and no spreading would take place without being authorized by the groundwater management plan. If there are opportunities for spreading at the Santa Ana River spreading grounds early in the water year (e.g., October though December) before the Parties can complete the groundwater management plan for that year, the Conservation District could spread the lesser of: (i) the average annual quantity spread during the 1934-35 to 1959-60 Base Period of the *Western* Judgment (4,941 afy) less any new spreading by Bear Valley *et al.* which was not being done during the Base Period or (ii) a quantity less than 4,941 af developed by the Western-San Bernardino Watermaster in its best professional judgment.

5. The priority of use of water would be as follows:

   a. Conservation District License Nos. 2831 and 2832 would have first priority.

   b. Valley District/Western Application No. 31165 would have second priority.

   c. Conservation District Application No. 31371 would have third priority.

   d. Valley District/Western Application No. 31370 would have fourth priority.

   e. If the water management plan for that year calls for spreading in the SAR spreading grounds beyond the 10,400 af in Licenses 2831 and 2832, Valley District/Western will step back and allow Conservation District to divert up to 39,600 afy under its new permit for spreading at the SAR spreading grounds in accordance with the water management plan.

   f. All spreading would be as described in the water management plan for that year and no spreading would take place without being authorized by the water management plan.

6. No Party's participation in the groundwater management plan's development, or agreement to operate under it, can be used by any Party to allege any forfeiture of any claimed water right.

Groundwater Management Plan Process

Paragraph 4 of the Seven Oaks Accord provides as follows:

> *Groundwater Spreading Program.* Applicants, after consultation with Water Users, shall develop and manage a groundwater spreading program that is intended to maintain groundwater levels at the wells specified in Exhibit G at relatively constant levels, in spite of the inevitable fluctuations due to hydrologic variation. The groundwater spreading program shall identify target water level ranges in the specified wells and shall be subject to the requirement that such spreading not worsen the problem of high groundwater levels in the Pressure Zone. The determination of whether a particular action will worsen groundwater levels in the Pressure Zone shall be made using the integrated surface and groundwater models used by Applicants in the environmental impact report for the Applications, as those models may be refined in the future.

The key word in this paragraph is the word "consultation" in the first sentence. Although the Seven Oaks Accord doesn't describe the process of consultation in detail, here's how we intend to consult with the Water Users (and Conservation District if we reach a settlement) in developing the annual management plan. Obviously, this process will change over time as our agencies collectively gain experience in managing the SBBA.

1. We intend to convene one or more meeting(s) of Valley District, Western, the Water Users and Conservation District no later than each October 1 to share information about the status of the SBBA and to develop a shared idea of how much water could be recharged in the event of a dry year, a normal year, or a wet year. These discussions would be like those that led to the interim spreading agreement this past fall.

2. By each October 15, Valley District and Western would develop a preliminary spreading plan for that water year using the SAIC/Geosciences model, as it may be refined over time. The plan would consider dry, normal and wet year scenarios and would attempt to identify spreading strategies for each year type. Valley District and Western would then circulate that preliminary spreading plan to all of the signatories of the revised Seven Oaks Accord for comments and refinements. It is in all of our collective interest to make the plan as effective as possible so Valley District and Western will be looking for any additional information from the Water Users or the Conservation District that can achieve our goals of keeping the SBBA as full as possible without causing high groundwater or other adverse environmental effects.

3. Based on comments from the Water Users and the Conservation District, Valley District and Western would issue a draft management plan by each November 15.

4. The parties to the Seven Oaks Accord would vote on whether or not to adopt the draft management plan by each December 1. The management plan would be adopted if it were approved by a two-thirds vote of a quorum of the parties to the Accord, provided that both Valley District and Western must approve any management plan. In other words, if the Conservation District were to be a party to the Accord, approval of an annual management plan

would require a minimum of four votes (if only five parties were in attendance) or a maximum of six votes (if every party attended).

5. If the parties are not able to adopt the draft management plan by each December 1, they would work cooperatively address any concerns and develop a revised proposal as soon as possible. If the parties cannot develop a proposal that receives support from two-thirds of a quorum by each January 1, the parties would implement any proposal that is approved by a majority vote of a quorum of the parties to the Accord, again provided that both Valley District and Western must approve any management plan. In other words, if the Conservation District were to be a party to the Accord, approval of an annual management plan after each January 1 would require a minimum of three votes (if only five parties were in attendance) or a maximum of five votes (if every party attended).

6. If spreading is possible before the date on which the parties approve an annual groundwater management plan, Valley District and Western would consult with our partners on a real-time basis and use our best professional judgment to direct the spreading of water in a manner that advances the goals of the annual management plan (see paragraph 2(b)). No party would spread water without Valley District and Western's prior consent.