DRAFT
ENVIRONMENTAL IMPACT REPORT
SCH No. 2009101105

RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT

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June 30, 2015

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Riverside-Arlington Groundwater Flow Model (RAGFM)
Appendix I – Traffic Impact Analysis Report

ACRONYMS AND ABBREVIATIONS

§ ..... Section
AB ..... Assembly Bill
ADAM ..... Aerometric Data Analysis and Measurement System
AF ..... acre-feet
AFY ..... acre-feet per year
AGR ..... Agricultural Supply (Waters)
AIC ..... Archaeological Information Center
amsl ..... Above Mean Sea Level
APE ..... Area of Potential Effect
AQMP ..... Air Quality Management Plan
BACT ..... Best Available Control Technology
BAU ..... Business as Usual
BDCP ..... Bay Delta Conservation Plan
bgs ..... below ground surface
BMP ..... Best Management Practice
BOD ..... Biochemical Oxygen Demand
bp ..... before present
CAAQs ..... California Ambient Air Quality Standards
CalEEMod ..... California Emissions Estimator Model
Caltrans ..... California Department of Transportation
CARB ..... California Air Resources Board
CBC ..... California Building Code
CBMWD ..... Chino Basin Municipal Water District
CCAA ..... California Clean Air Act
CCR ..... California Code of Regulations
CDFW ..... California Department of Fish and Wildlife
CEQA ..... California Environmental Quality Act
CESA ..... California Endangered Species Act
CFCs ..... Chlorofluorocarbons
cfs ..... cubic feet per second
CH_4 ..... Methane
CNDDB ..... California Natural Diversity Database
CNEL ..... Community Noise Equivalent Level
CNPS ..... California Native Plant Society
CO ..... Carbon Monoxide
CO_2 ..... Carbon Dioxide
COD ..... Chemical Oxygen Demand
CSDP ..... Comprehensive Storm Drain Plan
CTR ..... California Toxics Rule
CUWCC ..... California Urban Water Conservation Council
CWA ..... Federal Clean Water Act
CY ..... cubic yards
dB ..... Decibel
dBA ..... A-weighted Decibel
DEIR ..... Draft Environmental Impact Report
PROC ..... Process Supply (Waters)
DHS ..... California Department of Health Services
DPR ..... Department of Public Resources
DEIR ..... Draft Environmental Impact Report

DFS ..... Delhi sands flower-loving Fly
DO ..... Dissolved Oxygen
DSC ..... Delta Stewardship Council
DTSC ..... Department of Toxic Substances Control
DWR ..... (California) Department of Water Resources
e.g. ..... for example
ECP ..... Erosion Control Plan
EIR ..... Environmental Impact Report
EPA ..... United States Environmental Protection Agency
ESA ..... Endangered Species Act
°F ..... Degrees Fahrenheit
FCAA ..... Federal Clean Air Act
FEMA ..... Federal Emergency Management Act
FESA ..... Federal Endangered Species Act
FIRM ..... Flood Insurance Rate Map
FMMP ..... Farmland Mapping and Monitoring Program
FR ..... Federal Register
FTA ..... Federal Transit Administration
GHG ..... Greenhouse Gas
gpm ..... gallons per minute
GPS ..... Global Positioning System
GVW ..... Gross Vehicle Weight
GWP ..... Global Warming Potential
GWR ..... Groundwater Recharge (Waters)
H_2O ..... Water Vapor
HCFC ..... Hydrochlorofluorocarbons
HCOC ..... Hydrologic Condition of Concern
HCP ..... Habitat Conservation Plan
HFCs ..... Hydrofluorocarbons
hp ..... horsepower
I ..... Interstate (Highway)
i.e. ..... that is
ICBO ..... International Conference of Building Officials
IEUA ..... Inland Empire Utility Agency
IND ..... Industrial Supply (Waters)
IPPC ..... Intergovernmental Panel on Climate Change
IRWMP ..... Integrated Regional Water Management Plan
km ..... kilometer
LAPM ..... Los Angeles pocket mouse
LBVI ..... least Bell's vireo
Leq ..... Equivalent Sound Level
Ldn ..... Day/Night Average
Lmax ..... Maximum Sound Level
Lmin ..... Minimum Sound Level
$\mu g/m^3$ ..... Micrograms per Cubic Meter
MBTA ..... (Federal) Migratory Bird Treaty Act
MCL ..... Maximum Contaminant Level
MGD ..... Million Gallons Per Day
mg/L ..... micrograms per liter
MMRP ..... Mitigation Monitoring and Reporting Program
MOU ..... Memorandum of Understanding
MPO ..... Metropolitan Planning Organization

MS4s ..... Multiple Separate Storm Sewer Systems
MSHCP ..... Multiple Species Habitat Conservation Plan
msl ..... mean sea level
$MTCO_2eq$ ..... Metric Tons of CO_2 Equivalent
MUN ..... Municipal and Domestic Supply (Waters)
MWD ..... Metropolitan Water District
N ..... Nitrogen
N_2O ..... Nitrous Oxide
N/A ..... Not Applicable
NAAQs ..... National Ambient Air Quality Standards
NAHC ..... Native American Heritage Commission
NCCP ..... Natural Communities Conservation Plan
NFID ..... National Flood Insurance Act
NGVD ..... National Geodetic Vertical Datum
NHPA ..... National Historic Preservation Act
NOC ..... Notice of Completion
NOI ..... Notice of Intent
NOP ..... Notice of Preparation
NO_x ..... Nitrogen Oxide
NPDES ..... National Pollutant Discharge Elimination System
OAL ..... (State of California) Office of Administrative Law
OCWD ..... Orange County Water District
OHWM ..... Ordinary High Water Mark
OPR ..... California Office of Planning and Research
O_3 ..... Ozone
P ..... Phosphorus
Pb ..... Lead
PCE ..... Passenger Car Equivalent
PEIR ..... Program Environmental Impact Report
PFCs ..... Perfluorocarbons
$PM_{2.5}$ ..... Fine Particular Matter
PM_{10} ..... Coarse Particular Matter
POTW ..... Publicly-Owned Treatment Works
ppm ..... Parts Per Million
PRC ..... Public Resources Code
PROC ..... Process Supply (Waters)
Project ..... Riverside North Aquifer Storage and Recovery Project
PST ..... Pacific Standard Time
PPV ..... Peak Particle Velocity
RAFSS ..... Riversidian alluvial fan sage scrub
RAGFM ..... Riverside-Arlington Groundwater Flow Model
RBF ..... RBF Consulting
RCP ..... Regional Comprehensive Plan
REC 1* ..... Water Contact Recreation (Waters)
REC 2* ..... Non-Contact Water Recreation (Waters)
RGAS&R ..... Riverside Groundwater Aquifer Storage and Recovery
RH ..... Relative Humidity
RHWC ..... Riverside Highland Water Company
RIX ..... Rapid Infiltration and Extraction
RMS ..... Root Mean Square
RNASR ..... Riverside North Aquifer Storage and Recovery (Project)
ROW ..... right-of-way

RTP ..... Regional Transportation Plan
RWQCB ..... Regional Water Quality Control Board
RWQCP ..... Regional Water Quality Control Plan
RWQCP ..... Riverside Water Quality Control Plant
SAA ..... Streambed Alteration Agreement
SANBAG ..... San Bernardino Association of Governments
SAR ..... Santa Ana River
SASU ..... Santa Ana sucker
SAWPA ..... Santa Ana Watershed Protection Authority
SB ..... Senate Bill
SBKR ..... San Bernardino kangaroo rat
SBVMWD ..... San Bernardino Valley Municipal Water District
SCAQMD ..... South Coast Air Quality Management District
SCAG ..... Southern California Association of Governments
SCE ..... Southern California Edison
SCS ..... Sustainable Communities Plan
SF_6 ..... Sulfur Hexafluoride
SO_2 ..... Sulfur Dioxide
SO_x ..... Sulfur Oxide
SOI ..... Sphere of Influence
SPWN ..... Spawning, Reproduction and Development (Waters)
SRA ..... Source Receptor Area
SWP ..... State Water Project
SWPPP ..... Stormwater Pollution Prevention Plan
SWRCB ..... State Water Resources Control Board
SWWF ..... Southwestern willow flycatcher
TDS ..... Total Dissolved Solids
TIN ..... Total Inorganic Nitrogen
TKN ..... Total Kjeldahl Nitrogen
TOC ..... Total Organic Carbon
TTHML ..... Total Trihalomethanes
UBC ..... Uniform Building Code
UPRR ..... Union Pacific Railroad
USACE ..... U.S. Army Corps of Engineers
USFWS ..... United State Fish and Wildlife Service
USGS ..... United States Geological Survey
UWMP ..... Urban Water Management Plan
VdB ..... (Ground) Velocity in Decibels
VOC ..... Volatile Organic Compounds
WARM ..... Warm Freshwater Habitat
WILD ..... Wildlife Habitat (Waters)
WLAM ..... Waste Load Allocation Mode
WMWD ..... Western Municipal Water District
WRP ..... Water Reclamation Plan
WSCU ..... Watershed Scale Conjunctive Use
WQMP ..... Water Quality Management Plan

CHAPTER S EXECUTIVE SUMMARY

S.1 Project Overview

Project Location

The proposed Riverside North Aquifer Storage and Recovery Project ("project") is located in the southern portion of the City of Colton and north of the City of Grand Terrace; refer to *Exhibit 2.0-1, Regional Location Map*. The project site is located south of Interstate 10 and East M Street, west of Interstate 215 and the Santa Ana River, and east of the Union Pacific Railroad right-of-way. The project abuts the Santa Ana River as it trends south and bends westward through this part of the watershed. Roadways providing vehicular access to the project site include East Congress Street, Fogg Street, M Street, and/or Mt. Vernon Avenue. The project site is located south of the Mt. Vernon Avenue Bridge where the Santa Ana River transitions from a concrete-lined channel to a soft bottom river. The soft bottom allows for the infiltration of water through the ground surface to recharge the underlying groundwater aquifers.

Project Objectives

The objectives of the project include the following:

- Aquifer Storage and Recharge Objectives
  - Recharge the groundwater aquifers in the Riverside and Colton basins
  - Help achieve the requirements of the 1969 Western Judgment
  - Improve groundwater quality of the Riverside and Colton basins
  - Create drought storage
  - Reduce dependence on imported water
  - Maximize local groundwater production
  - Maximize capture and use of local surface water
  - Provide seasonal storage
- Utility Connection Objectives:
  - Create a utility corridor connection between the west and east side of the Santa Ana River

Components of the Proposed Project

The proposed project is separated into five components: in-stream recharge, off-stream recharge, diversion for the Riverside Canal, State Water Project (SWP) pipeline, and a utility crossing. See *Table 2.0-1, Components of the Proposed Project*, for a more detailed list of the components and what features they include.

The proposed in-stream recharge component of the project would be located along a segment of the Santa Ana River that contains engineered levees containing grout aprons on the west and east river banks, which may need to be modified to U.S. Army Corps of Engineer (USACE) standards before recharge could occur. The in-stream impoundment would consist of an inflatable rubber dam and potential improvements to levees upstream and downstream. The inflatable dam would be constructed with a series of adjoining bladders that

would be between piers which would span the width of the river. A diversion structure and conveyance facility would connect the impoundment area to the recharge basins and the Riverside Canal Pipeline. The structure will be located upstream of the rubber dam, and will convey water from the Santa Ana River to the headworks of the Riverside Canal. Also, a 42-inch diameter steel casing adjacent to the inflatable dam is proposed, which would allow utility crossing at this location. Also, four in-channel access ramps would be constructed to allow access to the in-stream recharge area for construction and periodic maintenance visits.

The project also proposes an off-stream component, which would include between three (3) and eight (8) basins where water impounded behind the dam could be diverted to replenish the groundwater aquifer. The existing State Water Project (SWP) connection located on the eastern bank of the Santa Ana River adjacent to the railroad right-of-way would be extended, giving the Project Partners the future option to recharge the proposed basins with imported water or convey imported water into the Riverside Canal, although the recharge of imported water is not being proposed at this time. The off-stream recharge component would also require the installation of a desilting facility which would include a desilting basin and/or screening equipment.

Land within the project area to the west of the Santa Ana River is presently vacant. The off-stream recharge basins and the proposed desilting facility would also be constructed in this area.

Refer to Section 2.0, *Project Description,* for a more detailed description of the project.

S.2 Cumulative Impacts

State *CEQA Guidelines* Section 15130 requires that an EIR include a discussion of cumulative impacts "…when the project's incremental effect is cumulatively considerable, as defined in [State *CEQA Guidelines* Section 15065(a)(3)]." Cumulatively considerable effects are those "…incremental effects of an individual project… when viewed in conjunction with the effects of past projects, the effects of other current projects, and the effects of probable future projects" [State *CEQA Guidelines* Section 15065(c)]. A lead agency need not consider an incremental effect as "cumulatively considerable," but does need to briefly describe its basis for concluding that the incremental effect is not cumulatively considerable.

Cumulative impacts of the proposed project combined with past, present, and reasonably foreseeable future projects are evaluated in Section 3.11 of this EIR. The assessment of cumulative impacts takes into consideration existing conditions, plus the proposed project, in combination with other planned regional watershed projects.

An analysis of cumulative impacts determined that even with the implementation of mitigation measures, significant and unavoidable cumulative environmental impacts may occur with regard to air quality, including impacts to climate change.

S.3 Significant Unavoidable Adverse Impacts of the Proposed Project

The project's potentially significant impacts are set forth in Sections 3.1 through 3.10 of this Draft EIR. As noted in these sections, most of the potentially significant impacts identified can be mitigated to a less than significant level through implementation of feasible mitigation measures. However, significant and unavoidable impacts would occur as a result of implementation of the proposed Project in the following areas:

- Regional construction-related emissions would exceed the SCAQMD daily emissions thresholds for NO_X and PM_{10} after the implementation of all mitigation measures. (Section 3.3, *Air Quality, Odor, and Climate Change*)
- Cumulative short-term, construction-related emissions would create a significant impact due to exceedances of SCAQMND thresholds for NO_X and PM_{10} after the implementation of all proposed mitigation measures. (Section 3.3, *Air Quality, Odor, and Climate Change*)

S.4 Summary of Alternatives Evaluated

This is a summary of project alternatives described in Section 5.0, *Alternatives to the Proposed Action*, which contains a detailed discussion of the alternatives considered for the Project. The project alternatives have been designed to alleviate identified environmental impacts, or were specifically requested for consideration during the preparation of the EIR. The City is not pursuing a 'reduced scale' alternative due to the limited local water supply and the need for new sources to meet current demand. A reduced scale alternative was deemed ineffective and was not considered during the alternatives analysis that was conducted as the City felt a reduced project alternative would not accomplish the objectives of the project while still creating environmental impacts similar to the full scale project.

Alternative 1: No Project Alternative

The No Project Alternative would not involve the development of the proposed project on the project site. The existing river alignment, landscape, and recharge capacity would remain unchanged with the implementation of this Alternative. Although this alternative would avoid the significant impacts associated with the proposed project, it would not achieve the project objectives, would be inconsistent with the City's UWMP and would require the City and Project Partners to rely more on imported water. The No Project Alternative would not achieve the City's goals of providing drought storage infrastructure, maximizing groundwater production, providing seasonal water storage, reducing the Project Partners' dependence on imported water, or improving the groundwater quality of the Riverside or Colton subbasins. Under this Alternative the City would still need to obtain water through other sources, which could include the construction of a similar project on the project site with appropriate local, state and federal approval. Due to its inability to accomplish the project objectives, the No Project Alternative is rejected from further consideration.

Alternative 2: Alternate Project Location Alternative

The Alternate Project Location Alternative would involve the development of the proposed project at an alternate project site. The existing river alignment, landscape, and recharge capacity would remain unchanged with the implementation of this Alternative. Under this scenario, the utility crossing would not be approved with the implementation of Alternative 2. However, this alternative does not preclude future development on the site. An initial dam location analysis was conducted to determine the most-suitable location for the alignment of the inflatable dam. The dam location yielded the project site location due to a number of factors that made it the best option within the project vicinity.

Upstream Location

An upstream dam location was considered but it was found that as the location moves upstream the recharge would occur within the Bunker Hill basin, which would not provide the intended benefits to the City and its

Project Partners as outlined within their Integrated Regional Water Management Plan. The Western Judgment also requires San Bernardino Valley Municipal Water District (SBVMWD) to maintain water levels within the Colton and Riverside North subbasins. Recharging the Bunker Hill subbasin would not fulfill the requirements of this mandate.

Downstream Location

Downstream dam locations were also considered, but due to the close proximity to the Rapid Infiltration and Extraction (RIX) Wastewater Treatment Plant in Colton and the Rialto Wastewater Treatment Plant, downstream dam locations would have a more saturated river bottom due to consistent flows from RIX. Downstream areas also have abundant habitat for sensitive species (including the Santa Ana sucker), as well as less stable ground conditions and a lack of suitable levees for impoundment.

Due to the reasons listed above, the alternate project location alternative was excluded from further analysis.

Alternative 3: Imported Water and Water Banking Alternative

Under the Imported Water and Water Banking Alternative, the City of Riverside and its Project Partners, SBVMWD and Western Municipal Water District (WMWD), would rely on imported water supplies to meet future demand and to manage current groundwater supplies within the project area. The imported water supplies would primarily originate from the State Water Project (SWP). WMWD receives 25% of its imported water supplies from the Colorado River. However, this source is limited and would not likely be used as an imported source for the City and the other Project Beneficiaries, the City of Colton and RHWC who are members of SBVMWD. Since the reliability and availability of imported water can be restricted at times, water banking could be used to increase water supply reliability. Water that has been banked in underground water storage would then be pumped and distributed through the local water district pipelines to the City service area. Implementation of this alternative would not include the development of the utility crossing. However, it does not preclude future development on the project site subject to applicable discretionary review and approval.

State Water Project

The SWP receives its supplies from the Sacramento River Basin, where it then transports the water south through a system of aqueducts to water districts in southern California (including SBVMWD and WMWD). The supplies sent to water districts ranges greatly each year dependent on rainfall, snowpack, runoff, stored water, pumping capacity in the delta, water demand, and legal/regulatory constraints. As of 2013, the DWR estimated that future water supply could be 54% of long-term average as of 2033, and as low as 24% if extended droughts are experienced. Rather than getting SWP water from either SBVMWD or WMWD, the City could also elect to purchase private water from private water rights holders and have it conveyed through the WMWD or SBVMWD system to the City. Through this option, the City would have to pay the water districts a conveyance fee. This imported supply would be vulnerable to reduced supplies as well as any seismic event due to the long transport distance it requires.

Colorado River

California's Colorado River water supply is limited to 4.4 million acre-feet per year (AFY); however, in past years California has purchased excess water from Arizona and Nevada in order to draw up to a maximum of 5.2 million AFY. In recent years Arizona has continued to increasingly use its allotment, reducing the excess

water available for California to purchase. Due to this reduced supply, the City would not expect to receive Colorado River water imports beyond that currently imported to the MWD.

Water Banking and Water Wheeling

Due to the fluctuation in water supply, water is not always available in the quantities needed to meet demand. In order to overcome this, the City could contract with a water district to store or bank water in an underground aquifer when supplies become available. The water would then need to be conveyed to the City through a neighboring water district's water conveyance system. The City would be required to pay the local water district a conveyance fee in order to use the system.

San Bernardino Valley Municipal Water District

SBVMWD is responsible for the long-term water supply in the San Bernardino Valley. The District imports both supplemental SWP water and pumps from groundwater storage areas in order to meet the water demands of the area. As part of the 1969 Western Judgment, the SBVMWD became responsible for maintaining water levels in key wells in the vicinity of the project. The proposed project would help to increase groundwater levels in the SBVMWD wells in close proximity to the project, and would reduce reliance on imported water necessary to recharge the SBVMWD groundwater supply.

Western Municipal Water District

WMWD is a wholesale purchaser of imported water that receives the majority of its water supplies from the SWP and Colorado River. WMWD is also responsible for the replenishment of the Riverside North Aquifer under the Western Judgment if extractions exceed the allowance for 5-years or by 20%. WMWD is also responsible for delivery of imported water in the Colton and Riverside Basin Areas if the Accumulated Obligations exceed the Accumulated Credits in these Basins and if Valley District is not meeting its Base Flow obligation at the Riverside Narrows. The proposed project would help to replenish the Riverside North Aquifer and would help to reduce SWP dependence for groundwater recharge.

City of Riverside

The City has access to imported water from WMWD through a 30 cfs direct connection to the MWD Mills Treatment Plant and up to 30 cfs of capacity in the Western's Mills Gravity Pipeline which is connected to the MWD Mills Treatment Plant. Per the City's 2010 Urban Water Management Plan (UWMP), the UMWP does not project to purchase imported water for the foreseeable future, if its proposed water supply and conservation projects are fully implemented. In comparison to the proposed recharge project, this project alternative is considered feasible as the amount of water supplied is within the capacity of the existing SWP facilities supporting the City. However, obtaining imported water to meet demands remains uncertain due to the fluctuation of SWP deliveries and the vulnerability of the SWP supply. To adequately compare the proposed project to the imported water alternative, the City would have to rely on water banking to meet demand and manage groundwater supplies. Water banking has its own environmental impact from the energy required to recharge, maintain, and extract water supplies.

Alternative 4: Increased Reclamation/Conservation

Water Reclamation

The City of Riverside is in the process of implementing its Recycled Water Facilities Plan which will aid in the efficient use of local resources and in turn reduce the City's reliance on local groundwater sources and imported water. As specified in the City's 2010 UWMP, the City plans to expand its use of recycled water over the next decade by completing two recycled water projects that could use up to 9,800 AFY of recycled water. However, increased water reclamation in the vicinity of the proposed project is infeasible due to the close proximity to potable wells, which would need to be abandoned if recycled water well injection was to be utilized. For future water demands, recycled water would be unable to supply the necessary water to meet demand as the population continues to grow within the area. Increased recycled water use would also have impacts on the Santa Ana River flows and would also require construction of new facilities to house new infrastructure.

Water Conservation

The City has implemented a variety of water demand management tools to maximize water efficiency and reduce overall water use. Further use of measures to reduce demand could help to further lower water use within the City. The City is also a signatory to the Memorandum of Understanding Regarding Urban Water Conservation in California, which requires the implementation of 14 water management best practices. The City's water demand and management practices were evaluated in the 2010 Water Efficiency Master Plan and a list of new conservation measures were developed accordingly. A four tier system was developed by the City, and plans to adopt the first two tiers are being implemented through the City's Urban Water Management plan with projected reductions of 10,000 AFY. According to the study conducted in the 2010 Water Use Efficiency Master Plan, the City could reduce use by 1,900 AFY with the inclusion of the Tier 3 and 4 conservation measures, generating a total of 11,900 AFY conserved through the inclusion of all four tiers. However, inclusion of the Tier 3 and 4 measures would have drastic impacts on residential and commercial users.

Conclusion

For the reasons listed above, the Increased Reclamation/Conservation Alternative is not a viable alternative to the proposed project, and will not adequately meet the project objectives. Conservation and reclamation are important components of the City's water portfolio but are not a substitution for the increase in supply generated by the proposed project.

S.5 Environmentally Superior Alternative

CEQA requires that an Environmentally Superior Alternative be identified; that is, an alternative that would result in the fewest or least significant environmental impacts. If the No Project Alternative is the environmentally superior alternative, State *CEQA Guidelines* Section 15126.6 (e)(2) requires that another alternative that could feasibly attain most of the project's basic objectives be chosen as the environmentally superior alternative. The "No Project" Alternative would avoid project-related impacts and is therefore environmentally superior to the proposed project, although it fails to meet project objectives and would not preclude other water supply related projects at the project site or elsewhere.

The Imported Water Supply Alternative is considered the "Environmentally Superior Alternative" to the proposed project, in that it avoids the local project-related impacts both off-river and in-river. However, the Imported Water Alternative does not meet multiple project objectives. In addition, providing drought or seasonal storage would require the construction of new storage facilities or complex third party agreements. The Imported Water Alternative would also have a variety of impacts including air quality and GHG emissions due to the resources required to convey water from the Sacramento-San Joaquin Delta to the Riverside North Subbasin. For the reasons above, the City is not pursuing the Imported Water Alternative in lieu of the project, but rather as a part of the balanced water portfolio.

S.6 Mitigation Monitoring and Reporting

CEQA requires public agencies to set up monitoring and reporting programs to ensure compliance with mitigation measures adopted or made as a condition of project approval in order to mitigate or avoid the significant environmental effects identified in environmental impact reports. A Mitigation Monitoring and Reporting Program (MMRP) incorporating the mitigation measures set forth in this EIR will be prepared and approved by the City of Riverside decision-makers and other responsible agencies concurrently with adoption of the findings of this EIR and prior to approval of the proposed project.

S.7 Areas of Controversy and Issues to Be Resolved

Section 15123 of the State *CEQA Guidelines* requires that an EIR contain a brief summary of the proposed actions and their consequences. Sections 15123(b)(2) and (3) also require that the EIR summary identify areas of controversy known to the lead agency, issues raised by agencies and the public, and issues to be resolved, including the choice among alternatives and whether, or how, to mitigate significant adverse physical impacts.

Based on City staff's review of available information, and comments received from the general public and other public agencies in response to the Notice of Preparation and public scoping meetings, the following issues are considered to be either controversial or to require further resolution prior to making an informed decision on the project:

- Potential adverse effects upon sensitive habitat and species; and,
- Potential adverse effects on downstream water supply and water quality.

S.8 Project Impacts and Mitigation Measures

Table S-1, Summary of Impacts and Mitigation Measures, lists the potentially significant project impacts identified in this EIR, the mitigation measure(s) required to minimize, avoid or reduce the level of significance for each significant impact, and the significance of impacts after mitigation.

Table S-1: Summary of Impacts and Mitigation Measures

IMPACT	MITIGATION MEASURE
3.1 LAND USE AND RELEVANT PLANNING	
Divide a Community 3.1-1 Implementation of the proposed project may physically divide an established community. Level of Significance: Less than Significant Impact.	No Mitigation is Required.

Table S-1, continued

IMPACT	MITIGATION MEASURE
Plan Consistency 3.1-2 Implementation of the proposed project may conflict with applicable land use plans, policies, or regulations of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. Level of Significance: Less than Significant Impact.	No Mitigation is Required.
3.2 NOISE	
Exceedance of Noise Standards 3.2-1 Implementation of the proposed project may expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Level of Significance: Less than Significant with Mitigation.	NOI-1: Prior to grading, the City shall include the following in construction bid documents: ▪ Construction contracts shall specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other State-required noise attenuation devices. ▪ Construction noise reduction methods such as shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied residential areas, and use of electric air compressors and similar power tools, rather than diesel equipment, shall be used where feasible. ▪ During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receptors. ▪ All construction entrances shall clearly post construction hours, allowable workdays, and the phone number of the job superintendent. This will allow surrounding owners and residents to contact the job superintendent with concerns. If the contractor receives a noise-related complaint, appropriate corrective actions shall be implemented and a report taken indicating the action with a copy of the report provided to the reporting party upon request. NOI-2: Project construction activities will also occur on Saturdays, from 7AM – 7PM, to further reduce total construction time and associated potential adverse effects related to traffic and noise along proposed haul routes.
Ground-borne Vibration 3.2-2 Implementation of the proposed project may expose persons to or generate Excessive ground-borne vibration or ground-borne noise levels. Level of Significance: Less than Significant with Mitigation.	Refer to Mitigation Measure NOI-1.

Table S-1, continued

IMPACT	MITIGATION MEASURE
Ambient Noise Levels 3.2-3 Implementation of the proposed project may generate a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. Level of Significance: Less than Significant Impact.	No Mitigation is Required.
Temporary or Periodic Noise Increase 3.2-4 Implementation of the proposed project may create a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Level of Significance: Less than Significant with Mitigation.	Refer to Mitigation Measure NOI-1.
3.3 AIR QUALITY, ODOR, & CLIMATE CHANGE	
Short-Term Construction Impacts 3.3-1 Short-term construction activities associated with the proposed project would result in significant air pollutant emission impacts. Level of Significance: Significant Unavoidable Impact.	AQ-1 Prior to issuance of construction bid documents, the City shall confirm that the Grading Plan, Building Plans and specifications stipulate that, in compliance with SCAQMD Rule 403, excessive fugitive dust emissions shall be controlled by regular watering or other dust prevention measures, as specified in the SCAQMD's Rules and Regulations. In addition, SCAQMD Rule 402 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off-site. Implementation of the following measures would reduce short-term fugitive dust impacts on nearby sensitive receptors: ▪ All active portions of the construction site shall be watered twice daily to prevent excessive amounts of dust; ▪ On-site vehicle speed shall be limited to 15 miles per hour; ▪ All on-site roads shall be paved as soon as feasible, watered twice daily, or chemically stabilized[1]; ▪ Visible dust beyond the property line which emanates from the project shall be prevented to the maximum extent feasible; ▪ All material transported off-site shall be either sufficiently watered or securely covered to prevent excessive amounts of dust prior to departing the job site; ▪ Track-out devices shall be used at all construction site access points; and, ▪ All delivery truck tires shall be watered down and/or scraped down prior to departing the job site.

1 If chemical stabilization is required, the methods/chemicals utilized will need to be evaluated so that no contamination would occur to surrounding upland area if significant runoff would occur.

Table S-1, continued

IMPACT	MITIGATION MEASURE
	AQ-2 All trucks that are to haul excavated or graded material on-site shall comply with State Vehicle Code Section 23114 (Spilling Loads on Highways), with special attention to Sections 23114(b)(F), (e)(4) as amended, regarding the prevention of such material spilling onto public streets and roads. Prior to the issuance of construction bid documents, hauling activities shall be specified to comply with the provisions set forth in Sections 23114(b)(F), (e)(4). AQ-3 Prior to issuance of construction bid documents, the City shall confirm that the Grading Plan, Building Plans and specifications stipulate that, in compliance with SCAQMD Rule 403, O_3 precursor emissions from construction equipment vehicles shall be controlled by maintaining equipment engines in good condition and in proper tune per manufacturer's specifications, to the satisfaction of the City Engineer. Maintenance records shall be provided to the City. The City Inspector shall be responsible for ensuring that contractors comply with this measure during construction. AQ-4 The following measures shall be implemented during construction to substantially reduce NO_X related emissions. They shall be included in the Grading Plan, Building Plans, and contract specifications. Contract specification language shall be reviewed by the City prior to issuance of a construction bid documents. The following note shall be included on all grading plans: "During construction activity, the contractor shall utilize applicable EPA-Certified construction equipment, including all off-road diesel-powered construction equipment. A copy of each unit's certified tier specification, BACT documentation, and CARB or SCAQMD operating permit shall be provided to the City at the time of mobilization of each applicable unit of equipment." ▪ Off-road diesel equipment operators shall be required to shut down their engines rather than idle for more than five minutes, and shall ensure that all off-road equipment is compliant with the CARB in-use off-road diesel vehicle regulation and SCAQMD Rule 2449. ▪ Contractors shall use 2010 and newer diesel haul trucks (e.g., material delivery trucks and soil import/export trucks). If the lead agency determines that 2010 model year or newer diesel trucks cannot be obtained, trucks that meet EPA 2007 model year NO_X and PM emissions requirements shall be utilized. ▪ The contractor and City, if the City's equipment is used, shall maintain construction equipment engines by keeping them tuned and regularly serviced to minimize exhaust emissions. ▪ Use low sulfur fuel for stationary construction equipment. This is required by SCAQMD Rules 431.1 and 431.2.

Table S-1, continued

IMPACT	MITIGATION MEASURE
	▪ Utilize existing power sources (i.e., power poles) when available. This measure would minimize the use of higher polluting gas or diesel generators. ▪ Configure construction parking to minimize traffic interference. ▪ Minimize obstruction of through-traffic lanes and provide temporary traffic controls such as a flag person during all phases of construction when needed to maintain smooth traffic flow. Construction shall be planned so that lane closures on existing streets are kept to a minimum. ▪ Schedule construction operations affecting traffic for off-peak hours to the best extent when possible. ▪ Develop a traffic plan to minimize traffic flow interference from construction activities (the plan may include advance public notice of routing, use of public transportation and satellite parking areas with a shuttle service.) ▪ Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than five minutes.
Operational Impacts 3.3-2 Long-term operation of the proposed project would not result in significant air pollutant emissions impacts. Level of Significance: Less than Significant Impact.	No Mitigation is Required.
Plan Consistency 3.3-3 Development associated with the proposed project would be consistent with regional plans and the State Implementation Plan. Level of Significance: Less than Significant Impact.	No Mitigation is Required.
3.4 BIOLOGICAL RESOURCES	
Sensitive Species 3.4-1 Implementation of the proposed project may have substantial adverse effects, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. Level of Significance: Less than Significant with Mitigation.	BIO-1 Location of the project site within federally designated critical habitat for the Santa Ana sucker shall require consultation between the U.S. Army Corps of Engineers (USACE) and the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Federal Endangered Species Act (ESA), prior to their issuance of a Section 404 Permit. If direct, indirect, or cumulative effects are identified during the consultation process the City is prepared to implement offsite conservation measures to offset those impacts to Santa Ana sucker and its designated critical habitat. The City has been coordinating with the USFWS for several years to identify an appropriate location to enhance habitat for the sucker and other species. The Hole Creek tributary, which is part of the McAllister/Hole Creek drainage within the City of Riverside,

Table S-1, continued

IMPACT	MITIGATION MEASURE
	has been identified as a stream located within currently occupied sucker habitat but is either lacking or has degraded critical habitat PCEs. The City will improve those PCEs that may be directly or indirectly affected by the project (water, gravel/cobble substrate, riparian vegetation). Additionally, the improvement will be made to habitat located within a portion of the river that is currently occupied by sucker and can be utilized immediately by the species. The creek consists of viable Santa Ana sucker habitat comprised of approximately 2,172 linear feet of runs, glides, riffles, pools, and slick rock plunge pools of various sizes. Rehabilitation of this tributary would provide immediate value to breeding, foraging, and refugia habitat for sucker. The City will implement the required creek improvements, including the provision of supplemental water, if needed, and/or additional offsite mitigation as identified by the USFWS to appropriately mitigate effects of the project. **Impacts of Hole Creek Mitigation Area** – Implementation of the Hole Creek mitigation measure may result in relatively minor additional impacts beyond those identified in the project construction area. Although this measure will result in a benefit to biological resources, there will be temporary dust, noise, construction traffic and aesthetic impacts associated with creation and ongoing maintenance activities for this mitigation site. Prior to issuance of a grading permit or any ground disturbance within the proposed project boundary, a qualified biologist shall be required to conduct a comprehensive survey of the Hole Creek tributary (consistent with the specific mitigation area illustrated in *Exhibit 3.4-4* of the EIR). Following survey of the proposed Hole Creek mitigation area, the biologist shall provide written recommendations for removal of non-native vegetation along the creek, removal of trash, water quality testing, and/or monitoring of substrate conditions, as applicable. Construction and maintenance at the Hole Creek Mitigation Area shall comply with applicable mitigation measures for the project area, in addition to any required construction, operation and/or maintenance measures established by regulatory agencies during the project permitting process. BIO-2 Botanical surveys conducted in 2009, 2011, and 2013 verified the presence of Santa Ana River woolly-star on the project site. A focused sensitive plant survey following CDFW's 2009 protocol shall be conducted prior to the commencement of any ground disturbing activities, and that all locations be marked for avoidance during construction and operation of the project. This survey will also assess the potential for other sensitive plant species to occur within the project site. If take of the woolly-star will occur either through direct or indirect effects resulting from construction, operations, or maintenance of this project, a CDFW 2081 Incidental Take Permit will be obtained and suitable mitigation measures will be developed through coordination

Table S-1, continued

IMPACT	MITIGATION MEASURE
	between CDFW and the City. This may include avoidance and minimization measures such as worker education and preventative flagging as well as onsite restoration of impacted areas and enhancement of nearby habitat in order to promote survival and persistence of woolly-star in this area. Impacts to woolly-star will be addressed in the USFWS Biological Opinion as part of the Section 7 consultation and 404/401 permitting process. BIO-3 Focused spring surveys for least Bell's vireo are recommended prior to grading. If LBVI is determined to occupy the project site, avoidance measures shall be recommended at that time. If avoidance is not possible, impacts to this species shall also need to be addressed during the Section 7 Consultation with USFWS and State Incidental Take Permits. BIO-4 If ground disturbing activities or removal of any trees, shrubs, or any other potential nesting habitat are scheduled within the avian nesting season (nesting season generally extend from February 1 – August 31), a pre-construction clearance survey for nesting birds shall be conducted within 3 days prior to any ground disturbing activities. The biologist conducting the clearance survey shall document a negative survey with a brief letter report indicating that no impacts to active bird nests will occur. If an active avian nest is discovered during the preconstruction clearance survey, construction activities shall stay outside of a 300-foot buffer around the active nest. For raptor species and listed species, this buffer is expanded to 500 feet. It is recommended that a biological monitor be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting behavior is no adversely affected by the construction activity. BIO-5 A pre-construction burrowing owl (BUOW) clearance survey shall be conducted in accordance with the 2012 CDFW protocol prior to any ground disturbing activities. This clearance survey can be conducted as part of the pre-construction nesting bird clearance survey. If burrowing owl are encountered and determined to be nesting, land disturbance activities shall not commence until the biologist has implemented the required measures according to the CDFW to clear the site for construction. One such measure may be to passively relocate the owls once the young have fledged the nest. This type of relocation requires the construction of artificial burrows in the near vicinity and collapsing of the old burrows once the owls have clearly flushed out of the site. If burrowing owls are encountered during construction, construction activities shall be halted in the vicinity of the find and the biologist/monitor called to the site. The contractor shall implement the recommendations of the biologist/monitor.

Table S-1, continued

IMPACT	MITIGATION MEASURE
	BIO-6 Prior to ground disturbing activities, a qualified biologist shall conduct a pre-construction clearance survey of the project site and access roads to verify baseline conditions and the potential presence of sensitive biological resources as previously identified for the project site. Based on this survey, the biologist shall prepare a construction and long-term management plan based on an adaptive management approach and submit it to USFWS and CDFW for review and approval. The construction portion of the management plan will include management actions to avoid and minimize impacts to sensitive biological resources including, but not limited to, fencing of sensitive areas occurring outside the development footprint, pre-construction surveys for burrowing owls and nesting birds (see BIO-4 and BIO-5 above), and the requirements for biological monitoring during the construction phase. The long-term management portion of the plan shall include avoidance and minimization measures that shall be continued during the operational phase including, but not limited to, periodic monitoring during the first five years of operation and potential corrective measures that may be needed to respond to unanticipated impacts to sensitive biological resources. To lessen impacts to small mammals, a preconstruction survey shall be conducted for small mammals by a qualified biologist to make a determination: (1) if a biological monitor should be present at the site during all land disturbance activities; (2) if exclusionary fencing needs to be installed around the perimeter of the construction work zone; or (3) if no further action is required. The biologist/monitor shall remain on-call during construction activities. If by chance any San Bernardino Kangaroo Rat, Los Angeles pocket mouse, southern grasshopper mouse, northwestern San Diego pocket mouse, or San Diego desert woodrat, are encountered during construction following the initial phases of ground disturbance, construction activities shall be halted in the vicinity of the find and the biologist/monitor called to the site. The contractor shall implement the recommendations of the biologist/monitor who will coordinate with the CDFW. BIO-7 Personnel associated with the construction of the site shall attend a worker education class. This class shall include general information regarding sensitive species, including the Santa Ana River woolly-star, Least bell's vireo, southwestern willow flycatcher, and Santa Ana sucker and their habitat, as well as the potential for wildlife movement through the project area. Project activities shall be limited to a well-defined area. Prior to grading and construction activities, the limits of disturbance shall be clearly marked with flagging, stakes or fencing around the project site and access roads. All vehicular use of

Table S-1, continued

IMPACT	MITIGATION MEASURE
	the road shall be confined to the disturbed roadbed. No advertent straying outside the roadway shall occur.
Riparian and Sensitive Habitat 3.4-2 Implementation of the proposed project may have substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. Level of Significance: Less than Significant with Mitigation.	Refer to Mitigation Measures BIO-I and BIO-7 through BIO-11
Wetlands 3.4-3 Implementation of the proposed project may have substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc…) through direct removal, filling hydrological interruption, or other means. Level of Significance: Less than Significant with Mitigation.	BIO-1 See above. BIO-8 A Section 404 permit shall be obtained from the United States Army Corps of Engineers (USACE) Regulatory Branch-Los Angeles District Office prior to commencement of any construction activities within the USACE's delineated jurisdictional areas. By obtaining the Section 404 permit, the project proponent will have demonstrated conformance with federal regulatory requirements for any discharge of fill material into the Santa Ana River which is considered "Waters of the United States," thereby reducing impacts (due to discharge of fill) on waterbodies affected by the project to a less than significant level. Location of the site within federally designated critical habitat shall require coordination and permitting with the USACE, with USACE consulting with the USFWS under Section 7 of the Federal Endangered Species Act (ESA), prior to issuance of the Section 404 Permit. BIO-9 A 401 Water Quality Certification from the Santa Ana Regional Water Quality Control Board (RWQCB) shall be obtained. The RWQCB also requires that CEQA compliance be obtained prior to obtaining the 401 Certification. By obtaining the 401 Water Quality Certification, the project proponent will have demonstrated conformance with State regulatory requirements for any discharge of fill material into the Santa Ana River which is considered "Waters of the United States," thereby reducing impacts (due to water quality associated with fill discharge) on waterbodies affected by the project to a less than significant level. BIO-10 A 1602 Streambed Alteration Agreement shall be obtained from the California Department of Fish and Wildlife (CDFW) prior to commencement of any construction activities. By obtaining the 1602 Streambed Alteration Agreement, the project proponent will have demonstrated conformance with State regulatory requirements for drainage modifications thereby reducing impacts (effects upon habitat and species under the jurisdiction of CDFW) on waterbodies affected by the project to a less than significant level. BIO-11 For permanent impacts to jurisdictional waters, the City may purchase in-lieu fee credits from a bank approved by the USACE, CDFW, and/or RWQCB and/or provide onsite and

Table S-1, continued

IMPACT	MITIGATION MEASURE
	offsite habitat restoration at a ratio between 3:1 and 1:1. Temporary impacts to jurisdictional waters shall be mitigated in a 1:1 ratio through onsite habitat restoration. The exact details of the required restoration shall be outlined in the Habitat Mitigation and Monitoring Program document, as required by the USACE, RWQCB, and CDFW, and shall be negotiated at the time of permitting.
Wildlife Movement 3.4-4 Implementation of the proposed project may interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. Level of Significance: Less than Significant with Mitigation.	Refer to Mitigation Measure BIO-6.
Conflict with Adopted Plans 3.4-5 Implementation of the proposed project may conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Level of Significance: Less than Significant Impact.	No Mitigation is Required.
3.5 HYDROLOGY AND WATER QUALITY	
Alter Drainage Patterns 3.5-1 Implementation of the Riverside Groundwater Aquifer Storage and Recovery Project may substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site. Level of Significance: Less than Significant with Mitigation.	HWQ-1 Prior to issuance of grading and improvement plans: ▪ As part of the final design process, the City shall refine current hydrology and hydrogeologic modeling to ensure that no adverse effects on hydraulics, stream stability, or levee stability downstream occur as a result of project implementation. Project design shall be subject to review and approval of the affected regulatory agencies (e.g. U.S. Army Corps of Engineers and San Bernardino County Flood Control District) and shall demonstrate compliance with all requirements (i.e. design features and/or analysis) identified by such agencies.
Flooding 3.5-2 Implementation of the Riverside Groundwater Aquifer Storage and Recovery Project may place within a 100-year flood hazard area structures that would impede or redirect flows. Level of Significance: Less than Significant with Mitigation.	HWQ-2: The project shall obtain an encroachment permit for the dam and any necessary levee construction from the San Bernardino County Flood Control District and the U.S. Army Corps of Engineers, which will require demonstration of compliance with applicable flood control standards at the local and federal level. The permitting process will require project review by both agencies to ensure that design and construction of the dam and/or any necessary modification to the existing levees do not result in adverse impacts to the floodplain or floodway with regard to the conveyance of Santa Ana River flows.

Table S-1, continued

IMPACT	MITIGATION MEASURE
Groundwater 3.5-3: Implementation of the Riverside Groundwater Aquifer Storage and Recovery Project may substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? Level of Significance: Less than Significant.	No Mitigation is Required.
Violation of Water Quality Standards 3.5-4 Implementation of the Riverside Groundwater Aquifer Storage and Recovery Project may violate water quality standards or waste discharge requirements. Level of Significance: Less than Significant with Mitigation.	HWQ-3 To reduce potential construction water quality impacts to less than significant: ▪ The City shall prepare and submit a Notice of Intent (NOI) to comply with the Construction General Permit 2009 to the California State Water Resources Board. ▪ As applicable, the City shall obtain a permit from the Santa Ana Regional Water Quality Control Board for any dewatering activities. If the disturbed areas are less than 1-acre: ▪ Prepare erosion control plan. ▪ Dewatering activities may require regional board permit. HWQ-4 Prior to issuance of a grading permit, the City shall: Prepare a Storm Water Pollution Prevention Plan (SWPPP) for the construction activities onsite. A copy of the SWPPP must be available and implemented at the construction site at all times. The SWPPP outlines the source control and/or treatment control BMPs that will avoid or mitigate runoff pollutants at the construction site to the "maximum extent practicable." These requirements are summarized as follows: ▪ Notice of Intent: The NOI certifies that the City will comply with conditions in the Statewide general NPDES permit. It is not a permit application and does not require approval, although an annual fee must be submitted with it. ▪ Stormwater Pollution Prevention Plan: The SWPPP is directed toward construction staff; it describes erosion and runoff control measures to be used during and after construction, and a plan to inspect and maintain these control measures. The SWPPP may be revised during construction in response to changed conditions, or if the properly installed BMPs are ineffective in preventing sediment transport off the site. Revisions to the SWPPP are also required if there are changes in activities which

Table S-1, continued

IMPACT	MITIGATION MEASURE
	could result in a significant amount of pollutants discharged in stormwater. ▪ Notice of Termination: The State Board must be notified (via a Notice of Termination form) once construction is complete. It must also be notified if a change of ownership occurs during construction. In this case, a revised NOI must be submitted, and the SWPPP must be revised by the new owner to reflect any changes in construction conditions. The City may request to be placed under individual NPDES permits rather than the general permit. The Regional Board may issue individual stormwater NPDES permits to construction projects when more stringent controls are necessary to protect water quality. As noted above, individual construction projects may also be regulated under a municipality's NPDES management program. The following are additional construction BMP's for the site, from the California Storm Water Best Management Practice Handbook - Construction Activity: ▪ NS-2 Dewatering Operations – This operation requires the use of sediment controls to prevent or reduce the discharge of pollutant to storm water from dewatering operations. ▪ NS-3 Paving and Grinding Operations – Prevent or reduce the runoff of pollutant from paving operations by proper storage of materials, protecting storm drain facilities during construction and training employees. ▪ NS-8 Vehicle and Equipment Cleaning – Use off-site facilities, or wash in designated areas to reduce pollutant discharge into the storm drain facilities. ▪ NS-9 Vehicle and Equipment Fueling – Use off-site facilities, or designated areas with enclosing or coverings to reduce pollutant discharge into the storm drain facilities. ▪ NS-10 Vehicle and Equipment Maintenance – Use off-site facilities or designated areas with enclosing or coverings to reduce pollutant discharge into the storm drain facilities. In addition run a "dry site" to prevent pollution discharge into storm drains. ▪ WM-1 Material Delivery and Storage – Minimize the storage of hazardous materials onsite. If stored onsite keep in designated areas, install secondary containment, conduct regular inspections and train employees. ▪ WM-2 Material Use – Prevent and reduce the discharge of pesticides, herbicides, fertilizers, detergents, plaster, petroleum products and other hazardous materials from entering the storm water.

Table S-1, continued

IMPACT	MITIGATION MEASURE
	▪ WM-5 Solid Waste Management – This BMP describes the requirements to properly design and maintain trash storage areas. The primary design feature requires the storage of trash in covered areas. ▪ WM-6 Hazardous Waste Management – This BMP describes the requirements to properly design and maintain waste areas. ▪ WM-8 Concrete Waste Management – Prevent and reduce pollutant discharge to storm water from concrete waste by performing on and off-site washouts in designated areas and training employees and consultants. ▪ WM-9 Sanitary/Septic Water Management – Provide convenient, well-maintained facilities, and arrange regular service and disposal of sanitary waste. ▪ EC-2 Preservation of Existing Vegetation – Minimize the removal of existing trees and shrubs because they serve as erosion control. ▪ EC-3 Hydraulic Mulch – Hydraulic mulch consists of applying a mixture of shredded wood fiber or a hydraulic matrix, and a stabilizing emulsion or tackifier with hydro-mulching equipment, which temporarily protects exposed soil from erosion by raindrop impact or wind. ▪ EC-4 Hydroseeding – Hydroseeding typically consists of applying a mixture of wood fiber, seed, fertilizer, and stabilizing emulsion with hydromulch equipment, to temporarily protect exposed soils from erosion by water and wind. ▪ WE-1 Wind Erosion Control - Wind erosion or dust control consists of applying water or other dust palliatives as necessary to prevent or alleviate dust nuisance generated by construction activities. ▪ TR-1 Stabilized Construction Entrance/Exit – A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles. ▪ TR-2 Stabilize Construction Roadway – All on-site vehicle transport routes should be stabilized immediately after grading and frequently maintained to prevent erosion and control dust. ▪ SE-1 Silt Fence – Composed of filter fabric, which has been entrenched, attached to support poles and sometimes backed by wire fence support. Silt fences promote sedimentation behind the fence of sediment-laden water. ▪ SE-3 Sediment Trap – A sediment trap is a small, excavated or bermed area where runoff for small

Table S-1, continued

IMPACT	MITIGATION MEASURE
	drainage areas can pass through allowing sediment to settle out. ▪ SE-8 Sand Bag Barriers – By stacking sand bags on a level contour, creates a barrier to detain sediment-laden water. The barrier will promote sedimentation. ▪ SE-9 Straw Bale Barrier – Place straw bales end to end in a level contour in a shallow trench and stake them in place. The bales will detain runoff and promote sedimentation. HWQ-5 The project shall prepare a Water Quality Management Plan (WQMP) prior to issuance of a grading permit in accordance with San Bernardino County guidelines for the following components: ▪ On-stream Impacts ▪ Off-stream Impacts ▪ State Water Project ▪ Riverside Canal Diversion ▪ Utility Crossing ▪ Other Related Features The WQMP(s) shall be required to address the following according to the San Bernardino County Water Program Model WQMP Guidance: ▪ Determine if the project will create a Hydrologic Condition of Concern (HCOC) based on Section 2.3 and implement HCOC stream stability studies if required. ▪ Incorporate and implement Site Design BMPs as specified in Section 2.5.1. Justification is required for any Site Design BMPs not incorporated into the Project. ▪ Incorporate and implement all Source Control BMPs as specified in Section 2.5.2, unless not applicable to the project due to project characteristics. Justification is required for any Source Control BMP not incorporated into the project. ▪ Either incorporate and implement Treatment Control BMPs as specified in Section 2.5.3, by including a selection of such BMPs into the project design; or participate in or contribute to an approved regional-based treatment program as specified in Section 3. Site Design and Source Control BMPs as specified in Sections 2.5.1 and 2.5.2 are required for projects participating in regional-based treatment programs. ▪ The combination of Site Design, Source Control and/or Treatment Control BMPs or Regional-based treatment program must address all identified pollutants and hydrologic conditions of concern.

Table S-1, continued

IMPACT	MITIGATION MEASURE
3.6 CULTURAL RESOURCES	
Paleontological Resources 3.6-1 Implementation of the proposed project may have a substantial adverse change in the significance of a paleontological resource or site or unique geologic feature. Level of Significance: Less than Significant with Mitigation.	CUL-1 The City shall prepare a paleontological resource impact mitigation program (PRIMP) for the initial excavation phase of the project. The PRIMP shall conform to the guidelines of the City of Riverside and the Society of Vertebrate Paleontology. CUL-2 A trained paleontological monitor shall be present during initial excavation activities within the project area containing known sediments likely to contain paleontological resources. The monitoring for paleontological resources shall be conducted on a half-time basis. If paleontological resources are located within excavation, the monitoring program will change to full-time. The monitor shall be empowered to temporarily halt or redirect construction activities to ensure avoidance of adverse impacts to paleontological resources. The monitor shall be equipped to rapidly remove any large fossil specimens encountered during excavation. During monitoring, samples shall be collected and processed to recover micro-vertebrate fossils. Processing shall include wet-screen washing and microscopic examination of the residual materials to identify small vertebrate remains. CUL-3 Upon encountering a large deposit of bone, salvage of all bone in the area shall be conducted with additional field staff and in accordance with modern paleontological techniques. CUL-4 All fossils collected during the project shall be prepared to a reasonable point of identification. Excess sediment or matrix shall be removed from the specimens to reduce the bulk and cost of storage. Itemized catalogs of all material collected and identified shall be provided to the museum repository along with the specimens. CUL-5 A report documenting the results of the monitoring and salvage activities and the significance of the fossils will be prepared. CUL-6 All fossils collected during this work, along with the itemized inventory of these specimens, shall be offered to a museum repository for permanent curation and storage.
Archaeological Resources 3.6-2 Implementation of the proposed project may have a substantial adverse change in the significance of an archaeological resource as defined in CEQA Guidelines §15064.5. Level of Significance: Less than Significant with Mitigation.	CUL-7 Prior to grading, an archaeological resource monitoring plan shall be developed by a qualified archaeologist. This plan shall include a grading observation schedule to be maintained when grading occurs on and offsite in upper soils to identify and further evaluate cultural resources that may be discovered in the project area. A qualified archaeologist shall be retained to attend pre-grade meetings and to monitor earth-moving activities, including clearing, grubbing, cutting, and trenching at the site. The archaeologist shall carefully inspect these areas to assess the potential for significant prehistoric or historic remains. A qualified Tribal Representative will be allowed to monitor earthmoving activities at the request of their representative tribe.

Table S-1, continued

IMPACT	MITIGATION MEASURE
	If during ground-disturbance activities, unique cultural resources are discovered that were not assessed by the archaeological report(s) and/or environmental impact report conducted prior to project approval, the following procedures shall be followed (unique cultural resources are defined, for this condition, as being multiple artifacts in close association with each other, but may include fewer artifacts if the area of the find is determined to be of significance due to its sacred or cultural importance): 1. All ground-disturbance activities within 100 feet of the discovered cultural resources shall be halted until a meeting is convened between the contractor, the archaeologist, the Native American tribal representative(s) and the Planning Director to discuss the significance of the find. 2. At the meeting, the significance of the discoveries shall be discussed and after consultation with the Native American tribal representative(s) and the archaeologist, a decision shall be made, with the concurrence of the City of Riverside, as to the appropriate mitigation (documentation, recovery, avoidance, etc.) for the cultural resources. CUL-8 If human remains are encountered, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin. Further, pursuant to Public Resource Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the County Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted within a reasonable timeframe. Subsequently, the Native American Heritage Commission shall identify the "most likely descendant." The most likely descendant shall then make recommendations and engage in consultation concerning the treatment of the remains as provided in Public Resources Code Section 5097.98. If requested, human remains may be buried by the respective tribe as close to the excavation site as possible in a location that will not be subject to future subsurface disturbance.
Historic Resources 3.6-3 Implementation of the proposed project would not have a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines § 15064.5. Level of Significance: Less than Significant with Mitigation.	CUL-9 The Riverside-Warm Creek Canal/Riverside Water Company System (Site 36-007169) shall be avoided during future construction activities, if feasible. If demolition, destruction, or removal of the feature cannot be avoided, additional recordation should be carried out to document its history and current condition, including detailed measurements and photographs of the canal, scaled drawings of a cross-section, and a profile of the gate at the end of the canal. The results of the recordation shall be documented on the appropriate DPR 523 forms and submitted to the Archaeological Information Center at the San Bernardino County Museum as

Table S-1, continued

IMPACT	MITIGATION MEASURE
	an update to Site 36-007169 for inclusion into the California Historical Resources Inventory. CUL-10: Prior to obtaining any federal funding, permits or approvals (including USACE Section 404 and 408 permits), the applicable federal lead agency shall comply with Section 106 of the National Historic Preservation Act, which requires consultation with the State Historic Preservation Officer regarding potential adverse effects to archaeological and historic resources.
Human Remains 3.6-4 Implementation of the proposed project may disturb human remains, including those interred outside of formal cemeteries. Level of Significance: Less than Significant with Mitigation.	Refer to Mitigation Measures CUL-7 and CUL-8.
3.7 GEOLOGY AND SOILS	
Surface Fault Rupture 3.7-1 Implementation of the Riverside Groundwater Aquifer Storage and Recovery System Project may expose people or structures to potential adverse effects from surface fault rupture. Level of Significance: Less than Significant with Mitigation.	GEO-1 All proposed improvements associated with development of the Riverside North Aquifer Storage and Recovery Project which cross the inferred Rialto-Colton fault shall be designed with current technology to accommodate seismic activity (such as placement of isolation valves and flexible pipe joints at a fault interface). The project shall incorporate the final design recommendations of the project geologist and/or geotechnical engineer into the design and construction of the project to reduce impacts related to seismic hazards (i.e., ground shaking, liquefaction, etc.). As standard practice, continuous geologic and geotechnical observations, testing, and mapping shall be conducted throughout site development and final design recommendations shall be provided in a grading report based on the observation and test results collected during grading. Proposed structures shall conform to the provisions of the California Building Standards Code in Title 24, which provides regulations for structural design and construction with regard to seismic safety. In addition, the City shall prepare a response/repair program in case of facility damage due to seismic activity.
Ground Shaking 3.7-2 Implementation of the proposed project may expose people or structures to potential substantial adverse effects involving strong seismic ground shaking or seismic-related ground failure. Level of Significance: Less than Significant with Mitigation.	Refer to Mitigation Measure GEO-1.

Table S-1, continued

IMPACT	MITIGATION MEASURE
Settlement and Collapse 3.7-3 Implementation of the proposed project may expose people or structures to potential substantial adverse effects from ground failure, including settlement, and collapse. Level of Significance: Less than Significant Impact.	Refer to Mitigation Measure GEO-1.
Liquefaction 3.7-4 Implementation of the proposed project would be located on a geological unit or soil that is unstable, or that would become unstable as a result of the proposed project, and potentially result in liquefaction. Level of Significance: Less than Significant with Mitigation.	Refer to Mitigation Measure GEO-1. In addition, the following mitigation is required: GEO-2 As part of the ongoing operations of the proposed project, the City shall ensure that the groundwater levels within the project area will be held at a depth of no shallower than 20 feet below ground surface (bgs) to avoid impacts associated with liquefaction.
Soil Erosion 3.7-5 Implementation of the proposed project may result in substantial wind or water soil erosion or the loss of topsoil, either on- or off-site. Level of Significance: Less than Significant with Mitigation.	Refer to Mitigation Measure GEO-1. In addition, the following mitigation is required: GEO-3 All earthwork and construction activities conducted as part of the project will be done in such a manner so as to prevent any obstruction of storm drains and downstream channels, resulting from increased erosion and sedimentation. As part of this process, the following will be required: (1) proper erosion control techniques would be used during grading and construction in accordance with the requirements of all applicable jurisdictional codes (i.e., Stormwater Pollution Prevention Plan (SWPPP)); (2) any required permits have been obtained (e.g., RWQCB 401 Water Quality Certification, USACE 404 Individual Permit, CDFG 1602 Streambed Alteration Agreement (SAA)); and, (3) temporary measures are designed to maintain the existing drainage flows and collect excess surface runoff and sediment resulting from the construction activities. GEO-4 In areas susceptible to soil erosion, sediment control shall be addressed in an Erosion Control Plan, to be reflected in facility plans, specifications and estimates. The Erosion Control Plan shall include, but not be limited to, the following: ▪ Placement of sandbags along the perimeter of a project site prior to initial grading if grading is to be undertaken during the rainy season (October to March); ▪ Minimization of the length of time that soils remain exposed to the elements; ▪ Chemical soil binders, in a manner approved by the City of Riverside if determined to be required for erosion control in areas not planned for development until subsequent phases. GEO-5 Any modification to the existing levees will require review and approval by the USACE, through the USACE Section 408 permitting process, to ensure the structural integrity and safety of the levee. The Section 408 Permit and other related

Table S-1, continued

IMPACT	MITIGATION MEASURE
	permits/approvals for levee modification will be required prior to any levee construction.
Expansive Soils 3.7-6 Implementation of the proposed project may pose a risk to people and structures due to the presence of expansive soils. Level of Significance: Less than Significant Impact.	Refer to Mitigation Measure GEO-1.
3.8 TRANSPORTATION AND CIRCULATION	
Existing Capacity 3.8-1 Implementation of the proposed project may cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections). Level of Significance: Less than Significant with Mitigation.	TRA-1 Traffic Management Plan (TMP). Contract documents shall incorporate the following TMP provisions, for the purpose of minimizing temporary construction-related traffic impacts: a) Duration – The City shall implement the TMP for the duration of site construction activities. b) Peak Hour Off-site Haul Trips – Prior to construction, the contractor shall either determine or obtain peak hour intersection levels of service along the haul route(s), in consultation with the affected local jurisdiction(s). The contractor shall utilize the haul route that affects the fewest intersections operating at an unacceptable Levels of Service as defined by adopted thresholds of the local jurisdiction(s). If the project triggers a significant temporary impact upon local intersections (usually defined as 50 or more peak hour trips for intersections operating at an unacceptable level of service), the contractor shall either reduce trips during the affected peak hour or avoid peak hour travel through the affected intersection(s) to avoid a temporary significant impact. One way that peak hour trips could be reduced would be to utilize larger capacity haul trucks, as shown in *Table 3.8-2* (larger capacity trucks allow either a reduced total construction time or would allow fewer trucks during the peak hour while carrying the same volume of material). c) Queuing on Public Streets - All queuing and stacking of haul trucks shall be managed on-site to minimize impacts on public roads. This may require an extension of the onsite driveways and stacking area for the trucks at the project site. If determined necessary by the City of Colton, the contractor shall deploy flagmen at project site entrance access points on the nearest public street. d) Local Agency Coordination – the contractor shall advise the local affected jurisdiction(s) along affected haul route(s) at least 30 days prior to construction. TRA-2 Construction Schedule. To minimize the length of the time the haul route activity will impact the surrounding communities for both noise and traffic, the haul route shall be allowed to occur on Saturdays (7AM-7PM), which will reduce the haul duration by approximately three weeks (alternately, if deemed preferable by the local jurisdiction, the construction

Table S-1, continued

IMPACT	MITIGATION MEASURE
	time saved by Saturday hauling could be used to reduce peak hour trips and keep the total construction schedule the same). In addition, to further reduce the total time required for construction, the contractor will be permitted to begin light site work and preparation for major grading and hauling activities as early as 6AM Monday-Friday, provided that site construction work does not exceed any applicable local noise regulations. Construction staging and site work shall occur as far as practicable from existing residential units along Fogg Street.
Level of Service 3.8-2 Implementation of the proposed project may exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways. Level of Significance: Less than Significant Impact with Mitigation.	Refer to Mitigation Measures TRA-1 and TRA-2.
Emergency Access 3.8-3 Implementation of the proposed project may result in inadequate emergency access. Level of Significance: Less than Significant Impact.	No Mitigation is Required.
Alternative Transportation Policies, Plans, or Programs 3.8-4 Implementation of the proposed project may create a conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks). Level of Significance: Less than Significant Impact.	No Mitigation is Required.
3.9 AESTHETICS, LIGHT, AND GLARE	
Scenic Vistas and Scenic Resources 3.9-1 Implementation of the proposed project may have a substantial adverse effect on the scenic vista or resource including, but not limited to, trees, rocks, outcroppings, and historic buildings within a State scenic highway. Level of Significance: Less than Significant with Mitigation.	AES-1 Prior to grading, the City shall show the temporary construction equipment staging areas within the project site through the duration of construction. Materials, heavy-duty equipment, and debris piles shall be clustered in order to minimize visual impacts during construction. At a minimum, these construction equipment and debris clusters shall be located at a distance of 100 feet from adjacent residence and shall be visually screened. AES-2 Interpretive signage shall be installed in the immediate vicinity of the dam adjacent to the Santa Ana River Trail. The sign shall depict the purpose and intent of the dam and demonstrate how the dam will operate. The content of the sign shall include both narrative and illustrative components. The sign shall be architecturally enhanced.

Table S-1, continued

IMPACT	MITIGATION MEASURE
Visual Character 3.9-2 Implementation of the proposed project may substantially degrade the existing visual character or quality of the site and its surroundings. Level of Significance: Less than Significant with Mitigation.	Refer to Mitigation Measures AES-1 and AES-2.
Light and Glare 3.9-3 Implementation of the proposed project may create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area. Level of Significance: Less than Significant with Mitigation.	AES-3 All outdoor lighting, aside from street lighting, shall be low to the ground shielded and/or hooded in order to obstruct shining onto adjacent properties or street and to minimize light intrusion into surrounding habitat. Low-pressure sodium vapor lighting or overhead high-pressure sodium vapor lighting with shields or cut-off luminaries shall be utilized. AES-4 A coordinated landscaping plan (that may also enhance any existing natural vegetation) shall be incorporated into construction bid documents and approved by the City, prior to commencement of construction activities. The plan shall address and minimize adverse glare impacts on pedestrian and motorist traveling along the proposed Fogg Street extension resulting from standing pools of water within the off-stream recharge basins. Landscaping shall provide adequate screening to attenuate glare impacts from the off-stream recharge basins only, and plant types shall be appropriate to the biological setting.
3.10 WATER SUPPLY	
Groundwater 3.10-1 Implementation of the proposed project may substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted). Level of Significance: Less than Significant Impact.	No Mitigation is Required.
Violation of Western Judgment 3.10-2 Implementation of the proposed project may result in a violation of the 1969 Western Judgment. Level of Significance: Less than Significant Impact.	No Mitigation is Required.
Conflict with Water Rights 3.10-3 Implementation of the proposed project may conflict with the availability of water rights within the Upper Santa Ana River watershed for use by the project partners for the capture of local surface water. Level of Significance: Less than Significant Impact.	No Mitigation is Required.

Table S-1, continued

IMPACT	MITIGATION MEASURE
3.11 CUMULATIVE IMPACTS	
Impact CUMUL-1: Cumulative Changes in Existing Land Use, Agriculture, Population and Housing. Level of Significance: No Impact.	No Mitigation is Required.
Impact CUMUL-2: Cumulative Effects Related to Hazards and Hazardous Material. Level of Significance: Less than Significant with Mitigation.	Refer to Mitigation Measures in Section 3.2, *Noise.*
Impact CUMUL-3: The proposed project and related cumulative projects would result in significant air quality impacts. Level of Significance: Significant Unavoidable Impact.	Refer to Mitigation Measures AQ-1 through AQ-4.
Impact CUMUL-4: Cumulative Loss of Sensitive Biological Resources. Level of Significance: Less than Significant.	No Mitigation is Required.
Impact CUMUL-5: Cumulative Impacts related to Hydrology and Water Quality. Level of Significance: Less than Significant with Mitigation.	Refer to Mitigation Measures in Section 3.5, *Hydrology and Water Quality.*
Impact CUMUL-6: Cumulative Increase in Impacts on Cultural Resources. Level of Significance: Less than Significant with Mitigation.	Refer to Mitigation Measures in Section 3.6, *Cultural Resources.*
Impact CUMUL-7: Cumulative Exposure of People or Structures to Geologic and Seismic Hazards. Level of Significance: Less than Significant with Mitigation.	Refer to Mitigation Measures in Section 3.7, *Geology and Soils.*
Impact CUMUL-8: Cumulative Reduction of Roadway Capacity, Traffic Safety, and Emergency Access. Level of Significance: Less than Significant with Mitigation.	Refer to Mitigation Measures in Section 3.8, *Transportation and Circulation.*
Impact CUMUL-9: Cumulative Impacts on Scenic Views and Visual Character. Level of Significance: Less than Significant with Mitigation.	Refer to Mitigation Measures in Section 3.9, *Aesthetics, Light, and Glare.*
Impact CUMUL-10: Cumulative Impacts on Water Supply. Level of Significance: Less than Significant.	No Mitigation is Required.

1.0 INTRODUCTION AND PURPOSE

1.1 Purpose of the EIR

According to Section 15121 of the State *CEQA Guidelines*, an EIR is an informational document that is written to inform public agency decision-makers and the public of the significant environmental effects of a proposed project. The purpose of this Draft Environmental Impact Report (Draft EIR) for the proposed Riverside North Aquifer Storage and Recovery Project ("project") is to review the existing conditions at and in the vicinity of the project site; identify and analyze the potential environmental impacts; and suggest feasible mitigation measures to reduce significant adverse environmental effects, as described in Chapter 2.0, *Project Description*. The potential impacts include both temporary construction-related effects and the long-term effects of development, operation, and maintenance of the project, as described in Chapter 2.0, *Project Description*.

The intent of this EIR is to address the potential project impacts utilizing the most-current and detailed plans, technical studies, and related information available. This EIR will be used by the City of Riverside (City), other responsible agencies, interested parties, and the general public to evaluate the potential environmental impacts of the proposed project (refer to Section 2.7, *Required Permits and Approvals*, for a list of responsible agencies and project approvals).

The EIR includes three main components which are analyzed throughout this document:

> **Groundwater Recharge Basins, State Water Project (SWP) Pipeline, and Inflatable Dam:** These three components of the project are analyzed at a project level, based on the amount of detail and information provided during project evaluation.

The City determined that a Project EIR is the appropriate CEQA document for the project, in accordance with Section 15161 of the State *CEQA Guidelines*. The intent of the Project EIR review process is to examine the environmental impacts of a specific development project. The Project EIR will examine all phases of the project including planning, construction, and operation.

1.2 Compliance with CEQA

The City of Riverside is the lead agency under CEQA, and is responsible for preparing the Draft EIR for the project (State Clearinghouse No. 2009101105). As part of the environmental review process, a copy of the expanded Notice of Preparation (NOP) was sent to those agencies defined as responsible agencies under CEQA. This EIR has been prepared in conformance with CEQA (California Public Resources Code Section 21000 et seq.), California *CEQA Guidelines* (California Code of Regulations, Title 14, Section 15000 et seq.), and the rules, regulations, and procedures for implementation of CEQA, as adopted by the City of Riverside. The principal State *CEQA Guidelines* sections governing content of this document are Sections 15120 through 15132, "Article 9: Contents of Environmental Impact Reports."

The EIR evaluates the issues and impacts identified as potentially significant in the NOP, in addition to issues identified in the public scoping meeting (which was held on August 10, 2009 at both the City of Riverside, Public Utilities Department, 3901 Orange Street, Riverside, CA 92501 and at the City of Colton, 650 N. La Cadena Drive, Colton, CA 92324); submitted NOP responses (refer to Appendix A, *Expanded Notice of Preparation, Public Scoping Materials, and NOP Comment Letters*); and information obtained throughout the EIR

process. The City determined that the project may result in significant adverse environmental effects, and therefore, requires an EIR. This determination is based on the preliminary review of available project information and the expanded NOP. As part of the review process, the Draft EIR is subject to a 45 day public review period by responsible and concerned agencies and interested parties. Following this period, responses to comments received from these agencies will be prepared. The Final EIR will consist of the Draft EIR (or a revision of the draft), comments received on the Draft EIR, and responses to those comments.

In accordance with Section 15121 of CEQA, a primary purpose of this EIR is to provide decision-makers and the public with specific information regarding the environmental effects associated with the project, identify ways to minimize the significant effects of the project, and describe reasonable alternatives to the project. As a means of reducing significant impacts where feasible, mitigation measures are provided, which may be adopted as Conditions of Approval. In addition, this EIR is the primary reference document in the formulation and implementation of a mitigation monitoring program for the project.

The City of Riverside, which has the principal responsibility for processing and approving the project, and other public agencies (refer to Section 2.7, *Required Permits and Approvals*) may use the information in this EIR, along with other information that may be presented during the CEQA process, as part of their decision-making process. Environmental impacts are not always mitigated to a level considered less than significant; in those cases, impacts are considered significant unavoidable impacts. In accordance with Section 15093(b) of the State *CEQA Guidelines*, if a public agency approves a project that has significant impacts that are not substantially mitigated (i.e., significant unavoidable impacts), the agency shall state in writing the specific reasons for approving the project, based on the Final EIR and any other information in the public record for the project. This is termed, per Section 15093 of the State *CEQA Guidelines*, a "Statement of Overriding Considerations."

This document analyzes the environmental effects of the project to the degree of specificity appropriate to the current proposed actions, as required by Section 15146 of the State *CEQA Guidelines*. The analysis considers the activities associated with the project, to determine the short-term and long-term effects associated with their implementation. This EIR discusses both direct and indirect impacts of the project, as well as cumulative impacts associated with other past, present, and reasonably foreseeable future projects. CEQA requires preparation of an objective, full disclosure document to inform agency decision-makers and the general public of the direct and indirect environmental effects of the proposed action; provide mitigation measures to avoid or substantially lessen the significant effects; and identify and evaluate reasonable alternatives that could avoid or substantially lessen one or more of such effects.

1.3 Scope of the EIR

An expanded NOP was completed on July 27, 2009 to determine the potential environmental impacts of the project (refer to Appendix A). The City of Riverside distributed the expanded NOP, which was filed with the State of California Office of Planning and Research on July 27, 2009. The NOP comment period closed on August 27, 2009, following the State-mandated 30-day public review period.

This EIR addresses potential significant impacts in the following areas as identified during the EIR preparation process, including public and agency comments received on the NOP, as well as comments received from the public during separate scoping meetings. In addition to CEQA-mandated discussions, environmental issues evaluated within this EIR are as follows:

- Land Use and Relevant Planning (3.1)

- Noise (3.2)
- Air Quality, Odor and Climate Change (3.3)
- Biological Resources (3.4)
- Hydrology and Water Quality (3.5)
- Cultural Resources (3.6).
- Geology and Soils (3.7)
- Transportation and Circulation (3.8)
- Aesthetics, Light and Glare (3.9)
- Water Supply (3.10)
- Cumulative Impacts (3.11)

Based on significance criteria, the effects of the project have been categorized as either "no impact", "less than significant impact," "less than significant with mitigation," or "significant unavoidable impact" (refer to Section 3.0, *Overview of EIR Methodology and Significance Determinations)*. Mitigation measures are recommended for potentially significant impacts, to avoid or lessen impacts. In the event the project results in significant impacts with implementation of mitigation measures, the decision-makers are able to approve the project based on a "Statement of Overriding Considerations." This determination would require the decision-makers to provide a discussion of how the benefits of the project outweigh identified unavoidable impacts. The State *CEQA Guidelines* provide in part the following:

a) CEQA requires that the decision-maker balance the benefits of a proposed project against its unavoidable environmental risks in determining whether to approve the project. If the benefits of the project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered "acceptable."

b) Where the decision of the public agency allows the occurrence of significant effects that are identified in the Final EIR but are not mitigated, the agency must state in writing the reasons to support its action based on the Final EIR and/or other information in the record. This statement may be necessary if the agency also makes the finding under Section 15091 (a)(2) or (a)(3) of the CEQA Guidelines.

c) If an agency makes a Statement of Overriding Considerations, the statement should be included in the record of the project approval and should be mentioned in the Notice of Determination (Section 15093 of the CEQA Guidelines).

1.4 Content of the EIR

The environmental issues determined to have potential impacts in the expanded Notice of Preparation and the issues identified for inclusion in the EIR during the public review period have been incorporated into this EIR. For each environmental issue, the EIR first describes the environmental setting (current conditions), then discusses and analyzes the potential related impacts that could be caused as a result of project implementation. For each potentially significant impact, the EIR specifies ways to mitigate the impact. In

addition, the EIR contains a description of the project, description of the environmental setting, identification of cumulative impacts, and an analysis of alternatives to the project.

The City shall implement mitigation measures of the EIR found to be feasible by decision-makers, related to any impact found to be potentially significant. Project design features are incorporated into the discussion of mitigation measures in that they will be required to be implemented, or have an appropriate environmental equivalent similar to the adopted mitigation measure that would achieve the same result. "Environmental equivalent" shall mean any measure or procedure, subject to the approval of the City that would have the same or superior result as the project design feature, and would have the same or superior effect on the environment. The City, in conjunction with any appropriate agencies, shall determine the adequacy of any proposed environmental equivalent. As with mitigation measures, the City would ensure compliance with an environmental equivalent through the mitigation monitoring process to actively track how mitigation is being implemented and that the intended results are successfully achieved.

1.5 Use and Organization of the EIR

It is the intent of this EIR to enable the City and other responsible agencies and interested parties to evaluate the environmental impacts of the project (refer to Section 2.7, *Required Permits and Approvals*, for a list of responsible agencies having permit approval responsibilities for the project). It is the intent of this EIR to provide environmental clearance for the project, such that the City will be able to utilize this EIR to satisfy CEQA requirements for project-related permits or approvals.

The Draft EIR is organized into 10 sections:

- **Section S,** *Executive Summary*, provides a brief project description and summary of the environmental impacts, and the mitigation measures proposed to reduce each impact.
- **Section 1.0,** *Introduction and Purpose*, provides CEQA compliance information.
- **Section 2.0,** *Project Description*, provides the project location, background and history, environmental setting (including on and offsite use), project characteristics, project objectives, purpose and need, project phasing, alternative descriptions, and permits and approvals that are required for the project.
- **Section 3.0,** *Overview of EIR Methodology and Significance Determinations,* discusses the existing conditions for each environmental issue area. This section describes the methodology for significance determination; identifies short-term and long-term environmental impacts of the project; recommends feasible mitigation measures to reduce the significance of impacts; and identifies areas of unavoidable significant impacts after mitigation. This section also discusses those impacts resulting with the proposed project, in combination with other projects in the vicinity.
- **Section 4.0,** *Growth Inducing Effects*, discusses the significant environmental changes that would result from the project, should it be implemented; growth-inducing impacts; and cumulative impacts associated with the City's General Plan buildout and concurrent surrounding projects.
- **Section 5.0,** *Alternatives to the Proposed Action*, describes alternatives to the project, some of which may be considered during project deliberations, and analyzes impacts for each resource by alternative.
- **Section 6.0,** *Significant Irreversible Environmental Changes,* discusses the significant irreversible environmental changes that would be involved in the proposed project should it be implemented. These changes may include, for example, uses of nonrenewable resources during the initial and

continued phases of the project that because of a large commitment of such resources, makes their removal or non-use thereafter unlikely; or, primary and secondary impacts of a project that would generally commit future generations to similar uses.

- **Section 7.0,** *Effects Found Not to Be Significant*, explains potential impacts that were determined not to be significant in the Expanded NOP.
- **Section 8.0,** *Significant Unavoidable Environmental Effects,* describes any significant unavoidable impacts, including those which can be mitigated but not reduced to a level of insignificance.
- **Section 9.0,** *Organizations and Persons Consulted*, identifies the lead and responsible agencies, preparers of the EIR, and federal, State, and local agencies, and other organizations, and individuals consulted during the preparation of the EIR.
- **Section 10.0,** *Bibliography*, identifies reference sources utilized for the EIR.

1.6 Public Scoping Process

Pursuant to State and local CEQA Guidelines, the City initiated the project environmental review process and distributed the NOP on July 27, 2009 for a 30-day public review period; refer to Appendix A, *Expanded Notice of Preparation, Public Scoping Materials, and NOP Comment Letters*. A public scoping meeting was held to discuss the proposed project on August 10, 2009 at both the City of Riverside, Public Utilities Department, 3901 Orange Street, Riverside, CA 92501 and the City of Colton, 650 N. La Cadena Drive, Colton, CA 92324.

1.7 Incorporation by Reference

In accordance with State *CEQA Guidelines*, Section 15150, this EIR incorporates by reference the following documents:

City of Colton General Plan (Updated August 20, 2013)

The *City of Colton General Plan* is a policy-planning document that provides a long-term outlook for the future of the City of Colton. The City of Colton General Plan study area takes into consideration areas outside the City's current City limits and its Sphere of Influence (SOI), in recognition of the interrelationships between land use and other issues affecting the City and surrounding lands. Goals and objectives contained within the City of Colton General Plan were developed to guide existing and future land use, circulation, and open space decisions within the City.

The City recently updated several Elements of its General Plan to ensure relevancy of the issues addressed with regard to existing conditions and future growth anticipated for the City. These include the Land Use, Mobility, and Housing Elements. The updated Elements were adopted by the City Council on August 20, 2013 (Resolution No. 61-13). This document is available online at http://www.ci.colton.ca.us/index.aspx?NID=313. Information contained within the General Plan was incorporated herein, because it is the primary source for City policies, objectives, and citywide planning analysis.

Location: City of Colton, Planning Department - 659 N. La Cadena Drive, Colton, CA 92324

City of Colton General Plan Environmental Impact Report (Updated August 20. 2013)

The *City of Colton General Plan Environmental Impact Report (EIR)* summarizes potential environmental impacts associated with the implementation of the *City of Colton General Plan*, including growth-inducing and cumulative impacts. Information from the General Plan EIR is incorporated herein, as it contains intensive information concerning impacts associated with the implementation of City policies and objectives. This impact analysis is pertinent to the Riverside North Aquifer Storage and Recovery Project EIR, because it includes impacts that will occur within the project area due to the implementation of the General Plan.

As stated above, the City recently updated the Land Use, Mobility, and Housing Elements of the General Plan. To evaluate potential environmental impacts resulting with implementation of the revised General Plan Elements, the General Plan EIR was also updated for purposes of consistency. The *City of Colton General Plan Update: Land Use, Housing, and Mobility Elements EIR: Volume III – Final* (State Clearinghouse No. 2012031037), dated May 2013, was adopted by the City Council on August 20, 2013 (Resolution No. 61-13).

Location: City of Colton, Planning Department - 659 N. La Cadena Drive, Colton, CA 92324

City of Riverside General Plan 2025 (November 2007)

The *City of Riverside General Plan 2025* is a comprehensive, long-term planning document that provides an outlook for the physical development of the area within its jurisdiction and of any land outside its boundaries that bears relations to its land use planning activities. The *City of Riverside General Plan* was adopted in 2007. The *General Plan* defines the framework by which the City's physical and economic resources are to be managed over time. The goals and policies contained in the General Plan are provided to guide the City's decision-makers. The seven state-mandated elements are included in the General Plan, including Land Use, Circulation, Housing, Conservation, Open Space, Safety, and Noise. This document is available online at http://www.riversideca.gov/planning/gp2025program/. Information contained within the General Plan was incorporated herein, because it is the primary source for City policies, objectives, and citywide planning analysis.

Location: City of Riverside, Planning Division – 3900 Main Street, Riverside, CA 92522

City of Riverside General Plan 2025 Program Environmental Impact Report (November 2007)

The *City of Riverside General Plan 2025 Program General Plan Environmental Impact Report (EIR)* summarizes potential environmental impacts associated with the implementation of the *City of Riverside General Plan*, including growth-inducing and cumulative impacts. Information from the General Plan EIR is incorporated herein, as it contains intensive information concerning impacts associated with the implementation of City policies and objectives. This impact analysis is pertinent to the Riverside North Aquifer Storage and Recovery Project EIR, because it includes impacts that will occur within the project area due to the implementation of the General Plan. This document is available online at http://www.riversideca.gov/planning/gp2025program/.

Location: City of Riverside, Planning Division - 3900 Main Street, Riverside, CA 92522

City of Riverside 2010 Urban Water Management Plan (adopted July 2011)

The City of Riverside Urban Water Management Plan is a planning-level document which evaluates a 25-year projection of future water supplies and demand. One of the documents' chief objectives is to maximize local water resources and minimize imported water. The City's water service area totals 75 square miles, of which 70 are within the City limits. Information contained within the UWMP was incorporated herein, because it is the primary source for City water demand and use estimations and objectives. This document is available online at: http://www.riversideca.gov/utilities/water-uwmp.asp.

Location: City of Riverside, Public Utilities Department – 3750 University Avenue, 3rd Floor, Riverside, CA 92501

Western Municipal Water District Updated Integrated Regional Water Management Plan Report (May 2008)

The Western Municipal Water District Integrated Regional Water Management Plan Report is a planning-level document which addresses long-range water supply planning in order to meet the future demands in a rapidly growing area, but also to meet the water supply reliability needs of the present as well as the future. The essence of this IRWMP is the identification and evaluation of water management strategies that could increase local water supply, thereby improving water supply reliability. The IRWMP also addresses local and regional water quality issues. This document is available online at http://www.wmwd.com/DocumentCenter/Home/View/350. Information contained within the IRWMP was incorporated herein, because it is the primary source for water planning information for Western and its member agencies.

Location: Western Municipal Water District of Riverside County – 14205 Meridian Parkway, Riverside, CA 92518

Santa Ana River Water Right Applications for Supplemental Water Supply Environmental Impact Report (SCH 2002071062, certified March 22, 2007)

The applications divert and put to beneficial use a total of up to 200,000 acre-feet of water per year from the Santa Ana River. The regional water agencies (Muni and Western) manage groundwater and surface water supplies in San Bernardino and Riverside counties. With the completion of the Seven Oaks Dam, Muni and Western are able to increase water supply reliability by reducing dependence on imported water; develop and deliver new, local, high quality, long-term water supply needed to meet part of anticipated future demands; and, expand operational flexibility by adding infrastructure and varying sources of water, thereby providing Muni and Western with greater capability to match varying supply and demand.

Location: San Bernardino Valley Municipal Water District – 380 East Vanderbilt Way, San Bernardino, CA 92408, and Western Municipal Water District of Riverside County – 14205 Meridian Parkway, Riverside, CA 92518

Upper Santa Ana River Watershed Integrated Regional Water Management Plan Report (January 2015)

The Upper Santa Ana Water Resources Association members prepared this Integrated Regional Water Management Plan (IRWMP). The plan concentrates on water management issues for users within the Upper Santa Ana River Watershed. The purpose of the plan is to fulfill current water management requirements while developing water supply reliability and furthering the use of local and imported resources. Implementation of this IRWM Plan will assist the region with optimizing the management and use of water resources in the region while protecting water quality from degradation. Information contained within the IRWMP was incorporated herein, because it is the primary source for water planning information for San Bernardino Valley Municipal Water District and its member agencies.

Location: San Bernardino Valley Municipal Water District – 380 East Vanderbilt Way, San Bernardino, CA 92408

Additional documents cited in the DEIR are noted in the applicable EIR section, including extensive additional policy planning, regulatory and CEQA documents that provide context and impact analysis with respect to cumulative impacts within the Upper Santa Ana River watershed.

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2.0 PROJECT DESCRIPTION

2.1 Project Location

The proposed Riverside North Aquifer Storage and Recovery Project ("project") is located in the southern portion of the City of Colton and north of the City of Grand Terrace in southwestern San Bernardino County; refer to *Exhibit 2.0-1, Regional Location Map*. The project site is located south of Interstate 10 and East M Street, west of Interstate 215 and the Santa Ana River, and east of the Union Pacific Railroad right-of-way. The project abuts the Santa Ana River as it trends south and bends westward through this part of the watershed. Roadways providing vehicular access to the project site include East Congress Street, Fogg Street, M Street, and/or Mt. Vernon Avenue.

2.2 Background and History

1969 Orange County and Western Judgments

The settlement of the Santa Ana River water rights issues in 1969 was initiated by the complaint filed by Orange County Water District (OCWD) on October 18, 1963, seeking an adjudication of water rights against substantially all water users in the area tributary to Prado Dam within the Santa Ana River watershed, but excluding the area tributary to Lake Elsinore. Thirteen cross-complaints were filed in 1968, extending the adjudication to include substantially all water users in the area downstream from Prado Dam. With some 4,000 parties involved in the case (2,500 from the Upper Area and 1,500 from the Lower Area), many believed that every effort should be made to arrive at a settlement and physical solution in order to avoid enormous and unwieldy litigation.

The physical solution accomplishes, in general, a regional intra-basin allocation of the surface flow of the Santa Ana River System. The Judgment leaves to each of the major hydrologic units within the basin the determination and regulation of individual rights therein and the development and implementation of its own water management plan subject only to compliance with the physical solution.

The Orange County Judgment designates four public agencies to represent the interests of the Upper and Lower Areas and gives them the responsibility to fulfill the obligations set forth in the Judgment, including the implementation of the physical solution. The Lower Area is represented by OCWD. The Upper Area is represented by SBVMWD, WMWD, and Inland Empire Utilities Agency (IEUA), formerly the Chino Basin Municipal Water District (CBMWD).

In the 1969 Orange County Judgment, all parties, whether situated in the Upper Area or Lower Area, had or claimed rights to the use of a portion of the water supply of the Santa Ana River system. The Judgment concluded that water users and other entities in the Lower Area have rights to receive an average annual supply of 42,000 acre-feet of base flow at Prado, together with the right to all storm flow reaching Prado Reservoir. Water users in the Upper Area have rights to divert, pump, extract, conserve, store and use all surface and groundwater supplies originating within the Upper Area without interference or restraint by Lower Area users, so long as the Lower Area receives the water to which they are entitled under this Judgment. Total flows at Prado have ranged from a minimum of 51,743 acre-feet per year to a maximum of 637,568 acre-feet per year since 1970. The proposed project is an attempt to capture, store, and beneficially use a portion of available storm flows that originate in the Upper Santa Ana Watershed. Water captured by the proposed project will be appropriated under Order 1649 and WMWD and SBVMWD are therefore entitled to its use.

Paragraphs VII through XII of the Western-San Bernardino Judgment describe provisions related to the further implementation of the Orange County Judgment. Such provisions include potential groundwater replenishment obligations. The proposed Riverside North Aquifer Storage and Recovery Project could assist with meeting any future groundwater replenishment obligations.

Upper Santa Ana River Water Rights Application

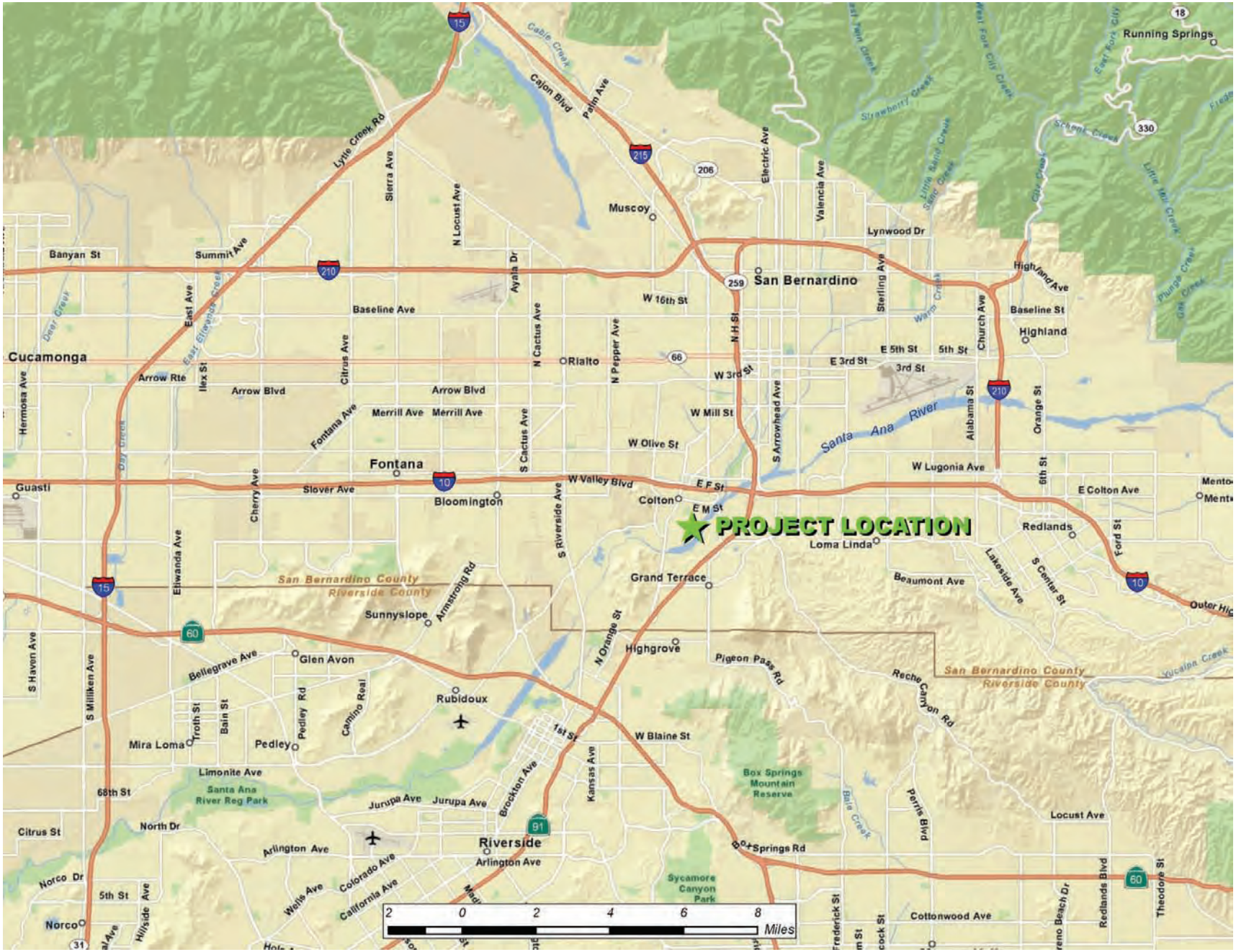
The State Water Resources Control Board (SWRCB), in 1989 and again in 1998, declared the Santa Ana River "fully appropriated." Under this determination, additional water rights appropriations would not be granted without first changing the status of the River.

In 1991, the SBVMWD challenged this determination by submitting an application to secure additional water rights from the Santa Ana River made available by construction of the Seven Oaks Dam. SBVMWD argued that the Seven Oaks Dam would create an opportunity to capture additional surface water and put it to beneficial use. The SBVMWD submitted this application on behalf of itself and WMWD for the appropriation of 100,000 acre-feet per year from the Santa Ana River (first application submitted).

The SWRCB adopted measures to re-analyze the fully appropriated stream status of the Santa Ana River. Shortly thereafter, SBVMWD and WMWD submitted a request to revise the declaration (first petition) alongside the original 1991 Water Rights Application.

In 1999, Orange County Water District (OCWD) submitted their own petition to secure water rights from the Santa Ana River. Subsequently, the SWRCB conducted hearings in 1999 on both petitions. The SWRCB concluded that SBVMWD provided evidence demonstrating that regional growth, the attendant increased runoff, and increased releases of treated wastewater had augmented flows in the Santa Ana River watershed.

SBVMWD argued that the Seven Oaks Dam would increase the supply of water for diversion during wet years. In 1999, The SWRCB amended the fully appropriated stream status pursuant to Order WR 2000-12 based on the evidence presented in this hearing. The Order permitted the water rights applications submitted by SBVMWD, WMWD, and OCWD to be processed. However, no determination was reached as to the amount of water that would be made available for appropriation to the agencies.



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RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

Regional Location Map

Exhibit 2.0-1

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SBVMWD and WMWD submitted a second application along with a second petition to secure water rights for 100,000 acre-feet per year (this quantity was in addition to the previously requested 100,000 acre-feet per year under the first application). This application was based on updated hydrologic analyses presented during the 1999 hearings. The analyses showed that during certain wet years more than 200,000 acre-feet would be available for appropriation in the Santa Ana River. Based on this evidence, SWRCB issued Order WR 2002-06, revising the fully appropriated stream status pursuant to the second petition (along with similar petitions by other agencies), and accepted the following applications:

- Chino Basin Watermaster (Application Number 31369) – Diversion of 97,000 acre-feet per year to groundwater storage;
- San Bernardino Valley Water Conservation District (Application Number 31371) - Groundwater and surface storage of 55,464 acre-feet annually;
- City of Riverside (Application Number 31372) – Direct diversion of 75 cubic feet per second throughout the year for a total maximum direct diversion of 41,400 acre-feet per year;
- Four minor applications for diversions of up to 102 acre-feet per year throughout the year from the west and east forks of Cable Creek within the Santa Ana River watershed; and,
- SBVMWD/WMWD (Application Number 31165 – Deferred) / SBVMWD/WMWD (Application Number 31370 – Deferred) – Right to use a maximum of 100,000 acre-feet per year for direct use underground storage (second application). After extensive hearings in May of 2007, the SWRCB granted water rights permits on four of the above-mentioned applications pursuant to Decision 1649 (SBVMWD and WMWD), Decision 1646 (Chino Basin Watermaster), Order WR-2008-0024 (City of Riverside), and Decision 1647 (Orange County Water District).

SWRCB's Decision 1649 partially approves SBVMWD and WMWD's water rights application to appropriate water by direct diversion and storage to groundwater basins for beneficial use within the boundaries of the areas administered by SBVMWD and WMWD, in San Bernardino and Riverside Counties. This decision permits SBVMWD and WMWD to divert and store up to 198,317 acre-feet per water year (October 1 to September 30) subject to prior water rights and subject to a series of terms and conditions (e.g. mitigation measures and, monitoring and reporting requirements). This decision appropriates water in the Santa Ana River and its tributaries upstream of the Seven Oaks Dam.

SWRCB's Decision 1646 conditionally approves Chino Basin Watermaster's water rights application to appropriate water in San Bernardino and Riverside Counties by direct diversion to groundwater basins within the boundaries of the areas administered by the Watermaster. This decision permits the Watermaster to divert up to 68,500 acre-feet per calendar year subject to prior water rights and subject to a series of terms and conditions (e.g. monitoring and reporting requirements). This decision appropriates water in the creeks (i.e. Deer, Day, Etiwanda, San Sevaine, Chino, San Antonia, and Cucamonga) all of which are tributaries to the Santa Ana River upstream of the Prado Dam.

SWRCB's Order WR-2008-0024 conditionally approves the City of Riverside's Wastewater Change Petition WW-0045 to change the place of use and purpose of use of a portion of the treated wastewater discharged from the City of Riverside's Regional Water Quality Control Plant (RWQCP). This order requires the City of Riverside to discharge a minimum of 25,000 acre-feet per year from the RWQCP to the Santa Ana River and allows the City to divert any additional treated effluent for beneficial reuse pursuant to petition WW-0045.

SWRCB's Decision 1647 partially approves OCWD's water rights application to appropriate water by storage in various basins within OCWD's boundaries in Orange and Riverside Counties. This decision permits OCWD to store up to 362,000 acre-feet per calendar year subject to prior water rights and subject to a series of terms and conditions (e.g. mitigation measures and, monitoring and reporting requirements). This decision appropriates water in the Santa Ana River at two points, one near River Road and one at Prado Dam, and six points of diversion and re-diversion below the Prado Dam along the Santa Ana River.

Riverside Basin Groundwater Management Plan

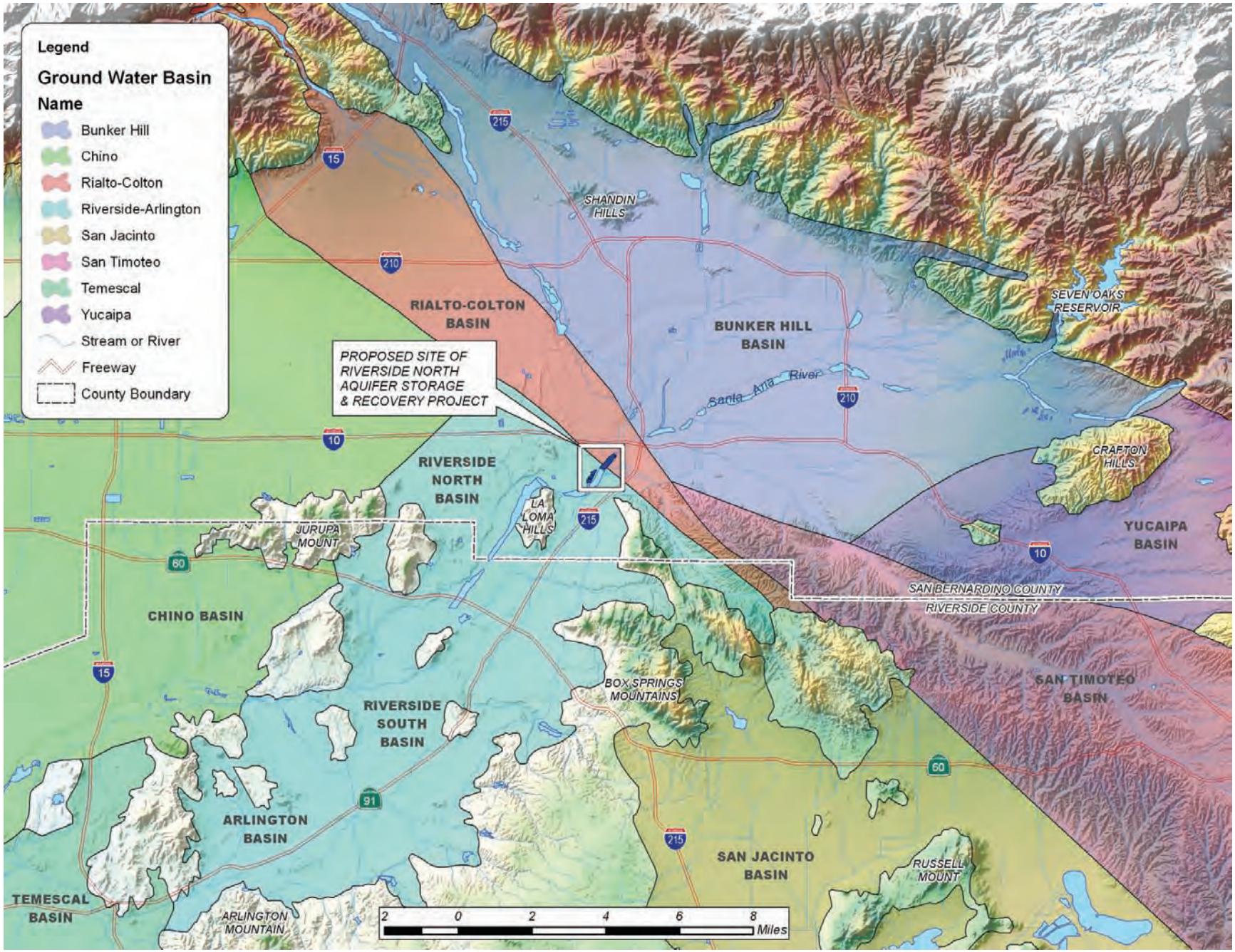
The City of Riverside and WMWD completed the Riverside Basin Groundwater Management Plan to provide a planning framework to operate and manage the Riverside groundwater basin in a sustainable manner and to ensure a long-term reliable supply for beneficial uses among all stakeholders in the basin. The Groundwater Management Plan analyzed current and projected production in the Riverside basin from all groundwater producers in the basin along with groundwater quality and groundwater levels. The plan recommended a set of objectives and elements that when implemented, are intended to meet components of a Groundwater Management Plan as defined in California Water Code Section 10753.8. In addition to the Groundwater Management Plan, the Riverside-Arlington Groundwater Flow Model (RAGFM) was completed to assist in developing the Groundwater Management Plan and to model future projects that will assist in management of the basin. The Riverside North Aquifer Storage and Recovery Project was described in the Implementation section of the Management Plan and was also modeled using the RAGFM to determine the benefits and impacts of the project. The Riverside North Aquifer Storage and Recovery Project was identified as a potential project to enhance the use of groundwater from the Riverside Basin to meet future water demands.

Project Agreement 16

In March of 1992, the City of San Bernardino, Orange County Water District, SBVMWD, and WMWD agreed to conduct a study to develop conjunctive-use alternatives for integrating the management of imported water, recycled water, and stormwater for water users that have access to groundwater in the Riverside and Colton groundwater basins.[1] In July of 2001, Project Agreement 16 – Riverside/Colton Water Resources Management Task Force prepared a reconnaissance-level investigation of the Riverside/Colton Basins Water Resources Management Program.[2] This document outlined the four proposed alternatives from the Plan initiated in 1992, the current conditions of the Riverside/Colton Basins (refer to *Exhibit 2.0-2, Groundwater Basins Map*), new project alternatives based on current conditions, and a recommended implementation strategy to achieve these alternatives.

1 Project Agreement 16, Riverside/ Colton Water Resources Management Task Force.

2 Project Agreement 16: Reconnaissance-Level Investigation Riverside/Colton Basins Water Resources Management Program Final Report, Prepared by Wildemuth Environmental, Inc., July 2001.



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RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

Groundwater Basins Map

Exhibit 2.0-2

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As a result of these previous studies and current environmental and economic factors, the City of Riverside, SBVMWD, and WMWD, have embarked on implementation of a project (i.e. the Riverside North Aquifer Storage and Recovery Project) that meets the intent of one of the alternatives originally conceived in the Project Agreement 16 Final Report (2001).

Current EIR Process

The City issued a Request for Proposals in June 2008 for the preparation of this Environmental Impact Report to analyze the Riverside North Aquifer Storage and Recovery Project (proposed project). In December 2008, the City of Riverside entered into an agreement with fellow stakeholders, WMWD and SBVMWD, to each fund one-third of the proposed project EIR.

The City, during initial stages of design (early 2008), conducted a dam location alternative analysis to determine the most-suitable location for the alignment of the dam. The selected inflatable dam location is discussed in Section 2.4, *Project Design Parameters*.

2.3 Environmental Setting

The project proposes to recharge the groundwater aquifers and improve water quality in the Riverside and Colton basins, while reducing dependence on imported water. The project site is located south of the Mt. Vernon Avenue Bridge, where the Santa Ana River transitions from a concrete-lined channel to a soft bottom river. The soft bottom allows for the infiltration of water through the ground surface to recharge the underlying groundwater aquifers. The project would include in-stream impoundment behind a proposed inflatable dam.

This proposed in-stream impoundment area would be located along a segment of the Santa Ana River that contains engineered levees containing grout aprons on the west and east river banks. These grout aprons may need to be modified to U.S. Army Corps of Engineer (USACE) standards before recharge could occur. A 42-inch diameter steel casing adjacent to the inflatable dam is proposed, which would allow utility crossing at this location. Additionally, four in-channel access ramps would be installed to allow site access for construction and periodic maintenance.

The project also possesses an off-stream component, which would include three (3) to eight (8) roughly consecutive basins where water impounded behind the dam could be diverted to replenish the groundwater aquifer. The existing State Water Project (SWP) connection located on the eastern bank of the Santa Ana River adjacent to the railroad right-of-way would be extended, giving the project partners the future option to recharge the proposed basins with imported water or convey imported water into the Riverside Canal. The recharge of imported water is not being proposed at this time; however, the extension of the SWP pipeline as a future option is included.

The project also possesses a diversion structure and pipeline to convey surface water to the Riverside Canal. A single diversion structure is proposed for this project, which would convey surface water from behind the inflatable dam to both the off-stream basins and to the Riverside Canal. The diversion structure will be located just upstream of the inflatable dam. The existing Riverside Canal pipeline conveys non-potable groundwater to the headworks of the Riverside Canal which generally trends north-south through the project area between the proposed off-stream basins and the Santa Ana River. The Riverside Canal pipeline (or a new pipeline or pipelines) would be used to convey surface water from the diversion structure to the Riverside Canal.

Land within the project area to the west of the Santa Ana River is presently vacant.

The proposed off-stream water impoundment area encompasses approximately 44.1 acres of contiguous land, all of which is undeveloped. Currently, the project site consists of vacant land with several dirt roads and groundwater wells owned and operated by the City of Riverside. In addition, a Southern California Edison substation is located to the northeast of the project area. Electrical transmission tower easements associated with the facility traverse the project area and surrounding properties in a north-south direction. The project site is currently surrounded by undeveloped properties to the north and west and the Cooley Ranch Planned Development to the east (on the east side of the Santa Ana River); refer to *Exhibit 2.0-3, Project Vicinity Map*, and *Exhibit 2.0-4, Proposed Project Limits*.

The General Plan designation and zoning for the project site is Open Space-Resources. According to the City of Colton's *General Plan*, the project site is proposed as a Regional Park; refer to *Exhibit 2.0-5, General Plan Land Use Designation Map*.

In-Stream Recharge Component

The proposed inflatable dam will be located about 1,200 feet downstream of the Mt. Vernon Avenue crossing. The in-stream recharge basin will form behind the inflatable dam and will occupy an area of approximately 24 acres of the Santa Ana River. The reach of the Santa Ana River in the project area consists of soft bottom and USACE riprap levees. The project area is located within the floodplain of the Santa Ana River. The impoundment area is surrounded by the following land uses:

North: Railroad right of way, vacant land, Santa Ana River, and open space with trails

South: Low-rise apartments, Santa Ana River, and open space with trails

East: Santa Ana River, office buildings, open space with trails

West: Vacant land

The Santa Ana River located within the boundaries of the in-stream recharge basin contains four plant communities, which include Riversidean Alluvial Fan Sage Scrub, Mulefat Scrub, Southern Willow Scrub, and Ornamental; refer to Section 3.4, *Biological Resources*, for detailed discussion. Additionally, a concrete structure of unknown purpose is located downstream of the proposed inflatable dam along a Southern California Edison easement.

Off-Stream Recharge Component

The off-stream recharge facility will occupy an area of approximately 44.1 acres of land on the west side of the Santa Ana River's western levee. The off-stream basin location consists of undeveloped land. The proposed location of the recharge basins is surrounded by the following land uses:

North: Duplexes, high density single family homes, and vacant land

South: Vacant land

East: Vacant land

West: Manufacturing, storage warehouse, and vacant land

The locations of the proposed off-stream recharge basins are largely characterized by a mixture of native and non-native vegetation marked by various degrees of disturbance. The area comprising this location was denuded and disturbed by existing unimproved dirt roads and paths. While most of the area proposed to be off-stream recharge basin area is mostly dry during non-storm conditions, evidence of hydrology flow (i.e., drift lines, incised drainage swale and sediment deposits) was observed within an ephemeral drainage located west of the off-stream recharge basin area. This indicates that, during storm events, the storm water will occasionally flow through the ephemeral drainage and through portions of the recharge basin area.

The ephemeral drainage (Drainage A) would be rerouted within RPU's property (APN 016338107) to continue to function around the recharge basins. An earthen swale along (and within) the northwest and west property boundaries of RPU's property (APN 016338107) would be constructed. The earthen swale would connect the existing ephemeral drainage on Colton's property (APN 016338101) to the existing ephemeral drainage on Colton's nearby property (016338102). The new swale would protect the hydraulic integrity of the ephemeral drainage and the drainage would continue to maintain sensitive habitat.

2.4 Project Design Parameters

An initial dam location alternative analysis was conducted to determine the most-suitable location for the alignment of the inflatable dam; refer to *Exhibit 2.0-6, Dam Alternative Locations*. The City ultimately selected the dam alignment that would be located approximately 1,200 feet downstream of the Mt. Vernon Avenue crossing. This alignment would include a total in-stream recharge area of approximately 24 acres and would produce an approximate average annual recharge volume of 6,290 acre-feet (infiltration rate = 3 feet/day). The proposed project would have the capacity to recharge and divert up to 200 cfs (i.e. in-channel up to approximately 35 cfs, off-channel up to approximately 65 cfs, and diversions to the Riverside Canal up to approximately 100 cfs). The approximate dam length and depth would be 810 feet and 6 feet, respectively. Additionally, a minimal length of diversion pipeline would be required under this Alignment to convey water impounded on the upstream side of the dam to off-stream basins and to the existing 42 inch Riverside Canal pipeline. The average annual off-stream recharge volume would be approximately 3,874 acre-feet (infiltration rate = 5 feet/day). The average annual diversion to the Riverside Canal pipeline would be approximately 3,860 acre-feet. The total anticipated average annual capture (i.e. recharge plus diversion) by this project is approximately 14,024 acre-ft for the hydrologic period of 1960 to 2012. This dam location may require the construction of up to 3,700 feet of grout curtains and/or sheet pilings in USACE levees, if deemed necessary.

2.5 Project Objectives

The objectives of the project include the following:

- Aquifer Storage and Recharge Objectives
  - Recharge the groundwater aquifers in the Riverside and Colton basins
  - Help achieve the requirements of the 1969 Western Judgment
  - Improve groundwater quality of the Riverside and Colton basins
  - Create drought storage
  - Reduce dependence on imported water

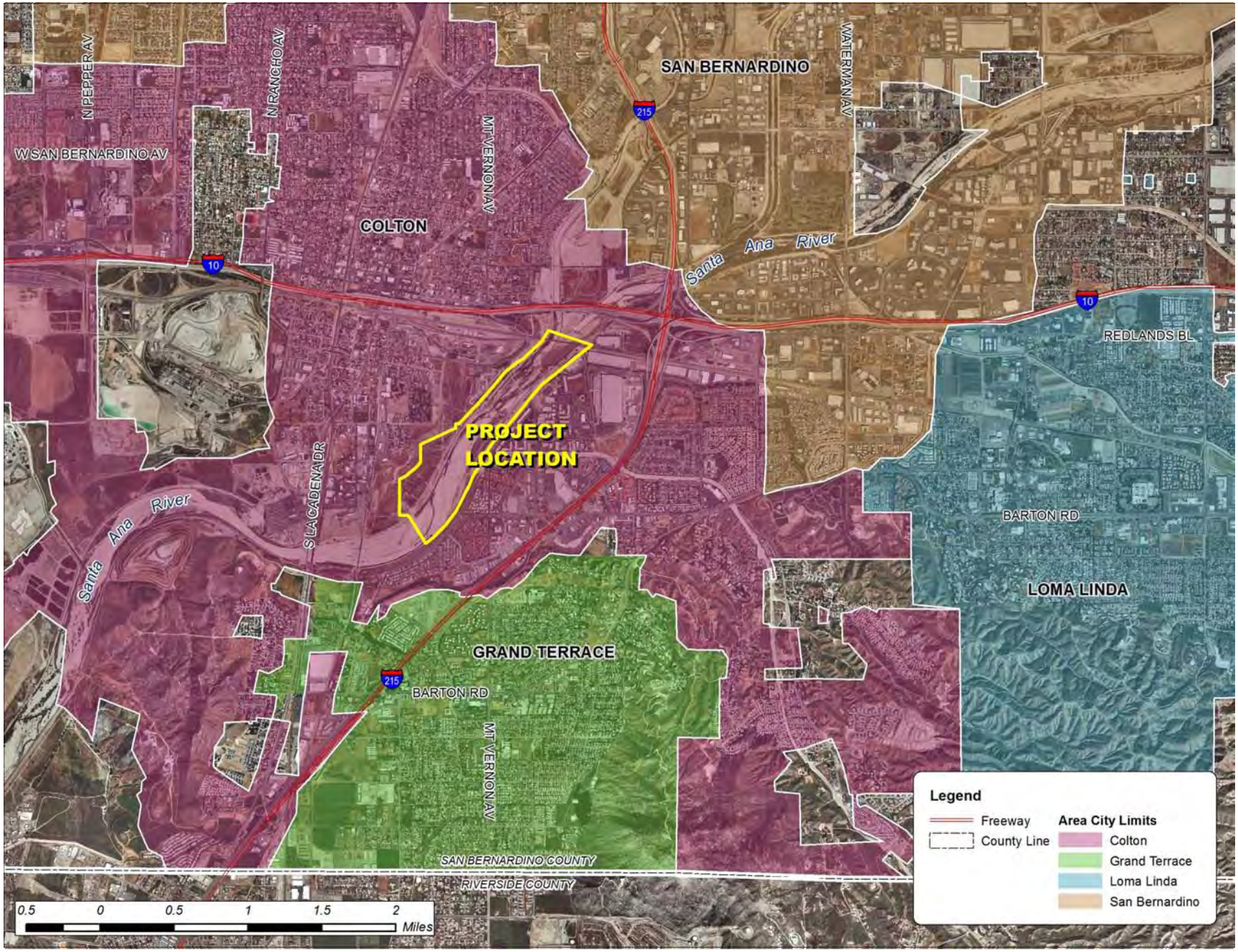
  - Maximize local groundwater production
  - Maximize capture and use of local surface water
  - Provide seasonal storage
- Utility Connection Objectives:
  - Create a utility corridor connection between the west and east side of the Santa Ana River

2.6 Project Description

The Riverside North Aquifer Storage and Recovery Project is an undertaking by the City of Riverside and its project partners: SBVMWD and WMWD. The project is designed to recharge the groundwater aquifers of the Riverside and Colton groundwater basins by capturing storm flow from the Santa Ana River. The project's intended purpose includes recharge of the Riverside and Colton basins, improvement of the groundwater quality in the Riverside and Colton basins, reduced dependence on imported water through increased storage, assurance that historical levels of production are maintained, to increase future water supplies from Riverside and Colton groundwater basins, and the creation of additional groundwater recharge basins along the Santa Ana River within the project area. In addition, the proposed project would replenish groundwater in close proximity to the City of Colton Wells 30 and 31, Riverside Highland Water Company wells located east of the river, and the City of Riverside's Flume wells, which convey supply directly to the John W. North Water Treatment Plant. Lastly, the recharge associated with this project may assist SBVMWD in meeting its obligations under the 1969 Western Judgment (i.e. to maintain water levels in the Colton and Riverside North Basins) and WMWD in meeting its obligation under the 1969 Western Judgment (i.e., deliver imported water in the Colton and Riverside Basins if the excess extractions by water users within Western and other obligations exceed Western's Base Rights and other credits in the Basins and if Valley District is not meeting its Base Flow obligation at the Riverside Narrows). *Exhibit 2.0-7, Annual Water Levels – Year 1931 to 2014*, shows the annual water levels for the period of 1931 to 2014 at the three index wells used by the Western-San Bernardino Watermaster to determine potential recharge obligations of SBVMWD in the Colton and Riverside North basins.

It is anticipated that the inflatable dam will capture a portion of the flows from most of the storm/rain events in the region that are tributary to the project area. Once flows within the Santa Ana River exceed 1,500 cfs, the rubber dam will be lowered to let these flows continue unhindered downstream. The dam would be raised again when flows decrease to less than 1,500 cfs. The in-stream and off-stream recharge basins will be capable of capturing a portion of the flows (approximately 200 cfs) and the in-stream basin will allow excess flows to overflow the rubber dam and travel downstream.

The City of Riverside issued an Amended Notice of Preparation on December 1, 2009. In that notice, the project was described as a conjunctive use project, including the construction of groundwater recharge facilities (inflatable dam, groundwater recharge basins, and conveyance pipelines), and also certain features requested by the City of Colton (passive recreational trail, potential Fogg St. Realignment, and related features). These non-conjunctive use elements are no longer part of the project. This EIR addresses the water-supply related project elements summarized below.



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RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

Project Vicinity Map

Exhibit 2.0-3

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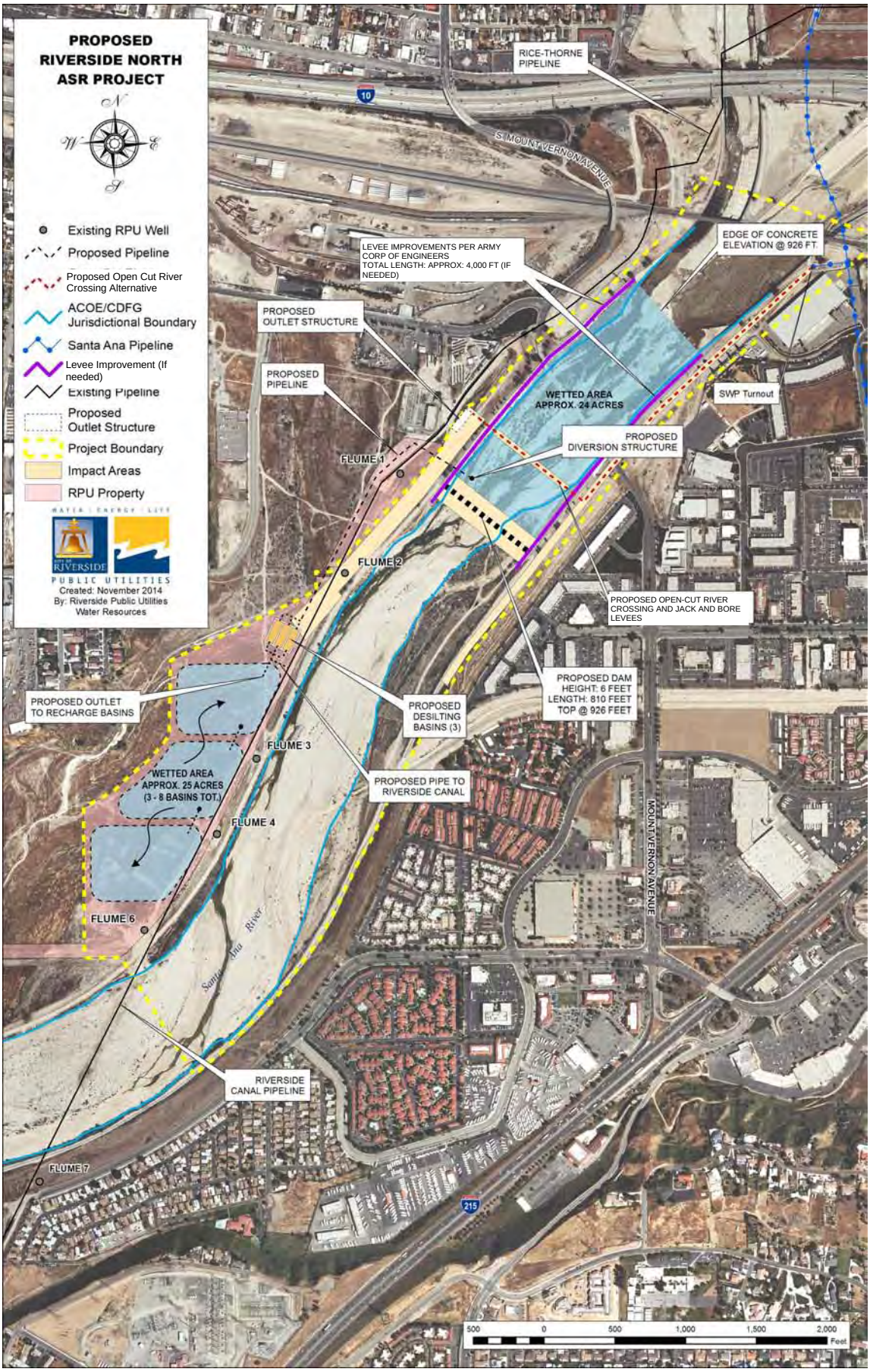

RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

Proposed Project Limits

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Exhibit 2.0-4

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RIVERSIDE NORTH AQUIFER STORAGE
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General Plan Land Use Designation Map

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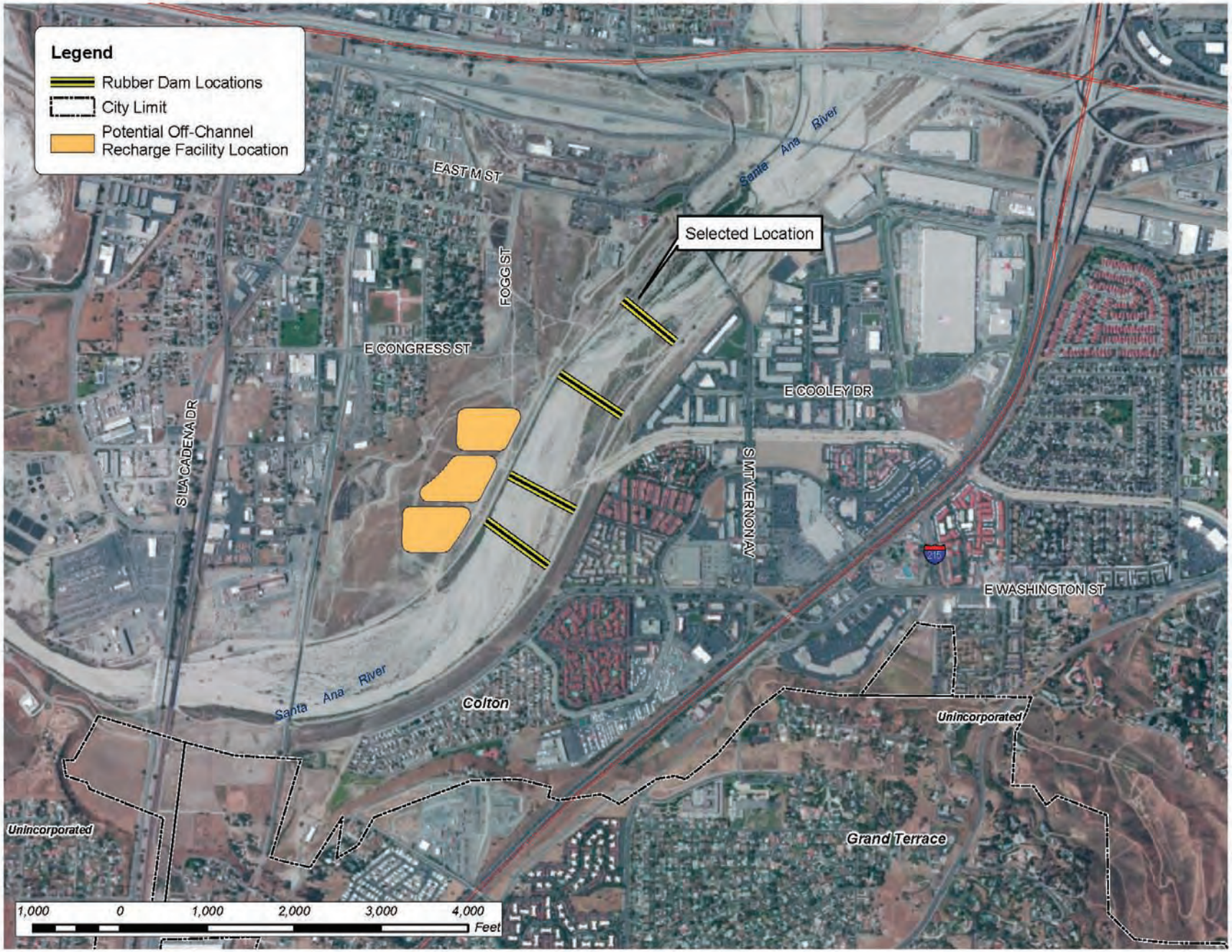

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RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

Dam Alternative Locations

Exhibit 2.0-6

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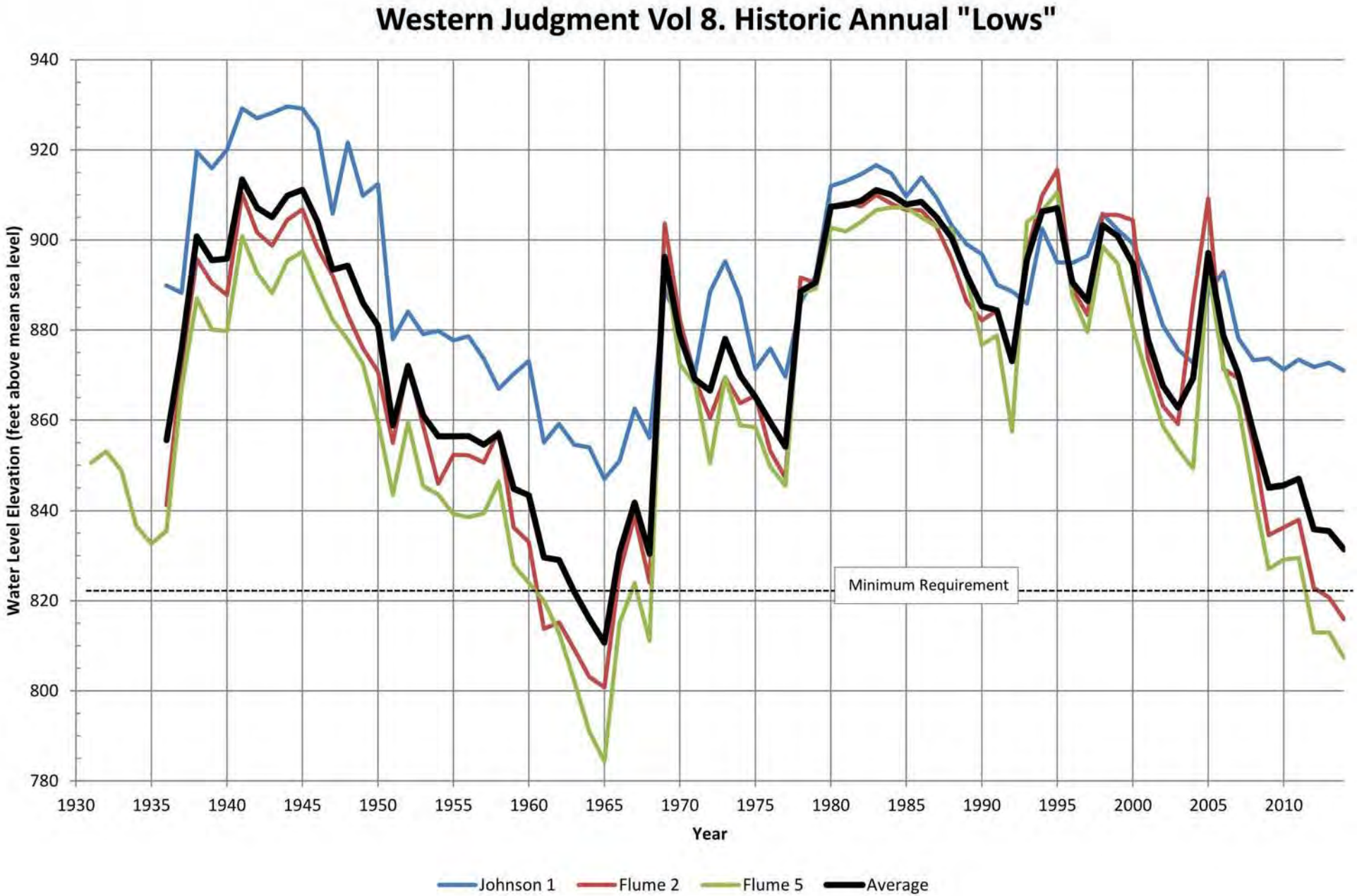

RIVERSIDE NORTH AQUIFER STORAGE
AND RECOVERY PROJECT - EIR

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Annual Water Levels - Year 1931 to 2014

Exhibit 2.0-7

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The Riverside North Aquifer Storage and Recovery Project is characterized by five main elements that would be developed as part of project implementation; refer to *Exhibit 2.0-4, Proposed Project Limits*. The individual components are summarized in *Table 2.0-1, Components of the Proposed Project*, and further detailed below:

Table 2.0-1 Components of the Proposed Project

Component	Proposed Features to be Constructed	Size (approx.)
In-Stream Recharge	▪ Inflatable dam measuring approximately 810 feet wide by 6 feet tall/deep ▪ Inflatable dam will be constructed with a series of adjoining bladders that would be between piers, which would span the river ▪ Approximately 6,290 acre-feet of average annual recharge ▪ Up to 100 ft. of rip rap energy dissipater ▪ Up to 2,000 LF of modified or new levees downstream, if necessary ▪ Up to 3,700 LF of modified USACE levees upstream, if necessary ▪ Diversion structure with slide gates impoundment area to recharge basins and Riverside Canal pipeline ▪ Construction of four in-channel access ramps	24 acres
Off-Stream Recharge	▪ 3 to 8 roughly sequential basins ranging from 3 to 11 feet deep ▪ Approximately 3,874 acre-feet of average annual recharge ▪ Desilting facility (desilting basin and/or screening equipment) ▪ 60-in. and a 72-in pipeline connecting the diversion structure to the recharge basins and Riverside Canal pipeline	44.1 acres
Diversion to the Riverside Canal	▪ Conveyance facilities ▪ Approximately 3,860 acre-feet of average annual diversions	-
State Water Project (SWP) Pipeline	▪ 36-in.diameter pipeline, 3,500 LF, and valves connecting the SWP pipeline to the Riverside Canal pipeline. ▪ Pipeline will be constructed utilizing jack and bore methods underneath the levees and open trenching across the river bottom to a depth below scour limits.	-
Utility Crossing	▪ 42-in. steel casing across/under the Santa Ana River	-

In-Stream Recharge Component

The in-stream recharge component would be constructed within the Santa Ana River channel. This component would provide opportunities for groundwater recharge to occur within the Santa Ana River channel as water is impounded behind an inflatable dam. To accomplish this, the project proposes the construction of an inflatable dam across the Santa Ana River channel, approximately 1,200 feet downstream of the Mt. Vernon Avenue crossing or about 2,200 feet north of the confluence of Reche Canyon Creek and the Santa Ana River. During construction, any flows from storms (if any) would be rerouted around the work sites via temporary construction diversion facilities that would be required to comply with permit requirements, safety measures and environmental compliance regulations. The dam would be raised and lowered depending on the amount of water flowing down the river. Current project concepts indicate that the proposed dam would span approximately 810 feet across the Santa Ana River and dam height is expected to be about 6 feet. The dam will consist of a series of adjoining bladders, where each segment is terminated at an intermediate pier ultimately spanning the width of the Santa Ana River. The dam could be fully inflated in approximately 15 to 30 minutes. However, due to the relatively larger span of this dam, the higher end of this range is anticipated. Deflation of the dam would take approximately 45 minutes to one hour; one hour is assumed due to the large span of the dam. The dam would be inflated and deflated manually by an operator;

however, other automatic safety devices that would inflate/deflate the dam would be implemented per the requirements of U.S. Army Corps of Engineers and San Bernardino County Flood Control District.

For planning purposes, the area anticipated to be covered by water impounded behind the inflatable dam is approximately 24 acres. The proposed inflatable dam (refer to *Exhibit 2.0-6, Dam Alternative Locations*) would result in approximately 6,290 acre-feet of average annual recharge assuming three feet of infiltration per day.

The in-stream basin is proposed to operate when flows in the Santa Ana River are below 1,500 cfs. The combined in- and off-stream basins are capable of infiltrating about 100 cfs based on the assumption that the in-stream basin infiltrates at a rate of three feet per day and the off-stream basins infiltrates at a rate of five feet per day. The diversions to the Riverside Canal would be limited to an additional 100 cfs.

Potential improvements to the existing USACE levees and construction of the diversion structure would take approximately four to six months if improvements are deemed necessary. Construction of the inflatable dam on the Santa Ana River would take approximately six to twelve months. This is likely to span over two years to avoid construction activities during the winter and early spring. Access for construction will be taken off of Mt. Vernon Avenue. Impacts from construction (temporary and/or permanent) will extend approximately 200 feet from the dam location (100 feet on either side of the dam). In addition to construction of the inflatable dam and potential levee improvements, other project design features that would be required as part of the in-stream recharge component of the project include the following:

- Earthwork to level the Santa Ana River channel bottom upstream and just downstream of the proposed dam location;
- Removal of an existing concrete structure of unknown purpose along the SCE easement downstream of the proposed inflatable dam (if feasible);
- Construction of conveyance facilities for water diversion through the west levees north of the proposed recharge basins;
- Construction of four in-channel ramps (two on each side of river) that will provide vehicular access for construction and operational maintenance of the dam;
- Construction of one 42-inch steel casing for the utility crossing across (approximately 810 feet in length); and,
- Miscellaneous riprap/ energy dissipater devices downstream of the proposed dam location to reduce the potential for erosion at the base of the dam structure. For planning purposes, the project assumes approximately 100 feet downstream of the proposed dam structure would be required to accommodate these materials/ devices.

Levee Modification

As previously stated, the proposed dam location may require the construction of approximately 3,700 feet of grout curtains and/or sheet pilings in the engineered USACE levees and/or other modifications depending on the USACE requirements. The grout curtain may be required to help minimize the potential for levee failure due to the increased ponding time resulting from the in-stream basin. Presently, the USACE levees are designed for flood control purposes only. The USACE will evaluate what, if any, modifications will be required for the project.

Off-Stream Recharge Component

The project would construct groundwater recharge basins on the west side of the river, behind the existing levees currently forming the river's western edge. When the proposed dam is fully inflated, a portion of the water impounded behind the dam would be diverted into the proposed off-stream recharge basins through conveyance facilities to replenish the groundwater aquifer within the Colton/Riverside groundwater basins. The diversion structure would require modification of the western levee north of the proposed basin area and upstream of the dam. The preliminary design of the groundwater recharge basins involve three to eight individual recharge basins arranged roughly sequentially encompassing approximately 25 acres. It is anticipated that these basins would range from three to eleven feet deep and be connected in series with pipes, open channels, and gate structures. The 44.1-acre off-stream site will be graded/improved to minimize the upland flows from entering the off-stream recharge basins and associated facilities.

Approximately 0.75 acres of desilting basins will be constructed upstream of the off-channel recharge basins so that water would flow initially through the desilting basins before entering the recharge basins. To ensure that the basins do not overflow and impact adjacent areas, including re-entering the Santa Ana River itself, inlet control (i.e. gate valves) will be used to limit the amount of water diverted from the Santa Ana River. The gate valves, along with the level transmitters located within the basins, would be tied to SCADA to ensure that the basins do not overfill. On- and off-stream basins where ponding will occur will be cleaned out on a yearly basis with beach cleaners to remove fine grain silt which slows infiltration.

Utilizing a conservative estimation, the expected quantity of export resulting from excavation of the on- and off-stream basins would be approximately 400,000 cubic yards (this quantity would be predominately generated by the off-stream basins). RPU will explore opportunities to remove/export undesirable downstream material and enhance areas downstream from the dam structure through consultation with the appropriate regulatory agencies.

Diversion to the Riverside Canal

As previously stated, the project would construct conveyance facilities to divert a portion of the water impounded behind the dam into the existing Riverside Canal pipeline. A single diversion structure would be used for the diversions to the off-stream recharge basins and to the Riverside Canal pipeline. All water diverted from the Santa Ana River will initially flow through the desilting facilities (likely parallel desilting basins) before being directed to the off-channel recharge basins or facilities to pump to the Riverside Canal pipeline.

Other Project Components

State Water Project Pipeline

The State Water Project component of the proposed project includes the construction of conveyance facilities (36-inch diameter pipeline, energy dissipater, and valves) to connect the proposed groundwater recharge basins to the State Water Project turnout located on the east bank of the river channel, south of the Union Pacific Railroad right-of-way. *Exhibit 2.0-4, Proposed Project Limits*, identifies a preliminary alignment option for this project component. It is anticipated that this project component would cross the river approximately 400 feet upstream of the inflatable dam location, or another suitable location depending on design refinement. A portion of the pipeline would be aligned on the landward side of the levee from the State Water Project Turnout to the point that the pipeline would cross the river, then the pipeline would be constructed

underneath the levees (on both sides of the river) via jack and bore construction methods. The pipeline would be buried underground and constructed across the river bottom via open trenching to a depth below scouring limits. Although this project component will provide the opportunity to use State Water Project water for groundwater recharge in the future, the project is not proposing to recharge imported water at this time. At a later date, if the project partners find that they would recharge groundwater utilizing imported water, they will comply with any and all necessary regulations and requirements. However, the extension of the SWP pipeline as a future option is included and addressed in the EIR where appropriate.

Project Access

Roadways providing vehicular access to the project site include East Congress Street, Fogg Street, M Street, and/or Mt. Vernon Avenue. Once on site, vehicles would travel on existing disturbed trails that are located throughout the project area, to the extent possible. Four ramps would be constructed, two on each side of the river, to provide vehicular access to the river bottom for construction and operational maintenance of the dam.

Utility Crossing

As part of the dam construction, the project would include the placement of a 42-inch diameter steel casing across the Santa Ana River, located beneath the inflatable dam. This casing would contain multiple conduits allowing a utility crossing under the Santa Ana River.

Right-of-Way Acquisition

The diversion structure and conveyance facilities connecting the in-stream recharge basin upstream of the dam to the off-stream basins and the Riverside Canal pipeline will cross a Southern California Edison (SCE) easement. The project will require the acquisition of an easement though this SCE easement. Additionally, the in-stream recharge basin, dam, and associated facilities will be located on San Bernardino County Flood Control owned property, and an easement or operating agreement will be required.

Routine Maintenance

The inflatable dam would be lowered when peak flows in the Santa Ana River are greater than 1,500 cfs. When flows in the Santa Ana River are less than 1,500 cfs, the dam would be inflated to capture up to 200 cfs. Fine sediment and sand that may build up behind the dam in the recharge zone of the Santa Ana River channel would need to be maintained. During the summer months when flow is minimal or absent, maintenance activities would include the removal of silt and excess sand deposits and vegetation control.

Sediment entering the diversion and conveyance facilities would be removed by the desilting basin. Removal of soils containing fine sediment would be removed periodically (one or two times per year) from the desilting basin. The basin bottoms may need to be scarified during clean-up to maintain infiltration capacity.

A control house containing an air compressor and generator, used to inflate the dam, and other associated mechanical equipment would be located on the western bank adjacent to the western abutment of the dam. Maintenance of this equipment would be performed by the City of Riverside personnel. The SWP pipeline may also require periodic inspection of valves and energy dissipaters.

Project Phasing

It is anticipated that the proposed project will be approved and the environmental documentation will be certified in 2016. The exact construction start date is dependent upon regulatory permits. Once permits are granted by resource agencies, construction could begin anytime thereafter (approximately five-plus years out). The project is currently fully funded.

2.7 Required Permits and Approvals

The City of Riverside is the Lead Agency for the project and has discretionary authority over the project. To implement this project, the following agreements, permits, and approvals would need to be obtained, as identified in *Table 2.0-2, Required Permits and Approvals*.

Table 2.0-2 Required Permits and Approvals

Agreements, Permits, and Approvals	Granting Agency	Agency Type
Current Permits/Approvals		
Environmental Impact Report (EIR) Certification	City of Riverside, Public Utilities Board	Lead Agency
Project Financing/Operating Agreements	Project Partners: • Riverside Public Utilities • San Bernardino Valley Municipal Water District • Western Municipal Water District	Responsible Agency
Water Rights Permit/Approval	State Water Resources Control Board	Responsible Agency
Clean Water Act Section 401 Water Quality Standards Certification	Regional Water Quality Control Board, Santa Ana Region	Responsible Agency
NPDES Permit	Regional Water Quality Control Board, Santa Ana Region	Responsible Agency
Discharge of Dredge or Fill Material into Water (Section 404 Permit) ▪ Clean Air Act Conformity Determination ▪ State Historic Preservation Office – Section 106 Compliance	Army Corps of Engineers	Responsible Agency
Approval to Modify Levees and Grade Stabilizer (Section 408 Permit)	Army Corps of Engineers	Responsible Agency
Endangered Species Act (ESA) Compliance (Section 7 Consultation)	United States Fish and Wildlife Service	Responsible Agency
California Endangered Species Act (CESA) Compliance	California Department of Fish and Wildlife	Trustee Agency
Section 1600 Streambed Alteration Agreement	California Department of Fish and Wildlife	Trustee Agency

Table 2.0-2, continued

Agreements, Permits, and Approvals	Granting Agency	Agency Type
Encroachment Permit	San Bernardino County Flood Control District	Responsible Agency
Encroachment Permit *(if grading impacts occur outside of the City-owned property)*	City of Colton	Responsible Agency

3.0 OVERVIEW OF EIR METHODOLOGY AND SIGNIFICANCE DETERMINATIONS

3.0.1 Existing Conditions, Environmental Impacts, and Mitigation Measures

This EIR is a Project EIR, as defined in Section 15161 of the State *CEQA Guidelines*. This chapter discusses the potential environmental impacts that would result in the approval and implementation of the proposed project. The following environmental topics are evaluated in Sections 3.1 through 3.10: *Land Use and Relevant Planning; Noise; Air Quality; Odor and Climate; Biological Resources; Hydrology and Water Quality; Cultural Resources; Geology and Soils; Transportation and Circulation; Aesthetics, Light and Glare*; and, *Water Supply*. Section 3.11 addresses the potential cumulative impacts associated with the environmental topics evaluated in Sections 3.1 through 3.10.

Existing Conditions

Existing conditions are the on-site and (as relevant) regional environmental conditions in existence on December 1, 2009 [the time of publication of the Amended Notice of Preparation (NOP)], pursuant to State *CEQA Guidelines* Section 15125. The NOP establishes the "baseline" for purposes of the EIR. However, given the elapsed time since NOP release, the City has, where appropriate, conducted supplemental field studies and updated appropriate technical information to reasonably reflect best available information.

Environmental Analysis

Thresholds of Significance

The environmental analysis first specifies the significance thresholds [i.e., the condition or state, which if reached or surpassed by the proposed project, would signify a negative physical change to the environment (environmental impact)].

Environmental Impacts and Mitigation Measures

Impacts

This subsection describes changes that would potentially result to the existing physical environment should the proposed project be approved, in accordance with State *CEQA Guidelines* Sections 15126 and 15126.2. Pursuant to State *CEQA Guidelines* Section 15143, the discussion focuses on the significant effects that would potentially result if the project is approved.

Impacts are numbered sequentially within each section. For example, impacts discussed in Section 3.1 are numbered 3.1-1, 3.1-2, etc.; impacts in Section 3.2 are numbered 3.2-1, 3.2-2, etc. Impacts are stated first and concluded with a summary description of the level of significance of the impact. A discussion that provides supporting analysis and justification for the impact determination is presented second. If mitigation is required to reduce the significance of the impact, it is stated third. Finally, if mitigation is required, a concluding statement that describes the level of significance of the impact after implementation of mitigation is presented.

Mitigation

Pursuant to State *CEQA Guidelines* Sections 15002, 15021, and 15126.4, mitigation measures are required (as feasible) when significant impacts are identified. Unless otherwise noted, all mitigation measures contained herein are proposed by the lead agency. If a mitigation measure itself would cause a significant impact, in addition to the impact caused by the project alone, that impact is also discussed, although at a lesser level of detail than the basic impact (pursuant to State *CEQA Guidelines* Section 15126.4 (A)(1)(d)). "Mitigation measures must be fully enforceable through permit conditions, agreements, or other legally-binding instruments. In the case of adoption of a plan, policy, regulation, or other public project, mitigation measures can be incorporated into the plan, policy, regulation, or project design" (State *CEQA Guidelines* Section 15126.4(a)(2)).

Each mitigation measure is numbered sequentially within each Section. For example, mitigation to reduce Impact 3.6-1 in the Cultural Resources Section is numbered CUL-1; the next mitigation measure in Section 3.6 is numbered CUL-2, etc.

3.0.2 Significance Determination

This Draft EIR includes as much detail as possible to maximize information available for public review and thus eliminate the need for future environmental documentation (see Chapter 1.0, *Introduction*, of this Draft EIR for further explanation of the EIR Process). This Draft EIR includes information gathered from *Notice of Preparation Comments* (Appendix A), utility agencies, available literature and reference documents, and applicable portions of prior EIRs (see Section 1.7, *Incorporation by Reference*).

The analysis of the project's impacts, as contained within this Draft EIR, is presented to clearly indicate the significance determination for each of the impacts by numbering each impact with a corresponding numbered impact discussion and, if necessary, mitigation measure(s). The significance determinations are based on a number of factors as explained in each impact section. These thresholds are derived from Appendix G of the State *CEQA Guidelines*, General Plan policies, ordinances, generally accepted professional standards, and quantified thresholds established by the City of Riverside or other agencies (such as level-of-service standards for traffic impacts and pollutant emission thresholds adopted by the applicable Air Quality Management District).

The following is an explanation of the different significance determinations made in this Draft EIR:

<u>No Impact</u>: Due to the nature or location of the project, no impact will occur. For example, underground facilities do not have the potential for long-term visual impacts.

<u>Less than Significant Impact</u>: This determination is made when the following applies:

> *Less Than Significant Impact*: Although an impact may occur, it will not be at a significant level, based on the standards described above. For example, construction-related air emissions that fall below the adopted standards will be less than significant.
>
> *Potentially Significant Impact "Mitigated" Through Existing Requirements* (no EIR mitigation required): In this case, there is an impact that may be potentially significant. However, the significance of this impact will be reduced to less than significant levels through adherence to and/or implementation of existing requirements and regulations. These existing requirements and regulations include local development

codes, engineering and design standards (e.g., Uniform Building Codes), and/or regulations from regional, State and federal agencies.

Less than Significant Impact with Mitigation: In this case, there is an impact that may be potentially significant. However, the significance of this impact will be reduced to less than significant levels through adherence to mitigation measures proposed under this EIR. For example, these recommended mitigation measures may include archaeological monitoring, screening of construction debris for aesthetic purposes, building setbacks due to the presence of known earthquake faults, etc. These mitigation measures go beyond the existing standards and regulations of regional, State and federal agencies that are applicable to a project.

Significant and Unavoidable Impact: This determination is made for a potentially significant impact where there is either no mitigation available, or the recommended mitigation measures are not sufficient to reduce the impact to less than significant levels. This determination requires a Statement of Overriding Considerations, pursuant to State *CEQA Guidelines* Section 15093, which would be adopted by City of Riverside policymakers as part of the resolution, prior to approving the project.

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3.1 LAND USE AND RELEVANT PLANNING

The purpose of this section is to identify existing land use conditions, analyze the proposed project's compatibility with existing land uses and consistency with relevant planning policies, and recommend mitigation measures to avoid or minimize the significance of potential impacts. Information in this section is based on the *City of Colton General Plan* (Updated 2013) and applicable policies of the *City of Riverside General Plan 2025* (2007).

3.1.1 Existing Conditions

The proposed project encompasses approximately 68.1 acres (24 acres for in-stream recharge, which includes approximately 17.5 acres of area for the dam facilities, and 44.1 for off-stream recharge) of land located within the City of Colton. The *City of Colton General Plan* currently designates the project area as Open Space. In addition, the project area is also zoned as Open Space-Resources.

Site Characteristics

The proposed Riverside North Aquifer Storage and Recovery Project is located in the southern portion of the City of Colton and north of the City of Grand Terrace. The project site is located south of the I-10 Freeway and East M Street, west of the I-215 Freeway and Santa Ana River, and east of the Union Pacific Railroad right-of-way. The project is located within and adjacent to the Santa Ana River as it trends south and bends westward through this part of the watershed.

Surrounding Land Uses

Land to the east of the project boundary is designated as Planned Community (Cooley Ranch) and Specific Plan (Santa Ana River Redevelopment Project Specific Plan, General Industrial Planning Area). To the south, along the general alignment of the Santa Ana River, is land designated as Open Space. To the west is land designated Low Density Residential and Heavy Industrial. To the north, along the general alignment of the Santa Ana River, is a strip of land designated as Open Space. Refer to *Exhibit 2.0-5, General Plan Land Use Designation Map*, for a map depicting existing land use designations for the project site and surrounding areas.

Surrounding Zoning Classifications

Land to the east of the project boundary is zoned as Planned Community (Cooley Ranch) and Specific Plan (Santa Ana River Redevelopment Project Specific Plan, General Industrial Planning Area). To the southwest, along the general alignment of the Santa Ana River is land zoned as Open Space. To the northwest is land zoned Single-Family Residential and Heavy Industrial. To the northwest, along the general alignment of the Santa Ana River is a strip of land zoned as Open Space. Refer to *Exhibit 3.1-1, Zoning Map*, for a representation of zoning classifications for the project site and surrounding areas.

3.1.2 Regulatory Setting

City of Colton General Plan

California State planning law requires each city to adopt a comprehensive, long-term General Plan for the physical development of the area within its jurisdiction and of any land outside its boundaries that bears

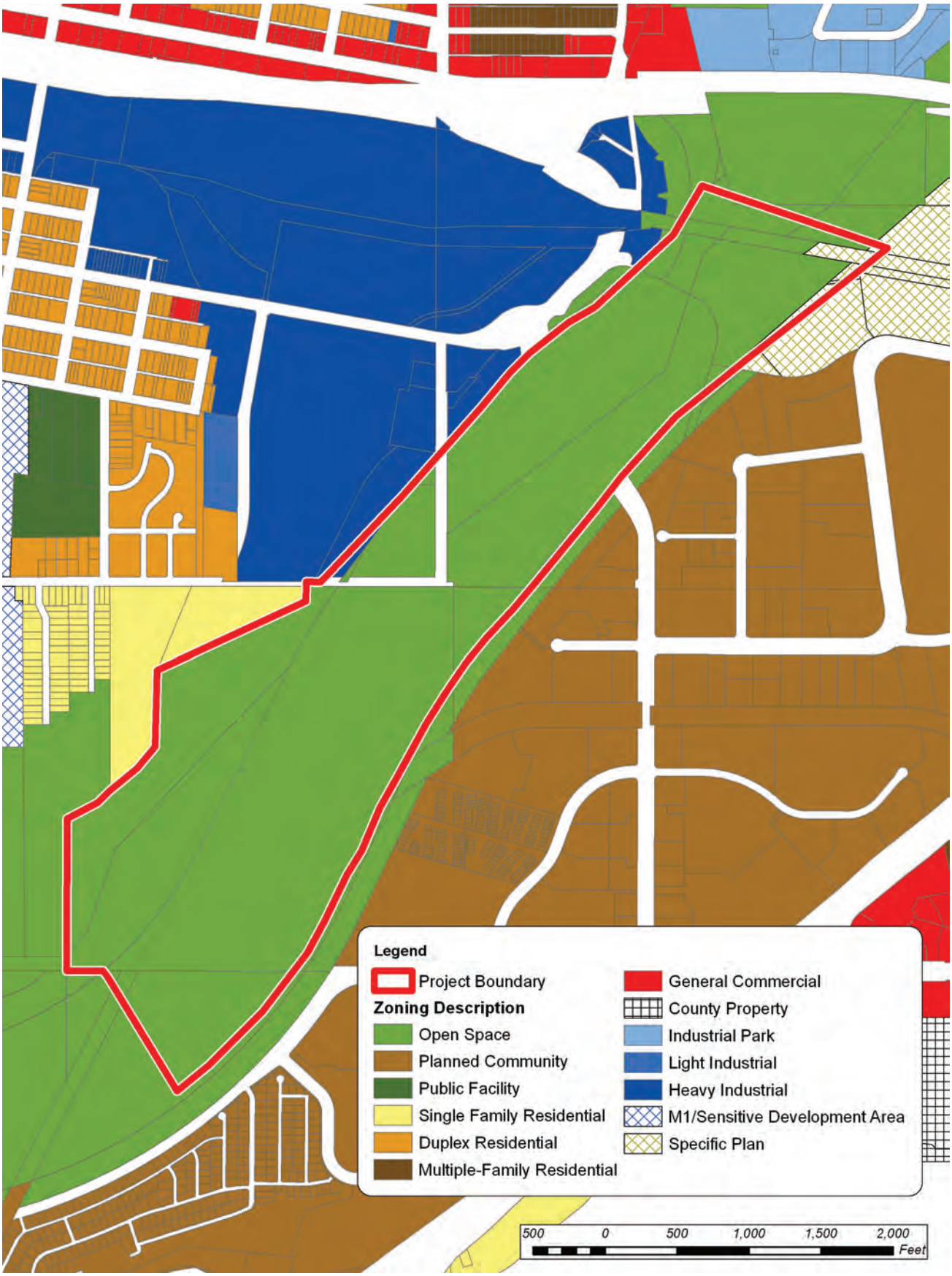
relations to its land use planning activities. The *City of Colton General Plan* was adopted in 1981 and updated in 1987, with nine chapters containing eight elements. In 2013, the Land Use, Housing, and Mobility Elements were updated. As discussed below, the City of Riverside is not subject to *City of Colton General Plan* or zoning regulations for its water supply project, pursuant to California Government Code Section 53091(d). Nonetheless, the City's General Plan and zoning is provided for local context, and was consulted regarding existing site conditions. This EIR therefore focuses on potential physical environmental impacts of the project.

Land Use Element

The Land Use Element of the *General Plan* was last updated in 2013. The main objective of the Land Use Element of the *General Plan* is to designate the proposed distribution, general location, and the extent of different land uses. Land is designated to be used for housing, business, industry, open space, public service, transportation, and other categories of public and private uses. The Land Use Element establishes a framework that City staff, local residents, and business leaders can utilize in decision-making with regard to future development. The Land Use Element sets a planning horizon year of 2030. However, the total development capacity established by the Land Use Plan may not be reached by 2030, as market and other factors will influence the rate at which development occurs. The Land Use Element is intended to establish the City's vision, identify how the vision can be achieved through public and private development initiatives, and ensure a balance between the Land Use Plan and the Circulation Plan, as well as the provision of adequate infrastructure and public services.

Circulation (Mobility) Element

The Circulation Element of the *General Plan* was last updated in 2013 (Mobility Element). The Mobility Element is an infrastructure plan which concerns itself with the circulation of people, goods, energy, water, sewage, storm drainage, and communications. The purpose of the Circulation Plan is to provide a safe, convenient, and efficient circulation system for the City, while identifying opportunities to enhance alternative means of transportation (e.g. transit, biking, walking). The Mobility Element has been designed to accommodate the anticipated transportation needs based on the estimated intensities of various land uses within the region. This Element describes the extent of physical improvements needed to accommodate anticipated population growth and ways to improve and maintain an acceptable level of service for the City's circulation system.



RIVERSIDE NORTH AQUIFER STORAGE
AND RECOVERY PROJECT - EIR

Zoning Map

JN 130506 Aug 2013

RBF CONSULTING
A Baker Company

Exhibit 3.1-1

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Housing Element

The Housing Element of the *General Plan* was last updated in 2013. The Housing Element of the *General Plan* is a comprehensive statement by the City of Colton of its current and future housing needs and proposed actions to facilitate the provision of housing to meet those needs at all income levels. The purpose of the Housing Element is to establish specific goals, policies, and objectives relative to the provision of housing. In addition, the Element identifies and analyzes housing needs, and resources and constraints to meet these needs.

Noise Element

The Noise Element of the *General Plan* provides a basis for comprehensive local programs to control and abate environmental noise and to protect local citizens from excessive noise exposure. The purpose of the Noise Element is to determine the quantity and quality of the noise environment present in the Colton General Plan Study Area and to establish policy and directions for controlling noise in the future developments of the area.

Open Space and Conservation Element

The purpose of the Open Space and Conservation Element is to provide for the comprehensive and long-term preservation and conservation of natural resources and open space lands located within the Colton area. The Element addresses protection and conservation of natural resources, including water, mineral and scenic resources.

Safety Element

The purpose of the Safety Element is to take geologic, seismic, and public safety hazards into account in the City's planning program. California requires a safety plan for the protection of the community from fires, geologic, and seismic hazards. The Safety Element includes features for protection such as evacuation routes, peak load water supply requirements, minimum road widths, clearances around structures, and geologic hazard mapping in areas of known geologic hazards.

Model Air Quality Element

The Air Quality Element of the *General Plan* was adopted in 1992. The Air Quality Element provides background information on the physical and regulatory environment affecting air quality within the City and the region. Through its goals, policies and programs, this Element also aims to balance the City's regulatory actions with their potential air quality effects. The Air Quality Element is intended to address federal and State ambient air quality standards.

Cultural Resources Preservation Element

The Cultural Resources Preservation Element of the *General Plan* was adopted in 2000. The purpose of the Cultural Resources Preservation Element is to identify and protect the City's precious cultural resources and to preserve and enhance the quality of life for all Colton citizens. This Element describes the documented pre-history and history of the City through the 20th Century and provides goals, policies and programs to protect the City's cultural heritage for future generations to appreciate.

The project site contains the following land use designation: Open Space. This designation is described in the *City of Colton General Plan* Land Use Element as:

Open Space

Parks/Recreation

The purpose of this land use designation is to identify present and future publicly owned parks and recreational facility. In addition, this designation includes privately held facilities devoted to passive and active outdoor recreational pursuits.

Permanent Open Space

This designation includes parcels, which due to environmental constraints, are unfit for human habitation. Examples include the Santa Ana River and its associated floodplain. Appropriate uses for this designation include recreational, equestrian, and agricultural uses.

The following are relevant principles and standards (as numbered in the General Plan) contained within the *City of Colton General Plan* Land Use Element:

A. Open Space

Principles:

1. A functional and adequate open space system should be provided which will protect recreational, agricultural, and other permanent open space uses.

Standards:

1. Public park space dedication or impact fees shall be required at the time of development unless similar public improvements are included as part of the project.

City of Riverside General Plan 2025

California State planning law requires each City and County to adopt a comprehensive, long-term General Plan for the physical development of the area within its jurisdiction and of any land outside its boundaries that bears relations to its land use planning activities. The *City of Riverside General Plan* was adopted in November 2007. The *General Plan* is a long-range policy-planning document that defines the framework by which the City's physical and economic resources are to be managed over time. The goals and policies contained in the *General Plan* are provided to guide the City's decision-makers. The seven State-mandated elements are included in the *General Plan*, including Land Use, Circulation, Housing, Conservation, Open Space, Safety, and Noise. In addition, the City of Riverside has also chosen to address Urban Design and Arts and Culture, Education, which are optional elements.

The Land Use Element contains many goals, objectives, policies, and actions related to the balanced and orderly pattern of growth that applies to the proposed project. The following are the most relevant of these goals, objectives, and policies:

Objective LU-2: **Recognize and enhance the Santa Ana River's multiple functions: a place of natural habitat, a place for recreation and a conveyance for stormwater runoff.**

Policy LU-2.2: Utilize the 2004 Santa Ana River Task Force Report in planning, programming and implementing environmental and recreational improvements to the River area.

Objective LU-7: **Preserve and protect significant areas of native wildlife and plant habitat, including endangered species.**

Policy LU-7.2: Design new development adjacent and in close proximity to native wildlife in a manner which protects and preserves habitat.

City of Riverside and City of Colton Municipal Code

The *City of Riverside* and the *City of Colton Municipal Codes* designate and regulate the location and use of buildings, structures, and land for industry, water conservation and other purposes. The proposed project is located within the City of Colton, outside of the City of Riverside. However, according to California Government Code Section 53091(d), "building ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency." (Section 53091[e]) also states, "Zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water..." Therefore, by State law, neither the City of Riverside's nor the City of Colton's Municipal Code apply to the proposed Project.

Urban Water Management Plan (UWMP)

The Urban Water Management Planning Act, Sections 10610 and 10656 of the California Water Code, requires a 20-year projection. The *City of Riverside UWMP* was adopted in 2011 and takes into account the projected demand for an extended time horizon of 25 years (to year 2035), which is in line with other water agencies that are preparing water supply assessments (WSA) and written verifications. Expanding the time horizon to 2035 allowed the City to utilize UWMP data for preparation of a WSA (pursuant to Senate Bill 610) or written verification (Senate Bill 221) between 2011 and 2015, when the next UWMP is due.

The UWMP considered the *City of Riverside General Plan 2025* which anticipates a build-out population of 376,000, with approximately 38,100 new dwelling units and 39.6 million square feet of new non-residential development within the City's northern and southern spheres of influence. In the 2010 UWMP (adopted in 2011), the City developed projections for its service area based on land use data from the City's Community Development Department (which includes the Planning Division) and Southern California Association of Governments (SCAG). The City used the projections, land use data, aerial photography, and specific development to establish water demand projections for the City's water service area through 2035. The water supply generated by the proposed project is assumed under the UWMP and is intended to meet this projected demand.

Air Quality Management Plan

The proposed project site is located in the South Coast Air Basin within the jurisdiction of the South Coast Air Quality Management District (SCAQMD). Every three years SCAQMD prepares an Air Quality Management Plan (AQMP). The 2012 AQMP was designed to meet both State and federal Clean Air Act

planning requirements. Applicable policies relating to air quality can be found in Section 3.3, *Air Quality, Odor, and Climate Change*, of this EIR.

3.1.3 Environmental Analysis

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the State *CEQA Guidelines*. For the purposes of this analysis, an impact on land use and planning is considered significant if the project would:

a) Physically divide an established community;

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

c) Conflict with any applicable habitat conservation plan or natural community conservation plan. (Refer to Section 7.0, *Effects Found Not To Be Significant*.)

Environmental Impacts and Mitigation Measures

Physically Divide an Established Community

Impact 3.1-1: Implementation of the proposed project may physically divide an established community. **Level of Significance: Less Than Significant Impact.**

In-Stream Recharge Component

The proposed inflatable rubber dam would be located approximately 1,200 feet downstream of the Mt. Vernon Avenue crossing, or about 2,200 feet north of the confluence of Reche Canyon Creek and the Santa Ana River, northeasterly of the proposed off-stream recharge basins. The in-stream recharge basin would form behind the rubber dam and would occupy an area of approximately 24 acres of the Santa Ana River. The reach of the Santa Ana River in the project area consists of soft bottom, existing USACE engineered levees, and non-engineered levees. The project area is located within the floodplain of the Santa Ana River. The impoundment area is surrounded by the following land uses:

North: Railroad right-of-way, vacant land, Santa Ana River, and open space with trails

South: Low-rise apartments, Santa Ana River, and open space with trails

East: Santa Ana River, office buildings, open space with trails

West: Vacant land

The Santa Ana River within the boundaries of the in-stream recharge basin is mainly an un-vegetated wash consisting of sandy and gravely material. However, sparse patches of mulefat, cottonwood, and willow are present. Additionally, a concrete structure of unknown purpose is located downstream of the inflatable dam along a Southern California Edison (SCE) easement.

Off-Stream Recharge Component

The off-stream recharge facility would occupy an area of approximately 44.1 acres of land adjacent to the Santa Ana River's western levee. The off-stream basin location consists of undeveloped land. The proposed location of the recharge basins is surrounded by the following land uses:

North: Duplexes, high density single-family homes, and vacant land

South: Vacant land

East: Vacant land

West: Manufacturing, storage warehouse, single-family homes, and vacant land

The locations of the proposed off-stream recharge basins are largely characterized by a mixture of native and non-native vegetation marked by various degrees of disturbance. The area comprising this location was denuded and disturbed by existing unimproved dirt roads and paths. While most of the area proposed to be off-stream recharge basin area is mostly dry during non-storm conditions, evidence of hydrology flow (i.e., drift lines, incised drainage swale and sediment deposits) was observed within an ephemeral drainage located west of the off-stream recharge basin area. This indicates that, during storm events, the storm water will occasionally flow through the ephemeral drainage and through portions of the recharge basin area.

The proposed project would be located along a stretch of the Santa Ana River which is currently vacant. The Santa Ana River traverses the project boundaries and is located on land zoned as Open Space-Resources. Land to the east of the project boundary is zoned as Planned Community (Cooley Ranch) and Specific Plan (Santa Ana River Redevelopment Project Specific Plan, General Industrial Planning Area). To the southwest, along the general alignment of the Santa Ana River, is land zoned as Open Space. To the northwest is land zoned Single Family Residential and Heavy Industrial. To the northwest, along the general alignment of the Santa Ana River, is a strip of land zoned as Open Space. Refer to *Exhibit 3.1-1, Zoning Map*, for a representation of zoning classifications for the project area and surrounding areas.

According to the *City of Colton General Plan* Land Use Map, the project site is designated as Open Space. Land to the east of the project boundary is designated as Planned Community (Cooley Ranch) and Specific Plan (Santa Ana River Redevelopment Project Specific Plan, General Industrial Planning Area). To the south, along the general alignment of the Santa Ana River is land designated as Open Space. To the west is land designated Low Density Residential and Heavy Industrial. To the north, along the general alignment of the Santa Ana River is a strip of land designated as Open Space. Refer to *Exhibit 2.0-5, General Plan Land Use Designation Map,* for a map of land use designations for the project and surrounding areas.

The City of Colton is physically divided by the Santa Ana River. The proposed project elements are located within a portion of the river as well as along property west of the river's edge. The *City of Colton General Plan* has designated land immediately to the northwest of the proposed off-stream basins for parks and recreational use and the possible location of a future regional park. Elements of the project would be physically located within the Santa Ana River. Other project elements would be located along the eastern and western banks of the river, but would not result in the division of an established community. Therefore, resulting impacts would be less than significant.

Construction-Related Impacts

While the construction of the in-stream and off-stream basins, rubber dam, and SWP pipeline may temporarily create physical barriers due to debris, materials, and cordoned impact areas, the Santa Ana River already acts as a barrier between urbanized land uses to the east of the river and urbanized land uses to the west of the river. Thus, the Santa Ana River is part of the environmental baseline for purposes of this analysis. Construction of the project elements would not substantially add or contribute to this pre-existing physical barrier. Therefore, project construction-related impacts related to the basins, SWP pipeline, and the rubber dam would not physically divide the community. Impacts would be less than significant, and no mitigation measures are required.

Operations-Related Impacts

From an operational standpoint, the proposed project elements are not improvements that would physically divide an established community within this southern portion of the City of Colton. The proposed groundwater in-stream recharge basin (the wetted area behind the rubber dam) would be located within the river channel and would be temporarily submerged underwater during operation when flow is present in the river. While this submerged in-stream basin would impede hiking across the river, crossings are located further upstream and downstream of the in-stream basin which bridge the Santa Ana River trail system to the western side of the river.

The SWP pipeline would not divide established communities since the pipeline would be installed underground. The inflatable rubber dam would be located roughly perpendicular to the Santa Ana River alignment within the river bottom. Hikers traversing the river would be able to travel alongside the river via the existing pedestrian trail or cross the river further downstream of the rubber dam. The off-stream recharge basins are proposed on vacant land with the Santa Ana River located immediately to the west of the riverbed. Since the Santa Ana River presently creates a physical barrier between urbanized land uses to the east of the river and urbanized land uses to the west of the river, the proposed basins would not create a new division within the established community. Operational or maintenance activities related to these project elements would not impede access between or physically divide the community. Therefore, project impacts would be less than significant, and no mitigation measures are required.

MITIGATION MEASURES

No mitigation is required.

Plan Consistency

Impact 3.1-2: Implementation of the proposed project may conflict with applicable land use plans, policies, or regulations of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. **Level of Significance: Less Than Significant Impact.**

The proposed project is assumed under the planned water supply projects and programs in the City of Riverside *Final 2010 Urban Water Management Plan*. The additional water supply generated by this project would further the City and its project partners' goal of reaching their estimated water supply projections (City of

Riverside: 143,226 acre-feet per year [AFY] by 2035[1]; WMWD: 248,065 AFY by 2035[2]; SBVMWD: 379,385 AFY by 2035[3]). Since the project would contribute an average annual additional 10,164 acre-feet of supply per year (combined in-stream and off-stream recharge) to the City of Riverside and its project partners, the project is consistent with applicable water plans with jurisdiction over the proposed project. Therefore, less than significant impacts would occur related to project consistency with applicable water plans.

The proposed project would be located within an area designated as Open Space by the *City of Colton General Plan* (refer to *Exhibit 2.0-5, General Plan Land Use Designation Map*). The Open Space land use designation has been divided into three categories: Permanent Open Space, Agriculture, and Parks/Recreation. Permanent Open Space includes areas that are unsafe for human habitation due to environmental hazards, including the Santa Ana River and its floodplain. Permanent Open Space areas can be used for recreational, equestrian, and agricultural uses. The Agriculture category is intended to protect existing areas devoted to agriculture or agriculturally related activities. The Parks/Recreation category of the Open Space designation identifies present and future publicly owned Parks and Recreation facilities, as well as large privately-held facilities devoted to passive and active outdoor recreational activities. The proposed project would include the construction of an inflatable dam and groundwater recharge basins within and adjacent to the Santa Ana River. These areas fall within the "Open Space - Permanent Open Space" designation, because these areas are unsafe for human habitation due to the Santa Ana River floodplain.

The project site is located on land zoned as Open Space-Resources. The *City of Colton Zoning Code*, contained within the City of Colton Municipal Code, does not expressly list the Open Space zoning classification. Nonetheless, according to California Government Code Section 53091(d), "building ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency." The Code (Section 53091[e]) also states, "Zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water."

Therefore, the proposed project would not be required to comply with the development standards and requirements as described in the City of Colton's Zoning Code and Municipal Code. Pursuant to the California Government Code 53091(d) and (e), impacts related to potential conflicts with the City of Colton's land use plans, policies, and regulations are considered less than significant.

Furthermore, the City of Riverside is unable to assign land use designations and zoning classifications to the project site, since the property falls outside of the jurisdiction of the City and outside of its Sphere of Influence. As noted above, the proposed uses are generally consistent with the City's Open Space designations. Therefore, less than significant impacts would occur.

Construction-Related Impacts

The proposed groundwater recharge basins, SWP pipeline, and rubber dam would be located within the Open Space land use designation and Open Space zoning classification. These facilities are considered public utilities and services. The City of Riverside is the lead agency and is proposing these facilities within City of Colton,

1 City of Riverside Public Utilities Department, Final 2010 Urban Water Management Plan, Adopted July 2011, pg. ES-3.

2 Western Municipal Water District, Final 2010 Urban Water Management Plan Update, June 2011, pg. ES-7.

3 San Bernardino Valley Municipal Water District, 2010 San Bernardino Valley Regional Urban Water Management Plan, June 2011, pg. 2-28.

on RPU property adjacent to the river, and within the Santa Ana River. Therefore, the City of Riverside is not required to adhere to the City of Colton zoning classifications, Zoning or Municipal Code, or land use designations. Therefore, the proposed project would be consistent with applicable land use plans, policies, and regulations. Implementation of the proposed project would not conflict with applicable land use plans, policies, or regulations of an agency with jurisdiction over the project, adopted for the purpose of avoiding or mitigating an environmental effect. Less than significant impacts would occur.

Operations-Related Impacts

As stated above, the City of Riverside is the lead agency and is proposing these facilities for the purposes of the "production, generation, storage, treatment, or transmission of water" within City of Riverside property. Therefore, the City of Riverside is not required to adhere to the City of Colton zoning classifications, Zoning or Municipal Code, or land use designations. The project would also not conflict with applicable water plans, such as the City of Riverside UWMP. Therefore, implementation of the proposed project would not conflict with applicable land use plans, policies, or regulations of an agency with jurisdiction over the project, adopted for the purpose of avoiding or mitigating an environmental effect. Less than significant impacts would occur.

Mitigation Measures

No mitigation is required.

3.1.4 Significant Unavoidable Adverse Impacts

No significant unavoidable impacts related to land use and relevant planning have been identified.

3.10 WATER SUPPLY

The purpose of this section is to evaluate the existing water supply setting for the proposed project area. The section will also consider the potential for the project to affect groundwater recharge capabilities within the Colton and Riverside groundwater basins, available water rights with regard to the Santa Ana River, and adjudication of water rights for the Santa Ana River. Mitigation measures, if appropriate, are recommended to minimize significant impacts that would occur as the result of project implementation. Information for this section was taken in part from the *Geohydrologic Evaluation: Riverside North Aquifer Storage and Recovery Project*, dated January 24, 2014 and prepared by Geoscience Support Services, Inc. (Appendix H), the *Riverside-Arlington Groundwater Flow Model* (RAGFM), dated June 2011 and prepared by Water Resources and Information Management Engineering, Inc. (WRIME) (Appendix H), the *City of Riverside Final 2010 Urban Water Management Plan,* dated July 2011 and prepared by the City of Riverside, and the *Water Use Efficiency Master Plan*, dated June 29, 2010 and prepared by Kennedy/Jenks Consultants (Appendix H).

3.10.1 Environmental Setting

Water Supply

The Santa Ana River is the largest stream system in southern California. It begins high in the San Bernardino Mountains and flows over 100 miles southwesterly where it discharges to the Pacific Ocean between Newport Beach and Huntington Beach. The Santa Ana River 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. Refer also to *Table 3.10-1, Summary of Various Regulations and Agreements Governing Upper Santa Ana River,* for a summary of the various regulations and agreements that govern the Upper Santa Ana River area.

Water is supplied to the project area from the Santa Ana River, State Water Project (SWP) water, Riverside Canal, existing groundwater, and stormwater runoff. Additional water is obtained from numerous springs and other creeks that are captured and diverted for water supply. Water supplies consist of both surface water (lakes, streams, reservoirs, etc.) and groundwater (below ground surface in soil pore spaces, fractures, or aquifers) that are either captured and delivered to retail water providers or stored.

Riverside Public Utilities Urban Water Management Plan (UWMP) (Adopted July 2011)

The City of Riverside UWMP serves as a guide for the long-term management and distribution of water supplies for the Riverside area. The primary source of potable water is from local groundwater basins, which include Bunker Hill, Riverside North, and Riverside South. Other sources of water for the City include groundwater from the Rialto-Colton Basin, recycled water from the City of Riverside's Regional Water Quality Control Plant (RWQCP), and/or imported water from Western Municipal Water District (WMWD) through a connection at the MWD Henry J. Mills Treatment Plant (Mills WTP).

The UWMP also states that the City of Riverside plans to increase its existing water supplies through conjunctive use projects. These and other water supply projects are described in the City's Water Supply Plan as follows:[1]

- *Seven Oaks Dam Water Supply Project* - Working with area water agencies, this project would utilize water supplies coming from the Seven Oaks Dam to recharge the Bunker Hill Basin.
- *Riverside North Aquifer Storage and Recovery Project [proposed Project]* – This program, phased in through 2020 will focus on recharging groundwater basins in Colton and North Riverside.
- *Arlington Basin Water Supply* - This joint program with Western Municipal Water District proposes projects such as construction of recharge basins that are supplemented with recycled water and storm water.
- *Recycled Water Project* – For more than twenty years Riverside Public Utilities has been working toward utilizing recycled water for such uses as landscape irrigation, which helps reduce needs for high quality drinking water. As part of RPU's Water Supply Plan, recycled water will be utilized to help recharge local groundwater basins.

Table 3.10-2, City of Riverside Existing and Planned (Projected) Water Supplies (acre-feet per year), identifies existing and planned water supplies available to the City. *Table 3.10-3, Riverside and Project Partners Water Supply Estimates,* provides a summary of water supplies for the City of Riverside and the project partners (imported water quantities for Riverside are included in the quantities shown for WMWD).

As stated above, the primary source of potable water for the City is from local groundwater supplies, with approximately 60 percent originating from the Bunker Hill Basin, which is an adjudicated basin. The Bunker Hill basin is mainly recharged from runoff from the San Bernardino Mountains located to the north of Riverside and has a storage capacity of approximately 5,976,000 acre-feet, and has a "safe yield" of approximately 232,100 acre-feet per year,[2] as determined by the 1969 Judgment, based on verified extractions. The City of Riverside has an Adjusted Right to produce and export groundwater from the Bunker Hill Basin pursuant to the 1969 Judgment.[3] Riverside is entitled to export 55,145 acre feet per year of groundwater from the Bunker Hill Basin, which includes its Adjusted Right, portions of the Adjusted Right from ownership of stock from other entities, and Riverside's New Conservation from Seven Oaks Dam. Riverside's portion of its New Conservation from its ownership in other entities has yet to be determined. The Riverside North and Riverside South basins were determined in this 2010 UWMP to have an operating yield of approximately 27,200 and 35,100 acre-feet per year, respectively. The water available to the City through 2035 through implementation of additional water supply projects is anticipated to be 13,500 acre-feet per year for the Riverside North basin and 28,600 acre-feet per year for the Riverside South basin.

1969 Western Judgment

As stated previously, the adjudication of the Santa Ana River was initiated by the complaint filed by Orange County Water District (OCWD) on October 18, 1963, seeking an adjudication of water rights against substantially all water users in the area tributary to Prado Dam within the Santa Ana River watershed, but

1 http://www.riversideca.gov/utilities/water-supply-plan.asp (accessed August 26, 2013).

2 Riverside Public Utilities, 2010 Urban Water Management Plan, Adopted July 2011, pg. 4-4.

3 Ibid, pg. 4-1.

excluding the area tributary to Lake Elsinore. Thirteen cross-complaints were filed in 1968, extending the adjudication to include substantially all water users in the area downstream from Prado Dam. With some 4,000 parties involved in the case (2,500 from the Upper Area and 1,500 from the Lower Area), many believed that every effort should be made to arrive at a settlement and physical solution in order to avoid enormous and unwieldy litigation.

The result was adjudication of the Upper Area (Western-San Bernardino) and for the Lower Area under the Stipulated Judgment (Judgment) in the case of Orange County Water District vs. City of Chino et al., as entered by the court on April 17, 1969 (Case No. 117628-County of Orange). The Stipulated Judgment became effective on October 1, 1970. It contains a declaration of rights of the water users and other entities in the Lower Area of the Santa Ana River Basin downstream of Prado Dam against those in the Upper Area tributary to Prado Dam, and it provides a physical solution to satisfy those rights.

The physical solution accomplishes a regional intra-basin allocation of the surface flow of the Santa Ana River System. The Judgment leaves to each of the major hydrologic units within the basin the determination and regulation of individual rights therein and the development and implementation of its own water management plan subject only to compliance with the physical solution.

The Judgment designates four public agencies to represent the interests of the Upper and Lower Areas and gives them the responsibility to fulfill the obligations set forth in the Judgment, including the implementation of the physical solution. The Lower Area is represented by OCWD. The Upper Area is represented by San Bernardino Valley Municipal Water District (SBVMWD), Western, and Inland Empire Utilities Agency (IEUA), formerly the Chino Basin Municipal Water District (CBMWD).

In the 1969 Judgment, all parties, whether situated in the Upper Area or Lower Area, had or claimed rights to the use of a portion of the water supply of the Santa Ana River system. The Judgment concluded that water users and other entities in the Lower Area have rights to receive an average annual supply of 42,000 acre-feet of base flow at Prado, together with the right to all storm flow reaching Prado Reservoir. Water users in the Upper Area have rights to divert, pump, extract, conserve, store and use all surface and groundwater supplies originating within the Upper Area without interference or restraint by Lower Area users, so long as the Lower Area receives the water to which they are entitled under this Judgment. Total flows at Prado have ranged from a minimum of 51,743 acre-feet per year to a maximum of 637,568 acre-feet per year since 1970.[4] The proposed project will capture, store, and beneficially use a portion of available storm flows.

Santa Ana River Water Rights

The State Water Resources Control Board (SWRCB) has declared the Santa Ana River "fully appropriated." As such, additional water rights appropriations would not be granted without changing the status of the River. In 1991, the SBVMWD challenged this determination by submitting an application to secure additional water rights from the Santa Ana River which were made available following construction of the Seven Oaks Dam. SBVMWD argued that the Seven Oaks Dam would create an opportunity to capture additional surface water and put it to beneficial use and submitted an application on behalf of itself and WMWD for the appropriation of 100,000 acre-feet per year from the Santa Ana River (first application submitted).

4 "Fortieth Annual Report of the Santa Ana River Watermaster for the Water Year October 1, 2006 through September 30, 2007," prepared April 2011.

The SWRCB subsequently adopted measures to reanalyze the fully-appropriated stream status of the Santa Ana River, and SBVMWD and WMWD submitted a request to revise the declaration (first petition) alongside the original 1991 Water Rights Application. In 1999, the OCWD followed the first petition with a similar petition. Subsequently, the SWRCB conducted hearings in 1999 on both petitions. It was concluded that SBVMWD provided evidence demonstrating that regional growth, the attendant increased runoff, and increased releases of treated wastewater had augmented flows in the Santa Ana River watershed. The SWRCB subsequently amended the fully-appropriated stream status pursuant to Order WR 2000-12, based on the evidence presented in the hearing. The Order permitted the water rights applications submitted by SBVMWD, WMWD, and OCWD to be processed. However, no determination was reached as to the amount of water that would be made available for appropriation to the agencies.

SBVMWD and WMWD submitted a second application along with a second petition to secure water rights for 100,000 acre-feet per year. This quantity was in addition to the previously requested 100,000 acre-feet per year under the first application. This application was based on updated hydrologic analyses presented during the 1999 hearings. The analyses showed that during certain wet years, more than 200,000 acre-feet would be available for appropriation in the Santa Ana River. Based on this evidence, SWRCB issued Order WR 2002-06, revising the fully appropriated stream status, pursuant to the second petition (along with similar petitions by other agencies), and accepted the following applications:

- The SBVMWD /WMWD application requesting a right to use a maximum of 100,000 acre-feet per year for direct use underground storage (second application);
- The Chino Basin Watermaster application requesting the right to divert 97,000 acre-feet per year to groundwater storage;
- The San Bernardino Valley Water Conservation District (Conservation District) application proposing groundwater and surface storage of 55,464 acre-feet per year;
- City of Riverside application proposing direct diversion of 75 cubic feet per second (cfs) throughout the year for a total maximum direct diversion of 41,400 acre-feet per year; and,
- Four minor applications for diversions of up to 102 acre-feet per year throughout the year from the west and east forks of Cable Creek within the Santa Ana River watershed.

Order WR 2002-06 did not specify the amount of water available for appropriation or whether the amount of water available for appropriation is adequate to approve the applications. Furthermore, prior to applications being approved, applications must meet all necessary obligations under CEQA. In March 2007 the Boards of SBVMWD and WMWD certified a Final Environmental Impact Report in support of the water rights applications. The SWRCB scheduled hearings on all water rights applications listed above.

On October 20, 2009, the SWRCB issued Order 1649 partially approving the water rights applications, granting among other things up to 100,000 acre-feet per year in SAR surface water diversions downstream of Seven Oaks Dam.[5] This included the City of Riverside's request for up to 75 cfs (41,400 acre-feet per year) of SAR surface water diversion. Refer to Section 2, *Project Description*, for additional background and history on SAR water rights.

5 http://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/santa_ana_river/docs/wrd1649.pdf (accessed August 26, 2013).

If this proposed project is approved and this EIR is certified, the project partners will work with the SWRCB to secure approval to capture and put to beneficial use the maximum wet year yield for the project based on the previous 53 years of hydrology. Due to uncertain future reliability of the SWP, the proposed project and other water supply projects identified in the IRMWP are essential to provide reliable water security for RPU and its project partners, including WMWD and SBVMWD.[6] Additional measures, such as water conservation and recycling, improved surface water management, protection of water quality, diversification of water supply sources, and ecosystem restoration and environmental improvement are also anticipated to contribute to ensuring a long-term, reliable source of water for the Upper Santa Ana River watershed.

Water Management and Distribution

The proposed project is an effort by the City of Riverside and its project partners, San Bernardino Valley Municipal Water District (SBVMWD – Valley District), and Western Municipal Water District (WMWD - Western). SBVMWD was formed in 1954, under the Municipal Water District Act of 1911 (California Water Code Section 71000 et seq.) as a regional agency to plan a long-range water supply for the San Bernardino Valley. SBVMWD is responsible for long-range water supply management for the project area, including importing supplemental water, and is responsible for most of the groundwater basins within its boundaries and for groundwater extraction over the amount specified in the existing water judgments.

SBVMWD has a critical role as one of four parties charged with implementing the Orange County Judgment[7] and the Western Judgment,[8] which provide SBVMWD with the legal authority and responsibility to manage the groundwater resources of the San Bernardino Basin Area. Under these two judgments, SBVMWD is directly responsible to the courts for ensuring that groundwater and surface water supplies are effectively managed for the benefit of the region. Further, SBVMWD is solely obligated under the Western Judgment to replenish the groundwater basin if excess extractions by water users in San Bernardino County and other obligations exceed SBWMWD's Adjusted Rights and other credits. SBVMWD has specific responsibilities for monitoring groundwater supplies and maintaining flows. It fulfills its responsibilities in a variety of ways, including importing water through the SWP for direct delivery and groundwater recharge, and coordinating water deliveries to retail agencies throughout its service area.

WMWD was formed in 1954 and maintains a 527-square mile area of western Riverside County. About one-fifth of the water Western purchases from the MWD comes from the Colorado River Aqueduct. Most of the imported water supply comes from the SWP, although Western also imports a small quantity of water from the San Bernardino basin. Western has several wells for pumping groundwater in its Murrieta Division. Today, the District serves roughly 24,000 retail and eight wholesale customers with water from the Colorado River, SWP, and groundwater.

6 San Bernardino Valley Municipal Water District, Upper Santa Ana River Watershed Integrated Regional Water Management Plan. January 2015.

7 Orange County Water District v. City of Chino et al. [1969].

8 Western Municipal Water District v. East San Bernardino County Water District et al. [1969].

3.10.2 Regulatory Framework

City of Riverside General Plan

Objective OS-10: Preserve the quantity and quality of all water resources throughout Riverside.

Policy OS-10.1: Support the development and promotion of water conservation programs.

Policy OS-10.2: Coordinate plans, regulations and programs with those of other public and private entities which affect the consumption and quality of water resources within Riverside.

Policy OS-10.8: Cooperate with Riverside and San Bernardino Counties and adjacent jurisdictions in the review and approval of new developments which affect the quality and quantity of basin-wide groundwater and surface water resources.

Policy OS-10.10: Protect aquifer recharge features and areas of important aquifers from degradation of water quality and reduction of recharge.

Policy OS-10.11: Monitor the quality and quantity of groundwater and surface water resources and consider revisions to the General Plan's policies if monitoring identifies significant reductions in water quality.

Public Facilities and Infrastructure Element

Objective PF-1: Provide superior water service to customers.

Policy PF-1.2: Support the efforts of the Riverside Public Utilities Department, Eastern Municipal Water District and Western Municipal Water District to work together for coordination of water services.

Policy PF-1.4: Ensure the provision of water services consistent with the growth planned for the General Plan area, including the Sphere of Influence, working with other providers.

3.10.3 Significance Threshold Criteria

The proposed project may result in potentially significant impacts to water supplies, due to limitations in groundwater management or resource conservation efforts. This section has been organized to respond to specific significance issues identified by the City of Riverside and its project partners to determine potential changes in the environment as they relate to water supplies.

The project may create a significant environmental impact if one or more of the following occurs:

1. Implementation of the proposed project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

2. Implementation of the proposed project results in a violation of the 1969 Western Judgment.

3. Implementation of the proposed project results in a conflict with available water rights within the Upper Santa Ana River watershed for use by the City of Riverside for capture of local surface water.

3.10.4 Impacts and Mitigation Measures

Impact 3.10-1: Implementation of the proposed project may substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted). **Level of Significance: Less than Significant Impact.**

The project proposes to recharge the groundwater aquifers and improve water quality in the Riverside and Colton basins, while reducing dependence on imported water.

As the project is intended to recharge the groundwater aquifers in the Riverside and Colton basins, and would not result in the direct consumption of groundwater for public or private purposes, the project would not contribute to a depletion of groundwater supplies or interfere substantially with groundwater recharge. As such, impacts would be less than significant, and no mitigation is required.

Mitigation Measures

No mitigation is required.

Impact 3.10-2: Implementation of the proposed project may result in a violation of the 1969 Western Judgment. **Level of Significance: Less than Significant Impact.**

In the 1969 Judgment, all parties, whether situated in the Upper Area or Lower Area, had or claimed rights to the use of a portion of the water supply of the Santa Ana River system. The Judgment provides that water users and other entities in the Lower Area have rights to receive an average annual supply of 15,250 acre-feet of base flow at the Riverside Narrows and 42,000 acre-feet of base flow at Prado Dam, together with the right to all storm flow reaching Prado Reservoir. Sufficient cumulative credits have been accrued by the upstream parties to allow the minimum base flow requirements at Riverside narrows and Prado Dam to be reduced to 12,240 AFY and 34,000 AFY, respectively.

The surface water flows at the Riverside Narrows and Prado Dam are well above the requirement of the 1969 Judgment both for "No Project" and "Project" conditions. In addition, project-induced water quality changes are insignificant (refer to the Geohydrologic Evaluation, section 3.5) and would not result in any required alterations to surface water flow.

As an adequate water supply is available within the Santa Ana River, the proposed project would not result in a violation of the 1969 Western Judgment, and the required supply of water to downstream users would remain available. Impacts would be less than significant, and no mitigation measures are required.

Downstream (Project Site to Prado Dam)

An adequate water supply is available to satisfy requirements established with the 1969 Western Judgment for users downstream of the project site. As such, the proposed project would not result in a violation of the 1969 Western Judgment. Impacts would be less than significant, and no mitigation measures are required.

MITIGATION MEASURES

No mitigation is required.

Impact 3.10-3: Implementation of the proposed project may represent a water rights impact within the Upper Santa Ana River watershed, with respect to surface water available for use by the City of Riverside and its project partners for the capture of local surface water. **Level of Significance: Less than Significant Impact.**

As previously discussed, a number of factors have influenced overall water availability with regard to the Santa Ana River and include, but are not limited to, urbanization within the watershed of the Santa Ana River, water management actions undertaken (including operation of Big Bear Lake and construction of Seven Oaks Dam), and importation of water from the SWP and Colorado River. As a result, several public entities have prepared and submitted applications to the California State Water Resources Control Board (SWRCB) for the granting of appropriative rights to a portion of the surplus water carried by Santa Ana River. As discussed above, SWRCB Order 1649 partially approved the SBVMWD/WMWD request for SAR water diversions.

Through Order 1649, "*the total quantity of water taken under both Application 31165 and Application 31370 shall not exceed 198,317 acre-feet per water year of October 1 to September 30. The total combined rate for water to be taken from the sources under Applications 31165 and 31370 for either direct use, underground storage, and/or off-stream surface storage shall not exceed an instantaneous rate of 1,250 cubic feet per second.*"[9] The City of Riverside and project Partners will work with the SWRCB to secure the necessary approval for the proposed project to capture and beneficially use the maximum wet year yield, which is based on the previous 53 years of hydrology.

This Draft EIR will be used by the City of Riverside, other responsible agencies, interested parties, and the general public to evaluate the potential environmental impacts of the proposed project and to demonstrate compliance with the SWRCB for the proposed project with the requirements of CEQA. The application to the SWRCB will be handled through a well-established public process. If and when the proposed project is approved and the Final EIR is certified, the project partners will work with the SWRCB to secure approval to capture and put to beneficial use the maximum wet year yield for the project based on the previous 53 years of hydrology. Refer to *Table 3.10-2, City of Riverside Existing and Planned (Projected) Water Supplies (acre-feet per year),* which identifies the City of Riverside existing and planned water supplies, and *Table 3.10-3, Riverside and Project Partners Water Supply Estimates,* which identifies Riverside and project partners' water supply estimates.

In addition, wells, pipelines, and Santa Ana River siphons owned and operated by outside water agencies (e.g., Empire Water Corporation), but located within the project area and/or surrounding area, would not be adversely impacted by the proposed project, because the project would increase groundwater levels, improve groundwater quality, and would not result in the migration of contaminated plumes (as discussed in Section 7, *Effects Found Not to Be Significant*).

9 SWRCB Order 1649, page 42.

For the above reasons, implementation of the proposed project is not anticipated to conflict with the availability of water rights within the Upper Santa Ana River watershed for use by the City of Riverside for the capture of local surface water. The project would provide an additional source of high-quality water to meet increasing needs placed on existing resources while complying with the 1969 Western Judgment. The project would not infringe upon the right or ability of other entities to divert water from the Santa Ana River.

Downstream (Project Site to Prado Dam)

As stated above, the 1969 Judgment concluded that water users and other entities in the Lower Area have rights to receive an average annual supply of 42,000 acre-feet of base flow at Prado, together with the right to all storm flow reaching Prado Reservoir. Water users in the Upper Area have rights to divert, pump, extract, conserve, store and use all surface and groundwater supplies originating within the Upper Area without interference or restraint by Lower Area users, so long as the Lower Area receives the water to which they are entitled under this Judgment. Total flows at Prado have ranged from a minimum of 51,743 acre-feet per year to a maximum of 637,568 acre-feet per year since 1970.[10] The proposed project is an attempt to capture, store, and beneficially use a portion of available storm flows. As such, the proposed capture of this unused water supply is not anticipated to result in impacts on downstream users, as an adequate supply is available without causing adverse effects on other users dependent upon water flow within the Santa Ana River.

As such, an adequate water supply is available to satisfy requirements established with the 1969 Western Judgment for users downstream of the project site, and the proposed project is not anticipated to conflict with the availability of water rights within the Upper Santa Ana River watershed for the capture of local surface water. Impacts would be less than significant, and no mitigation measures are required. As discussed on page 2.0-4 of this DEIR, SWRCB's Decision 1649 provided for additional SAR diversions. As part of project implementation, RPU will need to secure a determination and/or water rights approval from the SWRCB for the proposed SAR diversions.

Mitigation Measures

No mitigation is required.

3.10.5 Significant Unavoidable Adverse Impacts

No significant unavoidable impacts related to water supply have been identified.

10 "Fortieth Annual Report of the Santa Ana River Watermaster for the Water Year October 1, 2009 through September 30, 2010," prepared by Santa Ana River Watermaster, April 30, 2011.

Table 3.10-1 Summary of Various Regulations and Agreements Governing Upper Santa Ana River

Governing Document	Year Adopted	Binding Parties	Geographic Area	Key Provisions
Settlement Agreement between City of San Bernardino and City of Riverside and Riverside Water Company	1922	City of San Bernardino, City of Riverside, and Riverside Water Company	San Bernardino Artesian Basin	▪ Negotiated agreement related to the take, diversion, and use water from Lytle Creek, Warm Creek, and Devil Canyon Creek. ▪ The establishment of a provision for daily record keeping of all the diversions and use of water by all said parties.
Orange County Judgment	1969	Four Main water agencies – Orange County Water District (OCWD), SBVMWD, WMWD, and the Chino Municipal Water District (now the Inland Empire Utilities Agency), and all water users, over 4,000 in the area tributary to Prado Dam.	All water users, over 4,000, in the area tributary to Prado Dam, parties located within the Upper Santa Ana River watershed	▪ Imposes a physical solution that requires Upper Districts to deliver specific amounts of quality adjusted base flow at Riverside Narrows and Prado Dam. ▪ Provisions related to conservation establish that once the flow requirements are met, the upper area parties "…may engage in unlimited water conservation activities, including spreading, impounding, and other methods in the area above Prado Reservoir." ▪ Administer by the five-member Santa Ana River Watermaster that reports annually to the court and the four main water agencies.
Western Judgment	1969	SBVMWD and WMWD; Plaintiff parties with specific rights to produce 27.95 percent of the safe yield from the San Bernardino Basin Area (SBBA), the City of Riverside, Riverside Highland Water Company, Meeks & Daley Water Company, and the Regents of the University of California (Regents).	Resources upstream from Riverside Narrows, SBBA, Upper Santa Ana River Watershed.	▪ Entered simultaneously with the Orange County Judgment. ▪ Provides a determination of safe yield of the SBBA ▪ Establishes individual water rights in the SBBA for four Plaintiff parties that exported water from the SBBA for use within Western during the Base Period 1959-1963. ▪ SBVMWD is solely obligated under the Western Judgment to replenish the groundwater basin if excess extractions by water users in San Bernardino County and other obligations exceed SBWMWD's Adjusted Rights and other credits.

Table 10-1, continued

Governing Document	Year Adopted	Binding Parties	Geographic Area	Key Provisions
				▪ The Western Judgment provides for WMWD to be responsible for delivery of imported water to the Colton and Riverside Basin Areas if the excess extractions by water users within Western and other obligations accumulated since 1971 exceed Western's Base Rights and other credits accumulated since 1971 for the combined Basin Areas and if Valley District is not meeting its Base Flow obligation at the Riverside Narrows. ▪ Provides an obligation of SBVMWD to replenish the Colton and Riverside basins if water levels are lower than specific water level elevations in specified wells. ▪ The representative entities, SBVMWD and WMWD, are principally responsible for providing replenishment of the groundwater basins if extractions exceed amounts specified in the judgment or as determined by the Watermaster. ▪ Western Judgment contemplates that the parties will undertake "new conservation," which is defined as any increase in replenishment from natural precipitation resulting from operation of works and facilities that did not exist in 1969.
Santa Ana River-Mill Creek Cooperative Water Project Agreement	1976	Redlands Water Company, Bear Valley Mutual, Crafton Water Company, North Fork Water Company [East Valley Water District], Lugonia Water Company, City of Redlands, San Bernardino Water Conservation District (SBVWCD), YVWD, and the SBVMWD;	Eastern San Bernardino County	▪ The agreement was created to avoid pumping costs and to lower the overall cost of water through the exchange of water from the Santa Ana River, Mill Creek, and the SWP. ▪ Agreement described as "bucket for bucket exchange," consisting of multiple delivery methods and the sharing of existing facilities.

Table 10-1, continued

Governing Document	Year Adopted	Binding Parties	Geographic Area	Key Provisions
Big Bear Lake Operations	1977-1996	Big Bear Municipal Water District, Bear Valley Mutual, Santa Ana River Water Quality Control Board, and SBVMWD	Big Bear Lake, easterly end of the San Bernardino Valley	▪ 1996 agreement requires SBVMWD to furnish all in lieu water that Big Bear Municipal needs to meet the water supply demands of Bear Valley Mutual. ▪ Operational changes to Big Bear Lake result in changes in the timing and amounts of water Big Bear Lake and Bear Creek contribute to the Santa Ana River.
Groundwater Management Planning Act	2002	DWR and any local agency preparing a groundwater management plan	State of California	▪ Purpose – to meet the intent and requirements of Senate Bill 1938 ▪ Requires local agencies developing a groundwater management plan to follow specific requirements, including public notification and implementation of the public involvement process. ▪ In addition to public involvement the act includes timelines and submittal requirements. ▪ Does not require local agencies to prepare a groundwater management plan for the basins that are managed through adjudications. Any groundwater management planning would need to conform with the provisions of those adjudications.
Integrated Regional Water Quality Management Planning Act	2002	California Department of Water Resources (DWR); State Water Resources Control Board (SWRCB), State Department of Health Services	State of California	▪ Authorized a "regional water management group" to prepare and adopt a regional pan relating to water supply, water quality, flood protection, or other matters, under their authority. ▪ DWR and SWRCB prepared standards (Integrated Regional Water Management (IRWM) Guidelines) for preparation of IRWM Plans. ▪ Requires binding parties to include criteria used to select the projects and programs for grant funding.

Table 10-1, continued

Governing Document	Year Adopted	Binding Parties	Geographic Area	Key Provisions
Santa Ana Watershed Project Authority (SAWPA) IRWM Plan	2002, updated 2005, 2010 (One Watershed Plan)	Santa Ana Watershed Project (SAWP), Water users in the Santa Ana River	Santa Ana River Watershed	▪ 2002 a phasing planning process, *Santa Ana Integrated Watershed Plan (IWP)* was developed by the SAWPA. ▪ 2005 the IWP was updated as an IRWM. ▪ A complimentary planning process to the larger scale SAWPA Plan focusing on water management on a local level. ▪ Is considered part of the overall Santa Ana River water management process and is consistent with the past and current regional planning of SAWPA. ▪ The 2010 IRWMP was adopted as the "One Watershed" Plan, as set forth at http://www.sawpa.org/owow/the-plan/
Seven Oaks Accord	2004	SBVMWD, WMWD, the City of Redlands, East Valley Water District, Bear Valley Mutual Water Company (Bear Valley Mutual), Lugonia Water Company, North Fork Water Company, and Redlands Water Company	Santa Ana River Watershed	▪ The accord requires that SBVMWD and WMWD to recognize the prior rights of the water users for a portion of the natural flow of the Santa Ana River. In exchange, the water users agree to withdraw their protests to the water right application submitted by SBVMWD on behalf of itself and WMWD. All the parties to the Accord have agreed to support the granting of other necessary permits to allow SBVMWD and WMWD to divert water from the Santa Ana River. ▪ The Seven Oaks Accord calls for SBVMWD to develop and manage, within five years of SWRCB approval of the water right applications, a groundwater spreading program that will maintain groundwater levels at a number of specified wells owned and operated by the other parties. ▪ The Seven Oaks Accord provides the framework and a cooperative environment for major water entities in the Upper Santa Ana River watershed to prepare a plan for the integrated management of

Table 10-1, continued

Governing Document	Year Adopted	Binding Parties	Geographic Area	Key Provisions
				the region's surface water and groundwater resources.
Agreement Relating to the Diversion of Water from the Santa Ana River System Among WMWD of Riverside County, SBVMWD, and the City of Riverside	2004	WMWD, SBVMWD, and City of Riverside	Santa Ana River Watershed and Santa Ana River System	▪ Provides additional requirements of the Seven Oaks Accord. ▪ Requires that the groundwater management plan shall identify target water level ranges in the specified "index wells". ▪ Thresholds of significance related to Santa Ana River water diversion should be observed. ▪ Use integrated surface and groundwater models. ▪ An "integrated management program" must be "adopted" within five years of the date the SWRCB grants a permit to SBVMWD or WMWD to divert water from the Santa Ana River. ▪ Requires water users to limit spreading to conform to an annual management plan.
Institutional Controls and Settlement Agreement (ICSA)	2004-2006	City of San Bernardino Municipal Water Department (SBMWD), the United States District Court, the Central District of California, and Western Division (Court), SBVMWD, WMWD, City of Riverside, West Valley Water District, East Valley Water District, City of Colton, Riverside Highland Water Company.	Newmark Groundwater Contamination Superfund Site (Newmark Site) and Bunker Hill Ground Basin	▪ SBMWD obligated to operate and maintain a system of wells and treatment plants. ▪ SBMWD is required to enact institutional controls and implement an ordinance providing for the protection and management of the Interim Remedy ▪ Ordinance No. MC1221, approved in March 2006, establishes the management zone boundaries within the City of San Bernardino for water spreading and water extraction activities. ▪ City of San Bernardino required to implement an ordinance ensuring that activities in the management zone do not interfere or cause pass through of contaminants from the Newmark and Muscoy Operable Units.

Table 10-1, continued

Governing Document	Year Adopted	Binding Parties	Geographic Area	Key Provisions
				▪ Execution of an Institution Controls and Settlement Agreement (ICSA) to develop and adopted Institutional Controls Groundwater Management Program (ICGMP).
Settlement Agreement with San Bernardino Valley Water Conservation District	2005	SBVMWD, WMWD, and the SBVWCD	Within the boundaries of SBVMWD, WMWD, and the SBVWCD.	▪ Resulted in a cooperative agreement to develop an annual groundwater management plan.
Memorandum of Understanding (MOU) with the City of Riverside	2005	SBVMWD, WMWD, and the City of Riverside	City of Riverside/San Bernardino Valley	▪ Intent is to result in a cooperative approach to devise institutional and physical arrangements through which the City of Riverside could benefit relating to the Western Judgment and pending SBVMWD/ WMWD water rights applications. ▪ Good faith negotiations related to purchase, storage, and sale of imported water to the City of Riverside.
Cooperative Agreement to Protect Water Quality and Encourage the Conjunctive Uses of Imported Water in the Santa Ana River Basin	2007	Water agencies within the Santa Ana River Watershed and Regional Water Quality Control Board (RWQCB)	Santa Ana River Watershed	▪ Purpose: to monitor and improve water quality within the Santa Ana River Region. The agreement is limited in scope and specifically addresses Salinity Objectives. ▪ The agreement requires that the Parties analyze the effects on water quality of recharging imported water into groundwater basins. This analysis will be compiled into a report and submitted to the RWQCB every three years. ▪ Requires that any new project including the recharge of imported water must analyze its effects prior to implementation.

Table 10-1, continued

Governing Document	Year Adopted	Binding Parties	Geographic Area	Key Provisions
WMWD IRWM Plan	2008, 2011 (UWMP)	WMWD, State Water Project (SWP), Regional Water Quality Control Board	510-square-mile area primarily in western Riverside County	▪ Provides water management including storage of imported water as a supply source during dry years. ▪ The plan focuses on the mission of WMWD to provide water supply, wastewater disposal, and water resource management.
SWRCB Order 1649	2009	SWRCB, SBVMWD, WMWD	Upper SAR	▪ Up to 198,317 acre-feet/year of SAR surface water diversions, up to 1,250 cfs.

Table 3.10-2 City of Riverside Existing and Planned (Projected) Water Supplies (acre-feet per year)

Water Supply Sources	2015	2020	2025	2030	2035	2040
A. Existing Supplies						
Groundwater (Bunker Hill Basin)	53,426	53,426	53,426	53,426	53,426	53,426
Groundwater (Rialto-Colton Basin)	2,700	2,700	2,700	2,700	2,700	2,700
Groundwater (Riverside North)	13,500	13,500	13,500	13,500	13,500	13,500
Groundwater (Riverside South)	28,600	28,600	28,600	28,600	28,600	28,600
Total Existing Supplies	98,226	98,226	98,226	98,226	98,226	98,226
B. Planned Supplies						
Seven Oaks Dam Conservation (Phase 1)	2,000	4,000	4,000	4,000	4,000	4,000
Riverside North Aquifer Storage and Recovery	3,500	3,500	3,500	3,500	3,500	3,500
Pellissier Ranch Aquifer Storage and Recovery[1]	0	10,000	10,000	10,000	10,000	10,000
Recycled Water (RWQCP) (Landscape Irrigation)	3,650	5,800	5,800	5,800	5,800	5,800
Total Planned Supplies	9,150	23,300	23,300	23,300	23,300	23,300
C. Available Supplies						
Imported Water (MWD via WMWD)	21,700	21,700	21,700	21,700	21,700	21,700
Total Available Water Supply	**129,076**	**143,226**	**143,226**	**143,226**	**143,226**	**143,226**

1. The Pellissier Ranch Aquifer Storage and Recovery project includes 6,000 acre-feet/year of groundwater and storm water recharge, and 4,000 acre-feet/year of recycled water recharge.

Source: City of Riverside Public Utilities 2010 Urban Water Management Plan. Adopted July 2011.

Table 3.10-3 Riverside and Project Partners Water Supply Estimates

	2010	2015	2020	2025	2030	2035	Buildout
SBVMWD[1]							
Local Surface Water	50,150	50,150	50,150	50,150	50,150	50,150	n/a
Groundwater	171,713	175,713	180,313	180,313	180,313	180,864	n/a
Imported Water	71,456	71,418	70,840	71,082	70,220	70,244	n/a
Total Existing & Planned Supplies	300,083	311,241	318,464	326,144	333,145	340,784	n/a
WMWD[2]							
Existing Supplies							
Wholesale and Purchased	137,428	166,513	180,327	190,331	201,501	214,235	214,235
Local Supplies	8,350	8,950	8,950	8,950	8,950	8,950	8,950
Banking Program	6,000	6,000	15,000	15,000	15,000	15,000	15,000
Planned Supplies							
Local Supplies	0	5,520	7,080	7,640	8,760	9,880	11,000
Total Existing & Planned Supplies	151,778	186,983	211,357	221,921	234,211	248,065	249,185
City of Riverside Public Utilities	129,076	143,226	143,226	143,226	143,226	143,226	143,226

1. SBVMWD, 2010 San Bernardino Valley Regional Urban Water Management Plan. Amended September 2012. Normal Year - Pg. 2-28.
2. WMWD, 2010 Urban Water Management Plan. June 2011. Pg. ES-7.
3. Figures for the City of Riverside include supplies already accounted for in the WMWD supply estimates (e.g., wholesale purchases which are anticipated to be supplied to the City of Riverside).

Table 3.10-4 City of Riverside Groundwater Pumping Rights by Basin (acre-feet per year)

Basin Name	Pumping Right (AFY)	Type of Right
Bunker Hill Basin[1,2,3,4,5]	53,426	Adjudicated
Rialto-Colton Basin[6]	2,418	Historic
Riverside North Basin[6]	10,902	Historic
Riverside South Basin[6]	16,880	Historic
Arlington Basin[7]	--	Not adjudicated
Total	83,621	

Notes:
1 Includes rights held by the Gage Canal Company, the Regents of the University of California and shares in Mutual Water Companies.
2 Does not include Watermaster declared additional pumpage for mitigating high groundwater level.
3 The City of Riverside can increase rights by purchasing shares from Mutual Water Companies when available.
4 Does not include proposed rights from improved water conservation from the Seven Oaks Dam.
5 This does not include the City of Riverside's right to water delivered within the SBBA or San Bernardino County.
6 Figures are not water rights, but base period average annual extraction during the Western Judgment.
7 Basin not adjudicated.
Source: City of Riverside Public Utilities, 2010 Urban Water Management Plan. Adopted July 2011.

Table 3.10-5 100-year Flow Data from Santa Ana River Water Right Applications for Supplemental Water Supply Draft EIR

Tributary	100-yr Flood Flow (cfs)	Modified Flow (cfs)	Source of Modified Flow Data
Mill Creek	19,500	19,500	USACE 2000a
City Creek[1]	5,000	7,000	USGS Gage Data[2]
Mission Zanja Creek	3,500	3,500	USACE 2000a
San Timoteo Creek	15,000	8,000	USGS Gage Data[2]
East Twin Creek	18,000	10,000	Hydraulic Calc[3]
Lytle Creek & Warm Creek	70,000	21,000	USGS Gage Data[4]
	Total	69,000	

Notes:
1) Plunge Creek water to be used by SBVMWD and assumed to be unavailable for the project.
2) USGS Gage data for maximum discharge; San Timoteo Creek includes (-) 7,000 cfs for future recycled water allowances for City of Beaumont & Yucaipa Valley Water District (YVWD)
3) Hydraulic calculation based on s=0.05, n=0.05 (unlined/partially maintained), z=1, d/b=0.1.
4) Table 1: USGS Open-File Report 2005-1278.
Source: Geohydrologic Evaluation, pg. 25.

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3.11 CUMULATIVE IMPACTS

3.11.1 Definition of Cumulative Impacts

"Cumulative Impacts" describes potential environmental changes to the existing physical conditions that may occur with the Project together with all other past, present and reasonably foreseeable planned, and approved future projects.

3.11.1.1 Legal Requirements

Section 15355 of the California Environmental Quality Act (CEQA) Guidelines defines cumulative impacts as:

"…two or more individual effects which when considered together are considerable or which compound or increase other environmental impacts."

Section 15355 further describes potential cumulative impacts as follows:

(a) The individual effects may be changes resulting from a single project or a number of separate projects.

(b) The cumulative impacts from several projects are the change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time."

Cumulative impacts represent the change caused by the incremental impact of a project when added to other proposed or committed projects in the vicinity. Section 15355 of the Guidelines defines cumulative impacts to be ". . . two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Section 15130 of the CEQA Guidelines states that cumulative impacts shall be discussed where they are significant. It further states that this discussion shall reflect the level and severity of the impact and the likelihood of occurrence, but not in as great a level of detail as would be necessary for the project alone.

3.11.1.2 Methodology

Section 15130(b)(1) of the Guidelines states that the information utilized in an analysis of cumulative impacts should come from one of two sources:

1. A list of past, present, and probable future projects producing related cumulative impacts, including, if necessary, those projects outside the control of the agency; or

2. A summary of projections contained in an adopted general plan or related planning document designed to evaluate regional or area-wide conditions.

This EIR uses both the "list method" and "projection" methods described above, as a hybrid approach to addressing cumulative impacts. The list of projects below provides the reader with an understanding of specific potential cumulative projects, while the adopted plans noted below provide the reader with broader context for understanding and evaluating the potential for cumulative impacts.

3.11.2 Cumulative Projects and Relevant Regional Plans

The following project summaries represent past, present and probable future projects that could result in cumulative impacts when combined with the Riverside North Aquifer Storage and Recovery Project, focusing on Upper SAR watershed projects.

Regional Water Supply Projects

The Santa Ana River Watermaster Action Team, made up of Inland Empire Utilities Agency, Eastern Municipal Water District, Orange County Water District, San Bernardino Valley Municipal Water District and Western Municipal Water District are working together to identify, large, watershed-wide projects that would improve water supply reliability in the Santa Ana River Watershed. The following projects are presently being developed:

1. **"Economic based water use efficiency"**– This project will develop a set of "tools" for economic-based strategies that have proven effective at increasing water conservation in the watershed. These tools are intended to reduce the implementation cost to retail water agencies.

2. "**Watershed-Scale Conjunctive Use"** – This project would increase wet year storage and dry year groundwater production within the watershed to help reduce the impacts associated with drought.

3. **"Habitat Restoration and Arundo Removal"** – This project would create habitat for the Santa Ana sucker to help mitigate any "take" associated with water supply projects in the watershed. It will also remove the last amount of arundo, a non-native, water thirsty reed that has nearly been eradicated from the watershed.

A Prop 84 grant application has been developed for the economic-based water use efficiency project, which was submitted in summer 2014. Prop 84 grant applications for the other two projects are planned to be submitted for the subsequent funding round(s).

Upper Santa Ana River Habitat Conservation Plan

Development of the Upper Santa Ana River Habitat Conservation Plan (HCP)[1] is currently underway in a joint effort led by the San Bernardino Valley Municipal Water District (Valley District). The HCP participants include the permittees, the Wildlife Agencies, and other stakeholders. As of the end of Phase 1, there are ten water resource agencies participating in the HCP planning process, which includes:

1. San Bernardino Valley Municipal Water District
2. Western Municipal Water District of Riverside County
3. San Bernardino Municipal Water Department
4. San Bernardino Valley Water Conservation District
5. Riverside Public Utilities
6. East Valley Water District
7. West Valley Water District
8. Inland Empire Utilities Agency

1 http://www.uppersarhcp.com/

9. San Bernardino County Flood Control District
10. City of Rialto

This effort will analyze the cumulative impacts of proposed SAR water supply projects on the Santa Ana sucker and other select species. Should the analysis conclude the cumulative effects of these projects would result in a "take" of listed species, the participating agencies would work with the wildlife agencies on the required mitigation. The ultimate goal for the HCP is to obtain all of the necessary environmental permits for each of the included water supply projects, which include, but are not limited to, recharge projects, channel diversion projects, recycled water projects, as well as various maintenance and improvement projects along the Santa Ana River. *Exhibit 3.11-1, Cumulative Projects*, along with *Table 3.11-1, Upper SAR HCP Cumulative Projects Summary,* depicts proposed preliminary covered activities from the Final Phase 1 Report: Upper Santa Ana River Habitat Conservation Plan, prepared in March 2014 (note that there are other potential cumulative projects in the Upper Santa Ana River watershed, including various development projects, infrastructure, and other facilities traversing along or across the River, which are subject to the regulatory review process of multiple agencies and programs, as discussed further in Section 3.4 and 3.5).

The HCP is being prepared in coordination with the USFWS and CDFW (and other interested parties). Preparation of the HCP is anticipated to take approximately two to three years. The HCP will be coordinated with other regional HCPs.

Santa Ana River Water Right Applications for Supplemental Water Supply EIR

The Santa Ana River Water Right Applications for Supplemental Water Supply Environmental Impact Report (certified March 22, 2007) provided an evaluation of the potential environmental impacts associated with water right applications filed by the San Bernardino Valley Municipal Water District and Western Municipal Water District of Riverside County. The applications were filed with the State Water Resources Control Board to appropriate water from the Santa Ana River. The applications would divert and put to beneficial use a total of up to 200,000 acre-feet of water per year from the Santa Ana River. The applications would 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 the water agencies with greater capability to match varying supply and demand. This is relevant as both a cumulative project and for CEQA cumulative impact analysis. This EIR included an extensive analysis of cumulative impacts, specifically addressing diversion of Santa Ana River flows.

The City believes that the proposed RNASR project is consistent with the total diversion assumed in this 2007 Final EIR, which analyzed up to 200,000 acre-feet per year of diversions. The Final EIR itself contained extensive supplemental discussion of potential cumulative impacts downstream of Seven Oaks Dam (pages 2-27 through 2-114).

The project related facilities that had to be either modified or constructed as part of the 2007 EIR are located in four areas:

1. The Seven Oaks Dam and Reservoir Area

2. The Santa Ana River Construction Area

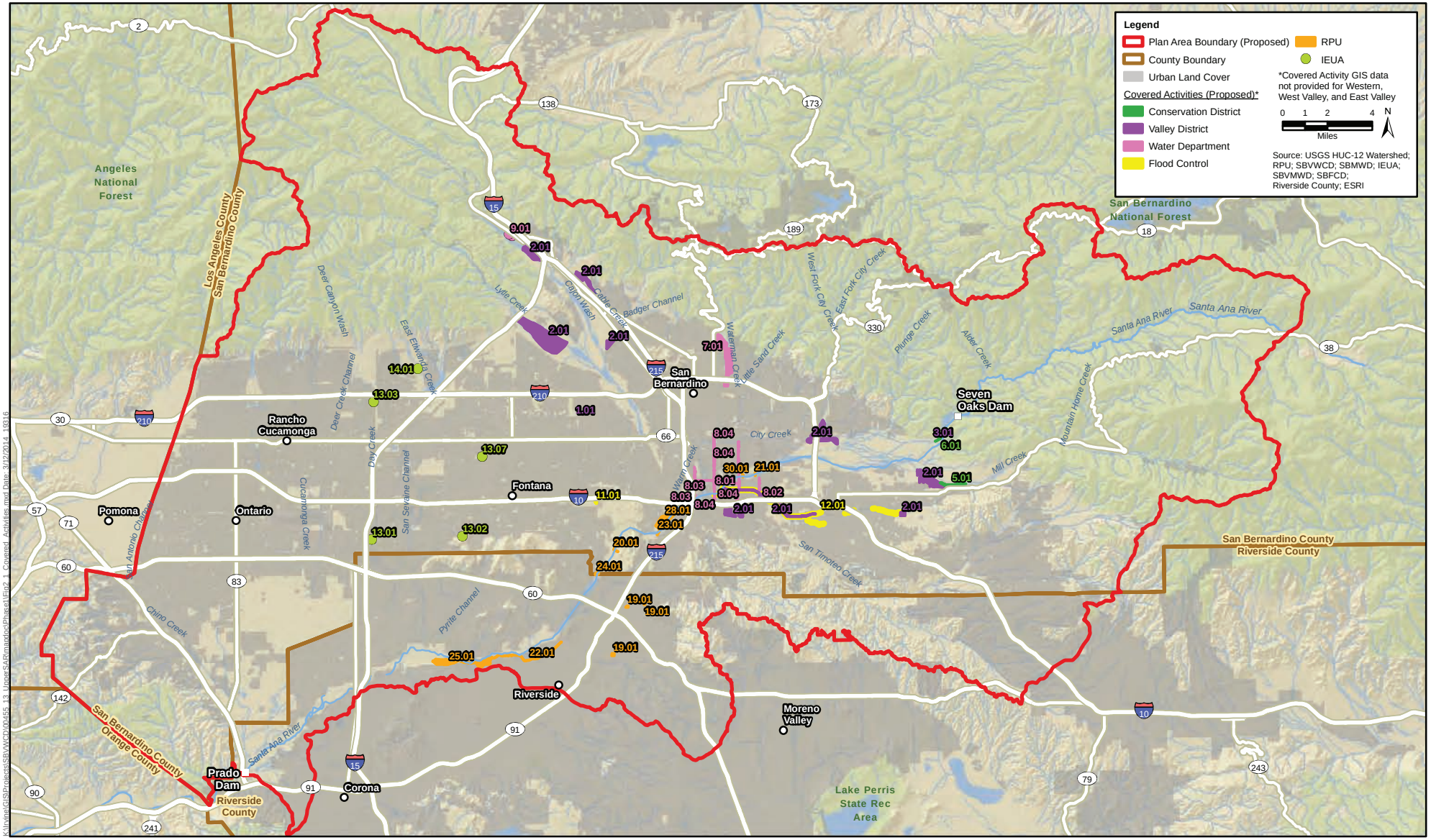
3. The Devil Canyon Construction Area

4. The Lytle Creek Construction Area

This water right application process will 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 the water agencies available to help meet the needs of other areas that depend on sources such as the State Water Project and Colorado River.

Upper Santa Ana River Watershed Integrated Regional Water Management Plan

SBVMWD, as the Lead Agency, in partnership with numerous other upper watershed agencies and stakeholders, developed the Upper Santa Ana River Watershed Integrated Regional Water Management Plan. The Plan identifies various management strategies and projects from water conservation, to recycling, to groundwater recharge and flood control. The IRWMP was updated in January 2015.



Source: *Upper Santa Ana River Habitat Conservation Plan*, Figure 2-1 (2014)

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Upper Santa Ana River Habitat Conservation Plan

Note: Refer to Table 3.11-1, *Upper SAR HCP Cumulative Projects Summary, on page 3.11-6* for a list of key projects.

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RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

Cumulative Projects

Exhibit 3.11-1

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Table 3.11-1 Upper SAR HCP Cumulative Projects Summary

ID	Proposed Covered Activity	Lead Agencies	Project Type Construction (C), Improvement (I), Operation (O), Maintenance (M)
1.01	Cactus Basin Recharge 1, 2, 3, 3A	Valley District/Flood Control	O,M
2.01	Active Recharge Project	Valley District/Flood Control	O,M
3.01	Enhanced Recharge Project	Conservation District	I,O
4.01	Pipelines: Foothill at City Creek, SAR Crossing, East Branch extension of SWP, Greenspot at Mill Creek	Valley District	O,M
5.01	Mill Creek Diversion and Channel Maintenance	Conservation District	M
6.01	Santa Ana River Channel Diversion and Cuttle Weir Maintenance	Conservation District	M
7.01	San Bernardino Recycle Water Project – Clean Water Factory	Water Department	C,O,M
8.01	Pipeline maintenance (Tippecanoe Ave, Mt. View Ave., E St, Waterman Ave, Orange Show Rd, Geothermal Pipeline)	Water Department	O,M
9.01	Kenwood Well Field and Pipeline	Water Department	C, O, M
10.01	Devil Creek Diversion Groundwater Recharge Basin	Water Department	C, O, M
11.01	Rialto Channel-Phase III	Flood Control	C, O, M
12.01	Basin and Channel Maintenance	Flood Control	M
13.01	Wineville Basin Recharge Master Plan Improvements	IEUA	I, M
13.02	RP-3 Basin Recharge Master Plan Improvements	IEUA	I, C
13.03	Lower Day Basin Recharge Master Plan Improvements	IEUA	I
13.07	Vulcan Basin Recharge Master Plan Improvements	IEUA	C, M
14.01	Etiwanda Debris Basin Improvements	IEUA	C
15.01	Basin Maintenance	West Valley	M
16.01	Pipeline Maintenance	West Valley	M
17.01	Canal Maintenance	West Valley	M
18.01	Other Routine Maintenance	West Valley	M
42.01	Lytle Creek Ranch Development Recycled Water Project	West Valley	O
19.01	Storm Water Capture Projects	RPU	C, O, M
20.01	Pipeline Crossing from Rapid Infiltration and Extraction	RPU	C, M
21.01	Future Gage Canal Transmission Main	RPU	C, M
22.01	Recycled Water Transmission Main Project	RPU	C, M
23.01	Flume and Riverside Canal Pipeline Replacements	RPU	C, M
24.01	Jurupa Ditch Company Well Maintenance	RPU	C,M
25.01	Hidden Valley Wetlands Restoration and Proposed Conveyance Facilities	RPU	C,O,M
26.01	Riverside Basin Proposed Recharge Project	RPU	C,O,M
27.01	Riverside Basin Proposed Wells and Pipelines	RPU	C,O,M
28.01	Riverside North Aquifer Storage and Recovery Project	RPU/Valley District/Western	C,O,M

Table 3.11-1, continued

ID	Proposed Covered Activity	Lead Agencies	Project Type Construction (C), Improvement (I), Operation (O), Maintenance (M)
29.01	Bunker Hill Basin Proposed Wells and Pipelines	RPU	C,O,M
30.01	Gage Canal Transmission Main Replacement	RPU	C,O,M
31.01	Harmony Development Surface Water Treatment Plant	East Valley	C,O,M
32.01	Harmony Development Wastewater Treatment Plant	East Valley	C,O,M
33.01	Routine Maintenance	East Valley	M
42.01	Pipeline Rehabilitation and Replacement Program	Western	M
43.01	Water Delivery and Wastewater Collection System Operation	Western	C,O,M
44.01	Recycled Water Live Stream Discharge	Western	C,O,M
45.01	Recycled Water Crossing to South AFC	Western	C,O,M
46.01	Stormwater Channel and Recycled Water Impoundment Upgrades to Western Water Recycling Facility	Western	I,O,M
47.01	Arlington Basin Water Quality Improvement Project	Western	C,O,M
48.01	La Sierra Pipeline Project	Western	C,O,M
49.01	Lake Mathews Water Treatment Plant	Western	C,O,M
50.01	Riverside Corona Feeder Project	Western	C,O,M
51.01	Replacement of the Owl Tree and March Line Pipelines	Western	I,O,M
52.01	Lake Mathews and Burwood Drive Pipeline Construction	Western	C,O,M
53.01	Construction of Potable Water/Recycled Water Tanks	Western	C,O,M

Source: Final Phase 1 Report: Upper Santa Ana River Habitat Conservation Plan (March, 2014), pg. 2-5 to 2-6.

3.11.3 Cumulative Impact Area

In respect to this EIR analysis, cumulative effects can generally be geographically classified as localized, site-specific resource issues, regional, watershed level resource issues and global resource issues. At the ***localized, site-specific resource scale***, the project's cumulative impacts have been analyzed for land use, noise, cultural resources, geology, and aesthetics impacts. The key documents incorporated for the analysis of these impacts were the Colton General Plan EIR, and San Bernardino County General Plan EIR. For the ***regional, watershed-level resource scale***, the project's cumulative impacts have been analyzed for biological resources, hydrology, and water supply. The key documents incorporated for this analysis included the Upper Santa Ana River Habitat Conservation Plan (HCP), SBVMWD "Water Rights Applications for Supplemental Water Supply EIR," Western Riverside MSHCP, San Bernardino County General Plan EIR, the Upper SAR IRWMP, as well as the Riverside County and San Bernardino County MS4 Permits and Watershed Action Plans. Lastly, at the ***global resource scale***, analysis of the project's cumulative impacts related to Air Quality and Greenhouse Gasses have been considered. The key document used for the analysis of the cumulative air quality impacts was the SCAQMD *Final 2012 Air Quality Management Plan*. These documents are cited where appropriate in the respective EIR section(s).

Each of the cumulative impact categories (EIR Sections 3.1 through 3.10) are analyzed and regulated by different agencies and associated regulatory or policy documents, in order to best protect the resource in question. Due to the large scale of the Santa Ana River Watershed, which spans 3,000 square miles, cumulative impacts related to the watershed in its entirety are beyond the regulatory purview of the City of Riverside.[2] The EIR therefore addresses the project's potentially significant impacts, recommends project-specific mitigation measures, and then also identifies existing or recommended measures to address potential cumulative impacts.

The cumulative impacts associated with the project, on a local, watershed-wide, and global scale are limited as the project will only be in operation under limited conditions. The project is intended to capture excess storm-water runoff within the Santa Ana River and facilitate recharge of the captured water into the underlying groundwater basin, but would only operate when flow in the River is less than 1,500 cfs. The project would also allow initial "first-flush" storm flows to pass, furthering reducing the total time that the project affects River flows. As discussed in Section 3.5, *Hydrology and Water Quality*, the project is not expected to have a significant impact on River hydrology. The project, when not in operation, will not impact the watershed and the resources within it.

3.11.4 Cumulative Impacts by Resource

3.11.4.1 Land Use and Relevant Planning

Impact CUMUL-1: Cumulative Changes in Existing Land Use, Agriculture, Population and Housing**. Level of Significance: No Impact.**

The *City of Colton General Plan EIR* (2013) addresses the cumulative impacts of long-term development within the surrounding project area with General Plan strategies that encompass sustainable community policies. Cumulative impacts to land use would be defined as impacts that result from either incremental changes in land use that would result in substantial disruption within an established community, or conflicts with adopted plans and policies related to avoidance or mitigation of environmental effects. The EIR concluded that the General Plan would not result in substantial disruption within an established community and therefore would not result in cumulative impacts in this area. In addition, it concluded the General Plan would not be in conflict with any land use plans or policies. The proposed project, though not under the jurisdiction of the City of Colton, proposes uses that are consistent with the land use designated for the site in the City of Colton General Plan (Open Space – Resource).

The project would not create significant new or cumulatively considerable land use impacts given its location within the Santa Ana River and its use of water resources consistent with all applicable regulations, laws, adjudications, policies and plans. The project does not represent a significant land use impact to the Santa Ana River, as water supply related uses already occur along the River, and the affected area is not utilized for any other land use at this time and there are no plans to change its use in the future. The project area is within a river and the immediate upland area. Due to the potential for fluctuating river flows, the only foreseeable and feasible uses for the immediate project area are water-resource or open space related. Therefore, the proposed project would not result in significant land use or planning impacts, that when combined with other

2 Santa Ana Watershed Association, Santa Ana Watershed Facts, www.sawatershed.org

past present and future projects would result in "cumulatively considerable" impacts to land use and relevant planning.

The proposed dam would periodically be inflated during storm events of a certain magnitude and deflated when flows are minimal, which would be considered a negligible cumulative contribution to other potential projects that may be proposed in the future. Therefore, the Santa Ana River would continue to function and maintain its current land use designation which would not contribute to any significant cumulative impacts to land use.

Based on the preceding analysis (See Section 3.1, *Land Use and Relevant Planning*), the Project is not anticipated to result in any significant project-related or cumulatively considerable impacts to Land Use or Relevant Planning programs.

3.11.4.2 Noise

Impact CUMUL-2: Cumulative Effects Related to Noise. L**evel of Significance: Less than Significant with Mitigation.**

The geographic area used for the cumulative noise impact analysis is generally the City of Colton as it is the City and surrounding area near the proposed project. Additional areas that were analyzed as part of the cumulative noise impact analysis included areas along the routes from the project site to the landfill that would experience the most significant impact of any construction noise resulting from the proposed project. Depending on the landfill chosen for disposal of materials during construction of the proposed project, the City of Loma Linda and/or the City or Redlands would also experience short-term construction-related noise impacts from truck trips associated with the proposed project. Operational noise would not likely be audible beyond the site boundaries and is not cumulatively considerable.

The *City of Colton General Plan Update EIR* (2013) addresses the cumulative noise impacts associated with development within the area immediately surrounding the project area. Planned or future projects in the area could consist of many types of development projects ranging from residential/commercial/industrial developments, to infrastructure projects that may occur near the proposed project site. All of these projects could result from General Plan Update implementation and would likely result in increases to ambient noise levels. The proposed project is an infrastructure project that is consistent with the General Plan Update, would only generate temporary construction-related noise, and no cumulatively considerable noise impacts would occur with project implementation. The primary goal of the Colton General Plan Noise Element is to protect public health and welfare by "eliminating noise problems and by preventing significant degradation of the future acoustic environment." Two Principles in the Colton Noise Element are; 1 – Establish criteria defining compatible land uses as a function of the level of noise exposure, and 2 – Control noise exposure from future noise generators so the ambient environment will be kept within acceptable limits. The continuing enforcement of Colton's Municipal Code would reduce potential noise impacts to less than significant levels. The City's General Plan Update EIR concludes that no cumulatively considerable noise impacts would result from implementation of the General Plan Update.

As the proposed project may also result in noise impacts to the City of Loma Linda and/or the City of Redlands, the General Plans of these jurisdictions have been considered in the cumulative noise impacts evaluation. Each jurisdiction has experienced an increase in ambient noise levels due to increasing development and traffic noise and has established policies to address noise issues. These include setting appropriate speed limits on roadways, noise thresholds for interior spaces and restrictions on noise intensive

uses to areas with compatible surrounding land uses through zoning. The proposed project would be consistent with the noise policies of these two jurisdictions and those of the City of Colton. However, temporary (less than significant) increases in ambient noise levels in at least two, and perhaps three of these jurisdictions would still occur.

Off-site haul trucks will create a temporary increase in arterial noise levels, which would contribute to existing traffic noise. The off-site haul truck noise would be temporary, limited to daytime hours (7:00 AM to 5:00 PM), and represents a relatively small fraction of existing or future noise levels (estimated at 320 to 640 ADT).[3] Though there is potential for cumulative short-term noise impacts to occur, the noise impacts from the proposed project would be temporary. With implementation of applicable existing regulations and incorporation of Measures NOI-1, NOI-2, and TRA-2, the project would have less than significant impacts and would not create cumulatively considerable noise or vibration impacts, given its location and nature. Construction noise at the site is relatively confined to the immediate area, which is predominantly industrial. Cumulative projects are therefore less likely to contribute to on-site construction noise due to separation both in time and geographically. As discussed above, operational noise will not produce significant noise or vibration impacts.

In summary, the Project-related cumulative impact would be less than significant with incorporation of Mitigation Measures NOI-1, NOI-2, and TRA-2 as recommended. With mitigation, the proposed project would not create a cumulatively considerable Noise impact.

3.11.4.3 Air Quality, Odor, and Climate Change

Impact CUMUL-3: Cumulative Impacts on Air Quality, Odor and Climate Change. **Level of Significance: Significant.**

Construction-Related Impacts

With respect to the proposed project's construction-period air quality emissions and cumulative Basin-wide conditions, the SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in the 2012 AQMP pursuant to FCAA mandates. As such, the proposed project would comply with SCAQMD Rule 403 requirements, and implement all feasible mitigation measures. As stated above, Rule 403 requires that fugitive dust be controlled with the best available control measures in order to reduce dust so that it does not remain visible in the atmosphere beyond the property line of the project site. In addition, the proposed project would comply with adopted 2012 AQMP emissions control measures. Per SCAQMD rules and mandates, as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., Rule 403 compliance, the implementation of all feasible mitigation measures, and compliance with adopted AQMP emissions control measures) would also be imposed on construction projects Basin-wide, which would include cumulatively-related projects.

Compliance with SCAQMD rules and regulations, as well as implementation of Mitigation Measures AQ-1 through AQ-4, would reduce the proposed project's construction related emissions. However, emissions of NO_X and PM_{10} would not be reduced to a less than significant level.

3 City of Loma Linda General Plan Circulation Element (2009), Figure 6.2, shows existing Barton Road at approximately 24,000 ADT, and Figure 6.4 shows buildout peak hour volumes of approximately 3,000. This project's off-site truck haul traffic represents approximately 3% and 2.2% of these volumes, respectively.

Other local and regional projects may contribute further to temporary or long-term exceedance of NO_X and PM_{10} emission levels. The type and scope of construction requirements and the length of time of the construction period would vary with each of the projects identified. Further, the year(s) in which construction would occur for each project would also vary, with construction occurring in later years anticipated to result in lesser impacts with regard to air quality and GHG emissions, as air quality in general within the air basin is assumed to continually improve over future years (e.g. with increased use of clean-fuels, low-emission vehicles, stricter emission regulations, etc.). As air emissions are regional and disperse throughout the Basin, individual projects that generate emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is in non-attainment. Since the project would exceed applicable construction emissions thresholds, it represents a cumulatively considerable contribution to cumulative air quality impacts. Therefore, a potentially significant unavoidable impact would occur in this regard.

The project implements reasonable and feasible mitigation measures. Although daily construction air quality emissions could be reduced by prolonging the construction period (exporting less soil each day, and/or reducing the intensity of site grading), this is not considered feasible as it would create additional construction-related impacts (such as traffic and noise) by extending the construction period, and would also delay implementation of the project, an important regional water supply project.

Operational Impacts

As discussed previously, the proposed project would not result in long-term air quality impacts. Long-term operations would generally be limited to periodic maintenance visits. The proposed project would not be a trip-generating land use. As a result, any long-term mobile source emissions would be infrequent and nominal. Additionally, operation of the proposed project would require the limited use of stationary equipment (i.e., air compressor, generator, etc.).

Maintenance requirements of other projects considered for the cumulative analysis would vary, due to the type and scale of the project. Typical maintenance activities would include equipment repair and replacement, routine upkeep of project components, and assessing equipment for efficiency and performance. However, some projects may be unmanned and generally operate with limited routine maintenance required, while others may require the presence of maintenance personnel and/or equipment on an ongoing, daily basis. For example, the maintenance requirements for a desalination facility would substantially differ from that required for a regional stormwater capture and recharge project.

As shown in the analysis in Section 3.3, *Air Quality* (Impact 3.3-2), the proposed project operations would not contribute a cumulatively considerable net increase of any nonattainment criteria pollutant. Therefore, the project's operational emissions would not be cumulatively considerable and cumulative operational impacts associated with project operations would be less than significant.

Global Climate Change

California is a substantial contributor of global GHGs, emitting over 400 million metric tons of CO_2 a year.[4] Climate studies indicate that California is likely to see an increase of three to four degrees Fahrenheit over the

4 California Environmental Protection Agency – California Air Resources Board. *California Greenhouse Gas Emissions for 2000 to 2010 – Trends by Emissions and Other Indicators. March 4, 2013.* http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_trends_00-10_2013-03-04.pdf. Accessed August 15, 2013.

next century. Methane is also an important GHG that potentially contributes to global climate change. GHGs are global in their effect, which is to increase the earth's ability to absorb heat in the atmosphere. As primary GHGs have a long lifetime in the atmosphere, accumulate over time, and are generally well-mixed, their impact on the atmosphere is mostly independent of the point of emission.

The impact of anthropogenic activities on global climate change is apparent in the observational record. Air trapped by ice has been extracted from core samples taken from polar ice sheets to determine the global atmospheric variation of CO_2, methane, and nitrous oxide from before the start of the industrialization (approximately 1750), to over 650,000 years ago. For that period, it was found that CO_2 concentrations ranged from 180 parts per million (ppm) to 300 ppm. For the period from approximately 1750 to the present, global CO_2 concentrations increased from a pre-industrialization period concentration of 280 ppm to 379 ppm in 2005, with the 2005 value far exceeding the upper end of the pre-industrial period range.

Regulations and Significance Criteria

The Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. It concluded that a stabilization of GHGs at 400 to 450 ppm carbon dioxide-equivalent concentration is required to keep global mean warming below 2 degrees Celsius (ºC), which in turn is assumed to be necessary to avoid dangerous climate change.

California Governor Arnold Schwarzenegger issued Executive Order S-3-05 in June 2005, which established the following GHG emission reduction targets:

1. 2010: Reduce GHG emissions to 2000 levels;
2. 2020: Reduce GHG emissions to 1990 levels; and,
3. 2050: Reduce GHG emissions to 80 percent below 1990 levels.

Assembly Bill (AB) 32 requires that CARB determine what the Statewide GHG emissions level was in 1990, and approve a Statewide GHG emissions limit that is equivalent to that level, to be achieved by 2020. In December 2007, CARB approved a 2020 emissions limit of 427 metric tons of CO_2 equivalent ($MTCO_2eq$).[5]

Due to the nature of global climate change, it is not anticipated that any single development project would have a substantial effect on global climate change. It is difficult to deem a single development as individually responsible for a global temperature increase. In actuality, GHG emissions from the proposed project would combine with emissions emitted across California, the United States, and the world to cumulatively contribute to global climate change.

On December 5, 2008, the SCAQMD adopted GHG significance thresholds for Stationary Sources, Rules, and Plans where the SCAQMD is lead agency. The threshold uses a tiered approach. A project is compared with the requirements of each tier sequentially and would not result in a significant impact if it complies with any tier. Tier 1 excludes projects that are specifically exempt from SB 97 from resulting in a significant impact. Tier 2 excludes projects that are consistent with a GHG reduction plan that has a certified final CEQA document and complies with AB 32 GHG reduction goals. Tier 3 excludes projects with annual emissions lower than a screening threshold. For industrial stationary source projects, the SCAQMD adopted a screening

5 California Environmental Protection Agency – California Air Resources Board. *Assembly Bill 32: Global Warming Solutions Act.* http://www.arb.ca.gov/cc/ab32/ab32.htm. Accessed August 15, 2013.

threshold of 10,000 $MTCO_2eq$ per year. This threshold was selected to capture 90 percent of the GHG emissions from these types of projects where the combustion of natural gas is the primary source of GHG emissions. SCAQMD concluded that projects with emissions less than the screening threshold would not result in a significant cumulative impact. Tier 4 consists of three decision tree options.

Under the first option, the project would be excluded if design features and/or mitigation measures resulted in emissions 30 percent lower than business as usual emissions. Under the second option the project would be excluded if it had early compliance with AB 32 through early implementation of CARB's Scoping Plan measures. Under the third option, project would be excluded if it met sector based performance standards. However, the specifics of the Tier 4 compliance options were not adopted by the SCAQMD board in order to allow further time to develop the options and coordinate with CARB's GHG significance threshold development efforts. Tier 5 would exclude projects that implement offsite mitigation (GHG reduction projects) or purchase offsets to reduce GHG emission impacts to less than the proposed screening level.

While not adopted by the SCAQMD Board, the guidance document prepared for the stationary source threshold also suggested the same tiered approach for residential and commercial projects with a 3,000 $MTCO_2eq$ per year screening threshold. However, at the time of adoption of the industrial stationary source threshold, the SCAQMD felt additional analysis was required along with coordination with CARB's GHG significance threshold development efforts.

At the November 2009 meeting of the SCAQMD GHG working group, SCAQMD staff presented two options for screening thresholds for residential and commercial projects. The first option would have different thresholds for specific land uses. The proposed threshold for residential projects is 3,500 $MTCO_2eq$ per year, the commercial threshold is 1,400 $MTCO_2eq$ per year, and the mixed-use threshold is 3,000 $MTCO_2eq$ per year. The second option would apply the 3,000 $MTCO_2eq$ per year screening threshold for all commercial/residential projects. Lead agencies would be able to select either option. These thresholds are based on capturing 90 percent of the emissions from projects and requiring them to comply with the higher tiers of the threshold (i.e., performance requirements or GHG reductions outside of the project) to not result in a significant impact.

SCAQMD staff also presented updates for compliance options for Tier 4 of the significance thresholds. The first option would be a reduction of 23.9 percent in GHG emissions over the base case. This percentage reduction represents the land use sector portion of the CARB Scoping Plan's overall reduction of 28 percent. This target would be updated as the AB 32 Scoping Plan is revised. The base case scenario for this reduction still needs to be defined. Residual emissions would need to be less than 25,000 $MTCO_2eq$ per year to comply with the option. Staff proposed efficiency targets for the third option of 4.6 $MTCO_2eq$ per year per service population (population employment) for project level analysis and 6.6 $MTCO_2eq$ per year for plan level analyses. For project level analyses, residual emissions would need to be less than 25,000 $MTCO_2eq$ per year to comply with this option.

SCAQMD staff recommended extending the 10,000 $MTCO_2eq$ per year industrial project threshold for use by all lead agencies. The two options for land-use thresholds were reiterated with a recommendation that lead agencies use the second, 3,000 $MTCO_2eq$ per year threshold for all non-industrial development projects. Staff indicated that they would not be recommending a specific approach to address the first option of Tier 4, Percent Emissions Reduction Target. If lead agencies enquire about using this approach staff will reference the approach recommended by the San Joaquin Valley Air Pollution Control District and describe the challenges to using this approach. For the third option of Tier 4, SCAQMD staff re-calculated the recommended Tier 4 efficiency targets for project level analyses to 4.8 $MTCO_2eq$ per year in 2020 and 3.0

$MTCO_2$ per year in 2035. The recommended plan level analysis efficiency target remains 6.6 $MTCO_2eq$ per year for 2020, but was lowered to 4.1 $MTCO_2eq$ per year for 2035. SCAQMD staff also stated that they are no longer proposing to include a 25,000 $MTCO_2eq$ per year maximum emissions requirement for compliance with Tier 4.

For the proposed project, the 3,000 $MTCO_2eq$ per year non-industrial screening threshold is used as the significance threshold, in addition to the qualitative thresholds of significance set forth below from section VII of Appendix G to the State *CEQA Guidelines*.

Direct Project-Related Sources of Greenhouse Gases

Table 3.11-2, Estimated Greenhouse Gas Emissions, presents the CO_2, N_2O, and CH_4 emissions as well as their CO_2 equivalent values for the construction phase of the proposed project. The project would not generate substantial operational project-related GHG emissions from area sources and mobile sources, as project operations would involve infrequent maintenance trips to the project site. CalEEMod was used to calculate construction-related GHG emissions. CalEEMod relies upon construction worker trips and off-road equipment emissions. As seen in *Table 3.11-2*, total project-related construction GHG emissions would be 2,337.14 $MTCO_2eq$/year. Construction GHG emissions are typically summed and amortized over the lifetime of the project (assumed to be 30 years), then added to the operational emissions.[6] Therefore, amortized construction emissions represent the total operational emissions for the proposed project. Direct, project-related operational emissions would result in 77.90 $MTCO_2eq$/year. This falls well below the SCAQMD screening threshold of 3,000 $MTCO_2eq$/year, and therefore does not represent a significant GHG impact.

Table 3.11-2 Estimated Greenhouse Gas Emissions

Source	CO_2	N_2O		CH_4	
	Metric tons/year	Metric tons/year	Metric tons of CO_2eq[2]	Metric tons/year	Metric tons of CO_2eq[2]
Construction Emissions[1]					
Year 1	2,141.72	0.00	0.00	0.13	2.70
Year 2	192.43	0.00	0.00	0.01	0.29
Total Construction Emissions ($MTCO_2eq$)[3]	**2,337.14**				
Total Amortized Construction Emissions (30 years) ($MTCO_2eq$)[4]	**77.90**				
Greenhouse Gas Emissions Threshold ($MTCO_2eq$/year)	*3,000*				
Is Threshold Exceeded?	***No***				
CO_2 = Carbon Dioxide; N_2O = Nitrous Oxide; CH_4 = Methane; $MTCO_2eq$/year = metric tons of CO_2 equivalent per year					

Notes:
1. Emissions calculated using the CalEEMod computer model.
2. CO_2 Equivalent values calculated using the U.S. Environmental Protection Agency Website, Greenhouse Gas Equivalencies Calculator, http://www.epa.gov/cleanenergy/energy-resources/calculator.html. Accessed November 2011.
3. Totals may be slightly off due to rounding.
4. The project lifetime is based on the standard 30 year assumption of the South Coast Air Quality Management District (http://www.aqmd.gov/aqmp/2012aqmp/index.htm.

Refer to Appendix C, *Air Quality Measurements*, for detailed model input/output data.

6 The project lifetime is based on the standard 30 year assumption of the South Coast Air Quality Management District (http://www.aqmd.gov/aqmp/2012aqmp/index.htm.

As described above, the proposed project will contribute to cumulative Air Quality and Climate Change impacts in the immediate area and greater region of the proposed project. The project requires grading for construction, maintenance and operation of a water resource facility. This would result in fugitive dust and emissions from manmade equipment and fossil fuel use. However, only short-term construction NO_X and PM_{10} emissions would result in a significant temporary impact. Since the project would exceed applicable construction emissions thresholds, it represents a cumulatively considerable contribution to cumulative air quality impacts.

As stated previously, the proposed project would not result in a significant impact regarding GHG emissions, as the project would not exceed the 3,000 $MTCO_2eq$/year significance threshold. It is generally the case that an individual project of this size and nature is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory.[7] GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective.[8] The additive effect of project-related GHGs would not result in a reasonably foreseeable cumulatively considerable contribution to global climate change. For the reasons discussed in this section and because the project incorporates GHG reduction measures and design features, the project's cumulative GHG emissions would have a less than significant impact on the environment.

3.11.4.4 Biological Resources

Impact CUMUL-4: Cumulative Loss of Sensitive Biological Resources. **Level of Significance: Less than Significant.**

An evaluation of whether an impact on biological resources would be cumulatively considerable must consider both the resource itself and how that resource fits into a regional or local context. Cumulatively considerable impacts would be those that, along with impacts from other past, present and planned projects substantially diminish or result in the loss of an important biological resource, or those that would conflict with local, State, and/or federal resource conservation plans, goals, or regulations. Impacts can be locally adverse but not cumulatively considerable because, although they would result in an adverse alteration of existing conditions, they would not substantially diminish or result in the permanent loss of an important resource on a population- or region-wide basis.

The City of San Bernardino Municipal Water Department has proposed the Clean Water Factory (CWF), and released a Notice of Preparation (NOP) under CEQA and a Notice of Intent (NOI) under NEPA and is therefore appropriate to evaluate as a cumulative project. The CWF is potentially relevant as a cumulative project because it proposes to reduce year-round base flow from the Rapid Infiltration and Extraction (RIX) facility located approximately 3 miles downstream of the RNASR project. In combination with the City of Rialto's WWTP discharge, the water RIX discharges currently supports the perennial section of river and its associated riparian habitat. This area of the Santa Ana River is important to the Santa Ana sucker population as conditions necessary for spawning, forage, and refugia (exposed gravels, algae and riparian cover) are usually present in this portion of the river. , Potential effects to the resource and this River section is of most concern from a cumulative perspective, due to its unique habitat for the federally listed Santa Ana River sucker.

7 California Air Pollution Control Officers Association, *CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*, 2008.

8 Ibid.

CWF proposes improvement to the existing San Bernardino Water Reclamation Plant (SBWRP) and the installation of distribution pipelines that would allow the City of San Bernardino to increase the availability of recycled waters to local users. CWF will treat effluent from SBWRP that will then be pumped to recharge basins to artificially recharge the Bunker Hill Groundwater Basins. The SBWRP currently treats wastewater to secondary treatment standards and then conveys the treated effluent to the RIX facility for tertiary treatment and discharge into the Santa Ana River. RIX discharges approximately 36 million gallons per day (mgd) to the Santa Ana River. As part of the CWF project, RIX could reduce its discharge into the Santa Ana River from 36 mgd to as little as 11.9 mgd. This reduction in discharge is planned to be phased over a 25-year period which equates to approximately a 5 mgd reduction every five years. The total reduction at year 25 represents approximately a 67% reduction from current conditions and would be expected to adversely impact in-stream habitat and adjacent riparian habitat (an assessment of impacts combined with proposed mitigation measures have not yet been developed and evaluated for their combined significance level).

The CWF project proposes a permanent reduction to the base flow in the perennial section of the Santa Ana River beginning at the RIX discharge location. Potential substantial and adverse impacts that may result from a reduction of base flow may include the following:

1) Long-term loss of in-stream habitats due to decreasing depths and wetted width of the river due to reduced perennial water availability. In-stream habitats include Santa Ana sucker habitat, arroyo chub habitat, and elements of Santa Ana sucker designated critical habitat;

2) Reduction of exposed coarse substrate resulting from decreased velocity and reduced sand transport off the gravel beds. Few and smaller gravel beds may result in reduced forage (algae on rocks), increased physiologic stress and decrease fitness, reduced survivorship of eggs and/or increased predation on eggs, increased chances of smothering of eggs under shifting sands, and overall reduction of successful sucker reproduction; and

3) Loss and/or degradation of riparian habitat along the river banks resulting from less water to sustain riparian vegetation. Riparian habitat includes least Bell's vireo habitat, southwestern willow flycatcher habitat, and southwestern willow flycatcher critical habitat. The potential reduction of vegetative cover along the edge of the stream could result in higher water temperatures and increased predation from lack of protective cover in Santa Ana sucker habitat. Increased water temperatures could also have indirect long term effects for fishes such as increased physiologic stress, reduced reproduction, reduced egg survival, and reduced overall fitness of fish in this reach which may have adverse impacts to the long-term health of the sucker population in the Santa Ana River since this is an important area for sucker recruitment.

In the absence of regulatory agency imposed mitigation, the CWF project may result in potentially significant adverse impacts to biological resources downstream of the RIX facility. Any project that contributes further to these potentially significant impacts would be considered to have cumulatively considerable impacts to biological resources. However, the proposed RNASR project has no additive effects that, when considered with the CWF proposal, would substantially diminish habitat or result in the loss of an important biological resource downstream. The basis for the lack of cumulative significant effects is that the two proposed projects have different operational -profiles. The CWF project will permanently reduce base flows in perennial reaches of the Santa Ana River while the RNASR project will divert a particular volume of storm flows that would not reach sensitive species at the CWF site, approximately 3 miles downstream. In this river system, storm flow, even when present, does not necessarily intersect with the base flow which supports the biologically sensitive areas.

1) The RNASR project proposes to remove a portion of storm flow which does little to maintain Santa Ana sucker habitat in the perennial reach of the River. Suckers need exposed gravels and cobbles in order to successfully spawn and forage. Storm flow typically deposits sands and silts rather than removing sediment from existing gravel and cobble substrate. Reduction in storm flow from the project will have no effect on the process that removes sand off existing gravel beds in the perennial reach (consistent steady flows over time). Additionally, the project will be permanently removing some portion of sand from the River during maintenance operations thus decreasing the amount that could be deposited downstream on gravel beds.

2) The project will not permanently impact supply or movement of coarse substrate material from upstream to downstream reaches as the dam will not be operational during large storm events that have enough energy to move gravels and cobbles downstream.

3) The narrow segment of storm flows to be diverted by the rubber dam 3 miles upstream do not reach the perennial flow in order to provide long term benefit to riparian habitat. Very little, if any, vegetation exists between the RNASR project site and the RM 53 where perennial flow and large stands of riparian vegetation begin. This suggests that periodic storm flow is not able to create and sustain riparian communities long-term, and, therefore, reduction in storm flow would not result in permanent loss or degradation of riparian habitat downstream.

4) The project has no effect on base flows in the perennial section of the River which currently provides habitat for Santa Ana sucker and other riparian-dependent resources.

Project-specific adverse impacts are expected to be minimal and unlikely to occur. If adverse impacts were to occur they would be short-lived and not result in the permanent loss of important habitat components (feeding, breeding, or refugia habitat) on a population- or region-wide basis. If deemed necessary by the regulatory agencies, the mitigation proposed (Hole Creek) as part of this project can offset potential impacts to species and their habitat by restoring an existing degraded stream, including supplemental water supply if needed, in an area of the Santa Ana River that has been occupied by Santa Ana sucker. This mitigation would expand suitable habitat for Santa Ana sucker and provide a functional tributary along the mainstem for spawning and refugia.

On a broader scale, the natural resources within the Upper SAR may be adversely affected by a variety of other factors, collectively adding to the potential for significant cumulative impacts. These factors include the potential for reduced storm flows due to continuing or future drought conditions, additional SAR storm flow diversions beyond those listed in the Upper SAR HCP. The overall amount of water entering system will likely decline over time as local agencies seek more aggressive and creative means to capture, recharge and reuse local run off and treated wastewater as a long term planning tool in response to drought conditions and growing populations. Two large conservation efforts are underway within the Santa Ana River and its adjacent floodplain: 1) the Upper Santa Ana River Wash Plan and HCP; and 2) the Upper Santa Ana River HCP. RPU is a member of the second HCP and the proposed project is a "covered" project under Plan (as is the CWF project). The Upper SAR HCP is developing ways to improve current conditions for sensitive species in the River while meeting the water supply needs of the upper Santa Ana River watershed. The HCP plans to use water strategically for multiple benefits (habitat, groundwater recharge) throughout the system. Planning is underway for restoration activities that will offset the potential impacts of groundwater supply and other regional projects included in the HCP although the Plan is in early stages and no environmental documents have been produced, to date.

Additionally, the Santa Ana Sucker Conservation Team, formed in 1998, of which RPU is a member, seeks to "determine the reasons for the decline of the Santa Ana sucker in the Santa Ana Watershed and devise strategies for the recovery of the species." Under the direction of the Conservation Team, scientists have been gathering data on population size, distribution and habitat requirements of the sucker since 2001.

Without full implementation of the above mentioned HCPs and other conservation programs aimed at providing long-term comprehensive protection for biological resources and in-stream and riparian habitats found within the Santa Ana River and wash habitats, the incremental impact of other projects listed in this section may significantly impact biological resources. Unregulated, the incremental effects would likely be cumulatively considerable and thus significant. However, it is expected that all projects with adverse impacts in the Santa Ana River will meet obligations to address those impacts with the both the state and federal wildlife agencies during the regulatory process. It is also expected that regulators will not issue permits to projects without appropriate measures that will offset incremental and cumulative impacts to sensitive species and habitat in the watershed.

3.11.4.5 Hydrology and Water Quality

Impact CUMUL-5: Cumulative Impacts related to Hydrology and Water Quality. **Level of Significance: Less than Significant with Mitigation.**

The proposed project is intended to capture a portion of storm water from the Santa Ana River when flow less than 1,500 cfs. Diverted water will recharge into the underlying groundwater basin. With mitigation, the project is not anticipated to result in any significant impacts to hydrology or water quality. From a flood control perspective, the project will not have any significant impacts, considering the enormous flood control capacity of Santa Ana River and the diversion limit of 200 cfs.). As noted above, the rubber dam and basins provide a slight flood control benefit by attenuating peak storm flows. From a sediment and water quality perspective, the project is also not expected to result in any significant impacts (refer to Section 3.4, *Biological Resources* for a discussion of sediment as it relates to downstream sensitive species, and refer to Section 3.10, *Water Supply*, as it relates to the project's surface flow diversion effects on downstream water supply and groundwater). The off-stream recharge basins will also allow diversion, collection and removal of fine sediments and associated pollutants, providing an additional water quality benefit.

Considering the lack of project level significant impacts, the project is also not expected to result in a "cumulatively considerable" impact to hydrology or water quality. The discussion below provides a summary of cumulative hydrology and water quality impacts within the Santa Ana River, for perspective, and to further support the lack of project cumulative impacts. The key CEQA documents incorporated for this analysis included the 2007 *SBVMWD Santa Ana River Water Right Applications for Supplemental Water Supply EIR*, Upper SAR IRWMP, and San Bernardino County General Plan EIR and City of Riverside General Plan EIR. Additionally, the Upper Santa Ana River Habitat Conservation Plan (HCP), Western Riverside MSHCP, Riverside County and San Bernardino County MS4 Permits and Watershed Action Plans were considered.

The 2007 *SBVMWD Water Rights Applications Final EIR* included an extensive analysis of cumulative impacts, specifically addressing diversion of Santa Ana River flows. The project is consistent with the total diversion assumed in the 2007 Final EIR. The Final EIR itself contained extensive supplemental discussion of potential cumulative impacts downstream of Seven Oaks Dam (pages 2-27 through 2-114). The *SBVMWD EIR* concludes that sediment impacts from cumulative projects would be less than significant with mitigation and that there are potential water quality impacts of cumulative projects on non-storm days (increased TDS and TIN). The proposed RNASR project does not represent a cumulative considerable contribution to this

previously identified cumulative water quality impact as discussed in this section, and in fact has a slight water quality benefit due to sediment removals.

The amount of water captured by the project over a typical water year represents only a small percentage of the total flow of the Santa Ana River. As stated previously, water captured by the proposed project would be appropriated under Decision 1649, and WMWD and SBVMWD are entitled to appropriate water by direct diversion and storage to groundwater basins for beneficial use within the boundaries of the areas administered by WMWD and SBVMWD. Compliance with such regulations would ensure that long-term operation of the proposed project would not contribute to a cumulative impact on groundwater resources. The anticipated project operations scenario would ensure that more than the minimum flows necessary to comply with the terms in the 1969 Judgment and Decision 1649 are sustained downstream of the proposed project, and that all water users and other entities continue to receive the water to which they are entitled. Per the provisions of the Judgment, Watermaster determines the annual extractions, area of use, and water levels in the Colton and Riverside Basin Areas. Excess extractions and any other obligations or credits by users within Western along with water levels in key indicator wells are used to determine if replenishment is required. As water diversion occurring with the proposed project would not cause a net deficit in volume of the underlying aquifer, the project would not contribute to a cumulative impact on groundwater resources. Refer also to Section 2, *Project Description,* and Section 3.10, *Water Supply*, for additional background and history on SAR water rights.

The modeling results from the *Geohydrologic Evaluation* indicate that the project would provide a beneficial effect for local pumping wells during the months of greatest recharge by reducing the drawdown in groundwater levels in the pumping wells while the wells are in operation. Groundwater levels are (and would continue to be) monitored daily at the project location. Effective groundwater monitoring would assist with estimating recharge rates, help determine groundwater quantity in storage to avoid depletion of supplies, and is used to assess water quality by verifying potable/domestic water suitability. As such, implementation of the project would not contribute to a depletion of groundwater supplies or contribute to a net deficit in aquifer volume or a lowering of the local groundwater table level. Flows downstream would not be substantially reduced by the project, and a viable water supply would remain available for use as recharge, as applicable. Therefore, the project would not contribute to a cumulative impact with regard to groundwater.

The project, along with other future development projects, would comply with all applicable federal, State, and local water quality regulations, including applicable elements of the region's Basin Plan, the Porter-Cologne Water Quality Control Act, and the federal CWA. Storm water and non-storm water runoff associated with construction activities that discharge either directly to surface waters or indirectly through MS4s must be regulated by an NPDES permit. The project would be required to obtain coverage under the General NPDES Permit for construction activities prior to site disturbance, and would need to meet San Bernardino County requirements for new development specified in its municipal permit from the RWQCB. In compliance with the NPDES permit, a SWPPP would be prepared and implemented to identify potential on-site pollutants, and to identify storm water BMPs to be implemented during construction and grading, as well as post-construction BMPs (consistent with applicable County and/or City standards). The project would further contribute to the protection of the quality of surface waters by obtaining a State Water Quality Standards Certification, as specified in Section 401 of the Clean Water Act, from the RWQCB to demonstrate that project activity complies with all applicable water quality standards, limitations, and restrictions. The project would also be regulated through USACE 404 permit and CDFW 1602 Streambed Alteration Agreement permit requirements (in addition to project-specific mitigation measures proposed) to ensure that the project does not contribute to a cumulative effect on water quality (refer also to Section 3.4, *Biological*

Resources, for additional discussion). Such storm water management measures would reduce the potential impact of storm water pollutants and discharges.

To ensure that the project does not contribute to a cumulative effect with regard to flooding, the proposed project would be subject to regulations imposed by FEMA, USACE and San Bernardino County Flood Control District for floodplain management in order to reduce future flood risk and potential damage to structures located within the floodplain. Similarly, all future development projects within the Santa Ana River floodplain would also be subject to such regulations to minimize the potential for flooding and related adverse effects to occur. Project compliance with USACE regulations and requirements of the Section 408 permit (regarding the structural integrity of adjacent existing levees) would be required to further reduce the potential for the project to contribute to a risk of flooding. The project would be subject to requirements of the County of San Bernardino Flood Control District (FCD) regarding facility design and operational requirements. Due to the size of the Santa Ana River Watershed, cumulative impacts associated with current and future projects located within its reach will also be regulated and monitored by the regional agencies that oversee the watershed in its entirety. Required compliance with regulations set forth by the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, State Water Resources Control Board, Regional Water Quality Control Board, FEMA, the U.S. Army Corps of Engineers, County Flood Control Districts and other agencies that oversee the SAR watershed and its resources will provide additional oversight to manage and monitor cumulative impacts within the watershed. Again, as noted above, the project itself is not expected to have any project-level or cumulatively considerable significant impacts to hydrology or water quality.

The proposed project is part of long-term coordinated plans to increase sustainability of water resources by water agencies and other public entities along the Santa Ana River, and within the greater watershed area, and is a proposed project listed as part of the Upper Santa Ana River HCP (currently in phase two of the three-phase project, and anticipated to take approximately two to three years to complete). The HCP is being developed as part of the process for obtaining permits from federal and State agencies to build the included water-related projects. Phase 2 HCP development includes an extensive effort to study, define, and model the hydrology of the Santa Ana River Watershed in an effort to understand how to avoid or minimize adverse hydrological impacts from cumulative water management projects within the watershed. The Hydrology Technical Advisory Committee of the HCP effort meets on a bi-monthly basis to discuss watershed flow analyses, flow modeling, and flow-ecological relationships among other related subjects. Much general information about Santa Ana River hydrology is also being collected and analyzed for this effort. Riverside Public Utilities is part of the team studying the complex hydrology of the SAR watershed, and this data is available for use in design and operation of the proposed project.

The Upper Santa Ana River HCP Hydrology Technical Advisory Committee is in the process of developing a watershed-wide, holistic conservation strategy for the Santa Ana sucker that will serve as a blueprint for conservation mitigation measures for the proposed project and others in the region. The Upper Santa Ana River HCP Team is studying and developing mitigation for cumulative impacts to the sucker (among other plant and animal species within the watershed). The HCP development process includes coordination with other regional HCPs in order to consider biological resources on a cumulative level for the region with regard to anticipated water supply projects and other development. Once implemented, future development projects within the boundaries of the HCP would be subject to the requirements of the Plan aimed at the long-term comprehensive protection of sensitive biological species and habitats. The proposed project will be working in parallel with the HCP planning process; however, the mitigation developed and agreed upon will be a portion of a much larger conservation strategy. Refer also to Section 3.4, *Biological Resources*, for additional information.

3.11.4.6 Cultural Resources

Impact CUMUL-6: Cumulative Increase in Impacts on Cultural Resources. **Level of Significance: Less than Significant with Mitigation.**

The *City of Colton General Plan EIR* addresses cumulative impacts of development to cultural resources within the area surrounding the proposed project area of potential effect. Project development has the potential to impact cultural resources in the Colton area and throughout the San Bernardino Valley. General Plan policies within Colton, and surrounding jurisdictions, combined with various regulatory requirements and safeguards, would prevent these impacts from being significant. Similarly, with implementation of applicable existing regulations and incorporation of Mitigation Measures CUL-1 through CUL-9 (see Section 3.6, *Cultural Resources*), the proposed project would not create significant new or cumulatively considerable cultural resource impacts, given its location and nature.

The Cultural Resources Study for the proposed project (Appendix G, *Identification and Evaluation of Historic Properties*), delineates previous cultural resources studies in the vicinity of the project in Figure 4 of Appendix G. The Cultural Resources Study also indicates previously recorded cultural resources in the project vicinity in Table 1 of Appendix G. These cultural resources and potential resources in the vicinity could be disturbed under some development scenarios. Planned or future projects in the area could consist of many types of development projects ranging from residential/commercial/industrial developments, to projects related to the proposed dam project that may occur along the Santa Ana River that may include, but not be limited to, recharge projects, channel diversion projects, recycled water projects, and various maintenance and improvement projects along the Santa Ana River. Planned or future projects in the area would be subject to applicable federal, State, and local regulations. However, unforeseen impacts to cultural resources could still occur in undisturbed areas. Given the knowledge of cultural resources in the area and various procedural safeguards regarding cultural resources, the likelihood of significant impacts to cultural resources from future development is remote.

The proposed project area is highly disturbed and it is unlikely that significant resources would be uncovered as a result of project implementation because of the dynamic nature of the river bed. Because the Project would not result in significant cultural resource impacts after mitigation, and the combined impacts of past, planned and known future projects are not cumulatively significant, the Project impacts, are not "cumulatively considerable." However, it is recommended that Mitigation Measures CUL-1 through CUL-9 be implemented to mitigate any unanticipated cultural resource impacts.

3.11.4.7 Geology and Soils

Impact CUMUL-7: Cumulative Exposure of People or Structures to Geologic and Seismic Hazards. **Level of Significance: Less than Significant with Mitigation.**

The City of Colton General Plan Update (2013) analyzes cumulative impacts related to geology and soils. As stated in the EIR, the geographic area for evaluation of seismic-related cumulative impacts could be considered the entire state of California as the entire region is subject to seismic hazards. However, the development of each project is dependent on site-specific constraints and does not generally impact areas outside the project boundary and the cumulative geology and soils impacts of development are not considered significant. The proposed project, when operated as presented, does not have the potential to impact geology or soils beyond the project boundary. Therefore, the geographic scope for considering cumulative impacts related to geology and soils includes only the extent of the development area affected by the proposed project.

As discussed in Section 3.7, *Geology and Soils* (Impacts 3.7-1 and 3.7-2), the project site lies within the seismically-active area of Southern California, within San Bernardino County. There are up to six established or suspected earthquake faults within a short distance of the proposed project site, all of which are part of the San Jacinto fault system, which is in turn part of the larger San Andreas system. The San Jacinto fault is considered one of the most active in California and has the potential to cause substantial damage to the region in the event of a major earthquake. A suspected fault also runs in a northwesterly-southwesterly direction through the center of Colton.

Planned or future projects in the area could consist of many types of development projects ranging from residential/commercial/industrial developments, to projects related to the proposed dam project that may occur along the Santa Ana River that would include, but not be limited to, recharge projects, channel diversion projects, recycled water projects, and various maintenance and improvement projects along the Santa Ana River. Some projects may be subject to development on unsuitable soils or areas where other geologic hazards. However, all planned projects within the project area would be required to conform to the applicable local, State, and federal regulations pertaining to construction (e.g. CBC) which would minimize these impacts.

Implementation of the proposed project would expose structures to geologic and seismically-related hazards within the project Boundary. However, conformance with the applicable standards and regulations, as well as implementation of the recommended mitigation measures, would reduce the project's contribution to cumulative geology and soils impacts to a level of less than significant. The project and any other reasonable foreseeable project(s) would be required to be in compliance with the California Building Code, which is considered to be a standard safeguard against major structural failures and loss of life. The CBC contains specific requirements for seismic safety and regulates grading activities, including drainage and erosion control requirements. Construction activities are required to comply with occupational safety regulations pursuant to the California Division of Occupational Safety and health regulations (Title 8 of the California Code of Regulations and in Section A33 of the CBC. Per the Alquist-Priolo Earthquake Fault Zoning Act, permits for development will not be issued until geologic investigations demonstrate that the proposed development site(s) are not threatened by surface displacement from future faulting. As such, impacts of the project would not have the potential to combine with impacts from past, present, or reasonably foreseeable projects to result in a cumulative impact to geology and soils. Mitigation Measures GEO-1 through GEO-5 (See Section 3.7) are recommended to minimize any Project-related contribution to cumulative geology and soils impacts to less than significant levels.

3.11.4.8 Transportation and Circulation

Impact CUMUL-8: Cumulative Reduction of Roadway Capacity, Traffic Safety, and Emergency Access. **Level of Significance: Less than Significant with Mitigation.**

The general geographic area used for the cumulative impact analysis to transportation and circulation is primarily the City of Colton, but also includes Redlands and Loma Linda, and the routes to local landfills from the Project site.

The *City of Colton General Plan EIR* addresses the cumulative transportation and traffic impacts of development within the surrounding project area and concludes that the cumulative impact to transportation and traffic from development in the area is potentially significant over the time frame ending in 2030. Much of this impact is due to increases in traffic from population growth outside of the control of any of the local jurisdictions and therefore cannot practically be mitigated to less than significant.

The proposed project would generate negligible transportation and circulation impacts during operation, given its nature as a water supply project, low maintenance needs and only periodic use. However, it would generate construction-related traffic over the 18-month to 2 year construction period, primarily due to truck hauls of dirt and construction debris to one or two landfills. Off-site haul trucks will create a temporary increase in traffic, which would contribute to existing traffic levels on the haul route(s). However, the off-site haul truck traffic would be temporary, limited to daytime hours (7:00 AM to 5:00 PM), and represents a relatively small fraction of existing or future traffic levels (estimated at 320 to 640 ADT).[9,10] This would result in short-term cumulative impacts, but no long-term cumulative impacts would occur as a result of project implementation. With implementation of applicable existing regulations and incorporation of Measures TRA-1 and TRA-2 (See Section 3.8, *Transportation and Circulation*), these impacts would be reduced to less than significant. Therefore, with implementation of the recommended mitigation, the proposed project would not create cumulatively considerable transportation and circulation impacts relative to the significant cumulative traffic impact already identified in the Colton General Plan.

3.11.4.9 Aesthetics, Light, and Glare

Impact CUMUL-9: Cumulative Impacts on Scenic Views and Visual Character. **Level of Significance: Less than Significant with Mitigation.**

Aesthetics, light and glare impacts are generally confined to a project site and to the immediate area surrounding the site and to areas that are within the view-shed of the site. The *City of Colton General Plan EIR* addresses cumulative aesthetic impacts of development within the area surrounding project. The EIR states that the impacts of the anticipated continuing development on aesthetics would not be cumulatively significant given the policies of the General Plan and other related laws and regulations. Planned or future projects in the area could consist of many types of development projects ranging from residential/commercial/industrial developments, to projects related to the proposed dam project that may occur along the Santa Ana River that would include, but not be limited to, recharge projects, channel diversion projects, recycled water projects, and various maintenance and improvement projects along the Santa Ana River.

The proposed project will contribute to cumulative impacts to aesthetics, light and glare in the immediate area of the proposed project. The proposed project would contribute to cumulative aesthetics impacts from security lighting, glare from the storage/recharge ponds and visual changes in the environment due to the presence of a rubber dam and ponds. Construction-related aesthetic impacts at the site are relatively confined to the immediate area, which is predominantly industrial. Operation of the proposed project will not produce significant aesthetic impacts. With implementation of applicable existing regulations and incorporation of Mitigation Measures AES-1 through AES-4 (See Section 3.9, *Aesthetics, Light, and Glare*), the project would not create significant new or cumulatively considerable aesthetic impacts, given its location and nature.

The area-wide and local cumulative impacts to aesthetics light and glare from development are considered less than significant, and therefore, the incremental impacts of the proposed project to aesthetics, light and glare, even without the recommended mitigation, are not "cumulatively considerable." However, it is recommended

9 City of Loma Linda General Plan Circulation Element (2009), Figure 6.2, shows existing Barton Road at approximately 24,000 ADT, and Figure 6.4 shows buildout peak hour volumes of approximately 3,000. The anticipated off-site truck haul traffic generated by the proposed project represents approximately 3% and 2.1% of these volumes, respectively.

10 City of Colton Mobility Element (2013) shows South Rancho Road as a "Regional Access Roadway" (Figure M-1), and all proposed truck routes as "Major Arterials" (Figure M-2).

that Mitigation Measures AES-1 through AES-4 be implemented to minimize any cumulative aesthetics impacts.

3.11.4.10 Water Supply

Impact CUMUL-10: Cumulative Impacts on Water Supply. **Level of Significance: Less than Significant.**

The project is designed to recharge the groundwater aquifers of the Riverside and Colton groundwater basins by capturing stream runoff from the Santa Ana River. The project's intended purpose includes recharging the Riverside and Colton basins, improvement of the groundwater quality in the Riverside and Colton basins, reduced dependence on imported water through increased storage, assurance that historical levels of production are maintained, to increase future water supplies from Riverside and Colton groundwater basins, and the creation of additional groundwater recharge basins along the Santa Ana River within the project area. In addition, the proposed project would replenish groundwater in close proximity to the City of Colton Wells 30 and 31, Riverside Highland Water Company wells located east of the river, and the City of Riverside's Flume wells, which convey supply directly to the John W. North Water Treatment Plant. Lastly, the recharge associated with this project may assist SBVMWD in meeting its obligations under the 1969 Western Judgment (i.e. to maintain water levels in the Colton and Riverside North Basins) and WMWD in meeting its obligation under the 1969 Western Judgment (i.e., deliver imported water in the Colton and Riverside Basins if the excess extractions by water users within Western and other obligations exceed Western's Base Rights and other credits in the Basins and if Valley District is not meeting its Base Flow obligation at the Riverside Narrows).

The Project is not anticipated to represent an individual or cumulatively considerable impact to water supply. The Project is consistent with the recently adopted Upper Santa Ana River Integrated Regional Water Management Plan, which specifically includes the Project.[11] Cumulative surface water diversions were also addressed in the Santa Ana River Water Right Applications for Supplemental Water Supply Environmental Impact Report, certified March 2007.

From a local perspective, the Project represents a beneficial impact to local water supply for the City and its Project Partners, by providing on average up to 7,466 AFY of new water to the groundwater basin (14,024 AFY, on average, will be captured by the Project but a portion of that amount would have naturally recharged the groundwater basin through the streambed) and 3,860 AFY of surface flow diversion to the Riverside Canal. With respect to downstream surface water supplies, particularly for agencies downstream of Prado Dam, Santa Ana River water rights are expressly regulated by the State Water Resources Control Board and basin watermasters, consistent with terms in the 1969 Judgment, which stipulates minimum surface water flows that must be maintained for Orange County parties, as well as existing water rights held by the City of Riverside and its Project Partners, including SWRCB's Decision 1649 (Section 3.10, *Water Supply*, *Table 3.10-1* provides a partial listing of applicable Upper Santa Ana River regulations and related water rights agreements and decisions).

11 Upper Santa Ana River Integrated Urban Water Management Plan, January 2015 (page 1-8, page 5-4, and Appendix J).

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3.2 NOISE

This section evaluates short- and long-term noise impacts related to the proposed project. Mitigation measures are also recommended to avoid or lessen the proposed project's noise impacts where necessary. Information in this section was obtained from the *City of Colton General Plan Noise Element* (May 5, 1987) and the *City of Colton Municipal Code*. Refer also to Appendix B, *Noise Measurements*, for the proposed project.

3.2.1 Existing Conditions

Noise Fundamentals

Standard Unit of Measurement

Sound is described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by differentiating among frequencies in a manner approximating the sensitivity of the human ear.

The perceived loudness of sound is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and should be approximated by the A-weighted sound levels (expressed as dBA) and the way the human ear perceives noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment.

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (Leq), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually one hour). The Leq is the foundation of the composite noise descriptor, day/night average (Ldn), and shows very good correlation with community response to noise.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound ten dBA higher than another is perceived to be twice as loud and 20 dBA higher is perceived to be four times as loud, and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud).

Noise Descriptors

Table 3.2-1, Noise Descriptors, lists various methods to measure sound over a period of time.

Table 3.2-1 Noise Descriptors

Term	Definition
Decibel (dB)	The unit for measuring the volume of sound equal to 10 times the logarithm (base 10) of the ratio of the pressure of a measured sound to a reference pressure (20 micropascals).
A-Weighted Decibel (dBA)	A sound measurement scale that adjusts the pressure of individual frequencies according to human sensitivities. The scale accounts for the fact that the region of highest sensitivity for the human ear is between 2,000 and 4,000 cycles per second (hertz).
Equivalent Sound Level (Leq)	The sound level containing the same total energy as a time varying signal over a given time period. The Leq is the value that expresses the time averaged total energy of a fluctuating sound level.
Maximum Sound Level (Lmax)	The highest individual sound level (dBA) occurring over a given time period.
Minimum Sound Level (Lmin)	The lowest individual sound level (dBA) occurring over a given time period.
Community Noise Equivalent Level (CNEL)	A rating of community noise exposure to all sources of sound that differentiates between daytime, evening, and nighttime noise exposure. These adjustments are +5 dBA for the evening, 7:00 PM to 10:00 PM, and +10 dBA for the night, 10:00 PM to 7:00 AM.
Day/Night Average (Ldn)	The Ldn is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period called the Leq. The Ldn is calculated by averaging the Leq's for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 PM to 7:00 AM), by 10 dBA to account for the increased sensitivity of people to noises that occur at night.
L01, L10, L50, L90	The fast A-weighted noise levels equaled or exceeded by a fluctuating sound level for 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period.

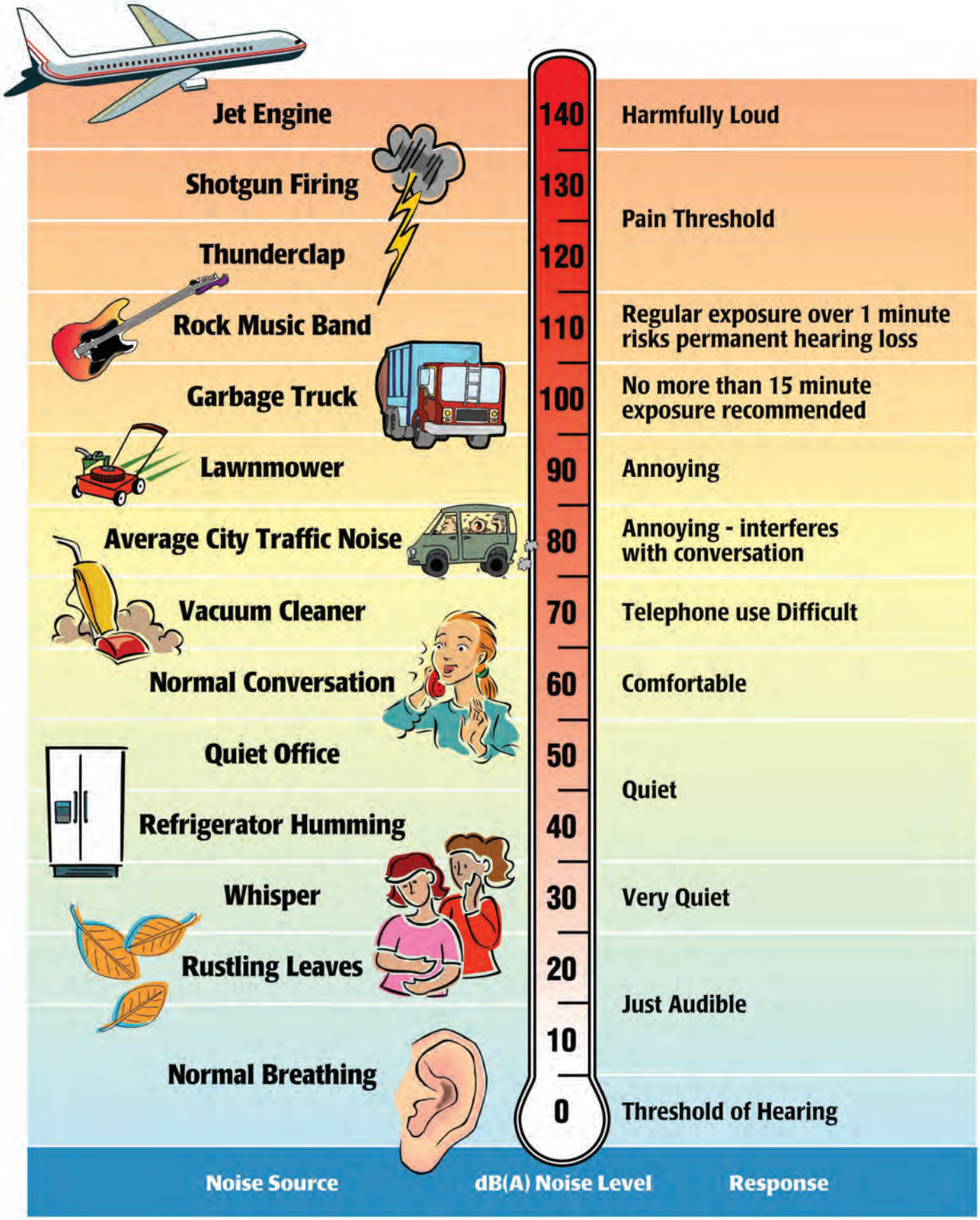
Source: Cyril M. Harris, Handbook of Noise Control, dated 1979.

Human Response to Noise

Examples of various sound levels in different environments are illustrated on *Exhibit 3.2-1, Sound Levels and Human Responses*.

Various methods have been developed for evaluating community noise to account for, among other things:

- The variation of noise levels over time;
- The influence of period individual loud events; and,
- The community response to changes in the community noise environment.



RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

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Sound Levels and Human Responses

Exhibit 3.2-1

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Human response to sound is highly individualized. Annoyance is the most common issue regarding community noise. The percentage of people claiming to be annoyed by noise generally increases with the environmental sound level. However, many factors also influence people's response to noise. The factors can include the noise character, variability of the sound level, presence of tones or impulses, and time of day of the occurrence. Additionally, non-acoustical factors, such as a person's opinion of the noise source, ability to adapt to the noise, attitude towards the source and those associated with it, and predictability of the noise, all influence a person's response. As such, response to noise varies widely from one person to another and with any particular noise, individual responses range from "not annoyed" to "highly annoyed."

When the noise level of an activity rises above 70 dBA, the chance of receiving a complaint is possible, and as the noise level rises, dissatisfaction among the public steadily increases. However, an individual's reaction to a particular noise depends on many factors, such as the source of the sound, its loudness relative to the background noise, and the time of day. The reaction to noise can also be highly subjective; and, the perceived effect of a particular noise can vary widely among individuals in a community.

The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on the community can be organized into six broad categories:

- Noise-induced hearing loss;
- Interference with communication;
- Effects of noise on sleep;
- Effects on performance and behavior;
- Extra-auditory health effects; and,
- Annoyance

Although it often causes discomfort and sometimes pain, noise-induced hearing loss usually takes years to develop. Noise-induced hearing loss can impair the quality of life through a reduction in the ability to hear important sounds and to communicate with family and friends. Hearing loss is one of the most obvious and easily quantified effects of excessive exposure to noise. While the loss may be temporary at first, it could become permanent after continued exposure. When combined with hearing loss associated with aging, the amount of hearing loss directly caused by the environment is difficult to quantify. Although the major cause of noise-induced hearing loss is occupational, substantial damage can be caused by non-occupational sources.

According to the United States Public Health Service, nearly ten million of the estimated 21 million Americans with hearing impairments owe their losses to noise exposure. Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. It can also disrupt effective communication between teachers and pupils in schools, and can cause fatigue and vocal strain in those who need to communicate in spite of the noise.

Interference with communication has proved to be one of the most important components of noise-related annoyance. Noise-induced sleep interference is one of the critical components of community annoyance. Sound level, frequency distribution, duration, repetition, and variability can make it difficult to fall asleep and may cause momentary shifts in the natural sleep pattern, or level of sleep. It can produce short-term adverse effects on mood changes and job performance, with the possibility of more serious effects on health if it

continues over long periods. Noise can cause adverse effects on task performance and behavior at work, and non-occupational and social settings. These effects are the subject of some controversy, since the presence and degree of effects depends on a variety of intervening variables. Most research in this area has focused mainly on occupational settings, where noise levels must be sufficiently high, and the task sufficiently complex for effects on performance to occur.

Recent research indicates that more moderate noise levels can produce disruptive after-effects, commonly manifested as a reduced tolerance for frustration, increased anxiety, and decreased incidence of "helping" behavior and increased incidence of "hostile" behavior. Noise has been implicated in the development or exacerbation of a variety of health problems, ranging from hypertension to psychosis. As with other categories, quantifying these effects is difficult due to the amount of variables that need to be considered in each situation. As a biological stressor, noise can influence the entire physiological system. Most effects seem to be transitory, but with continued exposure some effects have been shown to be chronic in laboratory animals.

Annoyance can be viewed as the expression of negative feelings resulting from interference with activities, as well as the disruption of one's peace of mind and the enjoyment of one's environment. Field evaluations of community annoyance are useful for predicting the consequences of planned actions involving highways, airports, road traffic, railroads, or other noise sources. The consequences of noise-induced annoyance are privately held dissatisfaction, publicly expressed complaints to authorities, and potential adverse health effects, as discussed above. In a study conducted by the United States Department of Transportation, the effects of annoyance to the community were quantified. In areas where noise levels were consistently above 60 dBA CNEL, approximately nine percent of the community was highly annoyed. When levels exceeded 65 dBA CNEL, the percentage rose to 15 percent. Although evidence for the various effects of noise has differing levels of certainty, it is evident that noise can affect human health. Most of the effects are, to a varying degree, stress related.

Ground-Borne Vibration

Vibration is an oscillatory motion throughout a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The peak particle velocity (PPV) or the root mean square (RMS) velocity is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak or vibration signal, while RMS is defined as the square root of the average of the squared amplitude of the signal. PPV is typically used for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response. Typically, ground-borne vibration, generated by manmade activities, attenuates rapidly with distance from the source of vibration. Man-made vibration issues are therefore usually confined to short distances (i.e., 500 feet or less) from the source.

Both construction and operation of development projects can generate ground-borne vibration. In general, demolition of structures preceding construction generates the highest vibrations. Construction equipment such as vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible vibration during construction activities. Heavy trucks can also generate ground-borne vibrations that vary depending on vehicle type, weight, and pavement conditions.

Noise-Sensitive Receptors

Human response to noise varies widely depending on the type of noise, time of day, and sensitivity of the receptor. The effects of noise on humans can range from temporary or permanent hearing loss to mild stress and annoyance due to such things as speech interference and sleep deprivation. Prolonged stress, regardless

of the cause, is known to contribute to a variety of health disorders. Noise, or the lack thereof, is a factor in the aesthetic perception of some settings, particularly those with religious or cultural significance. Certain land uses are particularly sensitive to noise, including schools, hospitals, rest homes, long-term medical and mental care facilities, and parks, and recreation areas. Residential areas are also considered noise sensitive, especially during the nighttime hours. *Table 3.2-2, Noise-Sensitive Receptors*, indicates some of the sensitive receptors that are located within the project study area.

Table 3.2-2 Noise-Sensitive Receptors

Type	Name	Approximate Distance from Project Site (feet)	Direction from Project Site
Residential	Residential Uses	215	East
		280	South
		150	West
		1,400	North
Hospital	Kaiser Permanente Medical Care Program	1,165	East
Hotel/Motel	Red Tile Inn	1,040	East
	Colony Inn	1,088	North
	Colton Motel	1,277	North
	Rio Inn Motel	2,294	North
Schools	San Bernardino County Special Education	300	East
	East Valley Community Day School	800	East
	My 1st Academy Preschool	911	East
	Nova Meridian Academy	1,037	East
	Woodrow Wilson Elementary School	1,980	West
	Solon Schools Group	2,321	East
Parks	Veterans Park	960	West
	Open Space Park	1,637	North
Places of Worship	Shekinah Glory Temple	290	East
	Echoes of Love Ministry	290	East
	Heart of Compassion Church	480	East
	Come As You Are Christian	1,037	East
	Community Temple	1,037	East
	Seventh Day Sabbath Church	1,037	East
	Iglesi Christiana Rios De Agua	1,046	East

Table 3.2-2, continued

Type	Name	Approximate Distance from Project Site (feet)	Direction from Project Site
Places of Worship (continued)	Ismalia Cultural Center	1,530	East
	Maranatha Community Church	2,206	East
	First Church – Christ Scientist	2,343	North
	Inland Christian Center Church	2,507	East

Source: Google Earth, 2013.

Sound Propagation

As sound propagates from the source to the receptor, the attenuation, or manner of noise reduction in relation to distance, is dependent on surface characteristics, atmosphere conditions, and the presence of physical barriers. The inverse-square law describes the attenuation caused by the pattern in which sound travels from the source to the receptor. Sound travels uniformly outward from a point source in spherical pattern with an attenuation rate of 6 dBA per doubling of distance. However, from a line source (e.g., a road), sound travels uniformly outward in a cylindrical patter with an attenuation rate of 3 dBA. The surface characteristics between the source and the receptor may result in additional sound absorption and/or reflection. Atmospheric conditions such as wind speed, temperature, and humidity may affect noise levels. The actual amount of attenuation is dependent upon the size of the barrier and the frequency of the noise. A noise barrier may be any natural or human-made feature such as a hill, tree, building, wall, or berm.

Project Setting

Project Location

The proposed project is located in the southern portion of the City of Colton, north of the City of Grand Terrace. The project site is located south of the Interstate 10 Freeway (I-10) and East M. Street, west of the Interstate 215 Freeway (I-215) and Santa Ana River, and east of the Union Pacific Railroad right-of-way. The project is located within and adjacent to the Santa Ana River as it trends south and bends westward through the watershed. The project site is currently surrounded by undeveloped properties to the north and west and the Cooley Ranch Planned Development to the east (on the east side of the Santa Ana River). Roadways providing vehicular access to the project site include East Congress Street, Fogg Street, M Street, and/or Mt. Vernon Avenue. Currently, the project site consists of vacant land with several dirt roads traversing the project site and several water wells owned and operated by the City of Riverside.

Existing Noise Sources

A number of transportation-related noise sources exist within the project area. Roadways, such as I-10, I-215, Colton Avenue, Mt. Vernon Avenue, Rancho Avenue, Valley Boulevard, and La Cadena Drive, and railroad corridors are all sources of noise that should be considered in the placement of land uses and in the application of noise standards and sound-attenuation measures. I-10 is approximately 340 feet north of the project boundary, and a railroad right of way is adjacent to the northern portion of the project site boundary. Other noise generators include construction activities, industrial and mechanical operations and equipment, automotive repair, lawnmowers, and home appliances.

3.2.2 Regulatory Framework

It is difficult to specify noise levels that are generally acceptable to everyone; what is annoying to one person may be unnoticed by another. Standards may be based on documented complaints in response to documented noise levels, or based on studies of the ability of people to sleep, talk, or work under various noise conditions. However, all such studies recognize that individual responses may vary considerably. Standards usually address the needs of the majority of the general population.

This section summarizes the laws, ordinance, regulations, and standards that are applicable to the project. Regulatory requirements related to environmental noise are typically promulgated at the local level. However, federal and State agencies provide standards and guidelines to the local jurisdictions.

State

Office of Planning and Research Noise Element Guidelines

The State of California Office of Planning and Research (OPR) Noise Element Guidelines include recommended interior and exterior level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The OPR Guidelines describe the compatibility of various land uses with a range of environmental noise levels in terms of dBA CNEL or Ldn.

A noise environment of 50 dBA to 60 dBA is considered to be "normally acceptable" for residential uses. Noise levels between 60 dBA and 70 dBA are considered to be "conditionally acceptable" for residential uses. Noise in the "normally acceptable" range places no undue burden on affected receptors and would need no mitigation. As noise rises into the "conditionally acceptable" range, some mitigation of exposure, as established by an acoustic study, would be warranted. The State indicates that locating residential units, parks, and institutions (i.e., churches, schools, libraries, and hospitals) in areas where exterior ambient noise levels exceed 65 dBA is undesirable. The OPR recommendations also note that, under certain conditions, more restrictive standards than the maximum levels cited may be appropriate. As an example, the standards for quiet suburban and rural communities may be reduced by 5 to 10 dB to reflect their lower existing outdoor noise levels in comparison with urban environments.

California Code of Regulations

In addition, Title 25, Section 1092 of the California Code of Regulations, sets forth requirements for the insulation of multiple-family residential dwelling units from excessive and potentially harmful noise. Whenever multiple-family residential dwelling units are proposed in areas with excessive noise exposure, the developer must incorporate construction features into the building's design that reduce interior noise levels to 45 dBA CNEL.

Local

City of Colton

The proposed project site is located within the City of Colton. The jurisdiction has an exemption to the noise level standards for construction activities within hourly limitations. Construction is typically permitted Monday-Saturday from 7:00 AM to 7:00 PM, excluding federal holidays. The project is exempt from local land use control, although City of Colton noise standards are provided for context in understanding potential local noise impacts.

City of Riverside General Plan

California State planning law requires each City and County to adopt a comprehensive, long-term General Plan for the physical development of the area within its jurisdiction and of any land outside its boundaries that bears relations to its land use planning activities. The *City of Riverside General Plan* was adopted in November 2007. The *General Plan* is a long-range policy-planning document that defines the framework by which the County's physical and economic resources are to be managed over time. The goals and policies contained in the General Plan are provided to guide the County's decision-makers. The seven State-mandated elements are included in the *General Plan*, including Land Use, Circulation, Housing, Conservation, Open Space, Safety, and Noise. In addition, the City of Riverside has also chosen to address Urban Design, Arts and Culture, and Education, which are optional elements.

The purpose of the Noise Element is to examine noise sources in the City, identify and appraise the potential for noise conflicts and problems, and identify attenuation methods to reduce existing and potential noise impacts. The following are relevant goals, objectives, and policies contained within the Noise Element:

Objective N–1: **Minimize noise levels from point sources throughout the community and, wherever possible, mitigate the effects of noise to provide a safe and healthful environment.**

Policy N–1.2: Require the inclusion of noise-reducing design features in development consistent with standards in Figure N–10 (Noise/Land Use Compatibility Criteria), Title 24 California Code of Regulations and Title 7 of the Municipal Code.

Policy N–1.3: Enforce the City of Riverside Noise Control Code to ensure that stationary noise and noise emanating from construction activities, private developments/residences and special events are minimized.

Policy N–1.4: Incorporate noise considerations into the site plan review process, particularly with regard to parking and loading areas, ingress/egress points and refuse collection areas.

Policy N–1.8: Continue to consider noise concerns in evaluating all proposed development decisions and roadway projects.

City of Riverside Municipal Code

The purpose of Title 7, "Noise Control", of the *City of Riverside Municipal Code* is to prohibit and control unnecessary, excessive, and/or annoying noise in the City. The intent of this Section of the Municipal Code is to minimize noise levels and attenuate the effects of noise to provide a safe and healthy living environment. Riverside's construction noise limits are similar to Colton's, in that it prohibits construction noise from "7:00 p.m. and 7:00 a.m. on week days and between 5 p.m. and 8 a.m. on Saturdays or at any time on Sunday or federal holidays."

3.2.3 Significance Threshold Criteria

Standards of Significance

The environmental analysis in this section is patterned after the Initial Study Checklist recommended by the State *CEQA Guidelines*, as amended. The Initial Study Checklist includes questions relating to noise impacts. The issues presented in the Initial Study Checklist have been utilized as thresholds of significance in this section. Accordingly, a project may create a significant environmental impact if it causes one or more of the following to occur:

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

b) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;

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

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

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels (refer to Section 7.0, *Effects Found Not To Be Significant*); and/or,

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels (refer to Section 7.0, *Effects Found Not To Be Significant*).

3.2.4 Impacts and Mitigation Measures

Exceedance of Noise Standards

Impact 3.2-1: Implementation of the proposed project may expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. **Level of Significance: Less than Significant with Mitigation.**

Construction-Related Impacts

Construction activities have a short and temporary duration, lasting from a few days to a period of several months. The construction duration is anticipated to be approximately 24 months. Truck traffic that would generate noise for the transportation of the materials export is anticipated to take between 2.6 and 12.5 months, depending on the type of truck utilized for the export and the landfill location that will be selected. Ground-borne noise and other types of construction-related noise impacts would typically occur during the initial site preparation, which can create the highest levels of noise. Generally, site preparation has the shortest duration of all construction phases. Activities that occur during this phase include earthmoving and soils

compaction. High ground-borne noise levels and other miscellaneous noise levels can be created by the operation of heavy-duty trucks, backhoes, and other heavy-duty construction equipment.

Noise from construction activities is generated by two primary sources: (1) the noise related to active construction equipment; and, (2) the transport of workers and equipment to construction sites. These noise sources can be a nuisance to local residents and businesses or unbearable to sensitive receptors (i.e., residential, hospital, hotel/motel, schools, parks, and places of worship). The Federal Transit Administration (FTA) has compiled data regarding noise generating characteristics of specific types of construction equipment and typical construction activities. These data are presented in *Table 3.2-3, Construction Equipment Noise Emissions Levels*. These noise levels would decrease rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling distance.

Table 3.2-3 Construction Equipment Noise Emissions Levels

Equipment	Typical Noise Level (dBA) - 50 feet from Source
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Dozer	85
Grader	85
Jack Hammer	88
Loader	85
Paver	89
Pile-Driver (Impact)	101
Pile-Driver (Sonic)	96
Scraper	89
Shovel	82
Truck	88

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, dated May 2006.

Operating cycles for these types of construction equipment used may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts).

Table 3.2-4, Construction Average Leq Noise Levels by Distance and Construction Stage, provides a description of construction noise levels during specific construction stages. The average noise levels presented in *Table 3.2-4* are based on the quantity, type, and acoustical use factor for each type of equipment that would be used during each construction phase.

Table 3.2-4 Construction Average Leq Noise Levels by Distance and Construction Stage

Description	Receptor Locations		Estimated Exterior Construction Noise Level [3,4]	Estimated Interior Construction Noise Level [3,4]	Speech Interference Criteria	Potentially Significant Impact?
	Direction[1]	Distance[2]				
Phase 1						
Site Grading/ Earthwork	North	1,088	62.7	42.7	65 dBA	No
	South	280	74.5	54.5	65 dBA	No
	East	215	76.8	56.8	65 dBA	No
	West	150	79.9	59.9	65 dBA	No
Phase 2						
Facility Construction	North	1,088	67.8	47.8	65 dBA	No
	South	280	79.5	59.5	65 dBA	No
	East	215	81.8	61.8	65 dBA	No
	West	150	74.5	54.5	65 dBA	No

Notes:
1. The proposed inflatable dam site is surrounded by the following land uses: railroad right-of-way, vacant land, Santa Ana River, and open space with trails to the north; low-rise apartments, Santa Ana River, and open space with trails to the south; office buildings, Santa Ana River, open space with trails to the east; and vacant land to the west. The proposed location of the recharge basins is surrounded by the following land uses: duplexes, high-density single-family homes, and vacant land to the north; vacant land to the south and east; and manufacturing, storage warehouse, and vacant land to the west. The nearest noise-sensitive receptors are Colony Inn 1,088 feet to the north; residential units 280 feet to the south; residential units 215 feet to the east; and residential units 150 feet to the west. The nearest pile driving will occur approximately 750 feet east of the residential units.
2. Distance is from the nearest receptor to the construction activity area of the project site, in feet.
3. Derived from the Federal Highway Administration, Roadway Construction Noise Model (FHWA-HEP-05-054), dated January 2006. Refer to Appendix B, *Noise Measurements*.
4. A typical building can reduce noise levels by 20 dBA with the windows closed. This assumes all windows and doors are closed, thereby attenuating the exterior noise levels by 20 dBA. (United States Department of Housing and Urban Development, The Noise Guidebook, undated, page 14).

Source: Federal Highway Administration, Roadway Construction Noise Model (FHWA-HEP-05-054), dated January 2006. Refer to Appendix B, *Noise Measurements*.

Short-term construction-related noise impacts would be anticipated during construction. Construction activities would expose adjacent receptors to interior peak noise levels of:

- 42.7 dBA to 59.9 dBA during Phase 1
- 47.8 dBA to 61.8 dBA during Phase 2

For construction noise, a "substantial" noise increase can be defined as interference with activities during the day and night. One indicator that construction noise could interfere with daytime activities would be speech interference. As none of the local jurisdictions in which the proposed project is located have quantitative guidelines for construction noise, the following criteria is utilized in the analysis to define relative construction related noise impacts:

- *Speech Interference Criteria*. The Speech Interference Level was designed to highlight or measure the degree to which background noise interferes with speech levels. Speech spoken with slightly more vocal effort can be understood well, when the noise level is 65 dBA. A typical building can reduce

noise levels by 20 dBA with the windows closed.[1] This noise reduction could be maintained only on a temporary basis in some cases, since it assumes windows would remain closed at all times. Therefore, this analysis utilizes an interior level of 65 dBA as a criterion level for determining significance for construction related activities, in the absence of an adopted specific construction noise related threshold by any of the local jurisdictions in which the proposed project is located.

Based on the speech interference criterion and the noise levels presented in *Table 3.2-4, Construction Average Leq Noise Level by Distance and Construction Stage,* short-term noise would be anticipated during site grading/earthwork activities and facility construction. However, there are no sensitive receptors in the immediate vicinity of the proposed project. The nearest sensitive receptors are residential uses located 150 feet to the west of the project boundary which would only perceive exterior construction-related noise levels between 74.5 and 79.9 dBA.[2] Therefore, construction activities would not expose adjacent receptors to significant impacts resulting from an increase in existing noise levels. As seen in *Table 3.2-4*, with windows and doors closed, the nearest sensitive receptors would not experience excessive noise levels. Thus, construction noise associated with the proposed project would not expose surrounding sensitive receptors to constructions noise levels in excess of the Speech Interference Criteria (65 dBA) during construction.

Truck hauling trips, construction crew commutes, and the transport of construction equipment and materials to the site for the proposed project would incrementally increase noise levels on access roads leading to the site. The proposed project construction is anticipated to cover a period of approximately 24 months. Truck traffic that would generate noise for the transportation of the materials export is anticipated to take between 2.6 and 12.5 months, depending on the type of truck utilized for the export and the landfill location that will be selected. Although there would be a relatively high single-event noise exposure resulting in intermittent noise nuisance, the effect on longer term (hourly or daily) ambient noise levels would be minimal. As a result, sensitive receptors would not be exposed to significant construction noise levels over an extended period of time.

Construction noise impacts are short-term and would cease upon completion of construction. The City of Colton typically allows construction activities between the hours of 7:00 a.m. to 7:00 p.m. Monday-Saturday, excluding federal holidays (similar to City of Riverside's construction noise limits). Furthermore, implementation of the recommended Mitigation Measure NOI-1 (i.e., engine muffling, placement of construction equipment, and strategic stockpiling and staging of construction vehicles), as well as compliance with the Municipal Code requirements, would serve to further reduce exposure and would minimize impacts from construction noise and would ensure that impacts are reduced to a less than significant level. Refer to Section 3.4, *Biological Resources*, for temporary noise effects on sensitive species during construction.

Construction-related noise associated with potential offsite hauling of export soil would also create noise both at the project site, and along potential haul routes (see Section 3.8, *Transportation and Circulation*). These routes traverse predominantly industrial areas, existing truck routes, and/or existing arterials providing access to the identified landfills. Offsite truck hauling related noise would avoid night-time hours, Sundays and holidays, and would be of limited duration. Measure NOI-2 proposes construction on Saturday, from 7 AM – 7 PM, to further reduce the total duration of offsite truck noise. Night-time construction (which would even further compress the construction schedule), is not feasible since the destination landfills close at 5 PM. If determined feasible and acceptable to the City of Colton, soil hauling could utilize over-sized trucks which could slightly

1 United States Department of Housing and Urban Development, The Noise Guidebook, undated, page 14.

2 These noise levels are exterior noise levels and would be reduced by 20 dBA inside the homes.

reduce total construction time by providing increased soil capacity in each truck (see Table 3.8-1 in Section 3.8, *Transportation and Circulation*).

Operational Impacts

The purpose of the Riverside North Aquifer Storage and Recovery Project includes improvement of the groundwater quality in the Riverside and Colton water basins, reduced dependence on imported water through increased storage, and the creation of additional groundwater recharge basins along the Santa Ana River within the project area. Short- and long-term operations would consist of periodic maintenance visits. Additionally, all stationary mechanical equipment (i.e., pumps, generators, etc.) would be housed within enclosed structures adjacent to the western river bank, more than 1,500 feet from surrounding sensitive receptors, and therefore, noise generated by project operation would not adversely affect these uses due to distance. Therefore, implementation of the proposed project would not expose persons to or generate noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies. A less than significant impact would occur in this regard.

Mitigation Measures

NOI-1 Prior to grading, the City shall include the following in construction bid documents:

- Construction contracts shall specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other State-required noise attenuation devices.
- Construction noise reduction methods such as shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied residential areas, and use of electric air compressors and similar power tools, rather than diesel equipment, shall be used where feasible.
- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receptors.
- All construction entrances shall clearly post construction hours, allowable workdays, and the phone number of the job superintendent. This will allow surrounding owners and residents to contact the job superintendent with concerns. If the contractor receives a noise-related complaint, appropriate corrective actions shall be implemented and a report taken indicating the action with a copy of the report provided to the reporting party upon request.

NOI-2 Project construction activities will also occur on Saturdays, from 7AM – 7PM, to further reduce total construction time and associated potential adverse effects related to traffic and noise along proposed haul routes.

Ground-borne Vibration

Impact 3.2-2: Implementation of the proposed project may expose persons to or generate excessive ground-borne vibration or ground-borne noise levels. **Level of Significance: Less than Significant with Mitigation.**

Construction-Related Impacts

Project construction can generate varying degrees of ground-borne vibration, depending on the construction procedure and the construction equipment used. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Ground-borne vibrations from construction activities rarely reach levels that damage structures.

The FTA has published standard vibration velocities for construction equipment operations. In general, the FTA architectural damage criterion for continuous vibration (i.e., 0.20 inch/second) appears to be conservative.

The types of construction vibration impact include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. Typical vibration produced by construction equipment is illustrated in *Table 3.2-5, Typical Vibration Levels for Construction Equipment*.

Ground-borne vibration decreases rapidly with distance. As indicated in *Table 3.2-5*, based on the FTA data, vibration velocities from typical heavy construction equipment operations that would be used during project construction range from 0.003 to 0.734 inch-per-second peak particle velocity (PPV) at 25 feet from the source of activity. At 75 feet from the source of activity, vibration velocities range from 0.001 to 0.141 inch-per-second PPV. The nearest sensitive receptors (residential uses) are located approximately 150 feet to the east and approximately 75 feet to the northwest. With regard to the proposed project, ground-borne vibration would be generated primarily during site clearing and grading activities on-site and by off-site haul-truck travel.

Table 3.2-5 Typical Vibration Levels for Construction Equipment

Equipment		Approximate peak particle velocity at 25 feet (inches/second)	Approximate peak particle velocity at 75 feet (inches/second)
Pile Driver (sonic/vibratory)	Upper Range	0.734	0.141
	Typical	0.170	0.033
Large bulldozer		0.089	0.017
Loaded trucks		0.076	0.015
Small bulldozer		0.003	0.001
Auger/drill rigs		0.089	0.017
Jackhammer		0.035	0.007
Vibratory hammer		0.035	0.007

Notes: 1. Peak particle ground velocity measured at 25 feet unless noted otherwise. 2. Root mean square amplitude ground velocity in decibels (VdB) referenced to 1 micro-inch/second. Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, dated May 2006.

Grading and construction of the proposed project is not anticipated to generate excessive ground-borne vibration or ground-borne noise levels that would negatively impact the residential uses to the south, east and west due to the distance of project construction activities from surrounding sensitive receptors. Refer also to Impact 3.2-1, above. Less than significant impacts are anticipated in this regard with incorporation of Mitigation Measure NOI-1.

Operational Impacts

Long-term operations would consist of periodic maintenance visits and enclosed stationary mechanical equipment (i.e., pumps, generators, etc.) located adjacent to the inflatable dam location. Therefore, a less than significant impact would occur in this regard.

Ambient Noise Levels

Impact 3.2-3: Implementation of the proposed project may generate a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the project. **Level of Significance: Less than Significant Impact.**

Long-term operations would consist of minimal, periodic maintenance visits. All stationary mechanical equipment (i.e., pumps, generators, etc.) would be housed within enclosed structures adjacent to the western river bank and located over 1,500 feet from surrounding residential homes. Due to this distance, operational noise impacts would be less than significant.

Temporary or Periodic Noise Increase

Impact 3.2-4: Implementation of the proposed project may create a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. **Level of Significance: Less than Significant with Mitigation.**

As shown in *Table 3.2-4, Construction Average Leq Noise Levels by Distance and Construction Stage*, with windows and doors closed, ambient noise levels at the nearest sensitive receptors would not exceed applicable thresholds. Construction noise associated with the groundwater recharge basins, SWP pipeline, and inflatable dam would not increase ambient noise levels beyond the Speech Interference Criteria (65 dBA). Refer to response to Impact 3.2-1 for a further detailed discussion of noise impacts. With implementation of Mitigation Measure NOI-1, described above, implementation of the proposed project would not create a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. In this regard, short-term construction noise impacts would be less than significant.

Although Measure NOI-2 would increase construction-related noise on Saturday, this noise would be temporary, confined to 7AM-7PM, and would reduce total duration (in days) of construction-related noise.

Long-term operations would consist of minimal, periodic maintenance visits. All stationary mechanical equipment (i.e., pumps, generators, etc.) would be housed within enclosed structures adjacent to the western river bank and would be located over 1,500 feet from surrounding residential homes. Due to this distance, implementation of the proposed project would not create a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Less than significant operational noise impacts would occur.

3.2.5 Significant Unavoidable Adverse Impacts

No significant unavoidable impacts related to noise have been identified following implementation of the recommended mitigation measures.

3.3 AIR QUALITY, ODOR, AND CLIMATE CHANGE

This section focuses on potential short-term air quality impacts associated with project construction activities. Information in this section is based primarily on the Aerometric Data Analysis and Measurement System (ADAM) Statistics (California Air Resources Board [CARB] 2010 through 2012); the *CEQA Air Quality Handbook* prepared by the South Coast Air Quality Management District (SCAQMD), April 1993 (as revised through November 1993); and, the SCAQMD *Final 2012 Air Quality Management Plan* (December 2012). Refer to Appendix C, *Air Quality Measurements*, for the assumptions used in this analysis.

3.3.1 Existing Conditions

Geography

The proposed project is located in the South Coast Air Basin (Basin), an area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino and San Jacinto Mountains to the north and east. The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area of Riverside County.

The extent and severity of the air pollution problem in the Basin is a function of the area's natural physical characteristics (weather and topography), as well as man-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall and topography all affect the accumulation and/or dispersion of air pollutants throughout the Basin.

Climate

The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. The climate consists of a semiarid environment with mild winters, warm summers, moderate temperatures and comfortable humidity. Precipitation is limited to a few winter storms. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms or Santa Ana winds.

The average annual temperature varies little throughout the Basin, averaging 75 degrees Fahrenheit (°F). However, with a less-pronounced oceanic influence, the eastern inland portions of the Basin show greater variability in annual minimum and maximum temperatures. All portions of the Basin have had recorded temperatures over 100°F in recent years.

Although the Basin has a semi-arid climate, the air near the surface is moist because of the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the Basin by offshore winds, the ocean effect is dominant. Periods with heavy fog are frequent, and low stratus clouds, occasionally referred to as "high fog," are a characteristic climate feature. Annual average relative humidity is 70 percent at the coast and 57 percent in the eastern part of the Basin. Precipitation in the Basin is typically nine to fourteen inches annually and is rarely in the form of snow or hail due to typically warm weather. The frequency and amount of rainfall is greater in the coastal areas of the Basin.

The height of the inversion is important in determining pollutant concentration. When the inversion is approximately 2,500 feet above sea level, the sea breezes carry the pollutants inland to escape over the mountain slopes or through the passes. At a height of 1,200 feet, the terrain prevents the pollutants from

entering the upper atmosphere, resulting in a settlement in the foothill communities. Below 1,200 feet, the inversion puts a tight lid on pollutants, concentrating them in a shallow layer over the entire coastal basin. Usually, inversions are lower before sunrise than during the day. Mixing heights for inversions are lower in the summer and more persistent, being partly responsible for the high levels of ozone (O_3) observed during summer months in the Basin. Smog in southern California is generally the result of these temperature inversions combining with coastal day winds and local mountains to contain the pollutants for long periods of time, allowing them to form secondary pollutants by reacting with sunlight. The Basin has a limited ability to disperse these pollutants due to typically low wind speeds.

The area in which the project is located offers clear skies and sunshine, yet is still susceptible to air inversions. This traps a layer of stagnant air near the ground where it is further loaded with pollutants. These inversions cause haziness, which is caused by moisture, suspended dust and a variety of chemical aerosols emitted by trucks, automobiles, furnaces and other sources.

Local Ambient Air Quality

Air Quality Monitoring Stations

The SCAQMD monitors air quality at 37 monitoring stations throughout the Basin. Each monitoring station is located within a Source Receptor Area (SRA). The communities within an SRA are expected to have similar climatology and ambient air pollutant concentrations. The proposed project is in the Cities of Riverside and Colton, located in SRA 34 (Central San Bernardino Valley). The monitoring stations typically measure pollutant concentrations ten feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations.

Pollutants Measured

The following air quality information briefly describes the various types of pollutants monitored at the San Bernardino-4th Street Monitoring Station. This monitoring station is located in SRA 34 and is nearest to the project site. Air quality data from 2010 through 2012 is provided in *Table 3.3-1, Local Air Quality Levels*.

Carbon Monoxide. Carbon monoxide (CO) is an odorless, colorless toxic gas that is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions.

CO replaces oxygen in the body's red blood cells. Individuals with a deficient blood supply to the heart, patients with diseases involving heart and blood vessels, fetuses (unborn babies) and patients with chronic hypoxemia (oxygen deficiency), as seen in high altitudes are most susceptible to the adverse effects of CO exposure. People with heart disease are also more susceptible to developing chest pains when exposed to low levels of CO. Exposure to high levels of CO can slow reflexes and cause drowsiness, and result in death in confined spaces at very high concentrations. The State and federal standard for CO is 9.0 ppm.

Nitrogen Dioxide. Nitrogen oxides (NO_X) are a family of highly reactive gases that are a primary precursor to the formation of ground-level O_3, and react in the atmosphere to form acid rain. NO_2 (often used interchangeably with NO_X) is a reddish-brown gas that can cause breathing difficulties at high levels. Peak readings of NO_2 occur in areas that have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries and other industrial operations).

NO_2 can irritate and damage the lungs, and lower resistance to respiratory infections such as influenza. The health effects of short-term exposure are still unclear. However, continued or frequent exposure to NO_2 concentrations that are typically much higher than those normally found in the ambient air, may increase acute respiratory illnesses in children and increase the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may aggravate eyes and mucus membranes and cause pulmonary dysfunction.

For NO_2, the Basin is designated as being in attainment under both State and federal standards. The NO_2 ambient air quality standard was amended on February 22, 2007 to lower the State 1-hour standard to 0.18 ppm and establish a new federal annual standard of 0.053 ppm.

Table 3.3-1 Local Air Quality Levels

Pollutant	Primary Standard		Year	Maximum[1] Concentration	Number of Days State/Federal Std. Exceeded
	California	Federal			
Carbon Monoxide (CO) [2]	9.0 ppm for 8 hours	9.0 ppm for 8 hours	2010 2011 2012	1.73 ppm 1.74 1.64	0/0 0/0 0/0
Ozone (O_3) (1-Hour) [2]	0.09 ppm for 1 hour	NA[4]	2010 2011 2012	0.129 ppm 0.135 0.124	27/1 40/2 41/0
Ozone (O_3) (8-Hour) [2]	0.07ppm for 8 hours	0.075 ppm for 8 hours	2010 2011 2012	0.105 ppm 0.121 0.109	60/40 66/39 77/54
Nitrogen Dioxide (NO_2) [2]	0.18 ppm for 1 hour	0.053 ppm annual average	2010 2011 2012	0.069 ppm 0.062 0.067	0/NA 0/NA 0/NA
Particulate Matter (PM_{10}) [2,4,5]	50 µg/m^3 for 24 hours	150 µg/m^3 for 24 hours	2010 2011 2012	63.0 µg/m^3 128.4 68.1	2/ID 2/0 1/0
Fine Particulate Matter ($PM_{2.5}$) [2,5]	No Separate State Standard	35 µg/m^3 for 24 hours	2010 2011 2012	39.3 µg/m^3 65.0 34.8	NM/2 NM/2 NM/0

ppm = parts per million
µg/m^3 = micrograms per cubic meter
NM = Not Measured
ID = Insufficient Data
PM_{10} = particulate matter 10 microns in diameter or less
$PM_{2.5}$ = particulate matter 2.5 microns in diameter or less
NA = Not Applicable

Notes:
1. Maximum concentration is measured over the same period as the California Standard.
2. Measurements taken at the San Bernardino-4th Street Monitoring Station located at 24302 East 4th Street, San Bernardino California 92410.
3. The U.S. Environmental Protection Agency revoked the federal 1-hour Standard in June of 2005.
4. PM_{10} exceedances are based on State thresholds established prior to amendments adopted on June 20, 2002.
5. PM_{10} and $PM_{2.5}$ exceedances are derived from the number of samples exceeded, not days.

Source: California Air Resources Board, ADAM Air Quality Data Statistics, http://www.arb.ca.gov/adam/welcome.html

Ozone. Ozone (O_3) occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. The troposphere extends approximately 10 miles above ground level, where it meets the second

layer, the stratosphere. The stratospheric (the "good" O_3) layer extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays.

"Bad" O_3 is a photochemical pollutant, and needs reactive organic compounds (ROGs), NO_X, and sunlight to form; therefore, ROGs and NO_X are O_3 precursors. To reduce O_3 concentrations, it is necessary to control the emissions of these O_3 precursors. Significant O_3 formation generally requires an adequate amount of precursors in the atmosphere and a period of several hours in a stable atmosphere with strong sunlight. High O_3 concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

While O_3 in the upper atmosphere (stratosphere) protects the earth from harmful ultraviolet radiation, high concentrations of ground-level O_3 (in the troposphere) can adversely affect the human respiratory system and other tissues. O_3 is a strong irritant that can constrict the airways, forcing the respiratory system to work hard to deliver oxygen. Individuals exercising outdoors, children, and people with pre-existing lung disease such as asthma and chronic pulmonary lung disease are considered to be the most susceptible to the health effects of O_3. Short-term exposure (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in aggravated respiratory diseases such as emphysema, bronchitis and asthma, shortness of breath, increased susceptibility to infections, inflammation of the lung tissue, increased fatigue, as well as chest pain, dry throat, headache and nausea.

Coarse Particulate Matter (PM_{10}). PM_{10} refers to suspended particulate matter which is smaller than 10 microns or ten one-millionths of a meter. PM_{10} arises from sources such as road dust, diesel soot, combustion products, construction operations and dust storms. PM_{10} scatters light and significantly reduces visibility. In addition, these particulates penetrate into lungs and can potentially damage the respiratory tract. On June 19, 2003, CARB adopted amendments to the Statewide 24-hour particulate matter standards based upon requirements set forth in the Children's Environmental Health Protection Act (Senate Bill 25).

Fine Particulate Matter ($PM_{2.5}$). Due to recent increased concerns over health impacts related to fine particulate matter (particulate matter 2.5 microns in diameter or less), both State and federal $PM_{2.5}$ standards have been created. Particulate matter impacts primarily affect infants, children, the elderly and those with pre-existing cardiopulmonary disease. In 1997, the U.S. Environmental Protection Agency (EPA) announced new $PM_{2.5}$ standards. Industry groups challenged the new standard in court and the implementation of the standard was blocked. However, upon appeal by the EPA, the U.S. Supreme Court reversed this decision and upheld the EPA's new standards.

On January 5, 2005, the EPA published a Final Rule in the Federal Register that designates the Basin as a nonattainment area for federal $PM_{2.5}$ standards. On June 20, 2002, CARB adopted amendments for Statewide annual ambient particulate matter air quality standards. These standards were revised/established due to increasing concerns by CARB that previous standards were inadequate, as almost everyone in California is exposed to levels at or above the current State standards during some parts of the year, and the Statewide potential for significant health impacts associated with particulate matter exposure was determined to be large and wide-ranging.

Sulfur Dioxide. Sulfur dioxide (SO_2) is a colorless, irritating gas with a rotten egg smell; it is formed primarily by the combustion of sulfur-containing fossil fuels. Sulfur dioxide is often used interchangeably with sulfur oxides (SO_X) and lead (Pb). Exposure of a few minutes to low levels of SO_2 can result in airway constriction in some asthmatics. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO_2.

Global Climate Change Gases. The natural process through which heat is retained in the troposphere is called the "greenhouse effect."[1] The greenhouse effect traps heat in the troposphere through a threefold process as follows: Short wave radiation emitted by the Sun is absorbed by the Earth; the Earth emits a portion of this energy in the form of long wave radiation; and greenhouse gases (GHG) in the upper atmosphere absorb this long wave radiation and emit this long wave radiation into space and toward the Earth. This "trapping" of the long wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect.

The most abundant GHGs are water vapor and carbon dioxide (CO_2). Many other trace gases have greater ability to absorb and re-radiate long wave radiation. However, these gases are not as plentiful. For this reason, and to gauge the potency of GHGs, scientists have established a Global Warming Potential (GWP) for each GHG based on its ability to absorb and re-radiate long wave radiation.

GHGs normally associated with the proposed project include the following:[2]

- *Water Vapor (H_2O)*. Although water vapor has not received the scrutiny of other GHGs, it is the primary contributor to the greenhouse effect. Natural processes, such as evaporation from oceans and rivers, and transpiration from plants, contribute 90 percent and 10 percent of the water vapor in our atmosphere, respectively.

  The primary human related source of water vapor comes from fuel combustion in motor vehicles. However, this is not believed to contribute a significant amount (less than one percent) to atmospheric concentrations of water vapor. The Intergovernmental Panel on Climate Change (IPCC) has not determined a GWP for water vapor.

- *Carbon Dioxide (CO_2)*. Carbon dioxide is primarily generated by fossil fuel combustion in stationary and mobile sources and is the primary greenhouse gas emitted through human activities. In 2011, CO_2 accounted for approximately 84% of all greenhouse gas emissions from human activities in the U.S. Although CO_2 emissions originate from a variety of natural sources, human-related emissions are responsible for the increase occurring in the atmosphere since the time of the industrial revolution.[3] Carbon dioxide is the most widely emitted GHG and is the reference gas (GWP of 1) for determining GWPs for other GHGs.

- *Methane (CH_4)*. Methane is emitted from biogenic sources, incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. In the United States, the top three sources of methane are landfills, natural gas systems, and enteric fermentation. Methane is the primary component of natural gas, which is used for space and water heating, steam production, and power generation. The GWP of methane is 21.

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1 The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth's surface to 10 to 12 kilometers.

2 All Global Warming Potentials are given as 100 year GWP. Unless noted otherwise, all Global Warming Potentials were obtained from the Intergovernmental Panel on Climate Change. Climate Change (Intergovernmental Panel on Climate Change, Climate Change, The Science of Climate Change – Contribution of Working Group I to the Second Assessment Report of the IPCC, 1996).

3 United States Environmental Protection Agency, Climate Change – Overview of Greenhouse Gases, Updated July 31, 2013. http://epa.gov/climatechange/ghgemissions/gases/fgases.html. Accessed August 16, 2013.

- *Nitrous Oxide (N_2O)*. Nitrous oxide is produced by both natural and human related sources. Primary human related sources include agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The GWP of nitrous oxide is 310.
- *Hydrofluorocarbons (HFCs)*. HFCs are typically used as refrigerants for both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam blowing is growing, as the continued phase out of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) gains momentum. The GWP of HFCs range from 140 for HFC-152a to 11,700 for HFC-23.[4]
- *Perfluorocarbons (PFCs)*. Perfluorocarbons are compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semi-conductor manufacturing. Perfluorocarbons are potent GHGs with a GWP several thousand times that of carbon dioxide, depending on the specific PFC. Another area of concern regarding PFCs is their long atmospheric lifetime (up to 50,000 years).[5] The GWP of PFCs range from 6,500 to 9,200.
- *Sulfur hexafluoride (SF_6)*. Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Sulfur hexafluoride is the most potent GHG that has been evaluated by the IPCC with a GWP of 23,900. However, its global warming contribution is not as high as the GWP would indicate, due to its low mixing ratio compared to carbon dioxide.

In addition to the six major GHGs discussed above (excluding water vapor), many other compounds have the potential to contribute to the greenhouse effect. Some of these substances were previously identified as stratospheric ozone (O_3) depletors; therefore, their gradual phase out is currently in effect. The following is a listing of these compounds:

- *Hydrochlorofluorocarbons (HCFCs)*. HCFCs are solvents, similar in use and chemical composition to CFCs. The main uses of HCFCs are for refrigerant products and air conditioning systems. As part of the Montreal Protocol, all developed countries that adhere to the Montreal Protocol are subject to a consumption cap and gradual phase out of HCFCs. The United States is scheduled to achieve a 100 percent reduction to the cap by 2030. The GWPs of HCFCs range from 93 for HCFC-123 to 2,000 for HCFC-142b.[6]
- *1,1,1 trichloroethane*. 1,1,1 trichloroethane or methyl chloroform is a solvent and degreasing agent commonly used by manufacturers. The GWP of methyl chloroform is 110 times that of carbon dioxide.[7]
- *Chlorofluorocarbons (CFCs)*. CFCs are used as refrigerants, cleaning solvents, and aerosols spray propellants. CFCs were also part of the U.S. Environmental Protection Agency's (EPA) Final Rule

4 Ibid.

5 Ibid.

6 United States Environmental Protection Agency, *Protection of Stratospheric Ozone: Listing of Global Warming Potential for Ozone Depleting Substances*, updated October 29, 2009. http://www.epa.gov/EPA-AIR/1996/January/Day-19/pr-372.html. Accessed August 16, 2013.

7 Ibid.

(57 FR 3374) for the phase out of O_3 depleting substances. Currently, CFCs have been replaced by HFCs in cooling systems and a variety of alternatives for cleaning solvents. Nevertheless, CFCs remain suspended in the atmosphere contributing to the greenhouse effect. CFCs are potent GHGs with GWPs ranging from 4,600 for CFC 11 to 14,000 for CFC 13.[8]

Sensitive Receptors

Sensitive populations are more susceptible to the effects of air pollution than is the general population. Sensitive populations (sensitive receptors) that are in proximity to localized sources of toxics and CO are of particular concern. Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The following types of people are most likely to be adversely affected by air pollution, as identified by CARB: children under 14, elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. Locations that may contain a high concentration of these sensitive population groups are called sensitive receptors and include residential areas, hospitals, day-care facilities, elder-care facilities, elementary schools and parks.

Existing sensitive receptors located in the project vicinity include single and multi-family residential homes, schools, parks, places of worship, and a hospital. Sensitive receptors can be seen below in *Table 3.3-2, Sensitive Receptors*.

3.3.2 Regulatory Framework

Regulatory oversight for air quality in the Basin rests with the SCAQMD at the regional level, CARB at the State level, and the EPA Region IX office at the federal level.

Federal

Environmental Protection Agency

The EPA is responsible for implementing the Federal Clean Air Act (FCAA), which was first enacted in 1955 and amended numerous times after. The FCAA established federal air quality standards known as the National Ambient Air Quality Standards (NAAQS). These standards identify levels of air quality for "criteria" pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare. The criteria pollutants are O_3, CO, NO_2 (which is a form of nitrogen oxides [NO_X]), SO_2 (which is a form of sulfur oxides [SO_x]), particulate matter less than 10 and 2.5 microns in diameter (PM_{10} and $PM_{2.5}$, respectively) and Pb; refer to *Table 3.3-3, National and California Ambient Air Quality Standards*.

8 United States Environmental Protection Agency, *Class I Ozone Depleting Substances*, Updated June 21, 2013. http://www.epa.gov/ozone/ods.html. Accessed August 15, 2013.

Table 3.3-2 Sensitive Receptors

Type	Name	Approximate Distance from Project Site (feet)	Direction from Project Site
Residential	Residential Uses	215	East
		280	South
		150	West
		1,400	North
Hospital	Kaiser Permanente Medical Care Program	1,165	East
Hotel/Motel	Red Tile Inn	1,040	East
	Colony Inn	1,088	North
	Colton Motel	1,277	North
	Rio Inn Motel	2,294	North
Schools	San Bernardino County Special Education	300	East
	East Valley Community Day School	800	East
	My 1st Academy Preschool	911	East
	Nova Meridian Academy	1,037	East
	Woodrow Wilson Elementary School	1,980	West
	Solon Schools Group	2,321	East
Parks	Veterans Park	960	West
	Open Space Park	1,637	North
Places of Worship	Shekinah Glory Temple	290	East
	Echoes of Love Ministry	290	East
	Heart of Compassion Church	480	East
	Come As You Are Christian	1,037	East
	Community Temple	1,037	East
	Seventh Day Sabbath Church	1,037	East
	Iglesi Christiana Rios De Agua	1,046	East
	Ismalia Cultural Center	1,530	East
	Maranatha Community Church	2,206	East
	First Church – Christ Scientist	2,343	North
	Inland Christian Center Church	2,507	East

Source: Google Earth, 2013.

Table 3.3-3 National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California[1]		Federal[2]	
		Standard[3]	Attainment Status	Standards[4]	Attainment Status
Ozone (O_3)	1 Hour	0.09 ppm (180 μg/m³)	**Nonattainment**	NA[5]	NA[5]
	8 Hours	0.07 ppm (137 μg/m³)	Unclassified	0.075 ppm (147 μg/m³)	**Nonattainment**
Particulate Matter (PM_{10})	24 Hours	50 μg/m³	**Nonattainment**	150 μg/m³	Attainment/ Maintenance
	Annual Arithmetic Mean	20 μg/m³	**Nonattainment**	NA[7]	Attainment/ Maintenance
Fine Particulate Matter ($PM_{2.5}$)	24 Hours	No Separate State Standard		35 μg/m³	Unclassified
	Annual Arithmetic Mean	12 μg/m³	**Nonattainment**	15 μg/m³	**Nonattainment**
Carbon Monoxide (CO)	8 Hours	9.0 ppm (10 mg/m³)	Attainment	9 ppm (10 mg/m³)	Attainment
	1 Hour	20 ppm (23 mg/m³)	Attainment	35 ppm (40 mg/m³)	Attainment
Nitrogen Dioxide (NO_2)[6]	Annual Arithmetic Mean	0.030 ppm (57 μg/m³)	NA	53 ppb (100 μg/m³)	Attainment
	1 Hour	0.18 ppm (339 μg/m³)	Attainment	100 ppb (188 μg/m³)	NA
Lead (Pb)	30 days average	1.5 μg/m³	Attainment	N/A	NA
	Calendar Quarter	N/A	NA	1.5 μg/m³	Attainment
Sulfur Dioxide (SO_2)	24 Hours	0.04 ppm (105 μg/m³)	Attainment	N/A	Attainment
	3 Hours	N/A	NA	N/A	Attainment
	1 Hour	0.25 ppm (655 μg/m³)	Attainment	75 ppb (196 μg/m³)	NA
Visibility-Reducing Particles	8 Hours (10 a.m. to 6 p.m., PST)	Extinction coefficient = 0.23 km@<70% RH	Unclassified	**No Federal Standards**	
Sulfates	24 Hour	25 μg/m³	Attainment		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m³)	Unclassified		

μg/m³ = micrograms per cubic meter; ppm = parts per million; km = kilometer(s); RH = relative humidity; PST = Pacific Standard Time; N/A = Not Applicable.

Table 3.3-3, continued

Notes:

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter-PM_{10} and visibility-reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations. In 1990, the California Air Resources Board identified vinyl chloride as a toxic air contaminant, but determined that there was not sufficient available scientific evidence to support the identification of a threshold exposure level. This action allows the implementation of health-protective control measures at levels below the 0.010 ppm ambient concentration specified in the 1978 standard.
2. National standards (other than ozone, particulate matter and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. EPA also may designate an area as attainment/unclassifiable, if: (1) it has monitored air quality data that show that the area has not violated the ozone standard over a three-year period; or (2) there is not enough information to determine the air quality in the area. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
3. Concentration is expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
5. The federal 1-hour ozone standard was revoked on June 15, 2005 in all areas except the 14 8-hour ozone nonattainment Early Action Compact (EAC) areas.
6. The Nitrogen Dioxide ambient air quality standard was amended in February 22, 2007 to lower the 1-hour standard to 0.18 ppm and establish a new annual standard of 0.030 ppm.
7. The Environmental Protection Agency revoked the annual PM_{10} standard in 2006 (effective December 16, 2006).

Source: California Air Resources Board and Environmental Protection Agency, June 4, 2013.

State

California Air Resources Board

CARB administers the air quality policy in California. The California Ambient Air Quality Standards (CAAQS) were established in 1969 pursuant to the Mulford-Carrell Act. These standards, included with the NAAQS in *Table 3.3-3, National and California Ambient Air Quality Standards,* are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility reducing particulates, hydrogen sulfide and sulfates. The California Clean Air Act (CCAA), which was approved in 1988, requires that each local air district prepare and maintain an Air Quality Management Plan (AQMP) to achieve compliance with CAAQS. These AQMP's also serve as the basis for preparation of the SIP for the State of California.

Like the EPA, CARB also designates areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data show that a State standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a State standard, and are not used as a basis for designating areas as nonattainment.

Under the CCAA, the Basin is designated as a nonattainment area for O_3, PM_{10}, and $PM_{2.5}$. The Basin is designated as an attainment area for CO, NO_2, SO_2, and Pb; refer to *Table 3.3-3*. Similar to the FCAA, all areas designated as nonattainment under the CCAA are required to prepare plans showing how the area would meet the CAAQS by its attainment dates.

Global Climate Change Regulatory Programs

Assembly Bill 1493. AB 1493 (also known as the Pavley Bill) requires that CARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHG emitted by passenger

vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State."

To meet the requirements of AB 1493, CARB approved amendments to the California Code of Regulations (CCR) in 2004 by adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 and adoption of 13 CCR Section 1961.1 require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty weight classes for passenger vehicles (i.e., any medium-duty vehicle with a gross vehicle weight rating less than 10,000 pounds that is designed primarily to transport people), beginning with the 2009 model year. Emissions limits are reduced further in each model year through 2016. When fully phased in, the near-term standards will result in a reduction of about 22 percent in GHG emissions compared to the emissions from the 2002 fleet, while the mid-term standards will result in a reduction of about 30 percent.

Assembly Bill 32. California passed the California Global Warming Solutions Act of 2006 (AB 32; *California Health and Safety Code* Division 25.5, Sections 38500 - 38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

Executive Order S-3-05. The Executive Order S-3-05 established the following goals: GHG emissions should be reduced to 2000 levels by 2010; GHG emissions should be reduced to 1990 levels by 2020; and, GHG emissions should be reduced to 80 percent below 1990 levels by 2050. The Secretary of the California Environmental Protection Agency (the Secretary) is required to coordinate efforts of various agencies in order to collectively and efficiently reduce GHGs. Some of the agencies involved in the GHG reduction plan include Secretary of Business, Transportation, and Housing Agency, Secretary of Department of Food and Agriculture, Secretary of Resources Agency, Chairperson of CARB, Chairperson of the Energy Commission, and the President of the Public Utilities Commission. The Secretary is required to submit a biannual progress report to the Governor and State Legislature disclosing the progress made toward GHG emission reduction targets.

Executive Order S-1-07. Executive Order S-1-07 proclaims that the transportation sector is the main source of GHG emissions in California, generating more than 40 percent of statewide emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in California by at least ten percent by 2020. This order also directs CARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

Senate Bill 97. SB 97, signed in August 2007 (Chapter 185, Statutes of 2007; PRC Sections 21083.05 and 21097), acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. This bill directs the Governor's Office of Planning and Research (OPR), which is part of the State Natural Resources Agency, to prepare, develop, and transmit to CARB guidelines for the feasible mitigation of GHG emissions (or the effects of GHG emissions), as required by CEQA.

OPR published a technical advisory recommending that CEQA lead agencies make a good-faith effort to estimate the quantity of GHG emissions that would be generated by a proposed project. Specifically, based

on available information, CEQA lead agencies should estimate the emissions associated with project-related vehicular traffic, energy consumption, water usage, and construction activities to determine whether project-level or cumulative impacts could occur, and should mitigate the impacts where feasible. OPR requested CARB technical staff to recommend a method for setting CEQA thresholds of significance as described in State *CEQA Guidelines* Section 15064.7 that will encourage consistency and uniformity in the CEQA analysis of GHG emissions throughout the State.

The Natural Resources Agency adopted the CEQA Guidelines Amendments prepared by OPR, as directed by SB 97. On February 16, 2010, the Office of Administration Law approved the CEQA Guidelines Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The CEQA Guidelines Amendments became effective on March 18, 2010.

Senate Bill 375. SB 375, signed in September 2008 (Chapter 728, Statutes of 2008), aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a sustainable communities strategy (SCS) or alternative planning strategy (APS) that will prescribe land use allocation in that MPOs regional transportation plan. CARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects may not be eligible for funding programmed after January 1, 2012.

Senate Bills 1078 and 107 and Executive Order S-14-08. SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. Executive Order S-14-08 was signed in November 2008, which expands the State's Renewable Energy Standard to 33 percent renewable power by 2020.

Senate Bill 1368. SB 1368 (Chapter 598, Statutes of 2006) is the companion bill of AB 32 and was signed into law in September 2006. SB 1368 required the California Public Utilities Commission (CPUC) to establish a performance standard for baseload generation of GHG emissions by investor-owned utilities by February 1, 2007. SB 1368 also required the California Energy Commission (CEC) to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards could not exceed the GHG emissions rate from a baseload combined-cycle, natural gas fired plant. Furthermore, the legislation states that all electricity provided to California, including imported electricity, must be generated by plants that meet the standards set by CPUC and CEC.

CARB Scoping Plan. On December 11, 2008, CARB adopted its Scoping Plan, which functions as a roadmap of CARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations.[9] CARB's Scoping Plan contains the main strategies California will implement to reduce CO_2eq[10]

9 California Air Resources Board, *Climate Change Scoping Plan, A Framework for Change*, December 2008.

10 Carbon Dioxide Equivalent (CO_2eq) - A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

emissions by 174 million metric tons (MMT), or approximately 30 percent, from the state's projected 2020 emissions level of 596 MMT of CO_2eq under a business as usual (BAU)[11] scenario (this is a reduction of 42 MMT CO_2eq, or almost ten percent, from 2002 to 2004 average emissions, but requires the reductions in the face of population and economic growth through 2020).

CARB's Scoping Plan calculates 2020 BAU emissions as the emissions that would be expected to occur in the absence of any GHG reduction measures. The 2020 BAU emissions estimate was derived by projecting emissions from a past baseline year using growth factors specific to each of the different economic sectors (e.g., transportation, electrical power, commercial and residential, industrial, etc.). CARB used three-year average emissions, by sector, for 2002 to 2004 to forecast emissions to 2020. At the time CARB's Scoping Plan process was initiated, 2004 was the most recent year for which actual data was available. The measures described in CARB's Scoping Plan are intended to reduce the projected 2020 BAU to 1990 levels, as required by AB 32.

As GHG emissions impacts have a global effect, they are cumulative in nature. Refer to Section 3.11, *Cumulative Impacts*, for a discussion of the project's GHG impacts.

Regional

South Coast Air Quality Management District

The SCAQMD is one of 35 air quality management districts that have prepared AQMP's to accomplish a five-percent annual reduction in emissions. The *Final 2012 Air Quality Management Plan* for the South Coast Air Basin relies on a multi-level partnership of governmental agencies at the federal, State, regional, and local level. The *Final 2012 Air Quality Management Plan* proposes policies and measures to achieve federal and State standards for improved air quality in the Basin and those portions of the Salton Sea Air Basin (formerly named the Southeast Desert Air Basin) that are under SCAQMD jurisdiction.

The *Final 2012 Air Quality Management Plan* includes new information on key elements such as:[12]

- Current air quality;
- Improved emission inventories;
- Implementation of new technology measures;
- New and changing federal requirements; and,
- Continued development of economically sound, flexible compliance approaches.

In addition to the *2012 Air Quality Management Plan* and its rules and regulations, the SCAQMD has published the *CEQA Air Quality Handbook*. The SCAQMD *CEQA Air Quality Handbook* provides guidance to assist local government agencies and consultants in developing the environmental documents required by CEQA. With the help of the *CEQA Air Quality Handbook*, local land use planners and other consultants are able to

11 "Business as Usual" refers to emissions that would be expected to occur in the absence of GHG reductions. See http://www.arb.ca.gov/cc/inventory/data/forecast.htm. Note that there is significant controversy as to what BAU means. In determining the GHG 2020 limit, CARB used the above as the "definition." It is broad enough to allow for design features to be counted as reductions.

12 South Coast Air Quality Management District – Final 2012 Air Quality Management Plan. December 2012. http://www.aqmd.gov/aqmp/2012aqmp/Final-February2013/index.html. Accessed August 15, 2013.

analyze and document how proposed and existing projects affect air quality and should be able to fulfill the requirements of the CEQA review process. The SCAQMD is currently in the process of developing an *Air Quality Analysis Guidance Handbook* to replace the current *CEQA Air Quality Handbook* approved by the SCAQMD Governing Board in 1993.

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino and Imperial Counties and serves as a forum for regional issues relating to transportation, the economy, community development and the environment. SCAG serves as the federally-designated metropolitan planning organization for the Southern California region and is the largest metropolitan planning organization in the United States. With respect to air quality planning, SCAG has prepared the *2008 Regional Comprehensive Plan and Guide* for the region, which includes Land Use and Housing, Air Quality, and Transportation chapters that influence the land use and transportation control portions of the *2012 Air Quality Management Plan*. SCAG is responsible under the FCAA for determining conformity of projects, plans and programs with the SCAQMD.

Local

City of Riverside General Plan 2025

California state planning law requires each City and County to adopt a comprehensive, long-term General Plan for the physical development of the area within its jurisdiction and of any land outside its boundaries that bears relations to its land use planning activities. The *City of Riverside General Plan 2025* was adopted in November 2007. The *General Plan* is a long-range policy-planning document that defines the framework by which the County's physical and economic resources are to be managed over time. The goals and policies contained in the General Plan are provided to guide the County's decision-makers. The seven State-mandated elements are included in the General Plan, including Land Use, Circulation, Housing, Conservation, Open Space, Safety, and Noise. In addition, the City of Riverside has also chosen to address Urban Design and Arts and Culture, Education, which are optional elements.

The Air Quality Element identifies the role of the City in helping the South Coast Air Basin in attaining the goals of meeting federal and State air quality standards. This Element also seeks to protect its own residents and businesses from the impacts of harmful air contaminants. The following are relevant provisions and programs intended to minimize current pollution emissions and require new development to implement measures to comply with air quality standard:

Objective AQ-1: **Adopt land use policies that site polluting facilities away from sensitive receptors and vice versa; improve job-housing balance; reduce vehicle miles traveled and length of work trips; and improve the flow of traffic.**

Policy AQ-1.2: Consider potential environmental justice issues in reviewing impacts (including cumulative impacts for each project proposed).

Policy AQ-1.3: Separate, buffer and protect sensitive receptors from significant sources of pollution to the greatest extent possible.

Policy AQ-1.26: Require neighborhood parks and community centers near concentrations of residential areas to include pedestrian walkways and bicycle paths to encourage non-motorized travel.

Policy AQ-2.16: Minimize traffic hazards and delays through highway maintenance, rapid emergency response, debris removal and elimination of at-grade railroad crossings.

Objective AQ-3: Prevent and reduce pollution from stationary sources, including point sources (such as power plants and refinery boilers) and area sources (including small emission sources such as residential water heaters and architectural coatings).

Policy AQ-3.4: Require projects to mitigate, to the extent feasible, anticipated emissions which exceed AQMP Guidelines.

Policy AQ-3.7: Require use of pollution control measures for stationary and area sources through the use of best available control activities, fuel/material substitution, cleaner fuel alternatives, product reformulation, change in work practices and of control measures identified in the latest AQMP.

Objective AQ-4: Reduce particulate matter, as defined by the Environmental Protection Agency (EPA), as either airborne photochemical precipitates or windborne dust.

Policy AQ-4.1: Identify and monitor sources, enforce existing regulations and promote stronger controls to reduce particulate matter (e.g., require clean fuels for street sweepers and trash trucks, exceed the AQMD requirements for fleet rules).

Policy AQ-4.2: Reduce particulate matter from agriculture (e.g., require use of clean non-diesel equipment and particulate traps), construction, demolition, debris hauling, street cleaning, utility maintenance, railroad rights-of-way and off-road vehicles to the extent possible, as provided in SCAQMD Rule 403.

Policy AQ-4.3: Support the reduction of all particulates potential sources.

Policy AQ-4.4: Support programs that reduce emissions from building materials and methods that generate excessive pollutants through incentives and/or regulations.

Policy AQ-4.5: Require the suspension of all grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour.

Objective AQ-5: Increase energy efficiency and conservation in an effort to reduce air pollution.

Policy AQ-5.1: Utilize source reduction, recycling and other appropriate measures to reduce the amount of solid waste disposed of in landfills.

Objective AQ-7: Support a regional approach to improving air quality through multi-jurisdictional cooperation.

Policy AQ-7.4: Coordinate with the SCAQMD to ensure that the City's air quality plans regarding reduction of air pollutant emissions are being enforced.

Policy AQ-7.5: Establish and implement air quality, land use and circulation measures that improve not only the City's environment but that of the entire region.

Policy AQ-7.9: Adhere with federal, State and regional air quality laws, specifically with Government Code Section 65850.2, which requires that each owner or authorized agent of a project indicate, on the development or building permit for the project, whether he/she will need to comply with the requirements for a permit for construction or modification from the SCAQMD.

Policy AQ-7.10: Incorporate, to the extent applicable and permitted by law, current and proposed AQMP measures.

Objective AQ-8: Make sustainability and global warming education a priority for the City's effort to protect public health and achieve State and federal clean air standards.

Policy AQ-8.26: Strengthen the City's existing trail inventory while providing a 75% increase of passive recreational and multi-use trails by 2015.

3.3.3 Significance Threshold Criteria

Under *CEQA*, the SCAQMD is an expert commenting agency on air quality within its jurisdiction or impacting its jurisdiction. Under the FCAA, the SCAQMD has adopted federal attainment plans for O_3 and PM_{10}. The SCAQMD reviews projects to ensure that they would not: (1) cause or contribute to any new violation of any air quality standard; (2) increase the frequency or severity of any existing violation of any air quality standard; or, (3) delay timely attainment of any air quality standard or any required interim emission reductions or other milestones of any federal attainment plan.

The environmental analysis in this section is patterned after the Initial Study Checklist (CEQA Guidelines, Appendix G) recommended by the *CEQA Guidelines*, as amended, and used by the City of Riverside in its environmental review process. The Initial Study Checklist includes questions relating to air quality. The issues presented in the Initial Study Checklist have been utilized as thresholds of significance in this section. Accordingly, a project may create a significant environmental impact if it causes one or more of the following to occur:

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

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

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

d) Expose sensitive receptors to substantial pollutant concentrations; and,

e) Create objectionable odors affecting a substantial number of people.

Based on these standards and thresholds, the effects of the proposed project have been categorized as either a "less than significant impact" or a "potentially significant impact." Mitigation measures are recommended

for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a significant unavoidable impact.

3.3.4 Impacts and Mitigation Measures

Short-Term (Construction) Impacts

Impact 3.3-1: Short-term construction activities associated with the proposed project would result in significant air pollutant emission impacts. **Level of Significance: Significant Unavoidable Impact.**

Short-term air quality impacts are predicted to occur during grading and construction operations associated with implementation of the proposed project. Temporary air emissions would result from the following activities:

- Particulate (fugitive dust) emissions from grading and building construction; and,
- Exhaust emissions from the construction equipment and the motor vehicles of the construction crew.

Potential odors could arise from the diesel construction equipment used on-site, as well as from architectural coatings and asphalt off-gassing. Odors generated during construction activities would be temporary and are not considered to be a significant impact. Emissions produced during grading and construction activities are short-term, as they would exist only during construction.

For the purposes of this analysis, construction of the proposed project is anticipated to commence in 2016. Construction is anticipated to last for approximately 24 months. Truck traffic that would generate noise/dust/exhaust for the transportation of the materials export is anticipated to take between 2.6 and 12.5 months, depending on the type of truck utilized for the export and the landfill location that will be selected. However, to allow for a conservative analysis, the project was modeled for a construction period of 18 months. Construction activities would include grading and earthwork, (which would utilize excavators, tractors, dozers, and a water truck) and building construction (which would utilize a pile driver, crane, tractor, and two heavy trucks). Exhaust emission factors for typical diesel-powered heavy equipment are based on the California Emissions Estimator Model (CalEEMod) program defaults. Variables factored into estimating the total construction emissions include the level of activity, length of construction period, number of pieces and types of equipment in use, site characteristics, weather conditions, number of construction personnel, and the amount of materials to be transported on- or off-site.

Project construction would result in approximately three acres of site grading per day and 400,000 cubic yards of soil export. The analysis of daily construction emissions has been prepared utilizing the CalEEMod computer model. Refer to Appendix C, *Air Quality Measurements*, for the CalEEMod modeling outputs and results. *Table 3.3-4, Short-Term (Construction) Emissions*, presents the anticipated daily short-term construction emissions.

Fugitive Dust Emissions

Construction activities are a source of fugitive dust (PM_{10} and $PM_{2.5}$) emissions that may have a substantial, temporary impact on local air quality. In addition, fugitive dust may be a nuisance to those living and working in the project area. Fugitive dust emissions are associated with land clearing, ground excavation, cut-and-fill, and truck travel on unpaved roadways. Fugitive dust emissions vary substantially from day to day, depending on the level of activity, specific operations and weather conditions. Fugitive dust from grading/earthwork and

construction is expected to be short-term and would cease upon project completion. Additionally, most of this material is inert silicates, rather than the complex organic particulates released from combustion sources, which are more harmful to health.

Dust (larger than 10 microns) generated by such activities usually becomes more of a local nuisance than a serious health problem. Of particular health concern is the amount of PM_{10} (particulate matter smaller than 10 microns) generated as a part of fugitive dust emissions. PM_{10} poses a serious health hazard alone or in combination with other pollutants. Fine Particulate Matter ($PM_{2.5}$) is mostly produced by mechanical processes. These include automobile tire wear, industrial processes such as cutting and grinding, and re-suspension of particles from the ground or road surfaces by wind and human activities such as construction or agriculture. $PM_{2.5}$ is mostly derived from combustion sources, such as automobiles, trucks, and other vehicle exhaust, as well as from stationary sources. These particles are either directly emitted or are formed in the atmosphere from the combustion of gasses such as NO_X and SO_X combining with ammonia. $PM_{2.5}$ components from material in the earth's crust, such as dust, are also present, with the amount varying in different locations.

Mitigation Measures AQ-1 and AQ-2 would implement dust control techniques (e.g., daily watering), limitations on construction hours, and adherence to SCAQMD Rules 402 and 403 (which require watering of inactive and perimeter areas, track out requirements, etc.) to reduce PM_{10} and $PM_{2.5}$ fugitive dust concentrations. According to the modeling results in *Table 3.3-4, Short-Term (Construction) Emissions*, total mitigated PM_{10} and $PM_{2.5}$ emissions would be 523.40 pounds per day (lbs/day) and 9.06 lbs/day. Therefore, mitigated PM_{10} emissions would still exceed the SCAQMD thresholds. Even with implementation of Mitigation Measures AQ-1 and AQ-2, impacts related to PM_{10} emissions would remain significant and unavoidable.

ROG Emissions

The highest concentration of ROG emissions would be generated during the grading and earthwork phases, which is the period of greatest activity for off-road equipment. The project construction would not result in an exceedance of ROG emissions, and therefore would be considered a less than significant impact.

Table 3.3-4 Short-Term (Construction) Emissions

Emissions Source	Emissions (pounds per day)[1]					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Grading/Earthwork and Building Construction						
Construction Emissions	20.40	187.18	106.05	0.23	707.06	10.98
Mitigated Emissions[2,3]	20.40	187.18	106.05	0.23	523.40	9.06
SCAQMD Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded After Mitigation?	**No**	**Yes**	**No**	**No**	**Yes**	**No**
Facility Construction						
Construction Emissions	4.56	35.63	16.18	0.05	1.45	1.45
Mitigated Emissions[2,3]	4.56	35.63	16.18	0.05	1.45	1.45
SCAQMD Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Is Threshold Exceeded After Mitigation?	**No**	**No**	**No**	**No**	**No**	**No**

Table 3.3-4, continued

Notes:

1. Emissions calculated using the CalEEMod Computer Model.
2. The reduction/credits for construction emission mitigations are based on reduction measures included in the CalEEMod computer model as recommended by the SCAQMD.
3. The reduction/credits for construction emission mitigations are based on mitigation included in the CalEEMod Computer Model and as typically required by the SCAQMD (Rule 403). The mitigation includes the following: replace ground cover on disturbed areas quickly, water exposed surfaces twice daily, apply soil stabilizers to inactive areas, and proper loading/unloading of mobile and other construction equipment.

Refer to Appendix C, *Air Quality Measurements*, for assumptions used in this analysis, including quantified emissions reduction by mitigation measures.

Asbestos

Naturally Occurring Asbestos

Pursuant to guidance issued by the Governor's Office of Planning and Research, State Clearinghouse, Lead Agencies are encouraged to analyze potential impacts related to naturally occurring asbestos. Naturally occurring asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations.

Serpentinite and/or ultramafic rock are known to be present in 44 of California's 58 counties. These rocks are particularly abundant in the counties of the Sierra Nevada foothills, the Klamath Mountains, and Coast Ranges. According to the Department of Conservation Division of Mines and Geology, *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Report* (August 2000),[13] the proposed project is not located in an area where naturally occurring asbestos is likely to be present. Therefore, impacts would be considered less than significant.

Construction Equipment and Worker Vehicle Exhaust

Exhaust emissions from construction activities include emissions associated with the transport of machinery and supplies to and from the project site, emissions produced on-site as the equipment is used, and emissions from trucks transporting materials to and from the site. Emitted pollutants would include ROG, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$. Standard SCAQMD regulations, such as maintaining all construction equipment in proper tune, shutting down equipment when not in use for extended periods of time, and implementing SCAQMD Rule 403, would be adhered to. However, as noted within *Table 3.3-4, Short-Term (Construction) Emissions*, exhaust from soil hauling and construction equipment would cause an exceedance of the SCAQMD's NO_X and PM_{10} thresholds during Year 1 of the construction period. Mitigation Measure AQ-3 would reduce ozone precursors (NO_X and ROG) by maintaining engines in good condition and proper tune. Mitigation Measure AQ-4 would be required to reduce NO_X emissions to the maximum extent practicable by requiring all diesel fueled construction vehicles to meet the latest emissions standards, utilizing low sulfur fuel, and maintaining equipment to manufacturers' specifications, among others. However, even with implementation of Mitigation Measures AQ-3 and AQ-4, impacts related to NO_X emissions would remain significant and unavoidable.

13 California Department of Conservation Division of Mines and Geology. *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Report* (August 2000). ftp://ftp.consrv.ca.gov/pub/dmg/pubs/ofr/ofr_2000-019.pdf. Accessed August 15, 2013.

Total Daily Construction Emissions

In accordance with the SCAQMD Guidelines, CalEEMod was utilized to model construction emissions for ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. Construction would occur over an estimated 24-month period with the greatest emissions being generated during the initial stages of construction (an 18-month period was assumed as a worst-case).[14] Truck traffic that would generate noise/dust/exhaust for the transportation of the materials export is anticipated to take between 2.6 and 12.5 months, depending on the type of truck utilized for the export and the landfill location that will be selected. The CalEEMod model allows the user to input mitigation measures such as watering the construction area to limit fugitive dust and applying soil stabilizers to the project area. Mitigation measures within the CalEEMod model allow for certain reduction credits and result in a decrease of pollutant emissions. Reduction credits are based upon studies developed by CARB, the SCAQMD, and other air quality management districts throughout California, and were programmed within the CalEEMod model. As indicated in *Table 3.3-4*, impacts would be significant and unavoidable for NO_X and PM_{10} emissions. Even with implementation of the recommended mitigation measures, overall aggregate emissions would exceed the SCAQMD standards for NO_X and PM_{10} during the overall construction phase. Thus, construction related air emissions would be significant and unavoidable.

Localized Significance Thresholds

Estimated grading activities would affect approximately three acres per day. Therefore, a Localized Significance Thresholds analysis was performed. Appendix C of the SCAQMD *Localized Significant Threshold Methodology* provides thresholds for one-, two-, and five-acre sites.

The closest sensitive receptors to the project site are the residential uses located approximately 150 feet (approximately 50 meters) west of the project site. This sensitive land use may be potentially affected by air pollutant emissions generated during on-site construction activities.

Table 3.3-5, Summary of Localized Significance of Construction Emissions, shows the construction-related emissions for NO_X, CO, PM_{10}, and $PM_{2.5}$ compared to the localized significance thresholds for Source Receptor Area 34, Central San Bernardino Valley, for a three-acre site, at a distance of 50 meters. Thresholds for receptors between two and five acres were determined through linear extrapolation based on the SCAQMD *Localized Significant Threshold Methodology*. Implementation of Mitigation Measure AQ-1 and AQ-2 would implement dust control techniques (e.g., daily watering), limitations on construction hours, and adherence to SCAQMD Rules 402 and 403 (which require watering of inactive and perimeter areas, track out requirements, etc.). As shown in *Table 3.3-5*, mitigated construction emissions would not exceed the localized significance thresholds for NO_X, CO, PM_{10}, or $PM_{2.5}$. Therefore, localized significance construction impacts would be less than significant.

14 As noted previously, the project was modeled for an 18-month construction period to allow for a conservative analysis. Therefore, project impacts would actually be less than that identified herein if a 24-month construction period results.

Table 3.3-5 Summary of Localized Significance of Construction Emissions

Construction Phase	Pollutant (pounds/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Total Mitigated On-Site Emissions	89.43	44.38	6.60	5.34
Localized Significance Threshold	*234*	*1,748*	*29*	*7*
Thresholds Exceeded?	**No**	**No**	**No**	**No**

NO_X = nitrogen oxides; CO = carbon monoxide; PM_{10} = particulate matter; up to 10 microns; $PM_{2.5}$ = particulate matter; up to 2.5 microns

Note:
1. The Localized Significance Threshold was determined using Appendix C of the SCAQMD Final Localized Significant Threshold Methodology (July 2008, Revised October 21, 2009) guidance document for pollutants NO_X, CO, PM_{10}, and $PM_{2.5}$. The Localized Significance Thresholds were based on a receptor distance of 50 meters, three-acre daily acreage of disturbance, and the source receptor area (SRA 34).

MITIGATION MEASURES:

AQ-1: Prior to issuance of construction bid documents, the City shall confirm that the Grading Plan, Building Plans and specifications stipulate that, in compliance with SCAQMD Rule 403, excessive fugitive dust emissions shall be controlled by regular watering or other dust prevention measures, as specified in the SCAQMD's Rules and Regulations. In addition, SCAQMD Rule 402 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off-site. Implementation of the following measures would reduce short-term fugitive dust impacts on nearby sensitive receptors:

- All active portions of the construction site shall be watered twice daily to prevent excessive amounts of dust;
- On-site vehicle speed shall be limited to 15 miles per hour;
- All on-site roads shall be paved as soon as feasible, watered twice daily, or chemically stabilized[15];
- Visible dust beyond the property line which emanates from the project shall be prevented to the maximum extent feasible;
- All material transported off-site shall be either sufficiently watered or securely covered to prevent excessive amounts of dust prior to departing the job site;
- Track-out devices shall be used at all construction site access points; and,
- All delivery truck tires shall be watered down and/or scraped down prior to departing the job site.

AQ-2: All trucks that are to haul excavated or graded material on-site shall comply with State Vehicle Code Section 23114 (Spilling Loads on Highways), with special attention to Sections 23114(b)(F), (e)(4) as amended, regarding the prevention of such material spilling onto public

15 If chemical stabilization is required, the methods/chemicals utilized will need to be evaluated so that no contamination would occur to surrounding upland area if significant runoff would occur.

streets and roads. Prior to the issuance of construction bid documents, hauling activities shall be specified to comply with the provisions set forth in Sections 23114(b)(F), (e)(4).

AQ-3: Prior to issuance of construction bid documents, the City shall confirm that the Grading Plan, Building Plans and specifications stipulate that, in compliance with SCAQMD Rule 403, O_3 precursor emissions from construction equipment vehicles shall be controlled by maintaining equipment engines in good condition and in proper tune per manufacturer's specifications, to the satisfaction of the City Engineer. Maintenance records shall be provided to the City. The City Inspector shall be responsible for ensuring that contractors comply with this measure during construction.

AQ-4: The following measures shall be implemented during construction to substantially reduce NO_X related emissions. They shall be included in the Grading Plan, Building Plans, and contract specifications. Contract specification language shall be reviewed by the City prior to issuance of construction bid documents. The following note shall be included on all grading plans: "During construction activity, the contractor shall utilize applicable EPA-Certified construction equipment, including all off-road diesel-powered construction equipment. A copy of each unit's certified tier specification, BACT documentation, and CARB or SCAQMD operating permit shall be provided to the City at the time of mobilization of each applicable unit of equipment."

- Off-road diesel equipment operators shall be required to shut down their engines rather than idle for more than five minutes, and shall ensure that all off-road equipment is compliant with the CARB in-use off-road diesel vehicle regulation and SCAQMD Rule 2449.
- Contractors shall use 2010 and newer diesel haul trucks (e.g., material delivery trucks and soil import/export trucks). If the lead agency determines that 2010 model year or newer diesel trucks cannot be obtained, trucks that meet EPA 2007 model year NO_X and PM emissions requirements shall be utilized.
- The contractor and City, if the City's equipment is used, shall maintain construction equipment engines by keeping them tuned and regularly serviced to minimize exhaust emissions.
- Use low sulfur fuel for stationary construction equipment. This is required by SCAQMD Rules 431.1 and 431.2.
- Utilize existing power sources (i.e., power poles) when available. This measure would minimize the use of higher polluting gas or diesel generators.
- Configure construction parking to minimize traffic interference.
- Minimize obstruction of through-traffic lanes and provide temporary traffic controls such as a flag person during all phases of construction when needed to maintain smooth traffic flow. Construction shall be planned so that lane closures on existing streets are kept to a minimum.
- Schedule construction operations affecting traffic for off-peak hours to the best extent when possible.

- Develop a traffic plan to minimize traffic flow interference from construction activities (the plan may include advance public notice of routing, use of public transportation and satellite parking areas with a shuttle service.)
- Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than five minutes.

Operational Impacts

Impact 3.3-2: Long-term operation of the proposed project would not result in significant air pollutant emissions impacts. **Level of Significance: Less than Significant Impact.**

The purpose of the project includes improvement of the groundwater quality in the Riverside and Colton water basins, reduced dependence on imported water through increased storage, and the creation of additional groundwater recharge basins along the Santa Ana River within the project area. Short- and long-term operations would consist of periodic maintenance visits. The basins would also be scoured one to two times per year to maintain adequate recharge capacity and remove excess sediment accumulation from the bottom of the off-stream desilting basin and the upstream side of the inflatable dam. Removal and transport of the sediment would require operation of a limited number of vehicles (e.g. bulldozer, dump trucks, etc.) on a temporary basis and limited to once or twice per year. Therefore, such activities are not anticipated to result in a significant impact on air quality over the long-term, and no mitigation is required.

A control house located adjacent to the proposed dam on the western bank of the river would house mechanical equipment (i.e., air compressor, generator, etc.). The control house, inflatable dam, and in-stream basin would be located more than 1,500 feet from residences. The desilting basin would be located over 630 feet from sensitive receptors. Long-term operation of the proposed project would not result in significant air pollutant emissions impacts, as emissions would not exceed the established thresholds due to limited maintenance operations and distance to sensitive receptors. Therefore, the proposed project would result in less than significant impacts on air quality. No mitigation is required.

Plan Consistency

Impact 3.3-3: Development associated with the proposed project would be consistent with regional plans and the State Implementation Plan. **Level of Significance: Less than Significant Impact.**

According to the *CEQA Air Quality Handbook*, the following procedures are required to be addressed in order to determine consistency with SCAQMD and SCAG policies:

1. Will the project result in any of the following:
   - An increase in the frequency or severity of existing air quality violations;
   - Cause or contribute to new air quality violations; or,
   - Delay timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.
2. Will the project exceed the assumptions utilized in preparing the AQMP?

With respect to the first criterion, SCAQMD methodologies require that an air quality analysis for a project include forecasts of project emissions in a regional context during short-term construction and long-term operations.

Since the consistency criteria identified under the first criterion pertain to pollutant emissions relative to localized pollutant concentrations, rather than to total regional emissions, an analysis of the project's pollutant emissions relative to localized pollutant concentrations is used as the basis for evaluation project consistency. As discussed above, localized concentrations of CO, NO_X, PM_{10}, and $PM_{2.5}$ have been analyzed for the project. SO_2 emissions would be negligible during construction and long-term operations, and therefore would not have the potential to cause or affect a violation of the SO_2 ambient air quality standard. Because ROGs are not a criteria pollutant, there is no ambient standard or localized threshold for ROGs. Due to the role ROG plays in ozone formation, it is classified as a precursor pollutant, and only a regional emissions threshold has been established.

Particulate matter is the primary pollutant of concern during construction activities, and therefore the project's PM_{10} and $PM_{2.5}$ emissions during construction were analyzed (1) to determine potential effects on localized concentrations; and, (2) to determine if there is a potential for such emissions to cause or affect a violation of the ambient air quality standards for PM_{10} and $PM_{2.5}$. The project's maximum potential NO_X and CO daily emissions during construction were also analyzed to determine potential effects on localized concentrations and to determine if there is a potential for such emissions to cause or affect a violation of an applicable ambient air quality standard. As shown in *Table 3.3-5, Summary of Localized Significance of Construction Emissions,* the maximum estimate of localized concentrations for CO, NO_X, PM_{10}, and $PM_{2.5}$ would remain below their respective SCAQMD Localized Significance Thresholds. As such, localized impacts (i.e. potential to violate either the State or federal standards at sensitive receptor locations) that may result from construction-period air pollutant emissions would be less than significant. Overall, as the project would result in less than significant impacts with regard to localized concentrations during project construction and operations, the project would meet the first AQMP consistency criterion.

With respect to the second criterion for determining consistency with SCAQMD and SCAG air quality policies, it is important to recognize that air quality planning within the Basin focuses on attainment of ambient air quality standards at the earliest feasible date. Projections for achieving air quality goals are based on assumptions regarding population, housing, and growth trends. Thus, the SCAQMD's second criterion for determining project consistency focuses on whether or not the proposed project exceeds the assumptions utilized in preparing the forecasts presented in the AQMP. Determining whether or not a project exceeds the assumptions reflected in the AQMP involves the evaluation of three criteria: (1) consistency with the population, housing, and employment growth projections: (2) project mitigation measures; and, (3) appropriate incorporation of AQMP land use planning strategies. The following discussion provides an analysis of each of these three criteria.

1. *Is the project consistent with the population, housing, and employment growth projections upon which the AQMP forecasted emission levels are based?*

A project is consistent with the AQMP in part if it is consistent with the population, housing, and employment assumptions that were used in the development of the AQMP. In the case of the 2012 AQMP, three sources of data form the basis for the projections of air pollutant emissions: the General Plan, SCAG's *2008 Growth Management* Chapter of the *Regional Comprehensive Plan* (RCP), and SCAG's *2012 Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS). The RTP also provides socioeconomic forecast projections of regional population growth.

The proposed project involves improvement of the groundwater quality in the Riverside and Colton water basins, reduced dependence on imported water through increased storage, and the creation of additional groundwater recharge basins along the Santa Ana River within the project area. Long-term operations would consist of periodic maintenance visits. Additionally, an air compressor and generator would be located on-site in the control house for use in inflating the rubber dam. As this stationary equipment would only be in operation on an intermittent and temporary basis when needed, operation over the long-term would not result in a substantial adverse effect on existing air quality. No significant impacts on air quality would occur with operation of the required stationary equipment, and no mitigation is required.

The proposed project will include the construction of an inflatable dam and groundwater recharge basins. The project area is zoned for open space and parks. As a result, the proposed project would not result in growth in population or employment is consistent with local land use plans, and it can be concluded that the proposed project would be consistent with the projections in the AQMP.

2. *Does the project implement all feasible air quality mitigation measures?*

Implementation of all feasible mitigation measures is recommended to reduce air quality impacts to the extent feasible. The proposed project would incorporate measures identified by the SCAQMD, as identified above. As such, the proposed project meets this AQMP consistency criterion.

3. *To what extent is project development consistent with the land use policies set forth in the AQMP?*

The determination of AQMP consistency is primarily concerned with the long-term influence of the project on air quality in the Basin. The project would not result in a long-term impact on the region's ability to meet State and federal air quality Standards. As discussed above, the project's long-term influence would also be consistent with the goals and policies of the AQMP and is, therefore, considered consistent with the SCAQMD's AQMP. Impacts would be less than significant, and no mitigation is required.

As such, development associated with the proposed project would be consistent with applicable regional plans and the State Implementation Plan. Impacts would be less than significant in this regard, and no mitigation is required.

3.3.5 Significant Unavoidable Adverse Impacts

Implementation of the proposed project and would result in a significant and unavoidable impact for the following areas:

- *Regional Construction Related Emissions* – As shown in *Table 3.3-4, Short-Term (Construction) Emissions,* activities related to construction of the project would exceed the SCAQMD daily emission thresholds for regional NO_X and PM_{10} after implementation of all feasible mitigation measures. Therefore, the construction of the project would have a significant and unavoidable impact on regional air quality. Construction emissions would not exceed the SCAQMD significance threshold for SO_X, CO, ROG, and $PM_{2.5}$.
- *Cumulative Short-Term Construction-Related Emissions* – As stated above, construction activities would create a significant and unavoidable impact due to exceedances of SCAQMD thresholds for the NO_X and PM_{10} criteria pollutants. Implementation of recommended mitigation measure AQ-1 through AQ-4 would reduce impacts. However a significant and unavoidable impact would remain.

If the City of Riverside approves the project, the City shall be required to cite their findings in accordance with Section 15091 of CEQA and prepare a Statement of Overriding Considerations in accordance with Section 15093 of CEQA. Refer to Section 5, *Alternatives to the Proposed Action*, for a discussion of alternatives that could reduce potential unavoidable significant impacts. The project itself represents an alternative water supply for the City and Project Partners, which reduces dependence on imported water supplies. From an air quality and GHG perspective, the project is far superior to imported water in terms of energy required to produce and convey the water, and therefore has considerably less indirect emissions than imported water. It should also be noted that cumulative air quality and GHG emissions are regulated by SCAQMD (construction emissions, stationary emissions, and related regulations) and by the Air Resources Board (including mobile vehicle emissions and CAAQS).

3.4 BIOLOGICAL RESOURCES

This section evaluates biological resources and the short- and long-term impacts resulting from implementation of the Riverside Groundwater Aquifer Storage and Recovery Project. Information in this section is based on the *Habitat Assessment for the Riverside North Aquifer Storage and Recovery Project* dated February 2015(prepared by RBF) (Appendix D1); *Delineation of CDFW and Corps Jurisdictional Areas*, dated December 2014 (prepared by RBF) (Appendix D2); *Auger Boring Technical Documentation* (Appendix D3); *Woolly-star Technical Memorandum* dated August 2011 (prepared by Riverside Public Utilities) (Appendix D4); *General Biological Resources Habitat Assessment and Focused Survey Report* dated July 2009 (prepared by Tom Dodson & Associates) (Appendix D5); the *Focused San Bernardino Kangaroo Rat Survey Report*, dated June 2009 (prepared by Tom Dodson & Associates); *Riverside North Aquifer Storage and Recovery Project Santa Ana River Sediment Transport Technical Memorandum*, dated January 2015 (prepared by RBF Consulting) (Appendix E); and information was taken from the *Geohydrologic Evaluation*, dated January 2014 (prepared by Geoscience) (Appendix H).

3.4.1 Environmental Setting

Existing Conditions

The proposed project is located in the southern portion of the City of Colton, north of the City of Grand Terrace. The project site is located south of Interstate 10 and East M Street, west of Interstate 215 and the Santa Ana River, and east of the Union Pacific Railroad right-of-way. The project is located within and adjacent to the Santa Ana River as it trends south and bends westward. The project site is currently surrounded by undeveloped properties to the north and west and the Cooley Ranch Planned Development to the east (on the east side of the Santa Ana River). Roadways providing vehicular access to the project site include East Congress Street, Fogg Street, M Street, and Mt. Vernon Avenue.

Currently, the project site consists of vacant land with several dirt roads crossing the project site and several water wells owned and operated by the City of Riverside. In addition, a Southern California Edison substation is located to the northeast of the project area. Electrical transmission tower easements associated with this facility traverse the project area and surrounding properties in a north-south direction. The sediments underlying the site are alluvial sand and gravel deposited by historical flows of the Santa Ana River, Warm Creek, and Lytle Creek. The project site is essentially flat with a slope to the southwest at about 1.5 percent. The elevation on the project site ranges from approximately 910 feet above mean sea level (amsl) to 955 feet amsl. Groundwater in the site vicinity is located approximately 112 feet below the ground surface as of October 2013.

The proposed off-stream water impoundment area encompasses approximately 44.1 acres of contiguous land, all of which is undeveloped. Existing development in the immediate vicinity of the project is commercial and residential in nature. Land immediately surrounding the water impoundment area is vacant, with the Santa Ana River located directly east. The reach of the Santa Ana River in the project area consists of soft bottom and rip rap levees. The site and adjacent parcels are zoned as Open Space-Resources.

Local Climate

The region has a year-round Mediterranean climate or semi-arid climate, with warm, sunny, dry summers and cool, rainy, mild winters. Average annual precipitation ranges from 12 inches per year in the coastal plain to 18 inches per year in the inland alluvial valleys, reaching 40 inches or more in the San Bernardino Mountains. Most of the precipitation occurs between November and March in the form of rain with variable amounts of

snow in the higher elevations. The climatological cycle of the region results in higher surface water flows in the spring and early summer and lower flows during the dry season. Winter and spring floods generated by storms are not uncommon in wet years. Similarly, during the dry season, infrequent summer storms can cause torrential floods in local streams.

Topography and Soils

The proposed project is located within the floodplain of the Santa Ana River (SAR). The SAR is the largest stream system in southern California, beginning in the San Bernardino Mountains, which reaches altitudes exceeding 10,000 feet, and flowing more than 100 miles to the Pacific Ocean near Huntington Beach. The Santa Ana River floodplain contains, among other habitat types, Riversidean alluvial fan sage scrub (RAFSS) and a mosaic of riparian communities including southern willow scrub, mulefat scrub, sandy riverwash, and stream habitat. These are regionally significant habitat types confined to river and creek floodplains of southern San Bernardino and northwest Riverside counties.

Portions of the Santa Ana River have been concrete-lined for flood control purposes and Reche Canyon Creek discharges along the eastern bank of the Santa Ana River. On-site elevation ranges from 910 to 955 feet above mean sea level and generally slopes to the southwest. According to the USDA Natural Resources Conservation Service Soil Survey, surface soils on and adjacent to the project site consist of Psamments and Fluvents (Frequently Flooded) and Tujunga Gravelly Loamy Sand (0 to 9 Percent Slopes).

3.4.2 Biological Survey Methodology

RBF conducted a thorough literature review and records search to determine which sensitive biological resources have the potential to occur on or within the general vicinity of the project site. In addition, a general habitat assessment of the proposed project site was conducted. The field survey provided information about the existing conditions on the site and potential for sensitive biological resources to occur. More specific detail regarding botanical survey methodology, Delhi Sands Flower-Loving Fly Habitat Assessment, Burrowing Owl Surveys, focused San Bernardino Kangaroo Rat trapping surveys, soil series assessment, and jurisdictional areas are discussed in Appendix D1.

Literature Review

Prior to conducting the field visit, RBF performed a literature review and records search to identify any current and historical occurrences of any sensitive biological resources potentially occurring on or within the vicinity of the project site. Previously recorded occurrences of special-status plant and wildlife species and their proximity to the project site were determined through a query of the California Department of Fish and Wildlife's California Natural Diversity Database (CNDDB) Rare find 5, the California Native Plant Society's (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California, Calflora Database, compendia of special-status species published by CDFW, and USFWS species listings.

Previously prepared reports, survey results, and literature prepared for the project site and surrounding areas were reviewed to understand existing conditions and note the extent of any disturbances that have occurred to the habitats on-site that would otherwise limit the presence of sensitive biological resources throughout the project site. Standard field guides and texts on sensitive and non-sensitive biological resources were reviewed for habitat requirements, as well as the following resources:

- United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS), Soil Survey;
- USFWS Critical Habitat designations for Threatened and Endangered Species;
- USFWS Endangered Species Profile and Primary Constituent Elements;
- USFWS Draft Recovery Plan for the Santa Ana sucker (USFWS 2014); and
- Previously Prepared Reports for the project site:
    - General Biological Resources Habitat Assessment and Focused Survey Report (August 2009, Tom Dodson & Associates), Appendix D5;
    - Focused San Bernardino Kangaroo Rat Survey Report (June 2009, Tom Dodson & Associates), Appendix D6;
    - Focused Santa Ana River Woolly-star Report (June 2009 and August 2011, Riverside Public Utilities, Water Resources Division), Appendix D4;
    - Assessment of the Riverside North Aquifer Storage and Recovery Project on the Santa Ana Sucker (May 2011, AECOM);
    - Preliminary Delineation of State and Federal Jurisdictional Waters (February 2009, updated July 2013, RBF Consulting), Appendix D2;
    - Habitat Assessment Update for the Riverside North Aquifer Storage and Recovery Project Located in the City of Colton, San Bernardino County, California (February 2015, RBF Consulting), Appendix D1;
    - Riverside North Aquifer Storage and Recovery Project Biological Resources Technical Memorandum Draft (November 2014, RBF Consulting), Appendix D1; and
    - Delineation of CDFW Jurisdictional Areas (December 2014, RBF Consulting), Appendix D2.

The literature review provided a baseline from which to document and analyze those areas on and within the immediate vicinity of the project site that provide suitable habitat for sensitive species. Additional recorded occurrences of these species found on or near the project site were derived from database queries. The CNDDB ArcGIS database was used, in conjunction with ArcGIS software, to locate the nearest sensitive species occurrences within the region and determine the distance from the project site.

General Biological Survey

On March 3 and 4, 2009, a reconnaissance survey was conducted on the project site by walking the site and noting general site conditions, vegetation communities, and plant and wildlife species, determining if focused surveys were needed for any potentially occurring listed species. The reconnaissance surveys determined the need for detailed habitat assessments for the Delhi Sands flower-loving fly (DSF), burrowing owl and San Bernardino kangaroo rat (SBKR). The detailed habitat assessments determined that focused surveys for the burrowing owl and San Bernardino kangaroo rat were needed, but that the site did not provide suitable DSF habitat due to lack of Delhi sand soil observed on-site (refer to Appendix D5). This original field survey was supplemented by a field re-visit in March 2011, and again by field visits conducted on June 26, 2013 and November 18, 2014 (refer to Appendix D1). The results of the 2011, 2013, and 2014 field surveys were analyzed in conjunction in a single habitat assessment (Appendix D1).

The 2009 reconnaissance survey identified two main plant communities as occurring on the project site: RAFSS and a mosaic of riparian communities, including southern willow scrub, mule fat scrub, sandy riverwash and stream habitat. The 2013 habitat assessment update verified the continued presence of these plant communities within the project site and noted that no significant changes had occurred to the habitat within the project site since 2009. Additionally, the project site contained several disturbed and/or developed areas. Disturbed areas within the project site no longer support a vegetation community and are primarily associated within continual human activities and maintenance. Disturbed areas include unimproved vehicle access roads and staging areas. Developed areas within the project site are unvegetated and consist of concrete-lined portions of the Santa Ana River and surrounding roadways (refer to Appendix D1).

During the June 2013 field investigation and habitat assessment, the entire project site was surveyed on foot to document the extent of each plant community previously documented as occurring on the project site and to assess the presence of suitable habitat for sensitive species. All plant communities and animal species observed were documented and jurisdictional features were identified. No focused surveys were conducted for sensitive species in 2013 during the habitat assessment. However, a focused plant survey in compliance with CDFW's 2009 protocols will be conducted to confirm the presence of woolly-star and will also focus on determining presences or absence of other potentially occurring State and federally listed plant species: slender-horned spineflower, Parry's spineflower and mesa horkelia, and focused survey for least Bell's vireo (LBVI), as well as pre-construction surveys for sensitive avian species and burrowing owl, are recommended. With the rapid expansion of LBVI up the Santa Ana River from Prado Dam, the species may be found to occur within the riparian area found onsite. The site is not expected to support southwestern willow flycatcher (SWWF) due to marginally suitable riparian vegetation onsite. However, although the onsite riparian vegetation lacks continuity and the dense understory favored by SWWF, habitat found on the project site has been designated as critical habitat. Additionally, due to the lack of suitable habitat or observation of the species, Santa Ana sucker (SASU) and SBKR are not expected to occur onsite.

On November 18, 2014, RBF biologists conducted a general biological survey to document the extent of each plant community previously documented as occurring on the project site, and to assess the presence of suitable habitat for sensitive species. Plant communities were identified using aerial photographs and were ground-truthed by walking meandering transects through the plant communities and along the boundaries between plant communities. The plant communities were evaluated for their potential to support sensitive plant and wildlife species. Notes were taken during the survey of all plant and animal species observed and jurisdictional features were identified as well as natural corridors that may support the movement of wildlife through the area (Appendix D1).

Special attention was paid to sensitive habitats and/or undeveloped areas, which have higher potential to support sensitive flora and fauna species. Areas providing suitable habitat for sensitive species were closely surveyed during the habitat assessment. All plant and wildlife species observed during the habitat assessment, as well as dominant plant species within each plant community, were recorded. Wildlife detections were made through observation of scat, trails, tracks, burrows, nests, and/or visual and aural observation. In addition, site characteristics such as soil condition, topography, presence of indicator species, condition of the plant communities, hydrology, and evidence of human use of the site were noted. The plant communities were classified in accordance with CDFW (2003) and Holland (1986), delineated on an aerial photograph, and then digitized into GIS Arcview. The Arcview application was used to compute the area of each plant community in acres.

Plant Communities

Plant communities were mapped using 7.5-minute USGS topographic base maps and aerial photography. The plant communities within the project site were classified according to CDFW's List of Terrestrial Natural Communities (2003) and cross-referenced to descriptions provided in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986).

Plants

Common plant species observed during the field survey were identified by visual characteristics and morphology in the field. Unusual or less familiar plants were identified in the laboratory using taxonomic guides. Taxonomic nomenclature used in this report follows the 2012 Jepson Manual (Hickman 2012).

Wildlife

Wildlife species were detected and identified during the field survey by sight, calls, tracks, scat, trails, burrows, and nests. Field guides were used to assist with identification of species during surveys and included guides such as the National Geographic Field Guide to the Birds of North America (2011) for birds and Burt (1986) for mammals.

3.4.3 Plant Communities

The plant communities occurring on the project site and their distribution were mapped by RBF in 2013 and confirmed again in 2014. Four (4) plant communities were observed within the boundaries of the project site during the habitat assessment: RAFSS, Mulefat Scrub, Southern Willow Scrub, and Ornamental. In addition, the project site contains areas that would be considered as disturbed and developed. These communities are described in further detail below.

Riversidean Alluvial Fan Sage Scrub

RAFSS is considered a sensitive habitat by CDFW and the California Native Plant Society. RAFSS is community restricted to intermittently or rarely-flooded, low-gradient alluvial deposits along streams, washes, and fans within large canyons on the coastal slopes of the San Gabriel Mountains and San Bernardino Mountains in San Bernardino County. This community is composed of a variety of drought-deciduous subshrubs and large evergreen woody shrubs. In addition to the scale broom (*Lepidospartum squamatum*), a dominant plant species found in RAFSS, woody shrubs such as chamise (*Adenostoma fasciculatum*), California buckwheat (*Eriogonum fasciculatum*), white sage (*Salvia apiana*), and yerba santa (*Eriodictyon trichocalyx*) are present in RAFSS. Common subshrubs include deerweed (*Acmispon glaber*), matchweed (*Gutierrezia californica*), and Douglas' nightshade (*Solanum douglasii*). Native species found within the herbaceous understory include common fiddleneck (*Amsinckia intermedia*), California croton (*Croton californicus*), and cryptantha (*Cryptantha* sp.). Due to intense, periodic flooding and erosion within the alluvial plain, a series of three step-like terraces are created above wash channels, each exhibiting a different successional phase. These phases are related to the amount of time elapsed since the most recent flood and occur as a sequential gradation of terrace types with increasing distance from the active channel. Within the survey area, two phases (pioneer and intermediate) of the RAFSS plant community occur, along with a section of disturbed intermediate RAFSS. These areas are described below.

Pioneer Riversidean Alluvial Fan Sage Scrub

The young or pioneer RAFSS plant community is found on the first terrace above the active channel of the Santa Ana River and is sparsely vegetated with low species diversity. This phase typically takes three to six years to become established after a flood disturbance.

Intermediate Riversidean Alluvial Fan Sage Scrub

The intermediate RAFSS plant community is found on the terrace above the pioneer RAFSS plant community and is defined by areas composed of dense yerba santa, scalebroom, and California buckwheat, as well as non-native grasses and early successional plant species. This phase takes approximately five to 14 years to become established after a flood disturbance.

Disturbed Intermediate Riversidean Alluvial Fan Sage Scrub

The intermediate disturbed RAFSS plant community is found predominantly to the west of the SAR in the off-stream recharge area. There are some small patches of this plant community on the eastern side of the SAR, within the channel. It is dominated by California croton as well as additional remnant RAFSS plant species including California buckwheat and scalebroom.

Mulefat Scrub

Mulefat scrub is a plant community typically associated with habitats that are seasonally flooded or saturated near canyon bottoms, irrigation ditches, or stream channels. The mulefat scrub plant community found within the survey area occurs near the middle of the survey area in the SAR south of Mount Vernon Avenue and extends to the existing SWP line that bisects the SAR. The mulefat scrub plant community, approximately 7.85 acres, is dominated by mulefat (*Baccharis salicifolia*) and includes a mix of willow (*Salix* ssp.) and cottonwood (*Populus fremontii*).

Southern Willow Scrub

The southern willow scrub plant community is typically composed of young, newly established willow and cottonwood plant species that can survive the frequent physical battering and inundation from flooding. The presence of these young willows normally allows finer sediments to accumulate, with the result that additional riparian plants can establish. Willow scrub plant communities are frequently described as early successional habitats and are among the first plant communities to form on newly established point bars along rivers.

Within the survey area, the southern willow scrub plant community is found on the northwestern bank of the concrete lined channel south of Interstate 10 and extends south, across the Santa Ana River, to Mount Vernon Avenue and to the existing SWP line that bisects the Santa Ana River. This plant community is dominated by black willow (*Salix gooddingii*), arroyo willow (*Salix lasiolepis*) with cottonwood, salt cedar (*Tamarix ramosissima*), mulefat, and cattails (*Typha* sp.).

The southern willow scrub plant community on the concrete lined channel portion of the Santa Ana River has established on approximately 3 to 8 inches of accumulated sediment deposits. This community may be washed downstream with the approaching wet season given the lack of substrate available for rooting.

Ornamental

Ornamental areas comprising non-native plant species are present in the southwestern corner of the project site adjacent to the residential neighborhoods.

Disturbed

Disturbed areas refer to areas that are unpaved, typically an earthen surface, and typically devoid of vegetation. Within the project site, disturbed areas are present on the southwestern end outside of the SAR, where there are unpaved dirt access roads along utility rights-of-way, and along the northeastern end, where there is an unpaved triangular terrace located at the confluence of Warm Creek and the SAR.

Developed

Developed areas typically refer to areas that are paved or cemented and are devoid of vegetation. Developed areas within the project site are un-vegetated and consist of concrete-lined portions of the SAR, slopes covered in riprap, and surrounding roadways.

3.4.4 Wildlife Species

Plant communities provide foraging habitat, nesting and denning sites, and shelter from adverse weather or predation. This section provides a discussion of those wildlife species observed, expected, or not expected to occur on-site. The discussion is to be used as a general reference and is limited by the season, time of day, and weather condition in which the survey was conducted. Wildlife observations were based on calls, songs, scat, tracks, burrows, and actual sightings of animals.

Amphibians

No amphibian species were observed during the survey. Based on site characteristics and the regional location, amphibian species most likely to be present within and around the project site include Baja California chorus frog (*Pseudacris hypochondriaca*), western toad (*Anaxyrus boreas*), American bullfrog (*Lithobates catesbeianus*), and African clawed frog (*Xenopus laevis*).

Reptiles

Only two reptile species were observed on-site during RBF's 2014 survey: western fence lizard (*Sceloporus occidentalis*) and common side-blotched lizard (*Uta stansburiana*). The site and surrounding habitat have the potential to support reptile species that are well acclimated to disturbance and to urban edge environments. Additional common reptiles that could be expected to occur in the area include the southern alligator lizard (*Elgaria multicarinata*), western skink (*Eumeces skiltonianus*), gopher snake (*Pituophis catenifer*), and southern Pacific rattlesnake (*Crotalus oreganus helleri*).

Avian

The project site provides suitable foraging and cover habitat for a wide variety of avian species. Because a large number of species were detected on-site, only the most abundant are listed here. The avian species that were most abundant during the survey included American crow (*Corvus brachyrhynchos*), yellow-rumped warbler

(*Setophaga petechia*), common yellowthroat (*Geothlypis trichas*), Lincoln's sparrow (*Melospiza lincolniii*), white-crowned sparrow (*Zonotrichia leucophrys*), song sparrow (*Melospiza melodia*), house finch (*Haemorhous mexicanus*), and lesser goldfinch (*Spinus psaltria*).

Mammals

The only mammalian species directly observed or detected via sign included coyote (*Canis latrans*). The project site provides suitable habitat for mammalian species adapted to disturbed, urban environments. However, most mammal species are nocturnal and are difficult to observe during a diurnal field visit. Additional mammals that could occur include Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (*Otospermophilus beecheyi*), bobcat (*Lynx rufus*), and desert cottontail (*Sylvilagus audubonii*).

Nesting Birds

No nesting birds were detected during RBF's 2014 survey, which was conducted in November after the avian nesting season. On-site vegetation and trees could provide ample nesting opportunities for avian species, particularly along the SAR corridor.

3.4.5 Sensitive Biological Resources

A search of the California Natural Diversity Database (CNDDB) was conducted to identify listed and sensitive plant and wildlife species as well as sensitive natural plant communities occurring within the San Bernardino South USGS 7.5-minute quadrangle. The CNDDB was queried for reported locations of listed and sensitive plant and wildlife species as well as sensitive natural plant communities within the San Bernardino South USGS 7.5-minute quadrangle. A search of published records of these species was conducted within this quadrangle using the CNDDB Rarefind 5 online software. The California Native Plant Society (CNPS) Inventory of Rare and Endangered Vascular Plants of California supplied information regarding the distribution and habitats of vascular plants in the vicinity. The habitat assessment was used to assess the ability of the plant communities found on-site to provide suitable habitat for relevant special-status plant and wildlife species.

The literature search identified twenty-three (23) sensitive wildlife species, twenty (20) sensitive plant species, and three (3) sensitive habitats as having the potential to occur within the San Bernardino South quadrangle. Sensitive plant and wildlife species were evaluated for their potential to occur within the project boundaries based on habitat requirements, availability and quality of suitable habitat, known distributions, and results of previous surveys (refer to *Table 3.4-1, Species Occurrence Potential)*. Of the forty-three (43) species listed in the CNDDB, sixteen (16) species were determined to have a moderate or higher potential to occur on-site. These species included the orange-throated whiptail (*Aspidoscelis hyperythra*), coastal whiptail (*Aspidoscelis tigris stejnegeri*), burrowing owl (BUOW), Santa Ana sucker (SASU), northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*), San Bernardino kangaroo rat (SBKR), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), southern grasshopper mouse (*Onychomys torridus ramona*), Los Angeles pocket mouse (*Perognathus longimembris brevinasus*), coast horned lizard (*Phrynosoma blainvillii*), Delhi Sands flower-loving Fly (DSF), least Bell's vireo (LBVI), Parry's spineflower, slender-horned spineflower, Santa Ana River woolly-star (SARWS), and mesa horkelia. In addition, despite not having been recorded in the CNDDB in the San Bernardino South quadrangle, the project site has the potential to provide suitable habitat for southwestern willow flycatcher (SWWF).

Table 3.4-1 Species Occurrence Potential

Scientific Name **Common Name**	**Status**		**Habitat**	**Observed On-site**	**Potential to Occur**
Wildlife Species					
Aspidoscelis hyperythra orange-throated whiptail	Fed: CA:	None CSC	Semi-arid brushy areas typically with loose soil and rocks, including washes, streamsides, rocky hillsides, and coastal chaparral.	No	**Moderate**. There is suitable habitat for this species throughout most of the site.
Aspidoscelis tigris stejnegeri coastal whiptail	Fed: CA:	None None	Found in a variety of ecosystems, primarily hot and dry open areas with sparse foliage - chaparral, woodland, and riparian areas.	No	**Moderate**. There is suitable habitat throughout the project site.
Athene cunicularia burrowing owl	Fed: CA:	None CSC	Occurs in dry, open areas such as grasslands, prairies, savannas, deserts, farmlands, golf courses and other urban areas.	No	**Low**. There is marginal habitat on-site.
Carolella busckana Busck's gallmoth	Fed: CA:	None None	Occurs in coastal dunes and coastal scrub habitat.	No	
Catostomus santaanae Santa Ana sucker	Fed: CA:	**THR** CSC	Occur in the watersheds draining the San Gabriel and San Bernardino Mountains of southern California. Streams that Santa Ana sucker inhabits are generally perennial streams with water ranging in depth from a few inches to several feet and with currents ranging from slight to swift.	No	**Presumed absent**. There is no suitable habitat. The Santa Ana River is dry within the project site, and this species is not known to occur upstream of the Rialto Drain.
Chaetodipus fallax fallax northwestern San Diego pocket mouse	Fed: CA:	None CSC	Occurs in desert and coastal habitats in southern California, Mexico, and northern Baja California, from sea level to at least 1,400 meters elevation. Found in a variety of temperate habitats ranging from chaparral and grasslands to scrub forests and deserts. Requires low growing vegetation or rocky outcroppings, as well as sandy soils for burrowing.	Yes (2009)	**High**. This species was captured during focused trapping in 2009.
Coccyzus americanus occidentalis western yellow-billed cuckoo	Fed: CA:	**THR** **END**	Obligate riparian species with a primary habitat association of willow-cottonwood riparian forest.	No	**Presumed absent**. There is no suitable habitat.

Table 3.4-1, continued

Scientific Name **Common Name**	**Status**		**Habitat**	**Observed On-site**	**Potential to Occur**
Crotalus ruber ruber northern red-diamond rattlesnake	Fed: CA:	None CSC	It can be found from the desert, through dense chaparral in the foothills (it avoids the mountains above around 4,000 feet), to warm inland mesas and valleys, all the way to the cool ocean shore. It is most commonly associated with heavy brush with large rocks or boulders. Dense chaparral in the foothills, cactus or boulder associated coastal sage scrub, oak and pine woodlands, and desert slope scrub associations are known to carry populations of the northern red-diamond rattlesnake; however, chamise and red shank associations may offer better structural habitat for refuges and food resources for this species than other habitats.	No	**Presumed absent**. There is no suitable habitat.
Dipodomys merriami parvus San Bernardino kangaroo rat	Fed: CA:	**END** CSC	Primarily found in Riversidean alluvial fan sage scrub and sandy loam soils, alluvial fans and flood plains, and along washes with nearby sage scrub. May occur at lower densities in Riversidean upland sage scrub, chaparral and grassland in uplands and tributaries in proximity to Riversidean alluvial fan sage scrub habitats. Tend to avoid rocky substrates and prefer sandy loam substrates for digging of shallow burrows.	No	**Presumed absent**. While suitable habitat is present on-site, this species was not captured during focused surveys and has not been observed in the general project vicinity in over a decade.
Empidonax traillii extimus southwestern willow flycatcher	Fed: CA:	**END** **END**	Occurs in riparian woodlands in southern California. Typically requires large areas of willow thickets in broad valleys, canyon bottoms, or around ponds and lakes. These areas typically have standing or running water, or are at least moist.	No	**Presumed absent**. There is no suitable habitat.
Eumops perotis californicus western mastiff bat	Fed: CA:	None CSC	Primarily a cliff-dwelling species, roost generally under exfoliating rock slabs. Roosts are generally high above the ground, usually allowing a clear vertical drop of at least three meters below the entrance for flight. In California, it is most frequently encountered in broad open areas. Its foraging habitat includes dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, and agricultural areas.	No	**Moderate**. There is suitable habitat where Mt. Vernon Avenue crosses the Santa Ana River.
Gila orcuttii arroyo chub	Fed: CA:	None CSC	Occur in warm streams of the Los Angeles Plain, which are typically muddy torrents during the winter, and clear quiet brooks in the summer, possibly drying up in places. They are found both in slow-moving and fast-moving sections, but generally deeper than 40 cm.	No	**Presumed absent**. While there is marginal habitat within the flowline of the project site, the Santa Ana River is dry within site boundaries except during storm events.

Table 3.4-1, continued

Scientific Name **Common Name**	**Status**		**Habitat**	**Observed On-site**	**Potential to Occur**
Lasiurus xanthinus western yellow bat	Fed: CA:	None CSC	Roosts in trees, especially palms, in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. This species forages over water and between trees.	No	**Low**. There is marginal habitat on-site.
Lepus californicus bennettii San Diego black-tailed jackrabbit	Fed: CA:	None CSC	Occurs in diverse habitats, but primarily is found in arid regions supporting shortgrass habitats. Openness of open scrub habitat is preferred over dense chaparral.	Yes	**Present**. This species was observed on-site in the Santa Ana River in December 2014.
Nyctinomops femorosaccus pocketed free-tailed bat	Fed: CA:	None CSC	Often found in pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oasis.	No	**Presumed absent**. There is no suitable habitat.
Onychomys torridus ramona southern grasshopper mouse	Fed: CA:	None CSC	Inhabits prairies and the southwestern desert.	Yes (2009)	**High**. This species was captured during focused trapping in 2009.
Perognathus longimembris brevinasus Los Angeles pocket mouse	Fed: CA:	None CSC	Occurs in lower elevation grasslands and coastal sage scrub communities in and around the Los Angeles Basin. Prefers open ground with fine sandy soils. May not dig extensive burrows, but instead will seek refuge under weeds and dead leaves instead.	Yes (2009)	**High**. This species was captured during focused trapping in 2009.
Phrynosoma blainvillii coast horned lizard	Fed: CA:	None CSC	Found in a wide variety of vegetation types including coastal sage scrub, annual grassland, chaparral, oak woodland, riparian woodland and coniferous forest. The key elements of such habitats are loose, fine soils with a high sand fraction; an abundance of native ants or other insects; and open areas with limited overstory for basking and low, but relatively dense shrubs for refuge.	Yes (2009)	**High**. Multiple individuals of this species were observed on-site in 2009.
Polioptila californica californica coastal California gnatcatcher	Fed: CA:	**THR** CSC	Obligate resident of sage scrub habitats that are dominated by California sagebrush. This species generally occurs below 750 feet elevation in coastal regions and below 1,500 feet inland. It prefers habitat with more low-growing vegetation.	No	**Low**. There is marginal habitat on-site.

Table 3.4-1, continued

Scientific Name **Common Name**	**Status**		**Habitat**	**Observed On-site**	**Potential to Occur**
Rhaphiomidas terminatus abdominalis Delhi Sands flower-loving fly	Fed: CA:	**END** CSC	DSF habitat is limited to areas that include Delhi fine sand, an aeolian (wind-deposited) soil type. The highest density of DSF have been found in habitat that includes a variety of plants including California buckwheat, California croton, deerweed, and telegraph weed.	No	**Presumed absent**. There is no suitable habitat.
Taxidea taxus American badger	Fed: CA:	None CSC	Primarily occupy grasslands, parklands, farms, tallgrass and shortgrass prairies, meadows, shrub-steppe communities and other treeless areas with sandy loam soils where it can dig more easily for its prey. Occasionally found in open chaparral (with less than 50% plant cover) and riparian zones.	No	**Low**. There is marginal habitat on-site.
Vireo bellii pusillus least Bell's vireo	Fed: CA:	**END** **END**	Primarily occupy riparian habitat that typically feature dense cover within 1 -2 meters of the ground and a dense, stratified canopy. Typically it is associated with southern willow scrub, cottonwood-willow forest, mule fat scrub, sycamore alluvial woodlands, coast live oak riparian forest, arroyo willow riparian forest, or mesquite in desert localities.	No	**Moderate**. There is a limited amount of low quality habitat on-site.
Plant Species					
Arenaria paludicola marsh sandwort	Fed: CA: CNPS:	**END** **END** 1B.1	Occurs in freshwater marshes and swamps. From 33 to 558 feet in elevation.	No	**Presumed absent**. The site is outside of the known elevation range for this species.
Astragalus hornii var. hornii Horn's milk-vetch	Fed: CA: CNPS:	None None 1B.1	Occurs in meadows, seeps, and playas. From 197 to 2,789 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Carex comosa bristly sedge	Fed: CA: CNPS:	None None 2B.1	Found in marshes and swamps. From 0 to 2,051 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Centromadia pungens ssp. laevis smooth tarplant	Fed: CA: CNPS:	None None 1B.1	Occurs in alkali meadow, alkali scrub, and disturbed areas within valley and foothill grassland, chenopod scrub, meadows, playas, and riparian woodland. From 3 to 2,100 feet in elevation.	No	**Low**. There is marginal habitat on-site.

Table 3.4-1, continued

Scientific Name Common Name	Status		Habitat	Observed On-site	Potential to Occur
Chloropyron maritimum ssp. maritimum salt marsh bird's-beak	Fed: CA: CNPS:	**END** **END** 1B.2	Upper terraces and higher edges of coastal salt marshes where tidal inundation is periodic. From 0 to 98 feet in elevation.	No	**Presumed absent**. There is no suitable habitat and the site is outside of the known elevation range for this species.
Chorizanthe parryi var. parryi Parry's spineflower	Fed: CA: CNPS:	None None 1B.1	Occurs on sandy and/or rocky soils in chaparral, coastal sage scrub, and sandy openings within alluvial washes and margins. From 131 to 5,594 feet in elevation.	No	**Moderate**. There is suitable habitat on-site in the upland portions of the site.
Dodecahema leptoceras slender-horned spineflower	Fed: CA: CNPS:	**END** **END** 1B.1	Chaparral, coastal scrub (alluvial fan sage scrub). Flood deposited terraces and washes. From 656 to 2,493 feet in elevation.	No	**Low**. There is marginal habitat on-site.
Eriastrum densifolium ssp. sanctorum Santa Ana River woolly-star	Fed: CA: CNPS:	**END** **END** 1B.1	Coastal scrub, chaparral in sandy soils on river floodplains or terraces fluvial deposits. From 295 to 2,001 feet in elevation.	Yes	**Present**. This species was observed in abundance in the upland portion of the project site in December 2014.
Galium californicum ssp. primum Alvin Meadow bedstraw	Fed: CA: CNPS:	None None 1B.2	Chaparral, lower montane coniferous forest between 4,429 and 5,577 feet in elevation.	No	**Presumed absent**. There is no suitable habitat and the site is outside of the known elevation range of this species.
Helianthus nuttallii ssp. parishii Los Angeles sunflower	Fed: CA: CNPS:	None None 1A	Occurs in marshes, swamps, and on damp river banks. From 16 to 5,495 feet in elevation.	No	**Presumed absent**. There is no suitable habitat. This species is presumed extirpated.
Horkelia cuneata var. puberula mesa horkelia	Fed: CA: CNPS:	None None 1B.1	Occurs on sandy or gravelly soils in chaparral, woodlands, and coastal scrub plant communities. From 230 to 2,657 feet in elevation.	No	**Low**. There is marginal habitat on-site.

Table 3.4-1, continued

Scientific Name **Common Name**	**Status**		**Habitat**	**Observed On-site**	**Potential to Occur**
Lepidium virginicum var. robinsonii Robinson's pepper-grass	Fed: CA: CNPS:	None None 4.3	Dry soils on chaparral and coastal sage scrub. From 3 to 2,904 feet in elevation.	No	**Low**. There is marginal habitat on-site.
Lycium parishii Parish's desert-thorn	Fed: CA: CNPS:	None None 2B.3	Coastal scrub and Sonoran desert scrub habitat. From 984 to 3,281 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Monardella pringlei Pringle's monardella	Fed: CA: CNPS:	None None 1A	Sandy hills covered in coastal sage scrub from 984 to 1,312 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Nasturtium gambelii Gambel's water cress	Fed: CA: CNPS:	**END** **THR** 1B.1	Brackish marsh, freshwater marsh, swamps, and wetlands. From 16 to 1,083 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Ribes divaricatum var. parishii Parish's gooseberry	Fed: CA: CNPS:	None None 1A	Occurs in riparian woodland, usually in willow swales. From 213 to 328 feet in elevation.	No	**Presumed absent**. There is no suitable habitat and the site is outside of the known elevation range of this species.
Sidalcea neomexicana Salt Spring checkerbloom	Fed: CA: CNPS:	None None 2B.2	Occurs in alkali springs and marshes within alkali playas, brackish marshes, chaparral, coastal scrub, lower montane coniferous forest, and Mojavean desert scrub. From 49 to 5,020 feet in elevation.	No	**Low**. There is marginal habitat on-site.
Symphyotrichum defoliatum San Bernardino aster	Fed: CA: CNPS:	None None 1B.2	Grows in grasslands and disturbed areas in the San Gabriel and San Bernardino Mountains and Peninsular Range. Occurs in vernally wet sites including ditches, streams, and springs in many plant communities. From 7 to 6,693 feet in elevation.	No	**Low**. There is marginal habitat on-site.

Table 3.4-1, continued

Scientific Name **Common Name**	**Status**	**Habitat**	**Observed On-site**	**Potential to Occur**
Sensitive Habitats				
Riversidean Alluvial Fan Sage Scrub	CDFW Sensitive Habitat	Considered a distinct and rare plant community found primarily on alluvial fans and flood plains along the southern bases of the Transverse Ranges and portions of the Peninsular Ranges in southern California. Relatively open vegetation type is adapted to periodic flooding and erosion and is comprised of an assortment of drought-deciduous shrubs and larger evergreen woody shrubs characteristic of both coastal sage scrub and chaparral communities.	Yes	**Present**
Southern Cottonwood Willow Riparian Forest	CDFW Sensitive Habitat	Dominated by cottonwood (*Populus* sp.) and willow (*Salix* sp.) trees and shrubs. Considered to be an early successional stage as both species are known to germinate almost exclusively on recently deposited or exposed alluvial soils.	No	**Absent**.
Southern Riparian Scrub	CDFW Sensitive Habitat	Riparian zones dominated by small trees or shrubs, lacking taller riparian trees.	No	**Absent**.

U.S. Fish and Wildlife Service (USFWS) - Federal
END- Federal Endangered
THR- Federal Threatened

California Department of Fish and Wildlife (CDFW) - California
END- California Endangered
THR- California Threatened
CSC- California Species of Concern

California Native Plant Society (CNPS)
California Rare Plant Rank
1A Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
1B Plants Rare, Threatened, or Endangered in California and Elsewhere
2B Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
4 Plants of Limited Distribution – A Watch List

Threat Ranks
0.1- Seriously Threatened in California
0.2- Moderately Threatened in California
0.3- Not Very Threatened in California

Of these 16 species determined to have a potential to occur on the project site, it was determined that the project site had suitable habitat for six (6) species: BUOW, SBKR, SWWF, DSF, LBVI, and SARWS. The project site was evaluated for the potential presence or absence of these species. The assessment also evaluated impacts that are expected to occur to suitable habitat or designated Critical Habitat as a result of the proposed project.

The following is a discussion of special status species that could be affected as a result of the proposed project:

Delhi Sands Flower-loving Fly

The Delhi Sands flower-loving fly (DSF) is endemic to the Delhi series soils. The Delhi Sands flower-loving fly is a large insect with an elongated body. The flight season of the Delhi Sands flower-loving fly extends from early August to early September, when the adults are active during the warmest portions of the day during periods of direct sunlight. All known extant populations of the DSF occur within an 8-mile radius of each other. The distribution straddles Interstate 10 in the vicinity of Colton and Rialto, Riverside and San Bernardino counties, California. The most characteristic feature of all known occupied DSF sites is fine sandy soils, often wholly or partly sand dunes stabilized by the sparse native vegetation. Areas containing sandy substrates with a sparse cover of perennial shrubs and other vegetation constitute the primary habitat requirement for DSFs. The DSF was listed as an endangered species by the USFWS on September 23, 1993 (58 Federal Register 49881).

The high silt and gravel components of the Delhi Sand soils located on the project site make the Delhi Sands unsuitable for DSF. Considering the site conditions and ecological factors, the Delhi Sands found on-site were determined to be unsuitable for DSF. Based on discussions with USFWS, it was determined that the site does not represent potential DSF habitat. Protocol DSF surveys are not warranted for the project site and there is no risk of take of DSF.

Least Bell's Vireo

The least Bell's vireo (LBVI) is a small, olive-gray migratory songbird that nests and forages almost exclusively in riparian woodland habitats. As a group, Bell's vireo are highly territorial and are almost exclusively insectivorous. LBVI nesting habitat typically consists of well-developed overstory, understory, and low densities of aquatic and herbaceous cover. The understory frequently contains dense sub-shrub or shrub thickets. These thickets are often dominated by plants such as narrow-leaf willow (*Salix exigua*), mulefat (*Baccharis salicifolia*), young individuals of other willow species such as arroyo willow (*Salix lasiolepis*) or black willow (*Salix gooddingii*), and one or more herbaceous species.

Although LBVI use a variety of riparian plant species for nesting, it appears that the structure of the vegetation is more important than other factors such as species composition or the age of the stand. LBVI begin to arrive at their breeding grounds in southern California riparian areas from mid-March to early April. Upon arrival, males establish breeding territories that range in size from 0.5 to 7.4 acres, with an average size of approximately 2 acres. After pair formation, vireos construct a hanging cup nest made up of dried plant material. Nests are usually placed in forks of branches between 2 and 5 feet from the ground. Females lay two to five eggs with both parents incubating the clutch for approximately 14 days and the young fledging after 10 to 12 days. The fledglings will remain in the parental territory for up to a month. A large majority of breeding vireos apparently depart their breeding grounds by the third week of September and only a very few have been found wintering in the United States.

Based on a review of the current site conditions, the riparian vegetation within the project site has a moderate potential to support LBVI. Focused surveys for LBVI are recommended for the spring of 2015.

Critical habitat units were designated by the USFWS on February 2, 1994, (59 FR 4845 4867) and included reaches of ten streams in six counties in southern California and the surrounding approximately 38,000 acres. However, no part of this project is located within designated critical habitat for LBVI.

Southwestern Willow Flycatcher

The southwestern willow flycatcher (SWWF) is a small passerine bird that has a grayish-green back and wings, whitish throat, a light gray-olive breast, and pale yellowish belly. It has two visible white wing bars and a faint or absent eye-ring. The call consists of a repeated "whit" and their song is a sneezy "fitz-bew" (60 FR 10694). The southwestern willow flycatcher is currently one of the four recognized subspecies of the willow flycatcher. This flycatcher is a neotropical migrant that breeds in the southwestern United States from mid-April to early-September. In the fall, it migrates south to its wintering grounds in portions of South America, Central America, and Mexico (60 FR 10694).

A rapid decrease in the numbers of southwestern willow flycatchers in California and other southwestern states prompted the USFWS to designate it as a Category 1 candidate species in 1991. One year later in 1992, the California Fish and Game Commission listed the species as endangered, under the CESA of 1970. On July 23, 1993 the southwestern willow flycatcher was proposed for listing as endangered by the USFWS and was then listed as federally endangered on February 27, 1995, under the ESA of 1973 (60 FR 10694). A recovery plan was finalized by USFWS in March of 2003.

The SWWF breeds in dense riparian habitats along rivers, streams, and other wetlands. They have been documented to establish territories in elevations ranging from sea level to 8,500 feet (Sogge 1997). Plant species closely associated with the flycatcher include willows (*Salix* sp.), boxelder (*Acer negungo*), seepwillow (*Baccharis* sp.), with an overstory of cottonwood (*Populus fremontii*) (62 FR 39129). Occupied habitat is generally dominated by shrubs and trees 13 to 23 feet or more in height, which provide dense lower and mid-story vegetation approximately 13 feet aboveground. This dense vegetation is often interspersed with open water, small openings, or sparse vegetation, creating a mosaic that is not uniformly dense (62 FR 39129).

Due to the sparse nature of the willow riparian forest on the project site, the habitat within the project area was not considered suitable for SWWF and focused surveys for SWWF were not conducted for the proposed project.

The USFWS designated Critical Habitat for the species on July 22, 1997. On May 11, 2001, the critical habitat designation from 1997 was struck down by the U.S. 10th Circuit Court of Appeals who required further economic analysis. Critical habitat designations for this species were re-proposed and finalized in October 2005 (70 FR 60886 61009) and reconfirmed in January 2013 (78 FR 343 534). The project is located within designated Critical Habitat for SWWF, however, the on-site riparian vegetation lacks continuity and the dense understory favored by SWWF and is considered unsuitable for occupancy by the species.

San Bernardino Kangaroo Rat

Focused presence/absence trapping surveys for San Bernardino kangaroo rat (SBKR) were conducted from May 26 through May 31, 2009. No SBKR were captured over the course of the 5-night trapping session and this species is presumed absent from the project site. No kangaroo rat sign was observed during the 2013 or

2014 habitat assessment. However, four (4) California species of special concern were captured during the 2009 trapping session, including southern grasshopper mouse, northwestern San Diego pocket mouse, Los Angeles pocket mouse, and San Diego desert woodrat (*Neotoma lepida intermedia*). The USFWS designated Critical Habitat units for the SBKR on April 23, 2002 (67 FR 19812 19845). On October 17, 2008, the USFWS published a revised SBKR Critical Habitat designation (73 FR 61936 62002). However, as a result of a legal challenge to the revised designation, the 2008 designation was vacated and the 2002 designation reinstated. The units include reaches of the Santa Ana River, Lytle Creek, Cajon Creeks, San Jacinto River, Bautista creek, and the Etiwanda alluvial fan. No part of this project area is located within the 2002 designated critical habitat for SBKR.

Burrowing Owl

Focused burrowing owl (BUOW) surveys were conducted on May 27 and 28, 2009, in accordance with the "Burrowing Owl Survey Protocol and Mitigation Guidelines" prepared by the California Burrowing Owl Consortium on April 1993 and the October 17, 1995, California Department of Fish and Game staff report on Burrowing Owl Mitigation. Upon completion of a Phase I habitat assessment, a Phase II survey of suitable BUOW habitat on and within 500 feet of the project site was conducted. Although a number of small mammal burrows were observed within the project area, no BUOW or sign (burrows, pellets, feathers, castings, or white wash) indicating historical or recent use of BUOWs within the project site was found.

Since no BUOW were observed during the 2009 focused survey, and the habitat conditions have not changed since the 2009 survey BUOW are not expected to occur on-site. However, it is recommended that a BUOW clearance survey be conducted prior to any ground disturbing activities in accordance with the CDFW 2012 Staff Report on Burrowing Owl Mitigation. Two (2) BUOW clearance surveys shall be conducted between 14 and 30 days prior to initial ground disturbing activities, and 24 hours prior to initial ground disturbing activities.

Santa Ana River Woolly-Star

The Santa Ana River woolly-star occurs along the SAR and Lytle and Cajon Creek flood plains from the base of the San Bernardino Mountains in San Bernardino County southwest along the SAR through Riverside County into the Santa Ana Canyon of northeastern Orange County from about 150 to 580 meters (Munz 1974; Roberts 1998). It is a perennial in the Phlox (Polemoniaceae) plant family. It blooms from June to August and produces bright blue flowers that are up to 1.4 inches long that occur in flower heads with about 20 blossoms each. This species is associated with early to moderate-successional alluvial scrub, and requires periodic flooding and silting for the creation of new habitats and colonization. It is found only within open washes on open slopes above main watercourses on fluvial deposits where flooding and scouring occur at a frequency that allows the persistence of open shrublands.

Plant communities occurring within the project site were surveyed on April 18 and 28, 2009, for the presence of sensitive plant species. Woolly-star was found on the northern margin of the proposed off-stream recharge area. This plant species is much more abundant adjacent to the site outside of project boundaries. A total of sixty-nine (69) plant species were encountered on the project site, of which twenty (20) were nonnative. Woolly-star was the only special status species documented during the 2009 survey. A total of two hundred and sixteen (216) individuals were recorded within the project site and on adjacent properties during the 2009 survey.

Riverside Public Utilities (RPU) Water Resources Division staff conducted a botanical survey to update the woolly-star assessment within the project site on August 16 and 17, 2011 (Appendix D4). During the 2011

plant survey, thirty-four (34) additional woolly-star individuals were recorded within the proposed recharge area along the northern boundaries of the project site.

During the 2013 habitat assessment, RBF documented the continued presence of woolly-star at the locations previously identified in 2009 and 2011. Four (4) additional woolly-star locations were identified within and along the western bank of the Santa Ana River during the 2013 habitat assessment.

The botanical surveys conducted in 2009 and 2011 were not conducted in accordance with the CDFW's 2009 Protocol for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. A focused sensitive plant survey following CDFW's 2009 protocol is recommended prior to the commencement of any ground disturbing activities to document the presence of woolly-star and to assess the potential for other sensitive plant species (slender-horned spineflower, Parry's spineflower, mesa horkelia) to occur within the project site. These data will be needed to process Incidental Take Permits with CDFW and USFWS.

Santa Ana Sucker

The Santa Ana sucker (SASU) is a fish species found only in a few rivers in southern California. They are related to mountain suckers, and similar in appearance. They are dark grey above and silvery-white below; with a faint pattern of darker blotches and stripes on their sides. Length has been recorded up to 25 cm, but less than 16 cm is more typical. SASU feed on diatoms, other kinds of algae, and detritus, which they get by scraping surfaces such as rocks. They also eat insect larva, with larger fish observed to consume insects more frequently. SASU are found in water ranging from a few centimeters to over a meter in depth, and a river bottom with gravel, rubble, and boulder substrates. Their geographic range is extremely restricted; only occurring in the Los Angeles, San Gabriel, Santa Ana, and Santa Clara River systems in southern California. Populations have been extirpated from several segments of the rivers, so that they now only inhabit the upper portion of the Los Angeles and San Gabriel drainages, and the lower part of the Santa Ana River in reaches of the river with perennial flow sustained by effluent discharged by wastewater treatment plants, urban runoff, and some rising groundwater.

An evaluation of potential impacts of the Riverside North Aquifer Storage and Recovery Project on the SASU was conducted in May 2011 by AECOM[1] (AECOM 2011). Based on the anticipated operations of the rubber dam, it was concluded that the construction and operations of the project would likely not result in significant adverse impacts to streamflow (i.e. timing, magnitude, and duration), sediment transport, and water quality within occupied SASU habitat, which occurs approximately 3 miles downstream of the project site (AECOM 2011) at River Mile 53 (approximately 53 miles upstream from Pacific Ocean)[2]. Since the project is located upstream of the currently impassable La Cadena bridge grade control structure, the project will not impair existing migratory patterns or access to known spawning or rearing sites for the species. No further surveys were recommended for SASU.

1 Because of project modifications, this study has been updated and is not appended to this EIR. However, this study is available upon request and will be utilized for future consultations with relevant reviewing/approving agencies.

2 The Geoscience Report (Appendix F, *Hydrology and Water Qaulity Technical Appendix*) references RM 23 in terms of the project location (the distance of the project location to the Prado Basin). For the purposes of this EIR, the reference to RM 23 has been replaced with RM 53 (the distance of the project location to the Pacific Ocean). As such, the project location is the same in the Geoscience Report and Draft EIR and the change in namesake does not affect project analysis.

USFWS designated Critical Habitat for SASU in 2005 in the lower and middle reaches of the Santa Ana River (70 FR 426 458). Under court order, in 2010, USFWS re-designated SASU Critical Habitat. The new designation included portions of the upper reaches of the Santa Ana River which, although unoccupied by SASU, provide gravel and cobble needed to maintain spawning and foraging habitat downstream. The Final Rule for the redesignation of critical habitat became effective on January 13, 2011 (75 FR 77962 78027). The expanded SASU critical habitat designation was appealed by local water agencies in 2011 but was upheld by a federal District Court in October 2012. Although an appeal was filed against this decision in June 2013 the project remains within designated SASU Critical Habitat. A significant portion of the river within these two reaches was not included in the designation because these portions of the river are either covered by the Western Riverside County MSHCP or the Santa Ana Sucker Conservation Program for the Santa Ana River. This latter program was developed by the Santa Ana Watershed Project Authority (SAWPA) in cooperation with USFWS. It is being implemented by SAWPA and three other participants, including the City of Riverside.

The Upper SAR HCP is in the process of developing a watershed-wide, holistic conservation strategy for SASU that will serve as a blueprint for conservation/mitigation measures for this project and others in the region. This project will be working in parallel with the HCP planning process and the mitigation developed and agreed to by the City will be an important supporting component of the much larger conservation strategy. This project serves as a key piece of the Upper SAR HCP and its watershed-wide conservation strategy since potential onsite and offsite mitigation measures will restore, enhance and protect habitat for multiple species covered in the Upper SAR HCP. The project's potential mitigation described at Hole Creek (**BIO-1**) will provide valuable habitat for Santa Ana sucker in a tributary that is in occupied areas of the river but currently provides marginal habitat due to the lack of perennial water and the presence of exotic predators. This proposed conservation activity will provide immediate ecological value to the sucker for spawning, foraging, and refugia.

3.4.6 Jurisdictional Delineation

A preliminary delineation of state and federal jurisdictional waters was prepared under a separate cover in February 2009. The delineation was updated by RBF in June 2013 and again in December 2014 (refer to Appendix D2, *Delineation of CDFW and Corps Jurisdictional Waters*). The jurisdictional delineation documents the regulatory authority of the United States Army Corp of Engineers (Corps), the Regional Water Quality Control Board (Regional Board), and the California Department of Fish and Wildlife (CDFW) pursuant to Sections 401 and 404 of the Federal Clean Water Act, the California Porter-Cologne Water Quality Control Act, and Section 1600 of the California Fish and Game Code.

Approximately 112.2 acres of Corps Waters of the U.S. are located within boundaries of the survey area. Corps impacts include 0.16 acres of permanent impacts (non-wetland) and approximately 5.47 acres of temporary impacts (non-wetland). No isolated or Rapanos conditions were observed within the boundaries of the project site; therefore, the Regional Board follows that of Corps jurisdiction (refer to Appendix D2, *Delineation of CDFW and Corps Jurisdictional Waters*).

Approximately 187.48 acres of CDFW Jurisdiction are located within the survey area. Of this amount, it is estimated that approximately 6.77 acres of CDFW jurisdictional streambed and associated habitats will be impacted by the proposed project. Of the 6.77 acres of impacts, 2.75 acres are permanent impacts (2.24 acres to CDFW streambed and 0.51 acre to associated CDFW associated habitat) and 4.02 acres are temporary impacts (3.49 acres to CDFW streambed and 0.53 acre to CDFW associated habitat (Appendix D1 and D2).

Regulatory Permits

Any project that involves impacting drainages, streams, or wetlands would require permits from the USACE, RWQCB, and CDFW. Both permanent and temporary impacts are regulated and would, therefore, trigger the need for permits. It is anticipated that an individual permit (IP) will be required for this project. The USACE will not issue the IP until RWQCB completes the Section 401 Water Quality Certification. Processing of the 401 Certification with RWQCB and 1602 Streambed Alteration Agreement (SAA) with CDFW can occur concurrently with the USACE permit process.

In order to properly design the project, the City performed seven auger borings within the Santa Ana River to evaluate the underlying soil conditions. As required, the City obtained a Section 1602 Streambed Alteration Agreement from CDFW and Section 404 Permit consistent with USACE requirements (eligible for authorization under Nationwide Permit 6) for temporary impacts on unvegetated streambed under the jurisdiction of the CDFW and USACE. The borings were conducted in October 2013 and proper measures have been taken to fill and cover the borings and to return the streambed to its original condition. Refer also to Impacts 3.4-1 to 3.4-3, below, for additional discussion. Documentation of the procedures and results of the auger boring activities are included in Appendix D-6 of this EIR. USACE will consult with USFWS under Section 7 of the ESA, since the project site is within SWWF and SASU designated critical habitat and may have impacts to LBVI and SARWS.

Wildlife Movement/Migration Corridors

Wildlife movement corridors are defined as areas that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. A wildlife corridor is generally represented by a linear patch of habitat that provides a connection between two core areas of the same habitat, allowing for the large-scale movement of species within their native habitats. Natural features such as canyon drainages, ridgelines, or areas with vegetation cover provide corridors for wildlife travel. Wildlife movement corridors are important, because they provide access to mates, food, and water; allow the dispersal of individuals away from high-population density areas; and facilitate the exchange of genetic traits between populations. Wildlife movement corridors are considered sensitive by the County of San Bernardino as well as by the resource and conservation agencies

The San Bernardino County Land Use Plan (URS 2007) and South Coast Wildlands (2008) depict various regional wildlife corridors within the County, three of which are located in or adjacent to the project site. (refer to *Exhibit 3.4-2, San Bernardino County Corridor Locations*). The project site is located within the Santa Ana River regional wildlife corridor, and is downstream of both the Cajon Wash and San Timoteo Canyon corridors. The Santa Ana River regional corridor within the project site provides movement opportunities for birds and mammals.

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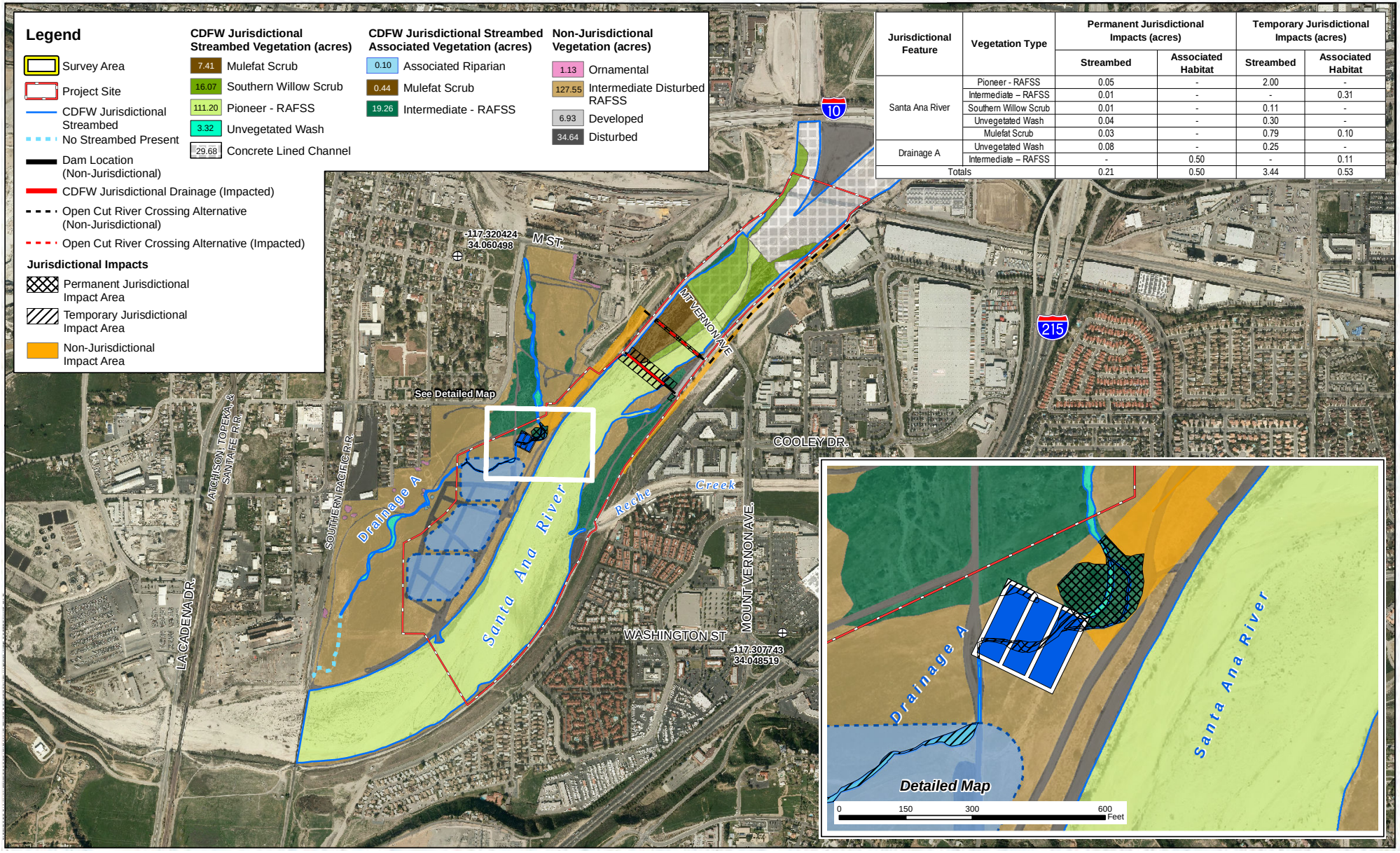

Jurisdictional Feature	Vegetation Type	Permanent Jurisdictional Impacts (acres)		Temporary Jurisdictional Impacts (acres)	
		Streambed	Associated Habitat	Streambed	Associated Habitat
Santa Ana River	Pioneer - RAFSS	0.05	-	2.00	-
	Intermediate – RAFSS	0.01	-	-	0.31
	Southern Willow Scrub	0.01	-	0.11	-
	Unvegetated Wash	0.04	-	0.30	-
	Mulefat Scrub	0.03	-	0.79	0.10
Drainage A	Unvegetated Wash	0.08	-	0.25	-
	Intermediate – RAFSS	-	0.50	-	0.11
Totals		0.21	0.50	3.44	0.53

Source: *Riverside North Aquifer Storage and Recovery Project Delineation of CDFW Jurisdictional Waters*, Exhibit 5a (2014)

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RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

Jurisdictional Delineation Map

Exhibit 3.4-1

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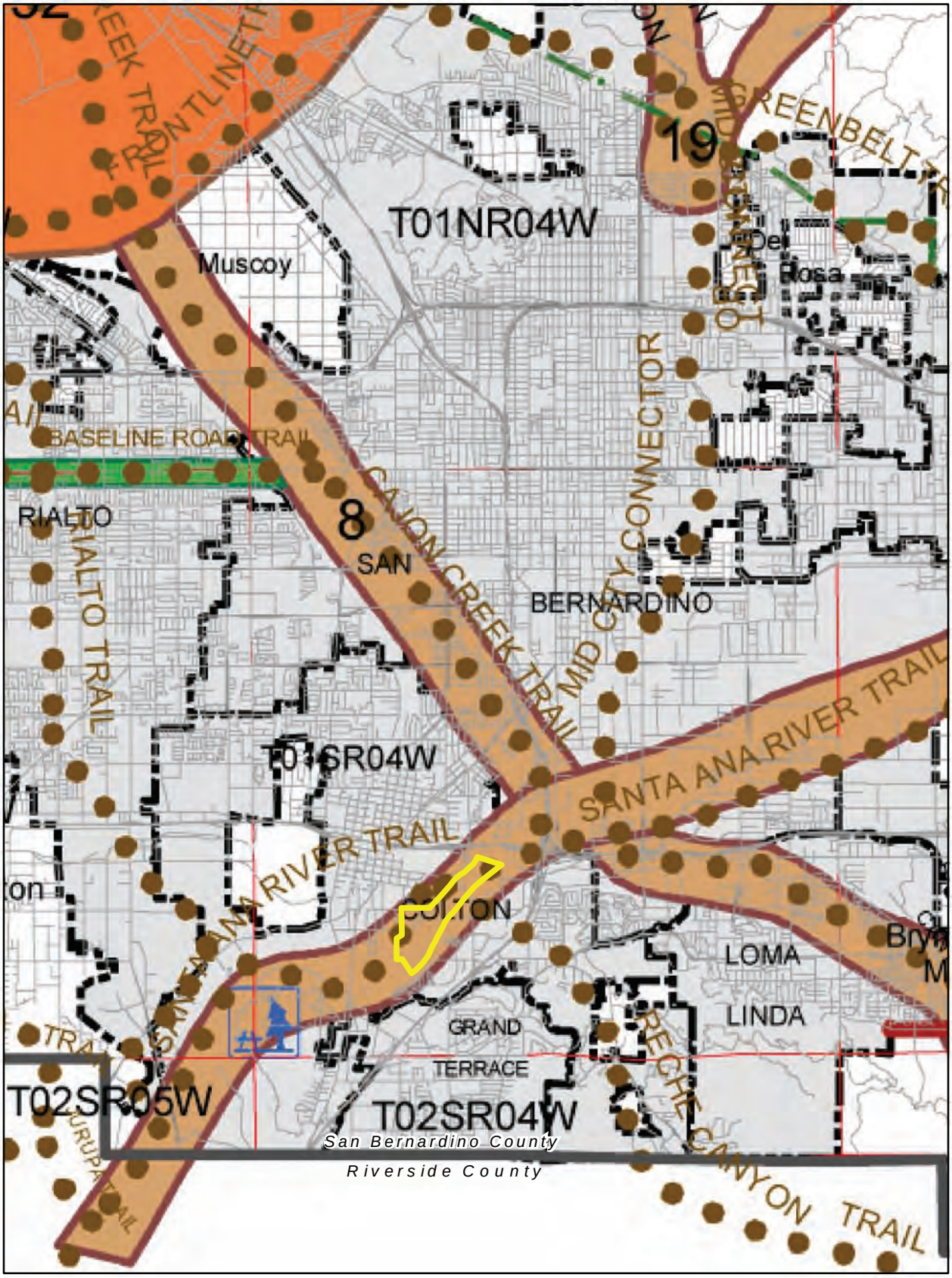

RIVERSIDE NORTH AQUIFER STORAGE
AND RECOVERY PROJECT - EIR

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San Bernardino County Wildlife Corridor Locations

Exhibit 3.4-2

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3.4.7 Regulatory Framework

Federal Regulations

Federal Endangered Species Act of 1973

Federally listed threatened and endangered species and their habitats are protected under provisions of the Federal Endangered Species Act (ESA). Section 9 of the ESA prohibits "take" of threatened or endangered species. Under the ESA, "take" is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any of the specifically enumerated conduct." The presence of any federally threatened or endangered species that are in a project area generally imposes constraints on development, particularly if development would result in "take" of the species or its habitat. Under the regulations of the ESA, the U.S. Fish and Wildlife Service (USFWS) may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act.

Under the ESA, "Critical Habitat" is also designated at the time of listing or within one year of listing. "Critical Habitat" refers to habitat or a specific geographic area that contains the elements and features that are essential for the survival and recovery of a species. In the event that a project has a federal nexus (i.e. federally issued permit, federal funding, federal lands) and may result in adverse effects to a species' designated Critical Habitat, the project proponent will be required to enter into Section 7 informal and/or formal consultations with the USFWS to obtain a biological opinion addressing incidental take of the species and modification of designated Critical Habitat. The project proponent also may be required to engage in suitable mitigation.

The proposed project is located within and adjacent to several overlapping areas that have been designated Critical Habitat. Direct or indirect adverse impacts to these areas known or presumed to support federally listed species or impacts to any State or federally listed species may trigger the requirement for State and/or federal incidental take permits.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S. Government Code [USC] 703) makes it unlawful to pursue, capture, kill, or possess or attempt to do the same to any migratory bird or part, nest, or egg of any such bird listed in wildlife protection treaties between the United States, Great Britain, Mexico, Japan, and the countries of the former Soviet Union, and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703; 50 CFR 10, 21).

The proposed project would be located within and adjacent to suitable nesting habitat for a variety of avian species, including special-status and listed species. In order to demonstrate compliance with the MBTA, the project proponent may be required to conduct preconstruction nesting surveys if construction is to occur during the nesting season.

Clean Water Act Section 404

The Corps regulates discharges of dredged or fill material into waters of the United States. The Corps typically regulates "waters of the United States" as any body of water displaying an ordinary high water mark (OHWM). Waters of the United States include wetlands and non-wetland bodies of water that meet specific criteria. The Corps' regulatory jurisdiction pursuant to Section 404 of the Federal Clean Water Act (CWA) is founded on a connection, or nexus, between the water body in question and interstate commerce. This connection may

be direct through a tributary system linking a stream channel with traditional navigable waters used in interstate or foreign commerce, or may be indirect, through a nexus identified in the Corps regulations.

In March 2012, the Corps reissued all existing nationwide permits (NWPs), general conditions, and definitions, with some modifications. The effective date for the new and reissued NWPs was March 19, 2012. These NWPs will expire on March 18, 2017. The NWPs will protect the aquatic environment and the public interest while effectively authorizing activities that have minimal individual and cumulative adverse effects on the aquatic environment.

The 2007 Supreme Court's decision in the consolidated cases *Rapanos v. United States* and *Carabell v. United States* (herein referred to simply as "*Rapanos*") addressed the jurisdiction over waters of the United States under the CWA. Congress enacted the CWA "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." One of the mechanisms adopted by Congress to achieve that purpose is a prohibition on the discharge of any pollutants, including dredged or fill material, into "navigable waters" except in compliance with other specified sections of the Act. In most cases, this means compliance with a permit issued pursuant to CWA Section 402 or 404. The Act defines the term "discharge of a pollutant" as "any addition of any pollutant to navigable waters from any point source and provides that "the term 'navigable waters' means the waters of the United States, including the territorial seas."

In *Rapanos*, the Supreme Court addressed where the federal government can apply the Clean Water Act, specifically by determining whether a wetland or tributary is a "water of the United States." The justices issued five separate opinions in *Rapanos* (one plurality opinion, two concurring opinions, and two dissenting opinions), with no single opinion commanding a majority of the Court. In the *Rapanos* Decision four justices, in a plurality opinion authored by Justice Scalia, rejected the argument that the term "waters of the United States" is limited to only those waters that are navigable in the traditional sense and their abutting wetlands. However, the plurality concluded that the agencies' regulatory authority should extend only to "relatively permanent, standing or continuously flowing bodies of water" connected to traditional navigable waters, and to "wetlands with a continuous surface connection to" such relatively permanent waters.

The agencies will assert jurisdiction over the following waters:

- Traditional navigable waters;
- Wetlands adjacent to traditional navigable waters;
- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months); and,
- Wetlands that directly abut such tributaries.

The agencies will decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with a traditional navigable water:

- Non-navigable tributaries that are not relatively permanent;
- Wetlands adjacent to non-navigable tributaries that are not relatively permanent; and,
- Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary.

The agencies generally will not assert jurisdiction over the following features:

- Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow); and,
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

The agencies will apply the significant nexus standard as follows:

- A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters.
- Significant nexus includes consideration of hydrologic and ecologic factors.

The proposed project is located within the Santa Ana River, which qualifies as a Water of the U.S., regulated by the Corps. Impacts to this waterway will require a CWA Section 404 permit.

State Regulations

California Endangered Species Act

State-listed threatened and endangered species are protected under provisions of the California Endangered Species Act (CESA). Activities that may result in "take" of individuals (defined in CESA as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") are regulated by the California Department of Fish and Wildlife (CDFW). Habitat degradation or modification is not included in the definition of "take" under CESA. Nonetheless, CDFW has interpreted "take" to include the destruction of nesting, denning, or foraging habitat necessary to maintain a viable breeding population of protected species.

The CDFW has also produced a species of special concern list to serve as a species watch list. Species on this list are either of limited distribution or their habitats have been reduced substantially, such that a threat to their populations may be imminent. Species of special concern may receive special attention during environmental review, but they do not have formal statutory protection.

The proposed project is located within and adjacent to suitable habitat for species protected by CDFW. Impacts to State listed species will require an Incidental Take Permit issued by the CDFW.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) provides for the protection of the environment within the State of California by establishing State policy to prevent significant, avoidable damage to the environment through the use of alternatives or mitigation measures for projects. It applies to actions directly undertaken, financed, or permitted by State lead agencies. If a project is determined to be subject to CEQA, the lead agency will be required to conduct an Initial Study (IS); if the IS determines that the project may have significant impacts on the environment, the lead agency will subsequently be required to write an Environmental Impact Report (EIR). A finding of non-significant effects will require either a Negative Declaration or a Mitigated Negative Declaration instead of an EIR. Section 15380 of the California Environmental Quality Act Guidelines independently defines "endangered" and "rare" species separately from the definitions in the CESA. Under CEQA, "endangered" species of plants or animals are defined as those whose survival and reproduction in the wild are in immediate jeopardy, while "rare" species are defined as those who are in such low numbers that they could become endangered if their environment worsens.

Clean Water Act Section 401

Applicants for a federal license or permit for activities which may discharge to waters of the US must seek Water Quality Certification from the state or Indian tribe with jurisdiction. Such Certification is based on a finding that the discharge will meet water quality standards and other applicable requirements. In California, Regional Water Quality Control Boards (Regional Boards) issue or deny Certification for discharges within their geographical jurisdiction. Water Quality Certification must be based on a finding that the proposed discharge will comply with water quality standards, which are defined as numeric and narrative objectives in each Regional Board's Basin Plan. Where applicable, the State Water Resources Control Board has this responsibility for projects affecting waters within the jurisdiction of multiple Regional Boards. The Regional Board's jurisdiction extends to all waters of the state and to all waters of the US, including wetlands.

Section 401 of the Clean Water Act requires that "any applicant for a federal permit for activities that involve a discharge to waters of the State, shall provide the federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the federal Clean Water Act." Therefore, before the Corps will issue a Section 404 permit, applicants must apply for and receive a Section 401 water quality certification from the Regional Board.

California Fish and Game Code:
Lake and Streambed Alteration Program

California Fish and Game Code Sections 1600-1616 establish a fee-based process to ensure that projects conducted in and around lakes, rivers, or streams do not adversely impact fish and wildlife resources, or, when adverse impacts cannot be avoided, ensures that adequate mitigation and/or compensation is provided.

Fish and Game Code Section 1602 requires any person, state, or local governmental agency or public utility to notify the CDFW before beginning any activity that will do one or more of the following:

(1) substantially obstruct or divert the natural flow of a river, stream, or lake;

(2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or

(3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake.

Fish and Game Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state. CDFW's regulatory authority extends to include riparian habitat (including wetlands) supported by a river, stream, or lake regardless of the presence or absence of hydric soils and saturated soil conditions. Generally, the CDFW takes jurisdiction to the top of bank of the stream or to the outer limit of the adjacent riparian vegetation (outer drip line), whichever is greater. Notification is generally required for any project that will take place in or in the vicinity of a river, stream, lake, or their tributaries. This includes rivers or streams that flow at least periodically or permanently through a bed or channel with banks that support fish or other aquatic life and watercourses having a surface or subsurface flow that support or have supported riparian vegetation.

Division 2, Chapter 5, Article 6, Section 1600 et seq.

California Fish and Game Code (FGC) Section 1600 et seq. (as well as other sections of the FGC that relate to streams, such as FGC Section 5650 and fishing regulations) jurisdiction is not predicated on the size of a stream; identification as a blue line drainage on a USGS topographic map, the morphology of a stream, how well-defined its banks are, or the cross-sectional area occupied by particular flow events (such as Ordinary High Watermark or bankfull flow). Nor does it depend on hydrologic connection to another waterbody, the time period between flow events, the constancy of water flow, or the presence of specific flora and fauna such as riparian plant species, or fish.

Jurisdiction is not defined by a specific flow event nor by the path of surface water as this path may vary seasonally. Rather, it is the Department's practice to define a channel based on the topography or elevations of land that confine the water to a definite course when the waters of a creek rise to their highest point. To define jurisdictional boundaries otherwise would result in a morass of jurisdictional boundaries that differed from stream to stream, changed with variations in channel morphology along the same stream, or that shifted seasonally on any given stream along with seasonal changes in flow.

CCR Title 14, Section 1.72

California Code of Regulations (CCR), Title 14, Section 1.72 defines a stream as "…a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation."

CCR Title 14, Section 1.72 does not pertain to the Department's jurisdiction as embodied in California Fish and Game Code (FGC) Section 1600 et seq., and is not the definition of a stream used by the Department. The Section 1.72 definition was developed to address a specific sports fish issue that came before the Fish and Game Commission. While the definition does speak to periodic and intermittent flow, Section 1.72 is limited to fish-bearing or aquatic life-bearing streams.

CCR Title 14, Section 1.72 also refers to the current or past presence of riparian vegetation. Although, as noted above, Section 1.72 does not apply to FGC Section 1600 et seq., the Department has observed that some Notifications of Lake or Streambed Alteration use the presence or absence of iconic riparian vegetation communities to define streams and Department jurisdiction. This approach is meaningless on streams in many dryland environments. Moreover, the FGC definition of fish and wildlife – all animals, birds, plants, fish, amphibians, invertebrates, reptiles, and related ecological communities, including the habitat upon which they depend for continued viability – does not limit the Department's protection and/or conservation authority to one specific type of vegetation community (e.g., iconic riparian).

Rather than limiting Department jurisdiction to fish-bearing streams alone, FGC Chapter 6, Fish and Wildlife Protection and Conservation, Section 1600 et seq. was enacted to provide for the conservation of fish and wildlife resources associated with stream ecosystems. The FGC further defines fish and wildlife to include: all wild animals, birds, plants, fish, amphibians, invertebrates, reptiles, and related ecological communities, including the habitat upon which they depend for continued viability (FGC Division 5, Chapter 1, Section 45, and Division 2, Chapter 1, Section 711.2(a), respectively). Fish means wild fish, mollusks, crustaceans, invertebrates, or amphibians, including any part, spawn or ova thereof (FGC, Division 5, Chapter 1, Section 45).

The proposed project is located within the Santa Ana River, which qualifies as a Water of the State, regulated by the CDFW. Impacts to this waterway will require a Section 1602 Streambed Alteration Agreement.

Western Burrowing Owl Protocol

Focused burrowing owl surveys are required to be conducted in accordance with the Burrowing Owl Survey Protocol and Mitigation Guidelines, prepared by the California Burrowing Owl Consortium on April 1993, and the October 17, 1995 CDFW staff report on Burrowing Owl Mitigation. The survey protocol identities a four-phased process with Phase IV being preparation of the report. The first phase is a Habitat Assessment. This phase calls for the identification of burrowing owl habitat onsite. If it is determined that borrowing owl habitat is observed, then Phase II is conducted. Phase II is a 100% coverage survey of the site plus a transect on adjacent properties when possible. The protocol requires a 150-meter (~500 foot) zone of influence on all sides of the project at no more than 30 meter (~100 foot) intervals. Pedestrian survey transects should be spaced to allow for 100 percent visual coverage of the ground surface. All burrows encountered should be examined for shape, scat, pellets, and tracks. Disturbance characteristics and all other animal sign encountered on a site are then recorded, and the date, time, and weather conditions are logged. CFDW now has a revised (2012) protocol for burrowing owl in place. Deviation from the above are minor but any preconstruction clearance survey will be required to follow the 2012 protocol, which requires two surveys. The first survey is conducted 14 to 30 days before construction, and the second survey is conducted 24 hours before construction.

Local Regulations

Southern California Association of Government (SCAG) Regional Comprehensive Plan and Guide (RCPG)

Goals and policies from the Growth Management and Open Space Chapters of the RCPG are applicable to the proposed project. Focus is placed on providing for the conservation of the region's open space resources with respect to:

- Interconnections among resources;
- Future land use decisions that will either strengthen or impair the region's ability to sustain the resources; and,
- Opportunities for inter-jurisdictional planning.

The intent of the RCPG is to conserve regional open space resources in order to ensure sustainability of such resources over time. To guide this effort, open space resources are grouped into three categories: natural lands, community open space, and farmlands and rangelands.

City of Riverside General Plan

California state planning law requires each City and County to adopt a comprehensive, long-term General Plan for the physical development of the area within its jurisdiction and of any land outside its boundaries that bears relations to its land use planning activities. The City of Riverside *General Plan* was adopted in November 2007. The *General Plan* is a long-range policy-planning document that defines the framework by which the County's physical and economic resources are to be managed over time. The goals and policies contained in the *General Plan* are provided to guide the County's decision-makers. The seven State-mandated

elements are included in the General Plan, including Land Use, Circulation, Housing, Conservation, Open Space, Safety, and Noise. In addition, the City of Riverside has also chosen to address Arts and Culture, and Education, which are optional elements.

The Open Space and Conservation Element is intended to provide guidance in developing and implementing activities that ensure the protection of Riverside's open space areas, scenic resources and hillsides. The following are relevant goals, objectives, and policies contained within the Open Space and Conservation Element:

Objective OS-1: **Preserve and expand open space areas and linkages throughout the City and sphere of influence to protect the natural and visual character of the community and to provide for appropriate active and passive recreational uses.**

Policy OS-1.1: Protect and preserve open space and natural habitat wherever possible.

Objective OS-5: **Protect biotic communities and critical habitats for endangered species throughout the General Plan Area.**

Policy OS-5.4: Protect native plant communities in the General Plan Area, including sage scrub, riparian areas, and vernal pools, consistent with the MSHCP.

Objective OS-6: **Preserve and maintain wildlife movement corridors.**

Policy OS-6.1: Protect and enhance known wildlife migratory corridors and create new corridors as feasible.

Policy OS-6.2: Support regional and local efforts to acquire, develop and maintain open space linkages.

Policy OS-6.3: Preserve the integrity of Riverside's arroyos and riparian habitat areas through the preservation of native plants.

Objective OS-7: **Turn the Santa Ana River Task Force "Vision" into reality.**

Policy OS-7.3: Preserve and expand open space along the Santa Ana River to protect water quality, riparian habitat and recreational uses.

3.4.8 Significance Threshold Criteria

Appendix G of the State *CEQA Guidelines* contains the Initial Study Checklist form, which includes questions relating to biological resources. The issues presented in the Initial Study Checklist have been utilized as Thresholds of Significance in this Section. Accordingly, a project may create a significant environmental impact if one or more of the following occurs:

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

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

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

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

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

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

Section 15065 (a), Mandatory Findings of Significance, of the State *CEQA Guidelines* states that a project may have a significant effect on the environment if "the project has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, [or] reduce the number or restrict the range of an endangered, rare, or threatened species."

The significance of an impact on biological resources considers the resource itself and the importance of that resource in a regional or local context. Those impacts that diminish, or result in the loss of, an important biological resource, or those that would conflict with local, State, or federal resource conservation plans, goals, or regulations are considered to be significant. Impacts may be locally adverse but not significant if they would not substantially diminish or result in the permanent loss of an important resource on a population- or region-wide basis, although they may result in an adverse alteration of existing conditions. The "region" in this analysis is defined as the Santa Ana River Watershed and the surrounding area.

3.4.9 Impacts and Mitigation Measures

The following is a summary of direct and indirect impacts to habitat and sensitive species that would occur with project implementation:

Direct Impacts

- The construction and operation of the dam will impact approximately 24 acres within the riverbed (changes to vegetation types, soils, and hydrology as a result of the periodic flooding of the area). Habitat within the riverbed consists of pioneer RAFSS and a mosaic of riparian communities including willow scrub, mule fat scrub, sandy riverwash and stream habitat.
- The construction and operation of the dam will impact approximately 42.4 acres on the western bank outside of the river channel for recharge basins. Habitat loss associated with the recharge basins would be permanent but restricted to disturbed intermediate RAFSS plant community dominated by non-native grasses and weedy forb species.

- Limited Santa Ana River woolly-star will be impacted by construction of the proposed recharge basins and the creation of the 24 acre impoundment area behind the dam. This loss must be addressed in the Biological Opinion from the USFWS and Incidental Take Permit from CDFW. In addition, plants that are outside of the construction area but adjacent to the north boundary may be affected incidentally by indirect impacts such as changes to local hydrology, dust, spread of non-native weed seeds, and construction-related soil compaction. Focused surveys will be required to fully assess impacts and minimize potential effects to the populations. Any identified take will require Incidental Take Permits, including mitigation.
- The project construction activities will not result in direct take of SASU, though designated SASU Critical Habitat located within the project site will be affected.
- There will be no impacts to SBKR. However, Los Angeles pocket mouse, southern grasshopper mouse, northwestern San Diego pocket mouse, and San Diego desert woodrat were detected on-site in the recharge area during focused trapping surveys for SBKR in 2009. These species may be affected during construction of this portion of the project, including through habitat loss, displacement, stress, and potential injury or mortality due to crushing or the collapsing of burrows.
- Pending a preconstruction nesting bird clearance survey, no impacts are expected to nesting raptors.
- There is nesting and foraging habitat for migratory birds of varying quality throughout the entire project site. Habitat for these birds will be lost. Birds may also be displaced or injured or may have foraging and nesting activities disrupted by project construction, particularly if construction occurs during the avian nesting season.

Indirect Impacts

- Implementation of this project has a limited potential to indirectly affect downstream riparian and aquatic resources. The potential for indirect effects comes from hydrologic changes through periodic impoundment and diversion of Santa Ana River water for groundwater recharge. Changes in hydrology could affect downstream riparian habitat currently occupied by sensitive species although the potential to affect those species is dependent upon conditions in the SAR downstream of the project. The project will affect the quantity of storm flow traveling downstream during an event but not the course of the water once it passes through the project area. The upstream limit of riparian habitat of concern is approximately located at RM 53 near the Rialto Channel. Habitat loss or degradation could occur from reduced availability of water that may occur during a specific range of surface flow in the river. However, it is difficult to quantify potential impacts to existing vegetation due to the width of the riverbed and constant change to flow patterns in the Santa Ana River.
- Sediment studies have determined that changes to stream flow and sediment transport as a result of the construction and operation of the proposed project is not expected to adversely affect SASU populations occurring downstream.
- Because woolly-star depends upon hydrology for seed dispersal and germination, prevention of high flow storm events could result in reduced gene flow and germination of future woolly-star seedlings downstream of the project. However, operations of the dam will not prevent peaks of storms greater than 1,500 cfs from reaching woolly-star populations on the river banks above project site or continuing downstream, therefore, the project is not likely to impact woolly-star downstream of the project area.
- Wildlife movement may have minor construction related impacts immediately downstream of the dam construction area. Wildlife movement during Operations is expected to have only minor effects, since

the operation of the dam will occur during storm events when water is flowing in the riverbed. Most wildlife will stay out of the riverbed during high flow conditions. These impacts are considered negligible.

Sensitive Species

Impact 3.4-1: Implementation of the proposed project may have substantial adverse effects, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. **Level of Significance: Less than Significant with Mitigation.**

DIRECT IMPACTS

The project is located in areas within the active SAR channel and an area immediately west of the SAR channel but still within the floodplain. The rubber dam will be located in an ephemeral section of the SAR and will divert up to 200 cfs of storm flow, when available. If flow in the river is greater than 200 cfs the flow exceeding that amount will overtop the structure and continue downstream. The project would impact an area of approximately 24 acres within the riverbed and another 42.4 acres on the western bank outside of the river channel. The following sections analyze potential direct impacts to species at the project site.

Instream

The instream portion of the project includes potential levee repairs, construction, rubber dam installation and recharge behind the dam. The operation of the rubber dam will allow for 24 acres of potential recharge capabilities within the stream channel, upstream of the dam. Of those 24 acres, construction of the rubber dam and related appurtenances will result in 14.5 acres of permanent disturbance. Temporary construction access to the off-river basins and to the rubber dam will utilize existing access roads, easements and/or disturbed areas to avoid or minimize temporary effects to any existing vegetation. The habitat within the riverbed consists of pioneer RAFSS and a mosaic of riparian communities including willow scrub, mule fat scrub, sandy river wash and stream habitat. Impoundment of water within the 24 acres upstream of the dam is likely to result in changes to vegetation types, soils, and hydrology as a result of the periodic flooding of the area. Vegetation may undergo a gradual conversion to emergent species that are more tolerant of being submerged for prolonged periods of time, with soils becoming more saturated by the prolonged presence of water.

Hydrology may be affected by changing scour points and changing the natural flow path of the SAR within the impoundment area. Transport of coarse sediment may be temporarily interrupted by the rubber dam but gravels and cobbles will ultimately be moved downstream during subsequent large storms (greater than 1,500 cfs) containing enough energy to move this material through the system. Therefore, the overall availability of coarse substrate material in the system will not be reduced by the project. Small sediment such as fine sands and silt will be captured behind the rubber dam and some portion of that material will be permanently removed from the system through routine maintenance activities.

Offstream

The loss of habitat on the western bank will result from the construction of several recharge basins, a continuation of the diversion structure that begins in the riverbed, and a conveyance facility. Habitat on the western bench is a highly disturbed intermediate RAFSS plant community that includes dense stands of exotic weed species dominated by non-native grasses such as bromes (*Bromus* sp.) and barley (*Hordeum* sp.) and forb

species such as fiddleneck (*Amsinkia menziesii*). Habitat loss associated with the recharge basins would be permanent.

The out of stream recharge basins will result in impacts to approximately 42.4 acres of disturbed intermediate RAFSS habitat and 0.3 acres of unvegetated wash. Temporary construction access to the off-river basins and to the rubber dam will utilize existing access roads, easements and/or disturbed areas to avoid or minimize temporary effects to any existing vegetation. Operational procedures for the basins will include regular maintenance to remove silt layers accumulating on the surface of the recharge basins. The requirement to maintain the percolation capabilities through periodic soil ripping deems these impacts permanent.

The project will result in the permanent loss of 25 acres of heavily disturbed intermediate RAFSS habitat that is intermixed with non-native grasslands. Despite the low quality of the RAFSS habitat, several species of concern were found in the general vicinity of the recharge basins. These species include the woolly-star, Los Angeles pocket mouse, southern grasshopper mouse, northwestern San Diego pocket mouse, San Diego black-tailed jackrabbit, horned lizard: potentially coast (San Diego) horned lizard. At this time, with the exception of the woolly-star, there is no specific state or federal requirement for obtaining an Incidental Take Permit for the "taking" of the above-listed species, Construction and long-term maintenance of the basins will likely result in the loss of individual animals of these species and impacts to their habitat. The project area consists of degraded, low quality RAFSS habitat that supports a limited number of individuals of these species and constitutes a small percentage of each of these species' geographic ranges. Therefore, the loss of individuals is not considered significant in the context of their overall populations on a local or regional scale.

Project impacts to habitat within the survey area are identified in *Table 3.4-2, Survey Area Vegetation Impact Summary*, below.

Table 3.4-2 Survey Area Vegetation Impact Summary

Vegetation Type	Total Vegetation Acreage	Impacted Acreage
Mulefat Scrub	7.85	0.9
Southern Willow Scrub	16.07	0.2
Pioneer RAFSS	111.20	24.0
Intermediate RAFSS	19.36	0.8
Disturbed Intermediate RAFSS	127.55	42.4
Ornamental	1.13	-
Disturbed	34.64	8.0
Developed	36.61	0.6
Unvegetated Wash	3.32	0.3
Total	257.73	35.5

Santa Ana River Woolly-Star

Woolly-star was documented on-site during botanical surveys conducted in 2009, 2011, and 2013. While construction access roads will avoid known woolly-star populations to the greatest extent possible, this species will be impacted by the construction of the proposed recharge basins and will require a biological opinion from the USFWS and Incidental Take Permit from CDFW. In addition, plants that are outside of, but adjacent to, the construction area may be affected by indirect impacts such as changes to local hydrology, dust, spread of non-native weed seeds, and construction-related soil compaction. It is recommended that prior to construction, focused botanical surveys conforming to CDFW's *2009 Protocol for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* be conducted to document the full, current extent of this species within the site boundaries, minimize potential effects to the populations, and assess the amount of take that will require a permit and compliance with **Mitigation Measure BIO-2.**

Santa Ana Sucker and Critical Habitat

Since the project area is located upstream of the impassable barrier of the La Cadena grade control structure the species is not present within the project site. Suitable habitat conditions for SASU do not currently occur in this section of the Santa Ana River due to the absence of perennial flow and very little exposed gravel and cobble substrate. Potentially suitable habitat for SASU in San Bernardino County begins at the Rialto Drain (Rialto Channel) approximately 3 miles downstream of the proposed project.

Approximately 60 cfs of surface flow is required within the project area at Mount Vernon Avenue in order for water to reach RM 53 (the vicinity of the Rialto Drain) to potentially intersect with perennial flow and occupied sucker habitat. Flow less than 60 cfs would naturally infiltrate over 3 miles of river bottom before reaching RM 53, therefore, the rubber dam capturing all surface flow below 60 cfs would have no effect to downstream resources at, or downstream of, RM 53. The greatest potential for direct impact to SASU and its habitat exists when surface flow in the project area is greater than 60 cfs (needed for water to reach RM 53) and below 260 cfs (when the dam is capturing 200 cfs). Within this range of flow, the project will be preventing nearly 100% of the water from reaching RM 53 (200 cfs captured/diverted and 60 cfs overtops the rubber dam but infiltrates prior to reaching RM 53). Once flow in the river is higher than 260 cfs, some portion of water will reach RM 53 although there is no certainty that the flow would comingle with existing perennial flow (comprising approximately 25% of the channel at RM 53) on the north bank of the river in order to contribute to SASU habitat.

It is possible that flows would continue downstream on a path located within the remaining 75% of dry river bed. In this scenario, the project would have no effect on SASU. It is also important to note that in this extremely flashy hydrologic system, any water from a storm event that reaches occupied SASU habitat (with or without the project) could be of temporary benefit to the habitat, unlike perennial flow that perpetually supports habitat. Conversely, these same storm waters could also have a negative effect on the habitat by transporting and depositing fine sands and silts on the gravels and cobbles.

Based on data from 1999-2010, (post-Seven Oaks Dam), the average annual Santa Ana River discharge at the project location under existing conditions is 226,924 ac-ft, 41,488 ac-ft, and 15,614 ac-ft for wet, average, and dry years, respectively.[3] Factoring in the limitations of the diversion structure and recharge basins, the total

3 Between 1999 and 2010 only one wet year (2004/2005) occurred. Two average years and eight dry years are included in this data set. The data set begins after the construction of Seven Oaks Dam.

capture possible by the project is 25,700 ac-ft in a wet year, 14,000 ac-ft in an average year, and 6,200 ac-ft in a dry year (Geoscience 2014). Operations of the rubber dam will effectively "skim" water off the beginning and ends of a storm event. For example, a theoretical storm lasting approximately 30 hours in late February with a peak of approximately 6,000 cfs would have a total discharge volume of 4,356 ac-ft. During this storm the project could only capture approximately 261 acre feet, or 6% of the total storm flow. Approximately 4,085 ac-ft of water would continue downstream past the project area. A smaller theoretical storm in September could have a peak flow near 2,500 cfs and total volume of 453 ac-ft, of which approximately 89 ac-ft could be captured by the project, or approximately 20% of the storm flow. In either scenario, due to the limiting factors of the infrastructure (less than 1,500 cfs flow and 200 cfs diversion) and the flashy storm systems that occur in this watershed, a large volume of water will continue to flow downstream during most storm events (see Hydrology Section for additional detail).

Accounting for the project and natural infiltration between the project and RM 53, approximately 24,298 ac-ft, 10,923 ac-ft, and 1,483 ac-ft in wet, average, and dry years, respectively, would reach RM 53 (Geoscience 2014). These values do not take into account additional surface flows from nearby Reche Canyon, Cooley Drain, Cooley Drive open channel and the South Rancho drain which would contribute to the surface flow at RM 53 during storm events. Most natural flows reaching RM 53 would also occur during peak flow conditions when surface flow rates exceed the capacity of the rubber dam (Refer to Appendix F: *Hydrology and Water Quality Technical Appendix*).

Based on a dataset which includes wet, dry, and average years from 1960 to 2012, on average, only 33 days per year had flows greater than 60 cfs within the project area (Geoscience 2014). Therefore, the project could have had impacts to conditions downstream at RM 53 only 9% of the year. The project would have had no effect on SASU downstream 91% of the year. Based on the same data, the average number of days per year that surface flow within the project area was between 60 and 260 cfs (the range of flow with greatest potential for impact to SASU) was 22 days or 6% of the year. However, it should be stated again that this is only *potential* for impact because there is no certainty that any storm water would comingle with perennial flow in occupied habitat due to the width of the river channel and high proportion of dry streambed.

The project is located within designated Critical Habitat for SASU. The primary constituent elements (PCE) that could potentially be directly affected by a dam upstream of occupied habitat is PCE 1: *A functioning hydrological system within the historical geographic range of Santa Ana sucker that experiences peaks and ebbs in the water volume (either naturally or regulated) that encompasses areas that provide or contain sources of water and coarse sediment necessary to maintain all life stages of the species, including adults, juveniles, larvae, and eggs, in the riverine environment.* As described above, due to the operations of the dam and limitations of the infrastructure, the project will collect a small portion of the total storm flow volume and not limit peaks and ebbs in storm water flowing downstream to occupied habitat.

The project would not divert the gravel and cobble out of the river and will not prevent coarse sediment (gravels and cobbles) from being transported downstream during large storm events. Gravel and cobble that accumulate within the project area will not be removed from the system during maintenance activities. Rather, this material would be carried downstream during high flow events (more than 1,500 cfs) when the rubber dam would not be inflated and would be at-grade with the riverbed. Through a sediment transport study conducted in 2011 (AECOM 2011) and an additional analysis of the project conducted in 2014 (RBF 2015, Appendix E), it was determined that changes to streamflow and sediment transport as a result of the construction and operation of the proposed project is not expected to adversely affect SASU populations occurring downstream.

Potential loss or adverse impacts to Critical Habitat (e.g. loss of in-stream habitat, adverse alterations in sediment transport mechanisms) will require consultation with USFWS under Section 7 of the Endangered Species Act. The project is not likely to negatively impact streamflow (i.e. timing, magnitude, and duration), sediment transport, and water quality as a result of the construction and operation of the proposed dam and is not likely to adversely impact SASU populations occurring downstream of the project site (AECOM 2011, RBF 2015 Appendix D1) and the project will not impair migratory patterns or access to known spawning or rearing sites. However, if it is determined during the consultation that impacts not identified in this document will result from this project the City of Riverside would agree to offsite conservation as a requirement of the Biological Opinion and the Army Corps 404 permit. In preparation for the environmental review process, the City of Riverside has been coordinating with the USFWS to identify potential enhancement of existing but degraded SASU habitat within portions of the river currently occupied by SASU. Conclusion of the Section 7 Consultation process would ensure that unanticipated potential impacts to SASU and its habitat are appropriately offset by conservation activities the City of Riverside agrees to implement. **Mitigation Measure BIO-1** would reduce impacts to less than significant levels.

Small Mammals

As determined during protocol trapping surveys in 2009, detailed literature reviews, and subsequent site visits to assess habitat suitability in 2013 and 2014, SBKR does not occur on the project site. There is little habitat on-site that is suitable to support this species and effects to suitable habitat are also considered negligible, if any. Therefore there will be no impacts to SBKR.

Los Angeles pocket mouse, southern grasshopper mouse, northwestern San Diego pocket mouse, and San Diego desert woodrat were detected on-site in the recharge area during focused trapping surveys for SBKR in 2009. These species may be affected during construction of this portion of the project, including habitat loss, displacement, stress, and potential injury or mortality due to crushing or the collapsing of burrows. To minimize the impacts to these species of special concern, **Mitigation Measure BIO-6** shall be implemented.

Least Bell's Vireo and Southwestern Willow Flycatcher

There is low habitat for LBVI located within the project boundaries and this species has been documented in the Rialto Channel and in downstream willow habitat; therefore, LBVI could occur within the project boundaries. If LBVI is present, disruption of nesting or foraging activities or otherwise undue stress to individual birds could occur if construction occurs during the avian nesting season. A focused survey for LBVI will be conducted in the spring preceding anticipated start of construction. If LBVI is determined to occupy the project site, take of this species will be addressed during the Section 7 Consultation process with the USFWS and in an ITP obtained from the CDFW.

No suitable SWWF habitat exists within the project site and construction related impacts to this species are not expected. However, based on the most recent Critical Habitat designation in 2013 (78 FR 343 534), SWWF designated Critical Habitat will be affected by the project through loss of vegetation within the project footprint. Loss or adverse modification of SWWF Critical Habitat (e.g. vegetation removal or loss of riparian habitat) will be addressed during the Section 7 Consultation process with USFWS per **Mitigation Measure BIO-1, BIO-3, and BIO-4**.

Burrowing Owl

Focused BUOW surveys were conducted on the project site in 2009. No BUOW or BUOW sign were detected within the survey area, and site conditions have not changed since these surveys. Direct impacts to BUOW

within the project site are not expected. However, it is recommended that a BUOW clearance survey be conducted prior to any ground disturbing activities in accordance with the CDFW 2012 Staff Report on Burrowing Owl Mitigation. **Mitigation Measure BIO-5** will reduce impacts to BUOW to less than significant levels.

Raptors

There is marginal habitat for raptors within the project site. Raptors could forage through the SAR and in upland areas, but nesting habitat in the area is limited. There may be minor effects to raptors through the loss of foraging habitat in the SAR and the recharge areas, but pending a preconstruction nesting bird clearance survey per **Mitigation Measure BIO-4**, no impacts are expected to nesting raptors.

Migratory Birds

There is nesting and foraging habitat of varying quality throughout the entire project site. Habitat for these birds will be lost. Birds may also be displaced or injured or may have foraging and nesting activities disrupted by project construction, particularly if construction occurs during the avian nesting season. **Mitigation Measure BIO-4** will mitigate impacts to less than significant.

INDIRECT IMPACTS

The following discussion addresses concerns related to potential impacts upon riparian, fisheries, and other wildlife resources in the SAR as they relate to reduction in surface water flow levels in the river and changes in hydrology to adjacent upland areas. Implementation of this project has potential to indirectly affect downstream riparian and aquatic resources beginning at approximately RM 53. Some degree of hydrologic changes will occur downstream of the project limits due to impoundment, diversion, and recharge of surface water.

The maximum amount of water that will be taken from the surface flow at any given time is 200 cfs, the physical limit of the infrastructure. Any flow greater than 200 cfs, no matter the size of a storm event, will overtop the rubber dam and continue downstream. Operations of the rubber dam will effectively "skim" water from the beginning and ends of a storm event. Based on data from 1999-2010, (post-Seven Oaks Dam), the average annual Santa Ana River discharge at the project location under existing conditions is 226,924 ac-ft, 41,488 ac-ft, and 15,614 ac-ft for wet, average, and dry years, respectively. Factoring in the physical limitations of the diversion structure and recharge basins, the total capture possible by the project is 25,700 ac-ft in a wet year, 14,000 ac-ft in an average year, and 6,200 ac-ft in a dry year (Geoscience 2014), which is a small percent of the available storm water. For example, a theoretical storm lasting approximately 30 hours in late February with a peak of approximately 6,000 cfs would have a total discharge volume of 4,356 ac-ft. During this storm the project could only capture approximately 261 acre feet, or 6% of the total storm flow. Approximately 4,085 ac-ft of water would continue downstream past the project area. A smaller theoretical storm in September could have a peak flow near 2,500 cfs and total volume of 453 ac-ft, of which approximately 89 ac-ft could be captured by the project, or approximately 20% of the storm flow. In either scenario, due to the limiting factors of the infrastructure (operational only with flows less than 1,500 cfs and a maximum capture rate of 200 cfs) and the flashy storm systems that occur in this watershed, a large volume of water will continue to flow downstream during most storm events (see Section 3.5, *Hydrology and Water Quality*, for additional detail).

The ephemeral drainage (Drainage A) would be rerouted within RPU's property (APN 016338107) to continue to function around the recharge basins. An earthen swale along (and within) the northwest and west

property boundaries of RPU's property (APN 016338107) would be constructed. The earthen swale would connect the existing ephemeral drainage on Colton's property (APN 016338101) to the existing ephemeral drainage on Colton's nearby property (APN 016338102). The new swale would protect the hydraulic integrity of the ephemeral drainage and the drainage would continue to maintain sensitive habitat.

Riparian Habitat

The degree to which the loss of this 200 cfs of surface flow will cause indirect impacts to downstream riparian vegetation and/or dependent species inhabiting is unknown. It is important to remember that although there may be sufficient volume for water to reach RM 53 there is no certainty that the flow would intercept the perennial stream and contribute to the riparian vegetation community due to the physical characteristics of the floodplain (wide alluvium channel). However, there are several scenarios identifying potential impacts based on surface flow conditions.

If surface flows in the project area are greater than 0 cfs but lower than 60 cfs the rubber dam will be inflated and impounding water, however, there will be no impact to riparian habitat located at approximately RM 53 because the water will have naturally infiltrated the sandy river bottom before reaching the habitat.

The greatest potential for indirect impact to riparian habitat exists when surface flow in the project area is greater than 60 cfs (needed for water to reach RM 53) and below 260 cfs (when the dam is capturing 200 cfs). Within this range of flow, the project could prevent nearly 100% of the water (200 cfs captured/diverted and 60 cfs overtops the rubber dam but infiltrates prior to reaching RM 53) from reaching RM 53 where substantial stands of riparian vegetation begin in this portion of the river.

During flow events greater than 260 cfs, some portion of the surface flow would reach RM 53. However, it is difficult to predict what benefit this water may have to riparian habitat downstream. In this area, the Santa Ana River consists of a wide alluvial floodplain with an inset low flow channel, which shifts within the riverbed periodically, often due to large storm events. Once flow in the river is higher than 260 cfs, some portion of water will likely reach RM 53 although there is no certainty that the flow would comingle with perennial flow (approximately 25% of the channel at RM 53) on the north bank of the river to benefit existing riparian vegetation. It is possible that flows would continue downstream on a path located within the remaining 75% of dry river bed. Due to the ephemeral nature of this flow it is unlikely that periodic, short term flow in a new portion of the riverbed would provide sustaining benefit to vegetation. This is supported by the current lack of a riparian community between the project site and the perennial flow located at RM 53.

Santa Ana Sucker

SASU is known to occupy the Rialto Drain and the perennial habitat downstream of this point (RM 53). This species requires gravel/cobble substrates for feeding and reproduction. Sand and fine sediment may be captured behind the dam structure and carried downstream by a subsequent storm event. Periodic flushing of accumulated suspended sediment at the dam site is expected to carry sediment up to approximately 3,000 feet downstream of the dam; however the rubber dam is located approximately 15,840 feet upstream of occupied habitat (AECOM 2011). While it is possible that a series of storms could push deposited sediment downstream toward occupied habitat, it is expected that the sediment will be well dispersed over the entire floodplain during subsequent events. Ongoing maintenance activities will also permanently remove some portion of the sands and fine sediment from behind the dam and deposit outside the river system. This would be an indirect benefit to SASU habitat.

Indirect impacts to riparian vegetation located along the banks of the occupied perennial stream beginning at RM 53 could potentially negatively impact SASU and its critical habitat although the potential for this is small due to operations of the dam and current riverbed conditions (see Riparian Habitat section above). Any indirect impacts resulting from the project would be short-term and less than significant when considering the influence of storm flow on the overall health of function of the riparian community adjacent to occupied reaches of the River.

Small Mammals

There is marginal, if any, habitat for these species within the SAR downstream of the project site. Because these species are not dependent on riparian or aquatic habitat, no impacts are expected to small mammals downstream of the site.

Least Bell's Vireo and Southwestern Willow Flycatcher

Both of these species have been documented within the SAR downstream of the project site. Any indirect impacts to the riparian and aquatic habitats in the downstream areas could potentially affect these listed species. However, the impacts are likely to be small (see Riparian Habitat section). Compliance with **Mitigation Measures BIO-1 and BIO-3** would reduce impacts to LBVI and SWWF to less than significant levels.

Santa Ana River Woolly-Star

There are known occurrences of this species several miles downstream of the project site (e.g. near Riverside Avenue). These occurrences are located adjacent to the perennial section of the SAR and no impacts are expected to occur to woolly-star as a result of the impoundment of water in the intermittent section of the river. Because woolly-star depends upon hydrology for seed dispersal and germination, prevention of high flow storm events could result in reduced gene flow and germination of future woolly-star seedlings downstream of the project. However, operations of the dam will not prevent peaks of storms greater than 1,500 cfs from reaching woolly-star populations downstream and storm flow less than 1,500 cfs will continue to flow downstream, minus the 200 cfs recharged by the rubber dam. Because most storm water and the peaks of large events will continue to reach occupied areas, the project is not likely to adversely impact woolly-star downstream of the project area. **Mitigation Measure BIO-2** will reduce impacts to woolly-star.

Burrowing Owl

There is no habitat for this species downstream of the project site. No offsite impacts are expected.

Raptors

There is suitable foraging habitat for raptors downstream of the project site, although they are more likely to forage in the many open fields in the upland areas outside of the SAR. However, the impacts are likely to be small (see Riparian Habitat section). Nesting activities downstream of the site would not be affected. No impacts are expected to occur to raptors downstream of the project site.

Migratory Birds

Migratory birds occur throughout the area, including downstream of the project site. Only those that are dependent on in-stream habitat, particularly shorebirds and waterfowl, would be expected to be affected at all. However, the impacts are likely to be small (see Riparian Habitat section). Project implementation is not expected to adversely affect nesting or foraging activities of migratory birds downstream of the project site.

Wildlife Movement

A potential indirect effect to wildlife movement is a change to migratory routes in order to avoid the rubber dam and/or the water impoundment areas either behind the dam or in the upland basin area. Changes to movement corridors are not expected to negatively affect survival or fitness of local wildlife.

RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

JN 130506 Aug 2013

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Santa Ana River Woolly-Star Locations

Exhibit 3.4-3

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RIVERSIDE NORTH AQUIFER STORAGE
AND RECOVERY PROJECT - EIR

JN 130506 April 2014

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Hole Creek Drainage - Proposed Off-Site Mitigation Area

Exhibit 3.4-4

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MITIGATION MEASURES

With implementation of the following Mitigation Measures aimed at preserving and restoring sensitive habitat and avoiding impacts to sensitive wildlife species, less than significant impacts are anticipated.

BIO-1 Location of the project site within federally designated critical habitat for the Santa Ana sucker shall require consultation between the U.S. Army Corps of Engineers (USACE) and the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Federal Endangered Species Act (ESA), prior to their issuance of a Section 404 Permit. If direct, indirect, or cumulative effects are identified during the consultation process the City is prepared to implement offsite conservation measures to offset those impacts to Santa Ana sucker and its designated critical habitat. The City has been coordinating with the USFWS for several years to identify an appropriate location to enhance habitat for the sucker and other species. The Hole Creek tributary, which is part of the McAllister/Hole Creek drainage within the City of Riverside, has been identified as a stream located within currently occupied sucker habitat but is either lacking or has degraded critical habitat PCEs. The City will improve those PCEs that may be directly or indirectly affected by the project (water, gravel/cobble substrate, riparian vegetation). Additionally, the improvement will be made to habitat located within a portion of the river that is currently occupied by sucker and can be utilized immediately by the species. The creek consists of viable Santa Ana sucker habitat comprised of approximately 2,172 linear feet of runs, glides, riffles, pools, and slick rock plunge pools of various sizes. Rehabilitation of this tributary would provide immediate value to breeding, foraging, and refugia habitat for sucker. The City will implement the required creek improvements, including the provision of supplemental water, if needed, and/or additional offsite mitigation as identified by the USFWS to appropriately mitigate effects of the project.

Impacts of Hole Creek Mitigation Area – Implementation of the Hole Creek mitigation measure may result in relatively minor additional impacts beyond those identified in the project construction area. Although this measure will result in a benefit to biological resources, there will be temporary dust, noise, construction traffic and aesthetic impacts associated with creation and ongoing maintenance activities for this mitigation site. Prior to issuance of a grading permit or any ground disturbance within the proposed project boundary, a qualified biologist shall be required to conduct a comprehensive survey of the Hole Creek tributary (consistent with the specific mitigation area illustrated in *Exhibit 3.4-4* of the EIR). Following survey of the proposed Hole Creek mitigation area, the biologist shall provide written recommendations for removal of non-native vegetation along the creek, removal of trash, water quality testing, and/or monitoring of substrate conditions, as applicable. Construction and maintenance at the Hole Creek Mitigation Area shall comply with applicable mitigation measures for the project area, in addition to any required construction, operation and/or maintenance measures established by regulatory agencies during the project permitting process.

BIO-2 Botanical surveys conducted in 2009, 2011, and 2013 verified the presence of Santa Ana River woolly-star on the project site. A focused sensitive plant survey following CDFW's 2009 protocol shall be conducted prior to the commencement of any ground disturbing activities, and that all locations be marked for avoidance during construction and operation of the project. This survey will also assess the potential for other sensitive plant species to occur within the project site. If take of the woolly-star will occur either through direct or indirect

effects resulting from construction, operations, or maintenance of this project, a CDFW 2081 Incidental Take Permit will be obtained and suitable mitigation measures will be developed through coordination between CDFW and the City. This may include avoidance and minimization measures such as worker education and preventative flagging as well as onsite restoration of impacted areas and enhancement of nearby habitat in order to promote survival and persistence of woolly-star in this area. Impacts to woolly-star will be addressed in the USFWS Biological Opinion as part of the Section 7 consultation and 404/401 permitting process.

BIO-3 Focused spring surveys for least Bell's vireo are recommended prior to grading. If LBVI is determined to occupy the project site, avoidance measures shall be recommended at that time. If avoidance is not possible, impacts to this species shall also need to be addressed during the Section 7 Consultation with USFWS and State Incidental Take Permits.

BIO-4 If ground disturbing activities or removal of any trees, shrubs, or any other potential nesting habitat are scheduled within the avian nesting season (nesting season generally extend from February 1 – August 31), a pre-construction clearance survey for nesting birds shall be conducted within 3 days prior to any ground disturbing activities. The biologist conducting the clearance survey shall document a negative survey with a brief letter report indicating that no impacts to active bird nests will occur. If an active avian nest is discovered during the preconstruction clearance survey, construction activities shall stay outside of a 300-foot buffer around the active nest. For raptor species and listed species, this buffer is expanded to 500 feet. It is recommended that a biological monitor be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting behavior is no adversely affected by the construction activity.

BIO-5 A pre-construction burrowing owl (BUOW) clearance survey shall be conducted in accordance with the 2012 CDFW protocol prior to any ground disturbing activities. This clearance survey can be conducted as part of the pre-construction nesting bird clearance survey. If burrowing owl are encountered and determined to be nesting, land disturbance activities shall not commence until the biologist has implemented the required measures according to the CDFW to clear the site for construction. One such measure may be to passively relocate the owls once the young have fledged the nest. This type of relocation requires the construction of artificial burrows in the near vicinity and collapsing of the old burrows once the owls have clearly flushed out of the site. If burrowing owls are encountered during construction, construction activities shall be halted in the vicinity of the find and the biologist/monitor called to the site. The contractor shall implement the recommendations of the biologist/monitor.

BIO-6 Prior to ground disturbing activities, a qualified biologist shall conduct a pre-construction clearance survey of the project site and access roads to verify baseline conditions and the potential presence of sensitive biological resources as previously identified for the project site. Based on this survey, the biologist shall prepare a construction and long-term management plan based on an adaptive management approach and submit it to USFWS and CDFW for review and approval.

The construction portion of the management plan will include management actions to avoid and minimize impacts to sensitive biological resources including, but not limited to, fencing

of sensitive areas occurring outside the development footprint, pre-construction surveys for burrowing owls and nesting birds (see BIO-4 and BIO-5 above), and the requirements for biological monitoring during the construction phase. The long-term management portion of the plan shall include avoidance and minimization measures that shall be continued during the operational phase including, but not limited to, periodic monitoring during the first five years of operation and potential corrective measures that may be needed to respond to unanticipated impacts to sensitive biological resources.

To lessen impacts to small mammals, a preconstruction survey shall be conducted for small mammals by a qualified biologist to make a determination: (1) if a biological monitor should be present at the site during all land disturbance activities; (2) if exclusionary fencing needs to be installed around the perimeter of the construction work zone; or (3) if no further action is required. The biologist/monitor shall remain on-call during construction activities. If by chance any San Bernardino Kangaroo Rat, Los Angeles pocket mouse, southern grasshopper mouse, northwestern San Diego pocket mouse, or San Diego desert woodrat, are encountered during construction following the initial phases of ground disturbance, construction activities shall be halted in the vicinity of the find and the biologist/monitor called to the site. The contractor shall implement the recommendations of the biologist/monitor who will coordinate with the CDFW.

BIO-7 Personnel associated with the construction of the site shall attend a worker education class. This class shall include general information regarding sensitive species, including the Santa Ana River woolly-star, Least bell's vireo, southwestern willow flycatcher, and Santa Ana sucker and their habitat, as well as the potential for wildlife movement through the project area.

Project activities shall be limited to a well-defined area. Prior to grading and construction activities, the limits of disturbance shall be clearly marked with flagging, stakes or fencing around the project site and access roads. All vehicular use of the road shall be confined to the disturbed roadbed. No advertent straying outside the roadway shall occur.

Riparian and Sensitive Habitat

Impact 3.4-2: Implementation of the proposed project may have substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. **Level of Significance: Less than Significant with Mitigation.**

DIRECT IMPACTS

As previously stated, the off-stream recharge basins would result in 42.4 acres of permanent disturbance to low quality, heavily disturbed intermediate RAFSS habitat on the western banks of the Santa Ana River.

The operation of the inflatable dam would allow for 24 acres of potential recharge capabilities within the stream channel, upstream of the dam. Of those 24 acres, construction of the inflatable dam and related appurtenances would result in 14.5 acres of permanent disturbance in the riverbed due to inundation during storm events.

Through coordination with the CDFW, the USFWS, and the Army Corps during the 1602 and 404/401 permit application process the City will be required to offset any direct or indirect impacts to riparian vegetation resulting from construction or operations of the project. The City will agree to provide either suitable offsite mitigation and/or purchase mitigation credits from a bank dedicated to the protection and enhancement of the Santa Ana River watershed. If offsite restoration is deemed appropriate riparian habitat will be enhanced and protected pursuant to **Mitigation Measures BIO-1** above. These mitigation measures will require that the City implement all possible avoidance and minimization measures to reduce impacts to riparian and sensitive habitats during the restoration process, including the acquisition of all necessary wetland permits from USACE, the RWQCB and CDFW (refer to **Mitigation Measures BIO-8 through BIO-11** below). All construction personnel would also be required to attend a class for education on the avoidance of sensitive species and habitats within the area, per **Mitigation Measure BIO-7**. With implementation of the identified mitigation measures aimed at preserving and restoring sensitive riparian habitat, less than significant impacts are anticipated.

INDIRECT IMPACT

The following discussion addresses concerns related to potential impacts upon riparian resources downstream of the project in the SAR as they relate to the project reduction in surface water flow levels. Implementation of this project has potential to indirectly affect downstream riparian habitat beginning at approximately RM 53. Some degree of hydrologic changes will occur downstream of the project limits due to impoundment, diversion, and recharge of surface water.

The maximum amount of water that will be taken from the surface flow at any given time is 200 cfs, the physical limit of the infrastructure. Any flow greater than 200 cfs, no matter the size of a storm event, will overtop the rubber dam and continue downstream. Operations of the rubber dam will effectively "scalp" water off the beginning and ends of a storm event. For example, a theoretical storm lasting approximately 30 hours in late February with a peak of approximately 6,000 cfs would capture approximately 261 ac-ft from a total volume of 4,356 ac-ft, or 6% of the total storm flow. Approximately 4,085 ac-ft of water would have continued downstream past the project area and provided water to downstream vegetation. A smaller storm in the fall could have a peak flow near 2,500 cfs and total volume that could be captured by the project would total 89 out of 453 ac-ft or approximately 20% of the storm flow. In either scenario, due to the limiting factors of the infrastructure (less than 1,500 cfs flow and 200 cfs capture) and the flashy storm systems that occur in this watershed, a large volume of water will continue to flow downstream during most storm events (see Hydrology Section for additional detail).

Riparian Habitat

The section of the river located between the project and RM 53 will experience a reduction in storm flow equal to or less than 200 cfs once the area behind the inflatable dam is full. The degree to which the loss of 200 cfs of surface flow will cause indirect impacts to downstream vegetation and/or dependent species inhabiting the RM 53 area is uncertain.. However, there are several scenarios possible based on surface flow conditions.

If surface flows in the project area are greater than 0 cfs but lower than 60 cfs the rubber dam will be inflated and impounding water, however, there will be no impact to riparian habitat located at approximately RM 53 because the water will have naturally infiltrated the sandy river bottom before reaching the habitat.

The greatest potential for indirect impact to riparian habitat exists when surface flow in the project area is greater than 60 cfs (needed for water to reach RM 53) and below 260 cfs (when the dam is capturing 200 cfs). Within this range of flow, the project will be preventing nearly 100% of the water (200 cfs diverted water and 60 cfs overtops the rubber dam but infiltrates prior to reaching RM 53) from reaching RM 53 where substantial stands of riparian vegetation begin in this portion of the river.

During flow events greater than 260 cfs, some portion of the surface flow would reach RM 53. However, it is difficult to predict what benefit this water may have to riparian habitat downstream. In this area, the Santa Ana River consists of a wide alluvial floodplain with an inset low flow channel. Once flow in the river is higher than 260 cfs, some portion of water will likely reach RM 53 although there is no certainty that the flow would comingle with perennial flow (approximately 25% of the channel at RM 53) on the north bank of the river to benefit existing riparian vegetation. It is possible that flows would continue downstream on a path located within the remaining 75% of dry river bed. Due to the ephemeral nature of this flow it is unlikely that this periodic, short term flow in a new portion of the riverbed would provide sustaining benefit to vegetation.

Accounting for both the project and natural infiltration between the project and RM 53, approximately 24,298 ac-ft, 10,923 ac-ft, and 1,483 ac-ft in wet, average, and dry years, respectively, would reach RM 53 (Geoscience 2014). These values do not take into account additional surface flows from nearby Reche Canyon, Cooley Drain, and the S. Rancho drain which would contribute to the surface flow at RM 53 during storm events. Most natural flows reaching RM 53 would occur during peak flow conditions when surface flow rates exceed the capacity of the rubber dam. Based on a dataset which includes wet, dry, and average years from 1960 to 2012, on average only 33 days per year had flows greater than 60 cfs within the project area (Geoscience 2014). Therefore, the project, if operational would have had impacts to conditions downstream at RM 53 only 9% of the year. The project would have had no effect on riparian habitat downstream 91% of the year. Based on the same data, the average number of days per year that surface flow within the project area was between 60 and 260 cfs (the range of flow with greatest potential for impact to SASU) was 22 days or 6% of the year. However, it should be stated again that this is only *potential* for impact because there is no certainty that any water would comingle with perennial flow in occupied habitat.. Additionally, any indirect impacts that may occur due to the project would be short-term and less than significant when considering the influence of storm flow on the overall health of function of the riparian community adjacent to occupied reaches of the River. This is supported by the current lack of a riparian community between the project site and the perennial flow located at RM 53.

Through coordination with the CDFW, the USFWS, and the Army Corps during the 1602 and 404/401 permit application process the City will be required to offset any direct or indirect impacts to riparian vegetation resulting from construction or operations of the project. The City will agree to provide either suitable offsite mitigation and/or purchase mitigation credits from a bank dedicated to the protection and enhancement of the Santa Ana River watershed. If offsite restoration is deemed appropriate, riparian habitat will be enhanced and protected pursuant to **Mitigation Measures BIO-1** above.

Wetlands

Impact 3.4-3: Implementation of the proposed project may have substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc…) through direct removal, filling hydrological interruption, or other means. **Level of Significance: Less than Significant with Mitigation.**

SUMMARY OF CDFW AND CORPS JURISDICTIONAL AREAS

The Santa Ana River and Drainage A within the project area exhibit streambed characteristics and support riparian habitat, including RAFSS habitat, and thus would be considered CDFW jurisdiction. In this location, the Santa Ana River is an intermittent hydrogeomorphic water feature that is composed of sandy, braided channels that carry water during and after storm events. The Santa Ana River is a dynamic system constantly changing due to these fluvial processes. As a result, the RAFSS plant community associated with the Santa Ana River is also dynamic and constantly changing. Although there are ecotonal effects from this dynamic interplay between the two phases of RAFSS found on the project site (Pioneer and Intermediate), they remain two distinct plant communities with different soil characteristics, hydrology, and vegetation composition that can be regulated by CDFW within the survey area.

The RAFSS plant community is a CDFW sensitive habitat and all RAFSS within the 100-year flood plain can be considered jurisdictional by the CDFW. In addition, the mulefat scrub plant community and southern willow scrub plant community will also fall under the jurisdiction of CDFW. Based on the results of the field visit, approximately 187.48-acres of CDFW jurisdiction occurs within the survey area. Refer to *Table 3.4-3* below for a summary of jurisdictional areas on-site. A final delineation will be conducted prior to project implementation to verify the extent of waters of the state for use during the 1602 Permit process.

Table 3.4-3. CDFW Jurisdictional Area within the Survey Area

Jurisdictional Feature	Jurisdictional Area		
	Vegetation Type	Streambed (acres)	Associated Habitat (acres)
Santa Ana River	Mulefat Scrub	7.41	0.44
	Southern Willow Scrub	16.07	-
	Pioneer - RAFSS	111.20	-
	Concrete Channel	29.68	-
	Intermediate – RAFSS	-	9.27
	Santa Ana River Totals	164.36	9.71
Drainage A	Unvegetated Wash	3.32	-
	Associated Riparian	-	0.10
	Intermediate – RAFSS	-	9.99
	Drainage A Totals	3.32	10.09
Totals		**167.68**	**19.8**

Evidence of an OHWM within the Santa Ana River and Drainage A included surface flow, drift deposits, changes in vegetation type, scour, and presence of a bed and bank. The Santa Ana River is considered an RPW and jurisdictional "Waters of the United States". Additionally, Drainage A is tributary to the Santa Ana River and contains evidence of an OHWM, and is considered jurisdictional by the Corps.

Based on the results of the field observation, the proposed project will result in approximately 0.16 acre of permanent impacts and approximately 5.47 acres of temporary impacts to Corps water of the U.S. (non-

wetland) (refer to Appendix D2, Exhibit 1, *Corps/Regional Board Jurisdictional Map*). No isolated or Rapanos conditions were observed within the boundaries of the project site; therefore the Regional Board follows that of Corps jurisdictional waters of the U.S.

DIRECT IMPACTS

The proposed project would result in the discharge of fill material into the Santa Ana River which is considered waters of the U.S. The Santa Ana River and Drainage A are considered jurisdictional by the CDFW. Based on the most current design plans, approximately 6.77-acres of CDFW jurisdictional streambed and associated habitats will be impacted by the proposed project (refer to *Exhibit 3.4-2, Jurisdictional Delineation Map*). Of the 6.77 acres of impacts, 2.75 acres are permanent impacts (2.24 acres to CDFW streambed and 0.51 acres to associated CDFW associated habitat) and 4.02 acres are temporary impacts (3.49 acres to CDFW streambed and 0.53 acres to CDFW associated habitat). The City will be required to obtain the following permits prior to construction activities within the delineated jurisdictional areas: USACE Section 404 Standard Individual Permit (SIP), RWQCB Section 401 Water Quality Certification, and CDFW Section 1602 Streambed Alteration Agreement (SAA).

Refer to *Table 3.4-4* below for an impact summary. **Mitigation Measures BIO-1, as well as BIO-8 through BIO-11** will mitigate for the loss of jurisdictional areas. A final delineation will be conducted prior to project implementation to verify the extent of waters of the U.S. and for use in the 1602 Permit application process.

Table 3.4-4 Jurisdictional Impact Summary

Jurisdictional Feature	Vegetation Type	Permanent Jurisdictional Impacts (acres)		Temporary Jurisdictional Impacts (acres)	
		Streambed	Associated Habitat	Streambed	Associated Habitat
Santa Ana River	Pioneer - RAFSS	2.13	-	2.00	-
	Intermediate – RAFSS	-	-	-	0.31
	Southern Willow Scrub	-	-	0.11	-
	Unvegetated Wash	-	-	0.34	-
	Mulefat Scrub	0.03	-	0.79	0.11
Drainage A	Unvegetated Wash	0.08	-	0.25	-
	Intermediate – RAFSS	-	0.51	-	0.11
TOTALS		**2.24**	**0.51**	**3.49**	**0.53**

INDIRECT IMPACTS

No significant project-related impacts on federally-protected wetlands would occur in the study area downstream from the project site. The location of the proposed off-stream basins intersect with Drainage A and therefore will alter the course of flow within Drainage A. Upstream of the basins, Drainage A consists of CDFW jurisdictional streambed and associated jurisdictional vegetation including an intermediate RAFSS plant community. Within the intermediate RAFSS plant community, there are documented locations of the federally and state endangered Santa Ana River woolly-star. Therefore, the proposed project has the potential to indirectly impact CDFW streambed, associated jurisdictional sensitive habitats, and endangered plant

species. Indirect impacts will be avoided and/or minimized by the proposed rerouting of Drainage A around the recharge basins because a swale will be constructed to allow continued flows through the drainage. The new swale would protect the hydraulic integrity of the ephemeral drainage and the drainage would continue to maintain sensitive habitat.

MITIGATION MEASURES

BIO-8 A Section 404 permit shall be obtained from the United States Army Corps of Engineers (USACE) Regulatory Branch-Los Angeles District Office prior to commencement of any construction activities within the USACE's delineated jurisdictional areas. By obtaining the Section 404 permit, the project proponent will have demonstrated conformance with federal regulatory requirements for any discharge of fill material into the Santa Ana River which is considered "Waters of the United States," thereby reducing impacts (due to discharge of fill) on waterbodies affected by the project to a less than significant level. Location of the site within federally designated critical habitat shall require coordination and permitting with the USACE, with USACE consulting with the USFWS under Section 7 of the Federal Endangered Species Act (ESA), prior to issuance of the Section 404 Permit.

BIO-9 A 401 Water Quality Certification from the Santa Ana Regional Water Quality Control Board (RWQCB) shall be obtained. The RWQCB also requires that CEQA compliance be obtained prior to obtaining the 401 Certification. By obtaining the 401 Water Quality Certification, the project proponent will have demonstrated conformance with State regulatory requirements for any discharge of fill material into the Santa Ana River which is considered "Waters of the United States," thereby reducing impacts (due to water quality associated with fill discharge) on waterbodies affected by the project to a less than significant level.

BIO-10 A 1602 Streambed Alteration Agreement shall be obtained from the California Department of Fish and Wildlife (CDFW) prior to commencement of any construction activities. By obtaining the 1602 Streambed Alteration Agreement, the project proponent will have demonstrated conformance with State regulatory requirements for drainage modifications thereby reducing impacts (effects upon habitat and species under the jurisdiction of CDFW) on waterbodies affected by the project to a less than significant level.

BIO-11 For permanent impacts to jurisdictional waters, the City may purchase in-lieu fee credits from a bank approved by the USACE, CDFW, and/or RWQCB and/or provide onsite and offsite habitat restoration at a ratio between 3:1 and 1:1. Temporary impacts to jurisdictional waters shall be mitigated in a 1:1 ratio through onsite habitat restoration. The exact details of the required restoration shall be outlined in the Habitat Mitigation and Monitoring Program document, as required by the USACE, RWQCB, and CDFW, and shall be negotiated at the time of permitting.

Wildlife Movement

Impact 3.4-4: Implementation of the proposed project may interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. **Level of Significance: Less than Significant With Mitigation.**

DIRECT IMPACTS

The project area is within a "Wildlife Linkage Corridor" along the SAR. The SAR is one of the few remaining biological corridors through the highly urbanized San Bernardino Valley and the greater southern California area that provides connectivity between remnant habitats within the greater urbanized area and large protected habitat areas located outside of the urbanized area. Under predicted climate change, biological corridors that provide connectivity between different types of habitat are likely going to become increasingly important in allowing the exchange of adaptive genes for alleles to spread as well as allowing species to migrate to new areas of appropriate habitat.

There may be minor construction-related impacts to wildlife movement in areas immediately upstream and downstream of construction (i.e. animals avoiding the area due to nearby construction). The dam will be constructed within the SAR, but will be at grade (likely covered with a thin layer of sediment) within the riverbed except when flows are present. When the dam is inflated it could create a barrier to wildlife movement. However, the dam will be inflated and be a barrier to migration during times when there is flow in the river, which would be a less likely period for wildlife to use the channel as a major corridor. Additionally, the project infrastructure is confined to one small section of the river bed and there are open areas upstream and downstream of the rubber dam that can be used by animals for movement and open access into the adjacent upland in order to circumnavigate the inflated dam.

The project shall take care to not interrupt the integrity of connectivity for wildlife movement. To minimize potential effects on wildlife movement, the project would be conditioned to avoid interruption of the integrity of the wildlife movement corridor along the Santa Ana River.

Mitigation Measure BIO-6 (listed above) would be implemented to document and protect the natural integrity of the wildlife movement corridor along the Santa Ana River to ensure that the project area continues to support wildlife movement for the long-term. As needed, mitigation may occur as approved by, and in consultation with the appropriate federal and State agencies. Mitigation may occur in the form of barrier fencing to prevent further intrusion and degradation of the area, habitat enhancement/restoration/avoidance, worker education and delineating construction area boundaries, pre-construction surveys, preparation of a construction and long-term management plan, biological monitoring, and obtaining appropriate permits for impacts to jurisdictional waters in order to ensure that impacts on existing habitat supported along the SAR corridor are minimized, thereby reducing potential effects on wildlife that utilize the corridor for purposes of movement. Following construction, the site shall be restored to its pre-project conditions through the implementation of a construction and long-term Mitigation Management Plan as required by Mitigation Measure BIO-6. With implementation of the above-referenced Mitigation Measures, less than significant impacts with regard to the movement of resident and migratory wildlife species would occur.

INDIRECT IMPACTS

Potential indirect adverse impacts to adjacent natural areas and organisms include a variety of factors resulting from increased disturbance due to visitation by humans: for example, loss of efficiency in foraging and other activities due to distraction and interference, increased invasion by non-native plants and animals due to human transport, and increased risk of fire. For the proposed project, such indirect effects are essentially limited to the construction period. Measures should be implemented to protect the natural integrity of the drainage. One such measure could be barrier fencing to prevent further intrusion and degradation in this area of the SAR. Following construction the site should be restored to its pre-project conditions through the implementation of the construction and long-term Mitigation Management Plan (Mitigation Measure BIO-6).

No physical improvements are proposed with the project within the downstream study area, and no impacts to riparian or other habitat are anticipated. Therefore, the project would not impede or substantially interfere with the movement of wildlife species upstream or downstream, within the SAR or on other affected lands. Impacts would be less than significant, and no mitigation is required.

Conflict with Adopted Plans

Impact 3.4-5: Implementation of the proposed project may conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. **Level of Significance: Less than Significant.**

SAWPA serves as lead for the Santa Ana Sucker Conservation Program which, has been in effect since 2000.[4] And was developed to identify and implement ways that local stakeholder could collaborate on Santa Ana sucker related work. The Programs intent, in collaboration with the USFWS and other local agencies, is to conserve sucker and protect its habitat through education and outreach, annul monitoring of the species and habitat, fund research activities to increase understanding of the species and develop habitat restoration activities that benefit sucker. Participants in the plan include SAWPA, the City of Riverside, San Bernardino Valley Municipal Water District, Orange County Water District, the City of San Bernardino Water Department, the Riverside-Corona Resource Conservation District, the Santa Ana Watershed Association, and San Bernardino County Flood Control District, the USFWS, and the Santa Ana Regional Water Board. Outside interested parties such as biological consultants, local academics, and environmental advocate organizations also participate.

The Upper SAR HCP is in the process of developing a watershed-wide, holistic conservation strategy for SASU that will serve as a blueprint for conservation mitigation measures for this project and others in the region. This project will be working in parallel with the HCP planning process and the mitigation developed and agreed to by the City will be an important supporting component of a much larger conservation strategy. The project serves as a key piece of the Upper SAR HCP watershed-wide conservation strategy since the potential onsite and offsite mitigation measures for listed species will restore, enhance and protect habitat for multiple species covered in the Upper SAR HCP. The project's potential mitigation proposed at Hole Creek will provide valuable habitat for Santa Ana sucker in a tributary that is located in occupied areas of the River but is currently marginal due to low flows and poor quality instream habitat for spawning and foraging. Additionally, a large pool often forms at the confluence of Hole Creek and the Santa Ana River, which presents ideal habitat for exotic predators such as largemouth bass, sunfish, and predatory amphibians. The restoration planned for Hole Creek includes enhancement of the channel, excavation of accumulated sediment and debris, non-native predator removal, and potentially augmenting the water supply such that the hydrology of the stream maintains functional habitat for native species. This conservation activity will provide immediate ecological value to the sucker for spawning, foraging, and refugia and will enhance currently degraded riparian vegetation habitat that will benefit vireo and other bird species.

The project is not anticipated to result in conflict with any local policies or ordinances protecting biological resources. Impacts would be less than significant, and no additional mitigation measures are required.

4 http://www.sawpa.org/collaboration/projects/santa-ana-sucker-conservationteam/

3.4.10 Significant Unavoidable Adverse Impacts

No significant unavoidable impacts related to biological resources have been identified following implementation of the recommended mitigation measures.

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3.5 HYDROLOGY AND WATER QUALITY

This section provides information regarding potential hydrology, drainage, and water quality impacts resulting from general grading and operation of the proposed project. Information for this section was taken primarily from the *Geohydrologic Evaluation of the Riverside North Aquifer Storage and Recovery Project Hydrology and Water Quality Technical Report*, prepared by Geoscience Support Services, Inc., dated January 24, 2014 (refer to Appendix H). Additionally, information was also taken from the *Riverside North Aquifer and Storage Recovery Project Hydrology and Water Quality Technical Appendix*, prepared by RBF Consulting in February 2015 (refer to Appendix F), and the *Riverside North Aquifer Storage and Recovery Project Santa Ana River Sediment Transport Technical Memorandum*, prepared by RBF Consulting in January 2015 (refer to Appendix E).

3.5.1 Environmental Setting

Existing Conditions

Regional Hydrology and Drainage

The project site falls within Region 8 (Santa Ana Region) of the California Regional Water Quality Control Board (RWQCB). The Santa Ana River (SAR) and its principal tributaries begin in the south- and southwest-facing portions of the San Bernardino Mountains, the south- and southeast-facing portions of the eastern San Gabriel Mountains, the south- and southwest-facing portions of the Santa Ana Mountains, and drain into the San Bernardino Valley and Chino Basin.

The SAR is the largest stream system in Southern California. It begins high in the San Bernardino Mountains where snowmelt and rainfall flow more than 100 miles southwesterly to discharge into the Pacific Ocean between Newport Beach and Huntington Beach. The SAR watershed covers over 2,650 square miles of urban, rural, agricultural, and forested terrain and the more populated urban areas of San Bernardino, Riverside, and Orange Counties, as well as a small portion of Los Angeles County.

Existing Site Hydrology and Drainage

The proposed inflatable dam will be located between the proposed off-stream basins location and the Mt. Vernon Avenue crossing in an area with engineered levees. The in-stream impoundment area will be located behind the inflatable dam and will occupy an area of approximately 24 acres of the SAR (refer to *Exhibit 2.0-3, Project Vicinity Map*, and *Exhibit 2.0-4, Proposed Project Limits)*. The reach of the SAR in the project area consists of soft bottom and USACE riprap levees. The 100-year flow rate in this reach is 140,000 cubic feet per second (cfs) per the USACE floodplain models. The impoundment area is surrounded by the following land uses:

North: Railroad right of way, vacant land, Santa Ana River, and open space with trails
South: Low-rise apartments, Santa Ana River, and open space with trails
East: Santa Ana River, office buildings, open space with trails
West: Vacant land

Upstream of the impoundment area is the confluence of Warm Creek and the Santa Ana River. At the confluence, the Santa Ana River is a concrete channel with an energy dissipation structure which transitions into a soft bottom with riprap levees. The Santa Ana River within the boundaries of the in-stream impoundment area is mainly an un-vegetated wash consisting of sandy and gravely material. However, sparse patches of mulefat, cottonwood, and willow are present. Additionally, a concrete structure of unknown

purpose is located downstream of the proposed inflatable dam along a Southern California Edison easement. Downstream of the inflatable dam, the channel bottom consists of a braided stream.

The off-stream recharge facility will occupy an area of approximately 44.1-acres of land on the west side of the Santa Ana River supported with non-engineered levees. A portion of this component extends through the western bank (non-engineered levee) of the Santa Ana River to allow for emergency spillway. The off-stream basins and Riverside Canal will receive impounded water from a diversion structure built into the western side of the engineered levee, upstream from the inflatable dam.

The off-stream basin location consists of undeveloped land. The proposed location of the recharge basins is surrounded by the following land uses:

North: Duplexes, high density single family homes, and vacant land
South: Vacant land
East: Vacant land
West: Manufacturing, storage warehouse, and vacant land

The locations of the proposed off-stream recharge basins are generally characterized by a mixture of native and non-native vegetation marked by various degrees of disturbance. The proposed recharge area is highly disturbed with a history of disking. This area supports disturbed intermediate RAFSS habitat. In the in-channel recharge and inflatable dam area, the habitat communities consist of a mosaic of riparian communities including RAFSS, southern willow scrub, mule fat scrub, sandy riverwash and stream habitat. While water flow typically does not exist within the proposed basin location, an ephemeral drainage (i.e., drift lines and sediment deposits) becomes active during storm events. Habitat on the western bank is a highly-disturbed RAFSS plant community that consists of dense stands of exotic weed species dominated by non-native grasses such as bromes (*Bromus* sp.) and barley (*Hordeum* sp.) and forb species such as fiddleneck (*Amsinkia menziesii*).

The existing area along the future State Water Project (SWP) pipeline extends from the Union Pacific Railroad right-of-way on the east side of the Santa Ana River to the area upstream of the proposed inflatable dam (utility crossing). The area consists of disturbed ground on the east side of the levee.

Surface Flow Volumes at Project Location

The proposed in-stream recharge basin location receives existing surface flow from the Santa Ana River, Warm Creek, and Lytle Creek. The United States Geological Survey (USGS) maintain gaging stations along the Santa Ana River at E Street (USGS Site No. 11059300), Warm Creek (USGS Site No. 11060400), and Lytle Creek (USGS Site No. 11065000) which record surface flow every 15 minutes, and can be accessed online. Lytle Creek receives storm runoff from the San Gabriel and San Bernardino Mountains and also collects street runoff, and meets with Warm Creek prior to leaving the San Bernardino Basin Area (SBBA). Warm Creek collects street runoff and storm runoff from the San Bernardino Mountains and in the past, conveyed high groundwater from the pressure zone of the SBBA into the Rialto-Colton basin. The Santa Ana River at E Street collects tributary flows from Mill Creek (USGS Site No. 11054001), Mission Zanja, City Creek (USGS Site No. 11055801), Plunge Creek (USGS Site No. 11055500), San Timoteo Creek (USGS Site No. 11057500), and East Twin Creek (USGS Site No. 11058500). The tributary creeks of the SBBA collect springs, snowmelt, and storm runoff from the San Bernardino Mountains, storm runoff from the San Timoteo Badlands, and street runoff. The project will receive surface flows from all of the previously-named streams and tributaries.

The Warm Creek, Lytle Creek, and E Street USGS gauge stations are located so that the combined discharge measures outflow from the SBBA and inflow to the project location. Geoscience Support Services, Inc. used these gauge stations along with historical average daily discharge volumes from upstream tributaries, synthesized flow data (to account for historical artificial SAR flows and future Seven Oaks Dam (SOD) diversions), and a calibrated surface water model of the SBBA (to evaluate surface water flow reduction from future SOD operation) to determine existing and synthesized flows at the project location and to determine potential flows available for capture. The results can be found in the *Geohydrologic Evaluation of the Riverside North Aquifer Storage and Recovery Project Report*, issued November 2011 and updated January 2014.

The Geohydrologic Evaluation determined that under the no project (i.e., existing condition) scenario that from the completion of the SOD in 1999 to 2010, the wet, average, and dry period flow volumes at the project location are 226,924, 41,488, and 15,614 acre-feet per year (AFY) respectively. To determine impacts from existing water right diversions, SBBA discharge volumes from 1960 to 2012 were synthesized using the Hydrological Simulation Program - Fortran (HSPF) surface water model developed for surface flow analysis of the San Bernardino Valley. The no project, existing mean synthesized flow volumes at the project location from 1960 to 2012 for a wet, average, and dry period are 52,836, 26,347, and 8,069 AFY respectively.

Downstream (Project Site to Prado Dam)

This reach of the Santa Ana River consists of soft bottom river bed with intermittent areas of USACE riprap levees. The 100-year flow rate in this reach is 140,000 cfs per the USACE floodplain models.

Rialto Drain

Santa Ana River surface water flows from the project site to River Mile 53 (RM 53, approximately 53 miles from the Pacific Ocean) have been estimated to require a minimum 60 cfs flow rate at the SAR near Mount Vernon in order to potentially intersect with perennial flow and occupied sucker habitat. Flow less than 60 cfs would naturally infiltrate over 3 miles of river bottom before reaching RM 53, In the Geohydrologic Evaluation of the project, 60 cfs was used as the minimum flow rate necessary to reach the RM 53[1].

Accounting for the project and natural infiltration between the project and RM 53, approximately 24,298 ac-ft, 10,923 ac-ft, and 1,483 ac-ft in wet, average, and dry years, respectively, would reach RM 53 (Geoscience 2014). These values do not take into account additional surface flows from nearby Reche Canyon, Cooley Drain, Cooley Drive open channel and the South Rancho drain which would contribute to the surface flow at RM 53 during storm events. Most natural flows reaching RM 53 would also occur during peak flow conditions when surface flow rates exceed the capacity of the rubber dam.

Surface Water Quality

The *Santa Ana Watershed Water Quality Control Plan* (Basin Plan) establishes water quality standards for the SAR. The mainstem of the SAR is divided into six reaches and the Basin Plan sets water quality objectives for each reach of the river. The project site falls within the northern portion of Reach 4.

1 The Geoscience Report (Appendix F, *Hydrology and Water Qaulity Technical Appendix*) references RM 23 in terms of the project location (the distance of the project location to the Prado Basin). For the purposes of this EIR, the reference to RM 23 has been replaced with RM 53 (the distance of the project location to the Pacific Ocean). As such, the project location is the same in the Geoscience Report and Draft EIR and the change in namesake does not affect project analysis.

The following beneficial uses for this reach are described in the basin plan:

- Municipal and Domestic Supply (MUN) waters are used for community, military, municipal or individual water supply systems. These uses may include, but are not limited to, drinking water supply.
- Groundwater Recharge (GWR) waters are used for natural or artificial recharge of groundwater for purposes that may include, but are not limited to, future extraction, maintaining water quality or halting saltwater intrusion into freshwater aquifers.
- Water Contact Recreation (REC 1*[2]) waters are used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing and use of natural hot springs.
- Non-contact Water Recreation (REC 2*) waters are used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing and aesthetic enjoyment in conjunction with the above activities.
- Warm Freshwater Habitat (WARM) waters support warm water ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish and wildlife, including invertebrates.
- Wildlife Habitat (WILD) waters support wildlife habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.
- Spawning, Reproduction and Development (SPWN) waters support high quality aquatic habitats necessary for reproduction and early development of fish and wildlife.

During the late summer months, when there is the least inflow of rainfall water, the baseflow Santa Ana River may be comprised almost entirely of discharges from wastewater treatment plants. Although these treatment plants are required to meet State treatment standards, the baseflow is high in total dissolved solids (TDS), nitrogen, and other constituents at times.

Reach 4 receives baseflow from Reach 5, upstream, as well as two wastewater treatment facilities downstream of the project, the City of San Bernardino Rapid Infiltration and Extraction (RIX) Facility (37,326 acre-feet in 2012) and the City of Rialto Waste Water Treatment Plant (6,805 acre-feet in 2012). The Basin Plan sets water quality objectives for constituents in all the reaches of the Santa Ana River. Reach 4 did not exceed any constituents in 2012 per the 2012 Annual Report of the Santa Ana River Water Quality. Reach 4 is listed in

2 The REC 1 and REC 2 beneficial use of designations assigned to surface waterbodies in this Region should not be construed as encouraging recreational activities. In some cases, such as Lake Matthews and certain reaches of the Santa Ana River, access to the waterbodies is prohibited because of potentially hazardous conditions and/or because of the need to protect other uses, such as municipal supply or sensitive wildlife habitat. Where REC 1 or REC 2 is indicated as a beneficial use in Table 3-1 in the 1995 Water Quality Control Plan for the Santa Ana River Basin (Region 8) Chapter 3, *Beneficial Uses*, the designations are intended to indicate that the uses exist or that the water quality of the waterbody could support recreational uses.

the 2010 Integrated Report (Clean Water Act Section 303 (d) list / 305 (b) report) of impaired water bodies by the California State Water Resources Control Board as being impaired by Pathogens from a non-point source and salinity/TDS/chlorides from an unknown source. Based on the 2010 303(d) list, the board will be developing a total maximum daily load (TMDL) to address pathogens and salinity in 2019.[3] Reach 3 is listed as being impaired by copper, lead, and pathogens. Reach 4 was listed because of impairment by pathogens. Reach 6 of the SAR was added to the list because of copper, lead, and cadmium concentrations and Reach 2 of the SAR was added because of indicator bacteria.[4]

Further downstream, Reach 3 receives baseflow from Reach 4 in addition to water treatment facilities, tributaries, and rising groundwater. The Western Riverside County Regional Wastewater Treatment Plant (6,489 acre-feet in 2012) and the City of Riverside Regional Water Quality Control Plant (32,578 acre-feet in 2012) discharged treated water into Reach 3. Reach 3 also receives flow from Temescal Creek, Chino Creek, Day Creek, Mill Creek (Chino Basin), and Hole Creek. Samples taken in 2012 from monitoring locations along the mainstem of the SAR exceeded sodium and total hardness objectives according to the 2012 Annual Report of Santa Ana River Water Quality. Of the Reach 3 tributaries that were sampled in 2012, Hole Creek was the only tributary that exceeded objectives. Hole Creek exceeded objectives for chloride, sodium, total dissolved solids, and total hardness.

Table 3.5-1 Average 2012 Water Quality Data for Santa Ana River Reach 4

Constituent	Units	Basin Plan Objective SAR Reach 4	Monitoring Locations		
			SAR-MISSION-01	SAR-RIVERSIDE AVE-01	WR-RIX-01
Ammonia-Nitrogen	mg/L		0	0.00	0.00
Bicarbonate (as $CaCO_3$)	mg/L		195	194	200
Boron	mg/L		*	*	*
Calcium	mg/L		*	67	*
Carbonate (as $CaCO_3$)	mg/L		0	0.0	0.0
Chemical Oxygen Demand	mg/L	**30**	6	11	5
Chloride	mg/L		83	82	81
Electrical Conductivity	umhos/cm		786	786	797
Hydroxide (as $CaCO_3$)	mg/L		0.0	0.0	0.0
Magnesium	mg/L		*	*	*
Nitrate-Nitrogen	mg/L		8	8.1	7.7
Nitrite-Nitrogen	mg/L		0.14	0.23	0.29
Organic Nitrogen	mg/L		0	0	0

3 *Riverside North Aquifer and Storage Recovery Project Hydrology and Water Quality Technical Appendix,* prepared by RBF Consulting in February 2015.

4 http://www.swrcb.ca.gov/santaana/water_issues/programs/tmdl/docs/303d/2010_303d.pdf.

Table 3.5-1, continued

Constituent	Units	Basin Plan Objective SAR Reach 4	Monitoring Locations		
			SAR-MISSION-01	SAR-RIVERSIDE AVE-01	WR-RIX-01
pH	units		8.2	8	7.6
Potassium	mg/L		*	*	*
Sodium	mg/L		*	*	*
Sulfate	mg/L		78	76	76
Total Alkalinity (as $CaCO_3$)	mg/L		195	194	200
Total Dissolved Solids	mg/L	**550**	500	508	460
Total Hardness (as $CaCO_3$)	mg/L		*	*	*
Total Inorganic Nitrogen	mg/L	**10**	8.2	8.3	8
Total Kjeldahl Nitrogen	mg/L		0	0	0
Total Nitrogen	mg/L		8.2	8.3	8
Total Organic Carbon	mg/L		2.7	2.5	1.9
Turbidity	NTU		7.8	1.5	0

Note: * Entered where there was no data collected for the constituent.

Table 3.5-2 Average 2012 Water Quality Data for Santa Ana River Reach 3

Constituent	Units	Basin Plan Objectives Santa Ana River Reach 3	Monitoring Locations				
			SAR River Road	SAR Hamner	SAR Etiwanda	SAR Van Buren	SAR MWD
Ammonia-Nitrogen	mg/L		0.03	0.03	0.07	0.00	0.00
Bicarbonate (as CaCO3)	mg/L		215	202	200	213	231
Boron	mg/L	**0.75**	*	*	*	*	0.23
Calcium	mg/L		85	79	77	84	95
Carbonate (as CaCO3)	mg/L		5.7	5	4.0	4.8	4.3
Chemical Oxygen Demand	mg/L	**30**	13	9	8.0	5.0	6.0
Chloride	mg/L	**140**	122	112	106	90	104
Electrical Conductivity	umhos/cm		1,036	967	945	926	984
Hydroxide (as CaCO3)	mg/L		0	0	0	0	0
Magnesium	mg/L		18	17	16	18	21
Nitrate-Nitrogen	mg/L		7.1	6.9	6.8	7.4	8.9
Nitrite-Nitrogen	mg/L		0	0.00	0.00	0.00	0.00

Table 3.5-2, continued

Constituent	Units	Basin Plan Objectives Santa Ana River Reach 3	Monitoring Locations				
			SAR River Road	SAR Hamner	SAR Etiwanda	SAR Van Buren	SAR MWD
Organic Nitrogen	mg/L		0.57	0.71	0.86	0.5	0.44
pH	units		8.4	8.3	8.2	8.3	8.2
Potassium	mg/L		15	15	15	11	10.1
Sodium	mg/L	**110**	103	99	96	84	93
Sulfate	mg/L	**150**	96	94	91	89	101
Total Alkalinity (as CaCO3)	mg/L		217	203	199	213	231
Total Dissolved Solids	mg/L	**700**	650	617	597	584	623
Total Hardness (as CaCO3)	mg/L	**350**	288	264	259	282	325
Total Inorganic Nitrogen	mg/L	**10**	7.1	6.9	6.9	7.4	8.9
Total Kjeldahl Nitrogen	mg/L		0.60	0.75	0.93	0.51	0.44
Total Nitrogen	mg/L		7.01	7.4	7.4	7.5	9.1
Total Organic Carbon	mg/L		3.5	4	4.8	2.8	2.6
Turbidity	NTU		18.0	8.2	11	10	9.6

Note: * Entered where there was no data collected for the constituent

Groundwater Quality

The project site is located within the southern portion of the Colton Management Zone of the Rialto-Colton groundwater basin and the northern portion of the Riverside A Management Zone of the Riverside North groundwater sub basin. Groundwater at the project location can be found in unconsolidated alluvial deposits primarily consisting of gravel, sand, silt, and clay. Groundwater levels at the project area can vary from historical highs of 915 feet above mean sea level (amsl) or 15 feet below ground surface (bgs) to historical lows of 800 feet amsl, or 130 feet bgs. During the last two water years, groundwater levels at the project location have varied seasonally by 30 to 40 feet.

Currently, groundwater underlying the project site has the following beneficial uses:

- Municipal and Domestic Supply (MUN) waters are used for community, military, or individual water supply systems including, but not limited to, drinking water supply.
- Agricultural Supply (AGR) waters are used for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
- Industrial Supply (IND) waters are used for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.

- Process Supply (PROC) waters are used for industrial activities that depend primarily on water quality (i.e., waters used for manufacturing, food processing, etc.).

Water quality data from Meeks Well, Mill Well, City of Riverside Flume Wells 2, 3, 4, and 6 were obtained from the California Department of Public Health's database (CDPH) for periods ranging from 1964 to 2003, as well as from the City of Riverside from 2003 to 2013. In general, the groundwater type is calcium bicarbonate with TDS concentrations at the project location ranging from approximately 170 to 450 mg/L over the last nine years, with an average concentration of 267 mg/L. Nitrate as nitrogen ranges from 0.5 to 6.9 mg/L. In 2006 and 2008, chloroform was detected in Flume wells 2, 3, 4, and 6. However, Total Trihalomethanes (TTHML) was not above Maximum Contaminant Level (MCL). Since 2008, chloroform has not been detected at any of the Flume wells. Additional VOCs have not been detected in samples from the Flume wells since 1995. Water quality sampling since 2006 for Flume Wells 1, 2, 3, 4, and 6 indicates that groundwater does not exceed MCLs or secondary MCLs for any of constituents tested with the exception of manganese, iron, and arsenic.

Manganese concentrations have occurred greatest and most frequently in Flume Well 6, ranging from the secondary MCL of 0.05 mg/L to 0.25 mg/L. Manganese has also been detected greater than the secondary MCL in Flume Wells 2 and 3. However, all concentrations have been below the Department of Public Health notification level of 0.5 mg/L. Since 2010, manganese has not been detected above the secondary MCL. Iron has been detected in Flume Well 4 occurring greater than the secondary MCL of 0.3 mg/L with a maximum concentration of 0.95 in February 2006. Iron was last detected in Flume Well 4 in September of 2009 and since, has occurred to be less than the detection limit. In March of 2006, arsenic was detected above the MCL of 0.010 mg/L in Flume Well 6 at a concentration of 0.011 mg/L. Subsequent sampling for arsenic at Flume Well 6 has resulted in concentrations less than the MCL. The most recent sample results for arsenic occurred in September of 2012 with a concentration of 0.0079 mg/L.

As part of the 2004 Basin Plan Amendment, every three years SAWPA determines the TDS and nitrate as nitrogen (N) for each subbasin within the Santa Ana Watershed. In August of 2014, SAWPA released the Recomputation of Ambient Water Quality in the Santa Ana Watershed for the Period 1993 to 2012. The ambient TDS concentration for the Colton Subbasin was found to be 440 mg/L and ambient nitrate as nitrogen was 2.7 mg/L. The Colton Subbasin TDS objective is 410 mg/L and the nitrate as nitrogen objective is 2.7 mg/L. The ambient TDS concentration from the Riverside Subbasin A was determined to be 420 mg/L and nitrate as nitrogen was 5.4 mg/L. The TDS objective for the Riverside Subbasin A is 560 mg/L and the objective for nitrate as nitrogen is 6.2 mg/L.

Nonpoint Source Pollutants

A net effect of urbanization can be to increase pollutant export. However, an important consideration in evaluating storm water quality from the project is to assess if it impairs the beneficial use to the receiving waters. Nonpoint source pollutants have been characterized by the following major categories in order to assist in determining the pertinent data and its use. Receiving waters can assimilate a limited quantity of various constituent elements. However, there are thresholds beyond which the measured amount becomes a pollutant and results in an undesirable impact. Background of these standard water quality categories provides an understanding of typical urbanization impacts.

Sediment – Sediment is made up of tiny soil particles that are washed or blown into surface waters. It is the major pollutant by volume in surface water. Suspended soil particles can cause the water to look cloudy or

turbid. The fine sediment particles also act as a vehicle to transport other pollutants including nutrients, trace metals, and hydrocarbons.

Nutrients – Nutrients are a major concern for surface water quality. Phosphorous and nitrogen are of special concern because they can cause algal blooms and excessive vegetative growth. Of the two, phosphorus is usually the limiting nutrient that controls the growth of algae in lakes. The orthophosphorous form of phosphorus is readily available for plant growth. The ammonium form of nitrogen can also have severe effects on surface water quality. The ammonium is converted to nitrate and nitrite forms of nitrogen in a process called nitrification. This process consumes large amounts of oxygen, which can impair the dissolved oxygen levels in water. The nitrate form of nitrogen is very soluble and is found naturally at low levels in water. When nitrogen fertilizer is applied to lawns or other areas in excess of plant needs, nitrates can leach below the root zone, eventually reaching ground water. Orthophosphate from auto emissions also contributes phosphorus in areas with heavy automobile traffic. As a general rule of thumb, nutrient export is greatest from development sites with the most impervious areas. Other problems resulting from excess nutrients are 1) surface algal scums, 2) water discolorations, 3) odors, 4) toxic releases, and 5) overgrowth of plants. Common measures for nutrients are total nitrogen, organic nitrogen, total Kjeldahl nitrogen (TKN), nitrate, ammonia, total phosphate, and total organic carbon (TOC).

Trace Metals – Trace metals are primarily a concern because of their toxic effects on aquatic life and their potential to contaminate drinking water supplies. The most common trace metals found in urban runoff are lead, zinc, and copper. A large fraction of the trace metals in urban runoff are attached to sediment and this effectively reduces the level which is immediately available for biological uptake and subsequent bioaccumulation. Metals associated with the sediment settle out rapidly and accumulate in the soils. Also, urban runoff events typically occur over a shorter duration, which reduces the amount of exposure, which could be toxic to the aquatic environment. The toxicity of trace metals in runoff varies with the hardness of the receiving water. As total hardness of the water increases, the threshold concentration levels for adverse effects increases.

Oxygen-Demanding Substances – Aquatic life is dependent on the dissolved oxygen (DO) in the water and when organic matter is consumed by microorganisms then DO is consumed in the process. A rainfall event can deposit large quantities of oxygen demanding substance in lakes and streams. The biochemical oxygen demand of typical urban runoff is on the same order of magnitude as the effluent from an effective secondary wastewater treatment plant. A problem from low DO results when the rate of oxygen-demanding material exceeds the rate of replenishment. Oxygen demand is estimated by direct measure of DO and indirect measures such as biochemical oxygen demand (BOD), chemical oxygen demand (COD), oils and greases, and total organic carbon (TOC).

Bacteria – Bacteria levels in undiluted urban runoff exceed public health standards for water contact recreation almost without exception. Studies have found that total coliform counts exceeded EPA water quality criteria at almost every site and almost every time it rained. The coliform bacteria that are detected may not be a health risk themselves, but are often associated with human pathogens.

Oil and Grease – Oil and grease contain a wide variety of hydrocarbons some of which could be toxic to aquatic life in low concentrations. These materials initially float on water and create the familiar rainbow-colored film. Hydrocarbons have a strong affinity for sediment and quickly become adsorbed into it. The major source of hydrocarbons in urban runoff is through leakage of crankcase oil and other lubricating agents from automobiles. Hydrocarbon levels are highest in the runoff from parking lots, roads, and service stations.

Residential land uses generate less hydrocarbons export, although illegal disposal of waste oil into storm waters can be a local problem.

Other Toxic Chemicals – Priority pollutants are generally related to hazardous wastes or toxic chemicals and can be sometimes detected in storm water. Priority pollutant scans have been conducted in previous studies of urban runoff, which evaluated the presence of over 120 toxic chemicals and compounds. The scans rarely revealed toxins that exceeded the current safety criteria. The urban runoff scans were primarily conducted in suburban areas not expected to have many sources of toxic pollutants (with the possible exception of illegally disposed or applied household hazardous wastes). Measures of priority pollutants in storm water include: 1) phthalate (plasticizer compound), 2) phenols and creosols (wood preservatives), 3) pesticides and herbicides, 4) oils and greases, and 5) metals.

Physical Characteristics of Surface Water Quality

Standard parameters, which can assess the quality of storm water, provide a method of measuring impairment. A background of these typical characteristics assists in understanding water quality requirements. The quantity of a material in the environment and its characteristics determine the degree of availability as a pollutant in surface runoff. In an urban environment, the quantity of certain pollutants in the environment is a function of the intensity of the land use. For instance, a high density of automobile traffic makes a number of potential pollutants (such as lead and hydrocarbons) more available. The availability of a material, such as a fertilizer, is a function of the quantity and the manner in which it is applied. Applying fertilizer in quantities that exceed plant needs leaves the excess nutrients available for loss to surface or ground water.

The physical properties and chemical constituents of water traditionally have served as the primary means for monitoring and evaluating water quality. Evaluating the condition of water through a water quality standard refers to its physical, chemical, or biological characteristics. Water quality parameters for storm water comprise a long list and are classified in many ways. In many cases, the concentration of an urban pollutant, rather than the annual load of that pollutant, is needed to assess a water quality problem. Some of the physical, chemical or biological characteristics that evaluate the quality of the surface runoff are outlined below:

Dissolved Oxygen – Dissolved oxygen in the water has a pronounced effect on the aquatic organisms and the chemical reactions that occur. It is one of the most important biological water quality characteristics in the aquatic environment. The dissolved oxygen concentration of a water body is determined by the solubility of oxygen, which is inversely related to water temperature, pressure, and biological activity. Dissolved oxygen is a transient property that can fluctuate rapidly in time and space. Dissolved oxygen is an indicator of overall water quality at a particular point and time of sampling. The decomposition of organic debris in water is a slow process and the resulting changes in oxygen status respond slowly also. The oxygen demand is an indication of the pollutant load and includes measurements of biochemical oxygen demand or chemical oxygen demand.

Biochemical Oxygen Demand (BOD) – The biochemical oxygen demand (BOD) is an index of the oxygen-demanding properties of the biodegradable material in the water. Samples are taken from the field and incubated in the laboratory at 20° C, after which the residual dissolved oxygen is measured. The BOD value commonly referenced is the standard 5-day values. These values are useful in assessing stream pollution loads and for comparison purposes.

Chemical Oxygen Demand – The chemical oxygen demand (COD) is a measure of the pollutant loading in terms of complete chemical oxidation using strong oxidizing agents. It can be determined quickly because it does

not rely on bacteriological actions as with BOD. COD does not necessarily provide a good index of oxygen demanding properties in natural waters.

Total Dissolved Solids (TDS) – TDS concentration is determined by evaporation of a filtered sample to obtain residue whose weight is divided by the sample volume. The TDS of natural waters varies widely. There are several reasons why TDS is an important indicator of water quality. Dissolved solids affect the ionic bonding strength related to other pollutants such as metals in the water. TDS are also a major determinant of aquatic habitat. TDS affects saturation concentration of dissolved oxygen and influences the ability of a water body to assimilate wastes. Eutrophication rates depend on total dissolved solids.

pH – The pH of water is the negative log, base 10, of the hydrogen ion (H+) activity. A pH of 7 is neutral; a pH greater than 7 indicates alkaline water; a pH less than 7 represents acidic water. In natural water, carbon dioxide reactions are some of the most important in establishing pH. The pH at any one time is an indication of the balance of chemical equilibrium in water and affects the availability of certain chemicals or nutrients in water for uptake by plants. The pH of water directly affects fish and other aquatic life and generally toxic limits are pH values less than 4.8 and greater than 9.2.

Alkalinity – Alkalinity is the opposite of acidity, representing the capacity of water to neutralize acid. Alkalinity is also linked to pH and is caused by the presence of carbonate, bicarbonate, and hydroxide, which are formed when carbon dioxide is dissolved. A high alkalinity is associated with a high pH and excessive solids. Most streams have alkalinities less than 200 mg/L and ranges of alkalinity of 100-200 mg/L seem to support well-diversified aquatic life.

Specific Conductance – The specific conductivity of water, or its ability to conduct an electric current, is related to the total dissolved ionic solids. Long term monitoring of project waters can develop a relationship between specific conductivity and TDS. Its measurement is quick and inexpensive and can be used to approximate TDS. Specific conductivities in excess of 2,000 µohms/cm indicate a TDS level too high for most freshwater fish.

Turbidity – The clarity of water is an important indicator of water quality that relates to the ability of photosynthetic light to penetrate. Turbidity is an indicator of the property of water that causes light to become scattered or absorbed. Suspended clays and other organic particles cause turbidity. It can be used as an indicator of certain water quality constituents such as predicting the sediment concentrations.

Nitrogen (N) – Sources of nitrogen in storm water are from the additions of organic matter to water bodies or chemical additions. Ammonia and nitrate are important nutrients for the growth of algae and other plants. Nitrogen occurs in many forms. Organic Nitrogen breaks down into ammonia, which eventually becomes oxidized to nitrate-nitrogen, a form available for plants. High concentrations of nitrate-nitrogen (N/N) in water can stimulate growth of algae and other aquatic plants, but if phosphorus (P) is present, only about 0.30 mg/l of nitrate-nitrogen is needed for algal blooms. Some fish life can be affected when nitrate-nitrogen exceeds 4.2 mg/l. There are a number of ways to measure the various forms of aquatic nitrogen. Typical measurements of nitrogen include Kjeldahl nitrogen (organic nitrogen plus ammonia); ammonia; nitrite plus nitrate; nitrite; and nitrogen in plants. The principal water quality criteria for nitrogen focus on nitrate and ammonia.

Phosphorus (P) – Phosphorus is an important component of organic matter. In many water bodies, phosphorus is the limiting nutrient that prevents additional biological activity from occurring. The origin of this constituent in urban storm water discharge is generally from fertilizers and other industrial products. Orthophosphate is

soluble and is considered to be the only biologically available form of phosphorus. Since phosphorus strongly associates with solid particles and is a significant part of organic material, sediments influence concentration in water and are an important component of the phosphorus cycle in streams. The primary methods of measurement include detecting orthophosphate and total phosphorus.

Flood Hazards and Flood Control

The City of Colton is a participant in the National Flood Insurance Program administered by FEMA. As a participant in the program, the City has adopted regulations for development within the floodplain. The floodplains are shown on flood insurance rate maps (FIRMs). The Santa Ana River in the study area is shown on map numbers 06701C8687H and 06071C8691H dated August 28, 2008. Much of the study area lies in Zone AE. Zone AE are areas with a one-percent annual chance of flooding where the base flood elevation (BFE) are known. The BFE for the study area ranges from 924 National Geodetic Vertical Datum (NGVD) at the southern end of the City of Colton property to 948 NGVD at the upstream end of the in-stream impoundment. Portions of the project area also contain a floodway.

3.5.2 Regulatory Framework

Federal

Federal Emergency Management Agency (FEMA)

The Federal Emergency Management Agency (FEMA) - a former independent agency that became part of the new Department of Homeland Security in March 2003 - is tasked with responding to, planning for, recovering from and mitigating against disasters. Formed in 1979 to merge many of the separate disaster-related responsibilities of the federal government into one agency, FEMA is responsible for coordinating the federal response to floods, earthquakes, hurricanes, and other natural or man-made disasters and providing disaster assistance to States, communities and individuals. The Federal Insurance and Mitigation Administration (FIMA) within FEMA is responsible for administering the National Flood Insurance Program (NFIP) and administering programs that provide assistance for mitigating future damages from natural hazards.

Established in 1968 with the passage of the National Flood Insurance Act, the NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the federal government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the federal government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods.

Clean Water Act

The CWA was enacted with the primary purpose of restoring and maintaining the chemical, physical, and biological integrity of the Nation's waters. The EPA has delegated responsibility for implementation of portions of the CWA to the State Water Resources Control Board (SWRCB) and the RWQCB for water

quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) Program.

Clean Water Act Section 303(d) – Total Maximum Daily Loads

When designated beneficial uses of a particular receiving water body are being compromised by water quality, Section 303(d) of the Clean Water Act requires identifying and listing that water body as "impaired." Once a water body has been deemed impaired, a TMDL must be developed for the impairing pollutant(s). A TMDL is an estimate of the total load of pollutants from point, non-point, and natural sources that a water body may receive without exceeding applicable water quality standards (with a "factor of safety" included). Once established, the TMDL allocates the loads among current and future pollutant sources to the water body.

California Toxics Rule

The California Toxics Rule (CTR) is a federal regulation issued by the Environmental Protection Agency providing water quality criteria for potentially toxic constituents in receiving waters with human health or aquatic life designated uses in the State of California. CTR criteria are applicable to the receiving water body and therefore must be calculated based upon the probable hardness values of the receiving waters for evaluation of acute (and chronic) toxicity criteria. At higher hardness values (increased solids) for the receiving water, copper, lead, and zinc are more likely to be complexed (bound) with these solids components in the water column (more solids results in greater potential for metals to be bound with receiving water particles). This in turn reduces the bioavailability and resulting potential toxicity of these metals.

Due to the intermittent nature of stormwater runoff, especially in Southern California, the acute criteria are considered to be more applicable to stormwater conditions than chronic criteria and therefore are used in assessing impacts. Acute criteria represent the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time without deleterious effects; chronic criteria equal the highest concentration to which aquatic life can be exposed for an extended period of time (four days) without deleterious effects.

State

Clean Water Act

Responsibility for the protection of water quality in California rests with the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs). The SWRCB establishes Statewide policies and regulations for the implementation of water quality control programs mandated by federal and State water quality statutes and regulations. The RWQCBs develop and implement Water Quality Control Plans (Basin Plans) that consider regional beneficial uses, water quality characteristics, and water quality problems. The City of Colton is located within the jurisdiction of the Santa Ana RWQCB. The Santa Ana RWQCB implements a number of federal and State laws, the most important of which are the State Porter-Cologne Water Quality Control Act and the federal CWA.

Porter-Cologne Water Quality Control Act

The Porter–Cologne Water Quality Control Act §13000 directs each RWQCB to develop a Basin Plan for all areas within its region. The Basin Plan is the basis for each RWQCB's regulatory programs. The proposed project site is located within the purview of the Santa Ana RWQCB (Region 8), and must comply with

applicable elements of the region's Basin Plan, as well as the Porter-Cologne Water Quality Control Act, and the federal CWA.

National Pollutant Discharge Elimination System (NPDES)

The NPDES permit system was established in the CWA to regulate both point source discharges (a municipal or industrial discharge at a specific location or pipe) and non-point source discharges (diffuse runoff of water from adjacent land uses) to surface waters of the United States. As defined in the federal regulations, non-point sources are generally exempt from federal NPDES permit program requirements, with two exceptions: (1) non-point source discharges caused by general construction activities of over one acre; and (2) stormwater discharges in municipal stormwater systems either as part of a combined system or as a separate system in which runoff is carried through a developed conveyance system to specific discharge locations.

Point Source Discharges - For point source discharges, each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge through the establishment of Waste Discharge Requirements.

Non-point Source Discharges Caused by General Construction and Operational Activities - One of the primary objectives of the regulations for non-point source discharges is the reduction of pollutants in urban stormwater discharge through the use of structural and non-structural Best Management Practices (BMPs). The Environmental Protection Agency (EPA) implemented the NPDES stormwater program in two phases. Phase I addressed large dischargers and construction activities that affect five acres or greater, while Phase II, which was implemented in 1999, addressed smaller dischargers and construction activities that affect one or more acres. Phase I Municipal Separate Storm Sewer Systems (MS4s) are covered by individual permits and Phase II MS4s are covered by a general permit. Regulated MS4s are required to develop and implement a stormwater management program to reduce contamination of stormwater runoff and prohibit illicit discharges. The regulations require that storm water and non-storm water runoff associated with a construction activity, which discharges either directly to surface waters or indirectly through MS4s, must be regulated by an NPDES permit. An MS4 is a conveyance system, or multiple conveyance systems, that transport polluted stormwater runoff, which is often untreated, into local water bodies. The NPDES permit requirements prevent harmful pollutants from being washed or dumped into MS4s.

Construction of the in-channel facilities will occur between April 15th and October 15th of each year. Throughout the 24 months of in-channel construction activity, protections will be provided to ensure the complete flow in the river can pass through the project area. The contractor will be responsible to provide bypass facilities. The bypass facilities will be in accordance with typical construction BMPs; and, may include limiting construction activities to only a portion of the channel width (thereby leaving a portion of the channel to convey flow) or temporary berms and mechanical equipment (i.e. pumps, etc.) to convey flow around construction activities and through the project area.

Typical construction BMPs include, but are not necessarily limited to the following:

- Scheduling or limiting activities to certain times of year;
- Prohibiting certain construction practices;
- Implementing equipment maintenance schedules and procedures; implementing a monitoring program;

- Other management practices to prevent or reduce pollution, such as using temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils;
- Storing materials and equipment to ensure that spills or leaks do not enter the storm drain system or surface waters;
- Developing and implementing a spill prevention and cleanup plan;
- Installing traps, filters, or other devices at drop inlets to prevent contaminants from entering storm drains; and
- Using barriers, such as straw bales or plastic, to minimize the amount of uncontrolled runoff that could enter drains or surface water.

Typical operation BMPs include, but are not necessarily limited to the following:

- Controlling roadway and parking lot contaminants by installing oil and grease separators at storm drain inlets;
- Cleaning parking lots on a regular basis;
- Incorporating peak-flow reduction and infiltration features (such as grass swales, infiltration trenches, and grass filter strips) into landscaping; and,
- Implementing educational programs.

The RWQCB administers the NPDES permit program regulating storm water from construction activities for projects greater than one acre in size. The main compliance requirement of the NPDES permits is the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The purpose of a SWPPP is to identify potential on-site pollutants, identify and implement appropriate storm water pollution prevention measures to reduce or eliminate discharge of pollutants to surface water from storm water and non-storm water discharges.

Stormwater BMPs to be implemented during construction and grading, as well as post-construction BMPs, will be outlined in the SWPPP prepared for the proposed project. The project proponent will be required to obtain coverage under the General NPDES Permit for construction activities prior to site disturbance, and will need to meet San Bernardino County's requirements for new development specified in its municipal permit from the RWQCB. Examples of construction BMPs include: detention basins for capture and containment of sediments, use of silt fencing, sandbags, gravel bags, or straw bales to control runoff and identification of emergency procedures in case of hazardous materials spills.

Clean Water Act Section 401 – Water Quality Certification

In addition to the issuance of NPDES permits or waste discharge requirements, the Regional Water Quality Control Board (RWQCB) acts to protect the quality of surface waters through water quality certification as specified in Section 401 of the Clean Water Act (33 USC 466 et seq.). Section 401 of the Clean Water Act requires that any person applying for a federal permit or license which may result in a discharge of pollutants into waters of the United States must obtain a State water quality certification that the activity complies with all applicable water quality standards, limitations, and restrictions. Subject to certain limitations, license or permit may be issued by a federal agency until certification required by Section 401 has been granted. Further, no license or permit may be issued if certification has been denied. Clean Water Act Section 404 permits and authorizations are subject to Section 401 certification by the RWQCBs.

The RWQCB 401 permit, USACE 404 permit, and CDFW 1602 Streambed Alteration Agreement permit requirements, mitigation, and discussion are included in Section 3.4, *Biological Resources*.

Local

Comprehensive Storm Drain Plans

The County of San Bernardino, Department of Public Works, Flood Control Planning Division prepared Comprehensive Storm Drain Plans (CSDP) 3 and 7.[5] These Drain Plans include all of the Colton Planning Area. The plans include a description of each drainage area and sub-drainage area in the community, existing storm drains and sizes, and proposed storm drains and sizes. A 25-year design runoff frequency was recommended for most improvements in the system.

Upper Santa Ana River Watershed Integrated Regional Water Management Plan (IRWMP)

The Upper Santa Ana Water Resources Association (Association) members (East Valley Water District, Riverside Highland Water Company, City of San Bernardino, West Valley Water District, Crafton Water Company, Bear Valley Mutual Water Company, San Bernardino Valley Water Conservation District, San Bernardino Valley Municipal Water District, Yucaipa Valley Water District, City of Redlands, Fontana Union Water Company, Meeks and Daley Water Company, City of Riverside, and City of Colton) prepared an Integrated Regional Water Management Plan (IRWM Plan) to address water management issues for the communities of the Upper Santa Ana River watershed. The IRWMP, updated January 2015, establishes water management objectives and underlying strategies to meet those objectives. Relevant objectives to the proposed project include:

- Improve surface water management:
- Optimize use of local surface water; and,
- Store local and imported water when it is available for use during drought periods.
- Improve groundwater management:
- Avoid impacts to and from the various groundwater contaminant plumes; and,
- Optimize recharge of stormwater.

City of Riverside General Plan

Public Facilities and Infrastructure Element

Objective PF-1	**Provide Superior Water Service to customers**
Policy PF-1.2	Support the efforts of the Riverside Public Utilities Department, Eastern Municipal Water District and Western Municipal Water District to work together for coordination of water services.

5 http://www.sbcounty.gov/dpw/floodcontrol/mpd.asp

Policy PF-1.4 Ensure the provision of water services consistent with the growth planned for the General Plan area, including the Sphere of Influence, working with other providers.

Open Space and Conservation Element

Objective OS-10 Preserve the quantity and quality of all water resources throughout Riverside

Policy OS-10.1 Support the development and promotion of water conservation programs

Policy OS-10.2 Coordinate plans, regulations and programs with those of other public and private entities which affect the consumption and quality of water resources within Riverside.

3.5.3 Significance Threshold Criteria

The following thresholds of significance are based on Appendix G of the State *CEQA Guidelines*. Significant impacts to hydrology and water quality could result from implementation of the proposed project if they would:

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

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);

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

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

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

f) Otherwise substantially degrade water quality;

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

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

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

j) Inundation by seiche, tsunami, or mudflow.

3.5.4 Impacts and Mitigation Measures

Drainage Patterns

Impact 3.5-1: Implementation of the Riverside Groundwater Aquifer Storage and Recovery Project may substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. **Level of Significance: Less than Significant Impact with Mitigation.**

Project Area (Groundwater Recharge Basins, Diversion to the Riverside Canal, Potential Levee Improvements, SWP Pipeline, Inflatable Dam, and Other Related Features)

The construction of the in-stream basin which includes the inflatable dam and associated foundation as well as improvements to the USACE levees (as deemed necessary) would alter downstream hydrology and drainage patterns. The inflatable dam is expected to be in operation and capturing flows from the Santa Ana River when flows are at or below 1,500 cfs. The recharge basins are limited by their ability to recharge the in-stream and diverted off-stream water, and once the basins are full, recharge will be limited to the recharge capacity (approximately 100 cfs for both the in-stream and off-stream recharge basins, assuming a uniform infiltration rate of 3 feet per day in-stream and 5 feet per day off-stream). Diversions to the Riverside Canal will also be limited once its capacity of 100 cfs is reached, resulting in a combined diversion capacity of 200 cfs. During storm events, the Riverside Canal collects runoff for flood control conveyance and would not be used for diversion until the conveyed runoff water is drained. Refer to Appendices F and H for detailed analysis.

Based on hydrology modeling performed, it is estimated that on average, flows were below 1,500 cfs (and above 60 cfs for flows to reach RM 53) approximately 1,682 days from 1960 to 2012, or approximately 8% of the time (refer also to Appendix E of Appendix H, *Geohydrologic Evaluation).* Since the rubber dam will be lowered for flows above 1,500 cfs and flows below 60 cfs typically do not reach downstream to RM 53, only an estimated 8% of storm flows would be affected by the project. This relatively small effect is further reduced by the fact that the rubber dam and Riverside Canal have a combined diversion capacity of only 200 cfs, so once the recharge areas (behind the rubber dam and off-stream) are full, flows over 200 cfs would continue downstream.

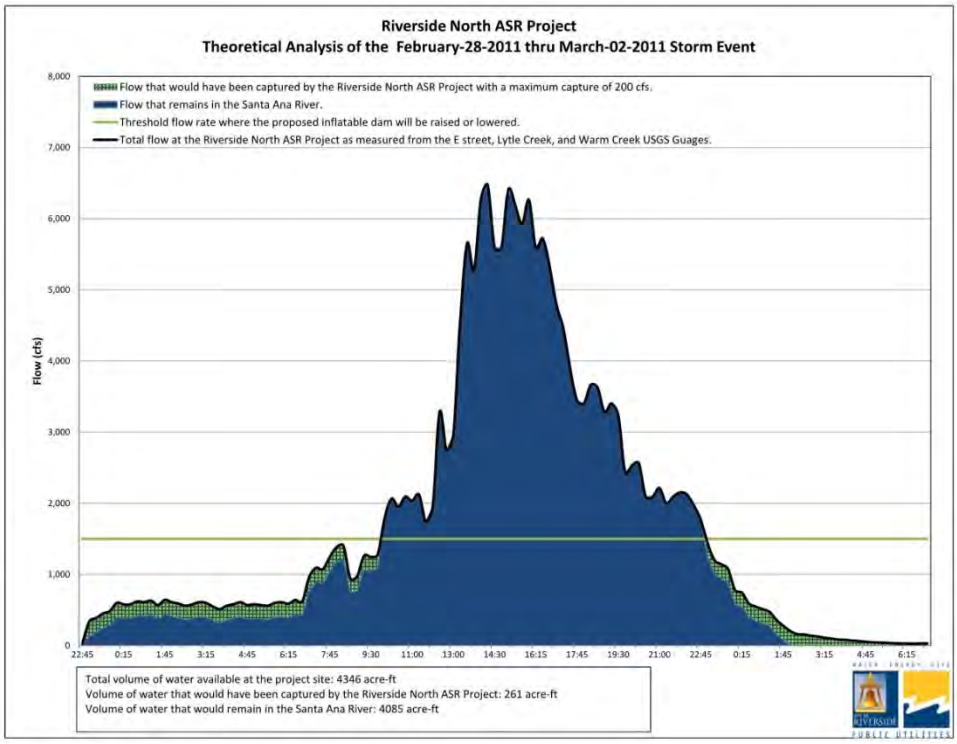
The ability to capture and infiltrate surface flows will be a function of the surface area of the potential recharge facilities and the rate at which surface and subsurface sediments will allow infiltration. The largest surface flows will likely occur in the months between December and May and it is expected that portions of available flow will bypass the current planned recharge locations when daily flows exceed the infiltration capacity of the proposed basins and conveyance capacity within the Riverside Canal pipeline. The limitation of potential infiltration volumes is based on available surface area for groundwater infiltration (size of recharge basin) and the actual infiltration rate of surface sediments. The current proposed project locations for groundwater recharge will capture only a portion of surface flows available at the project area, as discussed further below.

The project will not substantially alter the existing drainage pattern of the site or area. Based on the substantial flood control capacity of the SAR, the maximum diversion of 200 cfs will not affect flood operations either onsite or offsite. In fact, the project provides a slight flood control benefit by attenuating peak storm flows that are less than 1500 cfs by up to 200 cfs. The existing drainage pattern will not change (only the relative distribution), and the course of the SAR will not be altered with the proposed project. The rate or amount of surface runoff will moderately decrease as a result of increased in-ground percolation and increased supply to the Riverside Canal. The project will result in tightly-controlled pooling in and adjacent to the riverbed, but

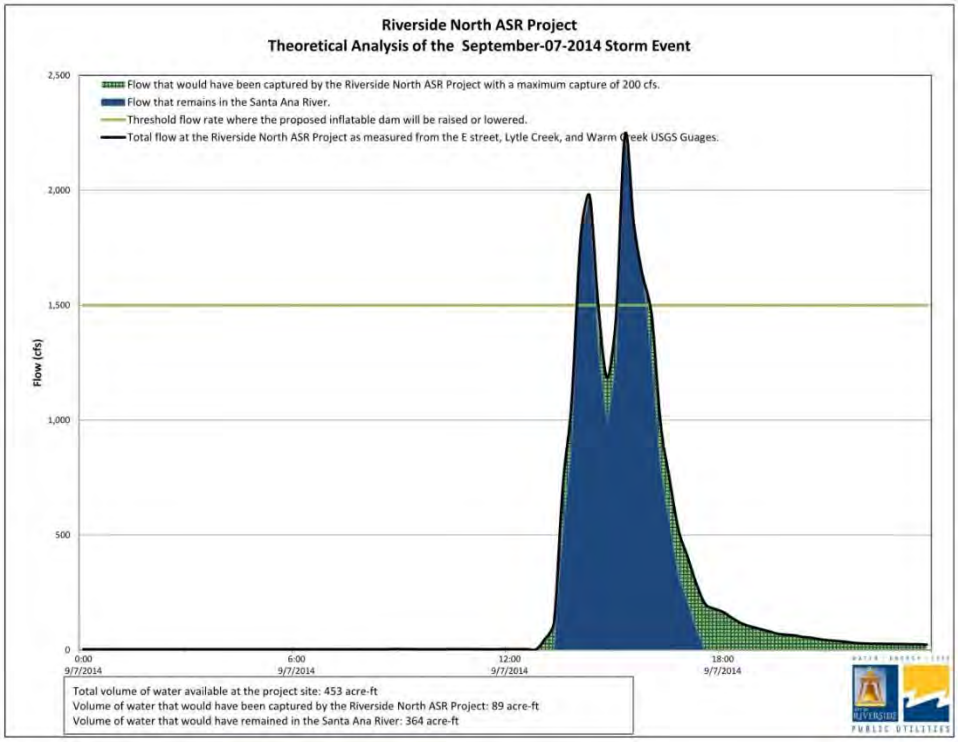
that pooling is not destructive "flooding," and mimics the natural pooling and percolation in riverbeds of that type.

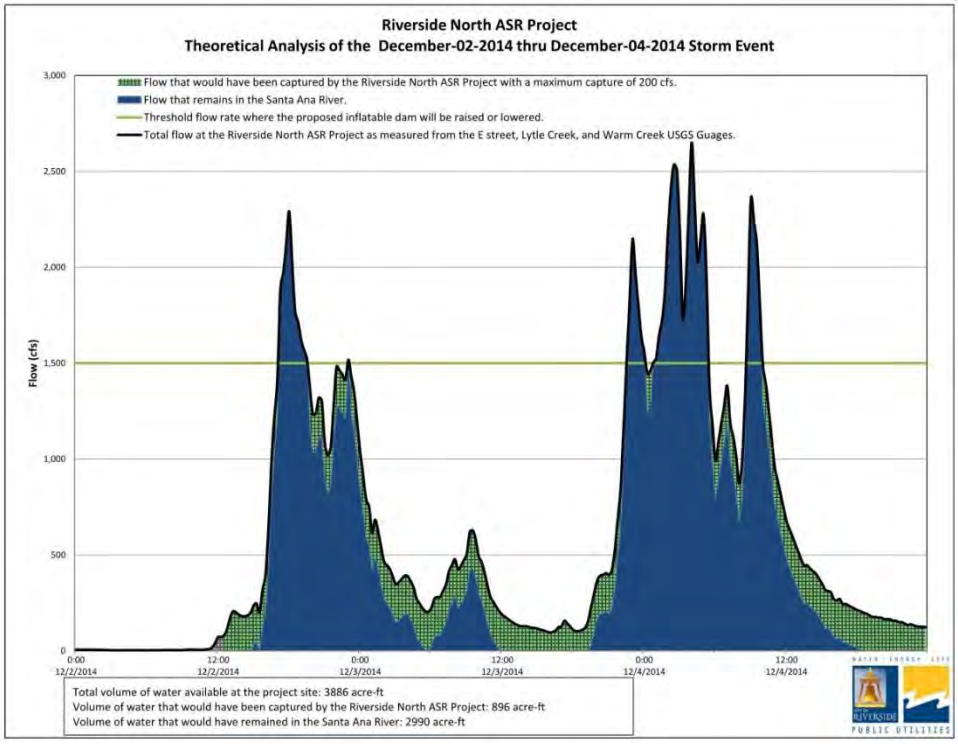
Based on data from 1999-2010 (post-Seven Oaks Dam), the average annual Santa Ana River discharge at the project location under existing conditions is 226,924 ac-ft, 41,488 ac-ft, and 15,614 ac-ft for wet, average, and dry years, respectively[6]. Factoring in the limitations of the diversion structure and recharge basins, the total capture possible by the project is 25,700 ac-ft in a wet year, 14,000 ac-ft in an average year, and 6,200 ac-ft in a dry year (Geoscience 2014).

The charts below illustrate theoretical modeling of how the rubber dam would be operated and the amount of water that would be captured during storm events of various sizes and patterns. The green horizontal line indicates when the dam would be inflated or deflated and when excess storm flow would overtop the rubber dam. These parameters are based on the limitations of the infrastructure. Operations of the rubber dam will effectively "skim" water off the beginning and ends of a storm event. For example, a theoretical storm lasting approximately 30 hours in late February with a peak of approximately 6,000 cfs would have a total discharge volume of 4,356 ac-ft. During this storm the project could only capture approximately 261 acre feet, or 6% of the total storm flow. Approximately 4,085 ac-ft of water would continue downstream past the project area. A smaller theoretical storm in September could have a peak flow near 2,500 cfs and total volume of 453 ac-ft, of which approximately 89 ac-ft could be captured by the project, or approximately 20% of the storm flow. In either scenario, due to the limiting factors of the infrastructure (less than 1,500 cfs flow and 200 cfs capture) and the flashy storm systems that occur in this watershed, a large volume of water will continue to flow downstream during most storm events.



6 Between 1999 and 2010 only one wet year (2004/2005) occurred. Two average years and eight dry years are included in this data set. The data set begins after the construction of Seven Oaks Dam.





Based on a dataset which includes wet, dry, and average years from 1960 to 2012, on average, only 33 days per year had flows greater than 60 cfs within the project area (Geoscience 2014). Therefore, the project could have had impacts to conditions downstream at RM 53 only 9% of the year. The project would have had no effect on SASU downstream 91% of the year. Based on the same data, the average number of days per year

that surface flow within the project area was between 60 and 260 cfs (the range of flow with greatest potential for impact to SASU) was 22 days or 6% of the year.

SWP Pipeline Diversion and Drainage "A" Hydrology

The SWP pipeline alignment will require crossing the local drainage on the east side of the USACE levee. The SWP pipeline would cross the Santa Ana River upstream of the proposed inflatable dam in an area that will be disturbed as part of the foundation excavation for the dam and/or the structural protection (rip rap). The SWP pipeline will be installed underground and is not expected to create a specific impact to the drainage. Therefore, improvements relative to the SWP pipeline would not result in significant impacts on hydrology or drainage patterns. Impacts will be less than significant, and no mitigation measures are required.

Construction of the diversion structure and associated piping will result in a minimal change in the percent impervious because the majority of the infrastructure would be underground. The ephemeral drainage would be rerouted within RPU's property (APN 016338107) to continue to function around the recharge basins. An earthen swale along (and within) the northwest and west property boundaries of RPU's property (APN 016338107) would be constructed. The earthen swale would connect the existing ephemeral drainage on Colton's property (APN 016338101) to the existing ephemeral drainage on Colton's nearby property (APN 016338102). The new swale would protect the hydraulic integrity of the ephemeral drainage and the drainage would continue to maintain sensitive habitat.

The project would implement standard design and construction measures and appropriate water quality measures to ensure proper surface drainage and to minimize potential effects on water quality. For these reasons, such improvements would not substantially alter the existing drainage pattern of the site or area or substantially increase the rate or amount of surface runoff in a manner that would result in flooding. Therefore, impacts to the ephemeral drainage hydrology are considered less than significant with regard to the diversion structure.

Downstream (Project Site to Prado Dam)

The project will result in periodic reductions in surface flow in the SAR downstream of the project equal to or less than 260 cfs once the area behind the inflatable dam is full. Accounting for the project and natural infiltration between the project and RM 53, approximately 24,298 ac-ft, 10,923 ac-ft, and 1,483 ac-ft in wet, average, and dry years, respectively, would reach RM 53 and the vicinity of Rialto Drain (Geoscience 2014). These values do not take into account additional surface flows from nearby Reche Canyon, Cooley Drain, Cooley Drive open channel and the South Rancho drain which would contribute to the surface flow at RM 53 during storm events. Most natural flows reaching RM 53 would also occur during peak flow conditions when surface flow rates exceed the capacity of the rubber dam. (Refer to Appendix F: *Hydrology and Water Quality Technical Appendix*).

The Waste Load Allocation Model (WLAM) developed by Wildermuth Environmental, Inc. was used in the Geohydrologic Evaluation to determine downstream, reduced SAR flows and water quality (TIN & TDS) due to the proposed project capturing SAR flows behind the inflatable dam. The 2010 and 2020 Publicly Owned Treatment Works (POTW) projected discharges to the SAR were used in the WLAM simulations to determine daily SAR flow rates at Riverside Narrows and Prado Dam with the project having an instantaneous capture rate of 200 cfs (instantaneous recharge plus diversion). The average daily flow at Riverside Narrows was reduced by 6.9 cfs and the average daily flow at Prado Dam was reduced by 6.5 cfs.

The project has been designed to ensure that it does not adversely affect the hydraulics, stream stability, or levee stability downstream and that the project results in less than significant impacts with an approved design by the regulatory agencies. As described further below, based on preliminary design plans, initial hydrologic modeling indicates that the project will not significantly impact areas downstream, from both a hydrologic and water quality perspective (Refer to Appendix F: *Hydrology and Water Quality Technical Appendix*).

HWQ-1: Prior to the issuance of grading and improvement plans:

As part of the final design process, the City shall refine current hydrology and hydrogeologic modeling to ensure that no adverse effects on hydraulics, stream stability, or levee stability downstream occur as a result of project implementation. Project design shall be subject to review and approval of the affected regulatory agencies (e.g. U.S. Army Corps of Engineers and San Bernardino County Flood Control District) and shall demonstrate compliance with applicable requirements (i.e. design features and/or analysis) identified by such agencies.

Flood Hazards

Impact 3.5-2: Implementation of the Riverside Groundwater Aquifer Storage and Recovery Project may place within a 100-year flood hazard area structures that would impede or redirect flows; or expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or otherwise substantially degrade water quality. **Level of Significance: Less Than Significant Impact with Mitigation.**

Project Area (Groundwater Recharge Basins, Diversion to the Riverside Canal, Levee Improvements, SWP Pipeline, Inflatable Dam, and Other Related Features)

The in-stream basin will impact both the Zone AE floodplain and floodway. The project may require modification to the existing Corps levees that may have the potential to impact both the floodplain and floodway. The proposed operating procedures for the inflatable dam are such that when flows exceed 1,500 cfs within the SAR at the project location, the inflatable dam will be lowered so that high flows can pass by the project location. During large storm events greater than 1,500 cfs the inflatable dam will not be engaged and storm flows will continue down the SAR unimpeded. In addition, the permitting agencies for the project will require that the inflatable dam and potential necessary levee improvements be designed to convey the 100-year storm flows without breeching the SAR levees as a safety precaution. Improvements within floodplains and floodways require permitting per State and federal law. For example the project may be required to obtain a FEMA Conditional Letter of Map Revision (CLOMR) followed with a Letter of Map Revision (LOMR), should final design plans indicate potential changes to the FEMA floodplain or floodway. Therefore, impacts would be less than significant, and no mitigation is required.

The off-stream basins are also located in the Zone AE floodplain for the Santa Ana River and the Zone AE and floodway for the ephemeral drainage originating from the I-10 freeway. Drainage A, an ephemeral drainage that is a tributary to the Santa Ana River, cuts through the location of the proposed off-stream basins, City of Colton property, and private property. Drainage A would be re-routed around the recharge basins. An earthen swale along (and within) the northwest and west property boundaries of RPU's property (APN 016338107) would be constructed. The earthen swale would connect the existing ephemeral drainage on Colton's property (APN 016338101) to the existing ephemeral drainage on Colton's nearby property (APN 016338102). The new swale would protect the hydraulic integrity of the ephemeral drainage and the drainage would continue to maintain sensitive habitat.

Mitigation Measure HWQ-1, existing regulatory/approval programs and standard design practices would ensure that the existing ephemeral drainage does not significantly impact project facilities.

The SWP pipeline alignment is generally located outside of the Santa Ana River floodplain except where it crosses the river upstream of the inflatable dam. Since the pipeline will be constructed below the ground surface, it will not impact the flood plain, and no mitigation is required. The utility crossing is proposed to be located in the Santa Ana River, upstream of the rubber dam. Since the crossing would be constructed below the ground surface, it would not impact the floodplain. Impacts would be less than significant, and no mitigation is required.

As previously described, construction of the diversion structure and associated piping will result in a minimal change in the percentage of impervious surfaces located within the project site because the majority of the infrastructure will be located underground. As a result of the predominantly subterranean design of the project components, the project will not impede or redirect flows in such a way that would expose people or structures to a significant risk of loss, injury, or death involving flooding, levee or dam failure. Continuing, the project construction and operation will not result in the degradation of water quality, both on- and off-site. Therefore, impacts are considered less than significant in this regard, and no mitigation is required. A small uninhabited control building will house the generator and air compressor used to inflate the dam would be constructed on the western bank adjacent to the western abutment of the dam. Although the structure would be located within the 100-year floodplain, due to its limited size and the extent of the floodplain, the structure would not substantially impede or redirect flows within the floodplain or floodway. Impacts are considered less than significant, and no mitigation measures are required.

Potential Water Quality Impacts from Existing Landfills

The project site is adjacent to the Cooley Landfill and is within close proximity to the Guyaux Landfill. The Colton Landfill is approximately 3.5 miles downstream from the project site. Impacts to water quality could occur if flooding causes the release/mobilization of contaminants contained within the landfills (refer to *Exhibit 3.5-1, Existing Landfills)*. These three landfills are existing facilities that have been adjacent to the Santa Ana River for numerous years.

The Cooley Landfill is owned by the County of San Bernardino and was operated by the County Solid Waste Management Department from 1962 until it closed in 1965. There is no information available that details the exact volume of refuse received at the landfill, but an estimate of 3,186,000 cubic yards of refuse deposited at the site is based on the levee/dike system construction plans prepared for levee construction. Refuse received at the landfill included residential wastes, demolition wastes, commercial refuse and non-decompostable inert solids. No septic, chemical, industrial, liquid, or hazardous waste was accepted at the landfill. On October 14, 2008, a cleanup case was opened with the oversight of the Santa Ana RWQCB (Region 8) – Case # 360304037. After groundwater monitoring efforts, it was determined that there was no contamination to water quality from the landfill and the groundwater monitoring was terminated due to no threat to water quality. The case was closed as of October 23, 2014. In addition, project design review by USACE will include evaluation of the levee that separates the in-stream recharge basin from the former landfill area. USACE may, through the 408 permitting process and consultation with applicable agencies, require installation of a grout curtain or other measures to stabilize the levee and/or insulate the recharge basins from the former landfill. Because it was determined that there is no threat to water quality from the Cooley Landfill, impacts to water quality due to flooding which could cause mobilization of contaminants are considered less than significant.

The Guyaux Landfill is located at the south end of Flores Street and Fernando Street in the City of Colton. On March 3, 2009, a cleanup case was opened with the oversight of the Santa Ana RWQCB (Region 8) – No Case # was available on the State Water Resources Control Board GeoTracker website. On October 28, 2014, the cleanup status remained open, but became eligible for closure. The GeoTracker website reports no specified potential contaminants of concern and no specified potential media affected. In March of 1997, the United States Environmental Protection Agency conducted an evaluation of the site under the authority of Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 40 U.S.C. Section 9604 (commonly known as Superfund). After groundwater sampling efforts, it was determined that concentrations of hazardous substances detected in the groundwater wells down gradient of the landfill were not significantly (more than three times) greater than what was found in groundwater wells up-gradient from the landfill. Because of this, the site does not qualify for listing on the federal Superfund [National Priorities] List. However, as indicated in a 1996 Expanded Site Inspection Report[7], the results of soil sampling efforts indicated that hazardous substances including arsenic, cadmium, chromium, lead, manganese, mercury and toluene are present at concentrations significantly above background levels. If the landfill is not secured from public access, and the soil is uncovered, there is a potential of exposing the public to contaminants. The cleanup status is still open, but has been inactive as of November 1, 2014. The City of Colton's General Plan Environmental Impact Report states that disposal of hazardous wastes are regulated under the Resources Conservation and Recovery Act, Hazardous Wastes Control Law, and California Code of Regulation Title 22. Sections 2729 through 2732 of the California Code of Regulations provide requirements for the reporting, inventory, and release response plans for hazardous materials. These requirements establish procedures and minimum standards for hazardous material plans, inventory reporting and submittal requirements, emergency planning/response and training. The San Bernardino County Fire Department Hazardous Materials Division reviews and approves Emergency/Contingency Plans for regulated facilities. The plans outline precautions and procedures necessary to protect facilities from accidental release of hazardous materials. Releases of hazardous materials or wastes are required to be reported to the California Office of Emergency Services. These existing regulations are considered adequate safeguards for preventing, responding to and cleaning up accidental releases of hazardous materials and wastes. Implementation of the project would not conflict with any of these regulations and the project would not result in a significant impact involving these hazards.

Potential Flooding Impacts Due To Dam Failure

Flooding impacts potentially could occur with or without the project due to major storm events or potential dam failure of the Seven Oaks Dam. If a storm event generates flows that exceed 1,500 cfs, the proposed inflatable rubber dam would be lowered to allow these flows to naturally occur as if the inflatable rubber dam was not there. The project proposes an inflatable rubber dam height of 6 feet. The average channel depth would be approximately 20 feet deep. The inflatable rubber dam could potentially hold approximately 75 acre-feet of water behind it and would stand approximately one-third the height of the surrounding levees that protect surrounding areas from flood events in the Santa Ana River. If a catastrophic event should occur that would cause the inflatable rubber dam to fail, all of the water would remain in the river channel as the levees were designed for a 140,000 cfs flood event. Impacts from failure of the inflatable rubber dam would be less than significant.

7 Expanded Site Inspection of the Guyaux Landfill, Site EPA ID Number: CAD 983652033, submitted to Gordon Woodrow EPA Region IX, prepared by Gregory R. Carroll (August 14, 1996): http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T10000006307

RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

Existing Landfills

JN 130506 Dec 2014

RBF CONSULTING A Baker Company

Exhibit 3.5-1

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Downstream (Project Site to Prado Dam)

The project will result in periodic reductions in surface flow in the SAR downstream of the project area. The proposed project will not alter the 100-year floodplain. As stated above, as part of the USACE and SBCFCD permitting processes, the design and operating procedures for the proposed inflatable dam will be subject to agency review and approval. Through this permitting process, potential impacts on stream stability and/or levee stability downstream of the proposed project will be evaluated, and potential impacts reduced to a level of less than significant.

Potential Water Quality Impacts to Downstream Existing Landfills

The Colton Landfill is approximately 3.5 miles downstream from the project site. The Colton Landfill is managed by Republic Services. According to the City of Colton General Plan Update Environmental Impact Report (May 2013), the landfill has a remaining capacity of 17 percent and is estimated to be closed in January 2017. The City of Colton implements various solid waste reduction, recycling, and re-use measures in compliance with AB 939. The City of Colton coordinates its waste management efforts with programs administered by the County of San Bernardino through the County's Countywide Integrated Waste Management Plan. Solid waste must be disposed of in accordance with regulations discussed above, as well as federal and state laws, which reduce impacts related to hazardous materials that may be exposed to people or groundwater to less than significant levels.

The proposed inflatable rubber dam is located approximately 3.5 miles upstream from the Colton Landfill. Should the inflatable rubber dam fail due to a catastrophic event it will not cause any impacts to the Colton Landfill. The inflatable rubber dam could potentially hold approximately 75 acre-feet of water behind it. It is anticipated that because of the distance from the proposed inflatable rubber dam to the Colton Landfill, the water would remain within the river channel and would dissipate significantly before reaching the Colton Landfill area. If a catastrophic event should occur that would cause the inflatable rubber dam to fail, all the water would remain in the river channel as the levees are constructed to contain 140,000 cfs of storm flow. Impacts to the Colton Landfill from the proposed inflatable rubber dam, should it fail, would be less than significant.

HWQ-2: The project shall obtain an encroachment permit for the dam and any necessary levee construction from the San Bernardino County Flood Control District and the U.S. Army Corps of Engineers, which will require demonstration of compliance with applicable flood control standards at the local and federal level. The permitting process will require project review by both agencies to ensure that design and construction of the dam and/or any necessary modification to the existing levees do not result in adverse impacts to the floodplain or floodway with regard to the conveyance of Santa Ana River flows.

Groundwater Supplies

Impact 3.5-3: Implementation of the Riverside Groundwater Aquifer Storage and Recovery Project may substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? **Level of Significance: Less than Significant Impact.**

Project Area – Local Groundwater (Groundwater Recharge Basins, Diversion to the Riverside Canal, Levee Improvements, SWP Pipeline, Inflatable Dam, and Other Related Features)

The project is designed to recharge the groundwater aquifers of the Riverside and Colton groundwater basins, by capturing flow from the Santa Ana River. The project's intended purpose includes improvement of the groundwater quality in the Riverside and Colton groundwater basins, reduced dependence on imported water through increased storage, maximized capture and use of local surface water, and to provide seasonal storage and the creation of additional groundwater recharge basins along the Santa Ana River within the project area.

A groundwater flow model was developed by Geoscience Support Services, Inc. for the groundwater basin underlying the project area and immediate vicinity to assess the impact to the groundwater surface from recharge at the project location and to consider the on-going pumping taking place simultaneously. The model used March 1997 groundwater levels which were approximately 45 feet bgs in the project area which is an average groundwater level for the period of record. Instantaneous discharge from Flume wells 1, 2, 3, 4, 6, and 7, and Colton 30 and 31 were used along with an infiltration rate of 3 feet per day for the in-stream and 5 feet per day for the off-stream basins. Mean wet, average, and dry period synthesized capture volumes for the in-stream basin and diversions to the off-stream basins were analyzed along with a no project scenario.

The no project scenario consisted of analyzing the steady state groundwater conditions based on the use of March 1997 groundwater levels and assuming that these conditions are reflective of current groundwater extractions and recharge occurring within the vicinity of the project area. The no project scenario found that one year of continuous groundwater pumping from project area wells resulted in a cone of depression in the vicinity of the project. Maximum drawdown beneath the center of the in-channel recharge basin was 2.5 feet below the pre-pumping groundwater surface; drawdown reached a maximum of approximately 5.5 feet under the off-stream basin location. During average dry year conditions, a groundwater mound was found not to occur under most of the project area. A groundwater mound was found to occur beneath the project area under average and wet year conditions. The groundwater level for dry year conditions beneath the in-stream basin was approximately 0.5 feet below the static level and 1.5 feet above the no project level. The groundwater level beneath the off-stream basins was 4 feet below the static level and 1.5 feet above the no project level.

For average year conditions, the greatest cumulative volume of recharge occurred at the end of three months (January, February, and March), which corresponds to the wettest months out of a year determined in the Geohydrologic Evaluation. The groundwater level for average year conditions at the in-stream basin was 2 feet above the static level and 4 feet above the no project level. The groundwater level beneath the off-stream basins was 1 foot below the static level and 4.5 feet above the no project level. The groundwater level for wet year conditions at the in-stream basin was 5 feet above the static level and 7 feet above no-project conditions. The groundwater level beneath the off-stream basins was 4 feet above the static level and 9.5 feet above the no project level.

The modeling results from the Geohydrologic Evaluation indicate that the project will provide a beneficial effect for local pumping wells during the months of greatest recharge by reducing the drawdown in groundwater levels in the pumping wells while the wells are in operation. Decreased drawdown will occur with the increase in recharge volumes resulting with the proposed project. Groundwater levels are and will continue to be monitored at the project location and proposed artificial recharge at the project location will be managed to minimize mounding appropriately. Therefore, implementation of the project would not 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. Impacts would be less than significant, and no mitigation measures are required.

The SWP pipeline will be located in a disturbed ground area east of the USACE levee. The alignment will require crossing the local drainage on the east side of the USACE levee. The SWP pipeline would be underground and would not deplete groundwater supplies or interfere substantially with groundwater recharge. Impacts will be less than significant, and no mitigation is required. The utility crossing is proposed to be located in the Santa Ana River, upstream of the inflatable dam. Since the crossing would be constructed below the ground surface, it would not impact groundwater supplies or recharge. Impacts will be less than significant, and no mitigation is required.

The construction of the diversion structure and pipeline will involve minimal above ground features. Therefore, this project component will not adversely impact the flood plain or potentially interfere with infiltration or recharge of underlying aquifers. Impacts will be less than significant, and no mitigation is required.

Downstream (Project Site to Prado Dam)

In the 1969 Judgment, all parties, whether situated in the Upper Area or Lower Area, had or claimed rights to the use of a portion of the water supply of the Santa Ana River system. The Judgment concluded that water users and other entities in the Lower Area have rights to receive an average annual supply of 42,000 acre-feet of base flow at Prado, together with the right to all storm flow reaching Prado Reservoir. Water users in the Upper Area have rights to divert, pump, extract, conserve, store and use all surface and groundwater supplies originating within the Upper Area without interference or restraint by Lower Area users, so long as the Lower Area receives the water to which they are entitled under this Judgment. Total flows at Prado have ranged from a minimum of 51,743 AFY to a maximum of 637,568 AFY since 1970 (Santa Ana River Watermaster, 2003).

On October 20, 2009, the SWRCB issued Order 1649 partially approving the water rights applications, granting up to 100,000 acre-feet per year in SAR surface water diversions downstream of Seven Oaks Dam.[8] This included the City of Riverside's request for up to 75 cfs (41,400 acre-feet per year) of SAR surface water diversion. Refer to Section 2, *Project Description* and Section 3.10, *Water Supply*, for additional background and history on SAR water rights.

Accounting for the project (200 cfs for flows less than or equal to 1,500 cfs) and natural infiltration between the project and RM 53 (60 cfs), approximately 24,298 ac-ft, 10,923 ac-ft, and 1,483 ac-ft in wet, average, and dry years, respectively, would reach RM 53 (Geoscience 2014). These values do not take into account additional surface flows from nearby Reche Canyon, Cooley Drain, Cooley Drive open channel and the South Rancho drain which would contribute to the surface flow at RM 53 during storm events. As such, flows downstream will not be substantially reduced by the project, and a viable water supply will remain available for use as recharge, as applicable.

No physical improvements are proposed within the river channel downstream of the project site that would alter or impede the potential for groundwater recharge to occur at downstream locations. Construction of the project would therefore not result in an increase in impervious surfaces (either in the channel or on any offsite

8 http://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/santa_ana_river/docs/wrd1649.pdf (accessed August 26, 2013).

or adjacent lands) that would affect groundwater recharge capabilities. The project does not involve the pumping of any groundwater, and therefore, will not contribute to potential depletion of local groundwater supplies from such activities.

The project would not 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. Impacts would be less than significant, and no mitigation measures are required.

Violation of Water Quality Standards

Impact 3.5-4: Implementation of the Riverside Groundwater Aquifer Storage and Recovery Project may violate water quality standards or waste discharge requirements. **Level of Significance: Less than Significant Impact with Mitigation.**

Project Area (Groundwater Recharge Basins, Diversion to the Riverside Canal, Levee Improvements, SWP Pipeline, Inflatable Dam, and Other Related Features)

The proposed project has the potential to impact stormwater quality. The project has been identified as a Category 6[9] project, because it is located adjacent to the 303(d) listed Reach 4 of the Santa Ana River. Reach 4 is listed on the 2010 303(d) list of impaired water bodies by the California State Water Resources Control Board as being impaired by Pathogens from a non-point source and salinity/TDS/chlorides from an unknown source.

Construction

Due to construction and associated earth moving, there will be temporary, additional impacts to storm water quality. Construction of all components of the project have the potential to produce typical pollutants such as nutrients, heavy metals, pesticides and herbicides, toxic chemicals related to construction and cleaning, waste materials including wash water, paints, concrete, food containers, and sanitary wastes, fuel, and lubricants. Impacts to water quality due to construction may be significant if not mitigated. *Table 3.5-3, Typical Construction Activity Pollutants*, lists the typical construction activity pollutants.

Depending on the construction timing, dewatering operations may be required if the excavation for either the inflatable dam foundation or the off-stream basins encounters groundwater or a storm event occurs during construction. The dewatering process will involve sediment removal and treatment of discharge to minimize pollutants in stormwater.

9 Developments of 2,500 square feet of impervious surface or more adjacent to (within 200 feet) or discharging directly into environmentally sensitive areas (ESAs), such as areas designated in the Ocean Plan as areas of special biological significance or waterbodies listed on the CWA Section 303(d) list of impaired waters.

Table 3.5-3 Typical Construction Activity Pollutants

Construction Practices	Sediment	Nutrients	Trace Metals	Pesticides	Oil, Grease, Fuels	Other Toxic Chemicals	Misc. Wastes
Dewatering Operations	X					x	
Paving Operations	X			x	x	x	x
Structure Construction			x			x	x
Material Delivery and Storage	x	x	x	x	x	x	
Material Use		x	x	x	x	x	
Solid Waste	x	x					x
Concrete Waste							x
Sanitary/Septic Waste							x
Vehicle/Equipment Fueling						x	x
Vehicle/Equipment Management						x	x
Vehicle/Equipment Maintenance						x	x

Sediment Transport Impacts

A study entitled, "*Assessment of the Riverside North Aquifer Storage and Recovery Project on the Santa Ana Sucker (Catostous santaanae)*," was previously prepared for Riverside Public Utilities by AECOM and Hydmet, Inc., dated May 23, 2011 (AECOM and Hydmet, 2011)[10]. Because the project has been modified since this study, the study was revised in March of 2014 (Hydmet, 2014) to evaluate an alternative six-foot high rubber dam project alternative. The revised model results have been incorporated into Appendix E, *Riverside North Aquifer Storage and Recovery Project Santa Ana River Sediment Transport Technical Memorandum* (RBF Consulting and Hydmet, January 2015). The study identified two primary objectives: (1) to evaluate the effects of the proposed project on hydrology, water quality, and sediment transport in the Santa Ana River; and, (2) to determine if the project would adversely impact the federally threatened Santa Ana sucker, which is resident downstream of the project site.

The *Riverside North Aquifer Storage and Recovery Project Santa Ana River Sediment Transport Technical Memorandum* (RBF Consulting and Hydmet, January 2015) concluded that impacts to streamflow (i.e. timing, magnitude, and duration), sediment transport, and water quality, as a result of the construction and operation of the

10 Because of project modifications, this study is not appended to this EIR. However, this study is available upon request and will be utilized for future consultations with relevant reviewing/approving agencies.

proposed dam, will not adversely impact Santa Ana sucker populations occurring downstream of the project site. The analysis considered both suspended sediment and bedload material transport. *Table 3.5-4, Sediment Gradation*, shows typical sediment size distributions for the suspended sediment and bedload regimes, and the percentage of each expected in the project reach. It is anticipated that the project would trap 1 to 5 percent of total transported sediment when the dam is in operation. The project would not divert the gravel and cobble out of the river and will not prevent coarse sediment (gravels and cobbles) from being transported downstream during large storm events. Gravel and cobble that accumulate within the project area will not be removed from the system during maintenance activities. Rather, this material would be carried downstream during high flow events (more than 1,500 cfs) when the rubber dam would not be inflated and would be at-grade with the riverbed. Small sediment such as sands and silt will be captured behind the rubber dam and some portion of that material will be permanently removed from the system through routine maintenance activities. Sediment slugs are not anticipated to impact downstream sucker habitat because observations of modeled conditions indicated that during high flows, trapped sediment is distributed downstream roughly within the first mile and would fill areas of the riverbed that may have been eroded during dam operation (refer to Appendix E). Refer also to Section 3.4, *Biological Resources,* for a more in-depth discussion of project effects on the Santa Ana sucker.

Suspended sediment transport was estimated from measurements made by the USGS at the Santa Ana River E Street Bridge (Gauge No.11059300). As shown in *Table 3.5-4*, suspended sediment was nearly all silt and fine sand. Bedload material size distributions were taken from sieve analysis of bed and bank samples near the Santa Ana River-Mill Creek confluence. The median sediment diameter is approximately one millimeter. Annual Santa Ana River Walk surveys and surface observations (at the project site) confirmed gravel and cobble sizes are present in the SAR downstream of the project area. Therefore, sediment size distribution provided in *Table 3.5-4* may be appropriate for bedload material transport analysis throughout the greater project reach of the SAR (refer also to Figure 3 of Appendix E).

Table 3.5-4 Sediment Gradation

Sediment Gradation		Size Class (in millimeters)		Average Size (in inches)	% Load Contribution	
		Lower	Upper		Suspended	Bed
Coarse silt	CM	0.031	0.062	0.002	62.1	0
Very fine sand	VFS	0.062	0.125	0.004	15.9	1.8
Fine sand	FS	0.125	0.25	0.0047	13.2	8
Medium sand	MS	0.25	0.5	0.015	6.5	15
Coarse sand	CS	0.5	1	0.03	2.3	20
Very coarse sand	VCS	1	2	0.059	0	17
Very fine gravel	VFG	2	4	0.118	0	13
Fine gravel	FG	4	8	0.236	0	10
Medium gravel	MG	8	16	0.472	0	7
Coarse gravel	CG	16	32	0.945	0	4.5
Very coarse gravel	VCG	32	64	1.89	0	2.5
Small cobble	SC	64	128	3.78	0	1
Large cobble	LC	128	256	7.559	0	0.2

In order to assess the potential impact of the proposed project on hydrology and sediment transport, hydrological data measured at short time intervals were required. Existing data for the 15-minute flow record for the USGS stream gauges for the Santa Ana River at E Street, recorded upstream of the project site, were

used. These data were adjusted for the inflow of Lytle and Warm Creeks, which have their confluence downstream of the gauge and upstream of the project site (providing an approximate increase of 50% in flow during some operational periods). These data allowed for modeling that evaluated sediment transport for each water year considered on a near-continuous basis (hourly) for the entire water year.

Hydrological data were obtained for the USGS stream gauge at E Street for nine operation years. Water years 2000-2008 and 2011 were used because Seven Oaks Dam storage began functional operation after 1999. Fifteen minute data for water years 2009-2010 and 2012-2013 were not available at the time of the analysis. It was assumed that this data was representative of existing conditions.

Project Operational Impacts on Sediment Transport

The rubber dam will operate during flows less than 1,500 cfs. At flows higher than 1,500 cfs the dam will be collapsed and will not influence river hydrology and sediment transport, allowing 100 percent of the storm flows to pass through the project reach unabated. Flows less than 1,500 cfs may continue through the project area unimpeded in order to allow large amounts of debris and lower quality water of the "first flush" of the storm season (or other times in the year dependent upon conditions) to bypass the facilities. When flows are greater than 1,500 cfs the dam will be deflated and all sediment accumulated behind the dam will be released downstream. The maximum impoundment volume is 75 acre-feet. For typical storm events, filling times would range from one to eight hours. During impoundment filling, there would be no release downstream. Once the impoundment areas are filled all flows greater than 200 cfs would overtop the dam. Sediment entering the diversion pipeline will be removed by the desilting basin. The in-stream and off-stream basins will be maintained on a regular basis to maintain infiltration capacity. The rubber dam will remain raised until the recharge reservoir becomes empty or inflows increase over 1,500 cfs due to another storm event.

Table 3.5-5, Annual Sediment Transport (in Tons), shows the modeling results for each sediment size classification, for total sediment transport, for all flows, for each water year considered. Additionally, *Table 3.5-6, Sediment Trapped During Operations (in Tons)*, shows the amount of sediment that will be trapped during each operational year, as well as the residual sediment remaining at the end of a wet season. A rough estimate of residual sediment was derived from a comparison of sediment transport versus flow with event-based accumulated sediment volumes in the recharge area (refer also to Figure 4 of Appendix E for an illustration of the grain size classes related to sediment transport versus flow). This resulted in the assumption that flows over 6,500 cfs will remove approximately 95 percent of the accumulated sediment; flows from 4,000 to 6,500 cfs will remove approximately 75 percent of the accumulated sediment; and, flows from 1,500 to 4,000 cfs will remove approximately 50 percent of the accumulated sediment.

Table 3.5-7, Trapped Load Versus Annual Load (in Percent), provides a comparison of sediment potentially trapped during operations to annual sediment transport. These values average around 30 percent, with lower values for very coarse gravel and small cobbles. Residual sediment comparisons are 1 to 5 percent (less than 1 to 3 percent for sand/silt mixture) unless flushing flows do not occur after the last operational flood event. It should be noted that flushing flows for the trapped sediment do not always occur after the last operational storm event each wet season. If not removed, this trapped sediment (an annual average of 4,800 total cubic yards, based on the ten water years modeled) will begin to be flushed downstream during the first event of the following year that has flows significantly above 1,500 cfs. Additionally, silt can have ten times the transport rate of very fine sand. Coarse silt trapping volumes will be dependent on flows during and after individual operational periods. However, typical flow through times and velocities will limit deposition of silt in the recharge pond.

Table 3.5-5 Annual Sediment Transport (in Tons)

Sediment Size Class	Water Year									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2011
VFS	8,874	5,175	715	24,454	10,108	301,506	13,507	562	9,860	123,207
FS	4,742	2,774	377	12,933	5,326	152,198	7,353	330	5,393	62,459
MS	2,810	1,659	216	7,452	3,045	77,762	4,604	255	3,420	32,051
CS	1,270	753	96	3,331	1,359	33,299	2,129	128	1,589	13,701
VCS	687	411	50	1,759	718	16,145	1,217	89	909	6,564
VFG	398	240	29	1,005	411	8,837	730	60	555	3,547
FG	181	110	13	450	185	3,818	343	32	263	1,507
MG	108	66	7	265	110	2,180	214	22	165	842
CG	56	35	4	136	57	1,086	117	14	91	406
VCG	24	15	2	57	24	447	51	7	40	164
SC	8	5	1	20	9	160	18	2	14	59
Total	19,159	11,242	1,509	51,863	21,350	597,437	30,280	1,501	22,306	244,507

Table 3.5-6 Sediment Trapped During Operations (in Tons)

Sediment Size Class	Water Year									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2011
VFS	2,296	1,383	115	3,568	1,784	44,191	6,267	515	5,229	10,197
FS	1,264	765	62	1,979	994	24,537	3,493	299	2,886	5,608
MS	815	499	39	1,303	662	16,180	2,340	228	1,921	3,596
CS	381	234	18	625	314	7,632	1,113	116	889	1,676
VCS	222	139	10	366	189	4,534	666	77	553	972
VFG	134	85	6	224	117	2,771	409	45	328	584
FG	63	42	3	108	54	1,325	193	15	175	276
MG	40	25	2	68	33	838	121	6	83	170
CG	22	12	1	36	17	463	66	3	46	93
VCG	8	4	0	14	6	186	20	1	18	39
SC	2	1	0	2	1	12	3	0	4	9
Total	5,247	3,189	256	8,293	4,171	102,669	14,691	1,305	12,132	23,220
End residual total	523	480	250	1,046	500	31,629	7,580	1,300	1,568	3,137
End residual sand/silt	106	96	53	212	101	6,870	1,442	192	299	694
Operation hours	127	159	5	327	323	3,391	1,255	692	906	430

Table 3.5-7 Trapped Load Verses Annual Load (in Percent)

Sediment Size Class	Water Year									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2011
VFS	25.9	26.7	16.1	14.6	17.6	14.7	46.4	91.6	53.0	8.3
FS	26.7	27.6	16.4	15.3	18.7	16.1	47.5	90.7	53.5	9.0
MS	29.0	30.1	18.1	17.5	21.7	20.8	50.8	89.6	56.2	11.2
CS	30.0	31.1	18.7	18.8	23.1	22.9	52.3	90.5	55.9	12.2
VCS	32.3	33.8	19.8	20.8	26.3	28.1	54.7	86.4	60.2	14.8
VFG	33.6	35.4	21.0	22.3	28.5	31.4	56.1	74.9	59.1	16.5
FG	34.9	38.3	23.6	24.0	29.2	34.7	56.3	47.3	66.7	18.3
MG	37.0	37.8	27.0	25.6	30.1	38.4	56.7	26.9	50.4	20.2
CG	39.1	34.6	26.3	26.5	29.9	42.7	56.6	21.3	50.7	22.9
VCG	33.9	27.2	0.0	24.7	25.1	41.6	39.6	15.2	45.6	23.8
SC	23.8	19.2	0.0	9.9	11.8	7.5	17.0	0.0	29.2	15.2
Total	27.4	28.4	17.0	16.0	19.5	17.2	48.5	87.0	54.4	9.5
End residual total	2.7	4.3	16.6	2.0	2.3	5.3	25.0	86.6	7.0	1.3
End residual sand/silt	1.2	1.9	7.4	0.9	1.0	2.3	10.7	34.2	3.0	0.6

As modeled, gravel and cobble trapping during operational periods for the project exhibited very low volumes. As shown in *Table 3.5-6*, gravel and cobble trapping during operation comprised less than five percent of sand transport, without accounting for potential silt transport. It is anticipated that the trapping of gravel and cobbles during project operational periods will be a very small percentage of the available bed material and can be replenished by river flow in a short distance downstream of the rubber dam. *Table 3.5-7* provides a comparison of the volume of gravel and cobbles trapped during operations to the total transport for all annual flows. The sediment transport model extended downstream to cross-section 24.8 miles, approximately 5,000 feet downstream of the proposed rubber dam.

As shown in *Table 3.5-6,* trapped sediment will be primarily sand and coarse silts. USGS data measurements available at E. Street indicated that the total silt transport could potentially be an order of magnitude larger than fine sand transport. As determined by the analysis, the river channel, for a few hundred feet downstream of the rubber dam, could be susceptible to erosion during project operations. Immediate downstream erosion potential will be mitigated through project design requirements as determined by reviewing agencies, including a downstream apron and energy dissipater to minimize potential erosion. After the dam is lowered, the river will restore the sediment transport to values typical of those upstream of the project, and the downstream channel will aggrade to its original geometry. The sediment transport model extended downstream to approximately 5,000 feet downstream of the proposed rubber dam. The modeled conditions indicated that during high flows, trapped sediment will be distributed downstream roughly within the first mile, filling in areas of the bed that are eroded as a result of dam operations.

Downstream adverse effects are not expected to result from dam operations. Although the modeling conducted did not extend downstream all the way to RM 53 (vicinity of Rialto Channel, occupied SASU habitat), modeling did not show a change in sediment aggradation occurring within two miles upstream of the RM 53 vicinity, therefore, it is not expected that an accumulation of fine sediments will occur at RM 53 as a result of project operations.

The proposed recharge basins are expected to benefit water quality within the watershed. This portion of the project will help remove pathogens from the Santa Ana River Reach 4. Since the project proposes to infiltrate most flows under 200 cfs, most pollutants will be removed by infiltration which is a recognized BMP for treatment of stormwater, as discussed in the County's Water Quality Management Plan Guidance. The project will also be a benefit relative to downstream sediments, as periodic maintenance of in-stream and off-stream basins will include removal of sediments.

Surface water samples collected at the proposed project location during flows from 2010 to 2011 indicate TDS concentrations ranging from 110 mg/L to 300 mg/L, and nitrate as nitrogen (N) ranging from 0.6 mg/L to 1.1 mg/L. The TDS and nitrate as N concentrations in the surface water are less than current concentrations in the groundwater and the planned artificial recharge will benefit current groundwater conditions.

The SWP pipeline is not expected to have an adverse impact on stormwater quality as it is a water line that may in the future be used for recharge. This EIR specifically excludes evaluation of the impact of recharging SWP water within the off-stream basins. Impacts will be less than significant, and no mitigation is required.

The utility crossing is not expected to have any post-construction impacts to water quality. Further, the diversion and pipelines will not significantly impact stormwater quality in the future, as they will have limited surface features. Impacts will be less than significant, and no mitigation is required. The project would be considered a Category 6 project per the County's WQMP Guidance, and would identify and implement required BMPs to reduce potential impacts to a level of less than significant.

Downstream Surface Water Quality (Project Site to Prado Dam)

For the water quality impact analysis of the proposed project, the simulated results were analyzed at the project diversion (Santa Ana River Reach 4), Riverside Narrows (Santa Ana River Reach 3), and Prado Dam (Santa Ana River Reach 3) locations to provide a representation of surface water quality along the Santa Ana River from the proposed project diversion point to Prado Dam. The Riverside Narrows and Prado Dam are locations of stipulated surface water flows and surface water quality by the 1969 Western Judgment. The TDS water quality objective set forth by the Santa Ana Watershed Water Quality Control Plan (Basin Plan) is 550 mg/L for Reach 4 and 700 mg/L for Reach 3. For Total Inorganic Nitrogen (TIN), the basin objectives are set at 10 mg/L for Reach 3 and 4.

The average daily simulated Santa Ana River flow rates at the above-mentioned locations were calculated for both the "No Project" and "Project" scenarios and with both projected 2010 and 2020 Publicly Owned Treatment Works (POTW) discharges to the Santa Ana River. The POTW 2010 and 2020 projected discharges have minimal effect on the flow rates at the project diversion point and Riverside Narrows. However, at Prado Dam there is a significant difference of approximately 25 and 40 cfs for 2010 and 2020 POTW discharges, respectively (refer to Appendix H, *Geohydrologic Evaluation*, Section 7.3, *Results of WLAM for RNASRP Scenarios for 200 cfs Recharge and Diversions* for discussion and comparison tables).

Modeling scenarios for the proposed project were selected based on planning simulations described in the "2008 Santa Ana River Wasteload Allocation Model Report" (Wildermuth 2009). Scenario 1 (Scenario 2 in the Wildermuth report) is the worst-case scenario resulting in the highest concentration of TDS and TIN. Scenario 2 (Scenario 5 in the Wildemuth report) has an overall increased use of project recycled water for both 2010 and 2020 POTW discharges. Average daily concentration results for TDS are shown in *Table 3.5-8, Wasteload Allocation Model Simulated Average Daily TDS Concentrations*. According to the modeling, the greatest TDS impact from the proposed diversion would occur at Riverside Narrows for Scenario 1 where the "No

Project" TDS concentration is 644.1 mg/L and the "Project" TDS is 649.6 mg/L, an increase of approximately 5.5 mg/L. The TDS are below the basin objectives of 700 mg/L for Riverside Narrows and Prado Dam in Santa Ana River Reach 3.

The simulated TDS concentration of Santa Ana River water diverted to the proposed project is 209.1 mg/L, which is below the basin objective of 550 mg/L for Reach 4. For both Scenario 1 and 2, the TDS concentration differences between the 2010 and 2020 POTW projected discharges is a 5 mg/L decrease and a 1.6 mg/L increase for the 2020 discharges with respect to the 2010 discharges, at Riverside Narrows and Prado Dam, respectively (refer to Appendix H, *Geohydrologic Evaluation*, Appendix F, *Technical Memorandum Assessment of Downstream Surface Water Quality Impacts from the Riverside North Aquifer Storage and Recovery Project*, Table 6, *Wasteload Allocation Model Simulated Average Daily TDS Concentrations with RNASRP Diversion of 200 cfs at Diversion Point, Riverside Narrows and Prado Dam Locations*).

Average daily concentration results for TIN are shown in *Table 3.5-9, Wasteload Allocation Model Simulated Average Daily TIN Concentrations*. The greatest TIN impact from the proposed project occurs at Riverside Narrows for Scenario 1 where the "No Project" TIN concentration is 8.9 mg/L and the "Project" TIN concentration is 9 mg/L, an increase of approximately 0.1 mg/L. The TIN concentrations are below the basin objectives of 10 mg/L for all simulations. The simulated TIN concentration of Santa Ana River water diverted to the proposed project is 2.1 mg/L, which is below the basin objective of 10 mg/L for Reach 4. There are no discernable differences in TIN concentrations for both the proposed project Scenarios 1 and 2 due to the differences in 2010 and 2020 POTW projected discharges. Therefore, less than significant impacts to surface water would occur due to the proposed diversion, and no mitigation measures are required.

Table 3.5-8 Wasteload Allocation Model Simulated Average Daily TDS Concentrations

Scenario 1								
POTW Discharge Rate Planning Year	Basin Objectives[1]		No Project		Project		Difference Between No Project and Project	
	Santa Ana Reach 3 mg/L	Santa Ana Reach 4 mg/L	Riverside Narrows[2] (SAR Reach 3) mg/L	Prado Dam[2] (SAR Reach 3) mg/L	Riverside Narrows[2] (SAR Reach 3) mg/L	Prado Dam[2] (SAR Reach 3) mg/L	Riverside Narrows[2] (SAR Reach 3) mg/L	Prado Dam[2] (SAR Reach 3) mg/L
2010	700	550	644.1	640.3	649.6	641.5	5.5	1.2
2020			639.2	641.9	644.7	643.1	5.5	1.2
Difference due to 2010 & 2020 POTW discharges			-4.9	1.6	-4.9	1.6	N/A	
Scenario 2								
POTW Discharge Rate Planning Year	Basin Objectives		No Project		Project		Difference Between No Project and Project	
	Santa Ana Reach 3 mg/L	Santa Ana Reach 4 mg/L	Riverside Narrows[2] (SAR Reach 3) mg/L	Prado Dam[2] (SAR Reach 3) mg/L	Riverside Narrows[2] (SAR Reach 3) mg/L	Prado Dam[2] (SAR Reach 3) mg/L	Riverside Narrows[2] (SAR Reach 3) mg/L	Prado Dam[2] (SAR Reach 3) mg/L
2010	700	550	644.1	640.5	649.6	641.5	5.5	1.1
2020			639.2	641.8	644.7	643.1	5.5	1.3
Difference due to 2010 & 2020 POTW discharges			-4.9	1.3	-4.9	1.6	N/A	

Table 3.5-8, continued

1 Source: 1995 Water Quality Control Plan, Santa Ana Regional Water Quality Control Board.
2 WLAM simulated average values are of hydrologic period from 1949 to 1999.
WLAM: Waste Load Allocation Model
POTW: Publicly Owned Treatment Works
TDS: Total Dissolved Solids
TIN: Total Inorganic Nitrogen

Table 3.5-9 Wasteload Allocation Model Simulated Average Daily TIN Concentrations

Scenario 1								
POTW Discharge Rate Planning Year	Basin Objectives[1]		No Project		Project		Difference Between No Project and Project	
	Santa Ana Reach 3 mg/L	Santa Ana Reach 4 mg/L	Riverside Narrows[2] (SAR Reach 3) mg/L	Prado Dam[2] (SAR Reach 3) mg/L	Riverside Narrows[2] (SAR Reach 3) mg/L	Prado Dam[2] (SAR Reach 3) mg/L	Riverside Narrows[2] (SAR Reach 3) mg/L	Prado Dam[2] (SAR Reach 3) mg/L
2010	10	10	8.9	8.1	9.0	8.1	0.1	0.0
2020			8.9	8.1	9.0	8.2	0.1	0.1
Difference due to 2010 & 2020 POTW discharges			0.0	0.0	0.0	0.1	N/A	
Scenario 2								
POTW Discharge Rate Planning Year	Basin Objectives		No Project		Project		Difference Between No Project and Project	
	Santa Ana Reach 3 mg/L	Santa Ana Reach 4 mg/L	Riverside Narrows[2] (SAR Reach 3) mg/L	Prado Dam[2] (SAR Reach 3) mg/L	Riverside Narrows[2] (SAR Reach 3) mg/L	Prado Dam[2] (SAR Reach 3) mg/L	Riverside Narrows[2] (SAR Reach 3) mg/L	Prado Dam[2] (SAR Reach 3) mg/L
2010	10	10	8.9	8.1	9.0	8.1	0.1	0.0
2020			8.9	8.1	9.0	8.1	0.1	0.0
Difference due to 2010 & 2020 POTW discharges			0.0	0.0	0.0	0.0	N/A	

1 Source: 1995 Water Quality Control Plan, Santa Ana Regional Water Quality Control Board.
2 WLAM simulated average values are of hydrologic period from 1949 to 1999.
WLAM: Waste Load Allocation Model
POTW: Publicly Owned Treatment Works
TDS: Total Dissolved Solids
TIN: Total Inorganic Nitrogen

HWQ-3 To reduce potential construction water quality impacts to less than significant:

- The City shall prepare and submit a Notice of Intent (NOI) to comply with the Construction General Permit 2009 to the California State Water Resources Board.
- As applicable, the City shall obtain a permit from the Santa Ana Regional Water Quality Control Board for any dewatering activities.

If the disturbed areas are less than 1 acre:

- Prepare erosion control plan.
- Dewatering activities may require regional board permit.

Implementation of the above mitigation measures would reduce water quality impacts to a less than significant level. The following sections discuss appropriate BMPs for use on the project.

HWQ-4 Prior to issuance of a grading permit, the City shall:

Prepare a Storm Water Pollution Prevention Plan (SWPPP) for the construction activities onsite. A copy of the SWPPP must be available and implemented at the construction site at all times. The SWPPP outlines the source control and/or treatment control BMPs that will avoid or mitigate runoff pollutants at the construction site to the "maximum extent practicable".

These requirements are summarized as follows:

- Notice of Intent: The NOI certifies that the City will comply with conditions in the Statewide general NPDES permit. It is not a permit application and does not require approval, although an annual fee must be submitted with it.
- Stormwater Pollution Prevention Plan: The SWPPP is directed toward construction staff; it describes erosion and runoff control measures to be used during and after construction, and a plan to inspect and maintain these control measures. The SWPPP may be revised during construction in response to changed conditions, or if the properly installed BMPs are ineffective in preventing sediment transport off the site. Revisions to the SWPPP are also required if there are changes in activities which could result in a significant amount of pollutants discharged in stormwater.
- Notice of Termination: The State Board must be notified (via a Notice of Termination form) once construction is complete. It must also be notified if a change of ownership occurs during construction. In this case, a revised NOI must be submitted, and the SWPPP must be revised by the new owner to reflect any changes in construction conditions.

The City may request to be placed under individual NPDES permits rather than the general permit. The Regional Board may issue individual stormwater NPDES permits to construction projects when more stringent controls are necessary to protect water quality. As noted above, individual construction projects may also be regulated under a municipality's NPDES management program.

The following are additional construction BMP's for the site, from the California Storm Water Best Management Practice Handbook - Construction Activity:

- NS-2 Dewatering Operations – This operation requires the use of sediment controls to prevent or reduce the discharge of pollutant to storm water from dewatering operations.
- NS-3 Paving and Grinding Operations – Prevent or reduce the runoff of pollutant from paving operations by proper storage of materials, protecting storm drain facilities during construction and training employees.

- NS-8 Vehicle and Equipment Cleaning – Use off-site facilities, or wash in designated areas to reduce pollutant discharge into the storm drain facilities.
- NS-9 Vehicle and Equipment Fueling – Use off-site facilities, or designated areas with enclosing or coverings to reduce pollutant discharge into the storm drain facilities.
- NS-10 Vehicle and Equipment Maintenance – Use off-site facilities or designated areas with enclosing or coverings to reduce pollutant discharge into the storm drain facilities. In addition run a "dry site" to prevent pollution discharge into storm drains.
- WM-1 Material Delivery and Storage – Minimize the storage of hazardous materials onsite. If stored onsite keep in designated areas, install secondary containment, conduct regular inspections and train employees.
- WM-2 Material Use – Prevent and reduce the discharge of pesticides, herbicides, fertilizers, detergents, plaster, petroleum products and other hazardous materials from entering the storm water.
- WM-5 Solid Waste Management – This BMP describes the requirements to properly design and maintain trash storage areas. The primary design feature requires the storage of trash in covered areas.
- WM-6 Hazardous Waste Management – This BMP describes the requirements to properly design and maintain waste areas.
- WM-8 Concrete Waste Management – Prevent and reduce pollutant discharge to storm water from concrete waste by performing on and off-site washouts in designated areas and training employees and consultants.
- WM-9 Sanitary/Septic Water Management – Provide convenient, well-maintained facilities, and arrange regular service and disposal of sanitary waste.
- EC-2 Preservation of Existing Vegetation – Minimize the removal of existing trees and shrubs because they serve as erosion control.
- EC-3 Hydraulic Mulch – Hydraulic mulch consists of applying a mixture of shredded wood fiber or a hydraulic matrix, and a stabilizing emulsion or tackifier with hydro-mulching equipment, which temporarily protects exposed soil from erosion by raindrop impact or wind.
- EC-4 Hydroseeding – Hydroseeding typically consists of applying a mixture of wood fiber, seed, fertilizer, and stabilizing emulsion with hydromulch equipment, to temporarily protect exposed soils from erosion by water and wind.
- WE-1 Wind Erosion Control - Wind erosion or dust control consists of applying water or other dust palliatives as necessary to prevent or alleviate dust nuisance generated by construction activities.
- TR-1 Stabilized Construction Entrance/Exit – A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.
- TR-2 Stabilize Construction Roadway – All on-site vehicle transport routes should be stabilized immediately after grading and frequently maintained to prevent erosion and control dust.

- SE-1 Silt Fence – Composed of filter fabric, which has been entrenched, attached to support poles and sometimes backed by wire fence support. Silt fences promote sedimentation behind the fence of sediment-laden water.
- SE-3 Sediment Trap – A sediment trap is a small, excavated or bermed area where runoff for small drainage areas can pass through allowing sediment to settle out.
- SE-8 Sand Bag Barriers – By stacking sand bags on a level contour, creates a barrier to detain sediment-laden water. The barrier will promote sedimentation.
- SE-9 Straw Bale Barrier – Place straw bales end to end in a level contour in a shallow trench and stake them in place. The bales will detain runoff and promote sedimentation.

HWQ-5 The project shall prepare a Water Quality Management Plan (WQMP) prior to issuance of a grading permit in accordance with San Bernardino County guidelines for the following components:

- On-stream Impacts
- Off-stream Impacts
- State Water Project
- Riverside Canal Diversion
- Utility Crossing
- Other Related Features

The WQMP(s) will be required to address the following according to the San Bernardino County Water Program Model WQMP Guidance:

- Determine if the project will create a Hydrologic Condition of Concern (HCOC) based on Guidance Section 2.3 and implement HCOC stream stability studies if required.
- Incorporate and implement Site Design BMPs as specified in Guidance Section 2.5.1. Justification is required for any Site Design BMPs not incorporated into the project.
- Incorporate and implement all Source Control BMPs as specified in Guidance Section 2.5.2, unless not applicable to the project due to project characteristics. Justification is required for any Source Control BMP not incorporated into the project.
- Either incorporate and implement Treatment Control BMPs as specified in Guidance Section 2.5.3, by including a selection of such BMPs into the project design; or participate in or contribute to an approved regional-based treatment program as specified in Guidance Section 3. Site Design and Source Control BMPs as specified in Guidance Sections 2.5.1 and 2.5.2 are required for projects participating in regional-based treatment programs.
- The combination of Site Design, Source Control and/or Treatment Control BMPs or Regional-based treatment program must address all identified pollutants and hydrologic conditions of concern.

3.5.5 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts relative to groundwater resources, hydrology, or water quality have been identified, following implementation of the recommended mitigation measures.

3.6 CULTURAL RESOURCES

The purpose of this section is to analyze potential project-related impacts to paleontological, archaeological, and historic resources. Mitigation measures are recommended to minimize significant impacts that would occur as the result of project implementation. Information and analysis in this section are based mainly on the *Identification and Evaluation of Historic Properties* prepared by CRM Tech (dated April 24th, 2009; refer to Appendix G), the *City of Colton General Plan* (Updated 2013), and the *City of Riverside General Plan 2025*(2007).

3.6.1 Existing Conditions

The project site is located in the City of Colton. Colton is situated in the heart of the San Bernardino Valley, a broad inland valley extending from the southern base of the San Bernardino and San Gabriel Mountains. The average maximum temperature in July reaches approximately 100 degrees (Fahrenheit) in this region, and the average minimum temperature in January dips to approximately 30 degrees (Fahrenheit). Annual rainfall is typically less than 15 inches.

The Area of Potential Effect (APE) (land area affected by the proposed project) is an irregularly shaped tract of land that lies within and along both sides of the Santa Ana River, the main natural waterway in the San Bernardino Valley. The APE is bounded on the southeast by a flood control levee, and on the northwest by light industrial uses, residential development, and vacant land. The APE extends southwesterly approximately 1.5 miles along the riverbed from just south of the Interstate 10 freeway. The terrain within the APE boundaries is dependent on the location of the proposed facilities, but includes a nearly level riverbed bordered by earthen levees, level valley lands, and naturally carved terraces with steep embankments.

Soils throughout the APE consist of coarse alluvial sand and gravel with fluvial sediments found in the riverbed and active channels. The elevation drops from 950 feet above mean sea level (amsl) in the upriver portion just upstream of the Mt. Vernon Avenue bridge to 925 feet amsl in the downriver portion just south of the southernmost off-stream recharge basin. Vegetation observed in the APE consists of a mix of native and invasive species including yerba santa, elderberry, palo verde, flat-top buckwheat brush, willow and cottonwood trees, mulefat, encelia, wild mustard, foxtails, cheeseweed, castor bean, and tumbleweeds.

Paleontological Resources

Paleontological resources are the preserved fossilized remains of plants and animals. Fossils and traces of fossils are preserved in sedimentary rock units, particularly fine- to medium-grained marine, lake, and stream deposits, such as limestone, siltstone, sandstone, or shale, and in ancient soils (paleosols). They are also found in coarse-grained sediments, such as conglomerates or coarse alluvium. Fossils are rarely preserved in igneous or metamorphic rock units, but such occurrences are known in San Bernardino County.

Fossils may occur throughout a sedimentary unit and, in fact, are more likely to be preserved subsurface, where they have not been damaged or destroyed by previous ground disturbance, amateur collecting, or natural causes such as erosion. In contrast, cultural resources are often recognized by surface evidence of their presence. A field survey for paleontologic resources can indicate that sediments likely to contain fossils are present, even if fossils are not observed on the surface. This is because excavation is often the only way in which fossils are discovered.

The region is host to numerous locales of significant paleontological resources. The County of San Bernardino has developed a Paleontologic Resource Overlay to assist in the planning process. Qualified professional paleontologists can determine what resources are considered significant and can mitigate impacts on significant resources, if required.

Archaeological Resources

It is widely acknowledged that human occupation in what is now the State of California began 8,000 to 12,000 years ago. In attempting to describe and understand the cultural processes that occurred in the ensuing years, archaeologists have developed a number of chronological frameworks that endeavor to correlate the technological and cultural changes that are observable in archaeological records to distinct time periods.

The development of an overall chronological framework for the region is hindered by a lack of distinct stratigraphic layers of cultural sequences that could be dated by absolute dating methods to provide a concrete timetable. Since results from archaeological investigations in this region have yet to be synthesized into an overall chronological framework, most archaeologists tend to follow a chronology adapted from a scheme developed by William J. Wallace in 1955 and modified by others (Wallace 1955, 1978; Warren 1968; Chartkoff and Chartkoff 1984). Although the beginning and ending dates of the different horizons or periods may vary, the general framework of prehistory in this region under this chronology consists of the following four periods:

- Early Hunting Stage (ca. 10,000 BC to 6,000 BC), which was characterized by human reliance on big game animals, as evidenced by large, archaic-style projectile points and the relative lack of plant-processing artifacts;
- Millingstone Horizon (ca. 6,000 BC to AD 1,000), when plant foods and small game animals came to the forefront of subsistence strategy, and from which a large number of millingstones, especially well-made, deep-basin metates, were left;
- Late Prehistoric Period (ca. AD 1,000 to 1,500), during which a more complex social organization, a more diversified subsistence base—as evidenced by smaller projectile points, expedient millingstones and later pottery—and regional cultures and tribal territories began to develop; and,
- Protohistoric Period (ca. AD 1,500 to 1,700s), which ushered in long-distance contact with Europeans, and thereby led to the Historic Period.

Ethnohistory

The City of Colton lies within an area where the traditional territories of three Native American groups overlap: the Serrano of the San Bernardino Mountains, the Luiseño of the Perris-Elsinore region, and the Gabrielino of the San Gabriel Valley. The Native Americans of present-day Riverside/San Bernardino were most likely one of these three groups. A late influx of Cahuilla during the 19th century also occurred.

Historic Resources

The APE, once a part of the vast land holdings of the Rancho San Bernardino land grant, exhibited no man-made features prior to the completion of the Southern Pacific Railway in 1875, with exception of several roadways that were noted further to the west. By the turn of the 20th century, the City of Colton to the northwest of the APE had experienced a period of rapid growth under the influence of the Southern Pacific Railway. The APE, however, located mostly within the floodplain of the Santa Ana River, remained

undeveloped except for the Southern Pacific line that crossed the riverbed, a road that traversed along the terrace above the river, and the Riverside Water Company's canal and flume system that diverted water from Warm Creek to the City of Riverside.

The issue of appropriating water from the Santa Ana River to irrigate orchards and vineyards in the Riverside area was in existence since as early as 1870. Many different companies and associations were organized over the years, but it was not until 1886 that the Riverside Water Company was officially formed. The company not only consolidated the rights and interests of multiple entities that it superseded, but also sought to improve the water supply by constructing a canal and flume on Warm Creek above its confluence with the Santa Ana River. The canal extended from Warm Creek to the north side of the riverbed, and there the waters were diverted into the redwood flume across the Santa Ana River. From the end of the wood flume, the water flowed into tunnels and an open canal to ultimately join the Riverside Upper Canal.

As in other parts of the inland southern California, earthen canals and wood flumes constructed in the late 19th century became inadequate forms of conveyance by the 1900s, and new systems of appropriating water became necessary. No record of when the canal was lined with concrete could be found, but it was not until 1894 that the California Portland Cement Company's plant at nearby Slover Mountain first produced cement, providing the means for affordable concrete.

By 1900, surface diversions of the Santa Ana River water were almost entirely eliminated unless there was considerable flow in the river, such as from winter rains or snow melt. By the 1910s, surface diversions had ceased, and in 1912, a pipeline was constructed from the upper end of the Riverside-Warm Creek Canal to replace the earlier system. In 1943, the wood flume across the riverbed was replaced with a buried pipeline. According to the City of Riverside Public Utility records, groundwater wells, known as Flume Wells, were drilled along the north side of the Santa Ana River below Warm Creek in the late 1920s as part of this newer system of water procurement, and the water was pumped into an underground pipeline. Today, this water flows to a treatment plant before it is dispensed to public use.

Other features observed in the APE on historic maps of the area include Mount Vernon Avenue and the Southern Pacific Railway alignments across Santa Ana River. The Railway alignment has changed substantially since the 1930s and was apparently re-aligned sometime after 1954 and before 1967. Around that same time, other minor changes were also made to the Southern Pacific Railroad Company's line across the riverbed, namely in the removal of a spur line on the terrace above the river.

According to historical maps, records on file at the City of Riverside Public Utilities Department, and previous documentation on the Riverside Water Company, the land within the APE (the majority of which is situated within the floodplain of the Santa Ana River) remained rural and relatively undeveloped. Over time, the course of the river was in a constant state of flux, flowing across the landscape wherever gravity and erosion permitted. Other than the water procurement and conveyance systems that were employed by the Riverside Water Company during the late 19th and 20th centuries, the APE seems to have a low sensitivity for any intact historical or archaeological remains.

3.6.2 Regulatory Framework

Federal

National Register of Historic Places

The National Historic Preservation Act (NHPA) was originally adopted in 1966 provides the most comprehensive national policy with regards to historic preservation. The Act is designed to encourage the preservation and prudent use of historic resources within the U.S. and establishes the policy of the U.S. Government regarding historic preservation. The Act is intended to "coordinate and support public and private efforts to identify, evaluate, and protect...historic and archaeological resources. Properties listed in the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture."[1]

Eligibility for listing in the National Register is evaluated for a particular historic resource by applying four basic criteria. The criteria generally require that the resource be at least 50 years of age and of significance at the local, state, or national level, according to one or more of the following:

A. It is associated with events that have made a significant contribution to the broad patterns of local or regional history;

B. It is associated with the lives of persons significant in our past;

C. It embodies the distinctive characteristic of a type, period, region, or method or construction, represents the work of an important creative individual, possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction; and/or,

D. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Eligibility for listing on the National Register requires that a resource possess integrity, or the ability of a property to convey its significance. Location, design, setting, materials, workmanship, feeling and association can influence a site's integrity. The particular National Register criterion under which the resource is considered eligible for listing are considered in determining which of these factors applies.

Section 106 of the NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by ACHP. Revised regulations, "Protection of Historic Properties" (36 CFR Part 800), became effective August 5, 2004. The responsible Federal agency first determines whether it has an undertaking that is a type of activity that could affect historic properties. Historic properties are properties that are included in the National Register of Historic Places or that meet the criteria for the National Register. If so, it must identify the appropriate State Historic Preservation Officer/Tribal Historic Preservation Officer (SHPO/THPO) to consult with during the process. It should also plan to involve the public, and identify other potential

1 National Park Service – National Register of Historic Places. http://www.nps.gov/nr/about.htm Accessed July 2013.

consulting parties. If it determines that it has no undertaking, or that its undertaking is a type of activity that has no potential to affect historic properties, the agency has no further Section 106 obligations.

State

California Register of Historic Resources

Criterion for eligibility listing on the California Register is based on the National Register criteria, with modifications made to apply to resources within the State of California. For a property to be eligible for inclusion on the California Register, one or more of the following criteria must be met:[2]

1. It is associated with the events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;

2. It is associated with the lives of persons important to local, California, or national history;

3. It embodies the distinctive characteristics of a type, period, region, or method or construction, represents the work of a master, or possesses high artistic values; and/or,

4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation (36 CFR 60.4).

Local

City of Riverside General Plan 2025

California state planning law requires each City and County to adopt a comprehensive, long-term General Plan for the physical development of the area within its jurisdiction and of any land outside its boundaries that bears relations to its land use planning activities. The *City of Riverside General Plan 2025* was adopted in November 2007. The *General Plan* is a long-range policy-planning document that defines the framework by which the County's physical and economic resources are to be managed over time. The goals and policies contained in the General Plan are provided to guide the County's decision-makers. The seven State-mandated elements are included in the General Plan, including Land Use, Circulation, Housing, Conservation, Open Space, Safety, and Noise. In addition, the City of Riverside has also chosen to address Urban Design, Arts and Culture, Historic Preservation, and Education, which are optional elements.

The Historic Preservation Element is intended to provide guidance in developing and implementing activities that ensure that the identification, designation and protection of cultural resources are part of the City's community planning, development and permitting processes. The following are relevant goals, objectives, and policies contained within the Historic Preservation Element:

Objective HP-1.0: To use historic preservation principles as an equal component in the planning and development process.

2 California State Parks - Office of Historic Preservation. http://ohp.parks.ca.gov/default.asp?page_id=21238 Accessed July 2013.

Policy HP-1.1: The City shall promote the preservation of cultural resources to ensure that citizens of Riverside have the opportunity to understand and appreciate the City's unique heritage.

Policy HP-1.2: The City shall assume its direct responsibility for historic preservation by protecting and maintaining its publicly owned cultural resources. Such resources may include, but are not limited to, buildings, monuments, landscapes, and right-of-way improvements, such as retaining walls, granite curbs, entry monuments, light standards, street trees, and the scoring, dimensions, and patterns of sidewalks, driveways, curbs and gutters.

Policy HP-1.3: The City shall protect sites of archaeological and paleontological significance and ensure compliance with all applicable State and federal cultural resources protection and management laws in its planning and project review process.

Policy HP-1.4: The City shall protect natural resources such as geological features, heritage trees, and landscapes in the planning and development review process and in park and open space planning.

Policy HP-1.5: The City shall promote neighborhood/city identity and the role of historic preservation in community enhancement.

Objective HP-4.0: To fully integrate the consideration of cultural resources as a major aspect of the City's planning, permitting and development activities.

Policy HP-4.2: The City shall apply the California State Historical Building Code to ensure that City building code requirements do not compromise the integrity of significant cultural resources, at the property owner's request.

Policy HP-4.3: The City shall work with the appropriate tribe to identify and address, in a culturally appropriate manner, cultural resources and tribal sacred sites through the development review process.

Objective HP-5.0: To ensure compatibility between new development and existing cultural resources.

Policy HP-5.1: The City shall use its design and plot plan review processes to encourage new construction to be compatible in scale and character with cultural resources and historic districts.

Policy HP-5.2: The City shall use its design and plot plan review processes to encourage the compatibility of street design, public improvements, and utility infrastructure with cultural resources and historic districts.

City of Riverside Municipal Code

The purpose of Title 20, "Cultural Resources," of the *City of Riverside Municipal Code* is to identify, protect, enhance, perpetuate, and use improvements, buildings, structures, signs, objects, features, sites, places, areas, districts, neighborhoods, streets, works of art, natural features, and significant permanent landscaping having special historical, archaeological, architectural, community, aesthetic or artistic value in the City.

3.6.3 Significance Threshold Criteria

The criteria given in the Initial Study checklist in Appendix G of the State *CEQA Guidelines* were used to evaluate potential significant impacts on cultural resources as the result of project implementation. The project would result in significant impacts related to cultural resources if it would:

a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5;

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5;

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or,

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

3.6.4 Impacts and Mitigation Measures

Paleontological Resources

Impact 3.6-1 Implementation of the proposed project may have a substantial adverse change in the significance of a paleontological resource or site or unique geologic feature. **Level of Significance: Less than Significant with Mitigation.**

Paleontological resources are fossilized remnants of prehistoric plants or animals preserved in soil or rock layers over time. Fossils and trace fossils are typically preserved in sedimentary rock units, typically in fine-to-medium-grained marine lake and stream deposits such as limestone, sandstone, or shale, and in ancient soils (paleosols). Fossils are also typically found in coarse-grained sediments including coarse alluvium or conglomerates.

The project area consists of younger quaternary alluvium that typically does not contain fossil specimens. However, specimens have been identified in older alluvium downstream from the project site. There is a potential that fossil remains may have been carried into the area by heavy flooding episodes. Therefore, the area is considered moderately sensitive for paleontological resources. Surface grading or shallow excavations in the proposed project area are not likely to uncover significant vertebrate fossils.

With adherence to Mitigation Measures CUL-1 through CUL-6, any substantial and deep excavations in the proposed project area shall be closely monitored by a qualified vertebrate paleontologist to ensure timely and professional collection of any fossils discovered. If remains of paleontological origin are identified, they shall be handled in accordance with current standards and guidelines. Therefore, the proposed project may have a substantial adverse change in the significance of a paleontological resource or site or unique geologic feature. With implementation of Mitigation Measures CUL-1 through CUL-6, impacts would be less than significant.

Construction-Related Impacts

Refer to the response above. Construction of the groundwater recharge basins, SWP pipelines and inflatable dam are not anticipated to uncover significant vertebrate fossils. However, deeper excavation may encounter

significant unknown vertebrate fossil remains, damage to which may result in a change in the significance of the resource. Therefore, the proposed project may have a substantial adverse change in the significance of a paleontological resource or site or unique geologic feature. With implementation of Mitigation Measures CUL-1 through CUL-6, described below, short-term, construction-related impacts would be less than significant.

Operations-Related Impacts

Operational impacts to paleontological resources associated with the project components are not anticipated, as operational activities would involve the maintenance of the proposed off- and in-stream basins. Maintenance activities are not expected to require any deep excavations that would have the potential to uncover or damage any unknown paleontological resources. Therefore, impacts related to project operational activities would be less than significant, and no mitigation is required.

Mitigation Measures

CUL-1: The City shall prepare a paleontological resource impact mitigation program (PRIMP) for the initial excavation phase of the project. The PRIMP shall conform to the guidelines of the City of Riverside and the Society of Vertebrate Paleontology.

CUL-2: A trained paleontological monitor shall be present during initial excavation activities within the project area containing known sediments likely to contain paleontological resources. The monitoring for paleontological resources shall be conducted on a half-time basis. If paleontological resources are located during excavation, the monitoring program will change to full-time. The monitor shall be empowered to temporarily halt or redirect construction activities to ensure avoidance of adverse impacts to paleontological resources. The monitor shall be equipped to rapidly remove any large fossil specimens encountered during excavation. During monitoring, samples shall be collected and processed to recover micro-vertebrate fossils. Processing shall include wet-screen washing and microscopic examination of the residual materials to identify small vertebrate remains.

CUL-3: Upon encountering a large deposit of bone, salvage of all bone in the area shall be conducted with additional field staff and in accordance with modern paleontological techniques.

CUL-4: All fossils collected during the project shall be prepared to a reasonable point of identification. Excess sediment or matrix shall be removed from the specimens to reduce the bulk and cost of storage. Itemized catalogs of all material collected and identified shall be provided to the museum repository along with the specimens.

CUL-5: A report documenting the results of the monitoring and salvage activities and the significance of the fossils will be prepared.

CUL-6: All fossils collected during this work, along with the itemized inventory of these specimens, shall be offered to a museum repository for permanent curation and storage.

Archaeological Resources

Impact 3.6-2: Implementation of the proposed project may have a substantial adverse change in the significance of an archaeological resource as defined in CEQA Guidelines §15064.5. **Level of Significance: Less than Significant with Mitigation.**

Archaeological resources are defined as the material remains of any area's pre-historic (aboriginal/Native American) or historic (European and Euro-American) human activity in addition to the traditional cultural resources associated with archaeological sites and historic buildings and structures. Construction activities associated with implementation of the proposed project may result in adverse effects on known or unknown archaeological resources.

Potential Archaeological Resources

Between November 2008 and April 2009, a cultural resources study was conducted on the APE. Additionally, on March 27 through 30, 2009, a field survey was conducted. During the field survey of the APE, no prehistoric artifact deposits were encountered.

In addition, a historical/archaeological resources records search was conducted on November 25, 2008 through the Archaeological Information Center (AIC), located in San Bernardino County Museum, Redlands. Maps and records on file at the AIC identified properties designated as California Historical Landmarks, Points of Historical Interest, or San Bernardino County Landmarks, as well as those listed in the National Register of Historic Places, in or near the APE and sites within the project vicinity.

However, it is evident that the majority of the APE has been previously disturbed by natural forces and mechanical means that have altered the ground surface. Due to these disturbances, including the construction of flood control devices and other human activities that have occurred since the late 19th century, it is unlikely that structures, objects, features or artifacts that are prehistoric in age currently exist on-site.

If unique archaeological resources are discovered during ground-disturbance activities that were not previously assessed by the archaeological report and/or this EIR, Mitigation Measure CUL-7 would be implemented to reduce impacts to a level of less than significant.

Native American Correspondence

The Native American Heritage Commission (NAHC) reported that the sacred lands record search identified no Native American cultural resources in the vicinity of the APE. However, noting that "the absence of specific site information in the Sacred Lands File does not guarantee the absence of cultural resources in any project area," the NAHC recommended that local Native American groups be contacted for further information. Correspondence was initiated with ten tribes named on the Commission's referral list, including the Pechanga Band of Luiseño Indians, Ramona Band of Cahuilla Indians, the San Manuel Band of Mission Indians, the Gabrieleno/Tongva San Gabriel Band of Mission Indians, the Gabrielino/Tongva Council/Gabrielino Tongva Nation, Morongo Band of Mission Indians, the Ti'At Society, the Serrano Nation of Indians, and the Soboba Band of Luiseño Indians.

Both of the representatives for the Soboba Band of Luiseño Indians and Gabrielino Tongva Nation recommended that archaeological and/or Native American Monitors be on-site to observe all ground-disturbing activities associated with the proposed project. Due to the high cultural sensitivity of the project vicinity, the Gabrielino/Tongva San Gabriel Band representative also requested that a Native American monitor be present during the undertaking. With implementation of monitoring required under Mitigation Measures CUL-7 and CUL-8, archaeological resources, including those resources linked to Native American history and pre-history, would be adequately preserved. Therefore, implementation of the proposed mitigation measures would reduce project impacts on archaeological resources to a less than significant level.

Construction-Related Impacts

Refer to the response, above. Construction of the groundwater recharge basins, SWP pipelines, and rubber dam are not anticipated to uncover archaeological resources, since evidence gathered during field surveys and records searches concluded that the site has been previously disturbed. Evidence suggests it is unlikely that structures, objects, features or artifacts, prehistoric in age, currently exist on-site.

It is recommended that archaeological and/or Native American Monitors be on-site to observe all ground-disturbing activities due to the high cultural sensitivity of the project site. With adherence to Mitigation Measures CUL-7 and CUL-8, impacts to archaeological resources would be less than significant.

Operations-Related Impacts

Operational impacts to archaeological resources are not anticipated, since operational activities would involve the maintenance of the proposed off- and in-stream basins and the dam. Maintenance activities are not expected to involve excavation activities on non-disturbed land, thereby reducing the potential for unknown resources to be discovered. Therefore, impacts related to project operational activities would be less than significant.

MITIGATION MEASURES

CUL-7: Prior to grading, an archaeological resource monitoring plan shall be developed by a qualified archaeologist. This plan shall include a grading observation schedule to be maintained when grading occurs on and offsite in upper soils to identify and further evaluate cultural resources that may be discovered in the project area. A qualified archaeologist shall be retained to attend pre-grade meetings and to monitor earth-moving activities, including clearing, grubbing, cutting, and trenching at the site. The archaeologist shall carefully inspect these areas to assess the potential for significant prehistoric or historic remains. A qualified Tribal Representative will be allowed to monitor earthmoving activities at the request of their representative tribe.

If during ground-disturbance activities, unique cultural resources are discovered that were not assessed by the archaeological report(s) and/or environmental impact report conducted prior to project approval, the following procedures shall be followed (unique cultural resources are defined, for this condition, as being multiple artifacts in close association with each other, but may include fewer artifacts if the area of the find is determined to be of significance due to its sacred or cultural importance):

- All ground-disturbance activities within 100 feet of the discovered cultural resources shall be halted until a meeting is convened between the contractor, the archaeologist, the Native American tribal representative(s) and the Planning Director to discuss the significance of the find.
- At the meeting, the significance of the discoveries shall be discussed and after consultation with the Native American tribal representative(s) and the archaeologist, a decision shall be made, with the concurrence of the City of Riverside, as to the appropriate mitigation (documentation, recovery, avoidance, etc.) for the cultural resources.

CUL-8: If human remains are encountered, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin. Further, pursuant to Public Resource Code Section 5097.98(b) remains shall be

left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the County Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted within a reasonable timeframe. Subsequently, the Native American Heritage Commission shall identify the "most likely descendant." The most likely descendant shall then make recommendations and engage in consultation concerning the treatment of the remains as provided in Public Resources Code Section 5097.98. If requested, human remains may be buried by the respective tribe as close to the excavation site as possible in a location that will not be subject to future subsurface disturbance.

Historic Resources

Impact 3.6-3: Implementation of the proposed project would not have a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5. **Level of Significance: Less than Significant with Mitigation.**

Historic resources generally consist of buildings, structures, improvements, and remnants associated with a significant historic event or person(s) and/or have a historically significant style, design, or achievement. In general, resources greater than fifty years old have the potential to be considered a historic resource. Damage to or demolition of such resources is typically considered to be a significant impact, as the value of the resource is diminished or eliminated. Impacts to historic resources can occur through direct impacts, such as destruction or removal, and through indirect impacts, such as a change in the setting of a historic resource.

Potential Historical Resources

During the field survey of the APE, no artifact deposits, historic in age, were encountered. However, numerous historic-period and modern features of the built environment were encountered within and immediately adjacent to the APE, including some previously-recorded sites, as discussed below.

Previously Recorded Sites

As stated in the records search results above, three historic-period structures were previously recorded within the APE boundaries: Site 36-010330 (Southern Pacific Railway), Site 36-007169 (Riverside Water Company's Santa Ana Siphon and Riverside-Warm Creek Canal), and Site 36-016417 (San Bernardino-Sonora Road). During the field survey of the APE, no evidence of the San Bernardino-Sonora Road was found anywhere in the APE, and therefore, no further explanation is necessary. This 19th century wagon road has most likely been obliterated from the landscape at this location due to many years of disuse and periodic flooding of the Santa Ana River. However, a bridge on the Southern Pacific Railway and additional historic-period waterworks features of Site 36-007169 were encountered, as discussed below.

Riverside-Warm Creek Canal/Riverside Water Company System (Site 36-007169)

A segment of a concrete-lined canal at this historic site was encountered within the APE boundaries during the field survey. It measures approximately 500 feet in length, six feet in width, and three feet in depth, and is bounded on one side by a raised earthen berm that measures approximately six feet in width and three feet in height. The southeastern end of the canal segment features a concrete dam wall with a slotted, rectangular opening that likely once functioned as a control gate. The canal segment is abandoned, and it appears that the water conveyance system at this location has been replaced with underground pipes. The City of

Riverside's Flume Well No. 2, originally drilled by the Riverside Water Company in 1928, is situated near the gate end of the canal, along the current alignment of an underground siphoning system.

The underground siphon at Site 36-007169 is buried beneath several feet of earth and clearly outside of the vertical APE with regard to the proposed undertaking. However, a total of six wells located along the siphon's alignment, known as the City of Riverside's Flume Well Nos. 1-6, were encountered during the field survey. This system of wells, originally constructed by the Riverside Water Company in the early 20th century, are a part of the City of Riverside's water diversion, extraction, and conveyance system along this part of the Santa Ana River, some of which has been previously recorded as Site 36-007169.

These wells are sequentially located along the banks of the Santa Ana River and extend a distance of approximately 3,800 feet. The northeastern-most well, known as Flume Well No. 1, is located approximately 1,000 feet to the southwest of the Mount Vernon Avenue bridge over the Santa Ana River. Five of the six wells are modern in appearance and contained within fence enclosures. Flume Well No. 5, however, is not enclosed and has not yet been upgraded to modern standards as the others have. It presently consists of a short length of vertical casing topped with a concrete superstructure. City of Riverside records show that the well was drilled between July and August 1927, but no other records are available that would reveal later alterations or new construction on the well. As such, it is impossible to determine whether the materials, design, and construction of the well superstructure are original to its 1927 construction or otherwise historic in age. Well Nos. 1-5 were all drilled between 1925 and 1928, while Flume Well No. 6 was drilled in 1972. As such, the portion of Site 36-007169 situated within the APE does not appear to be eligible for listing in the National Register of Historic Places or in the California Register of Historical Resources and, therefore, is not considered a historic property under Section 106 or a "historical resource" under CEQA.

While the portion of Site 36-007169 in the APE does not demonstrate the level of historic significance required for protection under the provisions of NHPA Section 106 and CEQA, the concrete-lined canal segment may be of some local historical interest due to its age and association with late 19th century waterworks. Mitigation Measure CUL-9 recommends the avoidance of this feature. However, in the event that avoidance is infeasible, Mitigation Measure CUL-9 would ensure the proper recordation of the engineered design and construction of the canal segment and preservation of the information for future researchers.

Segment of the Southern Pacific Railway (Site 36-010330)

The segment of the Southern Pacific Railway Company's east-west main line recorded as Site 36-01033, now a part of the Union Pacific system, crosses the Santa Ana River north of the APE on a modern-looking concrete bridge. While the railway alignment is historic in age, the track and bridge are clearly modern in design, construction, and materials. In addition, the current undertaking as proposed has no potential to affect either of these two features, either directly or indirectly. As such, they are considered to be outside the APE, and therefore would not be disturbed or potentially impacted by the proposed project.

Other Man-made Features Encountered in the APE

A modern-looking concrete bridge that carries Mount Vernon Avenue across the Santa Ana River was noted during the field survey north of the APE. This bridge, like the Union Pacific Railway bridge, is also clearly modern in design, construction, and materials. Two mature palm trees that appear to date to the historic-period were encountered within the APE at the southeast corner of Pine Avenue. It is possible that these two trees are remnant streetscape plantings, but with the immediate surroundings at this location being completely modern in design and construction, and with no associated historical features present, they have

lost all historical integrity to relate to the historic period. In addition, there were no historical or archaeological materials found at this location that would attribute any research value or possibility of historical significance to these two palm trees. As such, they are not considered historical resources and were not formally recorded during this study.

Both wood and metal high-voltage power lines cross the APE at different locations. Some of the wood poles have nails in them with head stamps of 1957, 1959, and 1980, and according to historic maps of the area the alignments date to the post-World War II era. However, these features are ubiquitous infrastructure elements that have been altered over the years since first constructed through regular maintenance, replacement of poles, and upgrades to increase voltage and capacity. As such, these features retain little potential for historic significance.

A total of three private wells were encountered within the APE boundaries during the field survey. These three wells consisted of short, above-ground steel casings measuring about eight to twelve inches in diameter, each capped with a lid with a lock on it. According to the City of Riverside Public Utilities Department, these wells were privately owned, probably drilled sometime during the first half of the 20th century, and are now abandoned. As ubiquitous, ancillary features with no associated historical or archaeological components present, these features have no potential to qualify as "historic properties" or "historical resources" and are not considered historically significant. Therefore, these three wells require no further study and were not formally recorded into the California Historical Resources Inventory. Project impacts are not anticipated, and no mitigation is required.

Construction-Related Impacts

It is not anticipated that construction of the recharge basins, SWP pipeline, or rubber dam would impact the concrete-lined canal segment of Site 36-007169, the Riverside-Warm Creek Canal/Riverside Water Company System. Construction activity is anticipated to occur outside of this location. However, in the event this facility cannot be avoided, proper recordation of the engineered design and construction shall be ensured and preserved for future researchers as identified in Mitigation Measure CUL-9.

Therefore, the proposed project would have a substantial adverse change in the significance of a historical resource. Impacts would be reduced to a level of less than significant with mitigation.

Operations-Related Impacts

Operational impacts to historic resources are not anticipated, as operational activities would involve only the maintenance of the proposed off- and in-stream basins and dam. These activities would occur at a safe distance from the canal segment. Therefore, impacts related to operational activities would be less than significant.

Mitigation Measures

CUL-9: The Riverside-Warm Creek Canal/Riverside Water Company System (Site 36-007169) shall be avoided during future construction activities, if feasible. If demolition, destruction, or removal of the feature cannot be avoided, additional recordation should be carried out to document its history and current condition, including detailed measurements and photographs of the canal, scaled drawings of a cross-section, and a profile of the gate at the end of the canal. The results of the recordation shall be documented on the appropriate DPR 523 forms and submitted to the Archaeological Information Center at the San Bernardino County

Museum as an update to Site 36-007169 for inclusion into the California Historical Resources Inventory.

CUL-10: Prior to obtaining any federal funding, permits or approvals (including USACE Section 404 and 408 permits), the applicable federal lead agency shall comply with Section 106 of the National Historic Preservation Act, which requires consultation with the State Historic Preservation Officer regarding potential adverse effects to archaeological and historic resources.

Human Remains

Impact 3.6-4: Implementation of the proposed project may disturb human remains, including those interred outside of formal cemeteries. **Level of Significance: Less than Significant with Mitigation.**

As with unknown paleontological, archaeological, or historic resources, buried human remains may be unearthed or damaged during ground-disturbance activities. No known formal gravesites have been identified within the project area. However, due to the known prehistoric habitation of the area and the identification of archaeological resources in the vicinity of the project area, the possibility that human remains could be encountered during grading, trenching, or other earth-moving activities as a result of project implementation does exist. Any disturbance of human remains as the result of the project would be considered a significant adverse impact. As such, Mitigation Measures CUL-7 and CUL-8 listed above would require an archaeological monitor on-site during grading activities. If human remains are discovered, compliance with all applicable state and federal regulations concerning preservation, salvage, or handling of these resources would be required. Implementation of applicable standards and Mitigation Measures CUL-7 and CUL-8 would ensure that human remains are not damaged if unearthed within the project area, and that such remains are handled appropriately. With implementation of Mitigation Measures CUL-7 and CUL-8, impacts on human remains as the result of project implementation would be reduced to a less than significant level.

Construction-Related Impacts

Construction of the groundwater recharge basins, SWP pipelines, and rubber dam is not anticipated to uncover human remains, since evidence gathered during field surveys and records search concluded that the site has been disturbed, and no known burial sites occur on-site. However, unrecorded human remains may be unearthed or damaged during ground-disturbing activities due to the presence of archaeological resources in the vicinity of the project area. As such, Mitigation Measures CUL-7 and CUL-8 would require an on-site archaeological monitor during grading activities. Compliance with state and federal regulations concerning preservation, salvage, or handling of human remains would be required in the event that human remained are unearthed. With implementation of Mitigation Measures CUL-7 and CUL-8, impacts on human remains as the result of project construction would be reduced to a less than significant level.

Operations-Related Impacts

Operational impacts to human remains are not anticipated, as operational activities would involve the maintenance of the proposed off- and in-stream basins and dam. Maintenance activities are expected to involve grading activities within previously-disturbed lands, thereby greatly reducing the potential for unknown human remains to be unearthed. Therefore, impacts related to operational activities would be less than significant, and no mitigation measures are required.

MITIGATION MEASURES

Refer to Mitigation Measures CUL-7 and CUL-8. No further mitigation is required.

3.6.5 Significant Unavoidable Adverse Impacts

No significant unavoidable impacts related to cultural resources have been identified following implementation of the recommended mitigation measures.

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3.7 GEOLOGY AND SOILS

The purpose of this section is to analyze the existing geologic conditions for the proposed project area and applicable regulations related to geologic hazards. The section will also evaluate seismic hazards including surface rupture, ground shaking, liquefaction, subsidence, tsunamis, and seiches and other geologic issues, such as potentially unstable soils and slopes. Mitigation measures are recommended to minimize significant impacts that would occur as the result of project implementation. Information and analysis in this section are based mainly on the *Geohydrologic Evaluation of the Riverside Aquifer Storage and Recovery Project* prepared by Geoscience Support Services, Inc., dated June 2009, updated January 2014.

3.7.1 Existing Conditions

Regional Geology

North of the project area, the San Gabriel and San Bernardino Mountains rise to elevations of up to 10,000 feet above sea level. These mountains, as well as the Jurupa and Box Springs Mountains, are comprised of igneous and metamorphic rocks of pre-Tertiary age. The rocks compose what is known as the basement complex that is believed to underlie the entire groundwater basin at varying depths. The top of the basement complex is considered the effective base of fresh water aquifers within the region. Slover Mountain to the west represents an extension of the surrounding metamorphic rock that protrudes downward into the granitic batholith. The basement surface is present at shallow elevations in the vicinity of the project area and to the south. Bedrock is present at depths of approximately 400 and 500 feet in the near vicinity of the project area.

The tertiary continental rocks which overlie the basement complex of Pliocene age (5.3 to 1.8 million years ago) occur in some portions of the Riverside Basin. The tertiary sediments in the vicinity of the site consist of the San Timoteo Beds which crop out in Reche Canyon, located to the east of the project area and along the erosional escarpment that forms the northern boundary of the community of Grand Terrace (basement rocks are also exposed along this erosional escarpment). The tertiary beds consist of well-compacted and cemented layer of gravel, sand, silt and clay. The compaction and cementation of these rocks suggests a period of deposition composed largely of continental sediment conformably resting on the underlying basement complex. Unconsolidated sands and gravels found within the continental deposits form well-suited aquifers. Alluvial sediments in the project area are primarily the result of weathering of the granitic and metamorphic rocks in the San Bernardino Mountains to the north.

The alluvial sediments are mapped as Holocene (less than 10,000 years before present (bp)) to Pleistocene (less than 2,000,000 years bp) very young river wash deposits, younger and older alluvial fan deposits, and old dune deposits. The older alluvium consists of unconsolidated coarse sand, gravel, silt and clay. The younger alluvium which is stratigraphically above the older alluvium generally consists of sand, gravel, cobbles, and boulders with minor interbedded silt and clay layers. In the project area, approximately 50 and 270 feet of clay sediments are present between the bedrock surface and the base of the water bearing materials.[1]

1 Geohydrologic Evaluation of the Riverside Aquifer Storage and Recovery Project, prepared by Geoscience Support Services, Inc., dated June 29, 2009, pgs. 9-11.

Local Geology

The Santa Ana River is located on highly permeable recent river wash deposits. Areas outside of the river channel are characterized by recent wash deposits which flank the edges of the active river channel and are located at a higher elevation relative to the adjacent river channel. The alluvial deposits will be described further in this section.

The principal geologic units identified in the study area from oldest to youngest include:

- Igneous/metamorphic basement complex
- Tertiary continental rocks
- Older alluvium
- Younger alluvium
- River-channel deposits[2]

Primary Earthquake Hazards

Seismicity and Seismic Shaking

The largest loss of life and property in California due to geologic hazards has been caused by violent ground shaking during earthquakes. There are up to six established or suspected earthquake faults within a distance of 12 miles of the City of Colton, all of which are part of the San Jacinto fault system, which is in turn part of the larger San Andreas system. The largest earthquake expected along the San Andreas fault is an 8.5 magnitude event.

The San Jacinto fault runs along the eastern edge of the City of Colton, passing directly under the Interstate 10/Interstate 215 interchange. This fault is regarded as one of the most active in California and has been subject to repeated earthquakes with seventeen events of six to eight Richter magnitude being recorded since 1769. This fault is presently undergoing minor creep in the Colton area. A suspected fault also runs in a northwesterly-southwesterly direction through the center of Colton. Any significant earthquake along these faults could cause extensive damage.

Faults

The regional geology of the Riverside Basin area is largely a function of faulting associated with the San Jacinto fault system. Faults in the vicinity of the proposed project include the Rialto-Colton fault (which is mapped as a buried fault through the project area), as well as the San Jacinto fault to the north and northeast (refer to *Exhibit 3.7-1, Geologic Hazards Overlay Map*). In the project area, the Rialto-Colton fault forms the boundary between the Rialto-Colton groundwater basin on the north side of the fault with the Riverside-Arlington groundwater basin on the south side of the fault. This fault strikes in a northwest-southeast direction. With the exception of the San Jacinto fault, groundwater barriers have little to no visible surface expression where they cross recent wash deposits and their existence is based largely on water level differences across the fault

2 Geohydrologic Evaluation, pgs. 9-10.

and offsets in older geologic units in the highland areas. In the vicinity of the site, insufficient data are available to assess the precise location of the Rialto-Colton fault. However, in the area of the proposed project, it appears that the fault may have little influence on water levels on either side.[3]

Secondary Earthquake Hazards

Liquefaction Potential

The potential for liquefaction occurs due to strong earthquake-induced ground accelerations, shallow groundwater conditions (groundwater at a depth of less than 50 feet below ground surface [bgs]) and loose unconsolidated granular soil conditions. The project will introduce groundwater into the surface sediments in the vicinity of the project. The overall depth to groundwater will be a function of the climatological conditions, recharge period, and the volume of surface water available for recharge.

According to the San Bernardino County General Plan "Geologic Hazard Overlay" map, the majority of the project site is located within an area susceptible to moderate to high liquefaction potential (refer to *Exhibit 3.7-1, Geologic Hazards Overlay Map*).

Ground Settlement

Strong ground shaking can cause settlement by allowing sediment particles to become more tightly packed, thereby reducing pore space. Unconsolidated, loosely pack alluvial deposits are especially susceptible to this phenomenon. Poorly compacted artificial fills may also experience seismically induced settlement.

Landslides

Landslides are mass movements of the ground that include rock falls, relatively shallow slumping and sliding of soil, and deeper rotational or transitional movement of soil or rock. Landslides are considered to be a basic geological hazard to any hillside areas. In addition, areas around creeks and streambeds are also susceptible to landslide hazards. The project area is relatively flat, with steeper slopes located along the existing riverbanks. According to the County of San Bernardino General Plan, "Geologic Hazard Overlay Map," the project site is not located within an area susceptible to landslides. The reach of the Santa Ana River in the project area consists of rip rap, engineered and non-engineered levees, and soft-bottom riverbeds.

Subsidence

Subsidence is the gradual lowering of ground surface typically with limited or no horizontal motion. Subsidence is usually a consequence of groundwater, gas or oil extraction or hydro-compaction. Generally, the effects of subsidence are gradual and become significant only over a period of years. Subsidence due to groundwater withdrawal, hydro-compaction, and earthquakes are assumed to be the only types of subsidence with potential to occur in the Colton area.

3 Geohydrologic Evaluation, pg. 11.

Soil Erosion

High wind conditions and stormwater runoff can cause significant soil erosion. Soil erosion is most prevalent in unconsolidated alluvium and surficial soils and in areas with steep slopes. There is a potential for erosion to occur during the grading process, specifically within periods of heavy rainfall.

3.7.2 Regulatory Framework

Federal

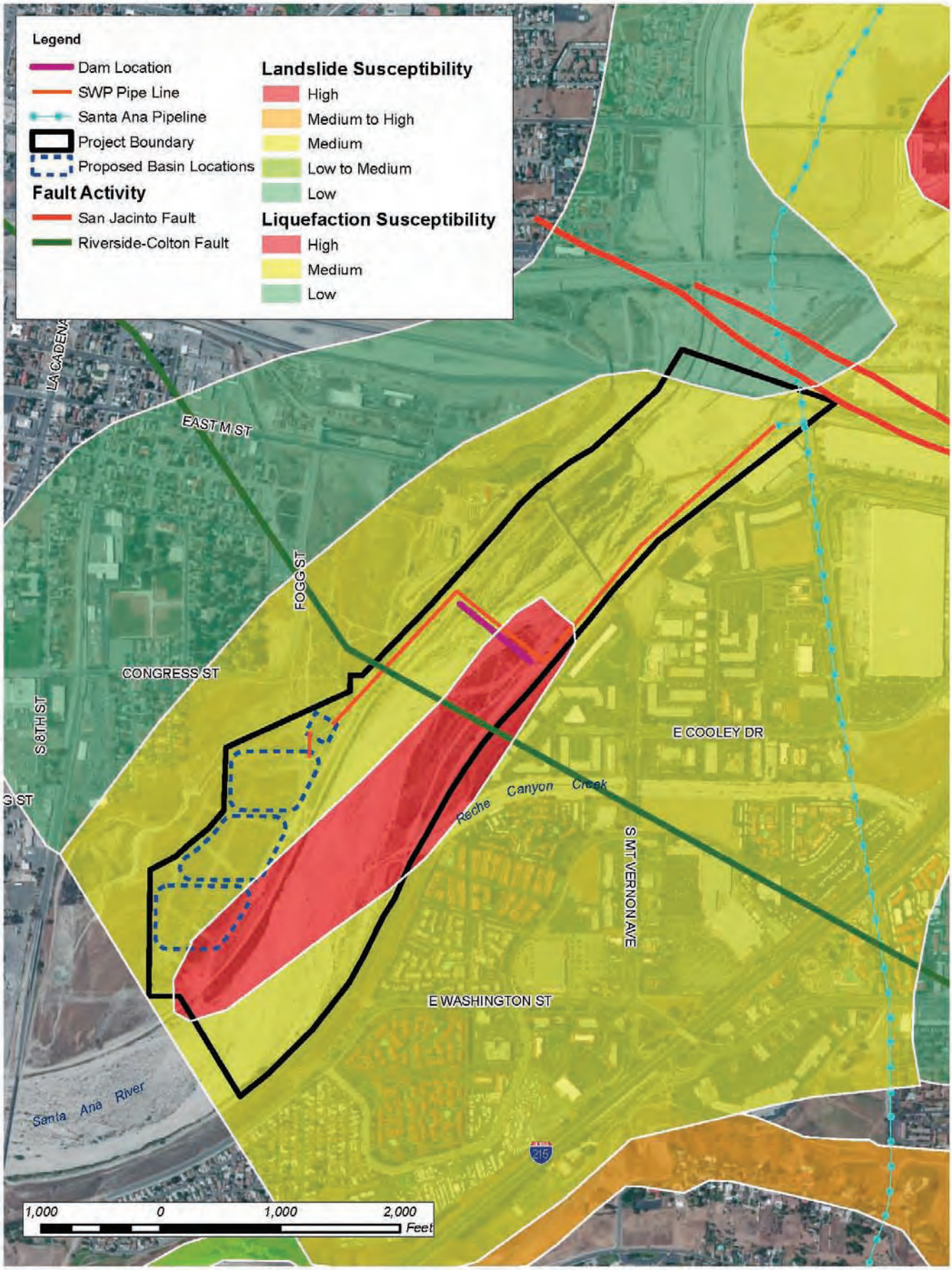
Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act) was signed into law in December of 1972. The Act requires the delineation of "Earthquake Fault Zones" along known faults that are considered to be "sufficiently active" and "well defined." The Act is intended to regulate development on or near active fault traces to minimize the potential risk to structures intended for human occupancy from fault-rupture risks (California Public Resources Code §2621–2630). The boundary of an "Earthquake Fault Zone" is generally located approximately 500 feet from major active faults and 200 to 300 feet from well-defined minor faults. The State Geologist is responsible for the mapping of such active faults as identified in the Division of Mines and Geology Special Publication 42. The maps are then made available to cities and counties for use in developing planning policies and controlling renovation or new construction. No Alquist-Priolo Earthquake Fault Zones are located within the project area.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act, passed in 1990, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically-induced landslides. Under the Act, seismic hazard zones are to be mapped by the State Geologist to assist local governments in land use planning. The program and actions mandated by the Seismic Hazards Mapping Act closely resemble those of the Alquist-Priolo Earthquake Fault Zoning Act (which addresses only surface fault-rupture hazards) and are outlined below:

- The State Geologist is required to delineate the various "seismic hazard zones."
- Cities and Counties, or other local permitting authority, must regulate certain development "projects" within the zones. They must withhold the development permits for a site within a zone until the geologic and soil conditions of the ESP site are investigated and appropriate mitigation measures, if any, are incorporated into development plans.
- The State Mining and Geology Board provides additional regulations, policies, and criteria, to guide cities and counties in their implementation of the law. The Board also provides guidelines for preparation of the Seismic Hazard Zone Maps and for evaluating and mitigating seismic hazards.
- Sellers (and their agents) of real property within a mapped hazard zone must disclose that the property lies within such a zone at the time of sale.



RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

Geologic Hazard Overlay Map

JN 130506 June 2014

RBF CONSULTING A Baker Company

Exhibit 3.7-1

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State

National Pollutant Discharge Elimination System (NPDES) (General Construction Activity Stormwater Permit)

As explained in further detail in Section 3.5, *Hydrology and Water Quality*, of this EIR, a Stormwater Pollution Prevention Plan (SWPPP) prepared in compliance with a National Pollutant Discharge Elimination System (NPDES) permit application is required. The SWPPP would detail the following: (1) specific construction site; (2) the existing and proposed construction erosion and sediment controls; (3) the existing and proposed systems for monitoring runoff water quality; (4) means of waste disposal; (5) implementation of approved local plans; (6) proposed program and methods to control post-construction sediment, erosion, and maintenance responsibilities; and (7) and construction and post-construction non-stormwater management controls. Dischargers are required to inspect construction sites before and after storms to identify stormwater discharge from construction activity and to identify and implement controls where necessary.

California Building Code / Uniform Building Code

The regulatory environment for the design and construction industries consists of building codes and standards covering local, State, federal, land use and environmental regulations. Building codes and standards are developed specifically for the purpose of regulating the safety, health and welfare of the public with respect to building construction and maintenance. Once adopted, building codes become law.

The Uniform Building Code (UBC) was first enacted by the International Conference of Building Officials (ICBO) in 1927. Revised editions of this code have been published every three years since that time. In California, the California Building Code (CBC) is used, which incorporates by adoption the UBC and includes necessary California amendments. The CBC contains specific requirements for seismic safety, excavation, foundations, retaining walls and site demolition. It also regulates grading activities, including drainage and erosion control.

Chapter 16.08.020 of the City of Riverside Municipal Code adopts by reference the CBC, 2013 Edition. The City of Colton has also adopted by reference the CBC, 2013 Edition.

Local

City of Riverside General Plan 2025

A goal of the Public Safety Element of the City of Riverside General Plan is to ensure that the City proactively addresses and implements measures to reduce the risk of hazards related to geology and soils.

Objective PS-1:	**Minimize the potential damage to existing and new structures and loss of life that may result from geologic and seismic hazards.**
Policy PS-1.1	Ensure that all new development in the City abides by the most recently adopted City and State seismic and geotechnical requirements.
Policy PS-1.2	Locate important public facilities of City importance outside of geologically hazardous areas.

3.7.3 Significance Threshold Criteria

The following thresholds of significance are based on Appendix G of the State *CEQA Guidelines*. Significant impacts to geology and soils could result from implementation of the proposed project if they would:

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

   i) Rupture of a known earthquake fault as delineated in the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42;

   ii) Strong seismic ground shaking;

   iii) Seismic-related ground failure, including liquefaction;

   iv) Landslides;

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

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, later spreading, subsidence, liquefaction or collapse;

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

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water (refer to Section 7.0, *Effects Found Not To Be Significant*.)

Potential impacts associated with the projects area's topography, soil and the region's seismic activities are identified below. Mitigation measures are provided to avoid or lessen the significance of impacts.

3.7.4 Impacts and Mitigation Measures

Surface Fault Rupture

Impact 3.7-1: Implementation of the Riverside North Aquifer Storage and Recovery Project may expose people or structures to potential adverse effects from surface fault rupture. **Level of Significance: Less than Significant with Mitigation.**

The project site is located within a seismically-active region near the North American and Pacific tectonic plates. Faults within this region experience a significant amount of seismic activity. The San Jacinto fault runs along the eastern edge of the City in a northwesterly-southeasterly direction, passing directly under the Interstate 10/Interstate 215 interchange. This fault is regarded as one of the most active in California and has been subject to repeated earthquakes with seventeen events measuring between six and eight on the Richter scale since 1769. This fault is presently undergoing minor creep in the Colton area and is not located within

the proposed project boundary. In addition to the San Jacinto fault which is located to the north and northeast of the project area, facilities proposed as part of the project would be impacted by the Rialto-Colton fault which is mapped as a buried fault traversing the project area; refer to *Exhibit 3.7-1, Geologic Hazards Overlay Map*.

In the project area, the Rialto-Colton fault forms the boundary between the Rialto-Colton groundwater basin on the north side of the fault with the Riverside-Arlington groundwater basin on the south side. With the exception of the San Jacinto fault, groundwater barriers have little to no visible surface expression where they cross recent wash deposits; their existence is based largely on water level differences across the fault and offsets in older geologic units in the highland areas. In the vicinity of the site, insufficient data is available to assess the specific location of the Rialto-Colton fault. According to the *Geohydrologic Evaluation Technical Memorandum* prepared for the project, the Rialto-Colton fault is assumed to be located within the boundaries of the proposed project site.

The 2013 CBC is considered to be a standard safeguard against major structural failures and loss of life. The goal of the code is to ensure that structures will: (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage, but with some non-structural damage; and (3) resist major earthquakes without collapse, but with some structural and non-structural damage. The CBC bases seismic design on minimum lateral seismic forces ("ground shaking"). The CBC requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings and structures from failure during earthquakes. The basic formulas used for the CBC seismic design require determination of the seismic zone and site coefficient, which represent the foundation conditions at the site.

Building and grading plans must be deemed acceptable by the City of Riverside, prior to construction. This would include review of the project to ensure compliance with the 2013 CBC, the City's Building Code, and professional engineering standards. The City will review the project's compliance with the CBC to determine if the requirements for construction within the project site's specific seismic hazard zones are met.

Construction-Related Impacts

The project would be subject to applicable State and local regulations pertaining to specific construction methods and/or restrictions to reduce the potential for property loss, injury, or death that could result from rupture(s) of faults during earthquake events. Conformance with State and local regulations and existing standard conditions or requirements will reduce impacts to less than significant, and no mitigation is required.

Operations-Related Impacts

The off-stream recharge basins would consist of unlined basins and would include connection piping from upstream of the dam to the basins, between the basins, and from the southernmost basin back into the Santa Ana River. The proposed inflatable dam would be located north of the Rialto-Colton fault; the off-stream recharge basins would be located south of the Rialto-Colton Fault. The SWP pipeline, however, is anticipated to traverse the Rialto-Colton fault, with portions of the pipeline located to both the north and south of the fault. Refer to *Exhibit 3.7-1, Geologic Hazards Overlay Map*, for an illustration of the identified active faults in relation to proposed infrastructure improvements.

No significant impacts from seismic hazards are expected, as the project would be required to comply with the CBC and local codes and standards, with compliance to be determined through City review of the building and grading plans. In addition, Mitigation Measure GEO-1 requires all conveyance facilities that cross the

mapped Rialto-Colton fault to be designed with current technology to accommodate seismic activity (such as placement of isolation valves and flexible pipe joints at a fault interface) and to incorporate the final design recommendations of the project geologist and/or geotechnical engineer into the design and construction of the project to reduce impacts related to seismic hazards (i.e., ground shaking, liquefaction, etc.). In addition, the City would prepare a response/repair program in case of facility damage. For the above reasons, impacts resulting from surface rupture are considered less than significant with mitigation.

MITIGATION MEASURES

GEO-1: All proposed improvements associated with development of the Riverside North Aquifer Storage and Recovery Project which cross the inferred Rialto-Colton fault shall be designed with current technology to accommodate seismic activity (such as placement of isolation valves and flexible pipe joints at a fault interface).

The project shall incorporate the final design recommendations of the project geologist and/or geotechnical engineer into the design and construction of the project to reduce impacts related to seismic hazards (i.e., ground shaking, liquefaction, etc.). As standard practice, continuous geologic and geotechnical observations, testing, and mapping shall be conducted throughout site development and final design recommendations shall be provided in a grading report based on the observation and test results collected during grading.

Proposed structures shall conform to the provisions of the California Building Standards Code in Title 24, which provides regulations for structural design and construction with regard to seismic safety. In addition, the City shall prepare a response/repair program in case of facility damage due to seismic activity.

Ground Shaking

Impact 3.7-2: Implementation of the proposed project may expose people or structures to potential substantial adverse effects involving strong seismic ground shaking or seismic-related ground failure. **Level of Significance: Less than Significant with Mitigation.**

As previously noted, the project site is located in close proximity to an active earthquake fault zone, as defined by the State Geologist. Therefore, structures on the project site would likely be subjected to strong seismic ground shaking, exposing them to seismic-related hazards. To minimize potential damage to the proposed structures by ground shaking, all construction would be required to comply with the most current CBC, as well as local codes and regulations that regulate site design and construction to minimize the potential for damage to property or adverse effects on human health and safety. Mitigation Measure GEO-1 also requires the preparation of a response/repair program in case of damage due to seismic activity and adherence to the 2013 CBC. For the above reasons, impacts resulting from ground shaking are considered less than significant with mitigation.

Construction-Related Impacts

As stated above, the project would be subject to applicable State and local regulations pertaining to specific construction methods and/or restrictions to reduce the potential for property loss, injury, or death that could result from seismic activity, including ground shaking and ground failure. Conformance with State and local regulations and existing standard conditions or requirements will reduce impacts to less than significant.

Operations-Related Impacts

The risk of impacts is similar to those mentioned under the response above. Strong seismic ground shaking has the potential to damage the inflatable dam facility, pipelines, and basins. However, in accordance with Mitigation Measure GEO-1, facilities would be designed with the most current technology and methods to accommodate seismic ground shaking (such as placement of isolation valves, flexible pipe joints at all fault interfaces, etc.), as well as the development of a response/repair program by the City in the event of facility damage. For the above reasons, impacts resulting from ground shaking are considered less than significant with mitigation.

Mitigation Measures

Refer to Mitigation Measure GEO-1. No further mitigation is required.

Settlement and Collapse

Impact 3.7-3: Implementation of the proposed project may expose people or structures to potential substantial adverse effects from ground failure, including settlement and collapse. **Level of Significance: Less than Significant Impact with Mitigation.**

Alluvial sediments in the project area are primarily the result of weathering of the granitic and metamorphic rocks in the San Bernardino Mountains to the north. The alluvial sediments are mapped as Holocene (less than 10,000 years before present (bp) to Pleistocene (less than 2,000,000 years bp) very young river wash deposits, younger and older alluvial fan deposits, and old dune deposits. The older alluvium consists of unconsolidated coarse sand, gravel, silt, and clay. The younger alluvium which is stratigraphically above the older alluvium generally consists of sand, gravel, cobbles, and boulders with minor interbedded silt and clay layers.

More specifically, the in-stream recharge basin would be located on highly permeable recent river wash deposits. The off-stream recharge basins would be located on recent wash deposits which abut the edge of the active river channel. These off-stream basins are located at a higher elevation relative to the adjacent river.

Recent soil boring logs for the off-stream portion of the project area indicate the majority of the underlying material within the first 90 feet below ground surface (bgs) consists of sand and gravel. Available boring logs indicate that in the project area, approximately 50 to 270 feet of clay sediments are present between the bedrock surface and the base of the water bearing materials.

A ground failure event, resulting in settlement and collapse, could occur within the project site. However, minimal damage is anticipated for the inflatable dam facility, pipelines, and basins. The off-stream recharge basins would consist of unlined basins. Settlement or collapse within these facilities would not result in the adverse effects on people or structures. In the event of settlement or collapse, these basins could be re-formed or repaired with minimal damage to structures.

Construction-Related Impacts

Implementation of the proposed project may expose people or structures to potential substantial adverse effects from ground failure, including settlement and collapse. As stated above, the project would be subject to applicable State and local regulations pertaining to specific construction methods and/or restrictions to

reduce the potential for property loss, injury, or death that could result from ground failure, including settlement and collapse. Conformance with State regulations and existing standard conditions or requirements will reduce impacts to less than significant.

Operations-Related Impacts

Standard construction practices would be employed to reduce potential risk to settlement and collapse. In addition, adherence to the CBC would reduce exposure to these risks; the removal of unsuitable surficial soils, compaction of underlying soils, regulation of moisture content, placement of concrete bases where necessary, and design of the structures would minimize impacts related to settlement and collapse. Less than significant impacts would occur with implementation of the most-current CBC, as well as local policies and regulations that regulate design and grading. These standard regulations would minimize the potential for damage to property or adverse effects on human health and safety.

Depending on the pipeline alignments and locations of the proposed facilities, there is the potential that the project components will be subject to unstable soils that would result in potential settlement or collapse. As a result, the project would incorporate the final design recommendations of the project geologist into the design and construction of the project. As standard practice, continuous geologic and geotechnical observations, testing, and mapping would be conducted throughout site development, and final design recommendations shall be provided in a grading report based on the observation and test results collected during project grading.

In addition, facilities would be designed with current technology to accommodate possible settlement or collapse (such as those described above under Mitigation Measure GEO-1). A response/repair program would also be prepared to address potential facility damage scenarios. With adherence to the recommendations of the project geologist, as well as the CBC, local policies and regulations, and professional engineering standards, impacts due to settlement or collapse are considered less than significant.

Mitigation Measures

Refer to Mitigation Measure GEO-1. No further mitigation is required.

Liquefaction

Impact 3.7-4: Implementation of the proposed project would be located on a geological unit or soil that is unstable, or that would become unstable as a result of the proposed project, and potentially result in liquefaction. **Level of Significance: Less than Significant with Mitigation.**

The proposed project would introduce groundwater into the surficial sediments in the vicinity of the project area. The overall depth to groundwater would be a function of climatological conditions, the recharge period, groundwater extractions, and volume of surface water available for recharge. The results of the groundwater model prepared for the Geohydrologic Evaluation indicate that surface water would infiltrate rapidly and would not result in the generation of a groundwater mound below the project area. Therefore, the project, along with the projected groundwater pumping schedule as described in the Geohydrologic Evaluation, would not result in shallower groundwater levels than existing conditions. Based on the March 1997 groundwater conditions, the groundwater recharge and pumping would result in a net drawdown beneath the recharge basins ranging from zero to 2.5 feet below the surface of the groundwater surface at the end of the simulated

12-month infiltration period. Therefore, implementation of the proposed facilities would not raise groundwater levels or increase the risk of liquefaction within the project area.

According to the San Bernardino County General Plan, "Geologic Hazard Overlay" map, the majority of the project site is located within an area susceptible to moderate to high liquefaction potential(refer to *Exhibit 3.7-1, Geologic Hazards Overlay Map*). Liquefaction often occurs in earthquake-prone areas underlain by alluvium where the groundwater is shallower than 50 feet. Groundwater beneath the project area occurs at depths ranging from a historical high water level elevation (Flume 2 well measured on May 10, 1983) of approximately 913 feet above mean sea level (amsl) which was approximately 19 feet below ground surface (bgs) to an elevation of approximately 801 feet amsl (131 feet bgs measured in Flume 2 well on November 12, 1965).

Groundwater elevations from March 1997 were the first data set which included groundwater level measurements available for the City of Riverside Meeks Well, Mill Well and Flume Wells 1 through 6 which provide water level data over the entire project area. The March 1997 groundwater elevations ranged from elevations of approximately 902 amsl at the north end of the project area (Meeks Well) to approximately 880 feet amsl at the southern end of the project area (Flume 6 Well). The depth to water in 1997 was approximately 45 feet bgs.

Static groundwater elevations (Spring 2013) ranged from approximately 837.6 feet above mean sea level (amsl) in the Flume 1 well to 838.2 feet amsl in Flume 4 well. These groundwater elevations indicate an approximate depth to water of 102 and 93 feet bgs for Flume 1 and Flume 4, respectively. The March 1997 groundwater elevations were higher than the present groundwater conditions and are, therefore, used to provide a conservative starting point (groundwater surface closer to ground surface) for assessing impacts related to liquefaction.[4]

The liquefaction susceptibility at any given location is best evaluated by point-specific testing that would typically include a determination of depth to water, subsurface soil types, and strength properties. The primary impact of liquefaction is structural damage, through settling, tilting and collapse. Lightweight buried structures, such as conveyance pipelines, may "float" to the surface. Facilities located in areas with high potential for liquefaction could be damaged in the event seismically induced liquefaction hazards occur.

Potential impacts associated with liquefaction would be mitigated through a groundwater elevation management program (described in Mitigation Measure GEO-2) and compliance with grading requirements set forth in the CBC, local building and grading standards, and professional engineering standards. This would reduce potential impacts to less than significant levels.

Construction-Related Impacts

As stated above, the project would be subject to applicable State and local regulations pertaining to specific construction methods and/or restrictions to reduce the potential for property loss, injury, or death that could result from liquefaction. Conformance with State regulations and existing standard conditions or requirements would reduce impacts to less than significant.

4 Geohydrologic Evaluation (Appendix H), pg. 14.

Operations-Related Impacts

The proposed inflatable dam would be relatively short in height (approximately 6 feet tall). This facility may be at risk of exposure to structural damage through settling, tilting and collapse, since the dam is located within an area with high susceptibility to liquefaction. Continuous geologic and geotechnical observations, testing, and mapping will be conducted throughout site development and final design recommendations in regard to liquefaction will be provided in a grading report based on the observation and test results collected during grading.

Additionally, project compliance with grading requirements set forth in the CBC would be required. Mitigation Measure GEO-1 will require the incorporation of final design recommendations of the project geologist and/or geotechnical engineer into the design and construction of the project which will address, among other geologic issues, impacts and recommendations related to liquefaction. Mitigation Measure GEO-2 would require the City to maintain groundwater levels below 20 feet bgs, in order to minimize the project's exposure to liquefaction risk, or as recommended by the project hydrogeologist during final design. With the incorporation of standard engineering practices and Mitigation Measures GEO-1 and GEO-2, impacts are considered less than significant.

Strong seismic events also have the potential to damage the pipelines and basins. However, pipelines would be designed with current technology to accommodate liquefaction resulting from ground shaking. Response/repair programs would be prepared addressing unexpected events in which facilities are damaged. Depending on ultimate siting of the proposed off-stream basins, a portion of these facilities may be located within an area with high susceptibility to liquefaction. Portions of the in-stream basin would also be located within this area of high susceptibility. Both off- and in-stream basins could therefore experience damage due to a liquefaction event. These facilities would be below grade and, thus, not susceptible to tilting. However, they may be susceptible to collapse. In the event of liquefaction-induced collapse, these basins could be re-formed or repaired without any damage to people or structures. In addition, standard construction practices, including the compaction of soils, removal of disturbed surficial soils, and layout design, would reduce the risk of impacts.

Therefore, less than significant impacts would occur with implementation of the most current CBC, as well as local policies and regulations that regulate design and grading. These standard regulations, along with Mitigation Measures GEO-1 and GEO-2, would minimize the potential for damage to property or adverse effects on human health and safety.

Mitigation Measures

Refer to Mitigation Measure GEO-1. In addition, the following mitigation is required:

GEO-2: As part of the ongoing operations of the proposed project, the City shall ensure that the groundwater levels within the project area will be held at a depth of no shallower than 20 feet below ground surface (bgs), or as recommended by the project hydrogeologist during final design, to avoid impacts associated with liquefaction.

Soil Erosion

Impact 3.7-5: Implementation of the proposed project may result in substantial wind or water soil erosion or the loss of topsoil, either on- or off-site. **Level of Significance: Less than Significant with Mitigation.**

The potential for erosion is influenced by climate, topography, soils, and vegetation. The project site is located in an area that is generally subject to erosion, runoff, and sedimentation due to topography, hydrology, and geological conditions. Erosion is generally limited to the vicinity of the existing active drainages. There is a potential for erosion to occur during the grading process during periods of rainfall.

Construction-Related Impacts

The design and construction during grading would create slopes that would be considered both grossly and surficially stable. In addition, the project geologist and/or geotechnical engineer would be required to include erosion and sediment control measures as part of the grading plan in order to minimize land modification and potential erosional effects. Grading plans will be prepared in accordance with applicable local and state requirements for erosion control and engineering suitability of graded surfaces. Short-term, construction-related impacts associated with soil erosion would be considered less than significant with implementation of Mitigation Measures GEO-3 and GEO-4, which would require erosion and sediment control measures. These measures will ensure the implementation of Best Management Practices (BMPs) to reduce or eliminate erosion and sedimentation in stormwater and non-stormwater discharge.

Operations-Related Impacts

No slopes within the off-stream basins are expected to be greater than 2:1 or higher than 11 feet. In general, the project site is relatively flat. Slopes would occur around the perimeter of the basins. Mitigation Measure GEO-1 would require the incorporation of final design recommendations of the project geologist and/or geotechnical engineer into the design and construction of the project which will address soil stabilization and slope stability. Grading plans would show slopes with the appropriate rise-to-run ratio, such that the integrity of the slopes conforms to the required site-specific geologic investigation recommendations.

Water within the basins would flow at a relatively slow rate, since the purpose of the basins is to allow the water to settle in the basins long enough to percolate through the basin floors. Water will be diverted to the off channel basins until they are full; off-channel diversions would cease once the basins reach capacity. A small increase in sediment deposition would occur as the water surface of impounded water increases in elevation. Reducing the rate of outflow from the reservoir and allowing the proposed recharge areas more time to remain static (which would allow sediment to settle) would have a beneficial impact in terms of a reduction in erosion.

Thus, water erosion in the off-channel areas would not result from rapid stormwater flows. The dam would be deflated at flows greater than 1,500 cfs and would not have any impact to flows that exceed this flow rate. The tops of the slopes of the basins would be capped in a manner that reduces the susceptibility to water-related erosion, since the soil types are highly susceptible to water-related erosion. The off-stream unnamed channel ephemeral drainage (Drainage A) could cause erosion to the off-stream basins should a large storm event occur, but the project itself would not cause this potential damage, since the drainage would be rerouted around the recharge basins to protect its hydraulic integrity and would continue to support sensitive habitat. The basins will be designed with appropriate energy dissipation and erosion control features, as required to meet applicable regulatory requirements. In addition, roadway bridge infrastructure would not be impacted by additional erosion, since flow rates would be slightly reduced due to the proposed impoundment upstream of the dam.

The SWP pipeline and pipelines associated with off-stream basins would not be susceptible to long-term erosion impacts, since the pipeline would be located underground and soils would be backfilled and re-

compacted. The inflatable dam would include miscellaneous rip-rap and/or energy dissipater devices downstream of the dam to reduce the potential for erosion at the base of the dam structure. The project assumes approximately 100 feet downstream of the proposed dam structure would be required to accommodate these materials and/or devices.

The proposed levees impacted by impoundment upstream of the dam would not be susceptible to erosion, since these levees would be re-engineered to USACE standards if deemed necessary. In addition, stormwater flows less than 1,500 cfs would be reduced within the in-stream recharge basin since the proposed dam is intended to collect and impound water behind the proposed dam alignment. This would allow stormwater to percolate into the river floor.

Therefore, operations-related impacts related to erosion may occur with the proposed project. However, with implementation of Mitigation Measure GEO-4, impacts would be reduced to a level of less than significant.

Mitigation Measures

Refer to Mitigation Measure GEO-1. In addition, the following mitigation is required:

GEO-3: All earthwork and construction activities conducted as part of the project will be done in such a manner so as to prevent any obstruction of storm drains and downstream channels, resulting from increased erosion and sedimentation. As part of this process, the following will be required: (1) proper erosion control techniques would be used during grading and construction in accordance with the requirements of all applicable jurisdictional codes (i.e., Stormwater Pollution Prevention Plan (SWPPP)); (2) any required permits have been obtained (e.g., RWQCB 401 Water Quality Certification, USACE 404 Individual Permit, CDFG 1602 Streambed Alteration Agreement (SAA)); and (3) temporary measures are designed to maintain the existing drainage flows and collect excess surface runoff and sediment resulting from construction activities.

GEO-4: In areas susceptible to soil erosion, sediment control shall be addressed in an Erosion Control Plan, to be reflected in facility plans, specifications, and estimates. The Erosion Control Plan shall include, but not be limited to, the following:

- Placement of sandbags along the perimeter of a project site prior to initial grading if grading is to be undertaken during the rainy season (October to March);
- Minimization of the length of time that soils remain exposed to the elements;
- Chemical soil binders, in a manner approved by the City of Riverside if determined to be required for erosion control in areas not planned for development until subsequent phases.

GEO-5: Any modification to the existing levees will require review and approval by the USACE, through the USACE Section 408 permitting process, to ensure the structural integrity and safety of the levee. The Section 408 Permit and other related permits/approvals for levee modification will be required prior to any levee construction.

Expansive Soils

Impact 3.7-6: Implementation of the proposed project may pose a risk to people and structures due to the presence of expansive soils. **Level of Significance: Less than Significant Impact.**

Expansive soils possess a "shrink-swell" characteristic, which is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying. Structural damage may occur over a long period of time due to this process, which is usually the result of inadequate soil and foundation engineering, or the placement of structures directly on expansive soils.

Expansive soils are significant in that every year soils shrink and desiccate in the dry portions of the year and swell in the wet winter months. The swelling and shrinkage has damaged pavements, sidewalks, slab and spread foundations, and structures built on the ground.

The project area is not particularly susceptible to soil expansion, due to the presence of sandy alluvial soils. However, there is the potential for small isolated areas of expansive soil to be encountered within the areas proposed for facility improvements. Any new facilities located in areas with expansive or compressible soils would be subject to potentially long-term significant impacts. However, the project will incorporate the final design recommendations of the project geologist and/or geotechnical engineer into its design and construction to reduce impacts related to expansive soils. In addition, the project would be required to comply with the requirements of the CBC in Title 24 for construction occurring within areas subject to expansive soils, as defined in Section 1803.5.3 of the 2013 CBC. Prior to any construction in such areas, a site-specific geotechnical assessment would be required to identify appropriate final design recommendations to ensure stability of the specific facility location. As such, impacts relative to expansive soils would be reduced to less than significant.

Construction-Related Impacts

As stated above, the project would be subject to applicable State and local regulations pertaining to specific construction methods and/or restrictions to reduce the potential for risk that could result from expansive soils. Conformance with State regulations and existing standard conditions or requirements will reduce impacts to less than significant.

Operations-Related Impacts

Refer to the response above. As part of the project, final design recommendations of the project geologist and/or geotechnical engineer would be implemented to reduce impacts related to expansive soils. If expansive soils are encountered, recommendations within the investigation which are designed to eliminate the adverse effects of expansive soils will be incorporated into project design. However, due to the relatively low potential for soil expansion, impacts are considered less than significant.

Mitigation Measures

Refer to Mitigation Measure GEO-1. No further mitigation is required.

3.7.5 Significant Unavoidable Adverse Impacts

No significant unavoidable impacts related to geology and soils have been identified following implementation of the recommended mitigation measures.

3.8 TRANSPORTATION AND CIRCULATION

This section describes the environmental setting (existing conditions and regulatory setting) for traffic and circulation relating to the proposed project, and the impacts on transportation that would result from project implementation. This section also includes mitigation measures that would reduce these impacts. A key source of data and information used in the preparation of this section was the *Traffic Impact Analysis Report* prepared for the proposed project by RBF Consulting, dated October 30, 2014 (Appendix I). Other information was obtained from the *City of Colton General Plan*, Mobility Element, adopted in August 2013; the *Riverside General Plan 2025*, Circulation and Community Mobility Element, adopted November 2007; the *City of Loma Linda General Plan*, Transportation and Circulation Element, adopted May 2009; and, the *City of Redlands General Plan*, Circulation Element, adopted October 1995.

3.8.1 Existing Conditions

This section discusses the existing conditions relating to transportation in the study area, as well as federal, state, and local regulations relating to transportation that would apply to the proposed project and its alternatives. The assessment of conditions relevant to this study includes roadway and transit infrastructure and operations.

The proposed project site is located in the southern portion of the City of Colton and north of the City of Grand Terrace; refer to *Exhibit 2.0-1, Regional Location Map*. The project site is located south of the Interstate 10 (I-10) freeway and East M Street, west of the Interstate 215 (I-215) freeway and Santa Ana River, and east of the Union Pacific Railroad (UPRR) right-of-way. The project is located within and adjacent to the Santa Ana River as it trends south and bends westward through this part of the watershed. Roadways providing vehicular access to the project site include East Congress Street, Fogg Street, M Street, and/or Mt. Vernon Avenue.

The proposed water impoundment area encompasses approximately 24 acres within the Santa Ana River and 44.1 acres adjacent to the west of the river, all of which is undeveloped; refer to *Exhibit 2.0-4, Proposed Project Limits*. Currently, the project site consists of vacant land with several dirt roads and water wells owned and operated by the City of Riverside. In addition, a Southern California Edison substation is located to the northeast of the project area. Electrical transmission tower easements associated with the facility traverse the project area and surrounding properties in a north-south direction. The project site is currently surrounded by undeveloped properties to the north and west and the Cooley Ranch Planned Development to the east (on the east side of the Santa Ana River), as shown in *Exhibit 2.0-3, Project Vicinity Map* and *Exhibit 2.0-4, Proposed Project Limits,* in Section 2.0 of this document.

The General Plan designation and zoning for the project site is Open Space/Parks; refer to *Exhibit 2.0-5, General Plan Land Use Designation Map*, in Chapter 2.0.

Existing Street System

A detailed field review was conducted to determine the existing intersection geometry, traffic control devices, signal phasing and other factors, which may affect intersection or roadway segment capacity. The following is a detailed description of roadways in the study area:

Agua Mansa Road is classified as a Major Arterial in the City of Colton General Plan Mobility Element. Through the project study area, Agua Mansa Road is currently built with two travel lanes. The posted speed limit is 45 miles per hour (mph). Agua Mansa Road is a designated truck route.

Rancho Avenue is classified as a Major Arterial in the City of Colton General Plan Mobility Element. Through the project study area, Rancho Avenue is oriented in a north-south direction. Rancho Avenue is currently built with four lanes except for a short section between I-10 and N Street, where one southbound lane and two northbound lanes are currently provided. The posted speed limit is 45 mph. Rancho Avenue is a designated truck route south of Valley Boulevard.

Valley Boulevard is classified as a Major Arterial in the City of Colton General Plan Mobility Element, and is currently built with four lanes through the project study area. Valley Boulevard is oriented in an east-west direction. East of Mount Vernon Avenue, Valley Boulevard narrows to two lanes and bends northward, transitioning to Sperry Drive. The posted speed limit is 35 mph. The City of Colton General Plan Mobility Element designates Valley Boulevard as a Transit Street between Pepper Avenue and 8th Street. Valley Boulevard is a designated truck route within the City of Colton.

Mount Vernon Avenue is classified as a Major Arterial in the City of Colton General Plan Mobility Element. Through the project study area, Mount Vernon Avenue is oriented in a north-south direction. Mount Vernon Avenue is currently built with four travel lanes north of I-10 and narrows to two lanes south of I-10 across the Santa Ana River channel. South of the Santa Ana River, Mount Vernon Avenue is currently constructed with six travel lanes to Washington Street. The posted speed limit is 35 mph. Mount Vernon Avenue is a designated truck route within the City of Colton.

Washington Street is classified as a Major Arterial in the City of Colton General Plan Mobility Element, and is currently built with four lanes through the project study area. Washington Street is oriented in an east-west direction, and transitions to Barton Road east of the Colton-Loma Linda City boundary. The posted speed limit on Washington Street is 40 mph. Mount Vernon Avenue is a designated truck route within the City of Colton.

Barton Road is classified as a four-lane Divided Highway in the City of Loma Linda General Plan Circulation Element, and is currently built with four lanes through the project study area. Barton Road is oriented in an east-west direction, and transitions to Washington Street west of the Colton-Loma Linda City boundary. The posted speed limit is 45 mph from Waterman Avenue to Mountain View Avenue. East of Mountain View Avenue, the posted speed limit on Barton Road is 55 mph. Barton Road is a designated truck route within the City of Loma Linda.

Existing Levels of Service

The study area intersections were selected based on two truck route alternatives to and from two potential landfill locations: Agua Mansa Landfill and San Timoteo Landfill. *Table 3.8-1* summarizes the existing AM and PM peak hour level of service (LOS) of the study intersections, based on the existing peak hour intersection volumes and existing intersection geometry. As required by the San Bernardino Congestion Management Plan (CMP), the 2000 Highway Capacity Manual (HCM) operation methodology for Signalized and Unsignalized Intersections was used to determine the operating LOS of the study intersections. The HCM methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on corresponding delay per vehicle thresholds for signalized and unsignalized intersections. Detailed HCM calculation sheets are contained in Appendix I.

The following are the acceptable LOS standards according to the current General Plan Mobility/Circulation Elements for the three jurisdictions within the study area:

- City of Colton: Maintain LOS D or better at all intersections;
- City of Loma Linda: Maintain LOS C or better at all intersections; and,
- City of Redlands: Maintain LOS C or better at all intersections.

Study intersections #1 through #14 are located within the City of Colton. Study intersections #15 through #17 are located within the City of Loma Linda, and study intersection #18 is located within the City of Redlands. The study area for the Agua Mansa Landfill alternative includes study intersections #1 through #8; the San Timoteo Landfill alternative includes study intersections #8 through #18. Refer also to Exhibits 3A and 3B of Appendix I for an illustration of the project study area for each landfill alternative.

Table 3.8-1 Existing Conditions Peak Hour Intersection LOS

Study Intersection		Jurisdiction	AM Delay – LOS (sec.)	PM Delay – LOS (sec.)
1.	S. Rancho Ave. / Agua Mansa Rd.	City of Colton	22.2 – C	30.9 – C
2.	S. Rancho Ave. / I-10 EB Ramps	City of Colton	24.8 – C	30.9 – C
3.	S. Rancho Ave. / I-10 WB Ramps	City of Colton	26.4 – C	23.7 – C
4.	N. Rancho Ave. / W. Valley Blvd.	City of Colton	32.3 – C	31.6 – C
5.	N. La Cadena Ave. / E. Valley Blvd.	City of Colton	29.3 – C	27.7 – C
6.	N. Mt. Vernon Ave. / E. Valley Blvd. / I-10 WB On-Ramp	City of Colton	36.7 – D	39.0 – D
7.	S. Mt. Vernon Ave. / I-10 EB Ramps	City of Colton	28.1 – C	27.3 – C
8.	S. Mt. Vernon Ave. / E. M St.	City of Colton	22.6 – C	19.3 – B
9.	S. Mt. Vernon Ave. (West of I-215) / E. Washington St.	City of Colton	33.8 – C	33.3 – C
10.	S. Mt. Vernon Ave. (East of I-215) / E. Washington St.	City of Colton	21.1 – C	19.1 – B
11.	E. Washington St. / E. Barton Rd. / S. Cooley Dr.	City of Colton	40.8 – D	39.8 – D
12.	E. Washington St. / Reche Canyon Rd.	City of Colton	28.3 – C	35.2 – D
13.	E. Washington St. / S. Hunts Ln.	City of Colton	8.8 – A	9.8 – A
14.	E. Washington St.-Barton Rd. / S. Waterman Ave.	City of Colton	30.1 – C	28.5 – C
15.	Barton Rd. / Anderson St.	City of Loma Linda	29.8 – C	31.6 – C
16.	Barton Rd. / Mountain View Ave.	City of Loma Linda	34.2 – C	**35.7 – D**
17.	Barton Rd. / California St.	City of Loma Linda	22.2 – C	20.0 – B
18.	Barton Rd. / San Timeteo Canyon Rd.	City of Redlands	16.7 – B	16.8 – B

Note: Deficient intersection operation shown in **bold**, where applicable.
(1) Seconds of delay per vehicle.

As shown in *Table 3.8-1*, all study intersections within the City of Colton are currently operating at acceptable levels of service (LOS D or better) during the peak hours. The intersection of Barton Road/Mountain View Avenue, located in the City of Loma Linda, currently operates at LOS D during the PM peak hour, which is considered a deficient LOS according to the *City of Loma Linda General Plan* Circulation Element.

3.8.2 Regulatory Framework

Traffic analysis in the State of California is guided by policies and standards set at the State level by Caltrans and by local jurisdictions. Since the proposed project is located in the City of Colton, the proposed project would adhere to the City's adopted transportation policies, which can be found in the *City of Colton General Plan,* Mobility Element, adopted in August 2013. The City of Riverside is the lead agency for the project. Therefore, the project would also comply with the adopted transportation policies in the *Riverside General Plan 2025*, Circulation and Community Mobility Element, adopted in November 2007.

City of Colton General Plan

The goals and policies contained within the *City of Colton General Plan*, Mobility Element, provide for the development of a safe and efficient transportation system, encourage the use of alternate transportation modes, accommodate the separation of traffic, and ensure the provision of adequate and convenient parking. As the project is a water supply facility, and only minimal operations/maintenance traffic will occur, the Colton General Plan policies for transportation do not apply to the project. The project is exempt from local land use control, although the City of Colton Mobility Element is included for context in understanding potential local traffic impacts.

City of Riverside General Plan 2025

The objectives and policies contained within the *Riverside General Plan 2025,* Circulation and Community Mobility Element, provide comprehensive strategies to provide for the circulation and mobility of the local and regional roadway, ensure cooperative implementation of regional and inter-jurisdictional transportation plans and improvements, encourage trip reduction, protect the City's neighborhoods from cut-through traffic, and provide for alternative modes of transportation, as well as effective and efficient goods movement and adequate parking. The following goals, policies, and programs are applicable to the proposed project:

Objective CCM-5: **Cooperate in the implementation of regional and inter-jurisdictional transportation plans and improvements to the regional transportation system.**

Policy CCM-5.1 Coordinate impacts of new roadway connections with adjacent cities and Riverside County to ensure consistency in design and operations of the new facilities and connections.

Objective CCM-6: **Reduce peak-hour trips, roadway congestion and air pollution.**

Policy CCM-6.1 Encourage the reduction of vehicle miles, reduce the total number of daily peak hour vehicular trips, increase the vehicle occupancy rate and provide better utilization of the circulation system through the development and implementation of TDM programs contained in the SCAQMD and County of Riverside TDM Guidelines.

Policy CCM-6.2 Encourage the use of telecommunications by Riverside residents, employees and students as a means to reduce air and noise pollution generated by traffic.

Objective CCM-7: **Minimize or eliminate cut-through traffic within Riverside's residential neighborhoods.**

Policy CCM-7.2 Work with adjacent jurisdictions, the County and regional agencies to address the impacts of regional development patterns on the local circulation system.

Objective CCM-12: Facilitate goods movements as a means of economic expansion, while protecting residents and visitors from the negative effects typically associated with truck operations and rail service.

Policy CCM-12.1 Discourage the use of public streets for heavy freight loading and unloading.

Policy CCM-12.2 Ensure that new development projects provide adequate truck loading and unloading facilities.

Policy CCM-12.3 Aggressively pursue grade-separated rail crossings to alleviate traffic congestion and associated air quality and noise impacts.

Policy CCM-12.4 Strive to minimize through truck traffic in residential areas, and enforce City codes that restrict trucks on certain streets.

Policy CCM-12.5 Work with railroads and State and federal agencies to minimize the adverse safety and congestion impacts of at-grade rail crossings of major streets.

Objective CCM-13: Ensure that adequate on- and off-street parking is provided throughout Riverside.

Policy CCM-13.1 Ensure that new development provides adequate parking.

Policy CCM-13.2 Accommodate joint use of parking facilities as part of an area plan or site plan, based on the peak parking demands of permitted uses in the planning area.

Policy CCM-13.3 Work with developers to provide additional parking to mitigate area-wide parking shortages whenever feasible.

Senate Bill 743

On September 27, 2013, Governor Brown signed Senate Bill (SB) 743 (Steinberg, 2013). SB 743 requires the Governor's Office of Planning and Research (OPR) to amend the CEQA Guidelines (Title 14 of the California Code of Regulations sections and following) to provide an alternative to level of service for evaluating transportation impacts. The alternative criteria must "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." (New Public Resources Code Section 21099(b)(1).) Measurements of transportation impacts may include "vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, or automobile trips generated."

3.8.3 Significance Threshold Criteria

A project or action is considered to have a significant transportation/circulation impact if the project or action would result in one or more of the following occurrences. These criteria are based in Appendix G of the State *CEQA Guidelines*:

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

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

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks (refer to Section 7.0, *Effects Found Not To Be Significant*);

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) (refer to Section 7.0, *Effects Found Not To Be Significant*);

e) Result in inadequate emergency access;

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

3.8.4 Impacts and Mitigation Measures

Existing Capacity

Impact 3.8-1: Implementation of the proposed project may cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections). **Level of Significance: Less than Significant with Mitigation.**

Construction-Related Impacts

In order to construct the proposed project, an estimated 400,000 cubic yards of material will need to be hauled from the project site to a landfill. A general traffic impact evaluation was conducted for two potential landfill locations where the excavated material may be transported. As part of the environmental review process, the traffic assessment specifically addresses potential impacts along the truck haul routes that may be used for the proposed project. The destination landfill alternatives being evaluated include the Agua Mansa Landfill and San Timoteo Sanitary Landfill. The Agua Mansa Landfill is the closest landfill to the project and is located at 588 Agua Mansa Road, approximately 1.1 miles west of the project site, within the City of Rialto. The San

Timoteo Sanitary Landfill is significantly further away and is located on San Timoteo Canyon Road, approximately 12 miles east of the project site, within the City of Redlands[1].

Truck traffic would gain access to and from the site directly from Mount Vernon Avenue (at two locations on either side of the Santa Ana River Bridge), East Congress Street, and/or from M Street. Materials would be hauled from the site to either the Agua Mansa or San Timoteo Landfills. Based on anticipated daily truck activity levels and project schedule, the assessment includes the evaluation of potential hauling routes and estimated duration times for hauling the excavated material to the alternate landfills. The duration of the materials export is anticipated to take between 2.6 and 12.5 months, depending on the type of truck utilized for the export and the landfill location that will be selected.

Proposed Truck Haul Routes

The *City of Colton General Plan Mobility Element* includes discussion on truck circulation routes as part of its implementation plan. Policy M-5.5 of the Mobility Element states that the City should enforce established truck routes to discourage truck shortcuts through residential neighborhoods. Additionally, Policy M-5.6 states that the City should ensure that the designated truck routes conform to performance criteria including: 1) Truck routes must avoid intrusions into residential neighborhoods to limit noise, vibration, and air quality impacts; 2) To the extent feasible, truck routes will not be provided on local streets and on streets with mostly residential frontage; 3) Truck routes must be located on roadways that provide direct and convenient access between Major Arterials and freeways (I-10 and I-215) and industrial and commercial businesses; and 4) Truck routes must be located on roadways with the design and construction capacity to accommodate truck traffic. As part of the proposed project, it is recommended that trucks travel along designated truck routes where possible and turn at signalized intersections to ensure the ability to make left turns safely. The proposed truck routes have been developed with these goals in mind.

Agua Mansa Landfill

The proposed hauling route from the project site to the Agua Mansa Landfill is illustrated in *Exhibit 3.8-1, Proposed Truck Haul Route for Agua Mansa Landfill Destination*. There are two access points to the project site which are located on either side on the south side at Mount Vernon Avenue. To arrive at the Agua Mansa Landfill from the project site, the proposed haul route assumes trucks would travel directly north on Mount Vernon Avenue, west on Valley Boulevard, south on Rancho Avenue, and west on Agua Mansa Road into the landfill site. For trucks traveling from the landfill to the project site, trucks would travel east on Agua Mansa Road, north on Rancho Avenue, east on Valley Boulevard, and south on Mount Vernon to the northern access points.

According to the *City of Colton General Plan*, Mobility Element, Mount Vernon Avenue, Valley Boulevard, and Rancho Avenue are all identified by the City as designated truck routes. Intersections where turns will be made

1 The EIR addresses potential construction-related offsite hauling impacts based upon reasonably foreseeable circumstances and available information. As noted, the EIR uses 400,000 CY as a total volume of material requiring hauling, as a worst-case estimate. Current engineering estimates place this volume closer to 300,000 CY (a 25% reduction). It is also possible that the exported soil would be taken to closer parcels, should they require fill dirt. The actual offsite hauling volume, route and destination will be determined through the final engineering and construction bid process, which is a market-driven process dependent on conditions at the time of construction. The EIR assumes that any offsite export destination is appropriately permitting to receive the export material. For illustrative purposes, the EIR has examined potential worst-case offsite hauling impacts based on the export material being delivered to one of the two closest landfills.

by the haul trucks along the suggested haul route between the project site and the Agua Mansa Landfill are currently signalized.

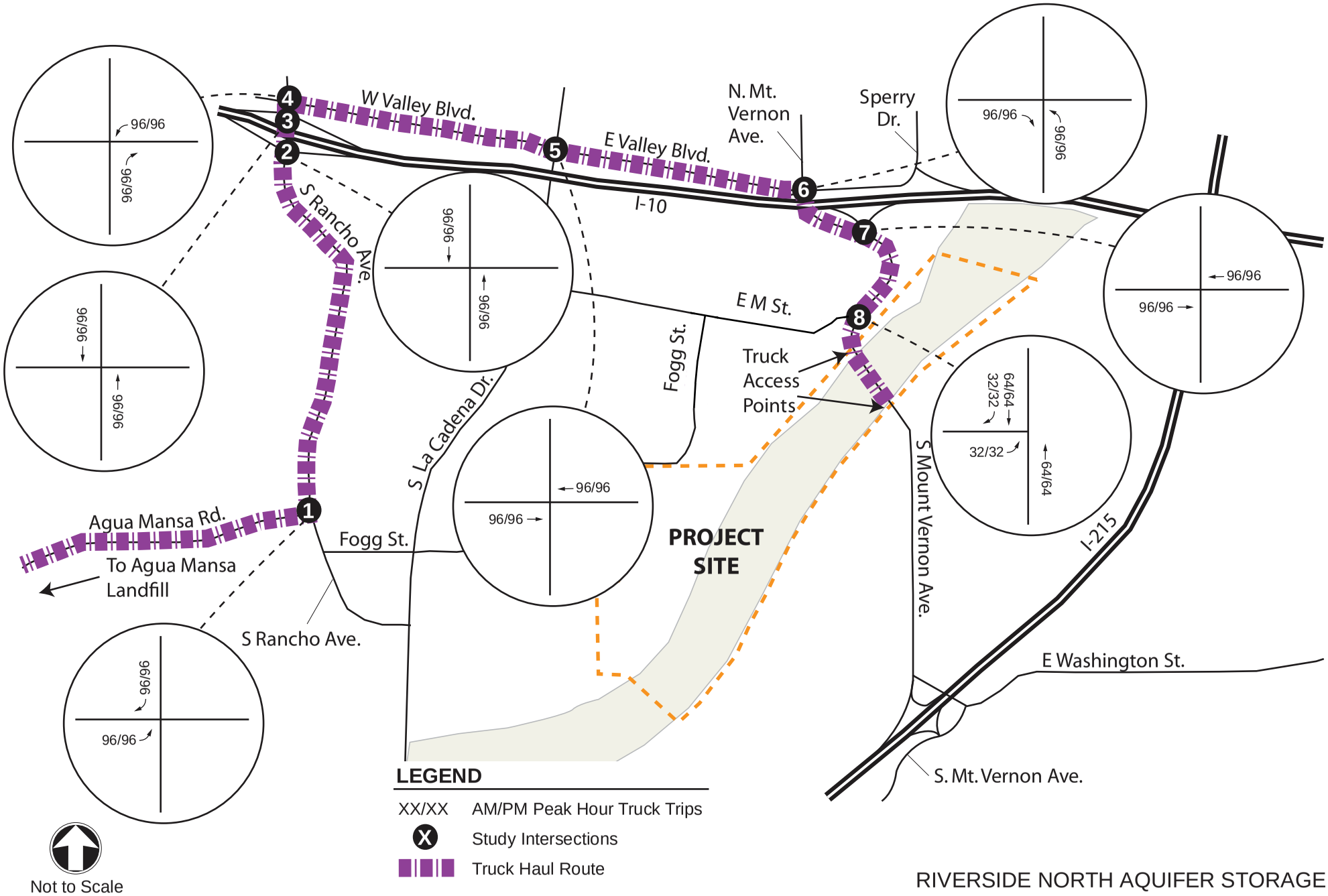
San Timoteo Landfill

The proposed haul route from the project site to the San Timoteo Landfill is illustrated in *Exhibit 3.8-2, Proposed Truck Haul Route for San Timoteo Landfill Destination*. To arrive at the San Timoteo Landfill from the project site, trucks may travel south on Mount Vernon Avenue, east on Washington Street continuing onto Barton Road, and south on San Timoteo Canyon Road to access the landfill. For trucks traveling from San Timoteo Landfill to the project site, trucks would travel north on San Timoteo Canyon Road, west on Barton Road continuing on to Washington Street, and north on Mount Vernon Avenue to the project site. Access to the San Timoteo Landfill requires travel through the Cities of Loma Linda and Redlands. According to the General Plan Circulation Elements for the Cities of Loma Linda and Redlands, Barton Road is identified by the City as a designated truck route. Intersections where turns would be made by the haul trucks along the suggested haul route between the project site and the San Timoteo Landfill are currently signalized.

Transport Trip Generation

Truck hauling activities that would potentially impact traffic operations in the study area are primarily associated with soil exportation to build the basin. Approximately 400,000 cubic yards is planned to be exported from the site by dump trucks.

Project construction is anticipated to occur over a 24-month period. However, an 18-month construction period is considered herein to assess a conservative, worst-case scenario. Based on an available fleet of 40 trucks, the duration of the export is anticipated to take between 2.6 and 12.5 months, depending on the type of trucks utilized for the export. Three types of trucks were considered at the time of this analysis. Based on hours of haul operation, it is assumed that each truck will make 16 trips per day to the Agua Mansa Landfill or eight trips per day to the San Timoteo Landfill. *Table 3.8-2, Truck Haul Schedule by Truck Type*, summarizes the loading capacity and the forecasted export duration for each truck type.



RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

Proposed Truck Haul Route and Truck Trips Agua Mansa Landfill Alternative

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Exhibit 3.8-1

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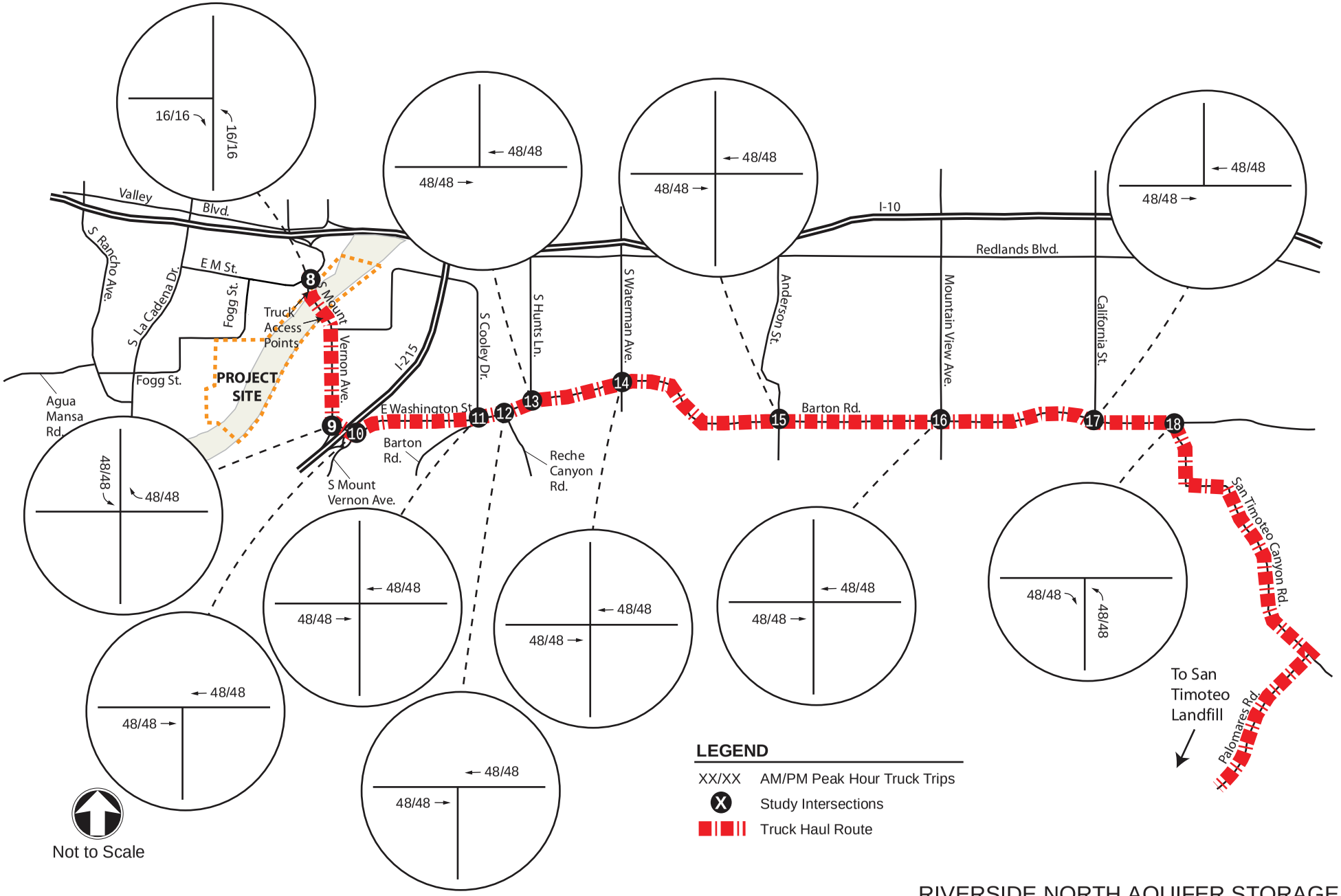

RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

Proposed Truck Haul Route and Truck Trips San Timoteo Landfill Alternative

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Exhibit 3.8-2

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Table 3.8-2 Truck Haul Schedule by Truck Type

Truck Type	Transfer Capacity (CY)	Total # of Loads (400k CY)	Total # Loads per Truck (at 40 Trucks)	# Trips per Day per Truck	# Days of Export	Total # Months (Monday – Friday assuming 20-day months)
10 Ton Dump	10 CY	40,000	1,000	AM = 16	AM = 125	6.3
				ST = 8	ST = 250	12.5
Double Dump	18 CY	22,222	556	AM = 16	AM = 69	3.5
				ST = 8	ST = 139	6.9
Belly Dump	24 CY	16,667	417	AM = 16	AM = 52	2.6
				ST = 8	ST = 104	5.2

Notes: CY: Cubic Yards AM: Agua Mansa ST: San Timoteo

As shown in *Table 3.8-2*, utilizing the truck with the highest transfer capacity (belly dump truck) and exporting soil to the nearest landfill (Agua Mansa Landfill) would yield the quickest exporting schedule of approximately 2.6 months. Conversely, utilizing the truck with the lowest transfer capacity (10-ton dump truck) and exporting to the San Timoteo Landfill would yield the longest exporting schedule of approximately 12.5 months.

Truck activity is anticipated to occur on weekdays (Monday through Friday) between 7:00 AM and 5:00 PM,[2] with approximately 16 trucks (to San Timoteo Landfill) to 32 trucks (to Agua Mansa Landfill) arriving per hour. Over the ten-hour period, between 160 and 320 trucks per day will access the project site resulting in 320 to 640 round-trip truck trips per day. Since trucks tend to have a more significant effect on roadway operations when compared to passenger vehicles, passenger car equivalency factors (PCE's) published by the San Bernardino Association of Governments (SANBAG) were applied to convert truck traffic to passenger vehicle equivalents. As specified by SANBAG, heavy-duty trucks should use a PCE factor of 3.0. Therefore, all truck trips calculated in this analysis were multiplied by 3.0 to derive traffic levels in PCE's. *Table 3.8-3, Soil Export Truck Trip Generation*, presents the estimated daily trip generation levels for the truck and landfill site alternatives.

Table 3.8-3 Soil Export Truck Trip Generation

Truck Type (Transfer Capacity in CY)	# Trips per Day	Total Round Trips per Hour	Total Round Trips per Day	Daily Round PCE Trips*	Hourly Round PCE Trips*	# Days of Export
To Agua Mansa Landfill						
10-Ton Dump Truck (10 CY)	16	64	640	1,920	192	125
Double Dump Truck (18 CY)	16	64	640	1,920	192	69
Belly Dump Truck (24 CY)	16	64	640	1,920	192	52
To San Timoteo Landfill						
10-Ton Dump Truck (10 CY)	8	32	320	960	96	250
Double Dump Truck (18 CY)	8	32	320	960	96	139
Belly Dump Truck (24 CY)	8	32	320	960	96	104

*Passenger Car Equivalency (PCE) factor of 3.0 applied.

2 Although site construction may occur up to 7:00 PM, the EIR has assumed that offsite hauling will cease at 5:00 PM as a means to reduce conflict with peak hour traffic (this also coincides with the landfill closure times).

As previously stated, the proposed project is anticipated to excavate and export up to 400,000 cubic yards of soil to one of two nearby landfills. The project would have the support of a fleet of 40 trucks and two options of landfills to haul the materials to. The excavation and exportation would consist of 960 to 1,920 PCE daily trips, with hours of haul operation from 7:00 AM to 5:00 PM. (Monday through Friday). The exporting activities would be temporary and would last from 2.6 to 12.5 months in duration, depending on the type of dump truck and the location of the selected landfill.

It is possible that some of the excavated soil may be used by potential developers for future roadway or development projects in closer proximity than the two landfills. However, these landfills described above were examined as a worst-case scenario. Any excavated soil that is not exported would reduce the impacts and the amount of trips on the roadways identified in *Exhibits 3.8-1 and 3.8-2*. It is also likely that truck trips between the project site and any development sites in need of fill would occur on the I-10 freeway. However, these trips would be negligible and would not result in any noticeable change in freeway operations.

To minimize project impacts on the affected roadways, hauling between the project site and the landfill(s) is proposed to cease at 5:00 PM on weekdays to minimize conflict with peak hour traffic. Given the number of PCE daily trips, in addition to haul operation hours ending at 5:00 PM prior to the worst of the PM peak period, the impacts to existing capacity with regard to traffic and circulation would be less than significant with implementation of the mitigation measures listed below. In order to minimize the length of the time the haul route activity will impact the surrounding community, mitigation is proposed (TRA-2 and NOI-2) to allow hauling to occur on Saturdays. Doing so will reduce the anticipated period required for hauling by up to three weeks, thereby effectively reducing potential project effects on the affected roadways during the work week, and reducing the time period during which the surrounding community would experience noise or traffic effects generated by project hauling activities.

Imported Fill

It is anticipated that construction within the proposed project would be able to utilize onsite fill generated by excavation of the groundwater recharge basins. For example, it is anticipated that limited grading inside the Santa Ana Channel would be needed to level the streambed. If during the final geotechnical analysis soils are determined to be unsuitable for construction purposes, the proposed project would import fill to the site. However, this imported fill which would primarily be used for construction of the dam would be minimal and far less than the 400,000 cubic yards being exported.

Operations-Related Impacts

Short- and long-term operations would consist of periodic maintenance visits. Thus, operational activities associated with the proposed project would not generate substantial amounts of traffic that would have the potential to adversely affect circulation on area roadways. A less than significant impact would occur in this regard, and no mitigation measures are required.

MITIGATION MEASURES

TRA-1: **Traffic Management Plan (TMP).** Contract documents shall incorporate the following TMP provisions, for the purpose of minimizing temporary construction-related traffic impacts:

a) **Duration –** The City shall implement the TMP for the duration of site construction activities.

b) **Peak Hour Off-site Haul Trips –** Prior to construction, the contractor shall either determine or obtain peak hour intersection levels of service along the haul route(s), in consultation with the affected local jurisdiction(s). The contractor shall utilize the haul route that affects the fewest intersections operating at an unacceptable Levels of Service as defined by adopted thresholds of the local jurisdiction(s). If the project triggers a significant temporary impact upon local intersections (usually defined as 50 or more peak hour trips for intersections operating at an unacceptable level of service), the contractor shall either reduce trips during the affected peak hour or avoid peak hour travel through the affected intersection(s) to avoid a temporary significant impact. One way that peak hour trips could be reduced would be to utilize larger capacity haul trucks, as shown in *Table 3.8-3* (larger capacity trucks allow either a reduced total construction time or would allow fewer trucks during the peak hour while carrying the same volume of material).

c) **Queuing on Public Streets -** All queuing and stacking of haul trucks shall be managed on-site to minimize impacts on public roads. This may require an extension of the onsite driveways and stacking area for the trucks at the project site. If determined necessary by the City of Colton, the contractor shall deploy flagmen at project site entrance access points on the nearest public street.

d) **Local Agency Coordination** – the contractor shall advise the local affected jurisdiction(s) along affected haul route(s) at least 30 days prior to construction.

TRA-2: **Construction Schedule.** To minimize the length of the time the haul route activity will impact the surrounding communities for both noise and traffic, the haul route shall be allowed to occur on Saturdays (7:00 AM to 7:00 PM), which will reduce the haul duration by approximately three weeks (alternately, if deemed preferable by the local jurisdiction, the construction time saved by Saturday hauling could be used to reduce peak hour trips and keep the total construction schedule the same). In addition, to further reduce the total time required for construction, the contractor will be permitted to begin light site work and preparation for major grading and hauling activities as early as 6:00 AM Monday-Friday, provided that site construction work does not exceed any applicable local noise regulations. Construction staging and site work shall occur as far as practicable from existing residential units along Fogg Street.

Level of Service

Impact 3.8-2: Implementation of the proposed project may exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways. **Level of Significance: Less than Significant Impact with Mitigation.**

Existing Plus Project Conditions

Agua Mansa Landfill Alternative

To determine project impacts on LOS, existing traffic volumes were overlaid with traffic generated by truck hauling activities associated with the project to and from the Agua Mansa Landfill. *Exhibit 3.8-3, Existing Plus Project Traffic Volumes – Agua Mansa Landfill Alternative,* shows the Existing Plus Project AM/PM peak hour

intersection volumes for the eight study intersections along the truck route to and from the Agua Mansa Landfill. All study intersections evaluated under this scenario are located within the City of Colton.

Table 3.8-4, Existing Plus Project Peak Hour Intersection LOS, summarizes the Existing Plus Project PM peak hour intersection LOS for the Agua Mansa Landfill Alternative. Detailed HCM calculation sheets are contained in Appendix C of Appendix I.

Table 3.8-4 Existing Plus Project Peak Hour Intersection LOS

Study Intersection (All Within City of Colton)		Existing Conditions		Existing Plus Project		Change in Delay (1)	
		AM Delay (1) – LOS	PM Delay (1) – LOS	AM Delay (1) – LOS	PM Delay (1) – LOS	AM	PM
1.	S. Rancho Ave. / Agua Mansa Rd.	22.2 – C	30.9 – C	26.5 – C	38.6 – D	4.3	7.7
2.	S. Rancho Ave. / I-10 EB Ramps	24.8 – C	30.9 – C	24.9 – C	31.3 – C	0.1	0.4
3.	S. Rancho Ave. / I-10 WB Ramps	26.4 – C	23.7 – C	26.5 – C	23.7 – C	0.1	0.0
4.	N. Rancho Ave. / W. Valley Blvd.	32.3 – C	31.6 – C	35.9 – D	35.0 – D	3.6	3.4
5.	N. La Cadena Ave. / E. Valley Blvd.	29.3 – C	27.7 – C	29.3 – C	28.2 – C	0.0	0.5
6.	N. Mt. Vernon Ave. / E. Valley Blvd. / I-10 WB On-Ramp	36.7 – D	39.0 – D	41.6 – D	46.4 – D	4.9	7.4
7.	S. Mt. Vernon Ave. / I-10 EB Ramps	28.1 – C	27.3 – C	32.3 – C	27.6 – C	4.2	0.3
8.	S. Mt. Vernon Ave. / E. M St.	22.6 – C	19.3 – B	22.8 – C	19.6 – B	0.2	0.3

Note: Deficient intersection operation is shown in **bold**, where applicable.
(1) Seconds of delay per vehicle.

Table 3.8-4 shows that consistent with existing conditions, the study intersections would all continue to operate at acceptable levels of service (LOS D or better in the City of Colton) with the addition of project-related truck traffic to existing AM and PM peak hour volumes.

San Timoteo Landfill Alternative

Similarly, project impacts of LOS were evaluated using existing traffic volumes overlaid with traffic generated by truck hauling activities associated with the proposed project, to and from the San Timoteo Landfill. The Existing Plus Project AM/PM peak hour intersection volumes for the eleven study intersections along the truck route to and from the San Timoteo Landfill are illustrated in *Exhibit 3.8-4, Existing Plus Project Traffic Volumes – San Timoteo Landfill Alternative.* Out of the eleven study intersections evaluated under the San Timoteo Landfill Alternative, seven intersections are located within the City of Colton, three intersections are located within the City of Loma Linda, and one intersection is located within the City of Redlands.

Table 3.8-5, Existing Plus Project Peak Hour Intersection LOS: San Timoteo Landfill Alternative, summarizes the Existing Plus Project PM peak hour intersection LOS for the San Timoteo Landfill Alternative. Detailed HCM calculation sheets are contained in Appendix D of Appendix I.

Table 3.8-5 Existing Plus Project Peak Hour Intersection LOS: San Timoteo Landfill Alternative

Study Intersection		Existing Conditions		Existing Plus Project		Change in Delay (1)	
		AM Delay (1) – LOS	PM Delay (1) – LOS	AM Delay (1) – LOS	PM Delay (1) – LOS	AM	PM
City of Colton Study Intersections							
8.	S. Mt. Vernon Ave. / E. M St.	22.6 – C	19.3 – B	23.9 – C	20.4 – C	1.3	1.1
9.	S. Mt. Vernon Ave. (West of I-215) / E. Washington St.	33.8 – C	33.3 – C	34.1 – C	33.3 – C	0.2	0.0
10.	S. Mt. Vernon Ave. (East of I-215) / E. Washington St.	21.1 – C	19.1 – B	21.4 – C	19.1 – B	0.3	0.0
11.	E. Washington St. / E. Barton Rd. / S. Cooley Dr.	40.8 – D	39.8 – D	42.0 – D	40.5 – D	1.1	0.7
12.	E. Washington St. / Reche Canyon Rd.	28.3 – C	35.2 – D	28.8 – C	35.2 – D	0.5	0.0
13.	E. Washington St. / S. Hunts Ln.	8.8 – A	9.8 – A	8.9 – A	10.0 – A	0.0	0.2
14.	E. Washington St.-Barton Rd. / S. Waterman Ave.	30.1 – C	28.5 – C	30.1 – C	28.5 – C	0.5	0.0
City of Loma Linda Study Intersections							
15.	Barton Rd. / Anderson St.	29.8 – C	31.6 – C	29.8 – C	31.8 – C	0.0	0.2
16.	Barton Rd. / Mountain View Ave.	34.2 – C	**35.7 – D**	34.6 – C	**36.1 – D**	0.4	0.4
17.	Barton Rd. / California St.	22.2 – C	20.0 – B	22.2 – C	20.0 – B	0.0	0.0
City of Redlands Study Intersections							
18.	Barton Rd. / San Timeteo Canyon Rd.	16.7 – B	16.8 – B	18.3 – B	19.9 – B	1.5	3.1

Note: Deficient intersection operation shown in **bold**, where applicable.
(1) Seconds of delay per vehicle.

Table 3.8-5 shows that consistent with existing conditions, the study intersections within the City of Colton would continue to operate at acceptable levels of service (LOS D or better) with the addition of project-related truck trips to existing AM and PM peak hour volumes. The intersection of Barton Road/Mountain View Avenue, located in the City of Loma Linda, would continue operating at a deficient LOS D during the PM peak hour with the addition of project-related truck trips to existing traffic volumes. According to the City of Loma Linda General Plan Circulation Element, LOS D is considered a deficient LOS.

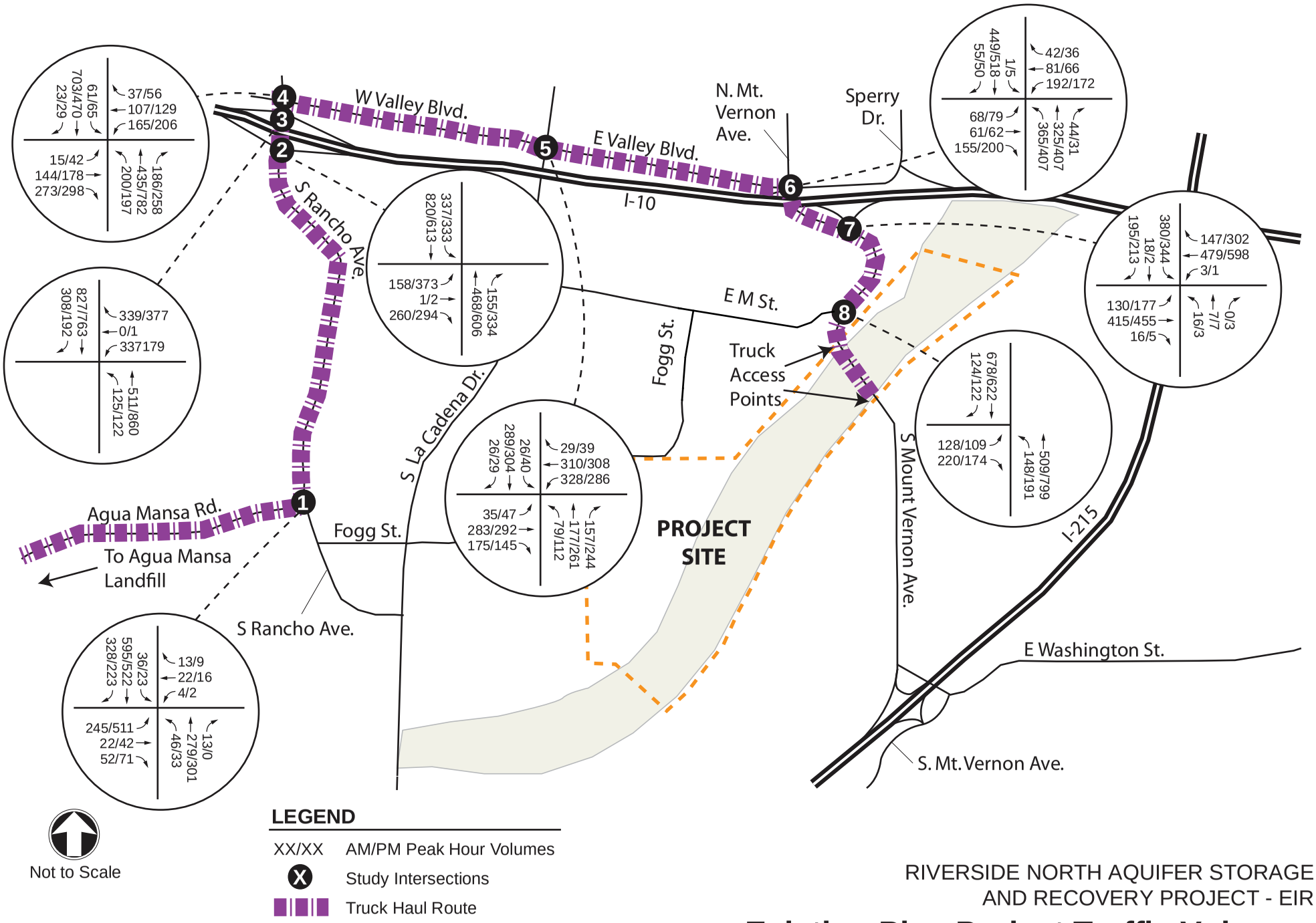
Policies that address traffic impacts and mitigation are typically based on determining the impacts of new development projects. The proposed project is a materials-exporting activity that would temporarily result in additional truck traffic for a duration ranging from approximately three months to one year, depending on which landfill is selected. Additionally, the traffic analysis considered a conservative, worst-case scenario in which all 400,000 cubic yards of material would be exported off-site to a landfill for the duration of the project.

If the San Timoteo Landfill is selected for the materials export, the intersection of Barton Road/Mountain View Avenue along the identified truck route would be affected by project traffic, and it is currently operating at a deficient level of service according to the City of Loma Linda LOS standards. As traffic generated by the proposed project would be short-term and limited in duration to the construction period, and the Project

would not cause any intersection to exceed an acceptable level of service, mitigation is not proposed at this time with regard to potential effects on the intersection of Barton Road/Mountain View Avenue. Implementation of Mitigation Measures TRA-1and TRA-2 would help to reduce project effects on this intersection. Further, the project would comply with policies concerning separation of traffic via truck routes in the *City of Colton General Plan*, Mobility Element, and the *Riverside General Plan 2025*, Circulation and Community Mobility Element. The project is consistent with the San Bernardino Congestion Management Plan as it does not generate more than 50 peak hour trips on a State highway, and generates less than a total of 250 peak hour trips (Figure C-1 of CMP).

MITIGATION MEASURES

Refer to Mitigation Measures TRA-1 and TRA-2.



RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

Existing Plus Project Traffic Volumes
Agua Mansa Landfill Alternative

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Exhibit 3.8-3

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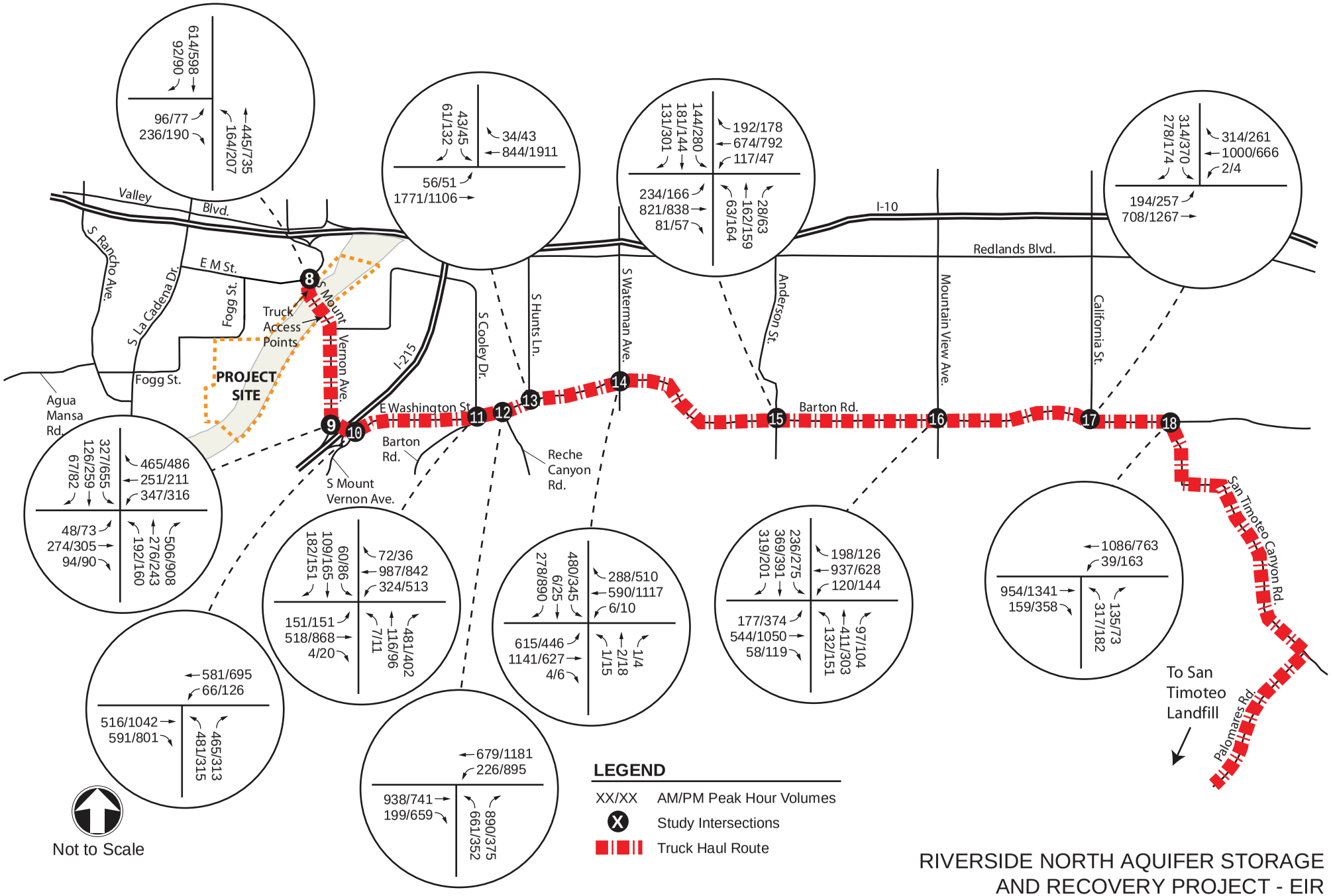

RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

Existing Plus Project Traffic Volumes
San Timoteo Landfill Alternative

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Exhibit 3.8-4

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Emergency Access

Impact 3.8-3: Implementation of the proposed project may result in inadequate emergency access. **Level of Significance: Less Than Significant Impact.**

The proposed project would be constructed within the existing Santa Ana River channel and on the west side of the river, behind the existing levees currently forming the River's western edge. Construction equipment would be staged to ensure that existing emergency access routes remain accessible during the construction phase. As such, impacts to emergency access would be less than significant.

Construction-Related Impacts

Refer to the response above. The staging of construction equipment would ensure accessibility to existing emergency access routes for all components of the proposed project. Therefore, impacts with regard to emergency access would be less than significant, and no mitigation measures are required.

Operations-Related Impacts

Refer to the response above. Upon completion of the proposed construction and throughout the operational life of the project, adequate emergency access would be provided at the proposed construction access route entrances. Therefore, impacts with regard to emergency access would be less than significant, and no mitigation measures are required.

Mitigation Measures

No additional mitigation is required.

Alternative Transportation Policies, Plans, or Programs

Impact 3.8-4: Implementation of the proposed project may create a conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks). **Level of Significance: Less Than Significant Impact.**

The project does not have the potential to affect alternative transportation plans or policies, given its nature as a water supply project, which generates nominal daily traffic associated with periodic maintenance. None of these features would be adversely affected by implementation of the proposed project, and a less than significant impact would occur.

Mitigation Measures

No additional mitigation is required.

3.8.5 Significant Unavoidable Adverse Impacts

No significant unavoidable impacts related to traffic and circulation have been identified following implementation of the recommended mitigation measures.

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3.9 AESTHETICS, LIGHT AND GLARE

The purpose of this section is to provide analysis and identification of aesthetic resources in the project vicinity. Potential project-related impacts have been analyzed and mitigation measures have been incorporated to reduce potential aesthetic impacts, where possible. Aesthetic and visual resource information included in this section has been compiled from aerial photographs, photographs of the site and surrounding areas, site surveys conducted by RBF Consulting personnel, City of Colton *General Plan* (May 1987, Updated 2013), City of Colton Development Code (amended October 2008), City of Riverside *General Plan 2025* (November 2007), and the City of Riverside Municipal Code, and County of San Bernardino 2007 *General Plan* (April 2007).

3.9.1 Environmental Setting

Landscape Character

Project Setting

The City of Colton is situated in the heart of the San Bernardino Valley, a broad inland valley extending from the southern base of the San Bernardino and San Gabriel Mountains. The project site is an irregular-shaped tract of land that lies within and along both sides of the Santa Ana River, the main natural waterway in the San Bernardino Valley. More specifically, the project site is located within the southern portion of the City of Colton. The site is located south of Interstate 10 and East M Street, west of Interstate 215 and the Santa Ana River, and east of the Union Pacific railroad right-of-way.

Site Conditions

Presently, the site consists of a portion of the Santa Ana River, as well as vacant land west of the river, which is traversed by several dirt roads. The elevation on the project site ranges from approximately 910 feet above mean sea level (amsl) to 955 feet above mean sea level (amsl). Groundwater in the site vicinity is located approximately 112 feet below the ground surface as of October 2013.

The site is bounded on the southeast by a flood control levee and on the northwest by vacant land. The project site extends southwesterly along the riverbed south of the Interstate 10 freeway. The project site covers the Santa Ana River as it trends south and bends westward. Roadways providing vehicular access to the project site include East Congress Street, Fogg Street, M Street, and/or Mt. Vernon Avenue. Once on site, vehicles would travel on existing disturbed trails that are located throughout the project area, to the extent possible.

Several groundwater wells owned and operated by the City of Riverside are located on the project site; refer to *Exhibit 2.0-4, Proposed Project Limits*. A portion of the Riverside Water Company's Riverside-Warm Creek Canal system is also located onsite. A Southern California Edison (SCE) substation is located to the northeast of the project area. Additionally, a concrete structure of unknown purpose is located downstream of the inflatable dam along the SCE easement. The terrain within the project boundary depends on location, but includes a nearly level riverbed bordered by earthen levees, level valley lands, and naturally carved terraces and steep embankments. Refer to *Exhibit 3.9-1, Site Photos*.

The proposed recharge area is highly disturbed with a history of disking. This area supports dense strands of exotic weed species dominated by exotic grasses and forbs. However, the northeast corner of the recharge area supports mature Riversidean alluvial fan sage scrub (RAFSS). Along the eastern margin of the recharge area, disturbances include roadways, power lines, off-road use and trash dumping. Although the habitat

conditions are disturbed and degraded, the species diversity in this area is high. The riparian communities on the project site were also disturbed by natural flooding processes (e.g. from increased runoff velocity) and by some small amounts of off-road traffic (tire tracks evident in places).

Surrounding Land Uses

The project site is surrounded by the following land uses:

North: Undeveloped land, industrial uses

South: Undeveloped land, residential uses

East: Cooley Ranch Planned Development; Southern California Edison (SCE) substation

West: Undeveloped land, residential and industrial uses

Visibility

Portions of the project site are visible from adjacent areas given the relative flatness of the site. In addition, the urbanized nature of the surrounding land makes the project site more conspicuous, since the project site consists of relatively undisturbed, dense vegetation. However, the topography of the project site, including the existing earthen levees, presently shield views of the riverbed floor where the dam location is proposed and where the majority of the dense vegetation exists.

Light and Glare

There are two typical types of light intrusion. First, light emanates from the interior of structures and passes out through windows. Secondly, light projects from exterior sources, such as street lighting, security lighting, and landscape lighting. "Light spill" is typically defined as the presence of unwanted and/or misdirected light on properties adjacent to the property being illuminated.

Glare is the sensation produced by luminance within the visual field that is significantly greater than the luminance to which the eyes are adapted, which causes annoyance, discomfort, or loss in visual performance and visibility.

The existing project site currently does not generate any light or glare. However, within the vicinity of the project site, nighttime illumination is generated by vehicular lights and lighting associated with industrial and residential uses. Due to the highly urbanized nature of the surrounding area, the night sky and nighttime vistas are limited.

Scenic Routes

The County of San Bernardino General Plan EIR does not identify any designated scenic routes or scenic highways within the vicinity of the project site. Interstate 10 and Interstate 215 are not designated as scenic routes within the vicinity of the proposed project.

Views from the western river levee looking toward Mt. Vernon Avenue across the proposed in-stream recharge component.

From the eastern river levee looking toward the proposed grade stabilizer (dam location).

Looking north along the Santa Ana Trail toward Mt. Vernon Avenue and the proposed in-stream recharge component.

From the western river levee looking at the grade stabilizer (the location of the proposed rubber dam).

East of Fogg Street looking southwest toward the proposed off-stream recharge component.

The location of the proposed State Water Project connection.

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RIVERSIDE NORTH AQUIFER STORAGE AND RECOVERY PROJECT - EIR

Site Photos

Exhibit 3.9-1

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Scenic Resources

The Santa Ana River corridor contains an extensive swath of land that offers significant scenic vistas, which contrast against developed urban areas. The City of Riverside Open Space and Conservation Element states that the Santa Ana River Corridor is an "aesthetically significant water feature."[1] Scenic vistas are defined as areas that provide a vista of undisturbed natural areas, including a unique or unusual feature that comprises an important or dominant portion of the viewshed, or an area that offers a distant vista that provides relief from less attractive views of nearby features. Designated federal, State, and local open space and recreational areas offer scenic vistas and views if they are visible and provide a break from the urban landscape.

3.9.2 Regulatory Framework

Local

City of Riverside General Plan 2025

A goal of the Open Space and Conservation Element of the City of Riverside General Plan is to maintain and enhance the visual character of the Santa Ana River.

Objective OS-7: **Turn the Santa Ana River Task Force "Vision" into reality.**

Policy OS-7.3: Preserve and expand open space along the Santa Ana River to protect water quality, riparian habit and recreational uses.

3.9.3 Significance Threshold Criteria

The environmental analysis in this section is patterned after the Initial Study Checklist recommended by the *CEQA Guidelines*, as amended, and used by the project partners in its environmental review process. The Initial Study Checklist includes questions relating to aesthetics, light, and glare. The issues presented in the Initial Study Checklist have been utilized as thresholds of significance in this section. Accordingly, a project may create a significant environmental impact if it causes one or more of the following to occur:

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

b) Substantially damage scenic resources, including, but not limited to, trees, rocks, outcroppings, and historic buildings within a state scenic highway (Refer to Section 7.0, *Effects Found Not to Be Significant*);

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

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

Based on these standards and thresholds, the effects of the proposed project have been categorized as either a "less than significant impact" or a "potentially significant impact." Mitigation measures are recommended

1 Riverside General Plan 2025, Open Space and Conservation Element, pg. OS-3.

for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a "significant unavoidable impact."

3.9.4 Impacts and Mitigation Measures

Scenic Vistas and Scenic Resources

Impact 3.9-1: Implementation of the proposed project may have a substantial adverse effect on the scenic vista or resource including, but not limited to, trees, rocks, outcroppings, and historic buildings within a state scenic highway. **Level of Significance: Less than Significant with Mitigation.**

Construction within the project site would be visible from South Fogg Street and East Congress Street. From these streets, pedestrians and motorists would be able to clearly see construction of the proposed basins and the transformation of open space. The nearest basins, however, to South Fogg Street would be located at a distance of approximately 400 feet. Motorists along Mt. Vernon Avenue would have a view of construction and the alteration of the river floor resulting from operation of the dam and the recharge area behind the dam.

Construction activities would involve heavy-duty vehicular and construction equipment. Activities would be temporary and would occur during normal work hours (anticipated to be between 7:00 a.m. and 5:00 p.m.). Storing of the equipment in clusters within the designated staging areas would help to mitigate temporary construction impacts. Staging areas would be located away from the residential neighborhood to the northwest and South Fogg Street, and would occur adjacent to the western banks of the Santa Ana River; refer to *Exhibit 2.0-4, Proposed Project Limits*. Short-term construction impacts would last approximately 24 months. With implementation of the proposed Mitigation Measure AES-1, short-term, construction-related impacts would be less than significant. Due to the height of the levees which line the Santa Ana River, it is not anticipated that installation of the proposed dam would impact viewsheds, except for those hiking within the area, traveling along Mt. Vernon Avenue, or using the Santa Ana River trail system.

No designated scenic highways are located within the project vicinity. In addition, no rocky outcroppings or historic buildings are located on-site. However, Section 3.6, *Cultural Resources*, discusses three historic period structures that were previously recorded within the Area of Potential Effect (APE): Site 36-010330 (Southern Pacific Railway), Site 36-007169 (Riverside Water Company's Santa Ana Siphon and Riverside-Warm Creek Canal), and Site 36-016417 (San Bernardino-Sonora Road). The San Bernardino-Sonora Road, a 19th century wagon road, has been erased from the landscape at this location due to many years of disuse and periodic flooding of the Santa Ana River. A bridge on the Southern Pacific Railway and additional historic-period waterworks features of Site 36-007169, including a segment of a concrete-lined canal, however, were encountered. This railway alignment is historic in age, but the track and bridge are clearly modern in design, construction, and materials. Thus, impacts to the San Bernardino-Sonora Road and Southern Pacific Railway are not anticipated.

Mitigation Measure CUL-9, found in Section 3.6, however, recommends the avoidance of the Riverside-Warm Creek Canal. In the event that avoidance is infeasible, Mitigation Measure CUL-9 allows for recordation of the engineered design and construction of the canal segment and preservation of the information for future researchers. Refer to Section 3.6, *Cultural Resources*, for further analysis.

As previously stated, the project proposes three to eight roughly consecutive basins that would be located adjacent to the westerly levee of the Santa Ana River. Long-term viewsheds of the now-vacant land where the basins are proposed would be altered. Currently, Riversidean alluvial fan sage scrub habitat, which could

be considered a scenic resource, dominates the proposed basins site. With project grading activities, up to 44.1 acres of the site (where the basins would be located and the RAFSS currently exists) would be permanently impacted. The current condition of this area, however, is degraded and denuded of vegetation.

Similarly, the proposed dam would be located within a riparian community that may also be considered a scenic resource. High levels of moisture in the soil of this area promote the survival of riparian vegetation. Impacts from construction would extend approximately 200 feet from the dam location (100 feet on either side of the dam). The habitat within the area impacted by the in-stream basin may be reduced or eliminated, since the in-stream basin, which would cover approximately 24 acres, would be temporarily submerged under water during storm events, other riparian communities would be recreated or dispersed in other portions of the impoundment area. Most likely, the newly created riparian areas would be formed at the fringes of the impoundment area. In addition, 100 feet downstream of the proposed dam structure would be required to accommodate rip-rap/energy dissipater devices to reduce potential erosion at the base of the dam; refer to *Exhibit 2.0-4, Proposed Project Limits*. Since the riparian habitat would be dispersed and redistributed, and minimal elimination of riparian trees would occur, less than significant impacts are anticipated.

Construction-Related Impacts

Refer to the response above. Construction will involve heavy-duty vehicles and construction equipment. Views of the basin, which primarily occur from South Fogg Street and East Congress Street, would be impacted. The installation of the dam would impact viewsheds for those hiking within the project vicinity, traveling along Mt. Vernon Avenue, or using the Santa Ana River trail system. Impacts due to construction activity would be mitigated through clustering of construction equipment within designated storage/staging areas at a less visible distance from the residences along South Fogg Street and East Congress Street, motorists along these streets and Mt. Vernon Avenue, and the Santa Ana River trail system. With inclusion of this mitigation measure, less than significant impacts are anticipated.

Operations-Related Impacts

Long-term impacts to the scenic vistas and resources would occur primarily within the Santa Ana River visual corridor. These impacts include the seasonal recharge of local surface water behind the proposed dam for approximately six months out of the year and installation of the dam. The dam would be approximately six feet tall and approximately 810 feet wide. The tops of the levees adjacent to the dam are approximately 30 feet tall. Therefore, the top of the dam would be approximately 24 to 30 feet below the tops of the levees. The proposed dam would only be visible to those using the Santa Ana River trail system or traveling along Mt. Vernon Avenue. It should be noted that some may view the dam as visually intrusive. Conversely, others may view the dam as a point of interest based on its unique quality. Refer to *Exhibit 3.9-2, Inflatable Rubber Dam and Groundwater Basin Examples*, for an example of a typical inflatable rubber dam and groundwater recharge basins.

To foster this sense of interest and enhance the project elements as having educational value, as well as to provide explanation of the introduction of the project components into the existing visual setting, the City of Riverside shall prepare interpretive signage depicting the purpose and intent of the dam and demonstrating how the dam will operate. The signage shall be architecturally enhanced and shall serve as a community educational piece. With installation of the interpretive signage listed under Mitigation Measure AES-2, impacts will be reduced to less than significant.

The proposed off-stream basins and SWP pipeline would occur on vacant land; however, as stated above, Riversidean alluvial fan sage scrub habitat, which could be considered a scenic resource, dominates the proposed basins site. With project grading activities, up to 44.1 acres of the site (where the basins would be located and the RAFSS currently exists) would be permanently impacted. The current condition of this area, however, is degraded and denuded of vegetation. Disturbances include dirt access roads, power lines and trash dumpings. The SWP pipeline would not produce permanent visual impacts, since this pipeline would be placed permanently underground. A relatively thin linear strip of dirt (approximately 4 to 8 feet) above the SWP pipeline alignment would be disturbed, but later backfilled and allowed to return to its natural state. As such, less than significant long-term impacts would occur to viewsheds within the Santa Ana River corridor, and no mitigation measures are required.

MITIGATION MEASURES

AES-1: Prior to grading, the City shall show the temporary construction equipment staging areas within the project site through the duration of construction. Materials, heavy-duty equipment, and debris piles shall be clustered in order to minimize visual impacts during construction. At a minimum, these construction equipment and debris clusters shall be located at a distance of 100 feet from adjacent residence and shall be visually screened.

AES-2: Interpretive signage shall be installed in the immediate vicinity of the dam adjacent to the Santa Ana River Trail. The sign shall depict the purpose and intent of the dam and demonstrate how the dam will operate. The content of the sign shall include both narrative and illustrative components. The sign shall be architecturally enhanced.

View of a groundwater recharge basin located in
Beaumont-Cherry Valley Water District (BCVWD)

Photograph of a groundwater recharge basin in BCVWD

View of the area surrounding a groundwater recharge basin in BCVWD

Rubber Dam, located in Orange County Water District

RIVERSIDE NORTH AQUIFER STORAGE
AND RECOVERY PROJECT - EIR

Inflatable Rubber Dam and Groundwater Basin Examples

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Exhibit 3.9-2

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VISUAL CHARACTER

Impact 3.9-2: Implementation of the proposed project may substantially degrade the existing visual character or quality of the site and its surroundings. **Level of Significance: Less than Significant with Mitigation.**

Construction of the proposed project would potentially create temporary impacts to the visual character of the area due to the presence of construction equipment, materials and debris piles and from excavation, grading, and construction activities. Mitigation Measure AES-1, described above, would reduce visual impacts through the clustering of construction equipment within temporary staging areas.

The proposed SWP pipeline extension, diversion structures, dam, and basins would permanently alter the visual character of the site from undeveloped land, riparian communities, and Riversidean alluvial fan sage scrub, which are considered visual resources. Impacts would occur to those hiking in the area, viewing the site from high structures within the vicinity of the project site, or driving or walking along South Fogg Street or East Congress Road. However, the portion of the project area to the west of the levee is largely defined as disturbed and degraded. The off-stream basins and other related features, which are proposed within this location, would therefore not substantially degrade a valuable visual resource.

As discussed in response to Impact 3.9-1, the dam could serve as a visual point of interest. Mitigation Measure AES-2 would require the installation of interpretive signage adjacent to the proposed dam. With incorporation of this mitigation, less than significant impacts are anticipated.

Approximately 24 acres, a portion of which contains riparian habitat, would be inundated behind the dam during storm events due to in-stream recharge operations. This affected area could be viewed from Mt. Vernon Avenue or from the Santa Ana River trail system. As discussed in response to Impact 3.9-1, riparian habitat would most likely be removed from immediately upstream of the dam and be redistributed in other portions of the impoundment area, particularly along the fringes of the impoundment pond. Therefore, the in-stream basin and dam would not result in a significant loss of riparian vegetation. While the Santa Ana River corridor is considered a regional visual resource, impacts are expected to be less than significant with implementation of Mitigation Measures AES-1 and AES-2. Therefore, implementation of the project would not cause a substantial adverse effect on the visual character of the project site.

Construction-Related Impacts

Refer to the response above. As part of the project, construction will involve heavy-duty vehicles, materials, and debris piles. Mitigation Measure AES-1, described above, would reduce visual impacts through the clustering of construction equipment within temporary staging areas onsite to limit the potential for such activities to be visible from offsite public vantage points. Less than significant short-term impacts are anticipated.

Operations-Related Impacts

Long-term impacts to the visual character and quality of the area would occur primarily within the Santa Ana River visual corridor. These impacts include the seasonal recharge of local surface water behind the proposed dam during storm events, in addition to the visual impacts related to the presence of the dam. However, the dam, as stated above, would be six feet tall. The tops of the levees adjacent to the dam would measure approximately 30 feet in height. Therefore, the top of the dam would be approximately 24 to 30 feet below the tops of the levees. The proposed dam would only be visible to those using the Santa Ana River trail system

or traveling along Mt. Vernon Avenue. The dam may serve as a point of public interest, due to its unique nature. However, out of the abundance of caution, some may view the dam as visually intrusive. Others may view the dam as visually beneficial when compared to existing infrastructure within the immediate vicinity of the proposed dam.

The off-stream basins would convert undeveloped land and disturbed Riversidean alluvial fan sage scrub to public infrastructure use (groundwater recharge facilities). Currently, Riversidean alluvial fan sage scrub habitat, which could be considered a scenic resource, dominates the proposed basins site. With project grading activities, up to 44.1 acres of the site (where the basins would be located and the RAFSS currently exists) would be permanently impacted. The current condition of this area, however, is degraded and denuded of vegetation. Less than significant long-term impacts to the visual character and quality of the area would occur with incorporation of Mitigation Measure AES-2 which would require installation of interpretive signage to enhance public interest and provide explanation as the purpose and operation of the facilities.

Mitigation Measures

Refer to Mitigation Measures AES-1 and AES-2. No further mitigation is required.

Light and Glare

Impact 3.9-3: Implementation of the proposed project may create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area. **Level of Significance: Less than Significant with Mitigation.**

The proposed facility would not introduce significant new sources of light and glare on the site or within the project vicinity. The project site is located within an urbanized setting, where surrounding uses are currently exposed to high levels of nighttime light. Proposed construction would occur during normal daytime working hours (anticipated to be 7:00 a.m. to 5:00 p.m.). Temporary construction lighting would be included for safety and security purposes. This temporary lighting would create minimal spillover and would be directed towards equipment, debris piles, materials, or disturbed areas. Therefore, substantial light is not anticipated during construction activities; nighttime views would be unaffected.

Minimal trips associated with the operational phase of the project would occur. These trips would be due primarily to maintenance and inspection operations, which would occur during daytime hours. Therefore, the proposed project would not increase nighttime illumination or decrease night sky visibility in the long run. Anticipated sources of light may include security lighting for ancillary buildings, and mechanical equipment storage structures. On-site light sources are not expected to create light spillover or glare impacts on surrounding land uses, since structures are anticipated to be located adjacent to the dam (a relatively substantial distance from neighboring residential uses). Mitigation Measure AES-3 includes provisions to ensure that lighting spillover impacts potentially occurring as a result of the proposed project would be reduced or eliminated to the maximum extent possible though shielding of light sources. With implementation of this mitigation measure, less than significant impacts related to light and glare are anticipated after mitigation.

Since the proposed project includes the recharge of surface water over approximately 24 acres in the in-stream recharge area and 44.1 acres in the off-stream area, the project may create a substantial source of glare. This pool of standing water may create an adverse sensation to on-lookers within the area; this effect may be produced by a significantly greater degree of luminance generated from this standing pool. Sensitive receptors within the area include motorists on the Mt. Vernon Avenue bridge, users of the Santa Ana River trail system,

and pedestrians and motorists on Congress Street or Fogg Street. However, this effect would occur only when a sufficient quantity of water is impounded behind the dam. In addition, the level of glare generated is expected to be minimal, since it would be limited to certain hours of the day and would only produce adverse effects if on-lookers were present and viewing the basin from the appropriate angle. Mitigation Measure AES-4 would require installation of landscape screening to reduce potential glare emanating from the off-stream basins. Due to the limited conditions under which glare would occur and could potentially impact sensitive receptors, operational impacts are considered less than significant with mitigation.

Construction-Related Impacts

Refer to the response above. Construction of the project would occur during normal daytime working hours. Therefore, substantial impacts related to light are not anticipated during construction activities; nighttime views would be unaffected.

Operations-Related Impacts

Minimal operational trips related to the basins, SWP pipelines, and dam would occur. Anticipated sources of light may include security lighting for mechanical equipment storage structures associated with the proposed dam, recharge basins, diversion structures, and related features. Due to the anticipated distance from neighboring residential uses, light spillover is not expected. To ensure lighting spillover is reduced to the maximum extent possible, Mitigation Measure AES-3 will be required. With implementation of this Mitigation Measure, less than significant impacts are anticipated.

As discussed above, glare from the standing pools of water created within the off- and in-stream recharge basins may generate adverse impacts on sensitive receptors (e.g., motorists along Mt. Vernon Avenue, users of the Santa Ana River trail system, and motorists and pedestrians traveling along the Fogg Street extension). However, glare would be limited, since adverse impacts would depend on the presence of an appropriate level of water, the time of day, the presence of sensitive receptors, and the angle from which the basin is being viewed. Impacts due to glare are considered incidental occurrences and are not anticipated to create significant, far-reaching impacts.

As stated previously, mitigation for the off-stream basins would include preparation and implementation of a coordinated landscaping plan that adequately addresses the screening of glare potentially emanating from the off-stream groundwater basins. Mitigation Measure AES-4 would reduce impacts resulting from the off-stream basins to less than significant levels. Due to the limiting factors described above, impacts resulting from glare are considered less than significant with mitigation.

Mitigation Measures

AES-3: All outdoor lighting, aside from street lighting, shall be low to the ground shielded and/or hooded in order to obstruct shining onto adjacent properties or street and to minimize light intrusion into surrounding habitat. Low-pressure sodium vapor lighting or overhead high-pressure sodium vapor lighting with shields or cut-off luminaries shall be utilized.

AES-4: A coordinated landscaping plan (that may also enhance any existing natural vegetation) shall be incorporated into construction bid documents and approved by the City, prior to commencement of construction activities. The plan shall address and minimize adverse glare impacts on pedestrian and motorist traveling along the proposed Fogg Street extension resulting from standing pools of water within the off-stream recharge basins. Landscaping

shall provide adequate screening to attenuate glare impacts from the off-stream recharge basins only, and plant types shall be appropriate to the biological setting.

3.9.5 Significant Unavoidable Adverse Impacts

No significant unavoidable impacts related to aesthetics, light, and glare have been identified following implementation of the recommended mitigation measures.

4.0 GROWTH INDUCING EFFECTS

4.1 CEQA Guidelines

Section 15126(d) of the State *CEQA Guidelines* requires an EIR to address the "growth-inducing" effects of a proposed project. Pursuant to Section 15126(d) of the State *CEQA Guidelines*, a project would have growth-inducing effects if it would:

- Foster economic or population growth, or the construction of additional housing;
- Remove obstacles to population growth;
- Tax existing community services or facilities, requiring the construction of new facilities that could cause significant environmental effects; or,
- Encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively.

Section 15126.2(d) states: "It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment." As such, this chapter of the EIR analyzes the potential environmental consequences of the foreseeable growth and development that could be induced by implementation of the proposed project.

4.2 Growth-Inducing Impacts of the Proposed Action

Growth-inducing impacts fall into two general categories, direct and indirect. Direct growth-inducing impacts are generally associated with the provision of urban services to an undeveloped area. The provision of these services to a site, and the subsequent development, can serve to induce other landowners in the vicinity to convert their property to urban uses. Indirect, or secondary, growth-inducing impacts consist of growth induced in the region by the additional demands for housing, goods and services associated with the population increase caused by, or attracted to, a new project.

Population and Housing Growth

The proposed project would result in the construction of an inflatable rubber dam across the Santa Ana River, groundwater recharge basins (downstream of the dam and adjacent to the river's westerly levee), a diversion structure to the existing Riverside Canal, an SWP pipeline extension, a utility crossing, and other related features. The proposed project does not include housing of any type and would not directly induce population growth through such construction of residential units. Indirectly, the proposed project does not remove any obstacle to growth, as the area has sufficient water entitlements for the planned future. The project replaces one type of water entitlement with a more local resource.

Economic Growth

Construction of the proposed project would be temporary in nature, and due to the extent of the construction requirements, would not result in a land use that would generate a substantial number of new jobs or increase in new housing within the local community. Therefore, construction of the proposed project would not contribute to substantial economic growth within the local community or surrounding areas. Staffing needs

would generally be limited to that required for periodic maintenance (e.g. removal of silt and excess sand deposits and vegetation control, operation of the mechanical equipment for the inflatable dam, etc.). Therefore, indirect population growth would not be considered significant as a result of the proposed project.

4.3 Obstacles to Growth

Several types of projects can induce population growth by removing obstacles that prevent growth. An example of this type of project would be the expansion of a wastewater treatment plant that would accommodate additional sewer connections within a service area, and therefore, would allow future construction and growth. The proposed project would expand groundwater supplies within the Riverside and Colton groundwater basins, but the purpose is to reduce reliance on imported water from the Colorado River and State Water Project.

The *City of Riverside Final 2010 Urban Water Management Plan* (UWMP) projected 2035 water demand to reach approximately 119,800 acre-feet per year (afy), while water supply would exceed that amount reaching approximately 143,226 afy. The proposed project was anticipated in the water supply estimation provided in the Western Municipal Water District's *2008 Integrated Regional Water Management Plan* (IRWMP)[1]. According to the City's Final 2010 UWMP, the City's water supply consists primarily of groundwater, but additional sources include the City of Riverside's Regional Water Quality Control Plant (RWQCP), and imported water from WMWD. The City plans to augment its existing water supplies through three conjunctive uses: Seven Oaks Dam Conservation; Pellissier Ranch Aquifer Storage and Recovery; and, the proposed project.

The proposed project would provide Riverside and its project partners with approximately 14,024 afy (on average) of additional groundwater supply and an average diversion to the Riverside Canal pipeline of 3,860 afy, which would be available for use by these agencies to reduce their dependence on imported water.

In addition, according to the 1969 Western Judgment, SBVMWD is required to manage the Rialto-Colton and Riverside North basins appropriately should the minimum groundwater elevation of 822.04 feet above msl occur at the index wells (based on an average of three wells within the project's immediate vicinity, Johnson 1; Flume 2; and, Flume 5). SBVMWD could manage these basins by groundwater replenishment or by allowing a temporary shift in production to Bunker Hill until the basins recover. Although groundwater levels have not dropped below the minimum threshold since the commencement of the 1969 Western Judgment, a recent downward trend has moved groundwater levels increasingly closer to the 822.04-foot level. The proposed project could assist to replenish the groundwater basins.

Table 4.0-1, Riverside Public Utilities Water Supplies, lists the sources and estimated quantity of water available to the City in year 2035:

1 Identified as the Riverside Groundwater Recharge Study, identifying groundwater recharge of local runoff.

Table 4.0-1 Riverside Public Utilities Water Supplies

Water Supplies	2035 (afy)
Existing Supplies	
Groundwater (Bunker Hill Basin)	53,426
Groundwater (Rialto-Colton Basin)	2,700
Groundwater (Riverside North)	13,500
Groundwater (Riverside South)	28,600
Total Existing Supplies	**98,226**
Planned Supplies	
Seven Oaks Dam Conservation (Phase 1)	4,000
Riverside North Aquifer Storage and Recovery[1]	3,500
Pellissier Ranch Aquifer Storage and Recovery[2]	10,000
Recycled Water (RWQCP)	5,800
Total Planned Supplies	**23,300**
Available Supplies	
Imported Water (MWD via WMWD)	21,700
Total Available Water Supply	**143,226**

[1] The 3,500 afy figure for the Riverside North Aquifer Storage and Recovery Project used in the 2010 UWMP is notably lower than the approximate average annual recharge volume listed in Chapter 2.0 of this Draft EIR (6,290 afy – in-stream; 3,874 afy), off-stream since the yield from the proposed project will be divided between the three project partners.
[2] The Pellissier Ranch Aquifer Storage and Recovery project includes 6,000 afy of groundwater and stormwater recharge and 4,000 afy of recycled water recharge.
Source: Riverside Public Utilities, Final 2010 Urban Water Management Plan, pg. ES-3.

In addition, the City of Riverside and its Project Partners are investing in infrastructure improvements such as the extension of a pipeline from the SWP turnout (north of the proposed basins), and a 42-inch underground utility crossing spanning the Santa Ana River (within the footprint of the inflatable dam).

The project meets a critical water supply need for the region, consistent with adopted water management planning documents (refer to Section 3.10, *Water Supply*, for additional discussion). In addition, given the uncertainty and unreliability of imported water, and the continued strain on available groundwater sources, the project provides an essential local water supply for the City of Riverside and its Project Partners. Any development facilitated by this project would be subject to a myriad of local, state and federal review processes to ensure consistency with adopted growth plans and compliance with CEQA and other relevant regulations focused on protecting environmental resources. Considering the above, impacts associated with growth inducement are considered less than significant.

4.4 Tax Existing Community Services or Facilities

Since the proposed project does not include additional housing, or commercial or industrial development, existing community services and facilities would not be impacted.

4.5 Conclusion

The proposed Riverside North Aquifer Storage and Recovery Project would not directly induce population growth. The proposed project does not include the development of housing units or commercial/industrial uses, and the infrastructure being proposed will accommodate growth already anticipated in existing planning studies and documents. Although the project would remove one potential obstacle to growth (water), and may therefore by definition be considered "growth-inducing", this impact is not considered significant for the reasons noted above.

5.0 ALTERNATIVES TO THE PROPOSED ACTION

5.1 CEQA Requirements

The State *CEQA Guidelines* Section 15126.6 mandates that an EIR include a comparative evaluation of the proposed project with a range of reasonable alternatives to the project, which would feasibly attain most of the basic objectives of the project while simultaneously avoiding or substantially lessening any of the significant effects of the project. Pursuant to Section 15126.6 (f)(1) of the State *CEQA Guidelines*, "among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site (or the site is already owned by the proponent)." Although these factors do not present a strict limit on the scope of reasonable alternatives to be considered, they help establish the context in which "the rule of reason" is measured against when determining an appropriate range of alternatives sufficient to establish and foster meaningful public participation and informed decision-making.

As described in Chapter 2.0, *Project Description*, the project proposes the construction of an inflatable dam across the Santa Ana River, which will be used for in-stream groundwater recharge and for the diversion of flow from the Santa Ana River to off-stream groundwater recharge basins west of the river channel and to the Riverside Canal pipeline. The inflatable dam will be approximately 6 feet high and approximately 810 feet wide across the channel. Off-stream recharge basins will be constructed and will range from 3 feet to 11 feet deep and be connected in series with pipes and gate structures. In addition, the project proposes the construction of a State Water Project pipeline, a utility crossing (to be located within the footprint of the inflatable dam), and related features.

5.2 Project Objectives

As discussed in Chapter 2.0, *Project Description*, the objectives identified for the proposed project include the following:

- Aquifer Storage and Recovery Objectives:
    - Recharge the groundwater aquifers in the Riverside and Colton basins
    - Achieve the requirements of the 1969 Western Judgment (Western Judgment)
    - Divert surface water to the Riverside Canal
    - Improve groundwater quality of Riverside and Colton Basins
    - Create drought storage
    - Reduce dependence on imported water
    - Maximize local groundwater production
    - Maximize capture and use of local surface water
    - Provide seasonal storage

- Utility Connection Objectives:
  - Create a utility corridor connection between the west and east side of the Santa Ana River

5.3 Significant Unavoidable Adverse Impacts of the Proposed Project

The project's potentially significant impacts are set forth in Sections 3.1 through 3.10 of this Draft EIR. As noted in these sections, most of the potentially significant impacts identified can be mitigated to a less than significant level through implementation of feasible mitigation measures. However, significant and unavoidable impacts would occur as a result of implementation of the proposed Project in the following areas:

- Construction-Related Emissions (Section 3.3, *Air Quality, Odor, and Climate Change*)
- Cumulative short-term, construction-related emissions (Section 3.3, *Air Quality, Odor, and Climate Change*)

5.4 Alternatives to the Proposed Project

Based on the purpose of the alternatives analysis as described above, and as prescribed in Section 15126.6 of the State *CEQA Guidelines*, the following alternatives were selected by the City of Riverside for evaluation in the EIR:

- Alternative 1: No Project Alternative
- Alternative 2: Alternative Project Location
- Alternative 3: Imported Water Supply Alternative
- Alternative 4: Increased Reclamation/Conservation Alternative

The analysis of project alternatives takes into consideration the base assumption that all applicable mitigation measures associated with the project would be implemented with the appropriate alternatives. However, applicable mitigation measures may be scaled down to reduce or avoid the potential impacts of the alternative under consideration, and may not precisely match those identified for the proposed project. If a specific impact is not raised within the discussion of an alternative, it is because the effect is expected to be the same as that associated with the implementation of the proposed project.

5.4.1 Project Alternatives

A description of each alternative and a comparative environmental evaluation to the identified impacts of the proposed project is provided below and has been considered as part of the alternatives analysis in accordance with § 15126.6 (c) of the State *CEQA Guidelines*. Over the past several years of conceptual design and siting efforts and extensive hydrogeologic studies, the City has developed the proposed project as an environmentally sound, technically feasible approach to utilizing excess River flows while minimizing impacts to the River. Several concepts were rejected over the course of these studies, due primarily to potential for greater impact, and/or consistency with the stated project goals and objectives.

The joint NOP comment from Center for Biological Diversity (the "Center"), San Bernardino Valley Audubon Society ("SBVAS"), Tri-County Conservation League, California Native Plant Society, The

Wildlands Conservancy, Sierra Club, Endangered Habitats League and the Friends of Riverside's Hills indicated the following (refer to *Appendix A* for NOP comment letters):

> "*The EIR should consider a range of smaller alternatives that reduce or avoid the project's significant environmental impacts as well as alternative project locations including the Pellisier Ranch property. The City should undertake an independent evaluation of the financial viability of the project, as well as reduced-scale alternatives. One alternative should explore returning more natural meanders to large sections of the river in appropriate places where increased infiltration could occur. Another alternative should explore using the Pellisier ranch lands as the project site. Another alternative should include using Low Impact Development (LID) techniques in development and redevelopment projects such as porous concrete and pavers to increase infiltration over larger areas than the proposed basins.*"

Watershed-wide evaluations of potential regional water supply alternatives are being addressed by SAWPA, SBVMWD and others as noted in Section 3.0 of this DEIR, and are considered outside the scope of this Project. The City's UWMP already includes of the Pellisier Ranch property for groundwater recharge, and as such this alternative site is not being considered in this EIR, as it is included in the portfolio of water supply options being pursued by the City. A "reduced scale" alternative is not being pursued by the City, in light of the need for supplemental water, and the limited availability for local water supply projects. Furthermore, a "reduced scale" alternative would still require substantial in-stream and off-stream construction, as well as potential levee modifications similar to the proposed Project, and would therefore likely not avoid the Project's identified potentially unavoidable significant air quality impacts. In response to this comment, the City modified proposed project operations by allowing initial "first flush" low flows to pass, thereby minimizing the flow diversion even further.

The project is situated in a unique location, adjacent to existing City groundwater wells, in proximity to SWP conveyance lines, adjacent to City-owned land available and feasible for off-river recharge, and in a section of the SAR relatively absent of sensitive river species and habitat.

Alternative 1: No Project Alternative

The No Project Alternative would not involve the development of the proposed project on the project site. The existing river alignment, landscape, and recharge capacity would remain unchanged with the implementation of this Alternative. Although this alternative would avoid the potentially significant impacts of the project, it would not achieve the project objectives, would not be consistent with the City's adopted UWMP, and would therefore require the City and Project Partners to rely more heavily upon imported water and other supplies.

Under this scenario, the additional water supply and projected overdraft conditions in the Riverside North subbasin would likely be mitigated with imported water, as well as other water supply options set forth in the City's UWMP. This alternative does not preclude future development on the site with similar water supply facilities or other uses, subject to appropriate local, state and/or federal approvals.

The No Project Alternative would not achieve the project objectives of providing infrastructure or facilities to create drought storage, nor would it maximize local groundwater production or the capture and use of local surface water. This Alternative would also not achieve the objective of providing seasonal water storage methods to supplement the available water supply during dry periods nor reduce the City and its Project Partners' dependence on imported water. In addition, no additional measures would be taken to improve groundwater quality of Riverside or Colton subbasins with this Alternative.

Under this alternative, in addition to continuing pursuit of water reclamation and conservation (see below), the City and Project Partners would need to pursue other new water supplies, whether imported or local, either of which have the potential for similar or greater environmental impacts and/or reduced reliability (see below).

As the No Project Alternative would not achieve the majority of the project objectives, this Alternative is therefore rejected from further consideration.

Alternative 2: Alternate Project Location Alternative

The Alternate Project Location Alternative would involve the development of the proposed project at an alternate project site. An initial dam location analysis was conducted to determine the most-suitable location for the alignment of the inflatable dam. A number of dam alignment locations were considered for the in- and off-stream basins (refer to *Exhibit 2.0-6, Dam Alternative Locations*). Factors that were considered in the analysis included potential recharge capacity and area of the in-stream basin, cost of construction of the dam and pipe works, impacts on riparian habitat, distance from off-stream recharge basins, and the stability of the dam. The proposed alignment was ultimately selected as the preferred dam alignment. None of the other locations would reduce or avoid the Project's identified significant environmental impacts.

The City also evaluated other dam construction options, including constructing two smaller rubber dams, and/or constructing a smaller rubber dam with additional in-stream recharge facilities ("T-levees," to capture in-stream flows through temporary levees constructed in the active River channel, to allow for increased groundwater recharge, similar to facilities downstream of Prado Dam). Neither of these options is being explored by the City at this time due to anticipated additional physical impact in the River channel and associated additional regulatory permitting and mitigation requirements.

Upstream Dam Location

The current location of the project would allow groundwater recharge within the Riverside and Colton subbasins. As one travels upstream (north of the I-10/ I-215 interchange and San Jacinto Fault), recharge would occur within the Bunker Hill groundwater basin. Recharge within the Bunker Hill basin would not provide the same benefits to the City and its Project Partners, since this would not meet the outlined objectives within their Integrated Regional Water Management Plans. In addition, the Western Judgment imposes a recharge obligation on SBVMWD to maintain threshold groundwater levels within the Colton and Riverside North subbasins. The proposed project is bound to the north by the Bunker Hill groundwater basin. Thus, shifting the dam further upstream would not fulfill the obligation mandated under the Western Judgment with respect to recharge of the Colton and Riverside North subbasins.

Downstream Dam Location

Alternatives including dam and basin locations further downstream are precluded due to the presence of the Rapid Infiltration and Extraction (RIX) Wastewater Treatment Plant in the City of Colton and the Rialto Wastewater Treatment Plant. Due to the presence of more regular daily flow in downstream sections of the Santa Ana River, there is reduced opportunity downstream for in-river recharge as the river bed is already saturated. Downstream areas also have more abundant habitat for sensitive species, including the Santa Ana sucker. In addition, portions of the river south of the project area may not have levees suitable for impoundment of water for prolonged periods of time and the riverbed may be hydraulically unstable due to changing riverbed conditions as flows increase and decrease throughout the year.

For these reasons, both upstream and downstream alternatives were excluded from further analysis, and neither alternative would avoid the identified potentially unavoidable significant impact of the project, short-term construction-related air emissions on a project and cumulative level.

Alternative 3: Imported Water Supply Alternative

Under the Imported Water Supply Alternative, the City of Riverside and its Project Partners, SBVMWD, and WMWD, would rely on imported water supplies to meet future demand and to manage current groundwater supplies within the project area. The imported water supplies would primarily originate from the State Water Project (SWP). Since the reliability and availability of imported water can be restricted at times, water banking could be used to increase water supply reliability. Banked imported water would then be wheeled to this area through the project partners. Implementation of this alternative would not preclude future development of project facilities or other uses at the project site, subject to applicable discretionary reviews and approvals.

State Water Project

The SWP obtains its supplies from the Sacramento River basin. SWP supplies can be pumped from the northern Sacramento-San Joaquin Delta (Delta) into the North Bay Aqueduct or pumped out of the southern Delta into the California Aqueduct (the majority of SWP water is supplied via the southern Delta). The California Aqueduct conveys water along the San Joaquin Valley and is pumped 1,926 feet over the Tehachapi Mountains where it then divides into the East and West Branches. Both SBVMWD and WMWD receive SWP water from the East Branch.

The reliability of SWP supplies to be delivered to its contractors in a given year depends largely on the amount of rainfall, snowpack, runoff, water in storage, pumping capacity from the Delta, demand for supply, and legal and regulatory constraints. In 2011, the California Department of Water Resources (DWR) released its State Water Project Final Delivery Reliability Report which provides current and future (2031) estimates of water delivery by the SWP. This report includes potential factors that can affect SWP deliveries and include: climate change, sea level rise, restrictions of SWP operations from State and federal regulations protecting endangered and threated species, and vulnerability of delta levees to floods and earthquakes. As of December 2013,[1] DWR estimated that in 2033, SWP deliveries could be 58 percent of long-term average Table A deliveries, with extended drought periods producing as low as 24% of Table A deliveries.

The Delta ecosystem is currently at risk due to a lack of floodplain habitat, marginalized channels, lost tidal marshes, altered flows, toxic contaminates and nutrients, and invasive species. The Delta provides habitat to approximately 500 plant and animal species including the threatened Delta Smelt and endangered Chinook Salmon. In 2009, the Delta Reform Act was passed making management of the Delta State policy. The Delta Stewardship Council (DSC) was created out of the new policy which is tasked with developing a comprehensive management plan for the Delta. The Bay Delta Conservation Plan (BDCP) is a planning process to inform the DSC as it develops the Delta Plan; the BDCP is currently being updated.

The BDCP is a collaborative effort that includes State and federal resource and wildlife agencies, environmental organizations, and water agencies throughout California to address the co-equal goals of providing for the conservation and management of aquatic and terrestrial species, restoring and enhancing Delta habitat, and improving the reliability of water supplies conveyed through the SWP. The BDCP are

1 The State Water Project Draft Delivery Reliability Report 2013, Table 6-3.

considering several possible alternatives that would divert water from North of the Delta and convey it around the Delta where it would be pumped for the SWP and potentially, could increase reliability of SWP deliveries.

Rather than going through SBVMWD or WMWD, the City may elect to purchase water from private water rights holders (typically farmers or other water agencies) in Northern and Central California and utilize SBVMWD and Metropolitan Water District of Southern California (MWD) facilities to wheel water to its service area. As part of this alternative, the City would be required to pay conveyance fees for use of SWP facilities for delivery of this water. Typically, this water is obtained through SWP facilities, which are a requirement at the point of origination (where the water is coming from) and point of conclusion (where the water will ultimately end up). However, due to delta export limitations as well as contractual agreements and growing SWP contractors' water demands, the availability of aqueduct capacity for transferring, or "wheeling," non-State Water Project (SWP) water is becoming increasingly restricted. Additionally, the unreliability of using private water rights makes this component an unlikely part this alternative.

Depending on the specific source(s), imported supplies tend to be higher in TDS and may contain other undesirable constituents requiring treatment prior to introduction into the potable water supply system (see Section 3.5, *Hydrology and Water Quality*).

Colorado River

In 1963, the U.S. Supreme Court reduced California's Colorado River supply to 4.4 million AFY. Over the last 10 years, California's annual use of Colorado River water has ranged from 4.5 to 5.2 million AFY due to surplus water from Arizona and Nevada. However, Arizona is approaching its apportionment reducing the likelihood of California receiving unused water in the near future. Of the 4.4 million AFY, agricultural entities hold up to 3.85 million AFY under water delivery contracts and in previous years have provided unused surplus water for domestic use. The City would not expect to receive Colorado River water as imported water but rather SWP water.

Water Banking and Water Wheeling

Imported water is not always available in the quantities necessary to meet demand, particularly during peak summer months and/or drought conditions. The concept of water banking is to contract with a water storage district to store or bank imported water in a groundwater aquifer when SWP water is readily available, typically in spring and wet years, and extract groundwater at a later time when demands increase and imported water becomes less available to its contractors. Imported water is typically stored by spreading or injecting the water into an aquifer. Groundwater extraction is accomplished by pumping out groundwater and wheeling the water through private or State-owned facilities to an entities service area. The City would have to contract with the facilities owner(s) to wheel water to the City's service area.

San Bernardino Valley Municipal Water District

SBVMWD is responsible for long-range water supply and management in the San Bernardino Valley. SBVMWD imports supplemental SWP water and manages groundwater storage within its boundaries. SBVMWD is also responsible for groundwater extractions over the amount specified in the Western Judgment. As part of the 1969 Western Judgment, SBVMWD became responsible for maintaining water levels in specified key wells in the vicinity of the proposed project location. If conditions defined in the Judgment were ever met, SBVMWD would be required to recharge the groundwater basin to offset the deficiency. SBVMWD boundaries span the eastern two-thirds of the San Bernardino Valley, the Crafton Hills, and a

portion of the Yucaipa Valley. The proposed project would benefit groundwater basins managed by SBVMWD and would reduce the reliance on imported water used to recharge the Riverside North and Colton subbasins, and help maintain groundwater supplies in these subbasins.

SBVWMD has an annual SWP Table A entitlement of 102,600 acre-feet. In accordance with SBVMWDs Integrated Urban Water Management Plan, their long-term average wholesale allocation of imported water from the SWP will remain relatively stable, projected at 58% of Table A allocations in 2033, based on the 2013 Final Delivery Reliability Report released by DWR.

Western Municipal Water District

The WMWD is a wholesale purchaser of imported water and receives 90% of its total water supplies from MWD, who in turn receives its supplies from the Colorado River and SWP. WMWD currently receives approximately 25% of its imported water from the Colorado River and approximately 75% of its imported water from the SWP. In total, WMWD projects this water supply will increase from 104,106 AFY in 2010 to 208,035 AFY in 2035. The City of Riverside is a member agency to WMWD.

The Western Judgment provides for WMWD to be responsible for delivery of imported water to the Colton and Riverside Basin Areas if the excess extractions by water users within Western and other obligations accumulated since 1971 exceed Western's Base Rights and other credits accumulated since 1971 for the combined Basin Areas and if Valley District is not meeting its Base Flow obligation at the Riverside Narrows.

City of Riverside

The City has access to imported water from WMWD through a 30 cfs direct connection to the MWD Mills Treatment Plant and up to 30 cfs of capacity in the Western's Mills Gravity Pipeline which is connected to the MWD Mills Treatment Plant. This allows the City to obtain a combined 60 cfs (13,400 gallons per minute (gpm)) at both the Mills and Van Buren Highline connections, which equates to roughly 43,400 acre-feet per year (AFY). The City last purchased imported water in 2008, and per its 2010 UWMP, the City does not anticipate purchasing imported water for the foreseeable future, if its proposed water supply and conservation projects are fully implemented.

In comparison to the proposed recharge project, this project alternative is considered feasible as the amount of water supplied is within the capacity of the existing SWP facilities supporting the City. However, obtaining imported water to meet demands remains uncertain. The City would be purchasing Tier 2 water, which does not have a firm guarantee to receive imported water in the future. Additionally, the unreliability and environmental concerns of the SWP will persist. To adequately compare the proposed project to the imported water alternative, the City would have to rely on water banking to meet demand and manage groundwater supplies. Water banking has its own environmental impact from the energy required to recharge, maintain, and extract water supplies.

Conclusion

The Imported Water Alternative would require the City and its Project Partners to purchase imported water from the SWP to supplement local groundwater basins and provide for anticipated deficiencies in future water supplies. As such, this Alternative would not achieve the project objective of reducing dependence on imported water. Since groundwater recharge facilities would not be constructed, the Imported Water

Alternative would not achieve the project objective of recharging and improving groundwater quality within the Riverside and Colton subbasins.

This Alternative would require water banking to meet anticipated demands and as a result would achieve the project objective of creating drought storage and providing seasonal storage for future use; however, this Alternative would not achieve project objectives in maximizing local groundwater production or maximizing capture and use of local surface water. In addition, this Alternative would represent an unreliable system for addressing potential future water supplies, as the ongoing availability and quantity of water supplies from the State Water Project remain uncertain due to potential climate change, sea level rise, restrictions of SWP operations from State and federal regulations protecting endangered species, and vulnerability of delta levees and conveyance facilities to floods and earthquakes. Although little or no additional local facilities may be needed to implement this Alternative, greater reliance upon imported water would result in greater air quality and related greenhouse gas emissions, due to the increased energy necessary to convey and pump water from the Delta down to the project area. This Alternative would therefore not be able to avoid or reduce the project's identified potentially significant unavoidable impact of air quality.

Although the City and Project Partners will continue to rely upon imported water as part of an overall water supply portfolio, since the Imported Water Alternative would not achieve the majority of the project objectives particularly with respect to reliability and vulnerability, and would also not reduce or avoid the project's unavoidable significant air quality impact, this Alternative is not considered adequate in meeting project objectives.

Alternative 4: Increased Reclamation/Conservation Alternative

Water Recycling (Reclamation)

The City of Riverside is in the process of implementing its Recycled Water Facilities Plan which will aid in the efficient use of local resources and in turn reduce the City's reliance on local groundwater sources and imported water. As specified in the City's 2010 UWMP, the City plans to expand its use of recycled water over the next decade by completing two recycled water projects. The completion of the Arlington-Central Avenue Recycled Water Project and the Pellissier Ranch Aquifer Storage and Recovery Project are projected to use up to 9,800 acre-ft of recycled water annually.

Under this Alternative, the City of Riverside and the other project partners would utilize recycled water supplies to provide an equivalent amount of water supplied by the proposed project. In-direct potable reuse (i.e. recycled water recharge) in the vicinity of the proposed project location is not viable because the City has active potable wells that would have to be abandoned under the draft regulations set by California Department of Public Health for recycled water recharge. In addition, over the next decade there would be insufficient quantities of recycled water available to the City from the RWQCP to offset the projected overdraft conditions in the Riverside North subbasin given the plant losses, in-plant uses, the environmental commitment, and the planned recycled water projects. The City could expand its direct use with recycled water (i.e. landscape irrigation) above what is planned in its two recycled water projects. However for the foreseeable future there would be insufficient quantities of recycled water to offset the new water supply generate from the proposed project. Recycled water projects also have their own potential environmental impacts, including reduction of discharge flows to the SAR, physical facility construction (treatment, storage and conveyance facilities), and operation and maintenance.

Water Conservation

The City has implemented a variety of water demand management tools to maximize the efficient use of local resources, which in turn reduces the City's reliance on imported water. Bolstered water conservation, the conversion of land use from irrigated agriculture to urbanized uses, adoption of drought-tolerant landscaping, and higher marginal water rates will place downward pressure on the demand for imported water. Intensified use of water Demand Management Measures (DMM) would further reduce demand and reliance on imported water.

The City of Riverside is a signatory to the Memorandum of Understanding Regarding Urban Water Conservation in California (Urban MOU), which requires the implementation of 14 Best Management Practices (BMPs), or DMMs, for water conservation. The Urban MOU was first adopted in December 1991 by the California Urban Water Conservation Council (CUWCC) and last amended in 2008. Agencies that are signatories to the Urban MOU are required to report regularly on their implementation efforts with regard to each of the 14 BMPs. These reports are archived in an online BMP Reporting Database at the CUWCC website and are publicly available.

The MOU and BMPs were revised by the CUWCC in 2008. The revised BMPs now contain a category of "Foundational BMPs" that signatories are expected to implement as a matter of their regular course of business. These include Utility Operations (metering, water loss control, pricing, conservation coordinator, wholesale agency assistance programs, and water waste ordinances) and Public Education (public outreach and school education programs). The remaining "Programmatic" BMPs have been placed into three categories: Residential, Large Landscape, and Commercial, Industrial, and Institutional Programs. The intent of the revision was to provide water utilities with flexibility on achieving reduction targets through alternative programs and now provide options including a flex track and per-capita use approach to compliance.

The City's historical water demands and past conservation efforts were analyzed in the *2010 Water Use Efficiency Master Plan* and a range of new conservation measures were developed and evaluated. Future conservation measures were prioritized according to effectiveness (i.e. the quantity of reduced water use) and cost.

The *2010 Water Use Efficiency Master Plan* developed a water conservation strategy to achieve 10,000 acre-ft/yr of savings by 2020 to help meet the requirements of the Water Conservation Bill of 2009 (SBX7-7). From an initial list of seventy-seven conservation measures representing all reasonably known conservation devices, practices, and policies, twenty quantifiable measures were recommended within a 4-tier program. According to the City of Riverside's 2010 UWMP, the City plans to implement the first two tiers, or Group 1 and 2 projects, to achieve about 10,000 acre-ft/yr by 2020.

Based on the findings from the 2010 Water Use Efficiency Master Plan, the City's service area could possibly conserve an additional 1,900 acre-ft/yr if Tier 3 and 4 conservation measures were implemented. However, the tier three and four conservation measures are drastic water conservation measures that would have significant impact on the City's residential and commercial customers.

If this alternative is selected instead of the proposed project, the City would have to increase their water-use conservation target above 10 percent. Currently, the 10 percent target established by the UWMP assumes the most easily achievable reductions in demand. Therefore, an increase in the percentage of reduction does not equate to a linear increase in cost. Rather, this intensified reduction would be increasingly costly given that the most-easily achievable reductions have or are already scheduled to be implemented.

Conclusion

For the reasons noted above, this Alternative is not a viable alternative to the proposed project, and thus is not considered adequate to meet the project objectives. As demonstrated in the City's UWMP, conservation and reclamation are part of a balanced water supply portfolio, but are themselves not adequate to meet future water demands without developing new water supplies like the proposed project.

5.5 Environmentally Superior Alternative

CEQA requires that an Environmentally Superior Alternative be identified; that is, an alternative that would result in the fewest or least significant environmental impacts. If the No Project Alternative is the environmentally superior alternative, State *CEQA Guidelines* Section 15126.6 (e)(2) requires that another alternative that could feasibly attain most of the project's basic objectives be chosen as the environmentally superior alternative. The "No Project" Alternative would avoid project-related impacts and is therefore environmentally superior to the proposed project, although it fails to meet project objectives and would not preclude other water supply related projects at the project site or elsewhere.

The Imported Water Supply Alternative is considered the "Environmentally Superior Alternative" to the proposed project, in that it avoids the local project-related impacts both off-river and in-river. However, this Alternative would not meet project objectives as reflected below:

- Divert surface water to the Riverside Canal
- Improve groundwater quality of Riverside and Colton Basins
- Reduce dependence on imported water
- Maximize local groundwater production
- Maximize capture and use of local surface water

In addition, providing drought or seasonal storage would require construction of new imported water storage facilities and/or relatively complex water banking arrangements through third parties. As discussed above, imported water is subject to reliability and vulnerability risks that conflict with the project objectives and the City's need to develop a balanced water supply portfolio with greater reliance upon local resources. Conveying imported water through the Sacramento-San Joaquin Delta to the Riverside North subbasin has a variety of significant environmental impacts, including increased air quality and related greenhouse gas emissions due to the increased energy requirement to convey Delta water to Southern California. Therefore, this Alternative does not reduce or avoid the project's identified unavoidable significant air quality impacts. For these reasons, and as stated above, the Imported Water Supply Alternative is not being pursued by the City in lieu of the proposed project, but rather as part of a balanced water supply portfolio.

6.0 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

6.1 CEQA Requirements

Section 15126.2(c) of the State *CEQA Guidelines* requires that an EIR discuss the significant irreversible environmental changes that would be involved in a proposed project, should it be implemented. An impact would be categorized as an irreversible environmental change if:

- The project involves a large commitment of nonrenewable resources;
- The primary and secondary impacts of the project generally commit future generations to similar uses;
- The project involves uses in which irreversible damage could result from any potential environmental incidents associated with the project; or,
- The proposed consumption of resources is not justified (e.g., the project results in wasteful use of energy).

6.2 Project Impacts

Implementation of the proposed project would require the long-term commitment of natural resources and land and result in significant irreversible environmental changes, both onsite and offsite. Numerous long-term physical environmental changes would occur, including changes in the following topic areas: aesthetics; biological resources; hydrology and drainage; and air quality, including impacts to global climate change.

These significant irreversible environmental changes are summarized as follows:

- Development within an active river channel, which would physically alter streamflows and downstream conditions within the Santa Ana River during stormflows.
- Development of vacant land that would be physically altered to create groundwater recharge basins, which can be considered an irreversible environmental change and a permanent investment in new infrastructure, as well as a long-term increase in demand for and supply of water for the City of Riverside and its project partners;
- Vegetation would be removed from the site and existing topographic features would be modified, which would visually alter the site from open space to public infrastructure;
- Construction of the proposed project would require use of water, steel, sand, gravel, and other minerals and natural resources. Although the proposed uses would not involve an unusual demand on these resources during construction, they nonetheless represent an incremental increase in demand for nonrenewable resources; and,
- Nonrenewable resources, such as oil and nonrenewable energy sources, would be used during construction and subsequent operations of the project.

Once the 50-to-100-year life span of the project is reached, it is probable that the site would continue to support public infrastructure, such as the inflatable dam, groundwater recharge basins, diversion conveyance facilities, SWP pipeline extension, and utility crossing, because of the large investment of capital resources

that would be expended on the project site. Consequently, development of the project would largely commit the project site to similar uses in the future.

Construction and implementation of the proposed project would commit energy, labor, and building materials. This commitment would be commensurate with that of other projects of similar nature and magnitude. Energy, labor, and building materials would also be committed to the construction of ancillary buildings and the proposed infrastructure necessary to support the project. Ongoing maintenance of the project site (e.g. vehicle use for periodic removal of soils containing sediment; operation of the generator/air compressor used to inflate the dam; or, mechanical equipment used for trail maintenance, weed abatement, and vector control) would entail a long-term commitment of energy resources such as oil and diesel fuel. This commitment of energy, labor, and construction materials would be a long-term obligation, because once the project site has been developed, it is highly unlikely that the land could be returned to its original condition, due to the nature of the improvements required.

As noted in Section 3.3, *Air Quality, Odor and Climate Change*, the project provides an alternative water supply with substantially reduced energy demands in comparison to conventional water supplies such as imported water.

7.0 EFFECTS FOUND NOT TO BE SIGNIFICANT

In the course of this evaluation, certain impacts of the project were found to be less than significant due to the inability of a project of this scope to create such impacts or the absence of project characteristics producing effects of this nature. The following section provides a brief description of effects found not to be significant or less than significant based on the analysis conducted through the EIR preparation process. Several issues indicated as "No Impact" or "Less than Significant Impact" are nonetheless addressed in this Draft EIR as a matter of clarification or convenience for the reader.

7.1 Aesthetics

a) *Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?* ***Level of Significance: No Impact.***

Development of the proposed Project would have no impact on a State scenic highway. The nearest highways to the Project site are Interstate 10 and Interstate 215, neither of which is designated as a scenic highway within the project vicinity by the State of California. Therefore, no impact would occur.

7.2 Air Quality, Odor and Climate Change

e) *Create objectionable odors affecting a substantial number of people?* ***Level of Significance: No Impact.***

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding plants. The proposed project does not include any uses identified by the SCAQMD as being associated with odors and would not result in a cumulatively considerable odor impact.

7.3 Agriculture Resources

a) *Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?* ***Level of Significance: No Impact.***

The proposed project site is not indicated on maps prepared pursuant to the Farmland Mapping and Monitoring Program (FMMP) as prime or unique farmland. Therefore, no impact would occur.

b) *Conflict with existing zoning for agricultural use, or a Williamson Act contract?* ***Level of Significance: No Impact.***

The proposed project site is zoned for recreational use on the City of Colton zoning map. In addition, the site is not encumbered by a Williamson Act contract. Therefore, no impact would occur.

c) *Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?* ***Level of Significance: No Impact.***

The proposed project site is not currently used for agricultural purposes. Approval of the proposed project would not convert farmland to non-agricultural use. Therefore, no impact would occur.

7.4 Geology and Soils

a) *Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?* ***Level of Significance: No Impact.***

The proposed project includes the construction of an inflatable dam, groundwater recharge basins, a SWP pipeline extension, diversion facilities to the Riverside Canal, a utility crossing, and related features. The need for wastewater disposal will not be required. Therefore, no impact would occur.

7.5 Hazards and Hazardous Materials

a) *Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?* ***Level of Significance: Less Than Significant Impact.***

The proposed project would include the construction of an inflatable rubber dam, groundwater recharge basins, a SWP pipeline extension, diversion facilities to the Riverside Canal, a utility crossing, and related features. It is not anticipated that hazardous materials would be involved in the construction process beyond typical diesel fuels used to operate construction equipment. Hazardous materials used in the operation of the facilities include minimal quantities of fuel to operate generators and air compressors within the control house located adjacent to the proposed dam on the western bank of the river. Impacts in this regard are considered less than significant. Refer to Section 3.5, *Hydrology and Water Quality*, for discussions regarding the potential for nearby landfills to impact the project site due to flooding or construction.

b) *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?* ***Level of Significance: Less Than Significant Impact.***

The proposed project site consists of vacant land that contains some unlawfully discarded debris and materials. Prior to any earthwork activities, the project proponent or responsible party(ies) would remove or remediate all materials dumped onsite in compliance with all applicable State and local laws and regulations. The project would be responsible for only what is to be remediated onsite, as the area is known for illicit debris dumping. As part of this process site conditions will be evaluated and proper remedial measures will be utilized to ensure exposure to hazardous materials is minimized or eliminated. Refer to Section 3.5, *Hydrology and Water Quality*, for discussions regarding the potential for Landfills (Cooley and Guyaux) to impact the project site due to flooding or construction.

The proposed project is in the vicinity of local streets and freeways. The project site has the potential to be directly impacted in the event of an accidental chemical release (e.g., petroleum, etc.) into the Santa Ana River. In San Bernardino County, hazardous material incidents are handled by the San Bernardino County Interagency Response Team, which is composed of Hazardous Materials Specialists from the County and participating City Fire Agencies. Hazardous material cleanup can be extensive if groundwater supplies are threatened. Additionally, such an incident could presumable require the closing of transportation corridors.

This would require an extensive emergency response. General County Disaster Planning is coordinated through the County Fire Department Office of Emergency Services which prepares for such incidents and maintains highly trained personnel and specialized equipment. The proposed project would not conflict or inhibit implementation of the Office of Emergency Services' Multi-Jurisdictional Hazard Mitigation Plan or the effective response of the San Bernardino County Interagency Response Team. Therefore, impacts in this regard are considered less than significant.

c) *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?* ***Level of Significance: Less Than Significant Impact.***

The proposed project site is located within one-quarter mile of three schools, San Bernardino County Special Education School, East Valley Community Day School, and My First Academy Preschool. However, no hazardous emissions would be generated within the project area, and therefore, no impacts are anticipated. If hazardous materials are discovered on-site, all contractors would be required to follow standard safety procedures that would minimize the potential for accidental release into the environment. Impacts in this regard are considered less than significant.

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

The project site is located over one-quarter mile from a site identified on the Department of Toxic Substances Control "Envirostor" database[1]. In accordance with this information it is not anticipated that a significant hazard to the public or environment would be created with implementation of this project. The proposed dam and in-river recharge basin is located immediately adjacent to the Cooley Ranch Disposal Site (located along the east bank of the Santa Ana River), which was an active waste disposal site until its closure in 1966. The Guyaux Landfill is located approximately 300 feet west of the off-river recharge basins. The Guyaux Landfill is comprised mostly of inert materials, and is not known to have affected groundwater quality in any of the City's current groundwater wells based on City routine review and monitoring of groundwater well water quality. The State Water Resources Control Board GeoTracker website has also been utilized to research information documenting the landfills. City groundwater well quality is routinely monitored, with well treatment implemented as appropriate based on any identified constituent, pursuant to CDPH requirements. With respect to soil contamination, if hazardous materials are identified onsite during construction activities, the project proponents would adhere to all applicable federal and State rules and regulations in the treatment and disposal of materials. Therefore, less than significant impacts are anticipated. Refer to Section 3.5, *Hydrology and Water Quality*, for discussions regarding the potential for Landfills (Cooley and Guyaux) to impact the project site due to flooding or construction.

e) *For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project area?* ***Level of Significance: No Impact.***

The Project site is not located within an airport land use plan or within two miles of a public airport. No impacts would occur in this regard.

1 California Department of Toxic Substances Control. http://www.envirostor.dtsc.ca.gov/public/, data accessed on July 22, 2013.

f) *For a Project within the vicinity of a private airstrip, would the Project result in a safety hazard for people residing or working in the Project area?* ***Level of Significance: No Impact.***

The Project site is not located within an airport land use plan or within two miles of a public airport. No impacts would occur in this regard.

g) *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?* ***Level of Significance: Less Than Significant Impact.***

Prior to construction activities, the project would undertake the preparation of a construction management plan to ensure that construction traffic and activities do not interfere with the City of Colton's adopted emergency response plan. With implementation of this plan, impacts associated with interference of an emergency response plan are anticipated to be less than significant.

h) *Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?* ***Level of Significance: No Impact.***

The proposed project is located on a vacant property surrounded by urban development. No impacts would occur in this regard.

7.6 Land Use and Relevant Planning

a) *Implementation of the proposed project may conflict with applicable habitat conservation plan or natural community conservation plan.* ***Level of Significance: No Impact.***

The proposed project site is not located within an area covered by a habitat conservation or natural community conservation plan. No significant impacts would occur in this regard.

7.7 Noise

a) *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?* ***Level of Significance: No Impact.***

The proposed project site is not located within an airport land use plan, and is not located within two miles of a public airport. No significant impacts would occur in this regard.

b) *For a Project within the vicinity of a private airstrip, would the Project expose people residing or working in the Project area to excessive noise levels?* ***Level of Significance: No Impact.***

The proposed project site is not located within the vicinity of a private airstrip. No significant impacts would occur in this regard.

7.8 Population and Housing

a) *Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?* ***Level of Significance: No Impact.***

The proposed project involves the construction of an inflatable dam and recharge basins. The construction of residential housing units is not proposed, and therefore, such uses would not add to the permanent population of the area. Further, the extension of roads or infrastructure to areas currently inaccessible or unserved by public utilities would not occur, and would therefore not induce development or population growth that may not have otherwise been possible. The proposed project would therefore have no impact on population growth. Therefore, no impacts would occur in this regard. Refer to Section 4, *Growth-inducing Effects*, for additional discussion.

b) *Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?* ***Level of Significance: No Impact.***

The proposed project would be constructed on lands that are currently vacant and, therefore, would not displace existing residential housing. No significant impacts would occur in this regard.

c) *Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?* ***Level of Significance: No Impact.***

The proposed project is located within a vacant property and, therefore, will not displace existing housing. No significant impacts would occur in this regard.

7.9 Public Services

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

1) *Fire protection?* ***Level of Significance: No Impact.***

The construction of residential housing units that would have the potential to increase area population, thereby potentially increasing the need for public fire protection services, is not proposed as part of the project. No inhabitable uses are proposed. The project proposes the construction of an inflatable dam, groundwater recharge basins, a SWP pipeline extension, diversion facilities to the Riverside Canal, a utility crossing and, which are not anticipated to require additional fire protection services. No significant impacts would occur in this regard.

2) *Police protection?* ***Level of Significance: No Impact.***

The construction of residential housing units that would have the potential to increase area population, thereby potentially increasing the need for public police protection services, is not proposed as part of the project. No inhabitable uses are proposed. The project proposes the construction of an inflatable dam, groundwater recharge basins, and other related features, which would not require additional police protection services. No significant impacts would occur in this regard.

3) *Schools?* ***Level of Significance: No Impact.***

The construction of residential housing units that would have the potential to increase area population, thereby potentially increasing the need for public school services, is not proposed as part of the project. The project proposes the construction of an inflatable dam, groundwater recharge basins, a SWP pipeline extension, diversion facilities to the Riverside Canal, a utility crossing and related features, which would not increase the demand for school services. No significant impacts would occur in this regard.

4) Parks? ***Level of Significance: No Impact.***

The construction of residential housing units that would have the potential to increase area population, thereby potentially increasing the need for public park services, is not proposed as part of the project. The project proposes the construction of an inflatable dam, groundwater recharge basins, a SWP pipeline extension, diversion facilities to the Riverside Canal, a utility crossing and other related features, none of which would increase the demand for public or private park services. No significant impacts on parks would occur in this regard.

5) Other public facilities? ***Level of Significance: No Impact.***

It is not anticipated that the proposed project would create the need for other additional public facilities, including library services. No significant impacts would occur in this regard.

7.10 Recreation

a) Would the proposed project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? ***Level of Significance: No Impact.***

The construction of residential housing units that would have the potential to increase area population, thereby potentially increasing the need for public park services, is not proposed as part of the project. The project proposes the construction of an inflatable dam, groundwater recharge basins, a SWP pipeline extension, diversion facilities to the Riverside Canal, a utility crossing and other related features, which would not increase the demand for public park services. No significant impacts would occur in this regard.

b) Does the proposed project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? ***Level of Significance: No Impact.***

The project proposes the construction of an inflatable dam, groundwater recharge basins, a SWP pipeline extension, diversion facilities to the Riverside Canal, a utility crossing and other related features, which would not have an adverse physical effect on the environment. No significant impacts would occur in this regard.

7.11 Transportation/Traffic

a) Implementation of the proposed project may result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks. ***Level of Significance: No Impact.***

The proposed project site is not located within an airport land use plan or within two miles of a public airport. The nearest public airport to the proposed project is San Bernardino International Airport, which is located

approximately five miles to the northeast of the project site. Therefore, no impacts to air traffic patterns are anticipated.

b) *Implementation of the proposed project may substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).* ***Level of Significance: No Impact.***

No roadway improvements are proposed as part of the proposed project. Additionally, there are no incompatible uses which have been identified with the vicinity of the project. No impacts would occur in this regard as a result of implementation of the proposed project. The roadway network connectivity and circulation function within the project vicinity would be preserved. Therefore, this component of the proposed project would not include any design feature hazards, and no impacts are anticipated.

c) *Implementation of the proposed project may result in inadequate parking capacity.* ***Level of Significance: No Impact.***

The proposed project would not construct facilities which would require additional parking. Therefore, parking demand would not increase as a result of the proposed project. No impacts would occur as a result of implementation of the proposed project.

7.12 Utilities and Service Systems

a) *Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?* ***Level of Significance: No Impact.***

The proposed project is not expected to generate wastewater. No significant impacts would occur.

b) *Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?* ***Level of Significance: No Impact.***

The proposed project is not expected to generate wastewater and, therefore, would not require the construction of new water or wastewater treatment facilities or the expansion of existing facilities. No significant impacts would occur.

c) *Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?* ***Level of Significance: No Impact.***

The project proposes improvements to existing stormwater levees, if necessary, along with the construction of an inflatable dam and groundwater recharge basins. To ensure that the basins do not overflow and impact adjacent areas, an outlet pipe within the southernmost basin would connect back into the Santa Ana River, allowing conveyance of overflow water back into the river. In addition, the inflatable dam would be lowered when peak stormwater flows reach 1,500 cubic feet per second (cfs). Therefore, no significant impacts would occur.

d) *Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?* ***Level of Significance: No Impact.***

The project proposes the construction of an inflatable dam, groundwater recharge basins, a SWP pipeline extension, diversion facilities to the Riverside Canal, and other related features which would contribute to water supplies. Therefore, no significant impacts would occur.

e) *Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?* ***Level of Significance: No Impact.***

The project proposes the construction of an inflatable dam, groundwater recharge basins, a SWP pipeline extension, diversion facilities to the Riverside Canal, a utility crossing and other related features, which will contribute to the water supply. The proposed project is not expected to generate wastewater; therefore, no significant impacts would occur.

f) *Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?* ***Level of Significance: No Impact.***

The project proposes the construction of an inflatable dam, groundwater recharge basins, a SWP pipeline extension, diversion facilities to the Riverside Canal, a utility crossing and related facilities. Due to the nature of the project, it is not expected that the project would generate a significant amount of solid waste during operation. The project site is currently devoid of structures, and the excavated material is anticipated to be transported to an off-site approved landfill for disposal (unless otherwise disposed of on the adjacent landownership immediately to the west of the project site, as described in Chapter 2.0, *Project Description*).[2] No significant impacts relative to this issue will occur.

g) *Comply with federal, state, and local statutes and regulations related to solid waste?* ***Level of Significance: No Impact.***

All development would be required to comply with federal, State, and local statutes relative to solid waste. No significant impacts would occur in this regard.

2 San Timoteo Landfill had approximately 13 million CY of remaining capacity as of December 2012 (http://www.calrecycle.ca.gov/SWFacilities/Directory/36-AA-0087/Detail/), and Agua Mansa has a remaining capacity of approximately 1.35 million tons.

8.0 SIGNIFICANT UNAVOIDABLE ENVIRONMENTAL EFFECTS

8.1 CEQA Requirements

Section 15126.2(b) of the State *CEQA Guidelines* requires an EIR to "describe any significant impacts, including those which can be mitigated but not reduced to a level of insignificance. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described."

Chapter 3.0 of this EIR describes the potential environmental impacts of the proposed project and recommends mitigation measures to reduce impacts to a less than significant level, where feasible. After implementation of the recommended mitigation measures, most of the significant impacts associated with the project would be reduced to a less than significant level. However, the following impacts would remain significant and unavoidable; that is, the identified mitigation measures would not, or might not be sufficient enough, to reduce the impacts to a less than significant level.

8.2 Project Impacts

8.2.1 Air Quality

Implementation of the proposed project would result in a significant and unavoidable impact for the following areas:

- *Regional Construction Related Emissions* – As shown in *Table 3.3-4, Short-Term (Construction) Emissions,* activities related to construction of the project would exceed the SCAQMD daily emission thresholds for regional NO_X and PM_{10} after implementation of all feasible mitigation measures. Therefore, the construction of the project would have a significant and unavoidable impact on regional air quality. Construction emissions would not exceed the SCAQMD significance threshold for SO_X, CO, ROG, and $PM_{2.5}$.
- *Cumulative Short-Term Construction-Related Emissions* – As stated above, construction activities would create a significant and unavoidable impact due to exceedances of SCAQMD thresholds for the NO_X and PM_{10} criteria pollutants. Implementation of recommended mitigation measure AQ-1 through AQ-4 would reduce impact. However a significant and unavoidable impact would remain.

If the City of Riverside approves the project, the City shall be required to cite their findings in accordance with Section 15091 of CEQA and prepare a Statement of Overriding Considerations in accordance with Section 15093 of CEQA. Refer to Section 5, *Alternatives to the Proposed Action*, for a discussion of alternatives that could reduce potential unavoidable significant impacts. The project itself represents an alternative water supply for the City and Project Partners, which reduces dependence on imported water supplies. From an air quality and GHG perspective, the project is far superior to imported water in terms of energy required to produce and convey the water, and therefore has considerably less indirect emissions than imported water. It should also be noted that cumulative air quality and GHG emissions are regulated by SCAQMD (construction emissions, stationary emissions, and related regulations) and by the Air Resources Board (including mobile vehicle emissions and CAAQS).

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9.0 ORGANIZATIONS AND PERSONS CONSULTED

9.1 Lead Agency

9.1.1 City Of Riverside

City of Riverside
Public Utilities Department
3750 University Avenue, 3rd Floor
Riverside, CA 92501

- Arshad Syed, Water Resources Manager
- David Garcia, Project Manager
- Michael Plinski, Senior Water Engineer
- Greg Herzog, Resources Analyst

9.1.2 Project Partners

San Bernardino Valley Municipal Water District
380 East Vanderbilt Way
San Bernardino, CA 92408

- Douglas Headrick, General Manager
- Wen Huang, Manager of Engineering
- Heather Dyer, Water Resources Project Manager

Western Municipal Water District
14205 Meridian Parkway
Riverside, CA 92518

- Leasa Cleland, Director of Water Resources
- Fakhri Manghi, Senior Water Resources Engineer

9.2 Consultants

9.2.1 RBF Consulting (Michael Baker International)

RBF Consulting, a Michael Baker International Company
40810 County Center Drive, Suite 100
Temecula, CA 92591

- Kevin Thomas, CEP, Vice President (Project Manager)
- Howard Barndt, PE, Senior Hydrologist (Sedimentation)
- Richard Beck, REA, CEM, CEI, Regulatory Manager
- Robert Davis, Transportation Planning Project Manager
- Darren Edgington, LEED AP, Environmental Planner
- Rebecca Kinney, PE, Senior Engineer (Hydrology)
- Achilles Malisos, Air Quality/ Noise Specialist
- Nicole Marotz, AICP, LEED AP, Senior Environmental Planner
- Dr. Thomas McGill, Principal Biologist
- Travis McGill, Project Biologist
- Jim McPherson, GIS Supervisor
- Thomas Millington, Environmental Associate (Jurisdictional Delineation)
- Peter Minegar, Environmental Associate

David Mizell, Transportation Planner
Hilary Potter, Word Processing
Alex Puhlman, GIS Analyst
Eddie Torres, Air Quality/ Noise Specialist
Ryan Winkleman, Senior Biologist
Bill Zimmerman, Graphics

9.2.3 CRM Tech (Cultural Resources Assessment)

CRM Tech
1016 East Cooley Drive, Suite A/B
Colton, CA 92324
(909) 824-6400
Bai "Tom" Tang, Principal Investigator
Mr. Michael Hogan, Principal Investigator

9.2.4 Geoscience (Geohydrologic Evaluation)

Geoscience Support Services, Inc.
620 W. Arrow Hwy, Suite 2000,
La Verne, CA 91750
Dr. Dennis E. Williams, Ph.D.
Brian Villalobos, PG, CEG, CHG

9.2.5 Hydmet, Inc. (Santa Ana Sucker Assessment)

Hydmet, Inc.
9855 Meadowlark Way
P.O. Box 678
Palo Cedro, CA 96073
(530) 547-4743
John Humphrey, Ph.D, P.E.
Wesley H. Blood, Ph.D.

9.3 Public Agencies

U.S. Army Corps of Engineers

U.S. Fish and Wildlife Service

California Department of Fish and Wildlife

Santa Ana Regional Water Quality Control Board

San Bernardino County Flood Control District