



S A N G O R G O N I O

INTEGRATED REGIONAL WATER MANAGEMENT PLAN

May 2018

*Prepared by the Regional Water Management Group of the
San Gorgonio Integrated Regional Water Management Region*

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Prepared by the Regional Water Management Group of the
San Gorgonio Integrated Regional Water Management Region

With assistance from Woodard & Curran



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Table of Contents

Table of Contents	i
List of Appendices.....	iii
List of Figures	iii
List of Tables	iv
List of Acronyms and Abbreviations	vi
Preface.....	ix
1. Regional Planning, Governance, Outreach and Coordination	1-1
1.1 IRWM Regional Planning.....	1-1
1.1.1 San Gorgonio Pass Water Alliance	1-1
1.1.2 California's Integrated Regional Water Management Program	1-1
1.1.3 San Gorgonio Regional Acceptance Process	1-1
1.1.4 IRWM Plan Preparation.....	1-2
1.1.5 Plan Outcomes.....	1-2
1.2 Technical Studies	1-4
1.3 Technical Analysis.....	1-5
1.4 Regional Governance.....	1-7
1.4.1 Process for Developing the Governance Structure	1-7
1.4.2 Governance Structure	1-8
1.4.3 Regional Water Management Group.....	1-8
1.4.4 Stakeholder Advisory Committee	1-9
1.5 Outreach and Participation	1-10
1.5.1 Stakeholder Identification	1-10
1.5.2 DAC Outreach.....	1-12
1.5.3 Tribal Outreach.....	1-12
1.5.4 Public Outreach.....	1-13
1.6 Regional Coordination	1-13
1.6.1 Coordination with Other Regions	1-13
1.7 Coordination with Local and Regional Water and Land Use Planning Efforts	1-13
1.7.1 IRWM Plan Updates.....	1-15
2. Region Description.....	2-1
2.1 Regional Boundaries	2-1
2.2 Physical Setting	2-1
2.2.1 Climate	2-3
2.2.2 Watershed and Surface Water Features.....	2-4
2.2.3 Geology and Geohydrology.....	2-5
2.2.4 Habitat and Environment.....	2-7
2.3 Land Use	2-11
2.3.1 Land Use Agencies and Planning	2-11
2.3.2 Land Use Types	2-12
2.4 Socio-Economic Setting.....	2-14
2.4.1 Population and Demographics	2-16
2.4.2 Disadvantaged Communities	2-16
2.4.3 Economic Factors.....	2-18

2.4.4	Social and Cultural Values	2-18
2.5	Water Supply and Demand.....	2-18
2.5.1	Water Demand	2-21
2.5.2	Imported Water Supply.....	2-22
2.5.3	Local Surface Water Supply.....	2-24
2.5.4	Groundwater Supply.....	2-27
2.5.5	Recycled Water	2-30
2.5.6	Regional Water Supply Projections	2-31
2.6	Water Quality	2-32
2.6.1	Beneficial Use	2-32
2.6.2	Drinking Water Quality	2-33
2.6.3	Environmental Water Quality.....	2-35
2.7	Flood Management.....	2-35
3.	Goals and Objectives	3-1
3.1	Development of Goals and Objectives.....	3-1
3.2	Challenges, Needs, and Vulnerabilities	3-1
3.2.1	Water Supply	3-3
3.2.2	Water Quality.....	3-3
3.2.3	Flood Management	3-4
3.2.4	Habitat and Open Space	3-4
3.2.5	Disadvantaged Communities	3-5
3.2.6	Climate Change.....	3-5
3.3	Goals and Objectives.....	3-8
3.3.1	Goal #1: Increase Regional Supply Availability and Reliability.....	3-8
3.3.2	Goal #2: Improve resilience of regional water distribution systems.....	3-9
3.3.3	Goal #3: Develop useable tools to understand hydrologic processes and regional management ..	3-10
3.3.4	Goal #4: Decrease impacts to groundwater quality	3-10
3.3.5	Goal #5: Increase resilience to changing water quality requirements	3-11
3.3.6	Goal #6: Enhance regional flood control infrastructure	3-11
3.3.7	Goal #7: Protect aquatic and riparian habitat	3-12
3.3.8	Goal #8: Support DACs and maintain the affordability of water	3-12
3.3.9	Goal #9: Support the economic vitality of DACs.....	3-13
3.3.10	Goal #10: Adaptation and Mitigation to Climate Change.....	3-13
3.4	Objective Prioritization	3-14
3.5	Conformance of Plan Objectives with Statewide Priorities	3-14
4.	Resource Management Strategies	4-1
4.1	Consideration of Strategies	4-1
4.2	Regional Watershed Management Strategies	4-1
4.2.1	Reduce Water Demand.....	4-2
4.2.2	Improve Operational Efficiency and Transfers	4-3
4.2.3	Improve Flood Management	4-4
4.2.4	Increased Water Supply	4-4
4.2.5	Improve Water Quality.....	4-6
4.2.6	Practice Resource Stewardship	4-7
4.2.7	People and Water.....	4-9
4.2.8	Strategies Not Applicable to the Region.....	4-10
4.2.9	Additional Climate Change Mitigation Strategies	4-10
5.	Projects	5-1

5.1	Project Identification	5-1
5.1.1	Initial Call for Projects.....	5-1
5.1.2	Project Identification in Technical Studies	5-1
5.2	Project Submittal, Review and Prioritization Process	5-2
5.2.1	Project Categories.....	5-2
5.2.2	Notification and Project Submittal	5-2
5.2.3	Review Process.....	5-5
5.2.4	Prioritizing the Projects.....	5-5
5.3	Implementation Grant Project Process	5-6
6.	Implementation.....	6-1
6.1	Impacts and Benefits of Plan Implementation.....	6-1
6.2	Performance and Monitoring	6-2
6.2.1	Plan Performance.....	6-2
6.2.2	Project Performance.....	6-2
6.3	Outreach and Governance	6-3
6.4	Data Management	6-3
6.4.1	Data Collection.....	6-3
6.4.2	Data Dissemination	6-4
6.4.3	Compatibility with Statewide Databases.....	6-4
6.4.4	Data Needs	6-5
6.5	Funding and Financing	6-6
6.5.1	Funding and Financing Options	6-6
6.5.2	Financing Plan.....	6-8
7.	References	7-1

List of Appendices

Appendix A – Water Supply Reliability Study
Appendix B – San Geronio Region Recycled Water Study
Appendix C – San Geronio Integrated Watershed and Groundwater Model Technical Memorandum
Appendix D – Memorandum of Understanding
Appendix E – Projection Nomination Form
Appendix F – IRWM Plan Project List, April 2018
Appendix G – Proof of Public Notice Publication

List of Figures

Figure 1-1: San Geronio IRWM Region	1-3
Figure 1-2: San Geronio IRWM Governance Structure.....	1-8
Figure 2-1: Proximate IRWM Regions	2-2
Figure 2-2: Watersheds and Surface Water Features.....	2-6
Figure 2-3: Regional Groundwater Basins	2-8
Figure 2-4: Habitat Areas Coverage Map	2-9
Figure 2-5: Land Management Authority.....	2-13
Figure 2-6: Land Use	2-15
Figure 2-7: Disadvantaged Communities.....	2-17

Figure 2-8: Regional Water Purveyors	2-20
Figure 2-9: Regional Water Supply Infrastructure	2-26
Figure 2-10: San Gorgonio Groundwater Basin Storage Units	2-29
Figure 2-11: 100-Year FEMA Flood Zones	2-37
Figure 5-1: Overview of Project Submittal, Review and Prioritization Process	5-3
Figure 6-1: IRWM Components that Require Funding and Financing	6-6

List of Tables

Table 1-1: Incorporating Technical Studies into IRWM Plan	1-4
Table 1-2: Technical Data and Studies Used in the San Gorgonio IRWM Plan	1-5
Table 1-3: San Gorgonio IRWM RWMG and SAC Members	1-10
Table 1-4: Stakeholder Outreach Distribution List	1-11
Table 1-5: Coordination with Local and Regional Planning Documents	1-14
Table 2-1: Average Monthly Climate	2-4
Table 2-2: Land Management Agencies	2-12
Table 2-3: San Gorgonio IRWM Region Population	2-16
Table 2-4: Water Demand	2-22
Table 2-5: Estimated Deliveries of SWP Table A Water (2015)	2-23
Table 2-6: Imported Water Recharged to Beaumont Basin by the city of Banning	2-24
Table 2-7: Current and Projected Water Supplies (AFY)	2-32
Table 2-8: Beneficial Uses of Surface Water ¹	2-32
Table 2-9: Beneficial Uses of Groundwater ²	2-33
Table 3-1: Organization of Goals and Objectives	3-2
Table 3-2: Projected Regional Climate Change Impacts	3-5
Table 3-3: Climate Change Vulnerability Issues for San Gorgonio Region	3-6
Table 3-4: Objectives and Performance Measures for Goal #1	3-9
Table 3-5: Objectives and Performance Measures for Goal #2	3-9
Table 3-6: Objectives and Performance Measures for Goal #3	3-10
Table 3-7: Objectives and Performance Measures for Goal #4	3-11
Table 3-8: Objectives and Performance Measures for Goal #5	3-11
Table 3-9: Objectives and Performance Measures for Goal #6	3-12
Table 3-10: Objectives and Performance Measures for Goal #7	3-12
Table 3-11: Objectives and Performance Measures for Goal #8	3-13
Table 3-12: Objectives and Performance Measures for Goal #9	3-13
Table 3-13: Objectives and Performance Measures for Goal #10	3-14
Table 3-14: IRWM Plan Objectives and Statewide Priorities	3-14
Table 4-1: Resource Management Strategies that Reduce Water Demand	4-2
Table 4-2: Resource Management Strategies that Improve Operation Efficiency and Transfers	4-3
Table 4-3: Resource Management Strategies that Improve Flood Management	4-4
Table 4-4: Resource Management Strategies that Increase Water Supply	4-5
Table 4-5: Resource Management Strategies that Improve Water Quality	4-6
Table 4-6: Resource Management Strategies that Practice Resource Stewardship	4-8
Table 4-7: Resource Management Strategies that Connect People and Water	4-9
Table 4-8: Resource Management Strategies Not Included in the IRWM Plan	4-10
Table 4-9: Additional Climate Change Mitigation Strategies	4-11
Table 4-10: Resource Management Strategies That Meet San Gorgonio IRWM Goals	4-12
Table 5-1: Project Prioritization Criteria and Scoring	5-6
Table 6-1: Potential Benefits and Impacts of Plan Implementation	6-2

Table 6-2: State Databases	6-5
Table 6-3: State and Federal Grants.....	6-7
Table 6-4: Financing Plan	6-9

List of Acronyms and Abbreviations

AF	Acre-feet
AFY	Acre-feet per year
Alliance	San Gorgonio Pass Regional Water Alliance
ASBS	Areas of special biological significance
Banning	City of Banning
BCVWD	Beaumont-Cherry Valley Water District
BDCP	Bay-Delta Conservation Plan
BHMWC	Banning Heights Mutual Water Company
BIA	Building Industry Association
BMP	Best management practices
BMZ	Basin Management Zone
CALFED	California and Federal Bay-Delta Program
CARB	California Air Resources Control Board
CASGEM	California Statewide Groundwater Elevation Monitoring Program
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
cfs	Cubic feet per second
Chromium-6	Hexavalent Chromium
CRA	Colorado River Aqueduct
CRBRWQCB	Colorado River Basin Regional Water Quality Control Board
CVP	Central Valley Project
CWD	Cabazon Water District
CWP	California Water Plan
DAC	Disadvantaged communities
Delta	Sacramento-San Joaquin Delta
DWR	California Department of Water Resources
EDA	Economic Development Administration
ETo	Evapotranspiration
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FIRM	Flood Insurance Rate Maps
GHG	Greenhouse gas
GIS	Geographic information systems
GPCD	Gallons per capita per day
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GWR	Groundwater recharge

HVWD	High Valleys Water District
IEEP	Inland Empire Economic Partnership
IRWM	Integrated regional water management
MAF	Million acre-feet
MBMI	Morongo Band of Mission Indians
MCL	Maximum contaminant level
MDP	Master Drainage Plan
mg/L	Milligrams per liter
mgd	Million gallons per day
MHI	Median household income
MOU	Memorandum of Understanding
MS4	Municipal separate storm sewer system
MSHCP	Multiple Species Habitat Conservation Plan
MSWD	Mission Springs Water District
MWD	Metropolitan Water District of Southern California
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Services
NO ₃	Nitrate
NPDES	National Pollutant Discharge Elimination System
ppb	Parts per billion
PEIR	Public Interest Energy Research
PRS	Project Review Subcommittee
O&M	Operations and management
RAP	Region Acceptance Process
RCFCWCD	Riverside County Flood Control and Water Conservation District
RCHCA	Riverside County Habitat Conservation Agency
RCIP	Riverside County Integrated Project
Region	San Gorgonio IRWM Region
RMS	Resource Management Strategies
RWMG	Regional Water Management Group
RWQCB	Regional Water Quality Control Board
SAC	Stakeholder Advisory Committee
SAWPA	Santa Ana Watershed Project Authority
SBVMWD	San Bernardino Valley Municipal Water District
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SFHA	Special Flood Hazard Areas
SG IRWM	San Gorgonio Integrated Regional Water Management
SGIWGM	San Gorgonio Integrated Watershed and Groundwater Model
SGMA	Sustainable Groundwater Management Act

SGPWA	San Geronio Pass Water Agency
SLR	Sea Level Rise
SRF	State Revolving Fund
SU	Subunit
SWP	State Water Project
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
Title 22	California Code of Regulations, Title 22, Division 4.5 – Wastewater Standards
TMDL	Total Maximum Daily Load
USFS	United States Forest Service
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
USGS	United States Geological Survey
USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
WUE	Water Use Efficiency
WWTP	Waste Water Treatment Plant

Preface

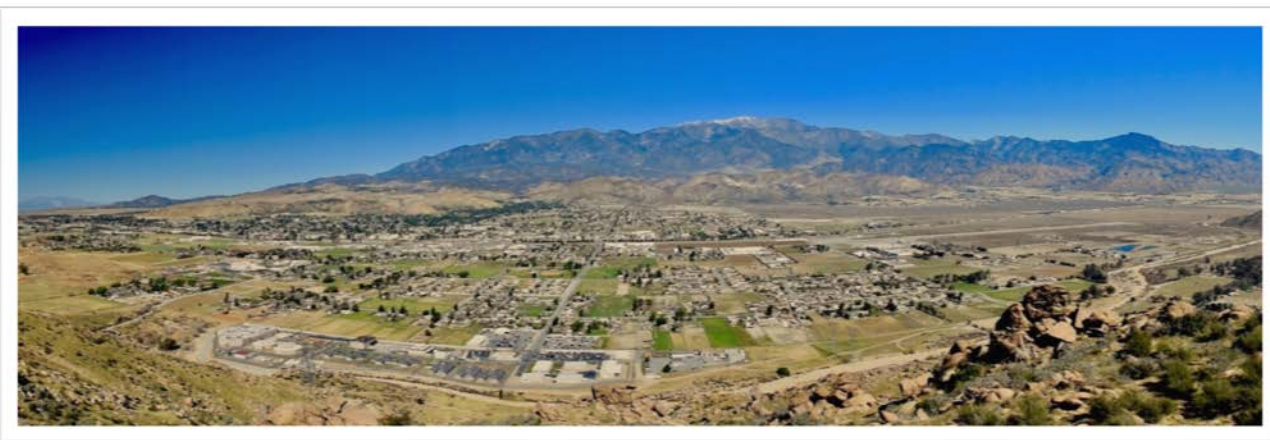
The 2018 San Gorgonio Integrated Regional Water Management (IRWM) Plan provides a pathway for agencies and stakeholders to collaboratively identify and implement water management solutions that provide multiple integrated benefits to the stakeholders and communities within the San Gorgonio IRWM Region.

Newly formed in 2016, the San Gorgonio IRWM Region embarked on the development of this 2018 Plan to not only meet the requirements for participation in the statewide IRWM Program, but to also articulate the needs, goals, objectives, strategies and projects that are unique to this Region.

The San Gorgonio Region is relatively rural, with immense areas of open space that allow for continued growth and urbanization. Residents, local agencies, and tribal communities understand the importance and value of the Region’s natural resources and beauty and know they must balance these needs with that of a growing community. This IRWM Plan provides opportunities for water resource planners, managers, and leaders to invest and utilize sustainable water management strategies as the Region prepares for a growing urban and rural populations.

This Plan provides the framework and procedures used to govern, collaborate, and plan activities, as well as to pursue statewide funding opportunities within the statewide IRWM Program. It is a “living document” that is intended to evolve with the changing needs and conditions of the Region, and it should provide a collaborative platform for discussion, data sharing, and planning.

The success of this Plan relies on the continued participation of stakeholders and community members. Agencies, stakeholders, and citizens are encouraged to read this Plan and continue to participate in the IRWM process. Information on how to participate and the schedule of stakeholder meetings can be found on the program’s website at www.sgirwm.org. Specific questions about the San Gorgonio IRWM Region, Plan and Program can be emailed to the program administer at SGIRWM@ci.banning.ca.us.



Part of the San Gorgonio IRWM Region, overlooking the City of Banning and the Sand to Snow National Monument from State Highway 243

The following Table provides a reference guide to the Department of Water Resource's (DWR) Plan Standards and where they can be found in the Plan.

DWR Plan Standard	IRWM Plan Chapter
Governance	Chapter 1: Regional Planning, Governance, Outreach and Coordination
Region Description	Chapter 2: Region Description
Objectives	Chapter 3: Goals and Objectives
Resource Management Strategies	Chapter 4: Resource Management Strategies
Integration	Chapter 1: Regional Planning, Governance, Outreach and Coordination Chapter 5: Projects
Project Review Process	Chapter 5: Projects
Impact and Benefit	Chapter 6: Implementation
Plan Performance Monitoring	Chapter 6: Implementation
Data Management	Chapter 6: Implementation
Finance	Chapter 6: Implementation
Technical Analysis	Chapter 1: Regional Planning, Governance, Outreach and Coordination
Relation to Local Water Planning	Chapter 1: Regional Planning, Governance, Outreach and Coordination Chapter 2: Region Description
Relation to Local Land Use Planning	Chapter 1: Regional Planning, Governance, Outreach and Coordination Chapter 2: Region Description Chapter 3: Goals and objectives Chapter 6: Implementation
Stakeholder Involvement	Chapter 1: Regional Planning, Governance, Outreach and Coordination Chapter 3: Goals and objectives Chapter 4: Resource Management Strategies
Coordination	Chapter 1: Regional Planning, Governance, Outreach and Coordination Chapter 5: Projects
Climate Change	Chapter 2: Region Description Chapter 3: Goals and objectives Chapter 5: Projects Chapter 6: Implementation

1. Regional Planning, Governance, Outreach and Coordination

The San Gorgonio Integrated Regional Water Management (IRWM) Region was established in 2016. This chapter describes the process used to form the Region and prepare the first San Gorgonio IRWM Plan in 2018. In addition, it will provide information on the Region's governance framework, decision-making process, participating stakeholders, and public involvement and coordination with water and land use planning agencies.

1.1 IRWM Regional Planning

1.1.1 San Gorgonio Pass Water Alliance

Water management within the San Gorgonio Pass area had historically been conducted by individual water resource management agencies acting to meet localized needs. In the interest of improving coordination, collaboration and communication among governments and water suppliers, the San Gorgonio Pass Regional Water Alliance (Alliance) was created in 2014 by thirteen agencies whose service areas span across the San Gorgonio Pass area and two watersheds including the Santa Ana on the west, and the Whitewater on the east. The Alliance's role is to foster communication, coordination, and cooperation among the various agencies, thus providing and improving opportunities to manage water resources.

1.1.2 California's Integrated Regional Water Management Program

The State of California's IRWM Program began in 2002 with the passing of the Regional Water Management Act (Senate Bill 1672). The IRWM Program is managed by the California Department of Water Resources (DWR) to "identify and implement water management solutions on a regional scale that increase regional self-reliance, reduce conflict, and manage water to concurrently achieve social, environmental, and economic objectives."

Since 2002, California voters have approved Propositions 50, 84 and 1 that have provided \$1.5 billion to fund the IRWM program. Funds are allocated to participating IRWM Regions through competitive grants for both planning and project implementation.

To participate in the IRWM Program, entities within a water management "region" can apply to be accepted as an official IRWM Region through DWR's Region Acceptance Process (RAP). It is through the RAP that regional boundaries are proposed by applicants and confirmed by DWR.

1.1.3 San Gorgonio Regional Acceptance Process

Since 2007, when DWR began the RAP, the eastern San Gorgonio Pass area has not been a part of a recognized IRWM Region and therefore not included in the IRWM Program. The Alliance recognized the need for integrated and regional water planning and projects in the area as well as additional sources of funding to support these efforts. Members of the Alliance began working with other stakeholders in the San Gorgonio Pass area to develop a new IRWM Region and formed the San Gorgonio Regional Water Management Group (RWMG) to lead the RAP.

The RWMG submitted a RAP application to DWR in 2016. DWR conditionally accepted the San Gorgonio IRWM Region in January 2017 pending additional inter-regional coordination.

The RWMG worked with DWR and the surrounding regions to confirm that the newly proposed San Gorgonio Region was in the best interest of stakeholders in and around the San Gorgonio Pass area. The San Gorgonio IRWM Region was accepted in 2017 by DWR and is shown in **Figure 1-1**.

1.1.4 IRWM Plan Preparation

In 2016, the San Gorgonio IRWM Region (Region) received a Proposition 1 Planning Grant to develop its first IRWM Plan in accordance with 2016 IRWM Grant Program Guidelines issued by DWR. The resulting San Gorgonio IRWM Plan was completed in 2018. This initial IRWM Plan process set regional goals and created an integrated planning process to develop strategies and projects that will address the water resource management needs of the Region's stakeholders and meet IRWM Plan Standards.

The San Gorgonio IRWM Plan benefitted from significant input from regional stakeholders and the public during six Stakeholder Advisory Committee (SAC) meetings held between May 2017 and March 2018. The first five SAC meetings focused on key topics that directly informed development of specific IRWM Plan content. Plan chapters were drafted by the project team (Woodard & Curran, consultant to the RWMG) and reviewed by the RWMG. Once all IRWM Plan sections had been completed, a public draft was released for a 30-day review on March 5, 2018. Announcement of the public review period was made via the San Gorgonio IRWM Program website (sgirwm.org) and directly via emails to the Program's interested party distribution list. At the direction of the RWMG, public comments were incorporated in the Final IRWM Plan that was submitted to DWR in May 2018.

Public hearings were held by each of the agencies comprising the RWMG to adopt the IRWM Plan in 2018. SAC members were also invited to adopt the IRWM Plan following adoption by the RWMG.

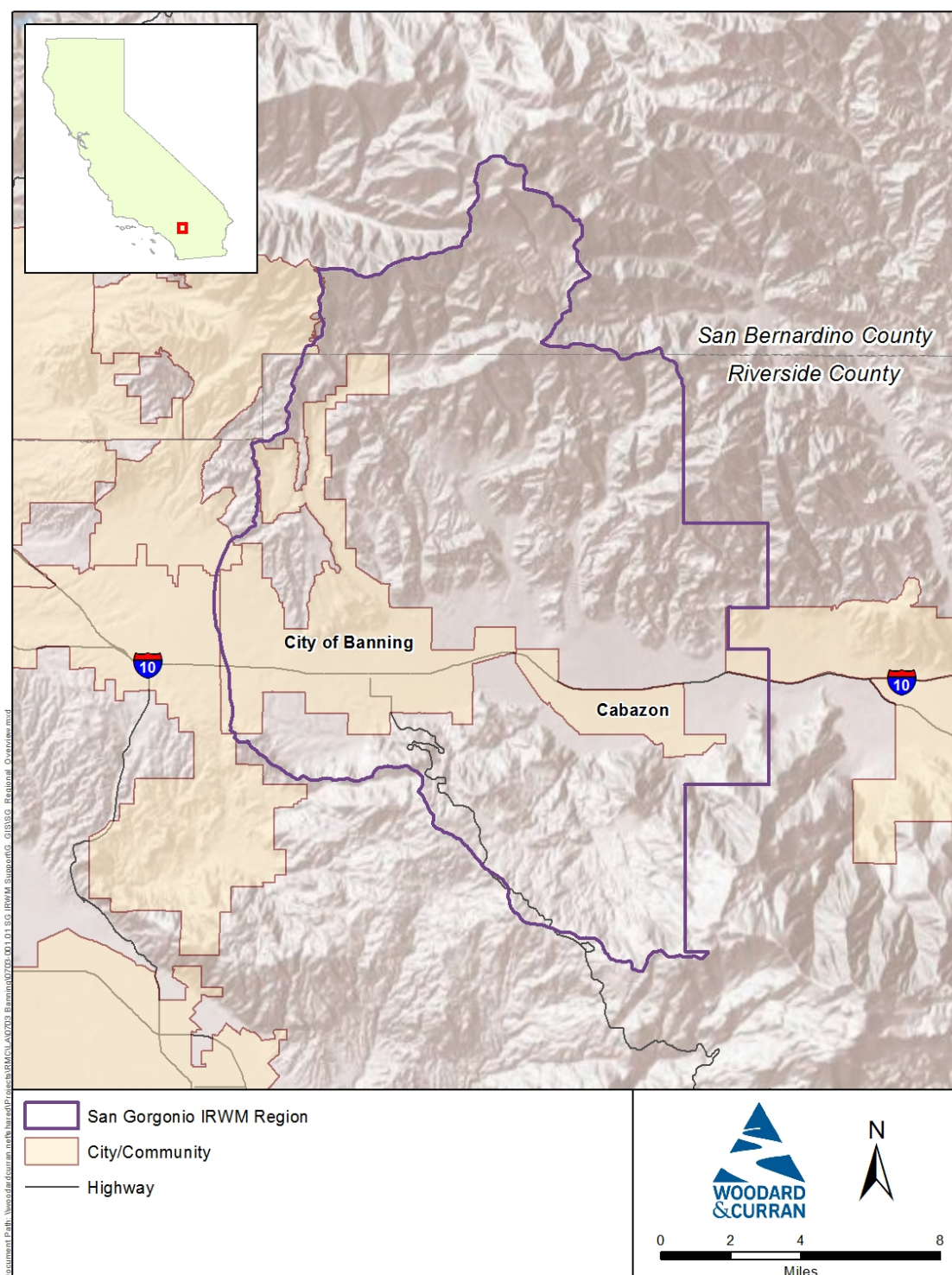
It is anticipated that updates to this initial 2018 IRWM Plan will take place in the future, so that the IRWM planning process will adapt to the changes within the Region and continue to reflect future needs, goals, strategies and projects.

1.1.5 Plan Outcomes

The 2018 San Gorgonio IRWM Plan provides the framework and procedures used to govern, collaborate, and plan regional IRWM activities, and foster project implementation. The Region's water-related agencies, districts, counties, cities, tribes, and other stakeholders worked across jurisdictional boundaries to conduct integrated and regional water resource management planning. This planning fosters the ability to implement projects that align with the needs and goals of the San Gorgonio IRWM Region.

By having created and successfully adopted an IRWM Plan, the Region is also eligible to receive much-needed funding to implement key projects for the Region's water resources, communities and environment.

Figure 1-1: San Gorgonio IRWM Region



Future updates to the IRWM Plan will build on the existing IRWM Program governance, outreach, and coordination described in this chapter, in order to meet future DWR requirements, as well as the needs of the Region.

1.2 Technical Studies

As part of the San Geronio IRWM Region's Proposition 1 Planning Grant, funding was allocated to complete three separate, yet integrated, water resources technical planning efforts. These technical efforts (listed below) were used to inform the IRWM Plan development by increasing the understanding of regional needs as well as identifying key strategies and potential projects to benefit the Region.

1. The *Water Supply Reliability Study (Appendix A)* estimates existing regional water supply reliability under current and projected conditions through 2040 and includes scenarios that identified water supply goals, strategies, and projects for inclusion in the IRWM Plan.
2. The *San Geronio Region Recycled Water Study (Appendix B)* identifies technical, institutional, and political opportunities to advance the use of recycled water on a regional scale and addresses related constraints for implementation. This Study also informs the IRWM Plan's regional goals and objectives, strategies, and potential projects.
3. The *San Geronio Integrated Watershed and Groundwater Model Technical Memorandum (SGIWGM) (Appendix C)* describes the process used to develop a new model for use in the Region. The completed model focused on combining existing watershed and groundwater models into an integrated surface and groundwater model that could be used to better understand the relationship between surface and groundwater systems and to assess the impacts and benefits of potential regional projects. Additional expansion of this groundwater model is currently being completed as part of an amendment to the Region's Proposition 1 Planning Grant. Documentation of this work will be included in future IRWM updates.

Table 1-1 describes the ways in which these additional technical efforts have been incorporated into the IRWM Plan.

Table 1-1: Incorporating Technical Studies into IRWM Plan

IRWM Plan Chapter	Water Supply Reliability Study	Recycled Water Study	SGIWGM
Region Description	Characterize existing and projected water supplies and demands	Describe current wastewater processes and recycled water as well as regulatory setting	Characterize current groundwater knowledge and setting
Goals and Objectives	Define regional needs, goals and objectives relative to water supply, quality and reliability as well as perform the climate change vulnerability analysis and set goals	Define regional goals and objectives for recycled water use as it relates to water supply, water quality and other topics	Support regional goal focused on improving understanding and management of groundwater basin

IRWM Plan Chapter	Water Supply Reliability Study	Recycled Water Study	SGIWGM
Regional Water Management Strategies	Identification and vetting of potential strategies to meet the Region's goals and objectives	Consider potential regional recycled water strategies that could be implemented to meet IRWM Plan goals and objectives	Provide tool to estimate benefits associated with potential recharge and groundwater management strategies within the IRWM Plan
Projects	Identify potential project concepts and the benefits and costs that could be included in the IRWM Plan for implementation	Identify potential project concepts and the benefits and costs that could be included in the IRWM Plan for implementation	Provide a tool to model conceptual groundwater project viability and impacts

1.3 Technical Analysis

In addition to direct input from stakeholders and the public and the technical studies, other technical data, plans, and studies were used to develop the San Gorgonio IRWM Plan. **Table 1-2** describes the primary sources of information used to prepare Plan sections and describes how data were analyzed, the relevant results from the analysis, and how the data were used in the IRWM Plan. Technical information was provided by statewide, local, and regional plans and studies related to water supply reliability. Facilities planning, water quality, flood control, and habitat protection were developed with public review and stakeholder participation. Much of the water supply and demand information used in the creation of the Plan was found in Urban Water Management Plans (UWMP) for the City of Banning and the San Gorgonio Pass Water Agency. The UWMP development process for water suppliers is updated frequently and undergoes extensive public review. However, there are smaller water purveyors (fewer than 3,000 connections), private water rights holders, and sovereign tribes that are not required to complete UWMPs; so additional sources of information were used.

Table 1-2: Technical Data and Studies Used in the San Gorgonio IRWM Plan

Data or Study	Analysis Method	Results/Derived Information	Use in IRWM Plan
2010 & 2015 Urban Water Management Plans for City of Banning and SGPWA	Analysis of water supply reliability, water quality, water demands, and infrastructure	Current and projected supplies and demands, quality concerns, and facility descriptions	Used to describe current and projected supplies and demands in the Region, and discuss drinking water quality concerns, and facilities. Also, used to establish water supply issues and needs.
2010-2014 American Community Survey (US Census Bureau)	Growth analysis, review of census block groups and designated places	Population, housing, and income data for the 5-year period from 2010 to 2014	Used to estimate median household income and Disadvantaged Communities (DACs)

Data or Study	Analysis Method	Results/Derived Information	Use in IRWM Plan
SCAG Regional Growth Forecast (Southern California Association of Governments, 2016)	Growth analysis, review of Transportation Analysis Zone (TAZ) data	Population, employment, for the period from 2010 to 2040	Used to estimate population, describe demographics and economic setting as well as to calculate demand
2010/2015 Census (US Census Bureau)	Review of census block groups and designated places	Populations and housing data for the years 2010 and 2015	Used to estimate current population for the Region, and calculate demand
Maximum Perennial Yield Estimates for the Banning and Cabazon Storage Units, and Available Water Supply from the Beaumont Basin (City of Banning, 2011)	Water supply analysis, regional groundwater resources	Safe yields for storage units in the San Gorgonio Pass subbasin	Used to describe the Region's groundwater resources
2013 Reevaluation of the Beaumont Basin Safe Yield (Beaumont Basin Watermaster, 2015)	Water supply analysis, regional groundwater resources	Current and projected groundwater supplies under Beaumont Basin Adjudication	Used to describe the Region's groundwater resources
San Gorgonio Pass Water Agency Report on Water Conditions (SGPWA, 2014)	Water supply reliability analysis	Current regional water supply sources and groundwater pumping estimates	Use to describe water supply and demand in the Region
Water Supply Assessment for Butterfield Specific Plan (City of Banning, 2011)	Water supply feasibility analysis	Description of projects with multiple benefits to stormwater and water supply	Used to describe planned projects with multiple benefits
City of Banning Recycled Water Master Plan (City of Banning, 2006)	Water supply feasibility analysis	Projected recycled water demands and facilities	Used to describe existing plans for use of recycled water as a new source of supply
City of Banning Chromium-6 Treatment and Compliance Study Memorandum (2016)	Water quality analysis	Description of compliance options for regulatory changes to allowable Chromium 6 levels	Used to describe resilience to change water quality requirements
1986-1989 Riverside County Master Drainage Plans (County of Riverside)	Flood analysis, review of drainage planning	Current drainage facilities and needs, as well as flood planning in Riverside County	Used to describe the Region's flood control facilities and needs.

Data or Study	Analysis Method	Results/Derived Information	Use in IRWM Plan
State Water Project Delivery Capability Report (DWR, 2015)	Water supply reliability analysis, review of SWP supplies to SGPWA	Forecasted SWP Table A deliveries under historical hydrology and climate change scenarios	Used to describe the reliability of imported water supplies to the region, including impacts of climate change
Water Quality Control Plan for the Colorado River Basin (Colorado River Regional Water Quality Control Board [RWQCB])	Water quality analysis	Beneficial use designations and water quality objectives	Used to describe current water quality impairments, beneficial uses for surface waters, and quality objectives for surface and ground waters
Western Riverside County Multiple Species Habitat Conservation Plan (County of Riverside)	Review location of sensitive habitats	Locations of habitat areas, and conservation needs	Used to describe the species habitat areas in the Region, conservation areas, and to establish habitat issues and needs
Coachella Valley Multiple Species Habitat Conservation Plan (County of Riverside)	Review location of sensitive habitats	Locations of habitat areas, and conservation needs	Used to describe the species habitat areas in the Region, conservation areas, and to establish habitat issues and needs
Rancho San Geronio Specific Plan	Water supply planning and analysis	Future water supply demands and locations of those demands	Used to describe and help calculate the future demands for water and wastewater needs and uses for the Region in the future

1.4 Regional Governance

The current San Geronio IRWM Region governance framework was developed to meet the requirements of DWR's 2016 Proposition 1 Program Guidelines while also reflecting the Region's unique setting and resources. The membership of the RWMG, collectively with the SAC, represents all entities significant to water management planning in the planning area. These entities have the institutional and fiscal capacity and systems to carry out IRWM planning and implementation efforts. The governance structure of the San Geronio IRWM Region is designed to be flexible and to meet the needs of the Region's stakeholders, while maintaining a clear structure and decision-making process.

1.4.1 Process for Developing the Governance Structure

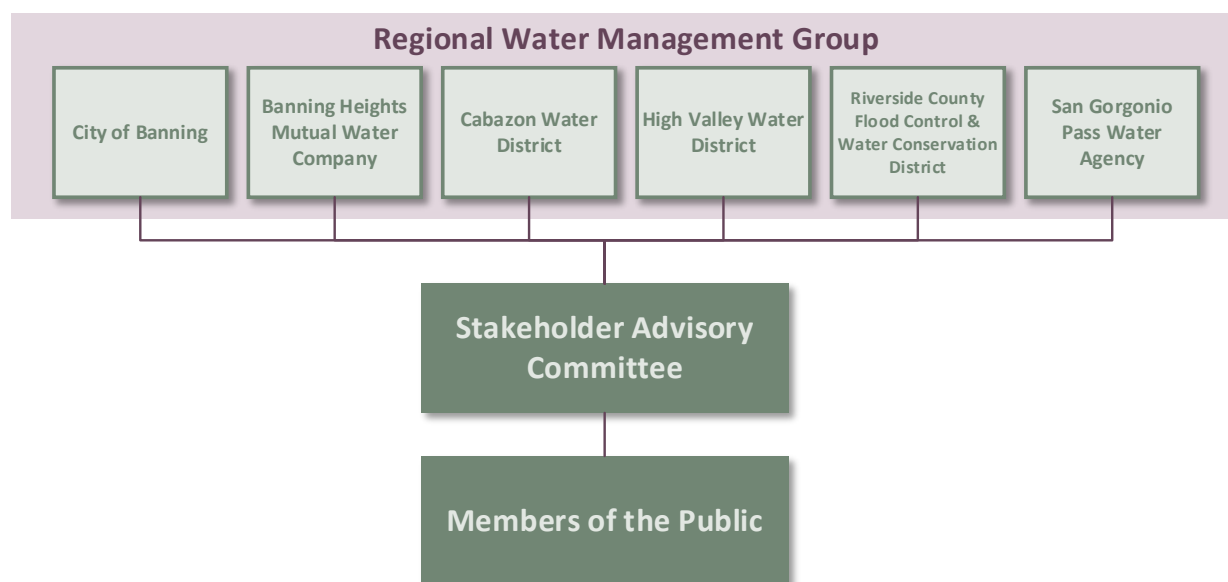
In 2016, the San Geronio IRWM RWMG was formed for the purpose of creating a new IRWM Region in the San Geronio Pass. Initial members of the RWMG initiated a recruitment program to identify and involve water management-related entities, organizations, and agencies for both the RWMG and the companion SAC.

That same year, the City of Banning (Banning), Banning Heights Mutual Water Company (BHMWC), Cabazon Water District (CWD), High Valleys Water District (HVWD), Riverside County Flood Control and Water Conservation District (RCFCWCD), and the San Gorgonio Pass Water Agency (SGPWA) signed the Memorandum of Understanding (MOU) to conduct IRWM Planning for the San Gorgonio Region. This MOU (**Appendix D**) forms the basis of the San Gorgonio IRWM RWMG. By adopting the MOU, the RWMG members committed resources and funding to work collaboratively together with the SAC and public to develop, adopt, and support implementation of an IRWM Plan. New entities can join the RWMG with a majority concurrence of the existing members and through the execution of the MOU by their governing boards. The term of the MOU is 10 years.

1.4.2 Governance Structure

The Region's governance structure features an inclusive process that encourages stakeholder involvement in the IRWM planning process. As shown in **Figure 1-2**, the simple structure is comprised of three key groups that work together to provide the Region with focused direction, while allowing for effective and comprehensive inter- and intra-regional collaboration.

Figure 1-2: San Gorgonio IRWM Governance Structure



1.4.3 Regional Water Management Group

The RWMG is a decision-making body that seeks to gain consensus from all members on key decision points so that items requiring decisions are discussed and agreed upon. The RWMG determines how to solicit and use input received from the SAC and the public within the IRWM program.

The RWMG consists of local agencies having statutory authority over water supply, water quality, water management, and/or flood protection. Furthermore, the RWMG members have diversity in water management responsibilities, including responsibilities associated with water supply, drinking and environmental water quality, wastewater, flood control, and water conservation.

Together, the RWMG members represent nearly all major water resource managers in the Region and have a variety of stakeholders and customers that are represented in the IRWM process.

The MOU identifies Banning as the lead in contracting for planning, preparing applications for funding, and implementing funded efforts on behalf of all potential project proponents and stakeholders within the Region. The MOU also authorizes Banning to submit applications to DWR for IRWM Planning and Implementation Grants, enter into contracts with DWR, and disburse funds to grantees. As such, the RWMG elected the Banning's representative to serve as Chair of the SG IRWM RWMG.

Currently the RWMG meets monthly to discuss San Gorgonio IRWM Program needs, which includes Plan development. However, the RWMG may opt to meet less frequently once the Region and its IRWM Plan are fully established.

1.4.4 Stakeholder Advisory Committee

The SAC was created to provide a dedicated group of key stakeholders to participate in the SG IRWM Program. Current members of the SAC include all the RWMG members as well as representatives from Native American Tribes, local businesses, and environmental groups throughout the Region. SAC members were selected by consensus of, and serve on behalf of, the RWMG to inform and advise the RWMG agencies on regional needs, goals, priorities, strategies, and projects. Together, SAC members represent local and countywide agencies, tribal nations, and commercial, community, and industry groups involved in water resource management, as identified in **Table 1-3**.

The existence of the SAC encourages other stakeholders and members of the public to participate in the planning process and submit goals, priorities, and projects. Membership in the SAC requires RWMG approval, but the Region actively encourages additional stakeholders that attend the SAC meetings as members of the public to officially join the SAC. Persons interested in participating in the SAC and meetings should contact the Program Manager at SGIRWM@ci.banning.ca.us or review the "Get Involved" section of the San Gorgonio IRWM website at www.sgirwm.org.

Initially, the SAC met through a series of six workshops dedicated to the development of the San Gorgonio IRWM Plan. For ongoing collaboration and grant program participation, the SAC will meet on a quarterly or as-needed basis.



Table 1-3: San Gorgonio IRWM RWMG and SAC Members

RWMG	SAC
<ul style="list-style-type: none"> • City of Banning • Riverside County FC&WCD • Cabazon Water District • High Valleys Water District • Banning Heights MWC • San Gorgonio Pass Water Agency 	<ul style="list-style-type: none"> • City of Banning • Riverside County FC&WCD • Cabazon Water District • High Valleys Water District • Banning Heights MWC • San Gorgonio Pass Water Agency • Morongo Band of Mission Indians • United States Forest Service (USFS) • Banning Bench Community of Interest Association • BIA Building Industry Association • Diversified Pacific • Pardee Development

1.5 Outreach and Participation

The San Gorgonio IRWM Program is supported by a diverse group of stakeholders with differing expertise, perspectives, and authority over various aspects of water management. The 2018 IRWM Plan development was informed by participation from a group of stakeholders that included the Region's water management agencies, tribes, and non-governmental organizations, engaged to represent a balance in viewpoints. The main opportunity for participation is through SAC meetings and workshops, at which there are no limitations preventing other stakeholders and the public from participating on an equal footing with members of the SAC. Stakeholders do not need to be SAC members to participate in the IRWM planning process and efforts. The Region does, however, require that if a stakeholder wishes to submit a project as part of an IRWM related grant application, that stakeholder would need to become an official member of the SAC.

1.5.1 Stakeholder Identification

During the 2016 RAP application process, the RWMG developed a preliminary list of potential stakeholders with water resources interests in the San Gorgonio Region, including cities and counties, special districts, tribes, state and federal agencies, environmental stewardship organizations, community organizations, disadvantaged community representatives, industrial and private interests, and neighboring IRWM Regions. A representative for each of the stakeholders in **Table 1-4** below was sent a letter soliciting interest in participating in the IRWM planning

process as a stakeholder. During the 2018 IRWM planning process, the RWMG further expanded this list of potential stakeholder groups. Organizations representing these communities were personally contacted by phone and email to participate in the IRWM planning process.

Table 1-4: Stakeholder Outreach Distribution List

Entity Type	Agencies and Entities
Cities/Counties	<ul style="list-style-type: none"> • City of Banning • City of Beaumont • Southern California Association of Governments • County of Riverside • Western Riverside Council of Governments
Community Organizations	<ul style="list-style-type: none"> • Banning Bench Community of Interest Association • Banning Bench Emergency Preparedness Committee • Cabazon Association • Cherry Valley Acres and Neighbors • Habitat for Humanity • Housing and Community Development Departments • Inland Empire Economic Partnership (IEEP)
Environmental Stewardship Organizations	<ul style="list-style-type: none"> • Endangered Habitats League • Riverside Land Conservancy • Wild California • Western Riverside County Regional Conservation Authority
Industrial and Private Interests	<ul style="list-style-type: none"> • Building Industry Association (BIA) • Diversified Pacific • Highland Springs Ranch & Inn • Krieger & Stewart • Pardee Development • Twin Pines Boys Ranch • Silent Valley Campground • Southern California Edison
Flood Control and Stormwater Management	<ul style="list-style-type: none"> • Riverside County Flood Control and Water Conservation District • San Bernardino County Flood Control District
Special Districts and Agency Alliances	<ul style="list-style-type: none"> • Banning School District • San Geronio Pass Water Agency • Banning Heights Mutual Water Company • Cabazon Water District • High Valleys Water District • Beaumont Cherry Valley Water District • San Geronio Pass Regional Water Alliance

Entity Type	Agencies and Entities
State & Federal	<ul style="list-style-type: none"> • California State Lands Commission • California Department of Fish and Wildlife • California Department of Water Resources • California Energy Commission • California Regional Water Quality Control Board – Colorado Region • California Wildlife Conservation Board • Natural Resources Conservation Service • San Bernardino National Forest • US Army Corps of Engineers • US Bureau of Land Management • US Environmental Protection Agency • US Federal Emergency Management Agency • US Fish and Wildlife Service • US Geological Survey
Tribes	<ul style="list-style-type: none"> • Morongo Band of Mission Indians
Neighboring IRWM Regions	<ul style="list-style-type: none"> • Coachella Valley IRWM Region • Santa Ana Watershed Project Authority (SAWPA) IRWM region

Those entities that were contacted but did not join the SAC were added to an interested party distribution list and are included on as-needed email updates regarding the San Gorgonio IRWM Program. This list is updated regularly to include any newly identified interested parties.

1.5.2 DAC Outreach

Of the estimated population of 30,255 within the San Gorgonio IRWM Region, 27,272 people, or 90%, qualify as living in a Disadvantaged Community (DAC) in accordance with State Guidelines (defined as communities with an annual median household income [MHI] less than 80% of the statewide annual median income). Many of the DACs in the San Gorgonio IRWM Region rely on significant infrastructure to serve relatively small and sparse populations. This can be challenging for the small, local water resource management agencies to adequately finance new projects and operate/maintain existing systems. These areas are further described in the *Region Description*.

Given that the RWMG, together with the SAC, provides water service to the entire Region, these entities also represent constituents within DACs. In addition, nearly all of the stakeholders that are included in the SAC, or are on the distribution list, in some way represent DAC interests within the Region. To further engage participation from representatives in these areas, the RWMG members personally contacted potential DAC representatives to solicit participation.

1.5.3 Tribal Outreach

The Morongo Band of Mission Indians (MBMI) is the only Federally Recognized Native American Tribe within the Region. The MBMI collaborated directly with RWMG members in the formation of the San Gorgonio IRWM Region and is an active member of the SAC. Tribal representatives are included on the IRWM distribution list and receive all SAC communications.

1.5.4 Public Outreach

Any member of the public can be included in the IRWM distribution list to receive notifications and agendas for upcoming SAC meetings, requests for information or input on IRWM planning activities, notifications for funding opportunities, and other IRWM-related announcements. While distribution of information is primarily conducted via email and through the program's website, interested members of the public can request that materials be distributed in other formats to accommodate their needs by contacting the Region's Program Manager.

The public is always invited and encouraged to attend SAC meetings to participate and provide input into the IRWM Program. IRWM SAC meetings include IRWM Program announcements, status reports on IRWM projects, status of IRWM grant funding awarded and opportunities, and other current activities. These other activities may include IRWM Plan update activities such as updating goals and objectives, identifying needs and strategies, determining climate change vulnerabilities, developing and reviewing projects, and updating the region description.

1.6 Regional Coordination

The Region regularly coordinates with relevant local, regional, and statewide planning entities as well as other IRWM Regions.

1.6.1 Coordination with Other Regions

Some members of San Gorgonio IRWM RWMG and SAC also participate in other IRWM Regions, which enhances the Region's ability to coordinate with proximate IRWM Regions. Given their proximity, there is a long history of working together with members from the SAWPA and Coachella Valley IRWM Regions (refer to **Figure 2-1**) to resolve water resources management-related issues and conflicts. As part of the 2016 RAP and Planning Grant applications, the San Gorgonio RWMG met with the Coachella Valley RWMG to discuss the formation of the San Gorgonio IRWM Region. As a result of these initial meetings, the two Regions agreed to the benefits and geographic coverage of the new San Gorgonio Region and acknowledged a desire to continue to collaborate on inter-regional issues within the Colorado Funding Area, including participation in DWR's DAC involvement initiative.

In addition to IRWM activities, members of the RWMG participate in the San Gorgonio Pass Water Alliance, which provides a regular mechanism to conduct inter-regional coordination with the neighboring SAWPA and Coachella Valley IRWM Regions.

1.7 Coordination with Local and Regional Water and Land Use Planning Efforts

The San Gorgonio IRWM stakeholder outreach and involvement process allows for interactive feedback to occur between local planning efforts (both water and land use) and IRWM planning. Within the San Gorgonio IRWM Region, local planning is conducted by counties, cities, local agencies and special districts. The County of Riverside (through the RCFCWCD), cities, and water agencies within the Region selected representatives to regularly attend and participate in IRWM meetings and workshops, providing valuable input. Additionally, State and Federal agencies provided input and participation with IRWM efforts to assist in communication, cooperation, or implementation of Plan components.

In addition, existing local, regional, and statewide plans were reviewed for relevant information to include as a part of the IRWM Plan process. The relevant plans, listed in **Table 1-5**, were used to further refine the Region's description, needs, goals, objectives, and strategies, and were used to help develop the Region's short- and long-term priorities for water management. Although local plans relevant to the Region do not currently include climate change adaptation and mitigation, other planning documents, such as the Santa Ana Watershed Project Authority IRWM Plan, were evaluated for those strategies to help guide and provide consistency across the greater region. **Table 1-5** lists each plan, describes its planning jurisdiction, explains how it applies to the Region, and provides an updated schedule.

The Region recognizes the importance of collaboration between land use planning and water resources management. The processes in place for articulating the Region's description, objectives, strategies, and projects incorporate input from land use planners that are a part of the SAC or provide comments on IRWM documents. It will be necessary to continue coordination with these land use planners to ensure that the IRWM Plan is appropriately implemented and to insure future Regional and local planning efforts evolve together and complement one another.

Table 1-5: Coordination with Local and Regional Planning Documents

Planning Document	Jurisdiction	Planning Content	Updates
California Water Plan (DWR, 2013)	Water Resource Planning	Population, housing, and income data for the 5-year period from 2006 to 2010	Every five years
City of Banning General Plan (Banning, 2006)	Land Use	Includes land use and zoning information, growth projections for the City of Banning	As needed
City of Banning 2015 Urban Water Management Plan (Banning, 2016)	Water supply / Wastewater	Provides current and projected water supply and demand, drinking water supply/quality issues, population, facilities, and water infrastructure and source information.	Every five years
San Geronio Pass Water Agency 2015 Urban Water Management Plan (SGPWA, 2016)	Water supply	Provides current and projected water supply and demand, drinking water supply/quality issues, population, facilities, and water infrastructure and source information.	Every five years
Riverside County General Plan, including subsections: Pass Area Plan and Riverside Extended Mountain Area Plan (County of Riverside, 2008)	Land Use	Includes area description, land use, and zoning information for Riverside County.	As needed

Planning Document	Jurisdiction	Planning Content	Updates
Western Riverside County Multiple Species Habitat Conservation Plan (County of Riverside, 2003)	Land Use	Includes a description of species habitat conservation areas, planning for future areas, and ecosystem descriptions.	As needed
Coachella Valley County Multiple Species Habitat Conservation Plan (County of Riverside, 2003)	Land Use	Includes a description of species habitat conservation areas, planning for future areas, and ecosystem descriptions.	As needed
Riverside County Flood Control and Water Conservation District Master Drainage Plan (RCFC&WCD, 1988)	Flood management	Includes flood risk and management information for Riverside County.	As needed
Regional Water Quality Control Board Plan for the San Diego Basin (RWQCB, 2012)	Water Quality	Includes 303(d) listings, beneficial uses, TMDLs, and plans for control of pollutants to surface waters.	As needed
2013 Re-evaluation of the Beaumont Basin Safe Yield	Water supply	Includes the background information and setting of the Beaumont hydrogeologic setting as well as the determined safe yield.	Every ten years
Santa Ana Watershed Project Authority (SAWPA) IRWM Plan	Water Resource Planning	Provides planning efforts, goals, climate change adaptations and mitigation strategies for local inter-Regional areas.	Every five years
First Update to the Climate Change Scoping Plan	California Air Resources Control Board (CARB)	Provides strategies to reduce or mitigate GHGs and climate change activities in California	As needed

1.7.1 IRWM Plan Updates

Formal IRWM Plan updates are required no less than every five years. The San Gorgonio IRWM Plan is intended to be a “living document” that is updated on a regular basis. Amendments and changes to the Plan may or may not trigger formal IRWM Plan updates. Amendments and changes significant enough to initiate a formal IRWM Plan update will be determined by the RWMG. All other changes will be approved by the RWMG and posted to the program website.

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2. Region Description

The purpose of this chapter is to define the San Gorgonio IRWM Region through descriptions of its boundaries, water demands, supply sources, water quality, ecological and environmental processes, land uses, social characteristics, and economic trends and conditions. Understanding the unique nature of the Region is key to developing meaningful IRWM planning needs, goals, and objectives, resource strategies, and projects as described in subsequent chapters of this IRWM Plan.

2.1 Regional Boundaries

The San Gorgonio IRWM Region represents the eastern San Gorgonio Pass, a distinctive geographical area in Southern California located between the San Bernardino Mountains to the north, the San Jacinto Mountains to the south, the desert areas of the Coachella Valley to the east, and the San Bernardino and Morena Valleys to the west. The San Gorgonio IRWM Region is predominately located within Riverside County; however, northern portions extend into San Bernardino County. The Region includes unique geographic, watershed, groundwater, and jurisdictional boundaries compared with those areas surrounding the Region.

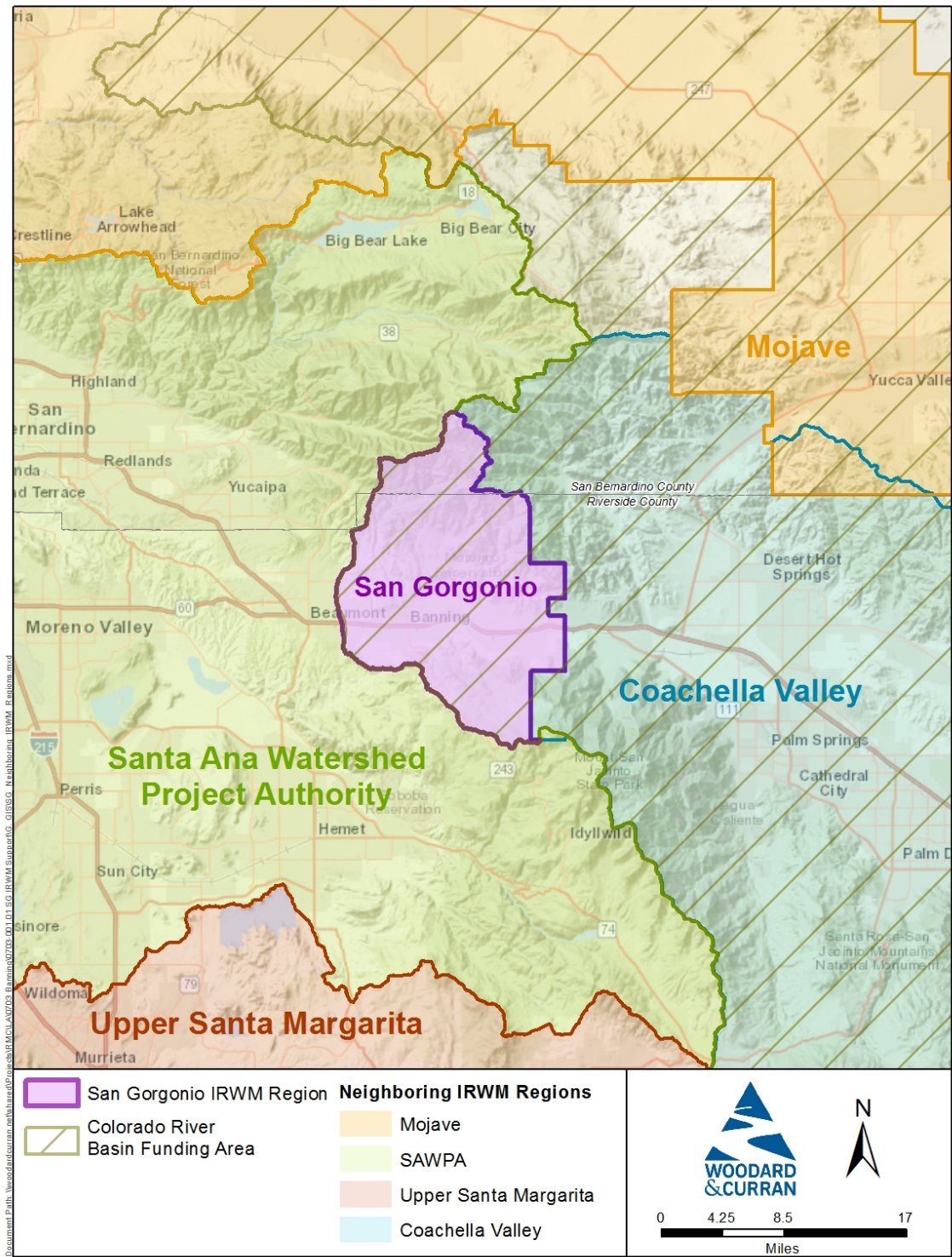
The Region covers an area of 228 square miles (142,720 acres) within the Colorado River Basin Funding area of the IRWM Program. The San Gorgonio IRWM boundary, drawn by regional stakeholders, reflects how water resources within the San Gorgonio Pass function as well as what and whom they benefit.

It was agreed during boundary determination that existing and adjacent IRWM regional boundaries needed to be mirrored. The Region's eastern and southeastern boundary runs adjacent to the Coachella Valley IRWM Region's northwest boundary which follows the service area boundary of the Desert Water Agency. The western and southwestern portions of the San Gorgonio IRWM boundary are defined by the boundary of the SAWPA IRWM Region which is contiguous with the Santa Ana River Watershed in this area. The San Gorgonio IRWM Region's northern boundary is defined by the Garnet Hill and Mission Creek subwatersheds of the Whitewater River Watershed, which is actively managed by Banning and BHMWC. The San Gorgonio IRWM Region boundaries are shown in **Figure 2-1**.

2.2 Physical Setting

The physical setting of the Region is consistent with what is commonly referred to as the San Gorgonio Pass. As such, the Region is characterized as having a higher elevation than the nearby desert and coastal areas. This topography provides the region with a unique climate pattern in a relatively rural setting with immense areas of open space, multiple seismic fault lines, ephemeral rivers, and specialized habitats.

Figure 2-1: Proximate IRWM Regions



2.2.1 Climate

The Region's unique climate is the primary factor that distinguishes water resources and management from other surrounding areas. Climate plays a large role in the ability to predict and manage the timing and volume of regional water resources. Demand and supply projections used by the Region's water resources managers are based on both seasonal and longer-term patterns of precipitation and temperature, allowing for variations between wet, dry, and average years as well as summer and winter seasons. Local surface water and groundwater supply infrastructure has been developed based upon the somewhat consistent patterns of precipitation that supply these resources. An understanding of local precipitation patterns is also critical to provide adequate flood protection and environmental flows for the Region. The following discussion provides information on the existing climate within the Region and goes on to explore some of the anticipated effects of longer-term climate change on the Region's water resources.

Existing Climate

The Region's area has a transitional climate characterized by the marine coastal influences from the west and arid Mojave Desert influences from the east, with cool winters and hot, dry summers. Precipitation in the Region generally occurs as rainfall, although snowfall can occur. As shown in **Table 2-1**, mean annual rainfall for the Region is on average 16.5 inches per year, with most rainfall occurring during just a few major storms from November through April. During wetter years, the Region can receive as much as 40 inches per year.

The mean annual minimum temperature is approximately 47°F and the mean annual maximum temperature is 77°F. The highest average maximum temperature of 96°F occurs in July and the lowest average minimum temperature of 39°F occurs during January.



San Geronio River's dry riverbed and arid desert climate

Evapotranspiration rate (ET_o) is the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues). ET_o serves as an indicator of how much water plants need for healthy growth and productivity. The standard annual average ET_o for the Region is approximately 5 feet per year with the highest rates of 8 inches occurring in July, and the lowest rate of 2 inches occurring during December.

Table 2-1: Average Monthly Climate

Month	Average Monthly ETo (inches) ¹	Average Rainfall (inches) ²	Average Max Temperature (°F) ²	Average Min Temperature (°F) ²
January	1.5	3.0	60.4	38.8
February	3.1	3.2	63.0	39.0
March	4.9	2.9	65.9	40.3
April	6.0	1.4	71.8	43.0
May	6.2	0.5	78.5	47.8
June	8.3	0.1	87.6	52.6
July	8.4	0.2	95.5	58.7
August	8.2	0.2	95.2	59.2
September	6.1	0.5	90.0	55.9
October	4.3	0.6	79.9	49.4
November	3.2	1.5	69.1	43.4
December	2.1	2.2	61.5	39.5
Annual	62.3	16.3	76.5	47.3

¹ CIMIS, 2017² Western Regional Climate Center, 2017

Potential Impacts and Effects of Climate Change

Estimating the impacts and effects of climate change at a regional level is challenging due to the coarse spatial scale of models that project climate change impacts of temperature and rainfall, and due to the long timescale evaluated in many models. Recently, state entities have been working to scale down climate models to allow for climate change planning at a level that can be useful for planning efforts. Understanding projected climate change impacts and effects on the Region will help to identify the ways in which water resources in the Region will be most vulnerable to climate change. The SAC conducted a climate change workshop as part of the IRWM Plan development, and climate change vulnerabilities were prioritized to identify strategies and projects that would most effectively adapt to and mitigate against climate change. **Chapter 3** provides further discussion on the potentially significant vulnerabilities to climate change within the Region. **Chapter 4** includes strategies identified by the Region to help meet climate change related objectives and address regional vulnerabilities identified by the SAC and RWMG.

2.2.2 Watershed and Surface Water Features

The San Gorgonio IRWM Region contains nearly all of the Banning and Cabazon subwatersheds of the larger San Gorgonio River Watershed. The Region also includes a part of the Garnet Hill subwatershed which serves as the larger Whitewater River watershed's headwaters; specifically, the South and East fork sub-watersheds at and upstream of their confluence. These physical watershed boundaries are presented in **Figure 2-2**.

The San Gorgonio River is also a tributary of the Whitewater River, which is a part of the Colorado River Basin. The river and its tributaries drain 2,209 square miles, beginning in the San Bernardino Mountains and flows approximately 80 miles east through the San Gorgonio Pass. The San Gorgonio River continues east beyond the San Gorgonio IRWM Region to its confluence with the Whitewater River in the Coachella Valley IRWM region, ultimately draining into the Salton Sea.

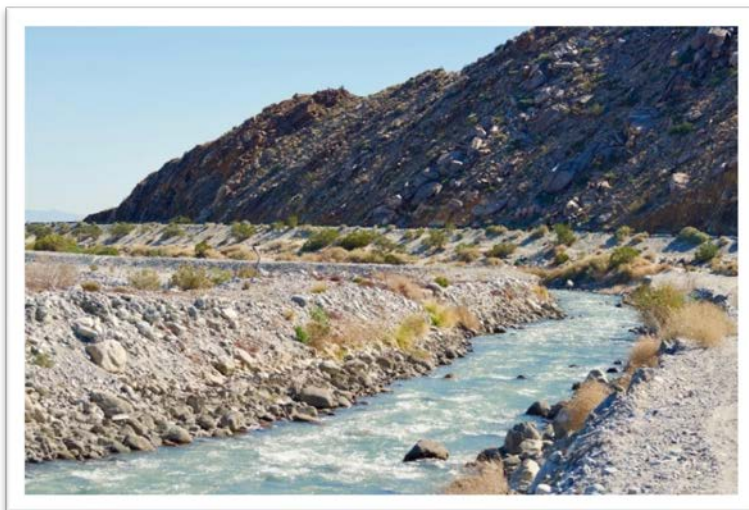


Photo of the Whitewater River just before its confluence with the San Gorgonio River

The Cabazon subwatershed of the San Gorgonio River includes Hathaway Creek and Potrero Creek to the north, originating in the San Bernardino Mountains, and Brown Creek, Twin Pines Creek, and Azalea Creek to the south, originating in the San Jacinto Mountains. The Banning subwatershed of the San Gorgonio River originates at the summit of the San Gorgonio Pass and includes Montgomery Creek and Smith Creek (**Figure 2-2**).

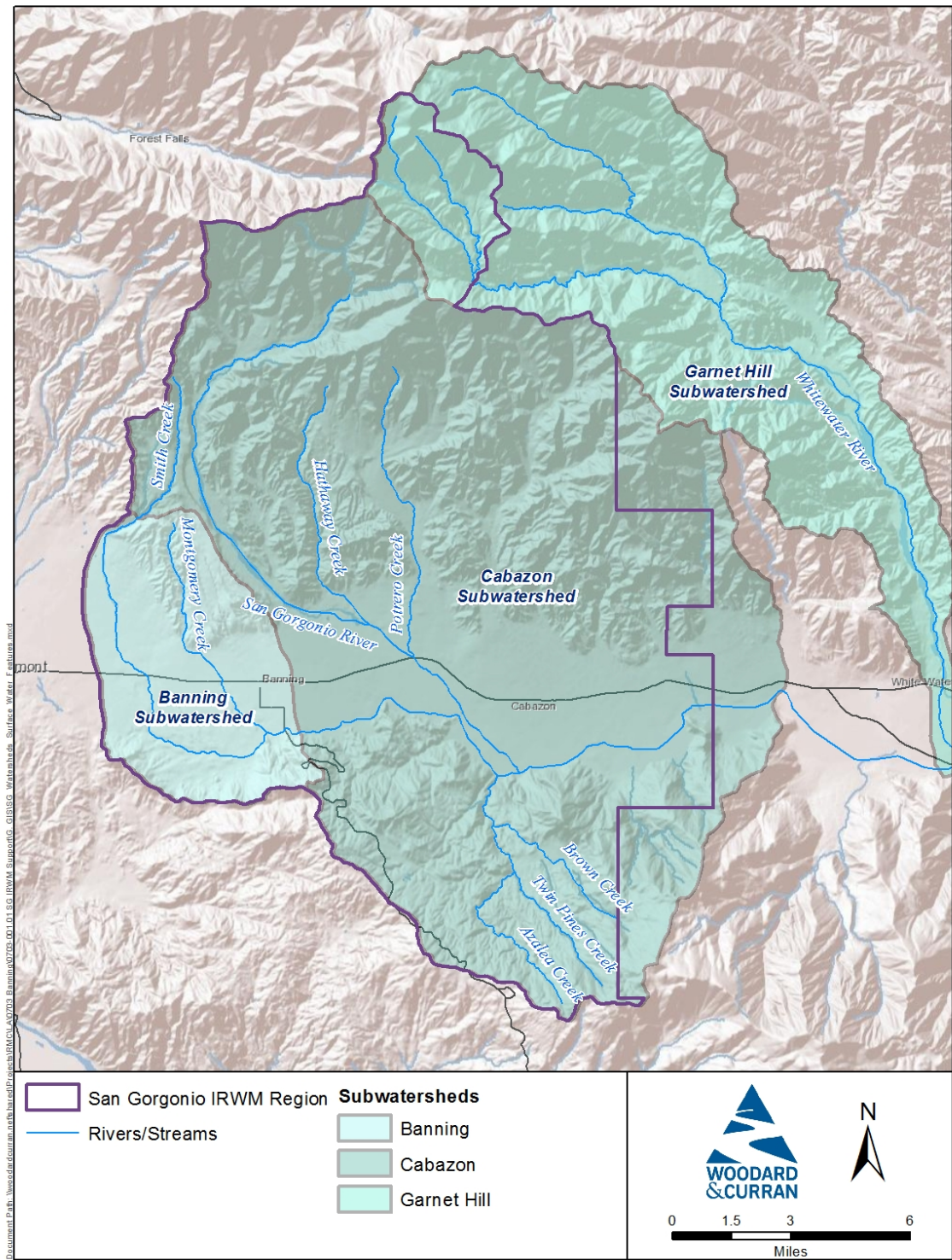
In addition to the San Gorgonio River system, the Region also includes the South and East forks of the Whitewater River that lie within the Garnet Hill subwatershed. The South and East forks have diversion structures that bring surface supplies to the San Gorgonio IRWM Region through the San Gorgonio Flume and is thus hydraulically linked to the San Gorgonio Region.

2.2.3 Geology and Geohydrology

The Region's high desert mountain pass topography is covered by multiple alluvial fan deposits that were derived from the San Bernardino and San Jacinto Mountains (USGS, *San Gorgonio Pass: Geologic Setting*, 2017). This alluvial fan geology provides wide areas that can rapidly and consistently recharge surface flows into the underlying San Gorgonio Pass Groundwater Basin. The San Gorgonio Pass watersheds recharge approximately 72% of total watershed flows into groundwater basins on an annual average. As result, the Region's watersheds have only ephemeral streams, with only a few perennial surface water sources occurring at higher elevations (USGS, *Estimating Natural Recharge in San Gorgonio Pass Watershed*, 2012).

The Region is a densely-faulted area, defined by the San Andreas Fault system, which includes a family of geologic structures covering a large area. Within the San Gorgonio Pass, the normally confined San Andreas fault line disaggregates into a family of irregular and discontinuous separate fault lines (Yule, 2009). This fractured fault system complicates how groundwater flows and moves throughout the area. Due to the numerous faults, bedrock and sediment layers have shifted resulting in significant differences in groundwater levels and flows that are difficult to understand and map. As such, recharge and pumping of supplies within the Region must be managed within many specific storage unit areas.

Figure 2-2: Watersheds and Surface Water Features



Together, these features create the greater San Gorgonio Pass Groundwater Basin. A map of this basin and the surrounding basins, as developed by DWR under Bulletin 118, is shown in **Figure 2-3**. The Region's subbasins and storage units are described in greater detail as part of this chapter's Water Supply section.

2.2.4 Habitat and Environment

Conservation and enhancement of habitat, biodiversity, and protection and restoration of the natural function of water systems are integral to maintaining the environmental processes that support healthy ecosystems and enable beneficial human uses of the watershed. Maintaining the quantity and quality of water resources within the San Gorgonio Region is critical to maintaining its unique habitat.

The Region falls within two Multiple Species Habitat Conservation Plans (MSHCP) that were developed to articulate the characteristics and needs of habitats within Riverside County as shown in **Figure 2-4**. The *Western Riverside County MSHCP* covers the western portion of Riverside County and includes approximately 62,824 acres of the Region's western half. The *Coachella Valley MSHCP* covers portions of Riverside County within the Coachella Valley and the eastern portion of the Region. The MSHCPs do not address Tribal Lands, including the Morongo Band of Mission Indians' Reservation.

The northernmost portion of the Region (within San Bernardino County) lies within the Sand to Snow National Monument and is not encompassed by the Riverside County MSHCPs. However, because of its proximity to existing identified significant conservation areas within Riverside County through the Western Riverside and Coachella Valley MSHCP's, the habitat and environmental processes discussed below are assumed to be somewhat relevant to this area as well.

Essential Ecological Processes

The San Gorgonio River and various tributaries function as a fluvial sand transport system for the adjacent Snow Creek/Windy Point and the Whitewater Floodplain conservation areas. The Region's San Bernardino Mountains and the San Jacinto Mountains are sand sources for this fluvial sand transport system. Fluvial sand transport along the San Gorgonio River west of the Cabazon Conservation Area, and functionality of the San Gorgonio River as a Biological Corridor, are maintained as a result of public ownership along the river and flood control regulations.

Biological Corridors and Linkages

The San Gorgonio River and associated tributaries provide value as a Biological Corridor between the San Bernardino Mountains and the San Jacinto Mountains. The area on either side of the Fornat Wash culvert under the Interstate Highway 10 (I-10) is included in the Conservation Area to serve as a Biological Corridor. The corridor on both the north and south sides of I-10 are bordered within one mile of the Morongo Indian Reservation, thus less is known about these areas.

Figure 2-3: Regional Groundwater Basins

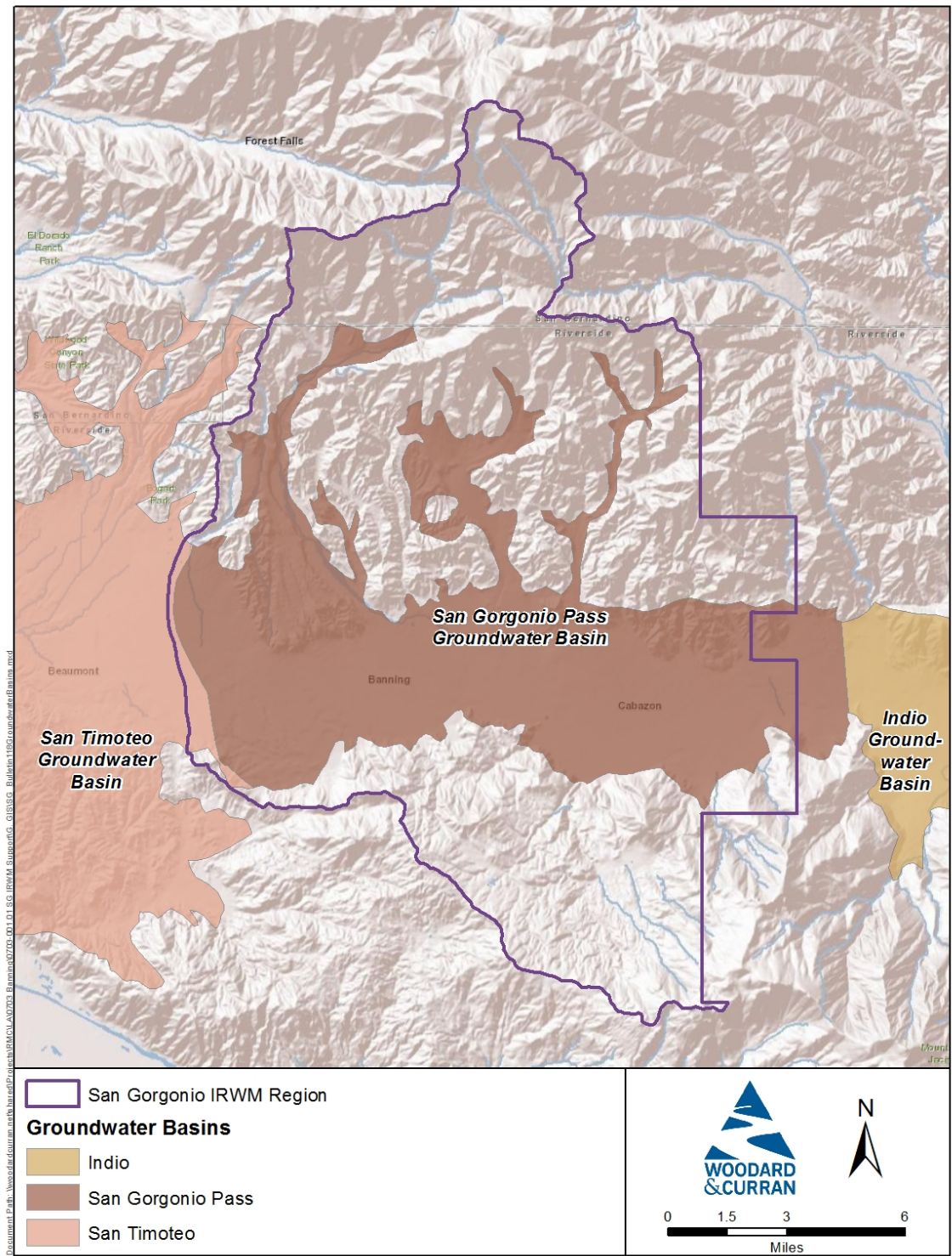
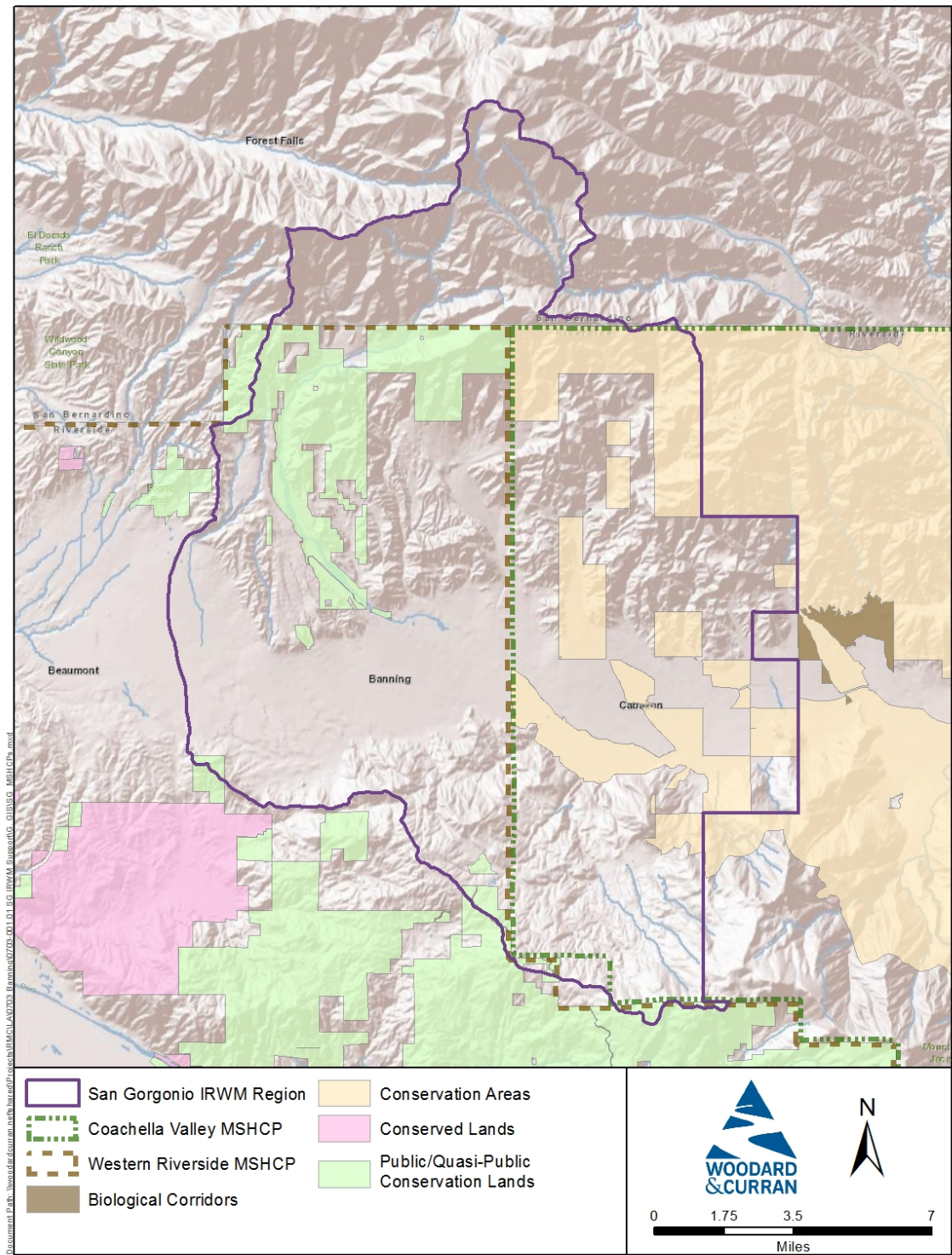


Figure 2-4: Habitat Areas Coverage Map



The Sand to Snow National Monument is a diverse area with a wide range of ecosystems, including lowland Mojave and Colorado deserts, riparian forests, creosote bush scrub and woodlands, fresh water marshes, Mediterranean chaparral, and alpine conifer forests. The San Gorgonio Wilderness, which is the area of the Monument within the Region, contains large un-fragmented habitat areas with no roads, and serves as an important habitat linkage between the San Bernardino and San Jacinto Mountain ranges. The area has been important for biological and ecological research, climate and land use change studies, and the impact of fire and invasive species management. The area has a remarkable species richness that makes it one of the most biologically diverse areas in southern California.



Sand to Snow National Monument taken just east from Cabazon

Sensitive Habitat and Species

Core Areas (Cores) are defined as blocks of habitat of appropriate size, configuration, and vegetation characteristics that generally support the life history requirements of one or more of the species identified for conservation in the MSHCPs. Linkages between Cores are also critical for conservation of sensitive species. Many of these Cores are large undisturbed tracts of land that are not currently connected to other Cores through linkages. The San Gorgonio IRWM Region intersects two designated and one proposed Core.

Core areas within the San Gorgonio Region provide potential nest sites, foraging habitat and connection to the portion of the San Bernardino Mountains in San Bernardino County that harbors key populations of certain species. Identified “planning species” that have suitable habitats within the Core area include the mountain lion, San Bernardino mountain kingsnake, and the California spotted owl. Maintenance of habitat quality and large intact interconnected habitat blocks are important for these species. Areas of the Region also contain MSHCP designated “Essential Habitat” for Peninsular bighorn sheep.

Additionally, the Cabazon Conservation Area contains “Other Conserved Habitat” for Coachella Valley milkvetch, Coachella Valley Jerusalem cricket, desert tortoise, burrowing owl, gray vireo, least Bell’s vireo, Le Conte’s thrasher, southwestern willow flycatcher, summer tanager, yellow-breasted chat, yellow warbler, Coachella Valley round-tailed ground squirrel, Peninsular bighorn sheep, and Palm Springs pocket mouse. Most of the Habitat for the Coachella Valley milkvetch, Coachella Valley Jerusalem cricket, Coachella Valley round-tailed ground squirrel, and Palm Springs pocket mouse is in the floodplain area of the San Gorgonio River.

MSHCP conservation objectives for this area do not include protecting the habitat for these species except incidental to conserving the Biological Corridor in the Fomat Wash area. The Plan aims to conserve the riparian species habitat.

Bioregions

The diversity of topography, climate, soils, and other physical elements of the Region have resulted in rich biological resources that are largely undisturbed but are experiencing rapidly increasing development pressure in many areas.

- **The San Bernardino Mountains Bioregion** includes the northern portion of the San Gorgonio IRWM Region at elevations above 3,000 feet. This Bioregion supports coniferous forests, montane chaparral, and broad-leaved forest. This Bioregion has not been heavily disturbed or urbanized.
- **The Riverside Lowland Bioregion** includes the lower areas of the San Gorgonio Pass area including the City of Banning, as well as the unincorporated developed areas east of Banning such as Cabazon. It also includes the lower elevation portions of the Morongo Reservation. The Riverside Lowlands Bioregion generally occurs at elevations below 2,000 feet and is characterized by Riversidean sage scrub and annual grasslands. The relatively arid climate is in part the result of the rain shadow cast by the Santa Ana Mountains. A high level of disturbance and urbanization are noted within this Bioregion.
- **The San Jacinto Mountains Bioregion** is the southernmost portion of the San Gorgonio IRWM Region that occurs at elevations above 3,000 feet. This Bioregion supports coniferous forests, montane chaparral, and broad-leaved forest. This Bioregion has not been heavily disturbed or urbanized.

Aquatic Resources

The San Gorgonio IRWM Region has two perennial river systems; the San Gorgonio River and the headwaters of the Whitewater River. The upper reaches of the Whitewater river are largely undisturbed, allowing the Whitewater River to be considered an area of high ecological significance as it is one of the most pristine and remote watersheds in southern California. It serves as a critical biological link between the San Bernardino Mountains and the Coachella Valley and San Jacinto Mountains and provides an important habitat for diverse species such as the California spotted owl, Nelson's bighorn sheep, and arroyo toad. The full course of the Whitewater River, extending outside of the region, hosts rich riparian vegetation that provides seasonal homes to endangered neo-tropical songbirds including least Bell's vireo and the southwest willow flycatcher (CalWild, 2017).

Fire Hazard

Due to the vast amounts of undeveloped, sloping terrain and the presence of certain types of vegetation such as the oak woodlands and chaparral habitat, much of the Region is subject to a high risk of fire hazards. The highest danger of wildfires can be found in the San Bernardino National Forest, in nearby rural areas, and along the urban edges.

2.3 Land Use

2.3.1 Land Use Agencies and Planning

Multiple local, state, tribal and Federal agencies have jurisdiction over land management in the Region. **Table 2-2** lists the cities, unincorporated areas, ecological reserves, tribal reservations,

and state and federal lands in the Region. **Figure 2-5** illustrates the jurisdiction of cities and unincorporated areas.

Table 2-2: Land Management Agencies

Cities and Unincorporated Areas
<ul style="list-style-type: none"> • City of Banning • Riverside County • San Bernardino County
Tribal Reservations
<ul style="list-style-type: none"> • Morongo Band of Mission Indians
Federal Lands
<ul style="list-style-type: none"> • United States Forest Service

The *County of Riverside General Plan* contains land use policies and recommendations for the San Gorgonio Region within portions of four Specific Plans: the *Pass Area Plan*, the *Riverside Extended Mountain Area Plan (REM Area Plan)*, the *Butterfield Ranch Specific Plan*, and the *Rancho San Gorgonio Specific Plan*. The Region is primarily located in the *Pass Area Plan*, which includes the incorporated cities of Banning, Beaumont, and Calimesa as well as the unincorporated communities of Cherry Valley, Cabazon, and Banning Bench. The *REM Area Plan* applies to a small area in the south of the Region in the San Jacinto Mountains. The *Butterfield Ranch Specific Plan* includes a portion of the western-most part of the Region along the border of the City of Banning north of I-10. The *Rancho San Gorgonio Specific Plan* includes areas in the southern portion of Banning south of I-10 between Sunset Avenue and South San Gorgonio Avenue. These Plans were used to define the land uses within the San Gorgonio IRWM Region in this section.

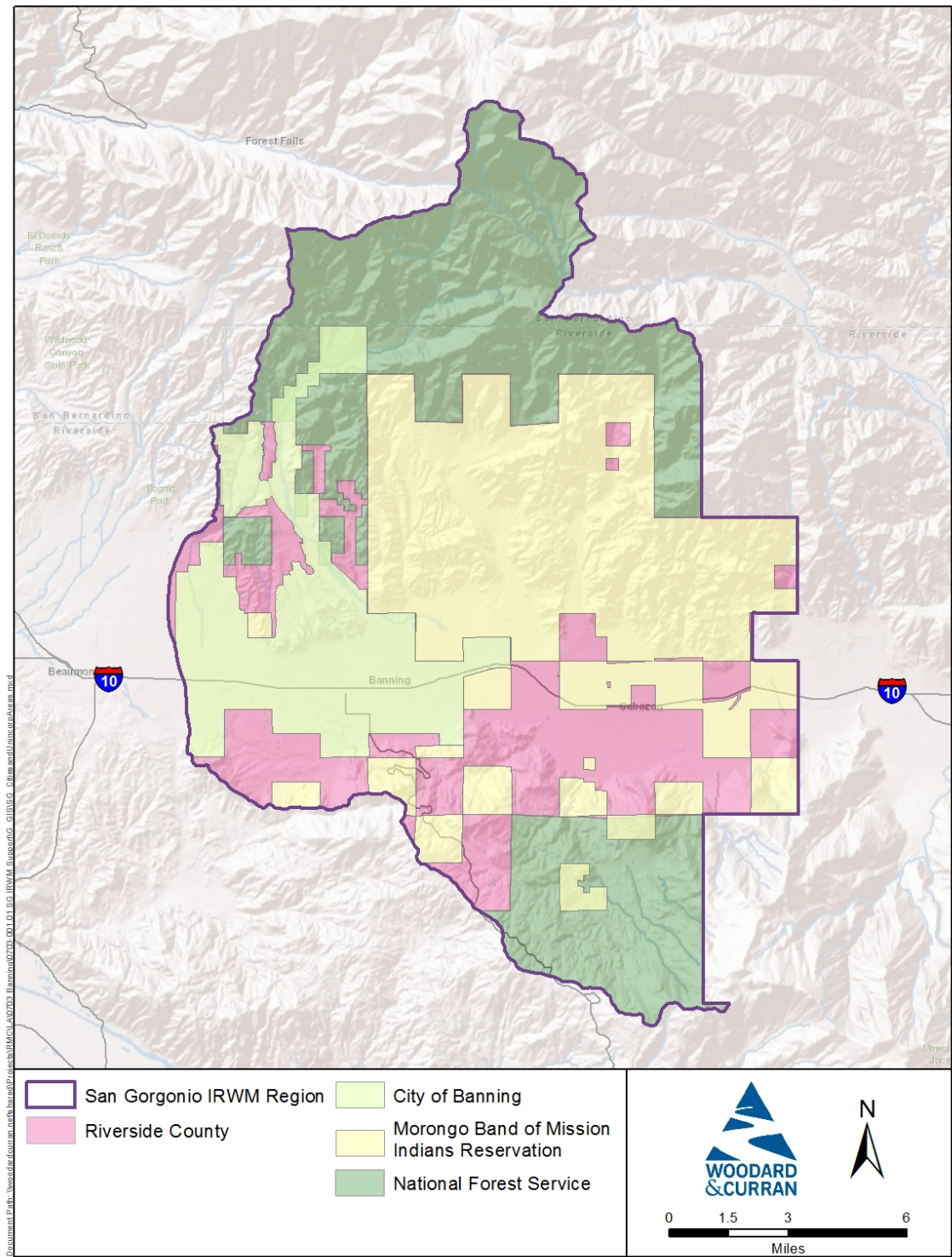
2.3.2 Land Use Types

The San Gorgonio IRWM Region is characterized as a predominately rural area with a slightly urbanized core that extends from west to east along the I-10. Most of the proposed development within the Region is expected to remain focused in areas that could potentially be annexed to the City of Banning. The land uses within this area are shown in **Figure 2-6** and are described below.

Tribal Lands

The Morongo Band of Mission Indians Tribe is a designated Federally Recognized Tribe by the US Department of the Interior, Bureau of Indian Affairs. As such, tribal lands in **Figure 2-6** are depicted as “Other” by most land use databases, and thus the Morongo Band of Mission Indians Tribal Land has been overlaid with orange and classified as tribal lands. Information as to how land is used and managed is relatively limited, but it is generally consistent with the rural nature of the areas without a separate urban core. The Morongo Band of Mission Indians also operates a casino and hotel within the Region.

Figure 2-5: Land Management Authority



Other Urban Residential and Commercial

The City of Banning is the Region's only incorporated city. Banning's residential land uses are predominately classified as single family with larger more rural lots south of the I-10 Freeway. A commercial core follows the I-10 through the center of Banning.

Industrial and Agricultural

The San Gorgonio IRWM Region does not include major agricultural activity. Recently, high value and more climatically appropriate crops have been cultivated within the Region, but this practice is relatively new and additional information is limited.

One of the largest industrial employers within the Region is the Arrowhead Water Bottling Facility, operated by Nestle Waters North America, Inc., which lies just within the boundaries of the Morongo Band of Mission Indians Reservation.

Open Space

The San Gorgonio IRWM Region contains vast open spaces of mountain forests and valleys that provide key habitats as well as recreational opportunities for communities across Southern California. The Region is home to portions of the San Bernardino National Forest, one of the major outdoor recreation areas of Southern California, including a stretch of the Pacific Crest Trail and the Santa Rosa National Monument.

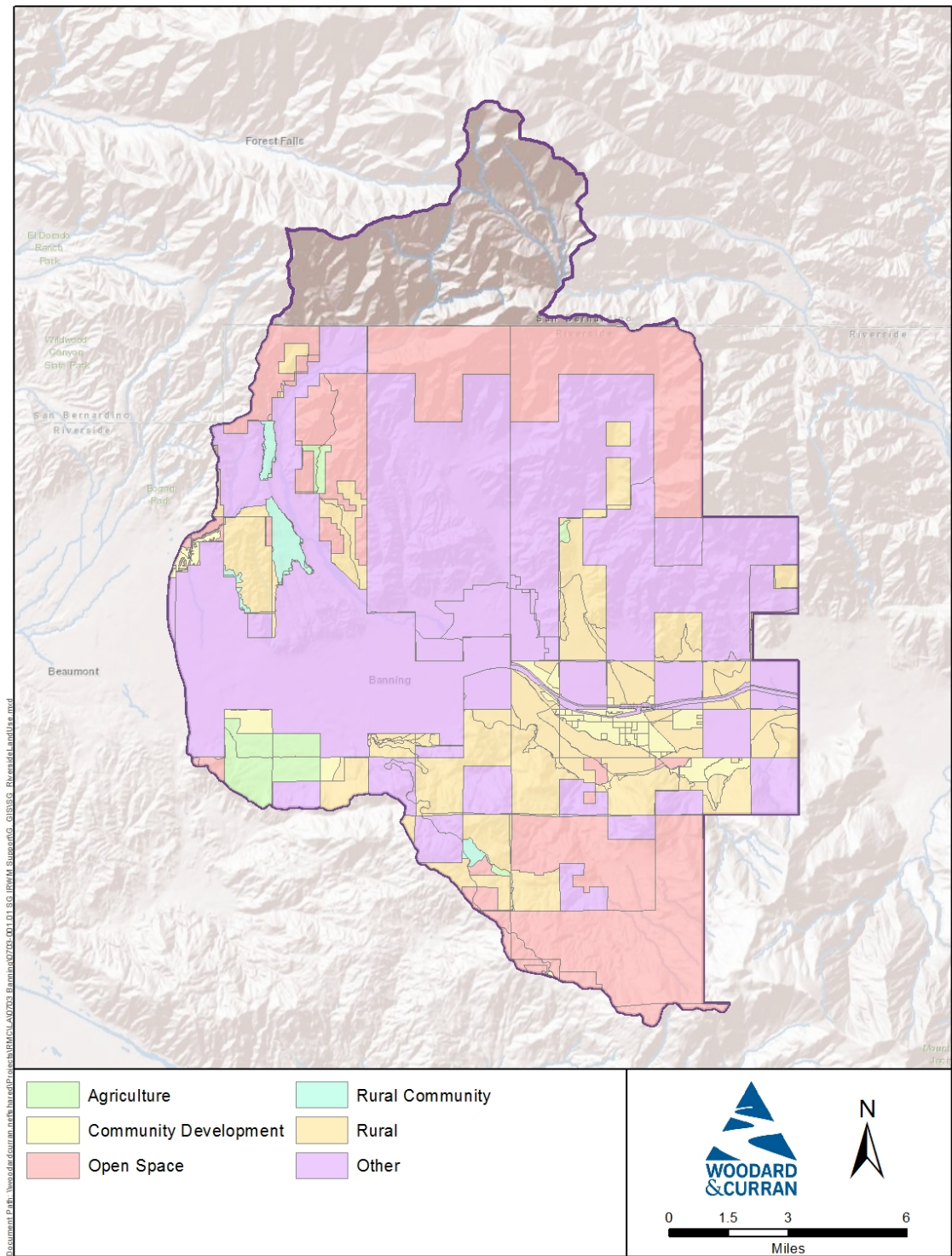
The San Gorgonio Wilderness, which lies within the Region's portion of the San Bernardino National Forest, is a recreational hub for the approximately 24 million Californians that live within a two-hour drive and is the number one visited wilderness in Southern California, attracting over 50,000 annual visits to this wild area. The Sand to Snow National Monument is a 154,000-acre area that encompasses lands in the Sonoran Desert floor up to 10,000 feet in the San Gorgonio Wilderness in the San Bernardino National Forest.

The San Gorgonio IRWM Region also contains portions of the San Jacinto Wilderness, which is managed by the USFS. The rugged terrain, open space, and scenic qualities of the San Bernardino and San Jacinto Mountains are expected to continue to be preserved through the Rural Mountainous and Open Space Conservation land use designations. It is co-managed by the USFS and the Bureau of Land Management, with 101,000 acres designated as wilderness.

2.4 Socio-Economic Setting

The San Gorgonio IRWM Region is characterized as a rural area with vast open spaces. Although it is relatively far from urbanized Los Angeles to the west, it is influenced by its proximity to the I-10 which connects the cities of Los Angeles to the west and Palm Springs to the east. The Region's socio-economic setting is reflective of historical, current, and emerging changes to its physical condition as well as from the way in which both land and water are managed within the Region. This section describes the Region's population, demographics, socio-economics, and cultural values.

Figure 2-6: Land Use



2.4.1 Population and Demographics

The existing and projected populations for the San Gorgonio Region are shown in **Table 2-3**. The majority of the Region's residents live in the City of Banning. The remaining population is primarily concentrated within the unincorporated areas of Cabazon and Banning Bench and the Morongo Band of Mission Indians Reservation.

Table 2-3: San Gorgonio IRWM Region Population

	2015 ¹	2020 ²	2025 ²	2030 ²	2035 ²	2040 ²
City of Banning	30,491	35,730	40,969	46,207	51,446	56,685
Unincorporated Riverside County (Including the Morongo Band of Mission Indians Reservation)	3,609	3,776	4,055	4,355	4,614	4,888
Unincorporated San Bernardino County	393	400	416	432	437	442
Total	34,493	39,906	45,440	50,994	56,497	62,015

¹ USCB, 2013

² SCAG, 2012

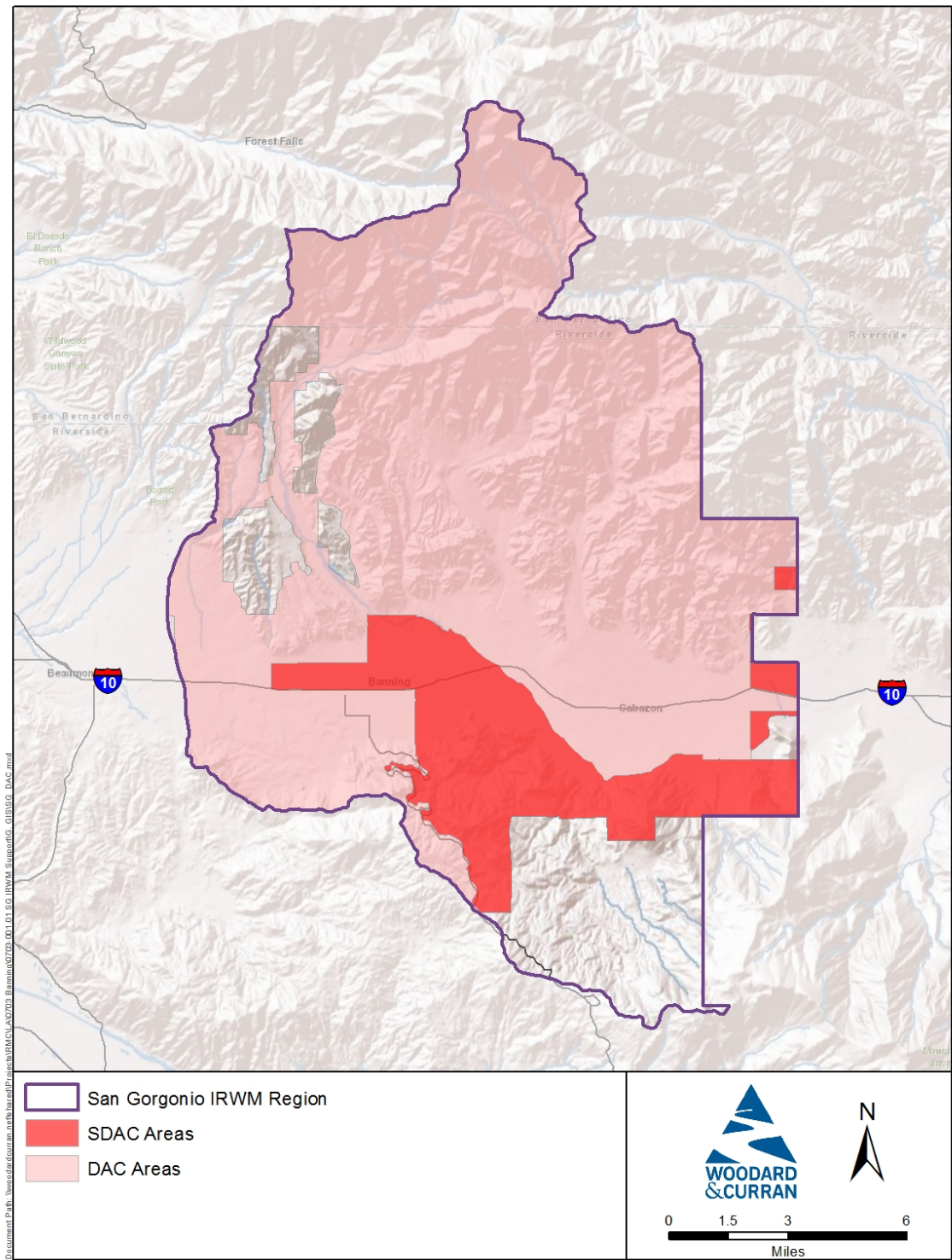
The Region has a diverse population comparable to the County of Riverside. According to Riverside County subdivision data from the 2010 Census¹, Hispanics and Latinos represent 37% of the San Gorgonio Pass area's population, which is lower than the countywide average of 45%. The Region also has a similar population of Asian Americans at 5%, African Americans at 6%, and Native Americans at 2%. The Region has historically been an area for affordable retirement. The Region has a larger percentage of population over 64 years old at 19%, compared with a countywide average of 12%. Similarly, 34% of the Region is under 25 years old, which is less than the countywide average of 39%.

2.4.2 Disadvantaged Communities

The Region's residential areas meet the State of California's definition of DACs. DACs are defined as those communities with an annual MHI less than 80% of the statewide annual MHI (California Water Code, (CWC § 79505.5(a)). At the time this plan was prepared (2017), DACs were considered areas with a MHI less than \$49,191(USCB, 2015). Approximately 17% of the Region's DAC areas qualify as a Severely Disadvantaged Community (SDAC), or those communities that have annual MHI of 60% (\$36,893) or less than the statewide annual average. The Region's SDACs are centered around the City of Banning and the southernmost portion, as shown in **Figure 2-7**.

¹ The San Gorgonio Pass Subdivision of Riverside County is a statistical division recognized by the Census Bureau covering the greater San Gorgonio Pass area. It includes the populated area within the Region, extends west, and includes the city of Beaumont and the community of Cherry Valley

Figure 2-7: Disadvantaged Communities



2.4.3 Economic Factors

For the forecast period 2010 to 2035, Riverside County is expected to have an annual average employment growth rate of approximately 3%. Employment levels are expected to reach approximately 1,243,000 in 2035 per Southern California Association of Governments (SCAG) projections. The five largest employment sectors in 2035 are expected to be retail, construction, health care, social services, and government. Leisure and hospitalities are expected to experience strong growth as it is anticipated that casino businesses will continue to expand on Tribal Lands. Riverside County will continue its trend of increasingly shifting from a logistics and manufacturing based economy to an information/professional services-based economy.

Driven by increases in projected employment levels and population, additional housing is required for economic expansion. Two-thirds of the new units are expected to be constructed in western Riverside County, which includes the SG IRWM Region. Another economic indicator of housing is the ability of the population to afford housing. Affordability measures in 2013 indicated that 56% of the population could afford the median priced home of \$298,000, making western Riverside County and southwestern San Bernardino County the most affordable region in southern California. The Region's unemployment rate is 10.2%.¹

2.4.4 Social and Cultural Values

As part of the *Riverside County Integrated Project (RCIP)*, a county-wide public opinion survey has identified the following ideas on social and cultural goals for the future of the County:

- Continued planned growth in response to population growth
- Road corridors that connect communities, within and to Riverside County
- Open space corridors that connect habitats
- No leapfrog development
- Less sameness, greater densities for “smart” developments
- Regional north/south and east/west solutions to congestion
- Better air quality through less traffic congestion and more local jobs
- A planning pact with cities to help achieve the plan

2.5 Water Supply and Demand

The SG IRWM Region's water framework governs how the San Geronio Groundwater Basin's network of subbasins are managed. Local surface water and imported water supplies are used to recharge these basins that provide vital supply storage given significant seasonal and annual surface supply variability. This section describes the water demands within the Region as well as how supplies are accessed and distributed to meet those needs.

¹ Calculated using 2006-2010 American Community Survey Employment Data by Block Group.

San Gorgonio Pass Water Agency: Water imported through the SWP is supplied to the Region by SGPWA. SGPWA is a wholesale water agency (and SWP contractor) whose service area includes eight retail purveyors in the Beaumont Plains and the San Gorgonio Pass.

City of Banning: Banning's Public Works Department and Water Division provides retail municipal water to its service area (of 16,908 acres) that encompasses Banning's incorporated area and some unincorporated areas of Riverside County as shown in **Figure 2-8**. Banning currently provides water service to a population of approximately 30,500 residents through 10,648 service connections.



City of Banning production well located in the San Gorgonio River Valley

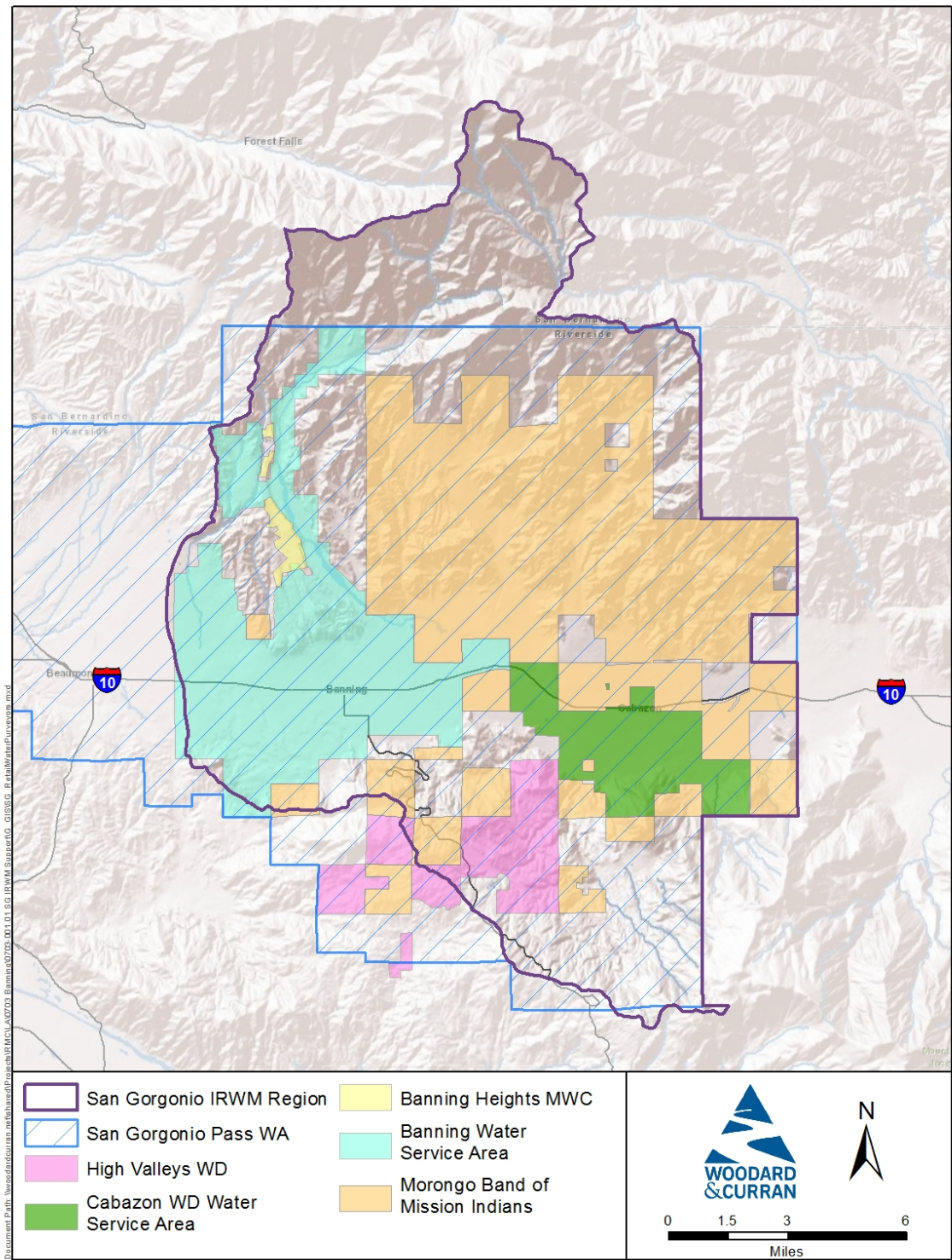
Banning produces groundwater from 21 potable wells plus three wells co-owned with the Beaumont Cherry Valley Water District (BCVWD). Banning also purchases imported water from the SGPWA, which is discharged to the BCVWD recharge facility outside of the San Gorgonio IRWM Region and stored in the Beaumont Basin. Additionally, Banning recharges the Banning Canyon Storage Unit with water delivered from the Whitewater River via a flume system.

Banning also owns and operates a wastewater treatment plant and wastewater collection system which receives and treats on average 2.0 million gallons a day (mgd). The effluent from these plants is discharged to above ground ponds that recharge the Banning Storage Unit. There are plans to upgrade the WWTP to produce recycled water supplies and provide groundwater recharge in the future.

Banning Heights Mutual Water Company: BHMWC is in the Banning Bench unincorporated community on a natural mesa to the north of Banning. BHMWC's service area covers approximately one square mile and serves approximately 200 domestic water meter connections and approximately 500 residents. BHMWC is a non-profit mutual water company that is owned by the property owners who are also the only shareholders. BHMWC's main source of water is diverted surface water from the Whitewater River by way of the Whitewater Flume. BHMWC may purchase water directly from the City of Banning during fires or other emergencies if water is available. BHMWC has two groundwater production wells in the Banning Bench Basin Storage Unit that are used when no other water is available (BHMWC, 2016).

Cabazon Water District: CWD covers an area of approximately 7.5 square miles in the eastern part of the San Gorgonio Region adjacent to Banning's service area. CWD provides potable water service to 910 domestic water meter connections within the Cabazon unincorporated area of Riverside County. All water served by CWD is pumped from four groundwater wells in the Cabazon Storage Unit.

Figure 2-8: Regional Water Purveyors



High Valleys Water District: HVWD is located in the San Jacinto Mountains and covers approximately 8 square miles, serving approximately 220 customers. HVWD does not have a natural water source and purchases water directly from Banning. Water is pumped eight miles up the mountain through three booster stations into three storage tanks and 40 miles of pipe to deliver water to residents. Since HVWD gets 100% of its supply from Banning, its supply and demand projections are incorporated into Banning's projections.

Morongo Band of Mission Indians: Under the direction of the Tribal Council and Reservation Services Administrator's office, the MBMI Water Department has the responsibility to provide a safe, reliable, and potable water supply to the residents and commercial enterprises within the reservation. The daily transient population on the reservation averages between 8,500 and 12,000 and the approximate residential population is 1,500. Morongo Band of Mission Indians owns and operates a wastewater treatment facility which provides centralized wastewater service to tribal and non-tribal commercial facilities, while all residential homes are currently on septic systems.

It should be noted that part of the western boundary includes small portions of Cherry Valley (0.17 square miles) and the City of Beaumont (0.28 square miles) due to the natural watershed boundary.

2.5.1 Water Demand

Current and projected water demands and supplies for the Region were calculated as part of the *Water Supply Reliability Study (Appendix A)*. Demand projections were estimated using the following two methods, based on planning data available for the purveyors:

- 1) **Banning 2015 UWMP:** Used for Banning demand projections
- 2) **SGPWA 2015 Report on Water Conditions:** Used to estimate 2015 demand for private pumpers
- 3) **SCAG population projections:** Used to generate rates of population growth for estimation of demand projections for non-Banning purveyors

As part of its 2015 UWMP, Banning projected its demands based on SCAG population projections and a demand factor of 220 gallons per capita per day (GPCD), as well as on planned developments. Given that the remaining water purveyors in the Region didn't have demand projections readily available, it was assumed that increases in demand for those service areas would correlate to the SCAG population growth rate.

For the areas within the Region but outside of Banning's service area, the population growth rate was calculated using SCAG population projections for unincorporated Riverside County. The assumed growth rate from 2015 to 2020 is 0.93% per year, from 2020 to 2035 is 1.48% per year, and from 2035 to 2040 is 1.19% per year.

Demand projections were then estimated using existing regional planning documents, the results of which can be seen in **Table 2-4**.

Table 2-4: Water Demand

Water Provider	Annual Demand (AFY)					
	2015 ¹	2020 ²	2025 ²	2030 ²	2035 ²	2040 ²
City of Banning	6,709	10,515	11,320	12,047	12,837	13,629
High Valleys Water District	65	68	73	78	83	88
Cabazon Water District	497	520	558	597	635	673
Banning Heights Mutual Water Company	105	110	118	126	134	142
Morongo Band of Mission Indians	1,750	1,831	1,967	2,102	2,238	2,370
Other Small Users	689	721	774	828	881	933
Region Total	9,815	13,765	14,787	15,778	16,781	17,836

¹ Volumes shown are actual deliveries. 2015 data is from the City of Banning's 2015 UWMP and unverified groundwater production data from the SGPWA 2015 Report on Water Conditions.

² 2020-2040 data is based on the City of Banning's 2015 UWMP and regional growth projections

2.5.2 Imported Water Supply

The Region receives imported water from the SWP via the East Branch Extension, a 33-mile long pipeline conveyance system that includes reservoirs and pump stations. Delivery of SWP supplies began with the completion of Phase 1 of the East Branch Extension in 2003. Phase 2 of the East Branch Extension increases the conveyance capacity to allow for a full allocation of SWP to SGPWA. SWP deliveries are recharged at the Noble Creek Recharge Facility, which is owned and operated by the BCVWD. The Noble Creek Recharge Facility consists of recharge basins overlying the Beaumont Basin, with a capacity of approximately 20,000 AFY.

The SWP is the nation's largest state-built water conveyance system, which includes reservoirs, lakes, and storage tanks; canals, tunnels and pipelines; and pumping and power plants. The source of SWP water is precipitation (melted snow and rainfall runoff) from the Sierra Nevada Mountains of Northern California. Water captured in the Oroville Reservoir travels to the Sacramento-San Joaquin Delta (Delta), which is a network of natural and artificial channels and reclaimed islands at the confluence of the Sacramento and San Joaquin rivers. The Delta forms the eastern portion of the San Francisco Bay estuary, receiving runoff from more than 40% of the state's land area. It is a low-lying region interlaced with hundreds of miles of waterways. From the Delta, the water is pumped into a series of canals and stored in reservoirs, which provides water to urban and agricultural users throughout the San Francisco Bay Area and Central and Southern California. SGPWA, as a SWP contractor, is allocated a "Table A" amount, which specifies the maximum annual amount of water an SWP contractor may request. The SGPWA SWP Table A amount is currently 17,300 AFY. The SWP contracts that were initiated and signed in the 1960's had initial 75-year terms, ending in 2035. Efforts are currently underway to extend the SWP contracts, and it is anticipated that the term of the SWP contracts will be extended to December 31, 2085.

The annual allocation of SWP water to SWP contractors is dependent on several factors and is subject to extreme variability from year to year. The primary factors affecting this supply are the amounts of water in SWP storage at the beginning of the year, hydrology, regulatory and operational constraints, and the total amount of water requested by the contractors.

DWR issues SWP reliability reports every two years to assist SWP contractors with water supply planning. Most recently, DWR released the *State Water Project Final Delivery Capability Report 2015*, which estimated the current and future reliability of SWP delivery capability considering regulatory requirements and the potential impacts of climate change and sea level rise. **Table 2-5** shows the estimates for deliveries of SWP Table A water during average years and a variety of dry year future conditions. Droughts were analyzed by DWR using the historical drought-period precipitation and runoff patterns from 1922 through 2003 as a reference.

DWR has also studied the potential effects of climate change in its analysis of SWP delivery reliability under future conditions. For that report, DWR identified that climate change poses the threat of increased variability in floods and droughts, and that sea level rise complicates efforts to manage salinity levels and preserve water quality in the Delta for urban and agricultural uses.

Table 2-5: Estimated Deliveries of SWP Table A Water (2015)

Hydrological Scenarios	Future Conditions
Long Term Average (1921-2003)	60%
Single Dry Year (1977)	11%
2-Year Drought (1976-1977)	28%
4-Year Drought (1931-1934)	33%
6-Year Drought (1987-1992)	29%
6-Year Drought (1929-1934)	33%

(DWR, 2015)

Article 21 of the SWP contract allows contractors (including SGPWA) to receive additional SWP deliveries during years when excess water is available and delivery of the water does not otherwise interfere with SWP operations. The SGPWA is entitled to purchase additional SWP supplies, pursuant to Article 21, when these conditions are satisfied. Article 21 water is typically only available during the wet months of the year.

SGPWA entered into the Yuba Accord Agreement which allows for the purchase of water from the Yuba County Water Agency through DWR to SWP contractors (including SGPWA) and the San Luis and Delta-Mendota Water Authority. Yuba Accord water comes from north of the Delta, and the water purchased under this agreement is subject to losses associated with transporting it through the Delta. While the amount of this water varies each year depending on hydrologic conditions, the average amount received by SGPWA has been approximately 300 AFY.

SGPWA is also in final negotiations with the San Bernardino Valley Municipal Water District (SBVMWD) to purchase up to 5,000 AFY of Table A water in years SBVMWD declares a surplus. Surplus years are expected every two out of every five years, thus being 2,000 AFY on average.

SGPWA recently approved an agreement with the Antelope Valley-East Kern Water Agency to lease 1,700 AFY for a 20-year period, starting in 2017. This will augment supplemental water supplies significantly, especially during dry years.

SWP supplies intended for use by the San Gorgonio Region are purchased by the City of Banning from SGPWA. SGPWA recharges the purchased untreated imported water into the Beaumont Groundwater Basin on behalf of Banning (**Table 2-6**). Banning accesses this supply through five wells, and three additional wells co-owned with BCVWD. The supply produced from these wells is conveyed into Banning's water supply system through pipelines also owned and operated by Banning. The Region does not directly purchase any treated imported water supply and instead treats imported water in combination with groundwater and local surface supplies. The Beaumont Basin provides local storage for all imported water supplies to those entities with approved storage accounts, including any additional Article 21 water.

Table 2-6: Imported Water Recharged to Beaumont Basin by the City of Banning

Year	Imported Water Recharged (AFY)
2010	1,338
2011	800
2012	1,200
2013	1,200
2014	608
2015	694

(City of Banning, 2015)

2.5.3 Local Surface Water Supply

Surface water flows from the Region's steep mountain areas are intermittent, with runoff only occurring after precipitation in the winter and spring months and during infrequent thundershowers. Streamflow from the San Bernardino Mountains to the north and the San Jacinto Mountains to the south percolates quickly in the sand and gravel of the canyon bottoms and in the San Gorgonio Pass, becoming part of the Region's groundwater supply. A portion of the surface water in the Region is, however, used directly by way of the Whitewater River Flume, while additional infrastructure captures surface water for groundwater recharge.

Whitewater River Flume

The Whitewater River is one of the few perennial surface water sources within the Region. A portion of the natural runoff from the South and East Forks of the Whitewater River is diverted and conveyed approximately 14 miles across the steep mountain slopes in the San Bernardino National Forest. This occurs in a concrete lined flume and steel penstocks through two hydroelectric power plants, historically operated by Southern California Edison (SCE). A map of the Whitewater River Flume is provided in **Figure 2-9**.

Under a 1928 Division of Water Rights determination, SCE, Banning, and BHMWC have rights to divert 13.26 cfs of natural flows from the Whitewater River. Since 1961, the three parties have collectively diverted an average of 1,500 AFY. BHMWC diverts approximately 1,000 AFY of the Whitewater River diversions from the Flume through a pipeline and a storage tank, which is treated at a filtration plant operated by BHMWC. The remainder of the diverted water flows into the San Gorgonio River, where a portion of the natural runoff and the Whitewater River diversions are

diverted into spreading ponds for groundwater recharge in the Banning Bench Storage Unit. It is uncertain exactly how much of the diverted water is currently recharged into the aquifer of the Canyon subunit as the flows are not metered.

Water rights to surface runoff out of the canyons in the San Bernardino Mountains to the Whitewater River watershed have been of concern in the past. BHMWC and Banning jointly have pre-1914 appropriative diversion rights to local surface runoff from the Whitewater Flume, which in the past was operated by SCE as part of a hydroelectric project. SCE ceased to operate the diversion for power generation in 1998 but has continued to allow its use for surface runoff diversion for irrigation and domestic beneficial use by BHMWC and Banning. The Whitewater Flume was damaged in January 2002 from erosion and maintenance challenges, limiting the ability to divert surface flow through a portion of the existing flume. To solve this issue, a temporary diversion and pipeline were created using existing natural channels to convey water to the lower flume. In addition, as part of the long-term ownership and maintenance of the existing flume in conjunction with SCE's surrender of its FERC Power license, SCE, SGPWA, BHMWC, and Banning entered into a four-party agreement to transfer ownership of the Whitewater Flume from SCE to the other three parties. The commitment to repair the diversions and existing conveyance system to maximize use of the existing rights was a component of the transfer agreement.

Stormwater Capture

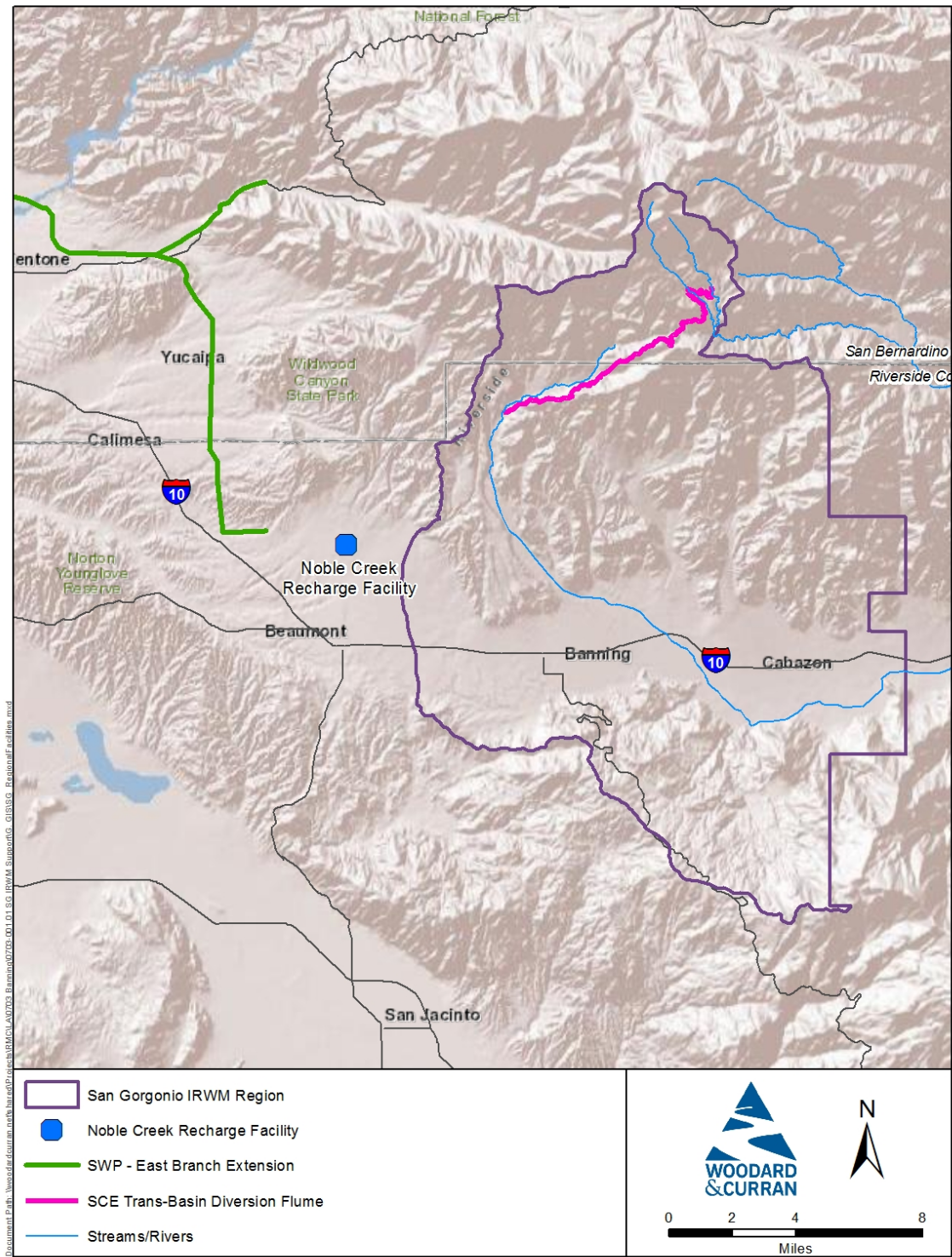
The City of Banning diverts surface water from the San Gorgonio River into percolation ponds located in Banning Canyon to recharge the Banning Bench Storage Unit. As previously described, the flows within the San Gorgonio River at this point include all supplies diverted by Banning from the Whitewater River. The contribution of the percolation ponds to subsurface groundwater flows into the Banning Bench Storage unit is unknown since no meter is currently present at the recharge basins.



Surface water diversion spreading basins along the San Gorgonio River located within Banning Canyon

Additional storm water capture within the Region represents a potential new local water supply. Banning is currently planning to conserve stormwater flows from tributary creeks within its service area to create new supplies of water to meet future needs. Additional stormwater flows can be captured and directed to basins or ponds for recharge of local groundwater basins. Butterfield Ranch and Rancho San Gorgonio are planned developments within the Region, and both developments' Specific Plans incorporate stormwater capture. The *Butterfield Ranch Specific Plan* includes design features that are estimated to capture and recharge approximately 1,370 AFY of stormwater flows from Smith Creek by 2020, and the *Rancho San Gorgonio Specific Plan* includes design features that are estimated to capture and recharge approximately 199 AFY of stormwater at full buildout.

Figure 2-9. Regional Water Supply Infrastructure



2.5.4 Groundwater Supply

The Region overlies the San Gorgonio Pass Groundwater Basin, (also known as the San Gorgonio Pass Subbasin of the larger Coachella Valley Hydrologic Unit, as defined in DWR Bulletin 118). Approximately 15 miles long, the San Gorgonio Groundwater Basin includes five hydraulically-connected ground water storage units: the Banning Storage Unit, the Banning Bench Storage Unit, the Banning Canyon Storage Unit, the Cabazon Storage Unit, and the Beaumont Storage Unit. These storage units are created by geologic faults that form barriers to the lateral movement of groundwater and cause water levels to vary significantly across adjacent Storage Units. Storage unit boundaries have most recently been defined in a 2006 United States Geological Survey report (USGS, 2006). The annual safe yield of storage units within the San Gorgonio Pass Subbasin has been estimated in an additional report published by the City of Banning in 2011 (Banning, 2011). Storage Units within the San Gorgonio Pass Subbasin are shown in **Figure 2-10**.

The Sustainable Groundwater Management Act (SGMA), passed in 2014, requires all groundwater basins in California to be managed sustainably by 2022. The legislation requires that a Groundwater Sustainability Plan (GSP) be prepared by 2022 in those basins the DWR has identified as medium to high priority. Since the San Gorgonio Pass Basin is listed as a medium priority basin, Regional agencies have formed a Groundwater Sustainability Agency (GSA) to manage the Basin under SGMA. The SGIWGM and the associated *SGIWGM Technical Memorandum* completed as part of the IRWM Plan development provides an important step in furthering the GSP development process.

Beaumont Storage Unit

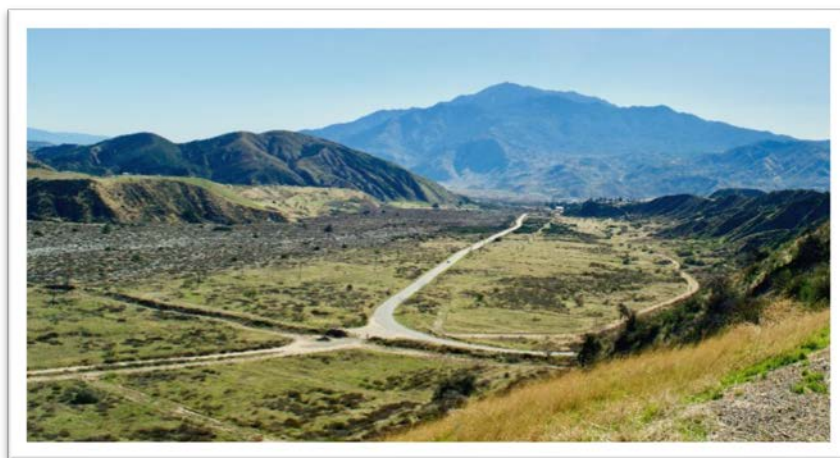
The Beaumont Storage Unit, also referred to as the Beaumont Basin, is located at the western end of the San Gorgonio Pass. A portion of the Beaumont Basin is within the Region, as can be seen in **Figure 2-10**. However, the primary functional storage capacity of the Beaumont Storage Unit underlies the City of Beaumont just outside of the Region. The Beaumont Storage Unit extends across the surface drainage divide between the San Gorgonio River and the Upper Santa Ana River watersheds. Surface runoff from Smith Creek and other areas in the eastern portion of the Beaumont Storage Unit flow east into the San Gorgonio River. The major inflows into the Storage Unit are Edgar, Little San Gorgonio, and Noble Creeks in the San Bernardino Mountains, which flow west into San Timoteo Creek and to the Pacific Ocean by way of the Santa Ana River.

The Beaumont Storage Unit is adjudicated pursuant to the *Stipulation for Entry of Judgement Adjudicating Groundwater Rights in the Beaumont Basin*. The court gave the responsibility of managing the storage unit to a Watermaster Committee, consisting of representatives from each of the five appropriators who serve water demands within the basin. The Watermaster makes an annual determination of the groundwater that each producer is entitled to pump from the Basin without incurring a replenishment obligation. The court initially established a long-term safe yield for the Basin of 8,650 AFY to be distributed among the appropriators. The safe yield was reevaluated by the Beaumont Basin Watermaster in the *2013 Reevaluation of the Beaumont Basin Safe Yield* and revised to 6,700 AFY in 2015. The Watermaster has also approved applications for use of the Basin for storage purposes. Banning is permitted to store up to 80,000 AF of surplus appropriated water within the Beaumont Storage Unit. An application was also approved in 2013 to allow the Morongo Band of Mission Indians to store up to 20,000 AF of imported water in the Beaumont Storage Unit.

Banning pumps water from the Beaumont Storage Unit that was recharged, with imported water purchased from SGPWA, via the BCVWD's Noble Creek spreading facility. This supply is pumped as needed and distributed to customers or sold to other water suppliers within the Region.

Banning Canyon Storage Unit

The Banning Canyon Storage Unit underlies BHMWC and the northernmost portion of Banning. The northern portion of the Banning Canyon Storage Unit is located in the County of San Bernardino. Surface water from the San Gorgonio River percolates rapidly in the alluvial sediments of the Banning Canyon and groundwater levels typically respond rapidly to precipitation events because of the high permeability and limited groundwater storage in this basin. Bedrock in the middle portion of the canyon is located approximately 200 feet below the ground surface.



Banning Canyon and the location of the Banning Canyon Storage Units southern portion

Groundwater from the Banning Canyon Storage Unit flows south across the Banning Fault and into Banning Bench Storage Unit.

When surface flow is present in Banning Canyon, flows are diverted by Banning into off-stream recharge basins to facilitate ground water recharge. The contribution of the infiltration basins to subsurface flow into the Banning Bench SU is

unknown since no meter is currently present at the percolation basins. The safe yield of the Banning Canyon SU is estimated to be 4,070 AFY.

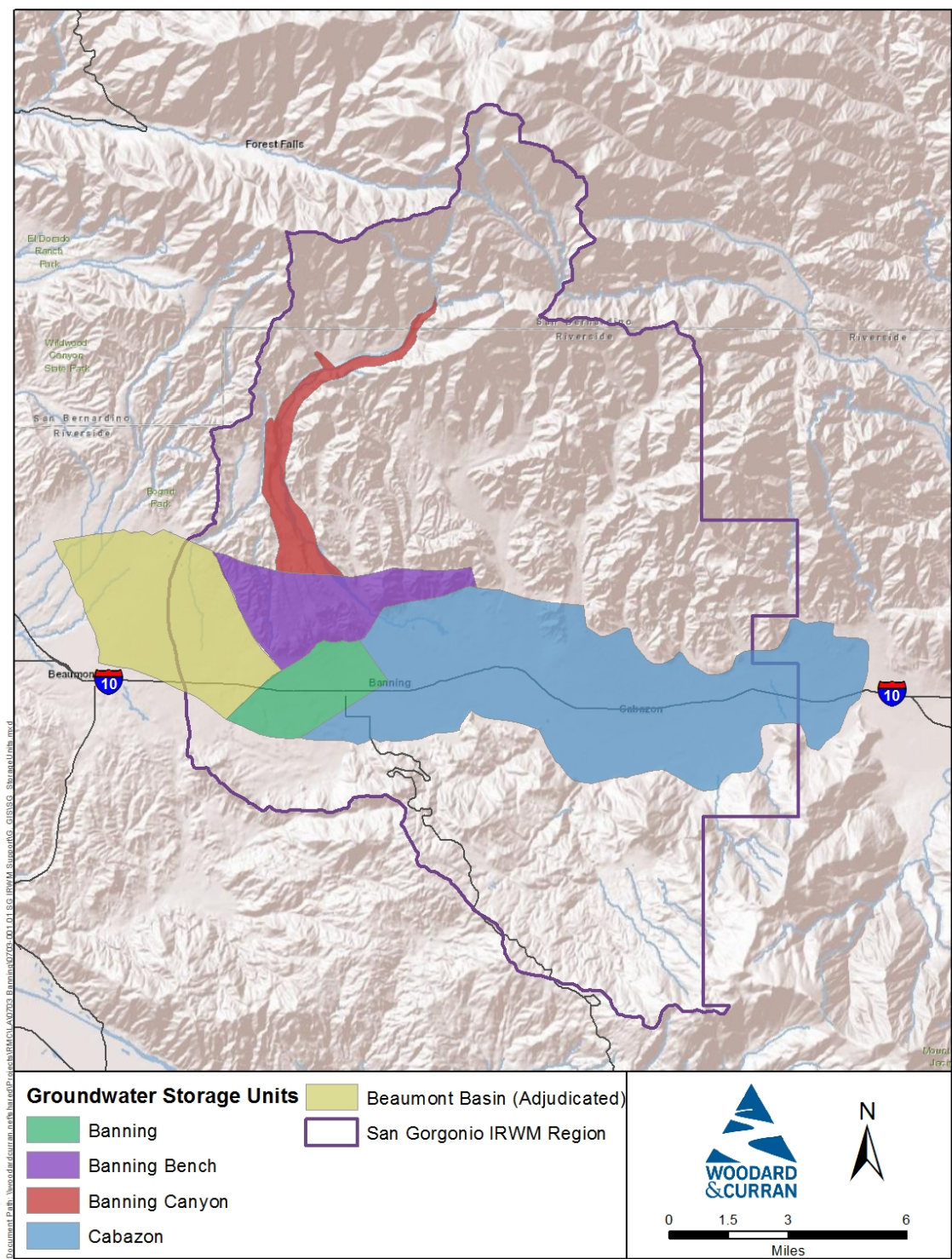
Banning Bench Storage Unit

The Banning Bench Storage Unit is the southernmost storage unit in the Banning Canyon. This storage unit is located north of Banning in an area of alluvial fill distinctly higher than that of the San Gorgonio Pass. The Banning Bench SU is 160 feet high and approximately 1.5 miles wide above the stream channel at the mouth of the San Gorgonio River Canyon. Groundwater in the Banning and Banning Bench Storage Units generally flow southeast into the Cabazon Storage Unit. The Safe Yield of the Banning Bench Storage Unit is estimated to be 1,960 AFY.

Banning Storage Unit

The Banning Storage Unit is located south of the Banning Bench Storage Unit, immediately north and south of I-10 in Banning. This storage unit encompasses approximately 7.6 square miles and serves the area at the base of the Banning Bench and the southern portion of Banning. The estimated safe yield of the Banning Storage Unit is 1,130 AFY. Groundwater from this storage unit tends to flow south into the Beaumont Storage Unit.

Figure 2-10: San Gorgonio Groundwater Basin Storage Units



Cabazon Storage Unit

The Cabazon Storage Unit is bounded on the north by the San Bernardino Mountains and by semi-permeable rocks, and on the south by the San Jacinto Mountains. The eastern boundary is formed by a bedrock ridge that creates a constriction defining the end of the San Gorgonio Pass and the start of the Indio Subbasin. Within the Region, groundwater producers in the Cabazon Storage Unit include Banning, CWD, and MBMI. Other groundwater pumpers outside the Region include the Mission Springs Water District (MSWD) which is essentially within the Coachella Valley IRWM Region.

Total storage capacity of the Cabazon Storage Unit was estimated at 2.2 million acre-feet (MAF) by DWR in 1987. The hydrologic Budget for the Cabazon Storage Unit indicates additional groundwater production can be developed due to a positive change in storage resulting from inflow and outflow factors, including wastewater percolation into the SU. Planned recycled water use for irrigation purposes in the Region would result in a reduction in direct percolation for the Cabazon Storage Unit.

The MWD CRA cuts southwest across the Region, just to the east of Cabazon where it goes from the valley floor into and through Mount San Jacinto and out of the Region. The San Jacinto tunnel, which was constructed in bedrock and is concrete lined, intercepts groundwater draining from the overlying mountain, about 1,500 AFY, and the CRA conveys it out of the area for use by others.

2.5.5 Recycled Water

The California Department of Public Health (CDPH) and the Colorado River RWQCB regulate the use and quality of recycled water in the Region. Title 22, Chapter 4, of the California Code of Regulations establishes recycled water quality standards and treatment reliability criteria dependent upon the end use of recycled water and the need to protect public health. Both secondary and tertiary treated wastewater can meet Title 22 standards dependent upon the end use of the water.

Utilization of recycled water for groundwater recharge is reviewed by CDPH on a case-by-case basis. CDPH requires blending of recycled water with non-recycled water, minimum travel times, and monitoring based on a thorough review of engineering reports. Initial blend requirements typically start at 20% recycled water and 80% non-recycled water for spreading projects. Water recharged in this manner must be retained for a minimum of two months in the ground prior to extraction for drinking water, though this could be longer based on CDPH review.

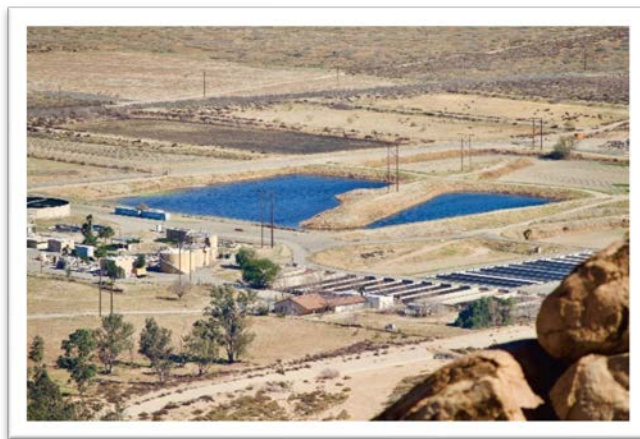
Recycled water is currently not produced or used within the Region. However, previous technical studies have explored the feasibility of using recycled water for irrigation and municipal uses within the region, and the *San Gorgonio Region Recycled Water Study (Appendix B)* was conducted to support goals and strategies identified in this plan through identification of recycled water project options within the Region.

The *San Gorgonio Region Recycled Water Study* evaluated existing data and water plan documents, and then identified potential sources of recycled water that would be available to the region over the planning horizon. Analysis was first conducted to identify potential sources of recycled water and the quantity those sources could provide. Consideration was then given to the potential uses of recycled water within the Region, both non-potable and groundwater recharge.

From these findings, a series of potential projects were identified. The Study roughly estimated project costs and identified next steps for the Region for its planning efforts.

Existing Wastewater Treatment

The City of Banning provides sewer service to the area within the City of Banning and to unincorporated areas of Riverside County that surround the southeast portion of the City. Collected wastewater is conveyed through sewer main lines, which are connected to the larger trunk lines. The trunk lines transport wastewater to Banning's 3.6 mgd WWTP. The effluent is treated to secondary standards and is then discharged to percolation ponds to recharge the Cabazon Storage Unit.



City of Banning WWTP and spreading basins

The Morongo Band of Mission Indians also owns and operates a WWTP designed to treat up to 0.75 mgd per day. The effluent is treated to secondary standards and is then discharged to percolation ponds to recharge the Cabazon Storage Unit.

Planned Recycled Water Facilities

Banning is proposing to expand its WWTP and construct facilities to support planned recycled water use in accordance with Banning's 2006 *Recycled Water Master Plan*. Phase I of the WWTP expansion consists of increasing the treatment capacity from 3.6 mgd to 5.1 mgd and adding tertiary treatment facilities for production of recycled water. Upon completion of Phase I, approximately 1,680 AFY of recycled water will be available to Banning for irrigation use. Banning has a projected recycled water demand of approximately 2,700 AFY for non-potable irrigation.

2.5.6 Regional Water Supply Projections

Table 2-7 summarizes the current and projected supply and demand within the Region under existing conditions and current projections, as identified in the *Water Supply Reliability Study (Appendix A)* completed as part of the overall IRWM Plan preparation process. As shown in the table, it is expected that in 2045, average annual demand may start exceeding average annual supply. Total supply includes imported, groundwater, local surface water, and recycled water.

Table 2-7: Current and Projected Water Supplies (AFY)

	Annual Average AFY					
	2020	2025	2030	2035	2040	2045
Total Demand	13,765	14,787	15,778	16,781	17,836	18,898
Total Supply	21,493	19,882	18,888	18,593	18,298	18,163
Difference (supply minus demand)	7,727	5,095	3,110	1,812	462	-735

2.6 Water Quality

The San Gorgonio Region is noted for its high level of both environmental and drinking water quality. The Region benefits from low levels of urbanization, agriculture, and industrial processing. In addition, the permeability of the overlying soils ensures that pure surface flows running off of open space lands go directly into local groundwater basins, helping to dilute any contaminants that enter the system.

Pollutant loading can come from two types of sources: point sources which are discrete discharges of water and wastes, and non-point sources which are discharges often resulting from anthropogenic land uses such as agricultural applications, atmospheric deposition, or wildlife. In some cases, a non-point source, such as urban runoff, can become a point source when it is collected by a storm drain or other collection system and discharged.

Water quality within the San Gorgonio Region is addressed through several plans, regulations, and guidelines including the 2006 *Water Quality Control Plan: Colorado River Basin- Region 7* (Basin Plan), which includes beneficial use designations and water quality objective standards for prevention of further degradation of impaired waters listed under 303(d) of the Clean Water Act, and Total Maximum Daily Load (TMDL) process.

2.6.1 Beneficial Use

Table 2-8 and **Table 2-9** provide the beneficial uses for individual reaches and groundwater basins as described in Section 2 of the 2006 Basin Plan.

Table 2-8: Beneficial Uses of Surface Water¹

Stream/River	MUN	AGR	AQUA	FRSH	IND	GWR	RECI	RECII	WARM	COLD	WILD	POW	RARE
Azalea Creek	P	X				X	X	X	X	X		X	
Brown Creek	P	I				I	I	I	I		I		
Hathaway Creek	P	X				I	I	I	I		I		
Potrero Creek	P	X				X	X	X	X		X		
San Gorgonio River	P	X				X	X	X		X	X		

Stream/River	MUN	AGR	AQUA	FRSH	IND	GWR	RECI	RECII	WARM	COLD	WILD	POW	RARE
Twin Pines Creek	X	X				X	X	X	X		X		
Whitewater River	X	X				X	X	X	I	X	X	X	

Listing of the beneficial uses is indicated by X for existing uses, P for potential uses, and I for intermittent uses.

MUN = Municipal and Domestic Supply; AGR = Agricultural Supply; AQUA= Aquaculture; FRSH = Freshwater Replenishment; IND = Industrial Service Supply; GWR = Groundwater Recharge; RECI = Water Contact Recreation; RECII = Non-contact Water Recreation; WARM = Warm Freshwater Habitat; COLD = Cold Freshwater Habitat; WILD = Wildlife Habitat; POW = Hydropower Generation; RARE = Preservation of Rare, Threatened, or Endangered Species

¹ Colorado River Basin Regional Water Quality Control Board, 2006

Table 2-9: Beneficial Uses of Groundwater ²

Hydrologic Unit	MUN	IND	AGR
San Gorgonio hydrologic subunit	X	X	X

² Colorado River Basin Regional Water Quality Control Board, 2006

2.6.2 Drinking Water Quality

Water Quality Management

Drinking water resources in the Region are governed by multiple legal, institutional, and regulatory issues and standards. California Title 22 Drinking Water Standards (Title 22) incorporates the federal requirements of the Safe Drinking Water Act, and compliance with Title 22 is required by all water service providers. Therefore, Title 22 monitoring of all regulated chemicals, as well as a number of unregulated chemicals, is conducted by water agencies in the Region. In order to be in compliance with Title 22, each agency must ensure that the regulated chemicals meet established primary drinking water standards to ensure the safety of the water supply. In addition to the primary drinking water standards, secondary drinking water standards have been set for some minerals based on non-health related aesthetics, such as taste and odor. Both primary and secondary standards are expressed as the maximum contaminant levels (MCLs) that are allowable for a given constituent. The *Water Quality Control Plan for the Colorado River Basin- Region 7*, published by the Colorado River Basin Regional Water Quality Control Board (CRBRWQCB) outlines several water quality objectives for surface water sources within the region.

Groundwater Quality

Groundwater quality is dependent upon a number of factors, including the water source, type of water-bearing materials in which the water occurs, water depth, proximity to faults, presence of surface contaminants, and quality of well maintenance. Water quality in the Region has historically been high. There is no known historical industrial or mining activity in the region that has generated harmful plumes of pollutants.

Banning is working with other pumpers in the Beaumont Basin to manage basin supply and quality in the Beaumont Basin Management Zone (BMZ) through the BMZ Maximum Benefits Program. The Maximum Benefits Program is intended to ensure the long-term sustainability of water quality in the BMZ through regional cooperation among Banning, Yucaipa Valley Water District, Beaumont-Cherry Valley Water District, the San Geronio Pass Water Agency, and the City of Beaumont. This program's requirements include conditions for operation of Banning's wastewater treatment plant, including water quality standards for recycled water and for water quality monitoring and reporting, focusing on total dissolved solids.

According to the *City of Banning General Plan*, wells within the Banning Canyon contain a total dissolved solids (TDS) concentration ranging from 185 to 360 milligrams per liter (mg/L). Studies of these wells indicated that water quality is within State limits for all chemical constituents, with the exceptions of calcium and bicarbonate. High bicarbonate levels are typical of runoff from the San Bernardino Mountains. In general, the TDS concentrations are lowest at the head of Banning Canyon at 185 to 200 mg/L. At the Canyon's base and at the valley floor, the TDS concentration range increases slightly to 185 to 360 mg/L.

Nitrates. Another impact on area groundwater is contamination associated with nitrates reaching groundwater basins resulting from long-term discharge at on-lot septic systems. The greatest impacts to groundwater quality are expected to occur where septic systems serve large populations in high densities. Well maintained community sewer systems provide excellent protection of groundwater resources, as they provide for the prompt removal of sewage materials. Scattered residential sites in the Region continue to rely on private septic systems for the disposal of wastewater. Many of these systems will be abandoned over time, as future development occurs and infrastructure is expanded.

Chromium-6. The State of California released a new MCL for hexavalent chromium (also known as "Chromium-6") in drinking water, effective July 1, 2014. Nine of Banning's groundwater wells are impacted by naturally occurring Chromium-6, as well as two wells co-owned with BCVWD. The City has received a variance from the Chromium-6 MCL until year 2020 in order take actions necessary to address the high Chromium-6 concentrations. Banning's *Chromium-6 Compliance Plan*, dated December 2015, involves analysis to determine treatment options and the design and construction of treatment facilities. The SWRCB voted in August 2017 to withdraw the new MCL but anticipates making a recommendation for a new MCL. In the interim, Compliance Plans will no longer be enforced by the Division of Drinking Water. See the SWRCB website on Chromium-6 for additional details.

Arsenic. The region has not experienced, and does not anticipate, issues associated with arsenic.

Perchlorate. The region has not experienced, and does not anticipate, issues associated with perchlorate.

Imported Water Quality

SWP supplies delivered to the SGPWA service area are treated at the Yucaipa Valley Regional Water Filtration Facility. SGPWA samples water quality of SWP supplies at the Devil Canyon sampling station in San Bernardino. According to SGPWA's *2015 Urban Water Management Plan*, SWP water is generally low in dissolved minerals, such as calcium, magnesium, sodium, potassium, iron, manganese, nitrate, and sulfate. The chloride content of SWP water varies from well over 100 (mg/L) to below 40 mg/L, depending on Delta conditions. Salinity of SWP water is

dependent on hydrologic conditions, and during wet years, TDS concentrations are relatively low. This is significant because the ambient salinity concentration of the Beaumont Basin benefits from the recharge of SWP water.

Surface Water Quality

Surface water from the South and East Forks of the Whitewater River is diverted by the Whitewater River Flume at an elevation of about 7,200 feet in a rugged mountainous terrain within the San Bernardino National Forest. The surface water supply is tested for constituents as required by state and federal regulations and is treated by BHMWC for use within its service area. This source of supply is currently of excellent quality, and it is at low risk for contamination due to the location of the diversion and conveyance system.

2.6.3 Environmental Water Quality

The San Gorgonio Region is located within the northwesterly boundary of the Colorado River Hydrologic Region and falls under the jurisdiction of the Colorado River RWQCB Region 7. The RWQCB is charged by the California Water Code with protecting water quality within the Region. The *Colorado River Water Quality Control Plan* (Colorado River Basin Plan) establishes water quality objectives for inland surface waters and groundwater based on their beneficial uses (See **Table 2-8** through **Table 2-9**). The Coachella Valley Planning Area of the Colorado River Hydrologic Region includes the San Gorgonio Hydrologic Subunit of the Whitewater Hydrologic Unit.

Within the Whitewater Hydrologic Subunit, it is necessary for agencies to coordinate their urban runoff management activities to achieve appropriate protection of receiving water quality. The USEPA publishes a list of impaired and threatened waters such as lakes, streams, and rivers. For each water body on the list, the state identifies the pollutant causing the impairment and assigns a TMDL for that pollutant based on the severity of the pollution and sensitivity of the water and water uses. This list of impaired waters is referred to as the 303(d) list.

The Region does not have any 303(d) listed waters; however, surface and groundwater quality are still a concern to the Region's stakeholders. In 2013, the Regional Board issued a Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) municipal stormwater permit to the County of Riverside, RCFCWCD, the Coachella Valley Water District, and ten incorporated cities: Banning, Cathedral City, Coachella, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs, and Rancho Mirage. Banning does not share an interconnected MS4 with the remainder of the permittees and discharges directly into the San Gorgonio River, where most MS4 discharges infiltrate. Rarely and only during significant runoff events, storm drainage may flow as far as the infiltration basins in the upper Coachella Valley upstream of Palm Springs.

2.7 Flood Management

The San Gorgonio Region is characterized by low-lying desert areas and higher elevation mountains. Although there is below average annual precipitation (compared to California as a whole), the annual precipitation is contained within infrequent larger events, resulting in large volume run-off events that flow through the Region. Due to the local geology, soil percolation rates are low in some areas, causing surface flows to build with the potential to create flash

flooding. As a result, there are several “washes” within the region that can convey normal precipitation and flow events and also have the potential to overflow and flood the valley floors.

The *Banning Master Drainage Plan* (MDP) was originally adopted by the RCFCWCD in 1975 and was revised in September 1994. The Banning MDP covers approximately 19 square miles within the City of Banning and surrounding unincorporated County. It is roughly bounded by the San Gorgonio River on the north, Smith Creek on the south, Hathaway Street on the east, and Highland Springs Road on the west.

The Banning area has experienced serious flooding problems in the past. As the area continues to urbanize, potential damages are expected to increase. Thus, the MDP encourages a more orderly growth pattern that can safely incorporate stormwater infrastructure.



A flood control channel in the City of Banning

The MDP has not been fully implemented at this time. Proposed stormwater infrastructure within Banning includes surface drainage structures such as open channels as well as underground storm drains that will convey stormwater to Smith Creek. Stormwater from a 10-year frequency event is planned to be conveyed in roadways where flows will reach the top of curbs and then by underground storm drains. Open channels are sized for a 100-year

storm. Responsibility for flood protection infrastructure has fallen to individual communities and the county. As much of the Region is undeveloped, there is little infrastructure outside of the San Gorgonio Pass area.

Infrastructure to address a 10-year event, the Banning MDP Line D-2 and D-2a, is currently being constructed within the IRWM boundary. The Notice to Proceed was issued to the contractor on May 15, 2017, and it is anticipated to be completed in early 2018. Line D-2 is over a mile of storm drain in Hargrave Street and Line D-2a is approximately 600 feet in Theodore Street (see Figure 2-12 of the *Banning Master Drainage Plan*, green line). This project will address flooding concerns in the area.

The Federal Emergency Management Agency (FEMA) designates areas of high risk of flooding as Special Flood Hazard Areas (SFHA). These areas are subject to flooding during a 100-year storm event and are mapped in FEMA Flood Insurance Rate Maps (FIRM) as Zone A. These flood zones have been mapped for the Region and are shown in **Figure 2-11**.

In 2015, the RCFCWCD reconstructed portions of the existing Gilman Home Channel in the City of Banning. The new facility consists of an underground storm drain sized to convey 100-year storm flows from George Street to the existing facility at Williams Street. As part of this project, RCFCWCD has been processing a Letter of Map Revision from FEMA to revise the 100-year floodplain in that area. Once the mapping revision goes into effect, it will remove approximately 200 parcels from the FEMA Zone A floodplain.



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3. Goals and Objectives

This chapter outlines several water resources related goals for the San Gorgonio IRWM Region. The goals were developed to address regional needs and challenges identified by the RWMG and SAC. The Region also established measurable objectives to provide a pathway toward meeting the established regional goals as well as performance measures that can be used to gauge the Region's success in meeting its objectives.

3.1 Development of Goals and Objectives

The goals and objectives for the San Gorgonio IRWM Plan were developed by the RWMG with input and participation from the Region's stakeholders over the course of several SAC workshops during the development of this IRWM Plan. An initial workshop was focused on defining water management needs, issues, and challenges for the Region. The needs were informed by the technical data, plans, and studies used to develop the San Gorgonio IRWM Plan discussed in **Section 1.2**, as well as by the three stand-alone water resources planning efforts approved as part of the San Gorgonio Region's Proposition 1 Planning Grant, as discussed in **Chapter 1**.

Based on the identified needs, issues, and challenges, the RWMG drafted regional goals and objectives which were discussed and refined by the SAC. An additional climate change objective was later recommended by the SAC and included by the RWMG to address the regional climate change vulnerabilities that were later identified. Each of these workshops was open to the public and those in attendance benefited from the knowledge, values, and experience of the Region's stakeholders.

The goals and objectives described for the San Gorgonio Region are shown in **Table 3-1**. The goals have been defined by the RWMG as general statements of purpose, and the objectives are defined as measurable actions that can be taken to meet the associated goal. A total of 10 goals and 17 objectives were established for the IRWM Plan. This broad set of goals and objectives addresses the challenges, needs, and vulnerabilities for the San Gorgonio Region in the areas of water supply, water quality, flood management, habitat and open space, DACs, and climate change.

3.2 Challenges, Needs, and Vulnerabilities

Below is a discussion of the challenges, needs, and vulnerabilities that form the foundation for the San Gorgonio Region's goals and objectives within the areas of water supply, water quality, flood management, habitat and open space, DACs, and climate change. As additional data is collected through regional planning efforts described later in Section 6.4, these challenges, needs, and vulnerabilities may be updated.

Table 3-1: Organization of Goals and Objectives

Goals		Measurable Objectives	
Water Supply			
Goal 1: Increase regional supply availability and reliability	Objective 1A: Implement regional recycled water projects within the Region and support local recycled water projects.		
	Objective 1B: Support affordable investments and agreements between local and external agencies to enhance the reliability of imported water throughout the Region.		
	Objective 1C: Maximize the use of groundwater supplies, including local storage of imported water.		
	Objective 1D: Implement appropriate regional demand management, water loss reduction and other conservation programs.		
Goal 2: Improve resilience of regional water distribution systems	Objective 2A: Implement regional infrastructure projects to increase distribution capacity, flexibility and redundancy.		
	Objective 2B: Form agreements between local and external agencies to support regional supply systems, conservation programs and emergency response.		
	Objective 2C: Support projects to increase resilience and redundancy of local production and distribution facilities.		
Goal 3: Develop useable tools to understand hydrologic processes and regional management	Objective 3: Build an integrated ground and surface water model for all subbasins within the San Gorgonio Groundwater Basin for use in determining available surface water supplies, groundwater basin functionality, storage potential and recharge project feasibility.		
Water Quality			
Goal 4: Decrease impacts to groundwater quality	Objective 4A: Reduce use of septic systems by expanding centralized collection and treatment systems.		
	Objective 4B: Increase monitoring of existing septic areas and enforcement of monitoring protocols.		
Goal 5: Increase resilience to changing water quality requirements	Objective 5: Remain engaged across the changing legal, institutional, and regulatory framework affecting drinking water standards.		
Flood Management			
Goal 6: Enhance regional flood control infrastructure	Objective 6A: Reduce properties subject to flood hazard insurance.		
	Objective 6B: Enhance regional multipurpose, multiple benefit stormwater management infrastructure.		
Habitat and Open Space			
Goal 7: Protect aquatic and riparian habitat	Objective 7: Provide continued protection consistent with the Western Riverside and Coachella Valley MSHCPs.		
Disadvantaged Communities			
Goal 8: Support DACs and maintain the affordability of water	Objective 8: Seek funding opportunities to ensure all communities have access to a reliable water supply and adequate wastewater treatment.		
Goal 9: Support the economic vitality of DACs	Objective 9: Support projects to provide safe, sustainable and livable communities and to promote future economic development of local DACs.		
Climate Change			
Goal 10: Adaptation to Climate Change	Objective 10: Implement multi-benefit strategies that reduce GHG emissions and adapt to climate change in the areas of flood management, water supply, water quality, water-dependent habitat, and fire risk.		

3.2.1 Water Supply

The San Gorgonio IRWM Region receives imported water from the Delta through the SWP. The availability of this supply is highly variable and there are current challenges to the system's overall sustainability given Bay Delta environmental protections. Climate change also poses long-term threats to the SWP supply as a result of reduced Sierra Nevada snowpack, loss of natural water storage, and sea level rise that increases the potential for levee failures and water quality impairments.

Although the Region benefits from the SWP supply, a connection to or discharge point from the SWP does not exist within the boundaries of the Region. The East Branch Extension of the California Aqueduct, a 33-mile long pipeline conveyance system, brings SWP supply as far east as the Beaumont Basin but does not physically deliver water into the San Gorgonio Region. SGPWA supplies imported water to the Region by recharging the Beaumont Basin. Those supplies are pumped by the City of Banning to serve customers within the Region. This lack of a direct connection to the Region limits the ability of imported water to be a resource for meeting future regional demands for areas such as Cabazon, High Valleys, and the Morongo Band of Mission Indians Reservation. Being at the end of the SWP system also creates emergency reliability concerns. The East Branch Extension is located in a densely-faulted area with high seismic activity from the San Andreas Fault System and therefore has the highest potential for a seismic event that could interrupt SWP service.

Locally, there is limited understanding as to the extent of the reliability of local surface and groundwater supplies in the region. During extended dry periods, regional demands can greatly exceed the availability of surface water intended for diversion or recharge and storage. This results in declining groundwater levels until wet years replenish the basins. Although there have been no major shortages of supplies within the Region historically, there is concern that changes in local flows, increased demands, and imported water availability would impact the water supply.

In addition, differences in groundwater levels and flows are difficult to understand and map given the fractured fault system within the San Gorgonio Pass. Effective water resources planning and management in accordance with SGMA will require a more comprehensive understanding of groundwater basin function.

3.2.2 Water Quality

The vast majority of drinking water in the San Gorgonio Region is from local groundwater. Water quality challenges for the Region are primarily focused on protecting the high quality of existing groundwater resources from emerging sources of contamination, as well as some localized groundwater quality issues. The greatest impacts to groundwater quality within the Region are expected to be from nitrates reaching groundwater basins as a result of long-term discharges from septic systems. If properly designed, constructed and maintained, septic systems can provide long-term, effective treatment of household wastewater in low density rural areas without alternative centralized wastewater treatments systems. The primary potential impacts to the Region are from areas where septic systems serve large and densely populated areas.

Additional water quality concerns in the Region include low levels of Chromium-6, a heavy metal that occurs naturally within the Region from the erosion and oxidation of ultra-mafic igneous rocks. In 2014, the California State Water Resources Control Board set a new MCL for Chromium-

6 at 10 parts per billion (ppb), resulting in exceedances in City of Banning wells and wells co-owned by Banning and the BCWD, all of which were within the range of 10 ppb and 25 ppb. The new MCL limit was contested, and in 2017 the SWRCB voted to remove the proposed standard and revert to the previous standard. It is possible that these limits will be revisited by the SWRCB in the future, and the compliance scenarios developed by Banning may be required.

3.2.3 Flood Management

Storm runoff from the San Bernardino Mountains and surrounding foothills can cause infrequent yet high volume flows along the San Gorgonio River system. The natural drainage system is designed to accommodate and adjust to these processes. There are several “washes” within the Region that can convey normal precipitation and flow events but also have the potential to overflow and flood the valley floors. Urbanization has modified watershed characteristics, including original runoff and sediment transport patterns, through the construction of impervious areas and artificial drainage structures.

Existing communities within the Region are subject to unconfined flooding and debris flows from the local mountain watersheds. The San Gorgonio River Watershed is part of a narrow, steep mountain pass, and fires along the mountainous slopes can create significant debris hazards for downstream communities. Generally, most of the flood control infrastructure in the Region provides protection from 100-year floods; so residential, commercial, and industrial areas could be subject to flooding in larger storms. Some residents in the Region whose properties are subject to flooding are required to have flood insurance.



Local flood control channel

3.2.4 Habitat and Open Space

Water within the Region has many beneficial uses including the contribution and support of wildlife habitat, rare species, and wetland ecosystems within the San Bernardino National Forest, and in areas along the San Gorgonio River. Habitat planning work through the Western Riverside County and Coachella Valley MSHCPs indicates that there are ample areas within the Region for native habitat. Development that occurs without consideration of habitat can cause habitat degradation and lead to the establishment of invasive species which adversely impact the hydrology, diversity, and ecological function of the riparian habitats. As the Region continues to develop, it will be important to protect and preserve existing habitat areas and the water that they depend upon.

3.2.5 Disadvantaged Communities

As described in **Chapter 2**, the Region’s residential areas are all categorized by the State of California as DACs, including tribal DACs. As a result, water supplies within the Regional DACs must be affordable, accessible, and in compliance with state and federal requirements to meet the needs of DACs. Many DACs within the Region are in rural and remote areas, creating challenges in finding affordable ways to maintain and/or improve reliable water supplies.

3.2.6 Climate Change

Climate change refers to decades long changes in the Earth’s climate as a result of elevated levels of greenhouse gases (GHG). A climate change vulnerability assessment for the San Geronio IRWM Region was conducted as part of the IRWM Plan development. The potential impacts are described on a regional and statewide level.

Projected Regional Climate Change Impacts

The San Geronio Region is small, and few climate impact studies apply specifically to the Region and its boundary. When possible, information specific to the Region was used, such as outputs for the San Geronio River Watershed from the Cal-Adapt website (<http://cal-adapt.org/>), developed by the California Energy Commission Public Interest Energy Research Program (PIER). Additional resources include climate change impact studies of nearby watersheds, such as the *2013 Santa Ana Watershed Basin Study* completed by USBR in collaboration with SAWPA. Where information on regional impacts was not available, state wide or larger regional data were used, such as those used in the State of California’s *Third Climate Change Assessment* or DWR’s *State Water Project Final Delivery Capability Report 2015*. The projected climate change impacts for the San Geronio Region are provided in **Table 3-2**.

Table 3-2: Projected Regional Climate Change Impacts

Climate Variable	Change
Temperature ¹	<ul style="list-style-type: none"> • Increase in average temperature of 2°F- 4°F by 2050 and 5°F-10°F by 2100 • Extreme heat days ($\geq 96.7^{\circ}\text{F}$) increase by more than 30 days/year by 2100
Precipitation ¹	<ul style="list-style-type: none"> • On average, projections show little change in total annual precipitation • Significant reduction in mountain snowpack, with precipitation falling as rain
Wildfire Risk ¹	<ul style="list-style-type: none"> • Slight increase in wildfire risk
Surface Water ²	<ul style="list-style-type: none"> • Projected changes in precipitation patterns and increases in temperature will decrease natural recharge throughout the basin
Groundwater	<ul style="list-style-type: none"> • Decrease in natural groundwater recharge² • Decreased SWP imports will decrease regional groundwater recharge³
Flooding ²	<ul style="list-style-type: none"> • 200-year flood event likely to replace 100-year flood event as a standard of measure

¹ Cal-Adapt, 2017

² USBR, 2013

³ DWR, 2015

Projected Statewide Climate Change Impacts

Since the Region receives imported SWP supplies, potential climate change impacts to the SWP system threaten the availability of imported water for the Region. In the Sierra Nevada Mountains (the source of SWP supplies), snowpack quantity is projected to decrease as there is a shift towards increased winter precipitation in the form of rain rather than snow. The timing of snowmelt runoff is also expected to shift as flows increase in the winter and decrease in the late spring and early summer. This change in timing is expected to impact flood control dam functionality and could decrease overall reservoir storage throughout the year and reduce the reliability of SWP water supply. Sea level rise also complicates efforts to manage salinity levels and preserve water quality in the Delta for urban and agricultural uses. DWR's *State Water Project Final Delivery Capability Report 2015* estimates that climate change could result in a 25% decrease in SWP supply by 2040. This decrease in supply will directly affect the amount of SWP water that can be delivered to the Beaumont Basin, which is a critical water source for the Region.

Vulnerability Sector Assessment and Prioritization

In order to identify the potential vulnerabilities to the Region's water resources as a result of the anticipated climate change impacts, the SAC conducted a climate change workshop as part of the IRWM Plan development. The vulnerabilities were then prioritized to identify strategies and projects that would most effectively adapt to and mitigate against climate change. "Adaptation" refers to adjustment to the effects of the changing climate by addressing areas of vulnerability, while "mitigation" refers to the reduction of emissions that contribute to climate change.

The State of California's *2011 Climate Change Handbook for Regional Water Planning* was used as guide to facilitate the SAC workshop assessment. The handbook provides quantitative tools for assessing the vulnerability of a watershed or region to climate change and techniques for addressing climate change adaptation and mitigation in a regional and watershed planning process.

The vulnerability issues prioritized by the SAC are described in **Table 3-3**. Based on the feedback from the stakeholders in the Region, all vulnerabilities are considered a priority but some were assigned as a higher priority level.

Table 3-3: Climate Change Vulnerability Issues for San Gorgonio Region

Vulnerability Issue		Description	Priority Level
Water Demand			
Increase in crop demand		There is a projected increase in regional water demands from new climate sensitive crops.	Priority
Decreased ability to use groundwater storage to buffer drought		The groundwater table has historically decreased during dry and normal year periods and has been replenished in wet years. More frequent and severe droughts from climate change could reduce opportunities to recharge the Region's groundwater basins.	Priority

Vulnerability Issue	Description	Priority Level
Limited ability to conserve further	The Region responded well to conservation mandates during the last drought. Hardening of demand could make the Region vulnerable to future droughts.	Priority
Limited ability to meet future demand	The area is characterized by high summer and low winter use. Higher temperatures create potential for increasing future peak summer and annual demands.	Highest Priority
Water Supply		
Decrease in local surface supply	A recent analysis of climate change and water supply in the Santa Ana River Watershed recently concluded that surface water supplies are likely to decrease.	Highest Priority
Decrease in groundwater supply	Changes in runoff patterns will impact the Region's ability to access and store water in local groundwater basins.	Highest Priority
Decrease in imported supply	Imported water reliability from the SWP could be reduced by 25% due to sea level rise as a result of climate change.	Highest Priority
Water Quality		
Increase in treatment needs and costs	Increased wildfires and erosion could impact water quality in surface water facilities such as the Whitewater Flume.	Priority
Flooding		
Increase in inland flooding	It is projected that floods will be more severe in the future. There are some places in the Region where the flood control infrastructure has been insufficient in extreme flood events, and most flood control infrastructure provides protection from 100-year events.	Priority
Increase in flood hazards	The San Geronio Watershed is part of a narrow, steep mountain pass. Potential increases from fires along the mountainous slopes can create significant debris hazards for downstream communities.	Priority
Ecosystem and Habitat		
Increased impacts to water dependent species	Water dependent species are expected to be affected by erosion and shifts in sedimentation. Seasonal high and low flows are also likely to shift, impacting species reliant on seasonal freshwater flow.	Priority
Decrease in available necessary habitat	Threatened species identified in the Coachella Valley and Western Riverside County MSHCPs have a lowered capacity to adapt to climate change.	Priority

Vulnerability Issue	Description	Priority Level
Hydropower		
Decrease in hydropower potential	There is potential for future use of hydropower generation from the Whitewater Flume, which could be affected by changing runoff patterns.	Priority

3.3 Goals and Objectives

Below is a summary of the goals and objectives for the San Gorgonio Region. The goals were defined as general statements of purpose, and the objectives were defined as measurable actions taken to achieve the associated goal. There are a total of 10 goals and 17 objectives within the IRWM Plan. This broad set of goals and objectives addresses the issues, needs, and challenges for the San Gorgonio Region in the areas of water supply, water quality, flood management, habitat and open space, DACs, and climate change.

The objectives standard in the 2016 IRWM Guidelines requires that objectives be measurable. A measurable objective means there is a metric the RWMG can use to determine if the objective is being met as the IRWM Plan is implemented. Many of the metrics directly apply to the results of projects that are implemented to support IRWM Plan objectives.

The goals and objectives include a list of qualitative performance measures identified for the San Gorgonio IRWM Plan. Performance measures for each of the 17 objectives help the Region measure progress in meeting its objectives, and ultimately in achieving its goals. Note that the measurement standards provided in **Table 3-4** through **Table 3-13** are intended to be examples and are not inclusive of all measures that could potentially be used.

3.3.1 Goal #1: Increase Regional Supply Availability and Reliability

A reliable water supply is necessary to protect the economic vitality of the Region and meet anticipated needs of the Region's population. As water demand grows in the Region, water supplies to the Region (specifically imported water supplies) are becoming less reliable. The first goal focuses on the need to maintain and improve regional water supply reliability, reduce dependency on imported water from the Delta, protect communities from extended droughts, and address the needs for adaptation to the potential water supply impacts of climate change including sea level rise.

The stakeholders in the San Gorgonio Region have identified a number of objectives to increase water supply availability and reliability. These include implementing recycled water projects that provide regional water supply benefits, further diversifying the Region's water portfolio, expanding infrastructure to maximize groundwater storage through recharge of imported water and the capture and storage of stormwater, and reducing the Region's potable water consumption through water use efficiency. Measurable objectives established for this goal are provided in **Table 3-4**.

Table 3-4: Objectives and Performance Measures for Goal #1

IRWM Plan Objectives	Performance Measure
Objective 1A: Implement regional recycled water projects within the Region and support local recycled water projects.	Number of recycled water projects implemented and/or AFY of recycled water recharged or delivered within the Region as reported in UWMPs or other project documentation.
Objective 1B: Support affordable investments and agreements between local and external agencies to enhance the reliability of imported water throughout the Region.	Number of implemented transfers and agreements planned and/or AFY water delivered to water providers within the Region as reported in UWMPs.
Objective 1C: Maximize the use of groundwater supplies, including local storage of imported water.	Number of implemented projects, the AFY of additional groundwater recharge, and/or AFY of groundwater production as reported in UWMPs or Annual Watermaster Reports.
Objective 1D: Implement appropriate regional demand management, water loss reduction and other conservation programs.	Number of water conservation programs implemented or GPCD savings as reported in the UWMPs.

3.3.2 Goal #2: Improve resilience of regional water distribution systems

With the expansion of the Region's water supply portfolio, it will be necessary to match the supply and treatment level of water resources to their uses and water quality demands. The second goal focuses on agreements and infrastructure investments to provide flexibility in the regional distribution system operations in response to seismic disturbances and other emergency interruptions. It also addresses geographic differences in water supply reliability, including access to reliable sources of imported water. Measurable objectives established for this goal are provided in **Table 3-5**.

Table 3-5: Objectives and Performance Measures for Goal #2

IRWM Plan Objectives	Performance Measure
Objective 2A: Implement regional infrastructure projects to increase distribution capacity, flexibility and redundancy.	Number of implemented projects that increase capacity of regional infrastructure and/or cfs of increased capacity as reported in UWMPs or other project documentation.
Objective 2B: Form agreements between local and external agencies to support regional supply systems, conservation programs and emergency response.	Number of implemented regional supply, conservation and emergency response agreements and/or

IRWM Plan Objectives	Performance Measure
	referenced AFY provided as reported in the UWMPs or other project documentation.
<i>Objective 2C: Support projects to increase resilience and redundancy of local production and distribution facilities</i>	Number of implemented projects that increase reliability of local production facilities and/or AFY served with improved reliability as reported in UWMPs or other project documentation.

3.3.3 Goal #3: Develop useable tools to understand hydrologic processes and regional management

The third goal focuses on developing tools that increase scientific knowledge and understanding of water management issues and effects of water management actions in the San Gorgonio Pass Groundwater Basin. An integrated groundwater model for the Region would combine and expand existing surface and groundwater models into a single numerical model of the areas of the San Gorgonio Pass Groundwater Basin. Such tools would be important in determining availability of surface water supplies under historical conditions as well as climate change conditions, understanding groundwater basin functionality and groundwater storage potential, and planning the location and feasibility of recharge projects for surface, imported, and recycled water within the region. Measurable objectives established for this goal are provided in **Table 3-6**.

Table 3-6: Objectives and Performance Measures for Goal #3

IRWM Plan Objectives	Performance Measure
<i>Objective 3: Build an integrated ground and surface water model for all subbasins within the San Gorgonio Groundwater Basin for use in determining available surface water supplies, groundwater basin functionality, storage potential and recharge project feasibility.</i>	Delivery of the expansion of existing models to include the entire San Gorgonio Groundwater Basin and the use of integrated models in planning documents that manage groundwater resources such as GSPs

3.3.4 Goal #4: Decrease impacts to groundwater quality

The fourth goal focuses on protecting local groundwater quality in order to ensure water supply reliability and availability and to protect human health. Flows from septic systems have the potential to add nitrates or other contaminants to the local groundwater basin. Reducing use of septic systems by expanding centralized collection and converting to sewer systems can reduce pollutant concentrations of organics but not minerals in groundwater. Continued and increased monitoring of existing septic areas and enforcement of monitoring protocols can also provide water quality and reliability benefits, particularly in rural areas and DACs where sewer collection

systems are not currently feasible. Measurable objectives established for this goal are provided in **Table 3-7**.

Table 3-7: Objectives and Performance Measures for Goal #4

IRWM Plan Objectives	Performance Measure
<i>Objective 4A: Reduce use of septic systems by expanding centralized collection and treatment systems.</i>	Number of septic systems upgraded and/or the AFY of wastewater diverted from a septic to a centralized system as documented in UWMPs or other project documentation.
<i>Objective 4B: Increase monitoring of existing septic areas and enforcement of monitoring protocols.</i>	Number of implemented monitoring programs and/or the number of septic systems improved through those programs.

3.3.5 Goal #5: Increase resilience to changing water quality requirements

The fifth goal focuses on ensuring compliance with MCLs protecting local groundwater in the State of California. The detection of Chromium 6 in groundwater supplies has raised concerns over the reliability of those supplies and has pointed to the need to monitor for, and potentially mitigate, changes in statewide drinking water standards. In the event new standards are adopted, the Region fully intends to take steps to provide water with levels at or below the MCL. Measurable objectives established for this goal are provided in **Table 3-8**.

Table 3-8: Objectives and Performance Measures for Goal #5

IRWM Plan Objectives	Performance Measure
<i>Objective 5: Remain engaged across the changing legal, institutional, and regulatory framework affecting drinking water standards.</i>	Continued compliance with State and Federal drinking water regulations and standards.

3.3.6 Goal #6: Enhance regional flood control infrastructure

The sixth goal focuses on enhancing regional flood control infrastructure through a watershed-wide approach in order to reduce flood risk and ensure community health and safety, while also increasing the potential for other benefits such as water quality, water supply, and habitat enhancement. Flood control infrastructure, including multi-purpose, multi-benefit, stormwater management projects are necessary to provide safe, sustainable and livable communities. Projects focused on reducing the risk of flooding within the Region can be focused on areas designated as

high risk under FEMA’s Flood Insurance Rate Maps. Measurable objectives established for this goal are provided in **Table 3-9**.

Table 3-9: Objectives and Performance Measures for Goal #6

IRWM Plan Objective	Performance Measure
<i>Objective 6A: Reduce properties subject to flood hazard insurance.</i>	Number of implemented flood projects or practices, and/or the number of structures or total area removed from flood hazards areas as documented in reduction analysis results.
<i>Objective 6B: Enhance regional multipurpose, multiple benefit stormwater management infrastructure.</i>	Number of flood management projects implemented in Region with multiple benefits.

3.3.7 Goal #7: Protect aquatic and riparian habitat

The seventh goal focuses on preserving the environmental health of the Region’s watersheds, ecosystems, and natural resources. The Region’s water resources planning must include considerations for the habitat that is also dependent upon how supply is managed. Objectives to both protect and enhance existing habitat areas as well as to create new areas have been developed as part of the Western Riverside County and Coachella Valley MSHCPs. Measurable objectives established for this goal are provided in **Table 3-10**.

Table 3-10: Objectives and Performance Measures for Goal #7

IRWM Plan Objective	Performance Measure
<i>Objective 7: Provide continued protection consistent with the Western Riverside and Coachella Valley MSHCPs.</i>	Number of projects implemented to protect, improve, enhance, and/or restore the Region's ecological resources.

3.3.8 Goal #8: Support DACs and maintain the affordability of water

The eighth goal focuses on supporting access to affordable water and wastewater resources projects for the many DACs within the region, particularly those areas that may face future water quality challenges or water reliability challenges due to insufficient infrastructure. The Region can help DACs by providing technical guidance, financial or staff resources to develop water resources related projects, or help to develop partnerships and funding for projects. Measurable objectives established for this goal are provided in **Table 3-11**.

Table 3-11: Objectives and Performance Measures for Goal #8

IRWM Plan Objective	Performance Measure
<i>Objective 8: Seek funding opportunities to ensure all communities have access to a reliable water supply and adequate wastewater treatment.</i>	Number of grant proposals submitted by and on behalf of DACs, and/or amount of funds received that directly benefit DACs within the Region.

3.3.9 Goal #9: Support the economic vitality of DACs

Effective water resources management is critical to the economic, social, and environmental stability of the DACs within the Region. Measurable objectives established for this goal are provided in **Table 3-12**.

Table 3-12: Objectives and Performance Measures for Goal #9

IRWM Plan Objective	Performance Measure
<i>Objective 9: Support projects to provide safe, sustainable and livable communities and to promote future economic development of local DACs.</i>	Number of implemented projects with DAC benefits within the Region.

3.3.10 Goal #10: Adaptation and Mitigation to Climate Change

Given climate change vulnerabilities to the Region's water resources, stakeholders have identified the need to take actions within the watershed to adapt to climate change impacts such as changes in the amount, intensity, timing, and quality and variability of runoff and recharge within the Region. The Region also acknowledges the need for the use of renewable energy and opportunities to reduce carbon emissions or sequester carbon and encourages projects and future Region activities to use renewable energy sources and low energy options when feasible. Additionally, reductions in potable water consumption decrease the dependency on imported supplies which will reduce the energy required to transport and pump water through the SWP leading to GHG emission reductions. Water efficiency improvements and reductions in energy consumption and GHG emissions incorporate strategies adopted by the California Air Resources Board AB 32 Scoping Plan. Considering the potential impacts in the Region's water resource management decisions now will allow the Region to better respond to future impacts to its water resources. Measurable objectives established for this goal are provided in **Table 3-13**.

Table 3-13: Objectives and Performance Measures for Goal #10

IRWM Plan Objective	Performance Measure
<i>Objective 10: Implement multi-benefit strategies that reduce GHG emissions and adapt to climate change in the areas of flood management, water supply, water quality, water-dependent habitat, and fire risk.</i>	Number of implemented projects that promote mitigation and/or adaptation strategies with multiple benefits.

3.4 Objective Prioritization

The SAC was asked to provide a recommendation to the RWMG for prioritizing the objectives in accordance with DWR Plan guidance. Based on the feedback from SAC members, the RWMG decided that all objectives are at the same priority level for the Region. Although the RWMG prioritized all objectives, those that relate to water supply are of immediate (2018) interest for the Region due to several factors such as anticipated population growth and climate change concerns.

3.5 Conformance of Plan Objectives with Statewide Priorities

The 2016 DWR IRWM Guidelines require that the IRWM Plan consider overarching goals of the Colorado River Basin Plan, the recommendations from CWP Update 2015, statewide water efficiency goals, the requirement of the IRWM Planning Act, and SGMA. **Table 3-14** provides the resulting correlation between the San Gorgonio IRWM Plan objectives and statewide priorities from the California Water Plan Update 2015.

Table 3-14: IRWM Plan Objectives and Statewide Priorities

Statewide Priorities	IRWM Plan Objectives
Make Conservation a California Way of Life	<ul style="list-style-type: none"> • Objective 7: Provide continued protection consistent with the Western Riverside and Coachella Valley MSHCPs.
Increase Regional Self-Reliance and Integrated Water Management Across All Levels of Government	<ul style="list-style-type: none"> • Objective 1A: Implement regional recycled water projects within the Region and support local recycled water projects. • Objective 1B: Support affordable investments and agreements between local and external agencies to enhance the reliability of imported water throughout the Region. • Objective 1C: Maximize the use of groundwater supplies, including local storage of imported water. • Objective 1D: Implement appropriate regional demand management, water loss reduction and other conservation programs. • Objective 2A: Implement regional infrastructure projects to increase distribution capacity, flexibility and redundancy.

Statewide Priorities	IRWM Plan Objectives
	<ul style="list-style-type: none"> • Objective 2B: Form agreements between local and external agencies to support regional supply systems, conservation programs and emergency response. • Objective 2C: Support projects to increase resilience and redundancy of local production and distribution facilities • Objective 3: Build an integrated ground and surface water model for all subbasins within the San Gorgonio Groundwater Basin for use in determining available surface water supplies, groundwater basin functionality, storage potential and recharge project feasibility.
Achieve the Co-Equal Goals for the Delta	<ul style="list-style-type: none"> • Objective 1C: Maximize the use of groundwater supplies, including local storage of imported water. • Objective 1D: Implement appropriate regional demand management, water loss reduction and other conservation programs. • Objective 2B: Form agreements between local and external agencies to support regional supply systems, conservation programs and emergency response.
Protect and Restore Important Ecosystems	<ul style="list-style-type: none"> • Objective 7: Provide continued protection consistent with the Western Riverside and Coachella Valley MSHCPs.
Manage and Prepare for Dry Periods	<ul style="list-style-type: none"> • Objective 1A: Implement regional recycled water projects within the Region and support local recycled water projects. • Objective 1B: Support affordable investments and agreements between local and external agencies to enhance the reliability of imported water throughout the Region. • Objective 1C: Maximize the use of groundwater supplies, including local storage of imported water. • Objective 1D: Implement appropriate regional demand management, water loss reduction and other conservation programs. • Objective 2B: Form agreements between local and external agencies to support regional supply systems, conservation programs and emergency response. • Objective 3: Build an integrated ground and surface water model for all subbasins within the San Gorgonio Groundwater Basin for use in determining available surface water supplies, groundwater basin functionality, storage potential and recharge project feasibility. • Objective 6B: Enhance regional multipurpose, multiple benefit stormwater management infrastructure.

Statewide Priorities	IRWM Plan Objectives
Expand Water Storage Capacity and Improve Groundwater Management	<ul style="list-style-type: none"> • Objective 1C: Maximize the use of groundwater supplies, including local storage of imported water. • Objective 3: Build an integrated ground and surface water model for all subbasins within the San Geronio Groundwater Basin for use in determining available surface water supplies, groundwater basin functionality, storage potential, and recharge project feasibility. • Objective 4A: Reduce use of septic systems by expanding centralized collection and treatment systems. • Objective 4B: Increase monitoring of existing septic areas and enforcement of monitoring protocols.
Provide Safe Water for All Communities	<ul style="list-style-type: none"> • Objective 8: Seek funding opportunities to ensure all communities have access to a reliable water supply and adequate wastewater treatment. • Objective 9: Support projects to provide safe, sustainable and livable communities and to promote future economic development of local DACs.
Increase Flood Protection	<ul style="list-style-type: none"> • Objective 6A: Reduce properties subject to flood hazard insurance. • Objective 6B: Enhance regional multipurpose, multiple benefit stormwater management infrastructure. • Objective 10: Implement multi-benefit strategies, that adapt to climate change impacts for flood management, water supply, water quality, water-dependent habitat, and fire risk.
Increase Operational and Regulatory Efficiency	<ul style="list-style-type: none"> • Objective 1A: Implement regional recycled water projects within the Region and support local recycled water projects. • Objective 1B: Support affordable investments and agreements between local and external agencies to enhance the reliability of imported water throughout the Region. • Objective 1C: Maximize the use of groundwater supplies, including local storage of imported water. • Objective 1D: Implement appropriate regional demand management, water loss reduction and other conservation programs. • Objective 2A: Implement regional infrastructure projects to increase distribution capacity, flexibility and redundancy. • Objective 2B: Form agreements between local and external agencies to support regional supply systems, conservation programs and emergency response. • Objective 2C: Support projects to increase resilience and redundancy of local production and distribution facilities

Statewide Priorities		IRWM Plan Objectives	
		<ul style="list-style-type: none">• Objective 5: Remain engaged across the changing legal, institutional, and regulatory framework affecting drinking water standards	
Identify Sustainable and Integrated Financing Opportunities		<ul style="list-style-type: none">• Objective 8: Seek funding opportunities to ensure all communities have access to a reliable water supply and adequate wastewater treatment.	

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4. Resource Management Strategies

This chapter considers the impacts and benefits of broad-ranging regional water management strategies that will help the San Gorgonio IRWM Region to meet the goals and objectives, while adapting to climate change vulnerabilities.

4.1 Consideration of Strategies

The Region considered the Resource Management Strategies (RMS) outlined in the *California Water Plan Update 2013* as required in DWR's 2016 IRWM Guidelines, as well as additional climate change strategies. The SAC reviewed and discussed the RMS and provided recommendations to the RWMG as to which were appropriate for the San Gorgonio IRWM Region and its stakeholders. This process also included the identification of additional strategies selected to mitigate against climate change through a reduction in energy consumption and emission of GHGs.

The RMS in this IRWM Plan are those that are considered by stakeholders as useful for meeting the Region's goals and objectives. **Table 4-10** shows the relationship between the RMS and the Region's goals from **Chapter 3**. In many instances, RMS can address multiple goals.

4.2 Regional Watershed Management Strategies

The RMS selected for inclusion in the IRWM Plan are described in this section according to *California Water Plan* grouping. The Region's stakeholders went through an exercise of classifying the selected RMS as either a strategy that should be supported or a strategy that should be implemented. Supported strategies are those that can be indirectly beneficial to meeting the Region's goals and objectives but cannot be implemented within the Region. Implemented strategies are those that will directly meet the Region's goals and objectives. In this section, the following icons are used to identify whether RMS from the CWP are categorized as *support* or *implement*.



Support



Implement

The SAC also identified strategies that address the Region's ability to adapt to climate change and/or mitigate GHG emissions. If a strategy improved the resilience of water resources in the face of climate change, the strategy was identified as helping the Region adapt to climate change. If a strategy is viewed as helping reduce the amount of energy consumed and/or GHGs produced, it is identified as mitigating GHGs. These chosen adaptation and mitigation strategies are identified with the following icons:



Adapt






Mitigate




The following is a discussion of the RMS considered by stakeholders as useful for meeting the Region's goals and objectives.

4.2.1 Reduce Water Demand

Table 4-1 includes RMS selected to meet the Region's water supply goals and objectives by reducing water demand in the Region. Enhancing the water supply reliability through reductions in water demand will help the Region adapt to reductions in local and statewide water supply availability resulting from climate change, while addressing potential increases in irrigation demand from increased temperatures. Furthermore, each of these strategies has the potential to mitigate the effects of climate change by reducing the electrical energy required to treat or deliver water to customers.

Table 4-1: Resource Management Strategies that Reduce Water Demand








Description	Meets IRWM Objectives
Agricultural Water User Efficiency	
Agricultural water use efficiency involves improvements in technologies and management of agricultural water to reduce water used for agricultural irrigation. It included incentives, public education, and other programs. The San Geronio Region is not currently considered to be an agricultural region, but agriculture of high value crops is increasing within the Region.	
Urban Water Use Efficiency	
Urban water use efficiency involves technological, policy, or behavioral improvements that reduce indoor and outdoor residential, commercial, industrial, and institutional water use. Examples of methods that the Region can use include incentivizing low flow devices and drought-friendly outdoor landscaping incentives, conservation pricing, and public education. Urban water use efficiency also contributes to environmental water quality in the Region by decreasing the over-irrigation of outdoor landscapes that contribute pollutants to urban runoff and dry weather flows.	
Crop Idling for Water Transfers	
Crop idling for water transfers is the practice of not planting crops in order to transfer water that would have otherwise been used to irrigate the crop to meet other demands. Although the Region does not have any large-scale agriculture, crop idling outside of the Region can increase imported water supplies for potential use within the Region. The potential for mitigation benefits from reduced energy consumption would depend on the resulting energy intensity of the resulting water transfer.	


Description	Meets IRWM Objectives
Water Meter Installation	
Water meter installation involves both the installation or upgrade to modern water meters to allow for more accurate data on water use and efficiency of distribution systems. Improved knowledge of water use and leaking can reduce overall demand.	  

4.2.2 Improve Operational Efficiency and Transfers

Table 4-2 includes RMS selected to implement water transfers and improve operational efficiencies in the Region. Each of these strategies will help the Region adapt to the water supply impacts of climate change, including changes in runoff patterns, decreases in surface supplies, and decreases in imported supplies.

Table 4-2: Resource Management Strategies that Improve Operation Efficiency and Transfers


Description	Meets IRWM Objectives
Conveyance – Regional/Local	
Conveyance Strategies for Regional/Local Infrastructure seek to improve the existing system flexibility and reliability through maintenance and new projects. Local and regional water supply conveyance systems that could benefit from this strategy within the San Geronio Region include both natural watercourses and man-made facilities such as pipelines and flood control channels.	 
Conveyance – Delta	
Conveyance of water from the Bay Delta to SWP is an important source of water for the Region. Although the Region can't directly implement strategies to improve Delta conveyance, it supports external efforts to improve SWP supply reliability.	 
System Reoperation	
System Reoperation allows for improved management and movement of existing water supplies including managing surface storage facilities to optimize the availability and quality of stored water supplies. System reoperation in the Region could involve balancing delivery forecasts and optimizing depth and timing of withdrawals.	  

Description	Meets IRWM Objectives
Water Transfers	
A water transfer is a temporary or long-term change in the point of diversion, place of use, or purpose of use due to a transfer, sale, lease, or exchange of water or water rights. A water transfer can be a temporary or permanent sale of water or water right by the water right holder, a lease of the right to use water from the water right holder or a sale or lease of a contractual right to water supply. Water transfers can be used by the Region to improve intra-regional flexibility as well as to secure additional imported sources from outside of the Region.	

4.2.3 Improve Flood Management

Table 4-3 includes the RMS selected to meet the Region’s flood management goals and objectives. This objective also addressed the need for the Region to adapt to increasing inland flooding and flood hazards resulting from climate change. Through added water supply benefits, this objective also provides mitigation benefits by decreasing the need for more energy intensive sources of supply.






Table 4-3: Resource Management Strategies that Improve Flood Management

Description	Meets IRWM Objectives
Flood Risk Management	
Flood Management focuses on protecting people, property, and infrastructure from floods. Flood management in the Region can include both structural and non-structural measures, preserve existing natural floodplains, remove existing structures from areas subject to flooding, and/or implement flood control measures. Flood control measures include channelization, detention and debris control, preparation for, response to, and recovery from a flood, minimization of loss of life, and damage to property from flooding. This is done while recognizing the benefits to ecosystems from periodic flooding.	

4.2.4 Increased Water Supply

Table 4-4 includes RMS that meet the Region’s water supply goals and objectives related to water supply. Each of these strategies addresses the water supply impacts of climate change, and some have the potential to mitigate climate change impacts where new supplies are less energy intensive and would reduce GHG emissions.




Table 4-4: Resource Management Strategies that Increase Water Supply




Description	Meets IRWM Objectives
Conjunctive Management and Groundwater Storage	
<p>Conjunctive Management is the act of storing surface water in a groundwater basin when available and withdrawing that water in drier years. Conjunctive Management and Groundwater Storage projects and programs can capitalize on available storage and increase groundwater supplies for the Region. In dry years when natural recharge is low and groundwater pumping is high, groundwater levels can decline, which increases overdraft potential, degradation of water quality, and may result in subsidence.</p>	
Municipal Recycled Water	
<p>Municipal recycled water is municipal treated wastewater that is further treated through a rigorous and high level of treatment for reuse. Recycled water is a significant resource in the Region that can be used to offset the need for potable water demands and improve groundwater quality.</p>	
Surface Storage – Regional Local	
<p>Regional and Local Surface Storage strategies increase local supply through the construction or modification of surface reservoir and stormwater catchment infrastructure. While no surface reservoirs are planned within the Region, there is a need to address changes in runoff patterns resulting from climate change and to further utilize potential strategies to capture stormwater in local groundwater basins.</p>	
Surface Storage – CALFED/(SWP)	
<p>This strategy encompasses the storage of water and cooperation with other agencies to store and enhance natural waterways and water quality. Such storage and water conservation and management agencies/organizations include California and Federal Bay-Delta Program (CALFED) and SWP. The Region receives SWP water, and increased reliability of the SWP is of high importance to the Region.</p>	
Irrigated Land Retirement	
<p>This is the process of retiring or discontinuing the irrigation of land so that water intended for irrigation can be transferred or used somewhere else permanently.</p>	

4.2.5 Improve Water Quality

Table 4-5 includes RMS that meet the Region’s water quality goals and objectives. Through the improvements in water quality, water supply can be increased thus being more resilient against climate change impacts. Additionally, increasing water quality may also help promote climate change mitigation by reducing overall energy requirements and reducing GHG emissions.

Table 4-5: Resource Management Strategies that Improve Water Quality















Description	Meets IRWM Objectives
Drinking Water Treatment and Distribution	
Drinking water treatment and distribution encompasses the improvement of quality of supplies delivered from treatment facilities. This ensures the Region delivers high quality and resilient supplies to customers. Implementing this strategy will support the Region’s objectives of meeting water quality standards and increasing groundwater supply which may not have been previously available due to quality concerns.	
Groundwater Remediation/Aquifer Remediation	
The practice of removing constituents and contaminants which impact the beneficial use of water. Remediation can take place in situ or ex situ depending on treatment strategies and contaminants and their levels. The Region does not currently have a need for groundwater remediation but would support efforts where necessary.	
Matching Water Quality to Use	
This strategy recognizes not all water uses require the same level of treatment and quality. This encompasses the identification of and execution of the steps required to efficiently and effectively supply appropriately treated water to customers with different water quality needs. Matching water quality to water use by recognizing the different needs, natural background conditions, hydrologic limitations, and economics ensures that limited public resources can be focused on the most significant problems. Benefits of this strategy to the Region can include providing reduced treated water costs if users can be supplied with raw water or recycled water, while reserving high quality water for drinking and industrial purposes.	




Description	Meets IRWM Objectives
Pollution Prevention	
<p>This strategy is the control or reduction of pollutants from point and nonpoint sources that can affect multiple environmental resources including water supply, water quality, and riparian and aquatic habitat. Methods to accomplish this may include public education, efforts to identify and control pollutant contributing activities, regulation of pollution-causing activities, and the implementation of structural and nonstructural water quality best management practices that reduce containment concentrations. Pollution prevention strategies would benefit the Region's by preventing the contamination of local environmental flows and water supplies.</p>	
Salt and Salinity Management	
<p>The management of water resources to reduce salt loads that impact a region to secure, maintain, and recover usable water supplies. Salinity impacts are often slow to emerge but can result in loss of habitat, and a reduction in community growth potential. Implementation of this strategy would help the Region achieve objectives related to habitat, groundwater quality, and water supply reliability and resiliency.</p>	
Urban Runoff Management	
<p>Encompasses the control of urban runoff through interception, diversion, control or capture of storm or dry weather runoff. While there are not currently significant volumes of urban runoff within the Region, this strategy can help recharge groundwater systems while protecting natural habitat from contamination.</p>	

4.2.6 Practice Resource Stewardship

Table 4-6 contains RMS that aim to protect aquatic and riparian habitat and the Region's overall ecosystem health. Each of these strategies address the need to adapt to climate change impacts, including impacts to water dependent species and decreases in available habitat, as well as resiliency to water quality impacts from wildfires and erosions and water supply impacts. These strategies can also reduce GHG's through reduced need for water treatment and the development of new higher energy consuming supplies.

Table 4-6: Resource Management Strategies that Practice Resource Stewardship







Description	Meets IRWM Objectives
Ecosystem Restoration	
The process of returning selected ecosystems to a state similar to its state before any disturbances. Disturbance may be the result of fires, floods, invasive species, or most commonly, human urbanization. This strategy aligns with several of Region's objectives, including increased habitat, as well as other benefits to water supply, including groundwater recharge and water quality.	  
Forest Management	
The implementation of projects and programs to support water resources in relation to forestlands. Projects and programs may include long-term monitoring, multi-party coordination, communication between downstream and upstream communities and water users, and revisions to water quality plans. These projects and programs can help protect the Region's riparian and aquatic habitat through the revision and improvement of its management practices.	  
Land Use Planning and Management	
The use of land controls to manage, minimize, or control activities that may negatively affect the quality of ground and surface waters, natural resources, or endangered or threatened species. The most effective and efficient practices would integrate the Region's water and land use planning with considerations of future economic development, land and property development, growth projections, and economic developments with their needs for water, energy, and other resources. Proper land use planning and management intersect and share benefits with many resource management strategies that can help the Region work towards all of its objectives.	  
Recharge Areas Protection	
This encompasses the protection of lands that are conducive and contribute to groundwater recharge, including river and streambeds, open spaces that allow water to permeate into the ground, artificial recharge areas, ponds, and basins. Protection techniques the Region may use include land use planning, land conservation, and habitat protection programs.	  
Sediment Management	
Encompasses the proper management of sediment levels and types of sediments in waterways. Sediment is beneficial in some areas, and detrimental in others, and can be variable in types, sizes, and compositions. Proper management within the Region is important not only to protect riparian and aquatic habitat, but for flood management and water infiltration as well.	 



Description	Meets IRWM Objectives
Watershed Management	
Aims to restore and enhance watershed function through planning, programs, and projects encompassing a broader perspective on resource management which includes improving and protecting water quality, ecosystems, and open space. Using the watershed as a basic management unit promotes multi-benefit, integrated projects, and regional collaboration. Projects that use watershed management can help the Region to meet all of its objectives.	  

4.2.7 People and Water

Table 4-7 includes RMS that focus on the education of the Region's population about water resources and recognizing the importance of how water influences their local culture. Through this, pollution and contamination from anthropogenic sources may decrease, while water use efficiency and conservation may increase. The strategies can address climate change adaptation and mitigation by reducing overall water demand.

Table 4-7: Resource Management Strategies that Connect People and Water

Description	Meets IRWM Objectives
Economic Incentives Policy (Loans, Grants, and Water Pricing)	
Economic incentives through loans, grants, or water pricing support are important for successful implementation of a project. Lack of adequate funding can often prevent projects from moving forward, while incentives can result in lower operational costs or lower local costs for implementing a project.	  
Outreach, Engagement, and Education	
Education and outreach are important for all water resource management programs and projects including those focused on watershed and water resources. Outreach to stakeholders and educating the public about critical water issues facing the Region are important steps towards successful program and project implementation to improve the Region's water supply, quality, and habitat. Additionally, performing engagement and outreach to other agencies and organizations allows for partnerships to be formed in order to enhance and advance programs and projects.	  

Description	Meets IRWM Objectives
Water and Culture	
Water and Culture acknowledges the cultural connection tribes have with their water resources. This strategy ensures that water resources on Native American lands within the Region are managed sustainably to ensure water quality and supplies are sufficient to maintain those cultural connections.	 

4.2.8 Strategies Not Applicable to the Region

Some of the *California Water Plan* 2015 RMSs are not applicable to the San Gorgonio IRWM Region due to geographic or resource limitations or being deemed inappropriate and/or ineffective. These strategies were discussed by the SAC and RWMG, but they are not incorporated into the San Gorgonio IRWM Plan. These strategies are described in **Table 4-8**.

Table 4-8: Resource Management Strategies Not Included in the IRWM Plan

Strategy	Reason for not including
Desalination (Brackish and Sea Water)	Desalination is the removal of salts from saline waters, including sea water for coastal communities and brackish groundwater for inland water users. The Region is in an inland watershed and there is no known saline groundwater body.
Precipitation Enhancement	Precipitation enhancement, commonly called "cloud seeding," artificially stimulates clouds to produce more rainfall or snowfall than they would produce naturally. This is considered an ineffective strategy by the stakeholders in the Region.
Agricultural Land Stewardship	Agricultural land stewardship involves balancing water supply and environmental management in conjunction with the historical food production of a Region. The San Gorgonio Region does not have significant agricultural areas that produce food.
Water-Dependent Recreation	Water-dependent recreation protects and enhances water bodies such as lakes, reservoirs, beaches, and perennial streams and rivers, for recreation use. However, there are no water bodies in the Region that support water-dependent recreation.

4.2.9 Additional Climate Change Mitigation Strategies

In addition to the RMS from the *California Water Plan*, the Region identified additional climate change mitigation strategies from the State of California's 2011 *Climate Change Handbook for Regional Water Planning* at a climate change workshop conducted by the SAC. While the majority of the RMS already listed in this chapter will help mitigate climate change, the Region identified

the following additional strategies that would specifically mitigate against climate change through a reduction in energy consumption and GHGs. These strategies are described in **Table 4-9**.

Table 4-9: Additional Climate Change Mitigation Strategies











Description	Meets IRWM Objectives
Optimize Sewer System	
This strategy includes the construction, repair, or modernization of the Region's sewer system to increase reliability and functionality. It may incorporate recharge or recycled water infrastructure or planning.	  
Conduct Emissions Inventory and Target	
This strategy utilizes the study, data collection, and modeling of local emissions to calculate reduction goals.	 
Treatment and Distribution Efficiency (Urban and Agricultural)	
This strategy encompasses the efficient treatment and distribution of water supplies by ensuring waste, leakage, and energy inefficient processes are limited.	  
Increase Use of Renewable Energy Sources	
The implementation or continued expansion of renewable energies within the Region, such as solar and wind.	 

Table 4-10: Resource Management Strategies That Meet San Geronio IRWM Goals

Resource Management Strategies	San Geronio IRWM Goals									
	1) Increase regional supply availability and reliability	2) Improve resilience of regional water distribution systems	3) Develop useable tools to understand hydrologic processes	4) Decrease impacts to groundwater quality	5) Increase resilience to changing water quality requirements	6) Enhance regional flood control infrastructure	7) Protect aquatic and riparian habitat	8) Support DACs and maintain the affordability of water	9) Support the economic vitality of DACs	10) Adaptation to Climate Change
Reduce Water Demand										
Agricultural Water Use Efficiency ¹	✓	✓		✓			✓	✓	✓	✓
Urban Water Use Efficiency	✓	✓		✓			✓	✓	✓	✓
Crop Idling for Water Transfers ¹	✓	✓		✓		✓	✓	✓	✓	✓
Water Meter Installation	✓	✓						✓	✓	✓
Graywater Use	✓	✓					✓	✓	✓	✓
Improve Flood Management										
Flood Risk Management	✓	✓		✓	✓	✓	✓	✓	✓	✓
Improve Operational Efficiency and Transfers										
Conveyance – Delta ¹	✓							✓	✓	
Conveyance – Regional/Local	✓	✓						✓	✓	✓
System Reoperation		✓			✓	✓	✓	✓	✓	✓
Water Transfers	✓			✓			✓	✓	✓	
Increase Water Supply										
Conjunctive Management and Groundwater Storage	✓	✓	✓			✓		✓	✓	✓
Desalination	✓	✓		✓						
Municipal Recycled Water	✓	✓		✓		✓		✓	✓	✓
Surface Storage – Regional/Local	✓	✓				✓		✓	✓	✓
Surface Storage – CALFED (/SWP) ¹	✓	✓						✓	✓	✓

Resource Management Strategies	San Gorgonio IRWM Goals									
	1) Increase regional supply availability and reliability	2) Improve resilience of regional water distribution systems	3) Develop useable tools to understand hydrologic processes	4) Decrease impacts to groundwater quality	5) Increase resilience to changing water quality requirements	6) Enhance regional flood control infrastructure	7) Protect aquatic and riparian habitat	8) Support DACs and maintain the affordability of water	9) Support the economic vitality of DACs	10) Adaptation to Climate Change
Irrigated Land Retirement ¹	✓			✓						
Improve Water Quality										
Drinking Water Treatment and Distribution	✓	✓		✓	✓			✓	✓	✓
Groundwater Remediation/Aquifer Remediation ¹			✓	✓		✓	✓			
Matching Water Quality to Use		✓		✓	✓			✓	✓	✓
Pollution Prevention	✓	✓		✓	✓			✓	✓	✓
Salt and Salinity Management	✓		✓	✓			✓			
Urban Runoff Management	✓	✓		✓	✓	✓	✓	✓	✓	✓
Practice Resources Stewardship										
Agricultural Lands Stewardship			✓	✓		✓				✓
Ecosystem Restoration	✓			✓		✓	✓	✓	✓	✓
Forest Management							✓	✓	✓	✓
Land Use Planning and Management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Recharge Areas Protection	✓	✓		✓	✓	✓	✓	✓	✓	✓
Sediment Management				✓	✓	✓		✓	✓	✓
Watershed Management	✓		✓	✓	✓	✓	✓	✓	✓	✓
People and Water										
Economic Incentives Policy	✓		✓	✓	✓	✓	✓	✓	✓	✓
Outreach and Education	✓		✓	✓	✓	✓	✓	✓	✓	✓
Water and Culture	✓		✓	✓	✓	✓	✓	✓	✓	✓

¹ Supported RMS that can be indirectly beneficial to the meeting Region's goals and objectives but cannot be implemented within the Region.

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5. Projects

Implementing projects is an integral part of the IRWM Plan, providing the primary means for meeting the IRWM Plan's goals and objectives. This chapter describes how the SG IRWM Region will work to facilitate the development of project concepts and the process by which the Region will submit, review, and prioritize projects in the IRWM Plan.

5.1 Project Identification

One of an IRWM Program's primary functions is to support the development of projects that promote integration and collaboration from a regional perspective while addressing the needs of the Region's stakeholders and IRWM requirements. The projects included as part of the SG IRWM Plan were developed by stakeholders within the Region through multiple processes as described here.

5.1.1 Initial Call for Projects

An initial call for San Gorgonio IRWM Plan projects was introduced at an SAC Workshop in November 2017. SAC Meeting attendees were given an overview of the project development and submittal process, including the *Project Nomination Form* (**Appendix E**). Potential project sponsors were given an opportunity to discuss their projects and/or project ideas with other stakeholders from the Region.

In addition to the SAC meeting, the announcement of the call for projects was sent to the Region's email distribution list and posted on the SGIRWM website, along with an information sheet describing deadlines, required information, and the submittal process. The potential project sponsors were given several weeks to prepare and submit the Project Nomination Form.

Since this process was newly developed and being implemented for the first time in the Region, the RWMG opted to allow for an initial project review step. If sponsors wanted to submit projects earlier, they would be reviewed for any potential issues and provided with relevant feedback. Any identified issues were reviewed with sponsors, allowing them to update the Project Nomination Form prior to the official close of the initial project call.

5.1.2 Project Identification in Technical Studies

As part of SG IRWM's Proposition 1 Planning Grant, funding was allocated to conduct an assessment of regional water supply reliability and recycled water potential use. These planning efforts were used to inform the project process by identifying potential water supply and recycled water projects and conducting planning level feasibility analyses of the benefits, costs and implementation considerations. Some of the projects within these studies were submitted to the IRWM Plan by regional stakeholders.

Water Supply Reliability Plan

The *Water Supply Reliability Study* (**Appendix A**) was developed with the participation of an ad-hoc water supply committee made up of members of the RWMG. The Study identifies the water supply reliability related needs of the Region through a baseline assessment of the Region's current and projected water supplies and a gap analysis to evaluate the ability of the Region's water

purveyors to meet future demands under various hydrologic scenarios. A variety of water supply reliability project concepts are identified to address the water supply needs of the Region, and they are further developed for inclusion in the IRWM Plan. This Study also presents planning-level costs and associated unit costs for each of the options.

San Gorgonio Region Recycled Water Study

Water recycling in the SG IRWM Region can create a local, drought-resistant source of water and reduce the nitrate levels in the groundwater. The San Gorgonio Region does not currently produce recycled water and the *San Gorgonio Region Recycled Water Study* (**Appendix B**) addresses the opportunities to do so through identifying regional recycled water project options and assessing the benefits and costs of these options. While individual agency recycled water planning efforts have been conducted within the Region, this Study is primarily focused on using a regional perspective and developing project concepts that can achieve multiple benefits for multiple entities. The Study is intended to support goals and strategies identified in the IRWM Plan by identifying recycled water project options in the San Gorgonio Region and evaluating the benefits of these project options. This Study also presents planning-level costs and associated unit costs for each of the project options.

5.2 Project Submittal, Review and Prioritization Process

Beyond the initial call for projects, project submittal and review is intended to be an on-going and dynamic process to encourage new and beneficial projects to be incorporated into the IRWM Plan as they are developed. The submittal review and prioritization process used by the San Gorgonio Region seeks to minimize barriers for inclusion and promotes participation for all stakeholders within the Region.

5.2.1 Project Categories

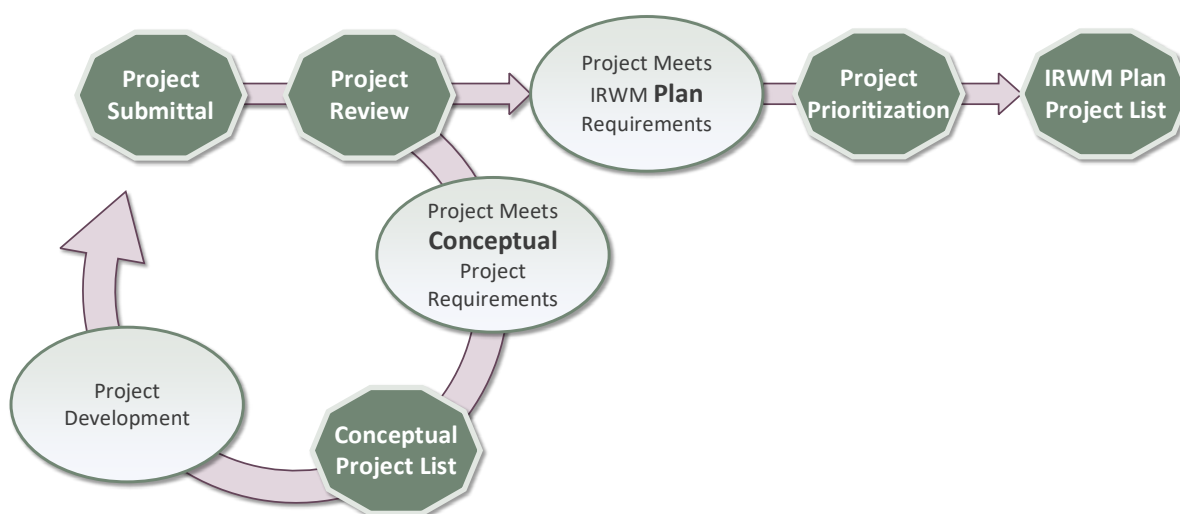
To facilitate the further development of project ideas that may not yet meet IRWM Plan project requirements, the RWMG allows for two categories of projects within the IRWM Plan:

- *Conceptual Projects*: Projects that do not yet meet the minimum DWR criteria for acceptance as an IRWM Plan Project but do support the goals and objectives of the IRWM Region. These projects are included in the IRWM Plan as a separate Conceptual Projects List and are tracked as part of the IRWM planning process for further collaboration and development into Plan Projects.
- *Plan Projects*: Projects that satisfy IRWM Plan requirements and benefit the Region. These plans, once approved, are prioritized and included in the IRWM Plan.

5.2.2 Notification and Project Submittal

The Region encourages projects to be submitted or updated by stakeholders on an ongoing basis. However, the Region may also conduct a targeted call for projects as necessary to support any IRWM Plan updates and grant funding opportunities.

Figure 5-1: Overview of Project Submittal, Review and Prioritization Process



Submittal Process

Stakeholders can submit projects at any time. To submit a project, stakeholders must first complete a *Project Nomination Form* (**Appendix E**). The form and instructions can be found on the program website at www.sgirwm.org. Once completed, the project sponsor emails the form directly to the SG IRWM Program Manager at SGIRWM@ci.banning.ca.us. For stakeholders without internet access, a hard copy form may be obtained by contacting the IRWM Program Manager at the City of Banning.

If the Region issues a specific call for projects, there will be specific project submittal dates and requirements posted on the program website. This information will also be distributed to the stakeholder email list and announced at SAC meetings.

As project information changes or is further developed on an already submitted project, project sponsors can submit an updated Project Nomination Form for the same project.

Required Project Information

Projects submitted to the IRWM Plan may be in different stages of development. For a project to be added to the IRWM Plan, sufficient technical development and vetting of the project needs to be completed by the project sponsor to indicate basic feasibility and value of the project.

Information Required for Conceptual and Plan Projects

- *Project type:* Indicate whether the project is a Conceptual Project or IRWM Plan Project.
- *General Project Information:* Basic information about the project, including name of the project sponsor, project title, project type (planning or implementation), project location, list of potential partners if applicable, and whether the project proponent has adopted the IRWM Plan.
- *Project Benefits:* Indicate which IRWM Plan Objectives would be supported by the project. All projects must support at least one IRWM Plan Objective.
- *Project Strategies:* Indicate which IRWM Plan strategies would be implemented as a result of the project. All projects must align with one or more Resource Management Strategies selected for use in the IRWM Plan.
- *Additional Project Benefits:* Indicate whether the project supports other specific IRWM tenets. Projects are not required to support any of the tenets to be included, but they are used for project prioritization. These include:
 - *Partnerships* – Establish partnerships through sharing data, funds, resources and infrastructure.
 - *Regionality* – Implements watershed-wide or regional-scale projects.
 - *Integration* – Meets objectives within multiple regional goals.
 - *Targeted Benefits* - Benefits DAC, Native American Tribal Communities and Environmental Justice Concerns.
 - *Sustainability* – Reductions to GHG emission compared to alternatives, adapts to climate change, or reduce Regional reliance on Sacramento/San Joaquin Delta.

Additional Information Required for IRWM Plan Projects

- *Project Cost and Funding:* Provide estimated project cost, a list of potential sources of funding for the project, and describe the basis for the project cost.
- *Project Feasibility:* Provide the status of the project, including the names of supporting documents, quantification of project benefits, and describe whether an economic feasibility analysis has been conducted.

5.2.3 Review Process

Project review is performed by the Project Review Subcommittee of the SAC to provide recommendations to the RWMG on which projects should be included in the IRWM Plan and their prioritization. The PRS is composed of volunteers from the SAC and approved by the RWMG. PRS responsibilities include reviewing projects to determine if the information submitted is sufficient to include the project into the next IRWM Plan update or if it qualifies as a conceptual project. The PRS reviews all Project Nomination Forms to determine if the information provided is complete and reasonable but does not verify or fact check the responses provided by project sponsors. Once the PRS has concluded their review, it will provide recommendations to the RWMG which is responsible for voting on the final project determination. Members of the PRS can conduct the review process independently but must meet to obtain consensus on project recommendations to the RWMG.

The frequency at which the PRS reviews and provides recommendations on projects will be flexible relative to the number of project nomination forms submitted and any time sensitivities expressed by project sponsors. The RWMG determines the necessity and schedule for PRS reviews and meetings.

Appendix F has the IRWM Plan Project List as of April 2018. The most recent version of the list can be found on the San Geronio IRWM Program website at www.sgirwm.com.

5.2.4 Prioritizing the Projects

DWR specifies that IRWM Regions should develop a process to prioritize submitted projects relative to the Region's stated objectives. The RWMG developed a project review structure based on a simple and straight-forward point system that is to be implemented by the PRS.

Based upon the review of the Project Nomination Forms, the PRS scores projects based upon the objective scoring criteria and weightings presented in **Table 5-1**. Scores are grouped into three categories: Group A (5-6 points), Group B (3-4 points), and Group C (1-2 points). Projects in Group A are considered to have a higher priority within the IRWM Plan. Plan prioritization is based heavily upon the potential for individual projects to best reflect the ideals of integration and regionalism promoted through the IRWM Program; however, it is not necessarily reflective of which projects should be prioritized for actual funding programs or implementation.

The PRS provides the RWMG with a recommended listing of new projects for inclusion in the IRWM Plan as well as a modified complete list of projects that includes the new recommended projects prioritized relative to all existing projects. The RWMG makes the final determination for the project prioritization and inclusion in the IRWM Plan. Once the projects have been approved for inclusion in the IRWM Plan, the Program Manager will make the list of projects available on the program website.

Table 5-1: Project Prioritization Criteria and Scoring

Project Prioritization Criteria and Scoring (one point each)	
Criterion 1: Meets objectives in at least two regional goals <u>and/or</u> implements at least two RMS	<i>The RWMG would like to see projects that align with and meet as many goals and RMS as possible to maximize potential benefit for the Region.</i>
Criterion 2: Forms partnership between multiple agencies <u>and/or</u> organizations	<i>Projects are encouraged to work and collaborate with other entities within the Region, as well as potential partners outside of the Region to fully utilize resources, data, knowledge, and experience.</i>
Criterion 3: Benefits DAC or Tribe	<i>Projects that benefit DACs or Native American Tribes are extremely important for Regional economic growth and stability.</i>
Criterion 4: Has at least one quantified benefit	<i>Projects should have documentation supporting the quantification of at least one benefit, but more are preferable to maximize and diversify the benefits gained by each project.</i>
Criterion 5: Has a completed cost/benefit analysis	<i>The RWMG must ensure projects will not only provide a net benefit, but also that funding and financing of the project have been evaluated by the project sponsor.</i>
Criterion 6: Adapts to climate change and/or reduces GHG emissions	<i>Based on IRWM Guidelines, reductions in GHGs and other climate change drivers are of high importance. Not only do these measures benefit the Region locally, they have a broader global impact.</i>

5.3 Implementation Grant Project Process

It is important to emphasize that the requirements for projects to be included as part of the IRWM Plan should be assumed to be different than the requirements or standards for inclusion in an IRWM implementation grant application. Inclusion in an approved IRWM Plan is, however, a requirement to be eligible to receive implementation funding from the IRWM Program.

If the San Gorgonio Region chooses to pursue a IRWM implementation grant, the RWMG will develop a specific process for submittal, review and selection of implementation grant projects relative to the unique requirements and scoring criteria of that funding opportunity. Any projects that are submitted through this specialized grant-related call for projects will also need to meet the basic IRWM plan requirements and be accepted by the RWMG into the existing IRWM Plan prior to inclusion in a San Gorgonio Region IRWM grant application.

6. Implementation

This chapter provides a roadmap for implementation of the IRWM Plan. The success of the IRWM Plan will depend on the Region's ability to anticipate challenges, monitor performance, and effectively respond to changing conditions through effective governance, outreach, and adaptive management. The SG IRWM Plan has developed an implementation framework that includes the following five components:

1. *Impacts and Benefits of Plan Implementation:* The Region identifies and communicates the potential impacts and benefits of IRWM Plan implementation, both within the IRWM Region and outside of the Region.
2. *Performance and Monitoring:* The Region monitors progress toward meeting planning goals and objectives and individual project performance.
3. *Outreach and Governance:* The Region maintains consistent governance and continued outreach to encourage further integrated and regional collaboration.
4. *Data Management:* The Region uses standardized processes of data collection, storage, and dissemination to promote information sharing and dissemination among project sponsors, stakeholders, the public, and the State of California.
5. *Funding and Financing:* The Region has identified potential sources of funding to support the continued implementation of the IRWM Plan.

6.1 Impacts and Benefits of Plan Implementation

The San Geronio IRWM Region has identified potential impacts and benefits from implementing the IRWM Plan. These include impacts and benefits within and outside the Region. It is also recognized that there will also be additional project-specific impacts associated with project implementation.

Planning Level Impacts and Benefits

The primary benefit from the preparation of the IRWM Plan has been the creation of a framework and implementation pathway for collaborative regional planning. This includes increased understanding of regional needs and opportunities, information sharing among stakeholders, opportunities for collaboration on project concepts, solving of regional conflicts, and accessing funding sources. There have been no substantive impacts identified as a result of completing this IRWM Plan, except the increased responsibility from the RWMG for funding, implementing, and managing the IRWM Plan.

Table 6-1 below lists potential regional and inter-regional impacts and benefits associated with implementation projects in the IRWM Plan. The table is organized by categories of goals and objectives, as identified in **Table 3-1** from **Chapter 3**.

Table 6-1: Potential Benefits and Impacts of Plan Implementation

San Gorgonio Region			Inter-Regional	
IRWM Goals	Potential Impacts	Potential Benefits	Potential Impacts	Potential Benefits
Water Supply Goal #1: Increase regional supply availability and reliability Goal #2: Improve resilience of regional water distribution systems Goal #3: Develop useable tools to understand hydrologic processes and regional management	<ul style="list-style-type: none"> • Short term construction and site-specific impacts such as ground, biological, and soil disturbances, as well as temporary aesthetic, air quality, noise, and transportation • Reduced effluent discharge available for instream flows • Increased water supply costs 	<ul style="list-style-type: none"> • Decreased potable demand • Increased water supply and enhanced supply reliability • Reduced dependence on imported water • Potential to better understand and manage groundwater resources and prevent over-draft • Reduced vulnerability from climate-change related reductions in overall water supply • Benefits extend to broad Region, including any disadvantaged communities and Native American Tribes 	<ul style="list-style-type: none"> • Decreased instream flow to downstream users 	<ul style="list-style-type: none"> • Increased available water supplies through decreased consumption within the Region • Increased availability of Bay-Delta water supplies • Improved management of shared groundwater resources
Water Quality Goal #4: Decrease impacts to groundwater quality Goal #5: Increase resilience to changing water quality requirements	<ul style="list-style-type: none"> • Increased short-term construction and site-specific impacts • Increased water treatment and supply costs 	<ul style="list-style-type: none"> • Higher quality water for customers throughout the Region • Improved health and safety for residents, including a high percentage of DACs • Improved water quality that is more resilient to changes in quality standards • Improved habitat quality for water dependent species • Protection against accidental contamination 	<ul style="list-style-type: none"> • None identified 	<ul style="list-style-type: none"> • None identified

San Gorgonio Region			Inter-Regional	
IRWM Goals	Potential Impacts	Potential Benefits	Potential Impacts	Potential Benefits
Flood Management Goal #6: Enhance regional flood control infrastructure	<ul style="list-style-type: none"> Increased short-term construction and site-specific impacts Changes in sediment loads and distribution 	<ul style="list-style-type: none"> Reduced risk to property and life Reduced flood insurance costs Increased water supply, water quality, and habitat Advancement of integrated flood management engineering and application for use by other entities 	<ul style="list-style-type: none"> Altered sediment loads to downstream regions 	<ul style="list-style-type: none"> Advancement of integrated flood management engineering and application for use by other entities
Habitat and Open Space Goal #7: Protect aquatic and riparian habitat	<ul style="list-style-type: none"> Increased short-term construction and site-specific impacts Limiting urban land use for development 	<ul style="list-style-type: none"> Reduced invasive species, and increased native and endangered species Improved passive recreation, education, water quality, water supply and flood control Improved ability to increase or maintain habitat corridors 	<ul style="list-style-type: none"> None Identified 	<ul style="list-style-type: none"> Improved ability to increase or maintain habitat corridors
Disadvantaged Communities Goal #8: Support DACs and maintain the affordability of water Goal #9: Support the economic vitality of DACs	<ul style="list-style-type: none"> Short-term increases to water costs Potential local construction disturbances 	<ul style="list-style-type: none"> Decreased water cost over time Higher quality water supply More resilient water supply Increased health benefits from new infrastructure and higher quality supply 	<ul style="list-style-type: none"> None Identified 	<ul style="list-style-type: none"> Increased regional economic growth will attract more intra-regional travel and tourism to the Region and its neighbors
Climate Change Goal #10: Adaptation to Climate Change	<ul style="list-style-type: none"> Increased short-term costs for implementing programs 	<ul style="list-style-type: none"> Improved air quality through decreased GHG and other emissions Decreased energy consumption 	<ul style="list-style-type: none"> None Identified 	<ul style="list-style-type: none"> Improved air quality through decreased GHG and other emissions

Project Level Impacts and Benefits

IRWM project impacts and benefits have been identified as part of the process for inclusion in the Plan. Since the IRWM project list is dynamic, the collective impacts and benefits are expected to change over time and so are not articulated within this chapter. An assessment of impacts and benefits for current IRWM projects can be found on the San Gorgonio IRWM website. The articulation of project-specific impacts and benefits will increase as projects are closer to implementation.

6.2 Performance and Monitoring

Performance monitoring is necessary for documenting the success of the IRWM Plan implementation. The Region assesses Plan performance in two areas:

1. *Plan Performance:* The RWMG tracks the Region's overall progress toward meeting the IRWM Plan's stated goals and objectives.
2. *Project Specific Performance:* The Region reviews the project monitoring plans for each project that is implemented through the IRWM Program to assess how projects are performing relative to expected goals, benefits and impacts.

6.2.1 Plan Performance

The RWMG is responsible for evaluating IRWM Plan Performance. The RWMG provides annual Plan performance updates that include a discussion on the funding and/or implementation of projects as well as the status of meeting IRWM Plan objectives and other planning requirements as identified in the IRWM Plan. An evaluation of new climate change information and tools that may help the Region with future planning efforts is included as well for discussion and consideration. Findings are presented to the SAC, and all information is provided on the program website at www.sgirwm.org.

The Region's progress in meeting the goals and objectives of the IRWM Plan are measured using the performance measures described in **Chapter 3**. Each performance measure listed includes the potential source of the data or information necessary to determine how projects are advancing in terms of meeting IRWM objectives.

Focusing on IRWM Plan performance not only ensures that the Region is working toward achieving its goals, but it helps identify any gaps that stakeholders feel need to be addressed. The SAC participates in annual discussions to identify any parts of the IRWM Plan that should be updated to reflect regional conditions and needs and to incorporate new information. These lessons learned are incorporated in future updates of the IRWM Plan.

6.2.2 Project Performance

Pursuant to DWR guidelines, projects funded through IRWM-related grants are required to include a project specific monitoring plan so performance can be readily assessed. The project sponsors have the responsibility for development of project specific monitoring plans that will include monitoring activities to determine if the project is making progress towards meeting its benefits and to ensure that each project is monitored to comply with all applicable rules, laws, and permit requirements. Required contents of monitoring plans include:

- Description of what is being monitored for each project (in a table format)
- Measures to remedy or react to problems encountered during monitoring
- Location of monitoring
- Monitoring frequency
- Monitoring protocols/methodologies, including who is responsible for monitoring
- Procedures to keep track of what is monitored
- Procedures to ensure monitoring schedule is maintained and adequate resources (including funding) are available

Project specific monitoring plans are prepared prior to the start of project construction or implementation, and the RWMG uses these monitoring plans to evaluate performance as projects are implemented. The RWMG is also responsible for ensuring implementation project data are available to the RWMG, stakeholders, and other interested parties.

6.3 Outreach and Governance

The governance and outreach process to be used for Plan implementation is described in *Chapter 1: Regional Planning, Governance, Outreach and Coordination*. The RWMG reviews these procedures annually relative to any input received from the SAC or public and makes updates as needed.

6.4 Data Management

The IRWM Plan has been prepared through a collaborative process that has generated and will continue to generate data and information to support its implementation. The Region provides stakeholders and members of the public access to the Plan and information developed through IRWM planning and project implementation. These data can be a valuable resource to stakeholders, regional entities, and the State. The Region's stakeholders can utilize data developed through the IRWM Plan process to better manage water supply reliability, water quality monitoring, invasive species removal, aquatic/riparian habitat management, species of concern, recreation and open space, land use development, climate change impacts, and project progress.

The San Geronio IRWM Program website serves as the Region's primary data management system. The data management system will be provided at www.sgirwm.org in addition to the public meeting dates, agendas, and meeting summaries. This section provides an overview of data collection techniques, data dissemination, coordination with state databases, and data needs. The SG IRWM Program Manager is responsible for maintaining the operation efficiency and organization of the DMS, and project sponsors are responsible for submitting project specific information.

6.4.1 Data Collection

The data and information used to evaluate IRWM Plan performance is collected from existing databases and monitoring efforts with established procedures, including:

- Urban Water Management Plans

- Annual Watermaster Reports
- Groundwater Management Plans
- Basin Studies
- General Plan land use
- MSHCP implementation data

Project specific data is provided by the project sponsor through project specific monitoring plans. To ensure accuracy of the data, all monitoring plans will include a statement or certification by the project sponsor that the agencies performing these monitoring efforts have performed adequate quality assurance and quality control measures.

6.4.2 Data Dissemination

Data dissemination occurs through several mechanisms including SAC meetings, website postings, email notices, and agency contacts. The CEQA and NEPA processes for implementation projects also provide opportunities for public input, review, and data dissemination.

Stakeholder workshops and SAC meetings are a primary means for data dissemination where partner agencies and organizations provide handouts, deliver presentations, and hold question and answer periods regarding implemented projects and programs. This not only ensures that data are made readily and easily available but also helps other project sponsors potentially use or align their own data collection practices for more efficient collaboration. The IRWM Plan and project performance reports are posted on the program website for the public to access. The performance reports include a description of recent activities on the IRWM Plan, project status updates, and performance statistics on meeting objectives.

6.4.3 Compatibility with Statewide Databases

The Region's agencies coordinate with the state to maximize opportunities to share data and meet statewide data needs. To the extent possible, data collected under the IRWM Plan are in a format compatible with statewide data programs, including the programs described in **Table 6-2**. To accomplish this, project sponsors work with the coordinating state agency to obtain the appropriate data formats for submission to these programs. In addition, the RWMG standardizes data gathered through IRWM planning efforts to integrate with applicable state data programs.

Additional data beyond that resulting from IRWM-funded project monitoring programs can also be added to the Region's data management system; however, the format and content of those data may or may not meet state standards since it was not necessarily funded through a state program. The Region has indicated that if stakeholders wish to share data within the Region, the IRWM Program data management system can be used for that purpose.

Table 6-2: State Databases

Program	Coordinating Agency	Description
California Environmental Data Exchange Network	SWRCB	Database to find and share information such as water quality, aquatic habitat, and wildlife health for California's water bodies, including streams, lakes, rivers, and the coastal ocean.
Water Data Library	DWR	Records data from various monitoring stations and types such as groundwater levels, water quality stations, surface water stage and flow sites, precipitation, climate observations, well logs, and other information.
California Statewide Groundwater Elevation Monitoring Program	DWR	Groundwater monitoring program to monitor and report groundwater elevations in all or part of a groundwater basin, as required by enacted legislation.
Surface Water Ambient Monitoring Program	SWRCB	Statewide monitoring effort designed to assess the conditions of surface waters using state, regional, and local agencies as well as the public and other NGOs.
Groundwater Ambient Monitoring and Assessment Program	SWRCB	Statewide basin assessment program designed to monitor groundwater for chemicals at low detection limits to improve statewide ambient groundwater quality monitoring and the availability of groundwater information and data.
California Environmental Information Clearinghouse	California Natural Resources Agency	Formerly known as the CA Spatial Information Library, this online directory facilitates the coordinated and sustainable development, maintenance, licensing and sharing of geospatial data and web map services by California government agencies, partners and stakeholders.

6.4.4 Data Needs

One of the functions of IRWM Plan Projects is to collect valuable and regionally relevant data for use between local agencies and stakeholders. The Region identified data needs early on in the IRWM Plan and Region formation process which guided the technical studies included in the Appendixes of this document. Other needs identified by the RWMG include water supply and water quality data to produce more robust and scientifically supported water management decisions. The Region would also benefit from an expansion of the groundwater model to include more of the Region's groundwater storage units and basins. Lastly, additional data on existing and needed infrastructure within the Region would help streamline and identify efficient expansion and repairs of the system.

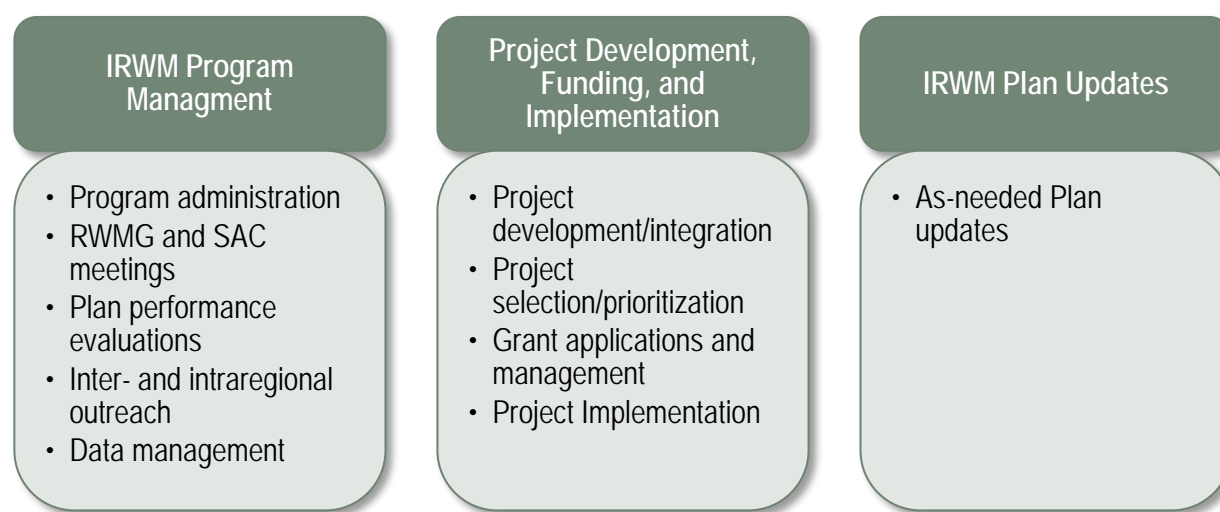
6.5 Funding and Financing

The purpose of this section is to provide adequate information on the potential costs and sources of funding to support the ongoing implementation of the IRWM Plan over time.

The first IRWM planning effort for the San Geronio IRWM Region was funded by a Proposition 1 Planning Grant issued by DWR. Of the estimated population of 30,255 within the San Geronio IRWM Region, 90% qualify as a DAC in accordance with State Guidelines. As a result, no other sources of local funding were required outside of in-kind contributions from the RWMG and the volunteers who participate in the SAC.

Following completion and adoption of the IRWM Plan, RWMG will need to secure ongoing revenues to support the cost of implementation. Projected costs of IRWM Plan implementation are primarily associated with three categories, listed in **Figure 6-1**.

Figure 6-1: IRWM Components that Require Funding and Financing



6.5.1 Funding and Financing Options

The Region plans to continue to secure funding and financing to implement the IRWM Plan and ongoing program management activities. Local funding may be limited because the majority of the Region is classified as a DAC.

Local Financing

Local financing and in-kind services are the foundation of a successful IRWM Program. The Region's program management activities such as administration, meetings, performance monitoring, outreach, and some data management are in-kind services performed by members of the RWMG. Project development and integration can also be contributed as in-kind services

RWMG agencies and local project sponsors are also expected to provide funding for project implementation and O&M costs. Potential funding sources and methods include local funding such

as rates, operating funds, water enterprise funds, taxes, assessments, and fees. It is also expected or required in some instances for sponsors who receive grant funds to provide local cost share.

Given that local revenue sources are not expected to be sufficient to fully fund all aspects of the IRWM Program's financing needs, the Region plans to fund its IRWM Program activities using a combination of local, state and federal funds.

Additional Financing Opportunities

The Region will continue to evaluate and apply for state funding opportunities, including future water related propositions and funding opportunities for IRWM project implementation. Other state and federal funding opportunities will also be evaluated. **Table 6-3** includes a list of potential state and federal grants that could supply additional funding for Plan project planning and implementation. This list is not exhaustive but represents a sample of the type of opportunities that the Region could pursue at this time.

Table 6-3: State and Federal Grants

Sources	Description
Grants Currently Awarded to the Region	
IRWM Grant Program – Planning Grants – State Program	Intended for IRWM Planning activities. The IRWM Region's IRWM Plan must comply with current Guidelines and Plan Standards.
Future IRWM Grants the Region Could Pursue	
IRWM Grant Program – Implementation Grants – State Program	Intended for water resources projects. The projects must be included in a compliant IRWM Plan to be eligible.
IRWM Grant Program – DAC Involvement – State Program	These applications are submitted by Funding Area (not IRWM Region) and require IRWM Regions to collaborate and disperse funds among the Regions to support DAC planning and project activities.
Other Funding Sources the Region Could Pursue	
SWRCB Groundwater Sustainability – State Program	A grant program for projects that prevent or clean up contamination of groundwater that serves or has served as a source of drinking water.
DWR CalConserve Water Use Efficiency Revolving Fund – State Program	Meant for local agencies, two types of urban water use efficiency projects and programs are eligible; 1) Pilot projects for local agencies to provide water efficiency upgrades to customers at no upfront costs, and 2) Local agencies to provide low-interest loans to customers to finance the installation of onsite improvements to repair or replace water pipes to conserve water. All applications are on a rolling basis, first-come, first-serve.
SWRCB Site Cleanup Subaccount Projects– State Program	Intended for projects that remediate the harm or threat of harm to human health, safety, or the environment caused by surface or groundwater contamination. This is for human-made contamination only and will not fund projects related to naturally occurring contamination.

Sources	Description
Water Recycling Funding Program – State Program	A grant designated for planning and construction of water recycling projects by public agencies.
Clean Water State Revolving Fund Loan Program – State Program	Offers low interest loans for construction of publicly-owned facilities including wastewater treatment, local sewers, sewer interceptors, water reclamation facilities, and stormwater treatment.
Drinking Water State Revolving Fund– State Program	Offers low-interest loans for planning/design and construction of drinking water infrastructure projects including: treatment systems, distribution systems, interconnections, consolidations, pipeline extensions, water sources, water meters, and water storage.
Water Infrastructure Finance and Innovation Act– Federal Program	Similar to State Revolving Fund Programs, however there are project cost requirements and the interest rate is higher.
Title XVI Water Recycling and Reclamation Program and WIIN Subset of Title XVI – Federal Program	Administered by the U.S. Bureau of Reclamation and provides grants for construction of water recycling treatment conveyance facilities, including planning, design, and construction costs.
USDA Rural Development Water and Environmental Program– Federal Program	Offers rural communities (populations $\leq 10,000$) to develop, construct, or improve water and wastewater infrastructure.
HUD Community Development Block Grants– Federal Program	Funds local community development activities that expand economic opportunities, principally for low and moderate-income areas. The program can fund drinking water and wastewater projects.
Department of Commerce Economic Development Administration (EDA) – Federal Program	Supports development in economically distressed areas of the U.S. through strategic investments that foster job creation and attract private investment. EDA's Public Works Program helps communities in economic decline upgrade their physical infrastructure, including drinking water and wastewater facilities.

6.5.2 Financing Plan

Table 6-4 shows the Region's funding and financing plan to complete the IRWM Program management, project development and implementation, and IRWM Plan update activities. Cost sharing and financing plans have largely been outlined in the MOU, signed in September of 2016 (**Appendix D**). Responsibilities for ongoing program management and Plan updates will be shared among the RWMG. The RWMG will determine the cost-sharing arrangement to complete grant applications on a case-by-case basis and will consider the potential recipients of the funds.

Table 6-4: Financing Plan

Activity	Approximate Cost or Time Commitment	Funding Source	Certainty/Longevity of Funding
IRWM Program Management			
RWMG Meetings, SAC Meetings, Plan Performance, Outreach, Data Management, Program Administration	\$50,000 – 100,000 /yr	<u>In-Kind:</u> Program Manager/ RWMG Agencies/ SAC <u>Funds:</u> RWMG Agencies	On-going agency staff allocations and RWMG members' operating budgets
Project Funding and Implementation			
Grant Applications, Grant Management	Cost varies by type of grant application	<u>In-Kind:</u> Program Manager/ Project Sponsors <u>Funds:</u> RWMG Agencies	Contingent on funding available and the number of projects, as well as grant program success
Project Implementation	Cost varies by type and size of project	<u>In-Kind:</u> Program Manager/Project Sponsors <u>Funds:</u> Project Sponsor, State Grants, Federal Grants	Agency and staff allocations. Contingent on available funding and grant program success
Plan Updates			
As Needed Plan Updates	Cost is expected to depend on the scale of the plan update	<u>In-Kind:</u> Project Manager/RWMG Agencies <u>Funds:</u> RWMG Agencies, State Grants	Agency and staff allocations. Contingent on available funding and grant program success

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