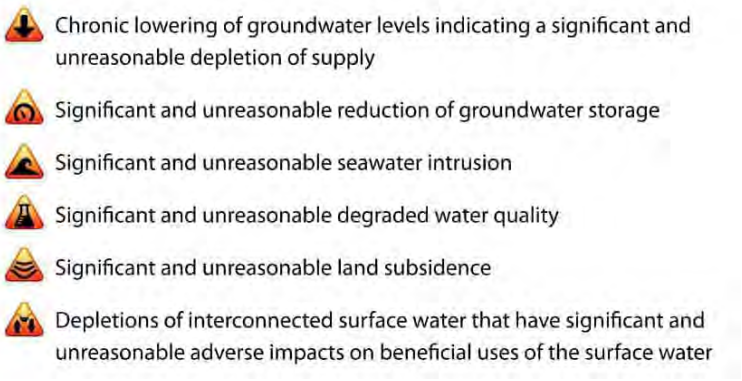
EXECUTIVE SUMMARY

The San Gorgonio Pass Subbasin's (SGP Subbasin) respective Groundwater Sustainability Agencies (GSAs) have prepared a single Groundwater Sustainability Plan (GSP) to comply with the Sustainable Groundwater Management Act (SGMA). The GSAs include San Gorgonio Pass GSA, Verbenia GSA, and Desert Water Agency GSA. The following is a summary of the content and layout of the document.

CHAPTER 1 - INTRODUCTION

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package, composed of AB 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley), collectively known as the Sustainable Groundwater Management Act of 2014 (SGMA), which is codified in Section 10720 et seq. of the California Water Code. This legislation created a statutory framework for groundwater management in California that must be achieved during the planning and implementation horizon from 2022 to 2042 for medium priority basins and sustained into the future without causing undesirable results. SGMA requires that the following six sustainability indicators must be considered:



The GSAs consist of various water agencies and municipalities that participate collaboratively to develop and implement the GSP to maintain sustainability in the SGP Subbasin. The SGP Subbasin includes three areas that are not subjected to SGMA. These include the Beaumont Basin, which is adjudicated, the United States Forest Service (USFS) lands, and the Morongo Band of Mission Indians (MBMI) reservation and trust lands.

The sustainability goal will be met by maintaining balance of water demand with available water supply. Implementation of this GSP is intended to achieve this goal while avoiding significant or unreasonable impacts to groundwater levels, groundwater storage, water quality, land subsidence or interconnected surface water.

CHAPTER 2 - PLAN AREA

The SGP Subbasin is located in Southern California between the San Bernardino Mountains to the north and the San Jacinto Mountains to the South, Coachella Valley to the East, and San Bernardino Valley to the west. The SGP Subbasin encompasses approximately 35,965 acres, which includes open land, urban, commercial, industrial, and municipal uses. There is a small portion of the Subbasin in the northern-canyon regions which are within the United States Forest Service's jurisdiction. Of the Subbasin's approximate 35,965 acres, approximately 13,211 acres are within MBMI jurisdiction. Figure ES 1 depicts the GSAs, adjudicated Beaumont Basin, and tribal lands within the SGP Subbasin.

The agencies and entities within the SGP Subbasin are outlined below:

Federal Lands

- *United States Forest Service*

Public Water Districts

- *Cabazon Water District (CWD)*
- *Mission Springs Water District (MSWD)*
- *Desert Water Agency (DWA) – State Water Project Contractor*
- *San Gorgonio Pass Water Agency (SGPWA) – State Water Project Contractor*

Mutual Water Companies (Privately Held Water Stock Companies)

- *Banning Heights Mutual Water Company*

Municipalities

- *City of Banning*

Federally Recognized Tribes

- *Morongo Band of Mission Indians*

To facilitate groundwater management in the SGP Subbasin, and to reflect variations within the subbasin due to management agencies and hydrogeologic conditions, four management areas (MAs) have been identified. These are defined as follows:

Management Area 1 – Adjudicated Beaumont Basin

Management Area 1 is the portion of the adjudicated Beaumont Basin lying within the SGP Subbasin. Based on SGMA provisions for adjudicated areas, the Beaumont Basin is not directly subject to SGMA and is not evaluated in this GSP.

Management Area 2 – Banning Canyon/Banning Bench

Management Area 2 consists of the portions of the San Gorgonio Pass GSA lying within the Banning Canyon and Banning Bench storage units as defined by the United States Geological Survey (USGS) and described in Chapter 3.

Management Area 3 – Banning/Cabazon

Management Area 3 consists of the portions of the San Gorgonio Pass GSA and Verbenia GSA lying within the Banning and Cabazon storage units as defined by the USGS and described in Chapter 3.

Management Area 4 – Desert Water Agency

Management Area 4 consists of the Desert Water Agency GSA lying within the Cabazon storage unit as defined by the USGS and described in Chapter 3.

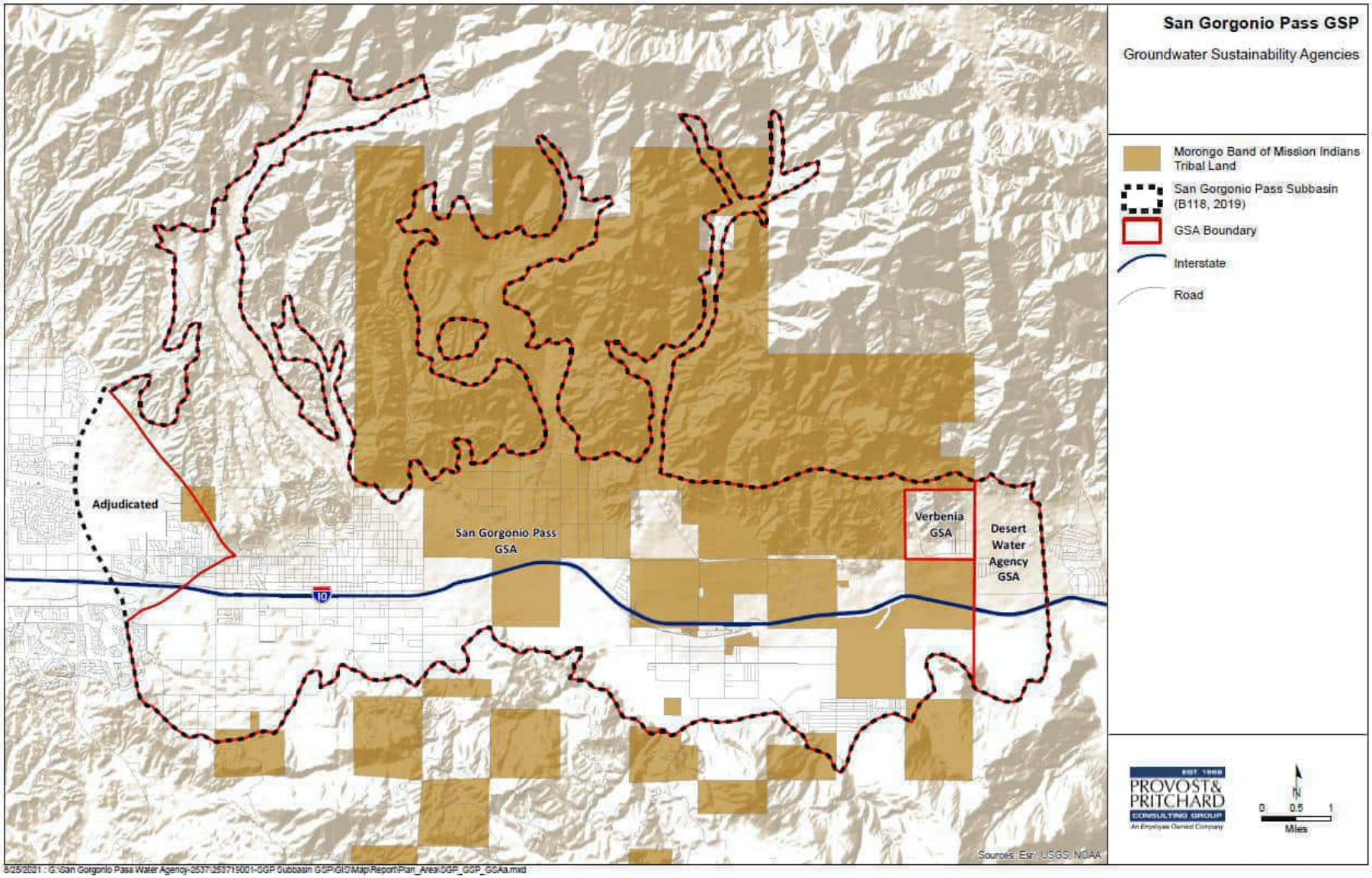


Figure ES 1 GSAs of the SGP Subbasin

CHAPTER 3 - BASIN SETTING

Chapter 3 is organized in three primary sections: hydrogeological conceptual model, groundwater conditions, and water budget.

HYDROGEOLOGICAL CONCEPTUAL MODEL/GROUNDWATER CONDITIONS

The Hydrogeological Conceptual Model (HCM) provides a description, based on readily available information, of the general physical characteristics of the regional hydrology, geology, geologic structure, water quality, principal aquifers, and principal aquitards in the basin setting. The SGP Subbasin is an alluvial filled groundwater basin that is bounded to the north by crystalline bedrock of the San Bernardino Mountains and to the south by rocks of the San Jacinto Mountains. Crystalline basement rocks of the San Bernardino and San Jacinto Mountains also define the bottom of the alluvial Subbasin. Alluvial fill thickness ranges from nearly 7,000 feet in a part of Management Area 1 (adjudicated Beaumont storage unit) and thins to zero along the flanks of the valley. Holocene and Pleistocene age alluvium and the Plio-Pleistocene age San Timoteo Formation are the main water bearing deposits within the SGP Subbasin. Several river canyons originate in the San Bernardino Mountains and debauch both water and sediment on to the valley floor portion of the SGP Subbasin. Several of these river canyons and associated alluvial deposits are included in the SGP Subbasin. Groundwater and surface water flows from these mountain canyons are significant sources of recharge to the valley floor portion of the SGP Subbasin. The SGP Subbasin includes the mountain canyons therefore, topographic relief is quite high, ranging from about 5,800 feet msl at the top of Potrero Canyon to about 1,400 feet msl at the eastern end of the SGP Subbasin.

The SGP Subbasin sits in a tectonically active area and the major faults of the San Andreas and the San Gorgonio Pass Fault Zones along with numerous ancillary faults have affected the landscape, and geologic and hydrogeologic evolution of the Subbasin. Some of these faults have demonstrated effects on groundwater flow and have been used, in part, to define several storage units in the SGP Subbasin, as discussed in Section 3.2. Groundwater generally flows south from the canyons and then east where a bedrock constriction creates a groundwater cascade into the Indio Subbasin. Surface water features of significance to management of the Subbasin include the numerous streams and creeks from the San Bernardino Mountains, a buried portion of the California State Water Project's (SWP) Colorado River Aqueduct, several manmade ponds and reservoirs, and a canal that brings water into the Subbasin from the Whitewater River.

GROUNDWATER CONDITIONS

The Groundwater Conditions section provides a historic, average, and current description of subsurface hydrology, water quality, and subsidence. The HCM and the Groundwater Conditions lay the foundation for development of water budgets, monitoring networks, and identification of data gaps. As mentioned above the SGP Subbasin is divided into storage units generally defined by faults. The storage units include the Beaumont (adjudicated), Banning, Banning Bench, Banning Canyon and Cabazon storage units. Groundwater conditions can vary considerably within and between the storage units. Groundwater contour maps prepared for the years 1998 and 2025, based on available groundwater level data, show that groundwater largely originates in the canyons, flows down the canyons and then mainly east towards the Indio Subbasin. Groundwater levels have tended to be stable over the long term, declining in dry years and recovering in subsequent wet years in the Banning Canyon storage unit (MA 2). Water levels in the Banning and Cabazon storage units (MA 3 and MA 4) have longer term cycles of decline and recovery, dropping as much as 100 feet in dry periods in some areas of the Banning and Cabazon storage units. The largest quantity of groundwater is pumped in the Banning Canyon storage unit for use by downstream users. SGP Subbasin's groundwater is of generally good quality. Currently, there are no known contaminant plumes that threaten groundwater, and historic contaminant sites are no longer active after successful mitigation. Overall groundwater quality meets public health goals with minimal exceedances of regulatory screening

levels. Constituents of concern include nitrate, TDS, hexavalent chromium, arsenic, fluoride, and lead. Groundwater and surface water appear to be seasonally connected in the Banning Canyon storage unit of MA 2 but groundwater in MA 3 and MA 4 is too deep to be connected to surface water and does support groundwater dependent ecosystems (GDEs). Land subsidence has not been observed as occurring in the SGP Subbasin and the Subbasin deposition layers make its occurrence unlikely. Saline water intrusion is not an issue in the SGP Subbasin.

WATER BUDGETS

A water budget is an account of all the water that flows into and out of a specified area and describes the various components of the hydrologic cycle (Figure ES 2). A water budget includes all the water supplies, demands, modes of groundwater recharge, and non-recoverable losses, making it possible to identify how much water is stored in a system and changes in groundwater storage during a given period.

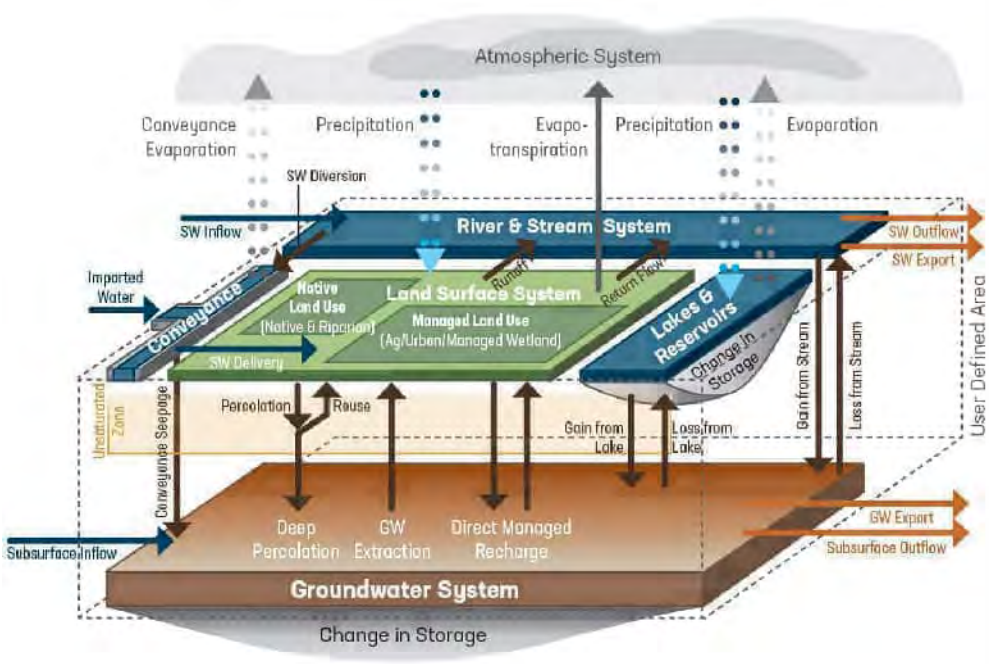


Figure ES 2 DWR Water Budget Graphic

Water budgets were prepared for a historical period (1998-2025), current period (2025), and future periods (2026-2072). The historical water budget covers a hydrologic period based on SGP Subbasin's multi-decade trends; however, the recent historic trends are drier than long-term historic conditions. The future water budgets are based on numerous assumptions related to climate change, population growth, water use, and in one scenario, future project implementation.

Because of the very dry conditions during the historical period, the groundwater storage decline in this period is not representative of average water supply conditions and as described in Section 3.3.10, does not by itself indicate that overdraft conditions are occurring.

CHAPTER 4 - SUSTAINABLE MANAGEMENT CRITERIA

SGMA defines sustainable groundwater management as the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results. The avoidance of undesirable results is important to the success of the Subbasin achieving sustainability. Several requirements from GSP regulations have been grouped together under the heading of Sustainable Management Criteria, including a Sustainability Goal, Undesirable Results, Interim Milestones, Operational Flexibility, Minimum Thresholds, and Measurable Objectives for the various indicators of groundwater conditions shown above. Development of these Sustainable Management Criteria is dependent on Subbasin information developed and presented in the HCM, groundwater conditions, and the water budget.

The three GSAs within the SGP Subbasin have been coordinating for several years on how to maintain sustainability and have assigned sustainable management criteria in alignment with historic conditions and projected conditions, without the influence of project benefits.

CHAPTER 5 - MONITORING NETWORK

This chapter describes previously existing monitoring programs and resources and the representative monitoring network, defined by the GSAs that will collect sufficient data to determine short-term, seasonal, and long-term trends in groundwater conditions.

The GSAs within the SGP Subbasin have established two representative monitoring networks:

> *Representative Groundwater Levels Monitoring Network: This network serves to monitor conditions related to groundwater levels, groundwater storage, and interconnected surface water in the Subbasin's Banning Canyon.*
> *Representative Groundwater Quality Monitoring Network: This network facilitates analysis of groundwater quality related to the identified constituents of focus, total dissolved solids (TDS) and nitrates.*

The data from this representative monitoring network will be reported to DWR and used to support the implementation of the GSP, evaluate the effectiveness of the GSP, monitor for compliance with sustainable management criteria, and aid in decision-making by the GSA and local water agencies.

CHAPTER 6 - PROJECTS AND MANAGEMENT ACTIONS

Projects and management actions may be implemented to avoid undesirable results and maintain groundwater sustainability in the SGP Subbasin. The possibility of project implementation is contingent on funding support and management actions will be explored as needed.

Six projects have been identified in the SGP Subbasin that would improve groundwater conditions. The identified projects are listed below. Phases indicated in the project title correspond with their respective phase in the project development lifetime.

- *Project #1: Municipal Water Conservation (Phase 1)*
- *Project #2: Stormwater Capture (Phase 2)*
- *Project #3: Additional Imported Water Spreading at Noble Creek Spreading Basins (Phase 2)*
- *Project #4: New Pipeline with Additional Imported Water Spreading in the Cabazon Storage Unit (Phase 2)*
- ~~*Project #5: New Pipeline with Additional Imported Water Spreading in the Banning Storage Unit (Phase 2)*~~ *(Project removed)*
- *Project #6: New Imported Colorado River Aqueduct Spreading in the Cabazon Storage Unit (Phase 2)*

- *Project #7: Hub and Spoke Distribution Project*

Several management actions have been identified for the SGP Subbasin that may support GSP implementation efforts. The identified management actions include the following:

- *Management Action #1: Implement Action Plan if Groundwater Levels Fall Below Minimum Thresholds*
- *Management Action #2: Well Head Requirements*
- *Management Action #3: Investigate Issues Promptly Regarding Water Quality and Unexpected Water Pumping*
- *Management Action #4: Impose SGMA or Other Available Fees on Pumpers to Encourage Reduced Pumping and Conservation*
- *Management Action #5: Groundwater Pumping Allocation*
- *Management Action #6: Groundwater Basin Adjudication*

CHAPTER 7 - PLAN IMPLEMENTATION

The adoption of the GSP in 2022 officially started the Plan Implementation. The GSAs will continue their efforts to secure necessary funding to successfully monitor and manage groundwater resources within the SGP Subbasin in a sustainable manner. The GSAs will coordinate with various stakeholders and beneficial users to begin implementing the GSP and identify ways to improve the future GSP Updates.

Costs to implement, monitor, annually evaluate, and update the GSP were estimated conservatively. Funding for projects and management actions will be through assessments and grant funds when available. The majority of the projects are conceptual. As projects are developed during the implementation period, costs will be refined. The schedules and estimates presented in the GSP are initial estimates and will likely change as the plan is implemented and periodically evaluated.

Successful implementation of this GSP over the planning and implementation horizon (2022-2042) will require ongoing efforts to engage stakeholders and the general public in the sustainability process, communicating the statutory requirement, the objectives of the GSP, and progress in maintaining the sustainability goal. The GSAs will report the result of sustainable management criteria analysis through results of representative monitoring including annual groundwater levels, extraction volume, surface water use, total water use, groundwater storage change, and progress of GSP implementation to the public and DWR on an annual basis. The GSAs will continue to update information and review the need for amending the GSP at least every five years. The five-year periodic evaluation will include the results of the Subbasin operations and progress in achieving sustainability including current groundwater conditions, status of projects or management actions, evaluation of undesirable results relating to measurable objectives and minimum thresholds, changes in monitoring networks, summary of enforcement or legal actions, and agency coordination efforts to the public and DWR.

1 INTRODUCTION

1.1 PURPOSE OF GROUNDWATER SUSTAINABILITY PLAN

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package, composed of AB 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley), collectively known as the Sustainable Groundwater Management Act of 2014 (SGMA), which is codified in Section 10720 et seq. of the California Water Code. This legislation created a statutory framework for groundwater management in California that must be achieved during the planning and implementation horizon and sustained into the future without causing undesirable results. SGMA requires that the following six sustainability indicators must be considered (Figure 1-1).

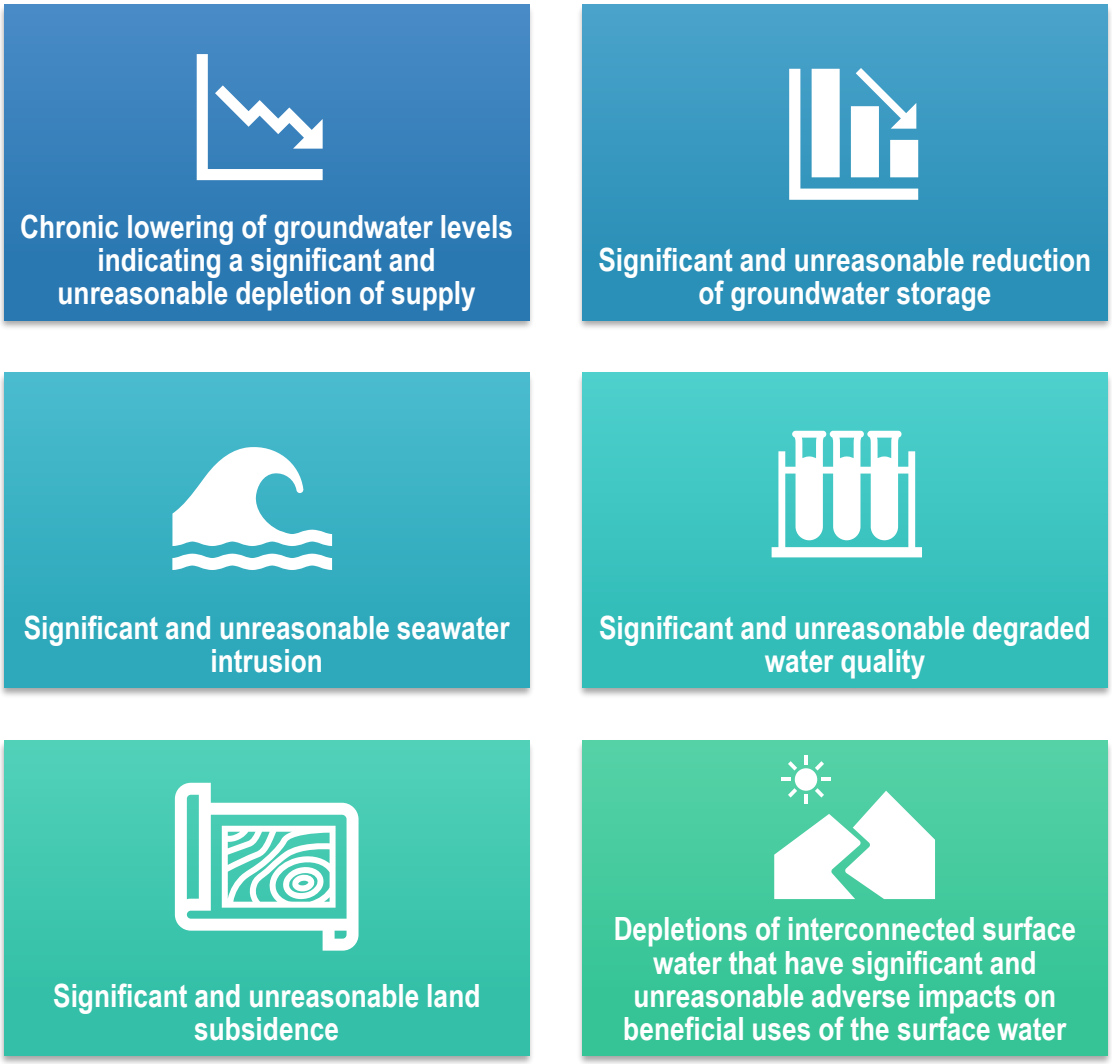


Figure 1-1. Sustainability indicators

SGMA requires governments and Groundwater Sustainability Agencies (GSA) of high and medium priority groundwater basins to establish sustainability and to ensure the subbasin will be operable without causing significant and unreasonable undesirable results related to the six sustainability indicators. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. For medium priority basins, including the San Gorgonio Pass Groundwater Subbasin (SGP Subbasin, Subbasin, Basin, or Plan Area), the deadline for achieving sustainability is 2042.

In his signing statement, Governor Brown emphasized that "groundwater management in California is best accomplished locally." The GSAs within the SGP Subbasin, are cooperatively working to maintain basin-wide sustainability. The feasibility of maintaining sustainability within the SGP Subbasin is improved with ongoing financial and technical assistance from the Department of Water Resources (DWR).

1.2 SUSTAINABILITY GOAL

The GSAs of the SGP Subbasin include Desert Water Agency GSA (DWAGSA), San Gorgonio Pass GSA (SGPGSA), and Verbenia GSA (VGSA). The sustainability goal of the GSAs is to ensure that the subbasin will be managed sustainably through the implementation period. In doing so, the SGP Subbasin will be managed in a sustainable manner to maintain a reliable water supply for current and future beneficial uses and users of groundwater in the subbasin, including land uses and property interests potentially affected by the use of groundwater, without experiencing undesirable results. This goal will be met by balancing water demand with available water supply, meeting the sustainability criteria for groundwater levels, groundwater storage, groundwater quality, land subsidence, or interconnected surface water, and avoiding significant or unreasonable impacts to beneficial uses and users of groundwater. Seawater intrusion is not an applicable sustainability indicator because the conditions that induce it are not present in the SGP Subbasin. More information is available in Chapter 4 – Sustainable Management Criteria.

The SGP Subbasin, identified by the DWR as groundwater Subbasin Number 7-021.04, is located within the Colorado River Hydrologic Region, Coachella Valley Groundwater Basin. The 2014 California State Groundwater Elevation Monitoring (CASGEM) Basin Prioritization classified basins as high, medium, low and very low. SGMA requires that groundwater basins in California's medium and high priority be managed in accordance with Groundwater Sustainability Plans (GSPs) or Alternate plans. In 2018, DWR completed and released the final Basin Prioritization as required by the Water Code., the State identified the SGP Subbasin as a "medium priority" subbasin. Chapter 3 – Basin Setting of this GSP discusses the hydrogeologic setting, groundwater conditions, and water budget.

While the SGP Subbasin experienced a decline of a portion of its stored groundwater in the recent prolonged drought period, the aquifers within the SGP Subbasin contain a substantial amount of water in storage. This extensive storage volume has lessened the effects of water level declines during the hydrologic cycle's extended drought periods, providing a buffer against extreme fluctuations in recharge supplies that are dependent on rainfall and mountain runoff each year. More information on the hydrologic cycle of the subbasin is available in Chapter 3 – Basin Setting.

The GSAs in the Subbasin are to collaborate to manage the aquifer to ensure the sustainability of groundwater resources for beneficial uses in the subbasin. This coordination can be most effective when there is collaboration between the GSAs' member agencies, SGP groundwater beneficial users, adjacent Subbasins, and the Morongo Band of Mission Indians (MBMI or Tribe). MBMI is a federally recognized tribe, which means the Tribe is not subject to SGMA. However, MBMI is an active participant in the San Gorgonio Pass GSP Working Group and has provided feedback and support in the development of the GSP and intended implementation. MBMI's jurisdiction covers approximately 37-percent of the SGP Subbasin's acreage. MBMI has an interest in groundwater sustainability as the Tribe produces groundwater to support the commercial, domestic, industrial, irrigation, and municipal uses, including the Morongo Casino, Resort, and Spa, located along Interstate 10 in Cabazon, California and the Arrowhead Water Bottling Plant.

Collaboration between all beneficial users will be important as the GSAs aim to secure funding and local support to implement projects and management actions to sustain the general groundwater conditions within the SGP Subbasin. Sustaining groundwater conditions is defined as managing groundwater levels to avoid significant and unreasonable impacts to applicable sustainability indicators. The variability in natural recharge supplies, in contrast to the comparatively steady nature of water demands, makes it infeasible to achieve balance every year.

It is anticipated, there will be years where the SGP Subbasin area will increase groundwater storage and other years where the groundwater storage declines, but groundwater storage is projected to continue at stable long-term conditions within the SGP Subbasin. More information on the SGP Subbasin water budget is available in Section 3.3.

Projects that can support water security, drought resilience, and adaptability to climate change by increasing the artificial groundwater recharge or increasing surface water supplies, as well as implementation of management actions, are identified in Chapter 6 – Projects and Management Actions. The goal of the Subbasin is to maintain the trend of cyclical water table variations that provide long-term groundwater storage, with the understanding that water levels will fluctuate based on the season, hydrologic cycle, and changing groundwater demands within the subbasin.

In order to accomplish this overarching goal, this plan identifies undesirable results, which are outcomes that could occur should the plan not be effectively implemented, or the plan's strategies are not effective. Undesirable results occur when specific minimum thresholds are exceeded. Sustainable outcomes identified in this GSP may take time to achieve; however, the Subbasin's priority is to maintain sustainable groundwater conditions throughout a multi-decade hydrologic cycle. In addition to the minimum thresholds, measurable objectives, called interim milestones, have been defined to gauge progress during the intervening years to assure that the groundwater levels are within a reasonable range of the projected groundwater levels and, therefore, in alignment with achieving the sustainability goal.

Undesirable results, minimum thresholds, and measurable objectives to meet the sustainability goal of the SGP Subbasin and this GSP are all defined and discussed in detail in Chapter 4 – Sustainable Management Criteria.

1.3 COORDINATION AGREEMENTS

Coordination agreements are required if more than one GSP is submitted within a groundwater basin. The SGP Subbasin is home to three GSAs, all of whom are involved in the preparation of a single GSP. Therefore, the SGP Subbasin GSAs are not required to develop a Coordination Agreement. Despite this, the GSAs entered into a cooperative Memorandum of Agreement for development of the GSP and grant funding, which is included as Appendix A – Memorandum of Agreement (MOA).

1.4 INTER BASIN AGREEMENTS

There are no written agreements between the SGP Subbasin and the adjudicated Beaumont Basin to the west and the Indio Subbasin to the east. Rather, the GSAs have coordinated directly with those neighboring subbasins and GSAs. Various coordination meetings have occurred between the consultant teams of the SGP Subbasin and the Beaumont Basin and Indio Subbasin to discuss estimates in projected pumping volumes, boundary flows, and other hydrogeologic estimations.

1.5 AGENCY INFORMATION

Regulation Requirements:

§354.6(a) The name and mailing address of the Agency

San Gorgonio Pass Subbasin
1210 Beaumont Ave.
Beaumont, CA 92223
Phone (951) 845-2577
Contact: Lance Eckhart, San Gorgonio Pass Subbasin Plan Manager

1.5.1 ORGANIZATION AND MANAGEMENT STRUCTURE OF THE GSA

Regulation Requirements:

§354.6(b) The organization and management structure of the Agency, identifying persons with management authority for implementation of the Plan. §354.6(c) The name and contact information, including the phone number, mailing address and electronic mail address, of the plan manager.

The SGP Subbasin includes diverse areas including commercial, industrial, municipal, and residential development; open (undeveloped) lands; and places that have been designated by the State of California as Disadvantaged Communities disproportionately impacted by environmental and socioeconomic burdens. The area is a mix of public agencies, private mutual water companies, federally recognized tribal territory, and non-districted (white area) lands. The Subbasin, which is located in Riverside County, is governed by three GSAs and their respective member agency representatives, as detailed below.

DESERT WATER AGENCY GSA REPRESENTATIVE

Esther Saenz
Desert Water Agency
1200 S Gene Autry Trl.
Palm Springs, CA 92264
(760) 323-4971

SAN GORGONIO PASS GSA REPRESENTATIVES

Larry Ellis
Banning Heights Mutual Water Company
7091 Bluff St.
Banning, CA 92220
(951) 849-2540

James Clark
Cabazon Water District
14618 Broadway St.
Cabazon, CA 92230
(951) 849-4442

Arturo Vela
City of Banning
99 E. Ramsey St.
Banning, CA 92220
(951) 922-3260

Lance Eckhart
San Gorgonio Pass Water Agency
1210 Beaumont Ave.
Beaumont, CA 92223
Phone (951) 845-2577

VERBENIA GSA REPRESENTATIVE

Arden Wallum
Mission Springs Water District
66575 2nd St.
Desert Hot Springs, CA 92240
(760) 329-6448

Lance Eckhart
San Gorgonio Pass Water Agency
1210 Beaumont Ave.
Beaumont, CA 92223
Phone (951) 845-2577

TECHNICAL CONSULTANT REPRESENTATIVES:

Terry Erlewine
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Phone (559) 449-2700

Abishek Singh
Intera Incorporated
3838 W. Carson St. #380
Torrance, CA 90503
Phone (424) 275-4055

SGP SUBBASIN PLAN MANAGER:

Lance Eckhart
San Gorgonio Pass Subbasin Plan Manager
1210 Beaumont Ave.
Beaumont, CA 92223
Fresno, CA 93725
Phone (951) 845-2577

1.5.2 LEGAL AUTHORITY OF THE GSA

Regulation Requirements:

§354.6(d) The legal authority of the Agency, with specific reference to citations setting forth the duties, powers, and responsibilities of the Agency, demonstrating that the Agency has the legal authority to implement the plan.

The legislation requires GSAs to develop and implement a GSP to achieve groundwater sustainability management within the territory of the Agency in compliance with the mandates and timelines in SGMA.

While there are a number of small public and private water purveyors and agencies throughout the territory of the Subbasin, these entities do not have sufficient staff or resources to otherwise form a GSA, and these entities have agreed that the interests of the area are best served by having three individual GSAs dedicated to management of groundwater resources within the Subbasin. Accordingly, the GSAs are the exclusive local agencies within their respective designated areas with powers to comply with SGMA.

In Water Code Appendix Section 143-801, the GSA enabling act provides that, pursuant to Chapter 8 of Part 2.74 of Division 6 of the Water Code, the GSA may impose a variety of fees as it may determine to be necessary, including, but not limited to, permit fees and fees on groundwater extraction or other regulated activities. These fees would fund the costs of a groundwater sustainability program, including, but not limited to, preparation, adoption, and amendment of a GSP and investigations, inspections, compliance assistance, enforcement, and program administration during implementation of the GSP, including a prudent reserve. These fees are discussed further below.

1.5.3 COST OF PLAN IMPLEMENTATION AND SOURCES OF REVENUE

Regulation Requirements:

§354.6(e) An estimate of the cost of implementing the Plan and a general description of how the Agency plans to meet those costs.

In 2019, the Subbasin's GSAs developed an MOA included as Appendix A - MOA that set forth a multi-year budget within the Subbasin's awarded grant budget to cover costs for GSA administration, GSP preparation, and initial implementation of the GSP for the GSAs.

During the implementation phase, the GSAs will consider options for funding projects in addition to potential grant funding, including loans and bonds. Other sources of funding will be considered and may be implemented in the future to meet the annual estimated costs of implementing the GSP that are discussed in Chapter 7 – Plan Implementation

1.6 GSP ORGANZAITION PREPARATION CHECKLIST

The GSP is organized in accordance with the SGMA Regulations in a format similar to the outline provided by DWR.

- ***Executive Summary*** *provides a summary of what will be included in the GSP.*
- ***Chapter 1*** *describes the Introduction, including purpose of the GSP, sustainability goal, agency information, and GSP organization.*
- ***Chapter 2*** *describes the Plan area, including geographic setting, existing water resources planning and programs, relationship of the GSP to other general plan documents within the Agency boundary and additional GSP components.*
- ***Chapter 3*** *serves as a scientific primer and describes the Basin Setting and includes three parts: (3.1) Hydrogeologic Conceptual Model, (3.2) Groundwater Conditions, and (3.3) Water Budget.*
- ***Chapter 4*** *sets forth the GSAs' adopted sustainability goals, addresses the mandated Undesirable Results, defines Minimum Thresholds for each Undesirable Result, and sets Measurable Objectives for both intermediate plan years (Interim Milestones) and for the Plan's complete implementation.*
- ***Chapter 5*** *describes the network of monitoring wells and other facilities adopted by the Agency to measure GSP outcomes. The chapter assesses the need for improvements to the network in order to provide fully representative data, including identification of data gaps. Monitoring protocols and data analysis techniques are also addressed.*
- ***Chapter 6*** *lists and describes each project and management action that will be evaluated and may be adopted by the GSAs in pursuit of sustainability. The section includes such project details as required permits, anticipated benefits, and project capital and operations/maintenance costs, along with management actions that may be implemented.*
- ***Chapter 7*** *describes the GSP implementation process, including estimated costs, sources of funding, an overall preliminary schedule through full implementation, description of the required data management system, methodology for annual reporting, and how progress evaluations will be made over time.*
- ***Chapter 8*** *summarizes the references and sources used to prepare and document this GSP.*

A checklist detailing where each regulation is addressed in the GSP is presented in Table 1-1.

Table 1-1

GSP REGULATIONS SECTION	WATER CODE SECTION	REQUIREMENT	DESCRIPTION	SECTION(S) OR PAGE NUMBER(S) IN THE GSP
ARTICLE 3. TECHNICAL AND REPORTING STANDARDS				
352.2		Monitoring Protocols	• Monitoring protocols adopted by the GSA for data collection and management • Monitoring protocols that are designed to detect changes in groundwater levels, groundwater quality, inelastic surface subsidence for basins for which subsidence has been identified as a potential problem, and flow and quality of surface water that directly affect groundwater levels or quality or are caused by groundwater extraction in the basin	Section 5.2 – Section 5.8
ARTICLE 5. PLAN CONTENTS, SUBARTICLE 1. ADMINISTRATIVE INFORMATION				
354.4		General Information	• Executive Summary • List of references and technical studies	Section 0 (pages ES-1 – ES-7) Section 8
354.6		Agency Information	• GSA mailing address • Organization and management structure • Contact information of Plan Manager • Legal authority of GSA • Estimate of implementation costs	Section 1.1 – Section 1.4 Section 7.1 – 7.2
354.8(a)	10727.2(a)(4)	Map(s)	• Area covered by GSP (Figure 2-2) • Adjudicated areas, other agencies within the basin, and areas covered by an Alternative (Figure 2-2) • Jurisdictional boundaries of Federal or State land (Figure 2-3) • Existing land use designations (Figures 2-5, 2-6, 2-7) • Density of wells per square mile (Figure 2-8)	Section 2.1

GSP REGULATIONS SECTION	WATER CODE SECTION	REQUIREMENT	DESCRIPTION	SECTION(S) OR PAGE NUMBER(S) IN THE GSP
ARTICLE 5. PLAN CONTENTS, SUBARTICLE 1. ADMINISTRATIVE INFORMATION (CONTINUED)				
354.8(b)		Description of the Plan Area	• Summary of jurisdictional areas and other features	Section 2.1
354.8(c) 354.8(d) 354.8(e)	10727.2(g)	Water Resource Monitoring and Management Programs	• Description of water resources monitoring and management programs • Description of how the monitoring networks of those plans will be incorporated into the GSP • Description of how those plans may limit operational flexibility in the basin • Description of conjunctive use programs	Section 2.2 Section 4.3-Section 4.4 Section 5.1 Section 5.7
354.8(f)	10727.2(g)	Land Use Elements or Topic Categories of Applicable General Plans	• Summary of general plans and other land use plans • Description of how implementation of the GSP may change water demands or affect achievement of sustainability and how the GSP addresses those effects • Description of how implementation of the GSP may affect the water supply assumptions of relevant land use plans • Summary of the process for permitting new or replacement wells in the basin • Information regarding the implementation of land use plans outside the basin that could affect the ability of the Agency to achieve sustainable groundwater management	Section 2.3 Section 6.2 – Section 6.3 Section 7.3

GSP REGULATIONS SECTION	WATER CODE SECTION	REQUIREMENT	DESCRIPTION	SECTION(S) OR PAGE NUMBER(S) IN THE GSP
ARTICLE 5. PLAN CONTENTS, SUBARTICLE 1. ADMINISTRATIVE INFORMATION (CONTINUED)				
354.8(g)	10727.4	Additional GSP Contents	Description of Actions related to: • Control of saline water intrusion • Wellhead protection • Migration of contaminated groundwater • Well abandonment and well destruction program • Replenishment of groundwater extractions • Conjunctive use and underground storage • Well construction policies • Addressing groundwater contamination cleanup, recharge, diversions to storage, conservation, water recycling, conveyance, and extraction projects • Efficient water management practices • Relationships with State and Federal regulatory agencies • Review of land use plans and efforts to coordinate with land use planning agencies to assess activities that potentially create risks to groundwater quality or quantity • Impacts on groundwater dependent ecosystems	Section 2.4 Section 3.2
354.10		Notice and Communication	• Description of beneficial uses and users • List of public meetings • GSP comments and responses • Decision-making process • Public engagement • Encouraging active involvement • Informing the public on GSP implementation progress	Appendix B Appendix C Appendix F Section 2.5

GSP REGULATIONS SECTION	WATER CODE SECTION	REQUIREMENT	DESCRIPTION	SECTION(S) OR PAGE NUMBER(S) IN THE GSP
ARTICLE 5. PLAN CONTENTS, SUBARTICLE 2. BASIN SETTING				
354.14		Hydrogeologic Conceptual Model	• Description of the Hydrogeologic Conceptual Model • Two scaled cross-sections • Map(s) of physical characteristics: topographic information, surficial geology, soil characteristics, surface water bodies, source and point of delivery for imported water supplies	Section 2.3
354.14(c)(4)	10727.2(a)(5)	Map of Recharge Areas	• Map delineating existing recharge areas that substantially contribute to the replenishment of the basin, potential recharge areas, and discharge areas	Figure 3-15
	10727.2(d)(4)	Recharge Areas	• Description of how recharge areas identified in the plan substantially contribute to the replenishment of the basin	Section 3.1
354.16	10727.2(a)(1) 10727.2(a)(2)	Current and Historical Groundwater Conditions	• Groundwater elevation data • Estimate of groundwater storage • Seawater intrusion conditions • Groundwater quality issues • Land subsidence conditions • Identification of interconnected surface water systems • Identification of groundwater-dependent ecosystems	Section 3.2
354.18	10727.2(a)(3)	Water Budget Information	• Description of inflows, outflows, and change in storage • Quantification of overdraft • Estimate of sustainable yield • Quantification of current, historical, and projected water budgets	Section 3.3
	10727.2(d)(5)	Surface Water Supply	• Description of surface water supply used or available for use for groundwater recharge or in-lieu use	Section 3.1

GSP REGULATIONS SECTION	WATER CODE SECTION	REQUIREMENT	DESCRIPTION	SECTION(S) OR PAGE NUMBER(S) IN THE GSP
ARTICLE 5. PLAN CONTENTS, SUBARTICLE 2. BASIN SETTING (CONTINUED)				
354.20		Management Areas	• Reason for creation of each management area • Minimum thresholds and measurable objectives for each management area • Level of monitoring and analysis • Explanation of how management of management areas will not cause undesirable results outside the management area • Description of management areas	Section 2. Section 4.2 – Section 4.6 Section 5.1 – Section 5.6
ARTICLE 5. PLAN CONTENTS, SUBARTICLE 3. SUSTAINABLE MANAGEMENT CRITERIA				
354.24		Sustainability Goal	Description of the sustainability goal	Section 4.1
354.26		Undesirable Results	Description of undesirable results Cause of groundwater conditions that would lead to undesirable results Criteria used to define undesirable results for each sustainability indicator Potential effects of undesirable results on beneficial uses and users of groundwater	Section 4.2
354.28	10727.2(d)(1) 10727.2(d)(2)	Minimum Thresholds	• Description of each minimum threshold and how they were established for each sustainability indicator • Relationship for each sustainability indicator • Description of how selection of the minimum threshold may affect beneficial uses and users of groundwater • Standards related to sustainability indicators • How each minimum threshold will be quantitatively measured	Section 4.3

GSP REGULATIONS SECTION	WATER CODE SECTION	REQUIREMENT	DESCRIPTION	SECTION(S) OR PAGE NUMBER(S) IN THE GSP
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354.14(c)(4)	10727.2(a)(5)	Map of Recharge Areas	• Map delineating existing recharge areas that substantially contribute to the replenishment of the basin, potential recharge areas, and discharge areas	Figure 3-15
	10727.2(d)(4)	Recharge Areas	• Description of how recharge areas identified in the plan substantially contribute to the replenishment of the basin	Section 3.1
354.16	10727.2(a)(1) 10727.2(a)(2)	Current and Historical Groundwater Conditions	• Groundwater elevation data • Estimate of groundwater storage • Seawater intrusion conditions • Groundwater quality issues • Land subsidence conditions • Identification of interconnected surface water systems • Identification of groundwater-dependent ecosystems	Section 3.2
354.18	10727.2(a)(3)	Water Budget Information	• Description of inflows, outflows, and change in storage • Quantification of overdraft • Estimate of sustainable yield • Quantification of current, historical, and projected water budgets	Section 3.3
	10727.2(d)(5)	Surface Water Supply	• Description of surface water supply used or available for use for groundwater recharge or in-lieu use	Section 3.1

GSP REGULATIONS SECTION	WATER CODE SECTION	REQUIREMENT	DESCRIPTION	SECTION(S) OR PAGE NUMBER(S) IN THE GSP
ARTICLE 5. PLAN CONTENTS, SUBARTICLE 2. BASIN SETTING (CONTINUED)				
354.20		Management Areas	• Reason for creation of each management area • Minimum thresholds and measurable objectives for each management area • Level of monitoring and analysis • Explanation of how management of management areas will not cause undesirable results outside the management area • Description of management areas	Section 2. Section 4.2 – Section 4.6 Section 5.1 – Section 5.6
ARTICLE 5. PLAN CONTENTS, SUBARTICLE 3. SUSTAINABLE MANAGEMENT CRITERIA				
354.24		Sustainability Goal	Description of the sustainability goal	Section 4.1
354.26		Undesirable Results	Description of undesirable results Cause of groundwater conditions that would lead to undesirable results Criteria used to define undesirable results for each sustainability indicator Potential effects of undesirable results on beneficial uses and users of groundwater	Section 4.2
354.28	10727.2(d)(1) 10727.2(d)(2)	Minimum Thresholds	• Description of each minimum threshold and how they were established for each sustainability indicator • Relationship for each sustainability indicator • Description of how selection of the minimum threshold may affect beneficial uses and users of groundwater • Standards related to sustainability indicators • How each minimum threshold will be quantitatively measured	Section 4.3

GSP REGULATIONS SECTION	WATER CODE SECTION	REQUIREMENT	DESCRIPTION	SECTION(S) OR PAGE NUMBER(S) IN THE GSP
ARTICLE 5. PLAN CONTENTS, SUBARTICLE 3. SUSTAINABLE MANAGEMENT CRITERIA (CONTINUED)				
354.30	10727.2(b)(1) 10727.2(b)(2) 10727.2(d)(1) 10727.2(d)(2)	Measurable Objectives	• Description of establishment of the measurable objectives for each sustainability indicator • Description of how a reasonable margin of safety was established for each measurable objective • Description of a reasonable path to achieve and maintain the sustainability goal, including a description of interim milestones	Section 4.4
ARTICLE 5. PLAN CONTENTS, SUBARTICLE 4. MONITORING NETWORKS				
354.34	10727.2(d)(1) 10727.2(d)(2) 10727.2(e) 10727.2(f)	Monitoring Networks	• Description of monitoring network • Description of monitoring network objectives • Description of how the monitoring network is designed to: demonstrate groundwater occurrence, flow directions, and hydraulic gradients between principal aquifers and surface water features; estimate the change in annual groundwater in storage; monitor seawater intrusion; determine groundwater quality trends; identify the rate and extent of land subsidence; and calculate depletions of surface water caused by groundwater extractions • Description of how the monitoring network provides adequate coverage of Sustainability Indicators • Density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends • Scientific rationale (or reason) for site selection • Consistency with data and reporting standards • Corresponding sustainability indicator, minimum threshold, measurable objective, and interim milestone	Section 5.1 – Section 5.7 Section 4.3 – Section 4.7

GSP REGULATIONS SECTION	WATER CODE SECTION	REQUIREMENT	DESCRIPTION	SECTION(S) OR PAGE NUMBER(S) IN THE GSP
			(Monitoring Networks Continued) Location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used Description of technical standards, data collection methods, and other procedures or protocols to ensure comparable data and methodologies	Section 5.1 – Section 5.4
354.36		Representative Monitoring	• Description of representative sites • Demonstration of adequacy of using groundwater elevations as proxy for other sustainability indicators • Adequate evidence demonstrating site reflects general conditions in the area	Section 4.3 Section 5.1 - Section 5.4
354.38		Assessment and Improvement of Monitoring Network	• Review and evaluation of the monitoring network • Identification and description of data gaps • Description of steps to fill data gaps • Description of monitoring frequency and density of sites	Section 5.2 – Section 5.7

GSP REGULATIONS SECTION	WATER CODE SECTION	REQUIREMENT	DESCRIPTION	SECTION(S) OR PAGE NUMBER(S) IN THE GSP
ARTICLE 5. PLAN CONTENTS, SUBARTICLE 5. PROJECTS AND MANAGEMENT ACTIONS				
354.44			• Description of projects and management actions that will help achieve the basin's sustainability goal • Measurable objective that is expected to benefit from each project and management action • Circumstances for implementation • Public noticing • Permitting and regulatory process • Timetable for initiation and completion, and the accrual of expected benefits • Expected benefits and how they will be evaluated • How the project or management action will be accomplished. If the projects or management actions rely on water from outside the jurisdiction of the Agency, an explanation of the source and reliability of that water shall be included. • Legal authority required • Estimated costs and plans to meet those costs • Management of groundwater extractions and recharge	Appendix E Section 6.2 – Section 6.3
354.44(b)(2)	10727.2(d)(3)		• Overdraft mitigation projects and management actions	Appendix E Section 6.2 – Section 6.3

GSP REGULATIONS SECTION	WATER CODE SECTION	REQUIREMENT	DESCRIPTION	SECTION(S) OR PAGE NUMBER(S) IN THE GSP
ARTICLE 8. INTERAGENCY AGREEMENTS				
357.4	10727.6	Coordination Agreements - Shall be submitted to the Department together with the GSPs for the basin and, if approved, shall become part of the GSP for each participating Agency.	Coordination Agreements shall describe the following: • A point of contact • Responsibilities of each Agency • Procedures for the timely exchange of information between Agencies • Procedures for resolving conflicts between Agencies • How the Agencies have used the same data and methodologies to coordinate GSPs • How the GSPs implemented together satisfy the requirements of SGMA • Process for submitting all Plans, Plan amendments, supporting information, all monitoring data and other pertinent information, along with annual reports and periodic evaluations • A coordinated data management system for the basin • Coordination agreements shall identify adjudicated areas within the basin, and any local agencies that have adopted an Alternative that has been accepted by the Department	Section 1.3

2 PLAN AREA

Regulation Requirements:

§354.8 Each Plan shall include a description of the geographic areas covered, including the following information:
(a) One or more maps of the basin that depict the following, as applicable:
(1) The area covered by the Plan, delineating areas managed by the Agency as an exclusive Agency and any areas for which the Agency is not an exclusive Agency, and the name and location of any adjacent basins.
(2) Adjudicated areas, other Agencies within the basin, and areas covered by an Alternative.
(3) Jurisdictional boundaries of federal or state land (including the identity of the agency with jurisdiction over that land), tribal land, cities, counties, agencies with water management responsibilities, and areas covered by relevant general plans.
(4) Existing land use designations and the identification of water use sector and water source type.
(5) The density of wells per square mile, by dasymetric or similar mapping techniques, showing the general distribution of agricultural, industrial, and domestic water supply wells in the basin, including de minimis extractors, and the location and extent of communities dependent upon groundwater, utilizing data provided by the department, as specified in section 353.2, or best available information.
§354.8(b) A written description of the Plan area, including a summary of the jurisdictional areas and other features depicted on the map.

2.1 PLAN AREA AND JURISDICTIONAL BOUNDARY

The SGP Subbasin is located in Southern California between the San Bernardino Mountains to the north and San Jacinto Mountains to the south, Coachella Valley to the east and San Bernardino Valley to the west (**Figure 2-1**). The SGP Subbasin is bounded by the San Timoteo Groundwater Subbasin to the west and Indio Subbasin (covered by a SGMA Alternative Plan) to the east (**Figure 2-1**).

The GSP Plan Area includes the SGPGSA, VGSA, and the DWAGSA (**Table 2-1**). The three GSAs have cooperatively worked together to coordinate GSP development. The SGP Subbasin includes an adjudicated area, known as the Beaumont Basin, that resides outside the Plan Area and is not subjected to GSP regulations. **Figure 2-2** depicts the adjudicated area and the Plan Area that make up the SGP Subbasin.

The Plan Area additionally includes approximately 13,211 acres of land within the federally recognized MBMI dominion. The Morongo Tribe is not required to comply with SGMA; however, the entire Basin will be evaluated for sustainability, including influences from the Morongo Tribe's groundwater management to the extent that data is available. **Figure 2-2** depicts the GSA participants and MBMI's jurisdictional boundaries, and **Figure 2-3** identifies the member agencies in the SGP Subbasin.

Table 2-1 – GSA Acreages

Jurisdiction	Approximate Acres	Percent of SGP Subbasin
Desert Water Agency GSA	1,975	5%
Verbenia GSA	655	2%
San Gorgonio Pass GSA[1]	33,335	93%
San Gorgonio Pass Plan Area	**35,965**	**100%**

[1]The Morongo Band of Mission Indians jurisdiction extends to approximately 13,211 acres (approximately 40-percent) of the SGP GSA area and makes up approximately 37-percent of the total SGP Subbasin acreage.

The SGP Subbasin is further organized into four separate Management Areas (MA), depicted in **Figure 2-4**. The reasoning behind Management Area assignments is described below:

MANAGEMENT AREA 1 – ADJUDICATED BEAUMONT BASIN

MA 1 was defined to cover the portion of the adjudicated Beaumont Basin lying within the SGP Subbasin. As part of an adjudicated basin, the Beaumont Basin is not required to prepare a GSP and provides separate annual monitoring to DWR. Based on the SGMA provisions for adjudicated basins, the Beaumont Basin portion of the SGP Subbasin was assigned a separate MA.

MANAGEMENT AREA 2 – BANNING CANYON/BANNING BENCH

MA 2, which includes the San Gorgonio Pass Water Agency (SGPWA), City of Banning (COB), Banning Heights Mutual Water Company (BHMWC), Mission Springs Water District (MSWD), and the MBMI lands, is established as an MA. MA 2 includes the United State Geographic Survey (USGS)-defined Banning Canyon and Banning Bench Storage Units, with the primary groundwater use occurring in the Banning Canyon storage unit.

MANAGEMENT AREA 3 – BANNING/CABAZON

MA 3, which includes the San Gorgonio Pass Water Agency (SGPWA), City of Banning, Cabazon Water District (CWD), Mission Springs Water District (MSWD), and the MBMI lands, is established as a single Management Area. Management Area 3 is the largest portion of the SGP Subbasin and includes lands in both the SGP GSA and VGSA. Consideration was given to identifying separate management areas for the Banning and Cabazon storage units (as defined by the USGS). However, the two storage units were established based on identified faults, which have not been identified to have significant differences in water level or water quality characteristics.

MANAGEMENT AREA 4 – DESERT WATER AGENCY GSA

The DWAGSA portion of the SGP Subbasin is an MA in consideration of its unique geologic characteristics, minimal groundwater use and water management characteristics. It overlies the eastern edge of the USGS identified Cabazon storage unit.

Figure 2-1. Regional Map

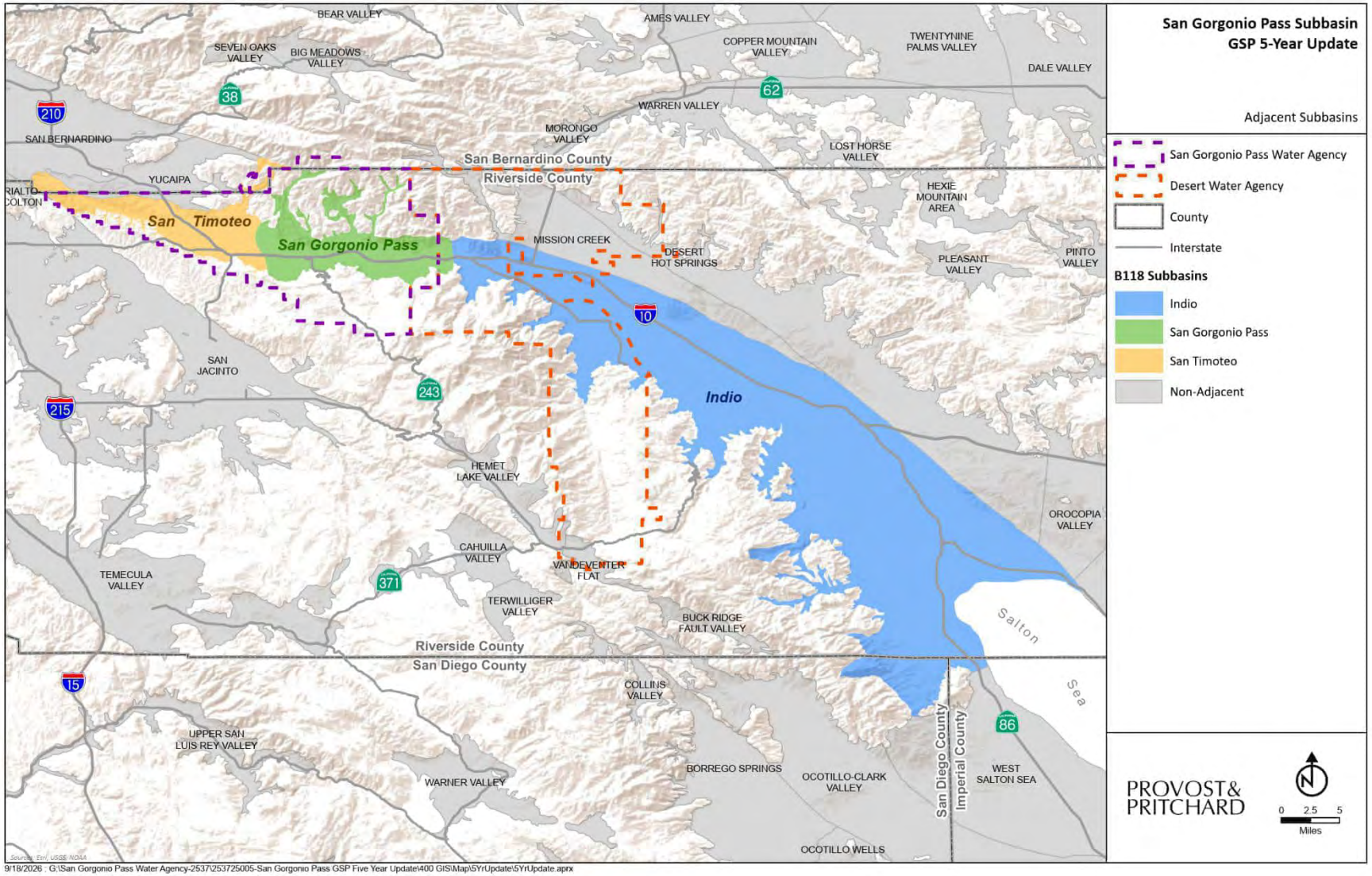


Figure 2-2. Groundwater Sustainability Agencies in the San Gorgonio Pass Subbasin

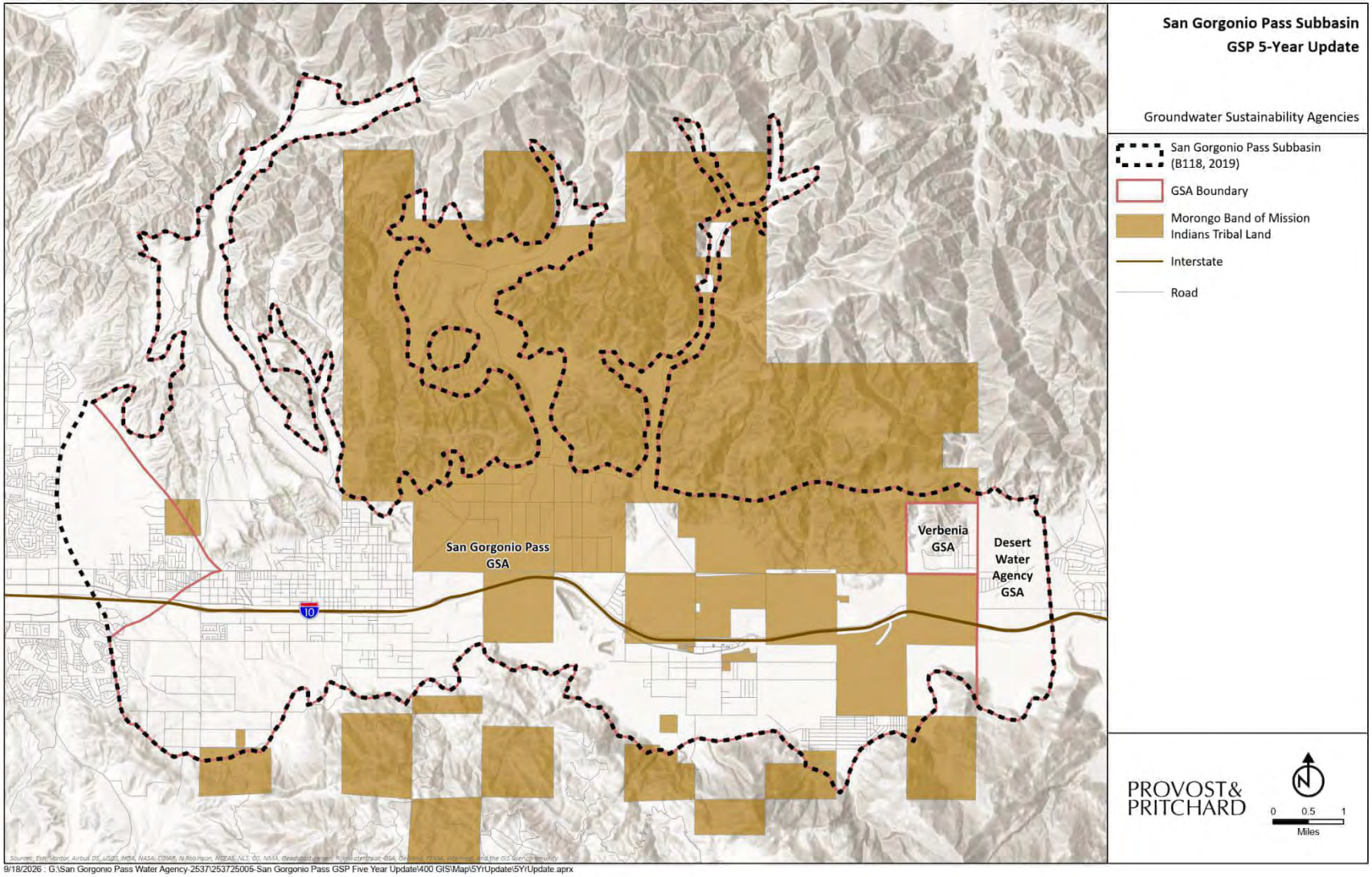


Figure 2-3. Member Agencies and Tribal Lands within San Gorgonio Pass Subbasin

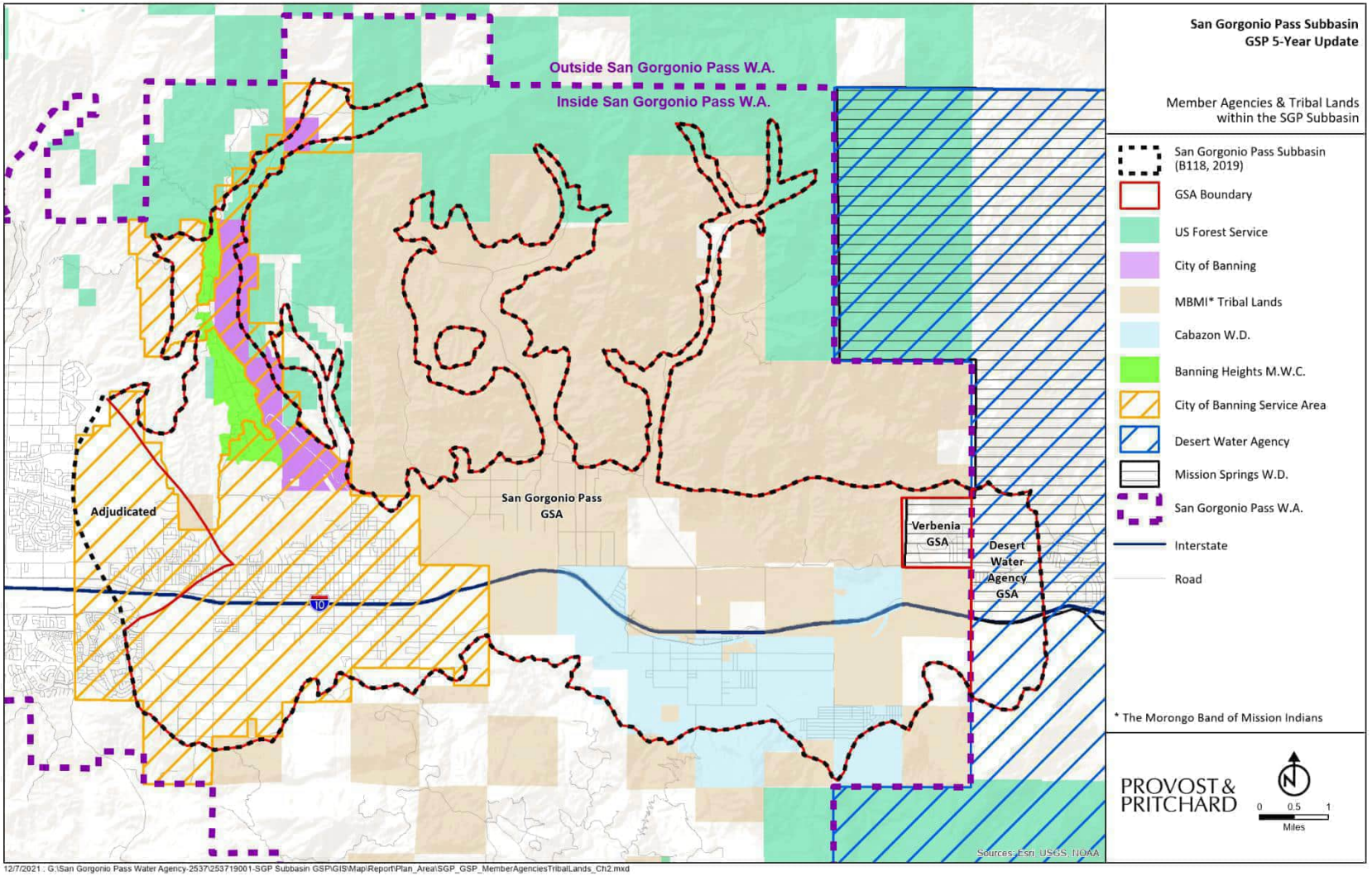
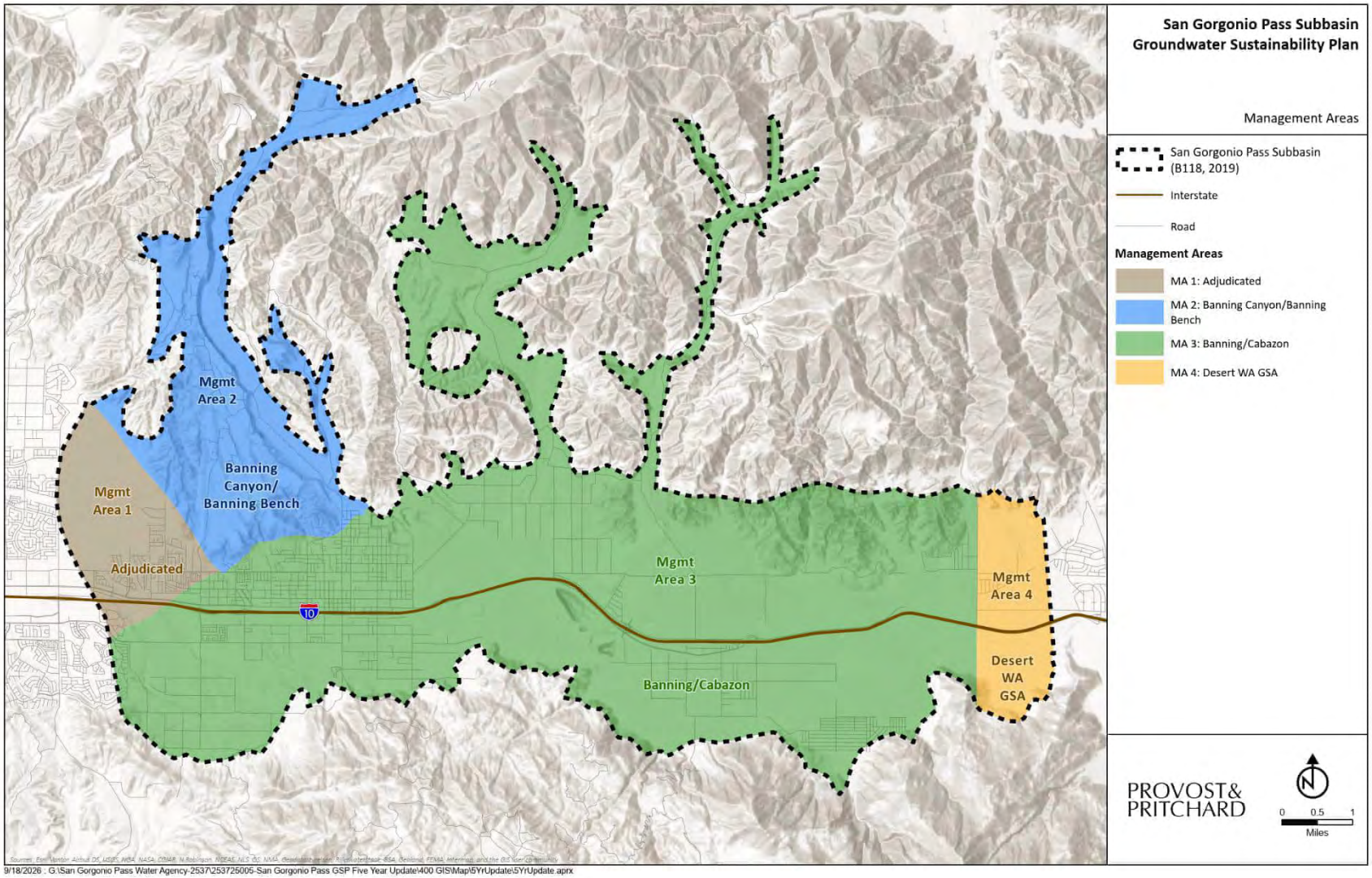


Figure 2-4. San Gorgonio Pass Subbasin Management Areas



2.1.1 LAND USE

The Subbasin is predominantly rural with urbanization extending west to east along the I-10. Additional urban development is expected to be limited to areas that have potential for annexation into the City of Banning. The 2000 and 2022 DWR land use surveys are presented in Figure 2-5 and Figure 2-6 respectively, providing a general overview of the local land uses within the Subbasin. The method for DWR's land use surveys changed from 2000 to 2022, resulting in an apparent reduction in urban development in the 2022 survey that is inconsistent from actual conditions of increased urbanization.

To better clarify the development in the Plan Area, the 2022 Farmland Mapping and Monitoring Program (FMMP) land use survey is depicted in Figure 2-7, showing the dominance of undeveloped and grazing land. The 2022 FMMP survey recognizes more development in the SGP Subbasin than the 2014 DWR survey, while also confirming that the 2000 survey overstated what is typically considered to be urban development.

2.1.1.1 UNDEVELOPED

As shown in Figure 2-7, the majority of the Plan Area is undeveloped open space, categorized as grazing, unique farmland or other land. With predictions of the greater Los Angeles and San Bernardino metropolitan areas' urban expansion potentially influencing development in the SGP Subbasin, the SGP Subbasin's water demand may be affected as land use conversion to urban uses would result in increased overall water demands. The projected water budget considers potential growth as identified in Urban Water Management Plans (UWMP) (Section 3.3).

2.1.1.2 RURAL RESIDENTIAL

Rural residential properties occurring in the areas of undeveloped open space are recognized as de minimus pumpers and rely on septic systems for wastewater disposal. SGMA defines smaller pumpers as de minimis, meaning that they extract less than 2 acre-feet per year (AFY) of groundwater to use for domestic purposes.

2.1.1.3 TRIBAL

The MBMI land includes agricultural, commercial, industrial, municipal, residential, and rural land uses. These lands include over 36,000 acres of trust land, located in the southern flank of the San Bernardino Mountains, the northern flank of the San Jacinto Mountains, and the valley floor of the San Gorgonio River. MBMI land includes several Tribal Government buildings, enterprise facilities, the Arrowhead Bottling Plant, and one of the largest casinos in California, the Morongo Casino, Resort & Spa. Approximately 13,211 acres of the over 36,000 acres are within the SGP Subbasin.

2.1.1.4 URBAN & DEVELOPED (COMMERCIAL, MUNICIPAL, RESIDENTIAL, INDUSTRIAL)

The City of Banning, the community of Cabazon, and MBMI are the primary areas of development within the Plan Area. The urban development within the SGP Subbasin includes but is not limited to commercial lands for uses such as retail outlets and the Morongo Casino, Resort & Spa, industrial areas, municipal facilities, such as schools and the police department, as well as residential neighborhoods.

2.1.1.5 AGRICULTURE

Agriculture is limited in the SGP Subbasin. Historically, the land near Banning Heights Mutual Water Company, located on the geologic feature known as the Banning Bench, served as the primary agricultural ground within the SGP Subbasin. The Banning Bench is located at a higher elevation than the valley and canyon floors, resulting in favorable climactic conditions for orchards with peaches, apples, and nectarines as the dominant crops. Additionally, a portion of Cabazon Water District was historically used for agriculture, also dominated by orchards much like the crops found on the Banning Bench. Peaches, apples, grapes, apricots, almonds, plums, melons, alfalfa, and vegetables were grown, and stock-watering was a common practice. Since 2000, much of the farmland has been converted to undeveloped open space or in some instances, rural residential use (Figure 2-5 and Figure 2-6).

2.1.1.6 LAND MANAGEMENT AGENCIES

The local, state, tribal, and Federal agencies that have jurisdiction over land management in the Subbasin are shown in Table 2-2.

Table 2-2. Land Management Agencies in the San Gorgonio Pass Subbasin

Cities & Unincorporated Areas
City of Banning
Riverside County
Tribal Reservations
Morongo Band of Mission Indians
Federal Lands
United States Forest Service

Figure 2-5. 2000 DWR Land Use in the San Gorgonio Subbasin

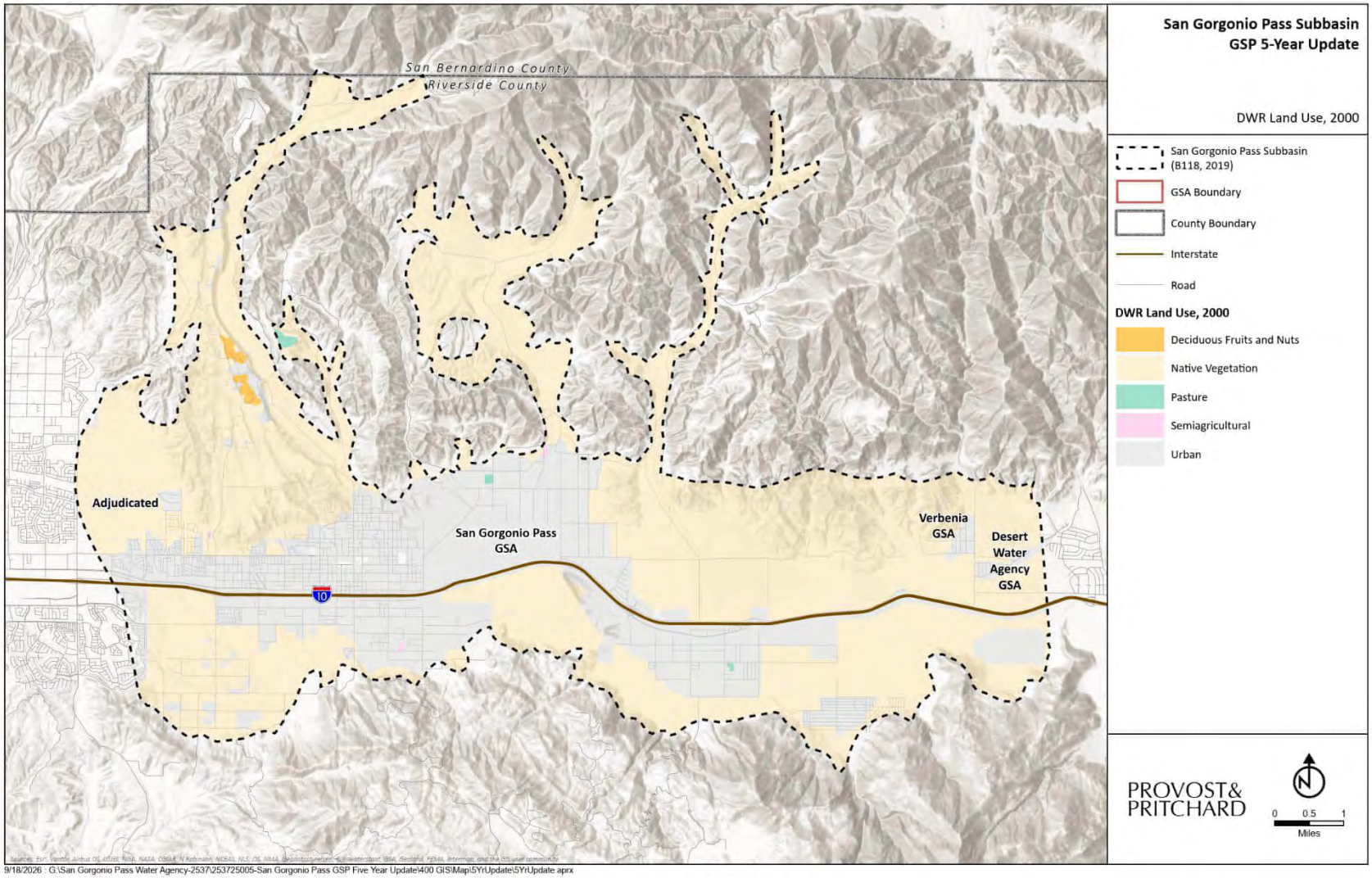


Figure 2-6. 2014 DWR Land Use in the San Gorgonio Pass Subbasin

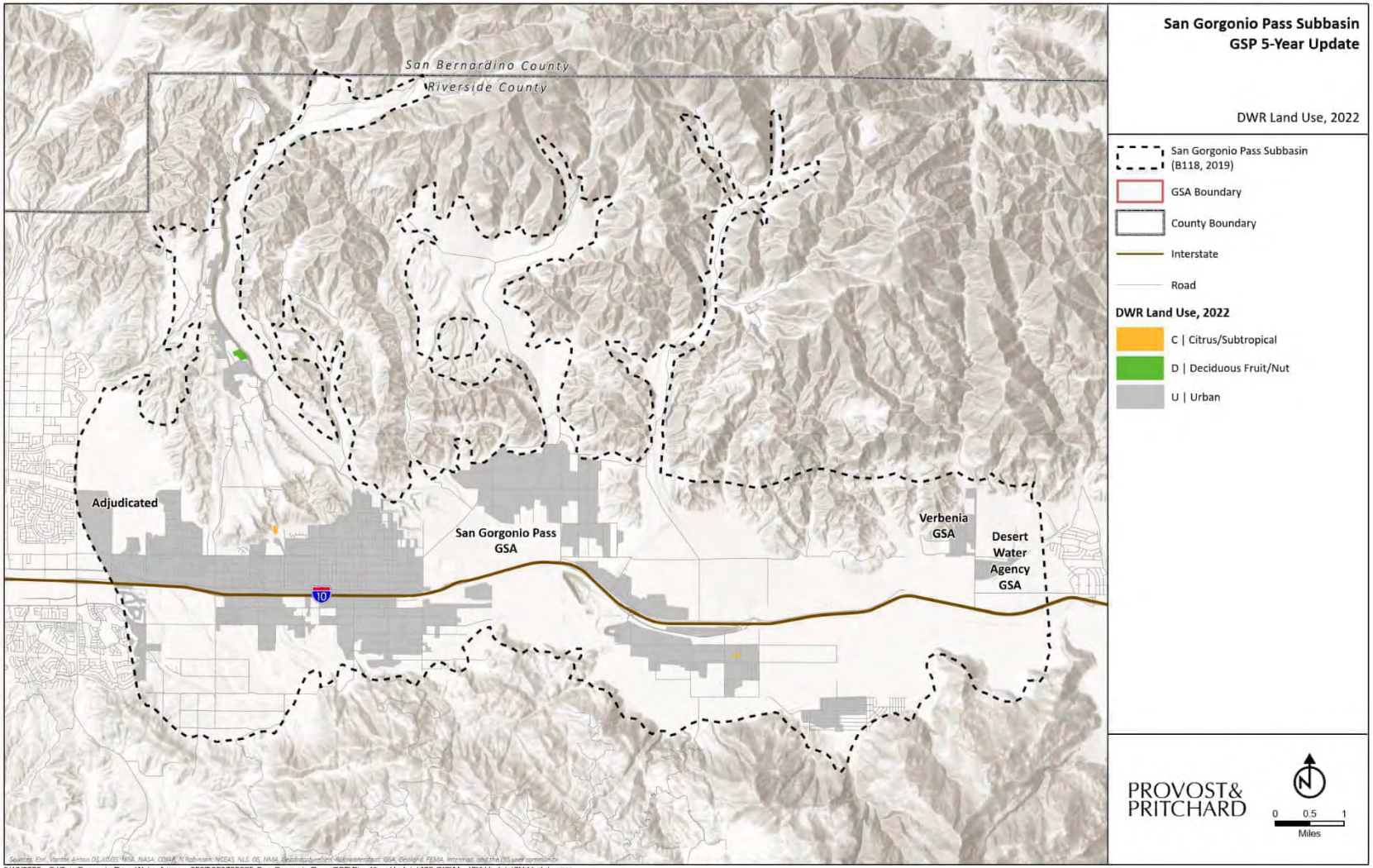
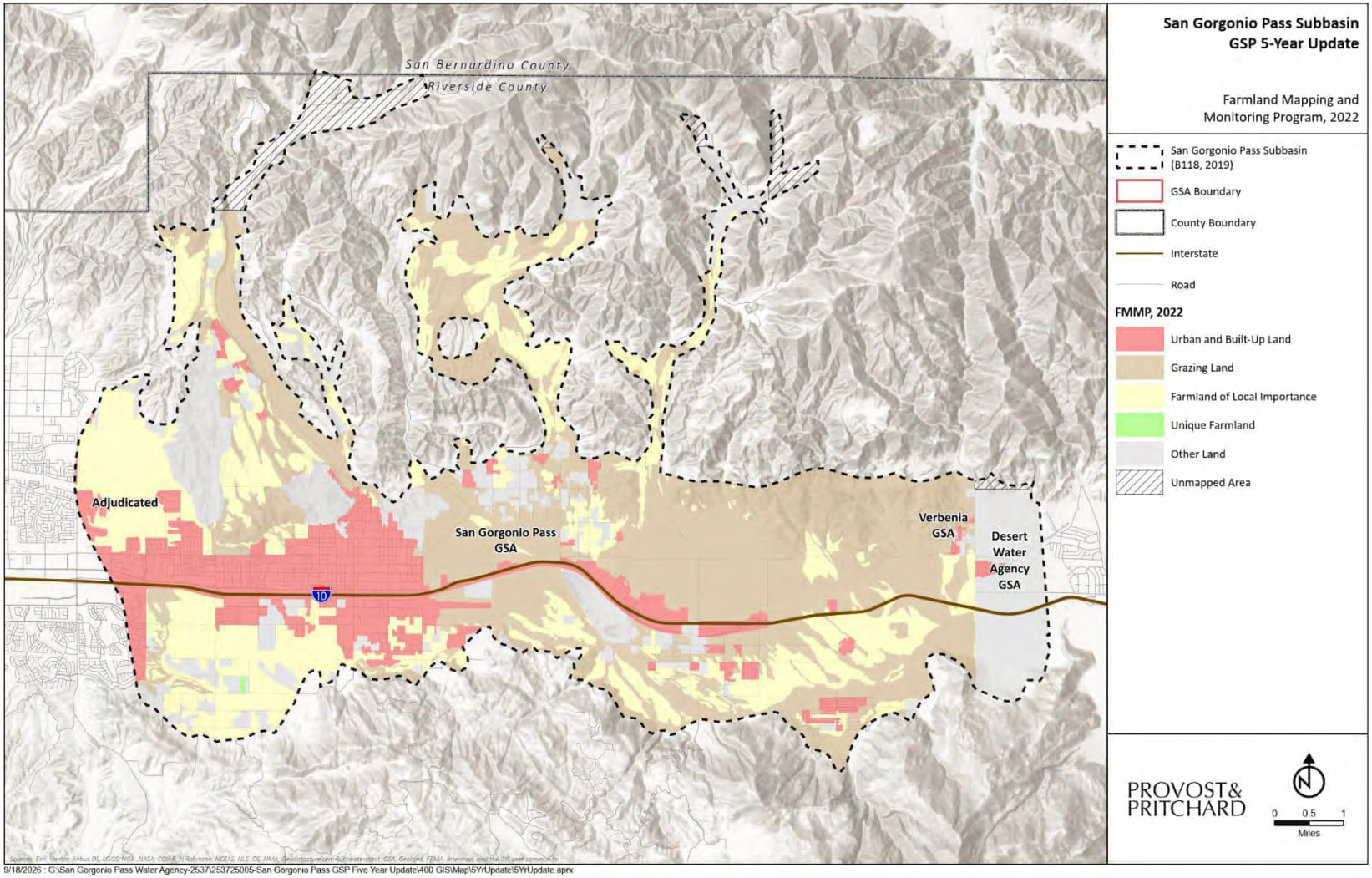


Figure 2-7. 2016 FMMP Land Use in the San Gorgonio Pass Subbasin



2.1.2 AGENCIES

The participants of the SGP GSP are comprised of public agencies and private mutual water companies. In addition to the member agencies, a small portion of the SGP Subbasin includes unincorporated Riverside County lands. The MBMI as a Federally recognized tribe is not subject to SGMA. Resulting data gaps associated with the MBMI lands within the Subbasin are described in Chapter 4 – Sustainable Management Criteria and Chapter 5 – Monitoring Network. While not a participant of the SGP GSP, MBMI is recognized as a significant stakeholder in the Subbasin's groundwater sustainability and has been included as a participant in the SGP GSA's Stakeholder Advisory Group. In addition, MBMI was actively involved in coordination for the GSP development through participation in the SGP GSP Working Group and is encouraged to remain engaged with the SGP GSP Working Group through the implementation period.

The SGP GSP members include the following (See Figure 2-3, which clarifies which GSA each member agency is associated with):

FEDERAL LANDS

- *United States Forest Service*

PUBLIC WATER DISTRICTS

- *Cabazon Water District (CWD)*
- *Mission Springs Water District (MSWD)*
- *Desert Water Agency (DWA) – State Water Project Contractor*
- *San Gorgonio Pass Water Agency (SGPWA) – State Water Project Contractor*

MUTUAL WATER COMPANIES (PRIVATELY HELD WATER STOCK COMPANIES)

- *Banning Heights Mutual Water Company*

MUNICIPALITIES

- *City of Banning*

UNINCORPORATED LANDS

- *Riverside County non-districted lands*

2.1.3 WATER SOURCES BY AGENCY

Water supplies in the SGP Subbasin include public and private groundwater extractions, Whitewater River water rights, Morongo Spring water permits, and potential future imported surface water available to SGPWA.

DWA is a State Water Project contractor that recharges water to the neighboring Indio Subbasin with customers in developed areas such as Palm Springs and Cathedral City. Although DWA does not supply surface water within the SGP Subbasin, the groundwater recharge benefits of DWA's activities extend into the SGP Subbasin. MSWD wells within DWAGSA pay a replenishment assessment in return for the groundwater replenishment activities managed and supplied by DWA.

Several of the SGP GSP member agencies are retail customers of the SGPWA, a State Water Project contractor and wholesale water agency, that imports water to purveyors as far west as Calimesa and as far east as Beaumont. The SGPWA service area is approximately 145,920 acres, of which 33,335 acres are within the SGP Subbasin and SGP GSA boundaries.

MBMI has rights to surface water resources predominantly in Millard, Potrero, and Hathaway canyons. It also utilizes groundwater to meet its domestic and commercial needs.

Groundwater use within the SGP Subbasin is quantified in Chapter 3 – Basin Setting. Figure 2-8 depicts the well density within the Subbasin, as defined by DWR's well completion report inventory. The well density map includes wells that are active, damaged, or inactive as of 2026. In general, the well density is relatively low, with some areas having no history of wells, and many areas having only a few wells constructed per

square mile. An inventory of known active wells and their respective construction details was developed and used for the water budget analysis, groundwater model, and hydrogeologic conceptual model.

Table 2-3 and Figure 2-10 summarize the water uses by agency.

A map showing the locations of identified domestic wells (as reported in DWR's Well Completion Report Map Application[1]) is shown in Figure 2-9 and a list of domestic well depths is available in Appendix G – Domestic Well Characteristics. Figure 2-9 shows the locations of domestic wells where information is available; where precise location data is not available, the centroid of a section is used for plotting. Figure 2-9 also indicates the well depth, where that data is available from DWR's Well Completion Report application. The DWR well completion reports, while likely not a comprehensive tabulation, are the only readily available data source. Based on the DWR well completion report summary, 41 domestic wells in the SGP Subbasin, of which 27 are located in upstream areas within, or adjacent to, the SGP Subbasin. As described in Chapter 3 – Basin Setting, the upstream areas include hanging canyons with shallow groundwater resources and areas of hard rock that may lie outside of the SGP Subbasin. Groundwater in the upstream canyons and hard rock areas fluctuates based on local conditions and is not affected by groundwater in the main groundwater storage areas within the Cabazon and Banning Storage Units.

[1] https://water.ca.gov/Programs/Groundwater-Management/Wells/Well-Completion-Reports

Table 2-3. Water Sources in the San Gorgonio Pass Subbasin

Agency	Water Source(s)	Service Sector(s)
San Gorgonio Pass Water Agency	Surface Water & Groundwater • *State Water Project surface water. Rural residential wells are present on rural residential properties within the service area.*	• *Municipal* • *Industrial* • *Residential* • *Commercial*
City of Banning	Groundwater • *Of the City of Banning's 21 potable wells, 16 are within the SGP Subbasin.*	• *Municipal* • *Residential* • *Commercial* • *Industrial*
Banning Heights Mutual Water Company	Surface Water • *Whitewater River surface water by way of Whitewater Flume to the approximate 200 domestic connections.* • *In event of emergencies, BHMWC may purchase water from City of Banning or produce residential supply from two production wells in the Banning Canyon.*	• *Residential*
Cabazon Water District	Groundwater • *Four groundwater wells serve as the sole water source for the CWD service area. All of which are currently active.*	• *Municipal* • *Residential* • *Commercial*
Morongo Band of Mission Indians	Surface Water & Groundwater • *Groundwater and Whitewater River surface water are the sources of water for the MBMI Water Department.* • *Rural residential wells are known to be present in the MBMI territory.* • *MBMI owns and operates a Wastewater treatment facility that discharges within the SGP-GSA boundary*	• *Cultural* • *Municipal* • *Residential* • *Commercial* • *Agricultural* • *Stock Watering* • *Industrial*
Mission Springs Water District	Groundwater • *Two MSWD wells are in the SGP Subbasin boundary.*	• *Residential*
Desert Water Agency	Groundwater • *There are two MSWD domestic supply wells within the DWAGSA boundary.*	• *Residential*

Figure 2-8. Well Completion Report Density by Section

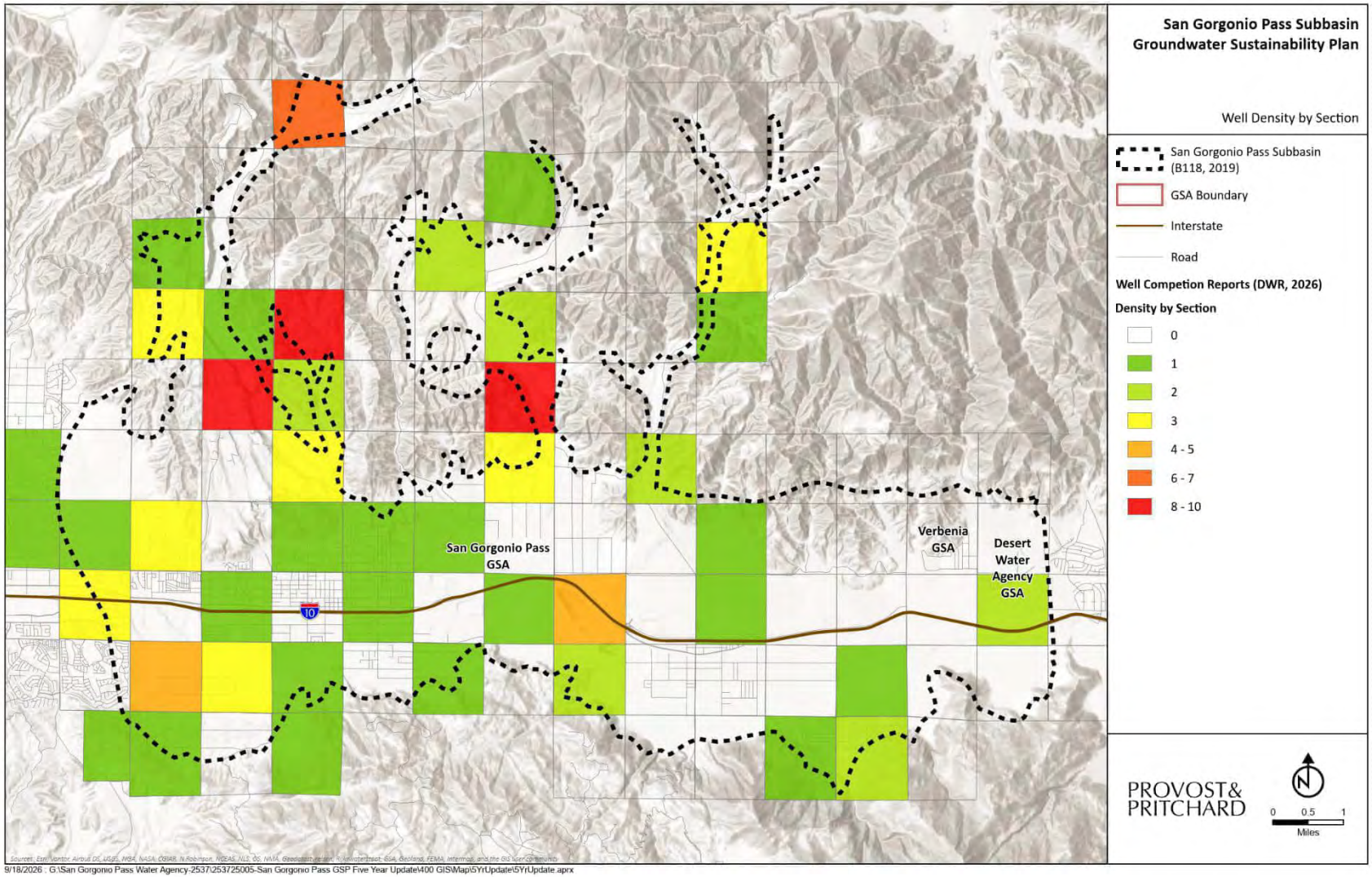
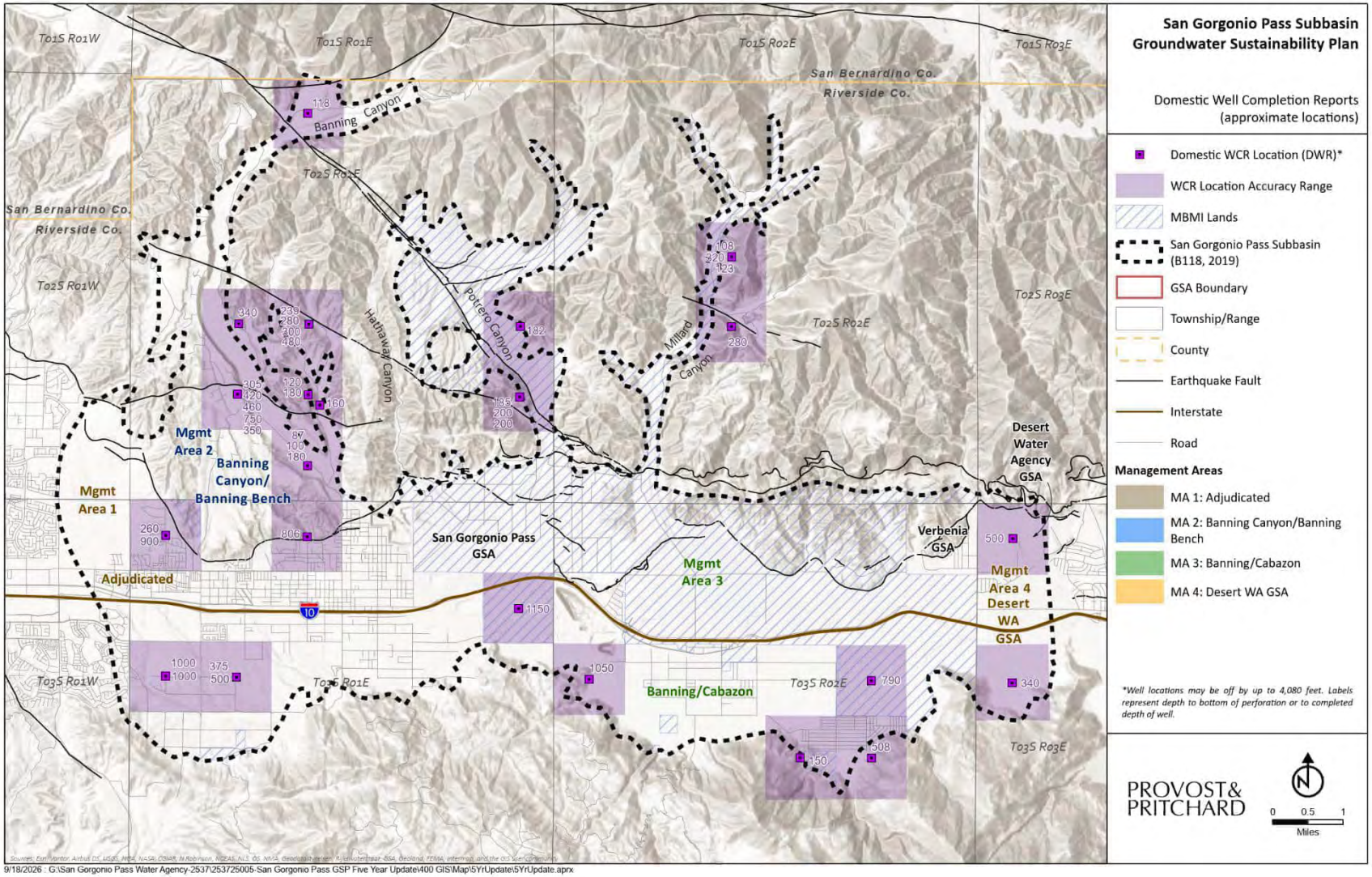
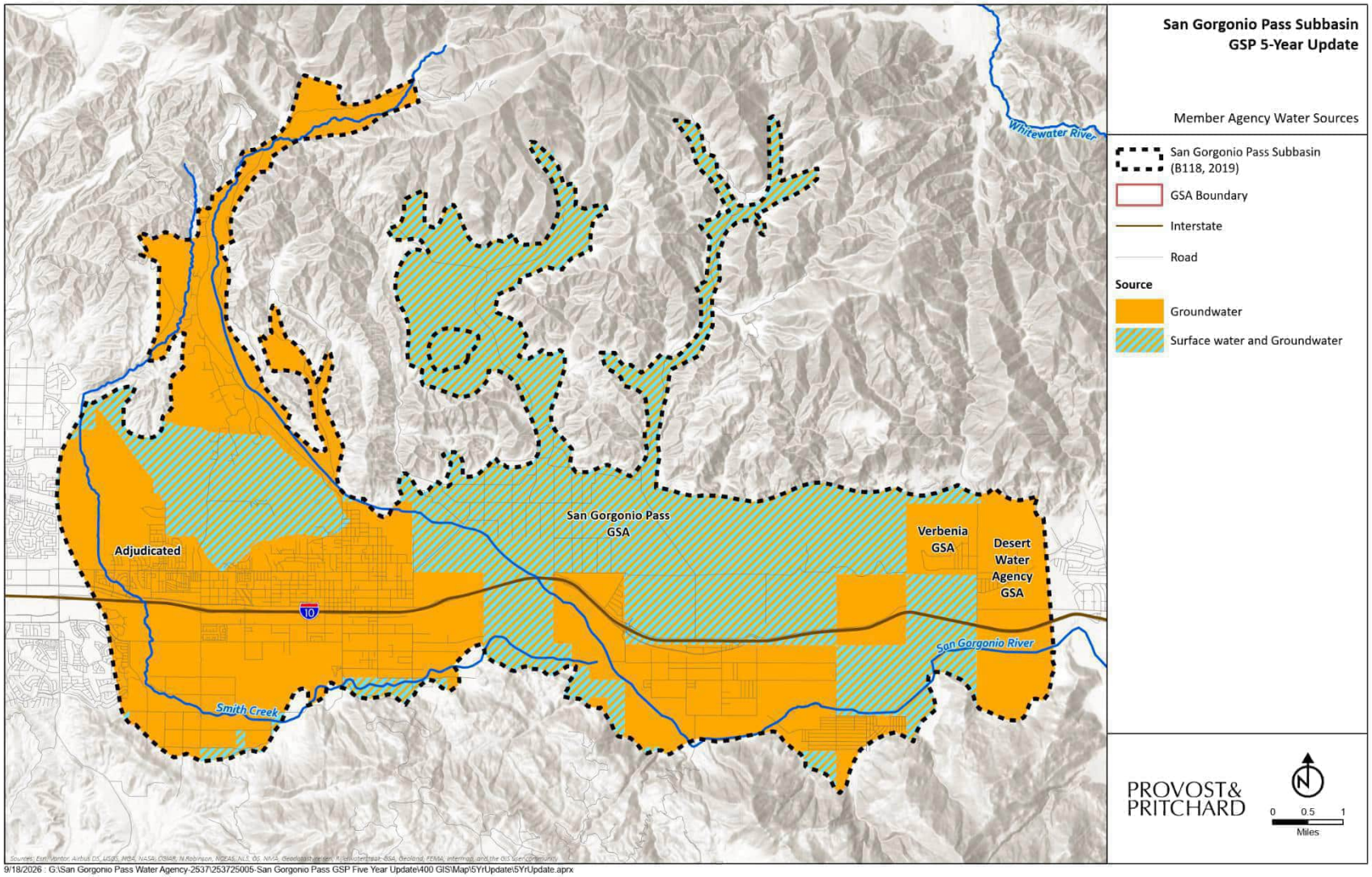


Figure 2-9. Domestic Wells



9/18/2026 : G:\San Gorgonio Pass Water Agency-2537\253725005-San Gorgonio Pass GSP Five Year Update\400 GIS\Map\5YrUpdate\5YrUpdate.aprx

Figure 2-10. Water Use by Service Sector in the San Gorgonio Pass Subbasin



2.1.3.1 IMPORTED WATER SOURCES

The SGP Subbasin contains a significant portion of the Banning and Cabazon sub-watersheds of the larger San Gorgonio River Watershed (Figure 2-11). The Plan Area is mostly dependent on groundwater, reflecting the limited availability and variability of surface water supplies. Despite this, the annual average groundwater consumption is minimal in relation to total groundwater storage (Chapter 3 – Basin Setting).

The most reliable surface water supply in areas adjacent to the Plan Area is the SWP water through SGPWA and DWA contracts with the California DWR. The SGPWA receives surface water outside of the SGP Subbasin via the East Branch Extension of the SWP's conveyance system, which was completed in 2003. The amount of SWP water available to SWP contractors is determined each year by the annual allocation of SWP water which depends on the SWP initial reservoir storage, hydrology, total water requested, and regulatory and operational constraints. The SWP surface water supplies are used as supplemental groundwater recharge for nearby basins when available and are a potential source of future supplemental supply to the Plan Area. No direct SWP deliveries are currently provided to the Plan Area.

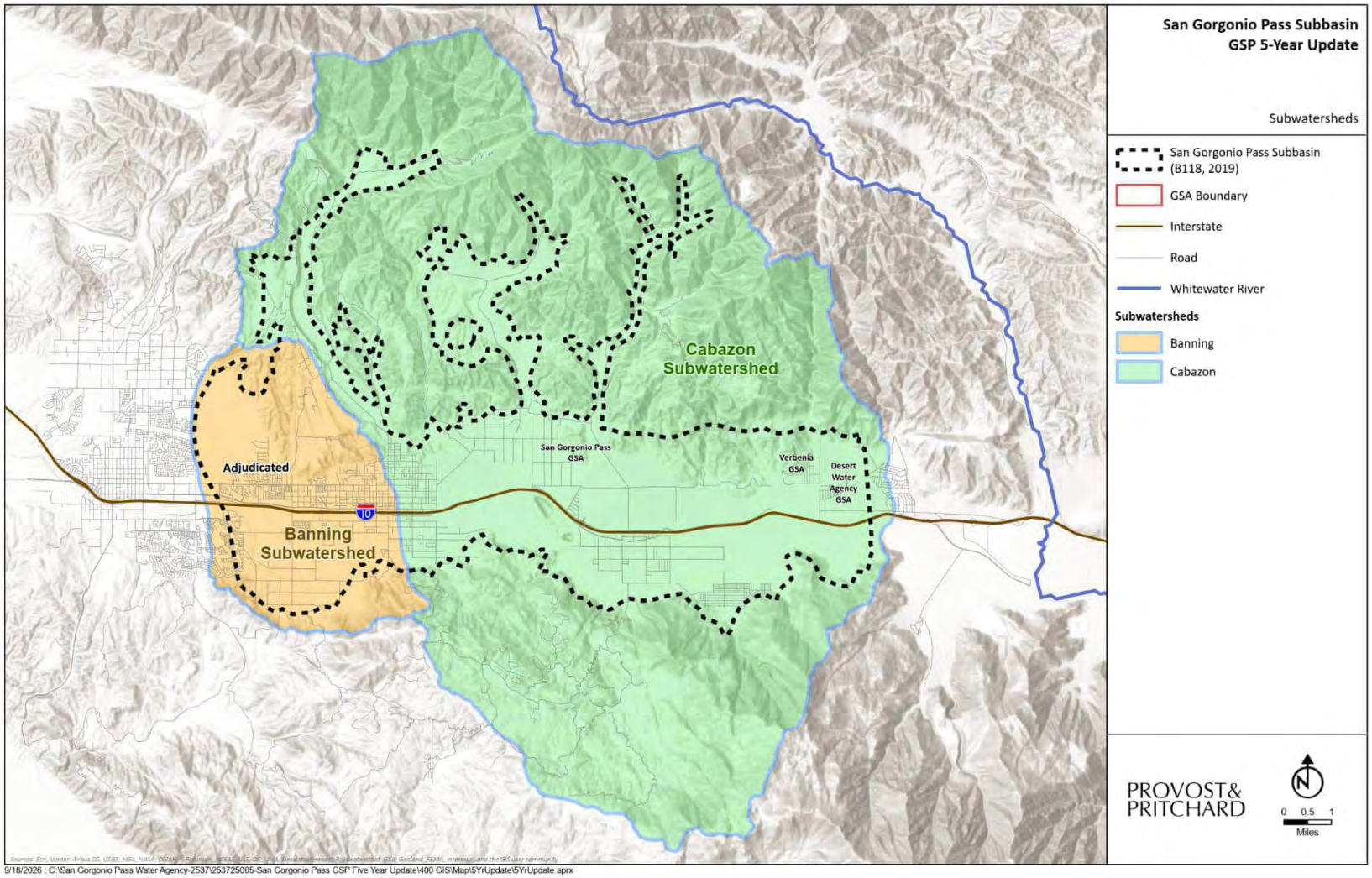
Recharge activities sourced by DWA SWP contract water and Coachella Valley Water District at the west end of the Indio Subbasin benefit the SGP Subbasin by reducing the outflow gradient from the east end of the SGP Subbasin. Although SWP water from DWA is recharged outside of the SGP Subbasin, the resulting higher water levels in the Indio Subbasin improve groundwater storage in the SGP Subbasin boundary. Chapter 3 – Basin Setting discusses the beneficial impacts in more detail.

2.1.3.2 SURFACE WATER SOURCES

Distributaries of the Whitewater River are one of the sole perennial surface water sources within the Subbasin. A flume (the "Flume," hereafter) conveys a portion of Whitewater River flows into the SGP Subbasin that is diverted from the South and East forks of the Whitewater River. The Flume includes a section of steel penstocks associated with historic hydroelectric power plants once operated by Southern California Edison (SCE). SCE ceased to operate the hydroelectric power plants after infrastructure failures in 1998. The City of Banning, BHMWC, and SCE have rights to divert approximately 9,600 AFY of natural flows from Banning Canyon under the 1938 Whitewater River Decree. Historically, the three entities diverted an average of approximately 1,500 AFY. Of this total, BHMWC diverts and filters approximately 1,000 AFY on average of Whitewater River supplies via the Flume. Remaining flows are diverted to the San Gorgonio River and into the City of Banning's spreading ponds for groundwater recharge within the Banning Bench Storage Unit and Banning Canyon Storage Unit. The Whitewater Flume was rendered unusable by the Apple Fire of August 2020 and temporarily did not provide water supply until it was partially rehabilitated in 2024.

Overall, surface water flows from the Plan Area's steep mountain areas are intermittent with runoff during the winter and spring months and during infrequent thundershowers. During such events, the gravel and sand bedded canyons provide for quick percolation, which contributes to the Plan Area's groundwater supply. The steep slopes and rapid percolation challenge flood capture projects and management actions. However, the City of Banning is evaluating opportunities for increased stormwater capture (Chapter 6 – Projects and Management Actions) and the MBMI has historically captured storm water run-off and unused surface and spring water supplies which are diverted into a series of spreading basins for groundwater recharge.

Figure 2-11. Subwatersheds of the San Gorgonio Pass Subbasin and the Whitewater River



2.2 WATER RESOURCES MONITORING AND MANAGEMENT PROGRAMS

2.2.1 MONITORING AND MANAGEMENT PROGRAMS

Regulation Requirements:

§354.8(c) Identification of existing water resource monitoring and management programs, and description of any such programs the Agency plans to incorporate in its monitoring network or in development of its Plan. The Agency may coordinate with existing water resource monitoring and management programs to incorporate and adopt that program as part of the Plan.

§354.8(d) A description of how existing water resource monitoring or management programs may limit operational flexibility in the basin, and how the Plan has been developed to adapt to those limits.

§354.8(e) A description of conjunctive use programs in the basin.

This section details monitoring initiatives in the Subbasin. More information on monitoring, available data, and the representative monitoring network are available in Chapter 5 – Monitoring Network.

2.2.2 GROUNDWATER LEVEL MONITORING

While the SGPGSA, Verbenia GSA, and DWAGSA are relatively new agencies, groundwater resources within their boundaries and surrounding lands have been managed for many years by the member agencies and other entities. The groundwater level monitoring program for each member agency (depicted in Figure 2-3) is described below.

2.2.2.1 SAN GORGONIO PASS GSA

SAN GORGONIO PASS WATER AGENCY

The largest public water agency in the SGP Subbasin, the SGPWA, has been involved in a variety of cooperative efforts to manage, preserve, and understand the area's water resources. The San Gorgonio Pass Water Agency supports local interests in water planning and management, develops projects, collects groundwater data, and prepares an annual report of groundwater conditions, which includes groundwater level monitoring.

The groundwater table rises or falls in response to the amount of recharge and the level of pumping. SGPWA began studying groundwater elevation and quality trends in 2006 within its service area and continues this on-going effort. Since the first SGPWA Annual Report produced in 2008, the SGPWA has promoted recharge activities and cooperated with USGS and member agency groundwater-level monitoring within the Subbasin.

CABAZON WATER DISTRICT

CWD performs pump tests to monitor aquifer parameters and groundwater flow in the three active CWD wells. In addition, groundwater levels and groundwater extraction are also monitored at these wells The records have been used for developing an understanding of groundwater conditions in the subbasin.

CITY OF BANNING

The City of Banning monitors groundwater extraction and elevation to inform future management decisions. The City of Banning's 2020 UWMP[2] recognizes groundwater as the City's primary water supply and describes the City's monitoring activities.

BANNING HEIGHTS MUTUAL WATER COMPANY

BHMWC primarily diverts surface water and uses a production well as a backup water supply in times of water supply emergency. It has received water supplies from the adjacent City of Banning since the Whitewater Flume was damaged by the Apple Fire in 2020. BHMWC privately monitors and maintains the data history of the limited production well use.

[2]https://wuedata.water.ca.gov/public/uwmp_attachments/2898679435/Banning%20Final%202020%20UWMP%20w%20Appendices%20-%2006.28.2021.pdf

MORONGO BAND OF MISSION INDIANS

While not a participating member of the SGP GSA, the MBMI has monitored groundwater levels utilizing a series of monitoring and active groundwater wells throughout the reservation boundaries; however, the data remains private. The MBMI actively participates in GSP development and contributed their understanding of groundwater conditions to the development of the plan.

2.2.2.2 VERBENIA GSA

MSWD is committed to protecting groundwater resources within its service area. MSWD monitors groundwater levels, extractions, and quality to identify trends and inform projects, development, and management actions.

2.2.2.3 DESERT WATER AGENCY GSA

Two USGS monitoring wells are available within the DWAGSA boundary.

2.2.3 GROUNDWATER EXTRACTION MONITORING

All water agency wells for municipal use are metered and the pumping volume is recorded. Most private wells are not required to be metered because they are not held to the Safe Drinking Water Act (SDWA), unlike public drinking water systems. Due to this lack of metering, the volume of private pumping is unknown. Private wells represent a small portion of the supply wells within the SGP Subbasin. Section 3.3 addresses estimated groundwater extraction in the SGP Subbasin.

2.2.4 GROUNDWATER QUALITY MONITORING

Groundwater quality is monitored at municipal wells and other areas of specific concern. The City of Banning, MSWD, and SGPWA each produce Annual Water Quality reports or water quality information available in similar reports. Not all SGP Subbasin member agencies are required to report groundwater quality information. MBMI has regulatory jurisdiction over surface water quality similar to state jurisdiction and the Clean Water Act authorizes the tribe to set its own surface water quality standards and water quality certification. The MBMI additionally reports groundwater quality information as required by the United States Environmental Protection Agency (USEPA) under the SDWA.

Additionally, water quality in the Plan Area is being monitored and reported on GeoTracker[3]. The domestic water suppliers perform routine water quality testing as required by the State Water Resources Control Board, Division of Drinking Water (DDW). The requirements for testing are based on the size of the community system. Additional testing may be done if a site has specific constituents of concern that need to be monitored.

Most of the wells in SGP GSP are used for commercial, domestic, industrial, and municipal purposes. In addition, there are a small number of private domestic wells that are not routinely monitored, and any monitoring records that may exist on these wells are typically private rather than public information. Under SGMA regulatory requirements, groundwater quality monitoring within the SGP Subbasin will continue to track regional trends and to serve as an indicator of changes in groundwater quality. Potential future groundwater quality monitoring is discussed in Chapter 5 – Monitoring Network, and groundwater quality is also further discussed in Section 3.2.

2.2.5 LAND SURFACE SUBSIDENCE MONITORING

Monitoring and reporting on land subsidence in the Plan Area are limited to public agencies such as National Aeronautics and Space Administration (NASA) and USGS. Permanent land subsidence is associated with compaction of inelastic clay layers through excessive groundwater extraction activities in an aquifer below an impermeable layer. Such clay layers are not known to be present in the SGP Subbasin; therefore, subsidence is not associated with groundwater management activities. The region's seismic activity can affect the land elevations in the region, which is documented in USGS studies. More information on land subsidence is provided in Chapter 3 – Basin Setting.

2.2.6 SURFACE WATER MONITORING

Surface water flows in the area is monitored by numerous agencies through various programs. Banning Heights Mutual Water Company (HMWC), USGS, and SGPWA partner in monitoring flows from the Whitewater River via their Flume. Additionally, the USGS and the City of Banning cooperate in monitoring flows of Whitewater River diversions. The United States Forest Service (USFS), MBMI, and Bureau of Land Management (BLM) monitor headwaters and perennial streams that are associated with downstream users within the Plan Area. There are no known surface water quality monitoring programs in with SGP Subbasin.

2.2.7 REGIONAL MONITORING AND REPORTING

2.2.7.1 INTEGRATED REGIONAL WATER MANAGEMENT PROGRAM

The Integrated Regional Water Management Program (IRWM) recognizes that regional control, self-reliance, and collaboration are needed to achieve common social, environmental, and economic objectives. Groundwater and surface water management programs and identification of existing monitoring programs are outlined in two regional IRWM Plans. The SGP Subbasin overlaps two IRWM regions – San Gorgonio Pass and Coachella Valley. Four member agencies of the SGP GSA (CWD, SGPWA, Banning Heights Mutual Water Company, and City of Banning) are within the San Gorgonio Pass IRWM region and participated in the San Gorgonio Pass IRWM Plan[4]. DWA and MSWD are two of Coachella Valley Regional Water Management Group's five water purveyors involved in the development of the Coachella Valley IRWM and Stormwater Resources Plan, addressing water needs in the region[5]. The IRWM Program can act supplementary to SGMA because the IRWM regions do not have the groundwater management authority of GSAs.

2.2.8 GSP MONITORING AND MANAGEMENT PLANS

Member agencies are responsible for monitoring, reporting, and providing data, analyses, and supporting information to their respective GSA. As needed, the GSAs will report the water quality and water supply data to the SGP GSP Working Group for annual reporting and GSP updates every five years. The monitoring program is described in Chapter 5 – Monitoring Network.

2.2.9 CONJUNCTIVE USE PROGRAMS

The SGP Subbasin is a conjunctive use area that relies on groundwater extractions to supplement limited available surface water supplies to meet water demands. Groundwater recharge is an important component in management of the groundwater supply to meet water demands. Intentional recharge within the SGP Subbasin is outlined in Table 2-4.

Table 2-4. Intentional Recharge in the San Gorgonio Pass Subbasin

Jurisdiction	Within SGP Subbasin	Outside SGP Subbasin
Desert Water Agency GSA		
Desert Water Agency	Although no DWA recharge facilities exist within the Subbasin limits, recharge activities in the Indio Subbasin extend their area of benefit within the SGP Subbasin.[6]	SWP supplies exchanged with Metropolitan Water District for Colorado River water are recharged in two recharge ponds outside of the SGP Subbasin.
Verbenia GSA		
Mission Springs Water District	No known intentional recharge activities within the Subbasin.	No known intentional recharge activities outside the Subbasin.
San Gorgonio Pass GSA		

[4] https://www.sgirwm.org/
[5] http://www.cvrwmg.org/
[6] Desert Water Agency. Groundwater Replenishment and Assessment, Annual Engineers Report.

Jurisdiction	Within SGP Subbasin	Outside SGP Subbasin
Morongo Band of Mission Indians	The MBMI discharges secondary treated wastewater into the Cabazon Storage Unit through its WWTP activities	In 2013, an application was approved to export and store up to 20,000 AF of surface water in the Beaumont Storage Unit within the Adjudicated Beaumont Basin. The actual recharge amounts of water imported are currently zero.
San Gorgonio Pass Water Agency	No known intentional recharge activities within the Subbasin.	Recharge facilities were constructed in 2018 and 2019 in the adjudicated Beaumont basin adjacent to the western portion of the Plan Area. SGPWA is permitted to store up to 10,000 AF of surface water in the Beaumont Storage Unit within the Adjudicated Beaumont Basin.
Banning Heights Mutual Water Company	No known intentional recharge activities within the Subbasin.	No known intentional recharge activities outside the Plan Area.
Cabazon Water District	No known intentional recharge activities within the Subbasin.	No known intentional recharge activities outside the Plan Area.
City of Banning	The Banning Canyon Storage Unit is recharged with Whitewater River water via the Flume when the water is available. The City of Banning recharges secondary treated wastewater to the Cabazon Storage Unit.[7]	The City of Banning is permitted to store up to 80,000 AF of surplus appropriated water in the Beaumont Storage Unit within the Adjudicated Beaumont Basin. The City of Banning has historically exported water for intentional recharge to the Beaumont Basin, ranging in volume from 1,338 AF in 2010 to 608 AF in 2014[8].

[7] Table 6-4 http://banning.ca.us/DocumentCenter/View/4543/2015-Urban-Water-Management-Plan-UWMP?bidId=
[8] Table 2-6 https://28c3dd9f-69f5-4dd5-bf25-251074d401bb.filesusr.com/ugd/1f9eac_fc8b7c04f707485c84db00e4894fc849.pdf

2.3 RELATION TO GENERAL PLANS

2.3.1 SUMMARY OF GENERAL PLANS/OTHER LAND USE PLANS

Regulation Requirements:

§354.8(f) A plain language description of the land use elements or topic categories of applicable general plans that include the following:
(1) A summary of general plans and other land use plans governing the basin.

California Government Code (§65350-65362) requires that each county and city in the state develop and adopt a General Plan. A General Plan states development policies and sets forth objectives, principles, standards, and plan proposals. It is a comprehensive long-term plan for the physical development of the county or city. In this sense, it is a "blueprint" for development.

The General Plan must contain seven state-mandated elements. It may also contain any other elements that the legislative body of the county or city wishes to adopt. The mandated elements are Land Use, Open Space, Conservation, Housing, Circulation, Noise, and Safety. A General Plan may be adopted in any form deemed appropriate or convenient by the legislative body of the county or city, including the combining of elements. The SGP Subbasin includes coverage from the County of Riverside's General Plan, Pass Area Specific Plan, and the City of Banning's 2013 General Plan[9].

The County of Riverside's General Plan[10] outlines land use policies and recommendations within the SGP Plan Area and includes the Pass Area Plan for the western half of the Subbasin. The previous General Plan was developed in 1987. The Riverside County General Plan and City of Banning General Plan set the direction for Riverside County's and the City of Banning's respective land use and development strategy through recognizing the economic base, transportation system, and preservation of the natural and cultural resources.

In addition to the County's and Cities' specific Land Use Plans, MBMI has a General Plan that reflects the intended growth and land use changes within MBMI's jurisdictional area. The General Plan evaluates MBMI's commercial, industrial, municipal, and residential planned changes to land uses, much as a County or City General Plan does. The MBMI General Plan is a confidential document and, therefore, is not available for review by the GSAs and cannot be submitted as a reference. The GSP is designed to consider impacts to beneficial users of groundwater, including MBMI. To achieve this with the best available information, the GSAs have developed estimations of projected land use changes in the MBMI lands and associated groundwater extraction estimations, discussed in Section 3.3.

All the aforementioned land use plans were developed prior to SGMA and this GSP.

2.3.2 IMPACT OF GSP ON WATER DEMANDS

Regulation Requirements:

§354.8(f) (2) A general description of how implementation of existing land use plans may change water demands within the basin or affect the ability of the Agency to achieve sustainable groundwater management over the planning and implementation horizon, and how the Plan addresses those potential effects.

The General Plans in the SGP Subbasin area were adopted prior to the formation of the GSAs and development of this GSP; therefore, the documents could not consider the impacts of this Plan's implementation. However, this GSP is informed by potential land use changes identified in the applicable General Plans.

General Plans typically make assumptions for urban development. The assumed land use changes and growth rates are addressed in the County Housing, Resource Conservation, or Land Use Element for each of the communities. This GSP is consistent with the land use change assumptions identified in the General

[9] http://www.ci.banning.ca.us/64/Planning
[10] Riverside County General Plan | Planning Department Riverside County

Plans for forecasting the anticipated water budget, described later in this GSP. Community and commercial growth in the SGP Plan Area are anticipated to be affected by the urban development from the greater San Bernardino and Los Angeles Metropolitan centers. Projected water budgets (Section 3.3Error! Reference source not found.) consider anticipated conversion of undeveloped land to developed land with increased water demands.

2.3.3 IMPACT OF GSP ON LAND USE PLAN ASSUMPTIONS

Regulation Requirements:

§354.8(f) (3) A general description of how implementation of the Plan may affect the water supply assumptions of relevant land use plans over the planning and implementation horizon.

The land use and water supply issues addressed in the Riverside County General Plan are applicable to the GSAs. As noted previously, the current General Plans were developed prior to the development of this GSP and enactment of SGMA. Future General Plan updates will need to consider impacts of SGMA and this GSP along with future annual reports and GSP updates.

Projected land use changes in the Riverside General Plan and City of Banning General Plan as well as the City of Banning Urban Water Management Plan and the neighboring City of Beaumont Urban Water Management Plan were reviewed to inform the projected water budget, described in Section 3.3.

To sustain maintenance of groundwater levels despite changes in land development and new water demands, a list of projects and management actions are outlined in Chapter 6 – Projects and Management Actions. These projects and management actions support new water supplies and actions to reduce demands.

2.3.4 PERMITTING NEW OR REPLACEMENT WELLS

Regulations Requirements:

§354.8(f) (4) A summary of the process for permitting new or replacement wells in the basin, including adopted standards in local well ordinances, zoning codes, and policies contained in adopted land use plans.

Riverside County requires a Riverside County Environmental Health Permit for construction, reconstruction, or destruction of a well within its jurisdiction. To construct or abandon a well, the well owner must first contact a registered well driller to prepare the application for submittal to the Riverside County Department of Environmental Health.[11]

Riverside County has the ability to manage the capacity and timing of current and future well development because of their requirement for a County-issued permit for the drilling of wells within their jurisdiction to provide on-site water supply when water lines are unavailable or infeasible to construct.[12]

2.3.5 LAND USE PLANS OUTSIDE THE BASIN

Regulation Requirements:

§354.8(f) (5) To the extent known, the Agency may include information regarding the implementation of land use plans outside the basin that could affect the ability of the Agency to achieve sustainable groundwater management.

Generally, all nearby General Plans contain similar policies to those within the basin regarding land use and promoting water conservation and sustainable development.

[11] Riverside County Department of Environmental Health. Wells. Wells | Environmental Health | County of Riverside (rivcoeh.org) accessed 7/7/2021.

[12] Riverside County General Plan. Housing Element. Page H-107. Ch08_Housing_100317.pdf (rctlma.org) accessed 7/7/2021.

2.4 ADDITIONAL GSP COMPONENTS

Regulation Requirements:

§354.8(g) A description of any of the additional Plan elements included in the Water Code Section 10727.4 that the Agency determines to be appropriate.

2.4.1 SALINE WATER INTRUSION

Saline or brackish water intrusion is the induced migration of saline water into a freshwater aquifer system and is typically observed in coastal aquifers where over-pumping of the freshwater aquifer causes saltwater from the ocean to encroach inland. Due to the distance of the SGP Plan Area from the Pacific Ocean, saline water intrusion is not an issue for the SGP GSP.

Groundwater with naturally occurring elevated concentrations of salts is not known to exist in the local aquifers. The SGP GSP member agencies strive to prevent the importation of saline surface waters that could ultimately degrade the groundwater. If alternative water sources are available for importation, the GSAs' member agencies will consider not only the cost but also the quality, including salinity, of the water. The Participants will monitor water quality in a manner that provides management information about salinity in the area.

2.4.2 WELLHEAD PROTECTION

The Federal Wellhead Protection Program was established by Section 1428 of the SDWA Amendments of 1986. The purpose of the program is to protect groundwater sources of public drinking water supplies. The program is based on the concept that the development and application of land use controls, usually applied at the local level, and other preventative measures can protect groundwater. Under the Act, States are required to develop an EPA-approved Wellhead Protection Program.

Wellhead protection is performed primarily during design and can include requiring annular seals, adequate drainage around wells, constructing wells at high locations, and avoiding well locations that may be subject to nearby contaminated flows. Wellhead protection is required for potable water supply wells.

Municipal wells constructed by the member agencies are designed and constructed in accordance with DWR Bulletins 74-81 and 74-90. A permit from the respective county is also needed to construct a new well. In addition, the member agencies encourage landowners to follow the same standard for privately owned wells. DWR Bulletins 74-81 and 74-90 provide specifications pertaining to wellhead protection, including methods for:

- *Sealing the well from intrusion of surface contaminants*
- *Covering or protecting the boring at the end of each day from potential pollution sources or vandalism*
- *Site grading to assure drainage is away from the wellhead*

2.4.3 MIGRATION OF CONTAMINATED GROUNDWATER

Groundwater within the SGP Plan Area is generally of excellent quality for local beneficial uses. However, some drinking water quality problems exist in specific areas due to high concentrations of certain constituents. Information on water quality within the SGP Plan Area is contained in Section 3.2.

2.4.4 WELL ABANDONMENT/WELL DESTRUCTION PROGRAM

The member agencies have and will continue to properly destroy their wells that are no longer used. In addition, the member agencies will encourage landowners and developers to convert unusable wells to monitoring wells, rather than destroy them, so that they can become a part of the region's groundwater monitoring program.

2.4.5 REPLENISHMENT OF GROUNDWATER EXTRACTIONS

Replenishment of groundwater is an important component in management of a groundwater supply to support maintaining groundwater levels with the avoidance of significant and unreasonable impacts to the beneficial users of groundwater. Groundwater replenishment occurs naturally through rainfall, rainfall runoff, stream/river seepage, and through purposeful means including deep percolation of landscape irrigation, wastewater effluent percolation, and intentional recharge. The primary local water sources for groundwater replenishment include precipitation, ephemeral recharge in the canyon areas, and the Whitewater Recharge Facilities managed by DWA. Although the Whitewater Recharge Facilities are adjacent to the SGP Subbasin, their groundwater storage and level benefits extend to the SGP Subbasin. Discussions of how groundwater recharge affects the water budget is provided in Section 3.3.

2.4.6 WELL CONSTRUCTION POLICIES

Proper well construction is important to ensure reliability, longevity, and protection of groundwater resources from contamination. The SGP GSP member agencies follow state standards (DWR Bulletins 74-81 and 74-90) when constructing municipal wells. County's Environmental Health Department maintains well inspections during various phases of construction in accordance with State Well Standards to help assure proper construction of private wells[13]. The County maintains records of all wells drilled in the SGP Plan Area. As of 2019, there were no limits on number of wells, which may be revisited in the future.

Outside of the City of Banning service areas, private agricultural or domestic wells can be drilled with a County permit. State well standards address annular seals, surface features, well development, and various other topics. Well construction policies intended to ensure proper wellhead protection are discussed in Section 2.4.2

2.4.7 GROUNDWATER PROJECTS

The SGP GSP member agencies share responsibility for the development and operation of recharge, storage, conservation, water recycling, and extraction projects to ensure sustainability by 2042. The member agencies generally develop their own projects to help meet their water demands and may develop additional future groundwater sustainability projects. Developing more groundwater recharge and banking projects is an option for stabilizing groundwater levels, and future projects could be implemented by member agencies and or by the GSAs. Chapter 6 – Projects and Management Actions provides descriptions, estimated costs, and estimated yield for numerous proposed projects.

The GSAs will also support measures to identify funding and implement regional projects that help the region achieve groundwater sustainability. This can include recharge projects that take advantage of local areas conducive to recharge and areas where recharge provides the most benefit to the SGP Plan Area. This can reduce the burden for certain agencies from having to recharge within their boundaries if they do not have suitable land, soils, or water.

2.4.8 EFFICIENT WATER MANAGEMENT PRACTICES

Water conservation has been and will continue to be an important tool in local water management, as well as a key strategy in achieving sustainable groundwater management. The member agencies engage in water conservation activities which include water use restrictions, water metering, education, tiered rates, etc. During a recent drought, these water conservation programs were tested and included State-mandated urban water restrictions for the first time. Details of water conservation programs can be found in local UWMPs. Many agencies also have multi-stage water shortage contingency plans to help conserve water in droughts. Efficient water management practices will include maximizing the beneficial uses of water along with recycled water use as it can replace potable water use in some instances. Future efforts may include an increased focus on elevating awareness on sustainable yield and explaining the

[13] Ibid

requirements of SGMA. Some or all of these conservation efforts will be necessary to achieve groundwater sustainability.

2.4.9 RELATIONSHIPS WITH STATE AND FEDERAL AGENCIES

From a regulatory standpoint, the SGP GSP members have numerous relationships with State and Federal agencies related to water supply, water quality, and water management. Relationships unique to the region are briefly summarized below.

DEPARTMENT OF WATER RESOURCES (STATE WATER PROJECT)

Most of the imported surface water in the vicinity comes from either direct delivery of State Water Project (SWP) water or Colorado River Water exchanged for State Water Project water. The SGPWA serves as the wholesale agency selling the SWP water.

US FOREST SERVICE

The SGP Plan Area includes USFS land in the northern mountainous portion of the Subbasin. The USFS is recognized as a SGMA stakeholder and has been invited to participate in the SGP Stakeholder Advisory Group meetings.

2.4.10 IMPACTS ON GROUNDWATER DEPENDENT ECOSYSTEMS

The Nature Conservancy's (TNC) GDE Pulse online interactive mapping tool has identified potential groundwater dependent ecosystems (GDEs) in the SGP Subbasin. Of the GDEs identified on GDE Pulse, those that are within the Subbasin's canyons are potentially accurate due to the depth to groundwater being within 200-feet depth to water during ephemerally wet conditions. However, the valley of the Subbasin, including Management Areas 2 and 3, have groundwater depths of hundreds of feet and cannot support conditions for potential GDEs. A detailed analysis of the identification and assessment of impacts of GDEs is available in Section 3.2 The SGP GSAs will continually assess groundwater conditions that can support GDEs through the best available data during the implementation phase and will report any changes to GDE identification or methodology in 5-year updates.

Interconnected Surface Water is a Sustainability Indicator and is defined as "*surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted*." Interconnection between the surface water and groundwater could lead to GDEs and must be considered. Information on interconnected surface water can be found in Section 3.2.

2.5 COMMUNICATION & OUTREACH PLAN

The GSAs have prioritized public outreach and stakeholder engagement with the intention of ensuring the GSP recognizes the needs of the SGP Subbasin and the beneficial uses and users of groundwater. The outreach activities considered the water uses associated with tribes, GDEs, disadvantaged communities, adjacent subbasins, and any interested members of the public. This Section serves as the SGP Subbasin's Communication & Outreach Plan, detailing how the GSAs supported stakeholder outreach and facilitated opportunities for public comment.

2.5.1 DESCRIPTION OF BENEFICIAL USES AND USERS

Regulation Requirements:

§354.10 Each plan shall include a summary of information relating to notification and communication by the Agency with other agencies and interested parties including the following:

(a) A description of the beneficial uses and users of groundwater in the basin, including the land uses and property interests potentially affected by the use of groundwater in the basin, the types of parties representing those interests, and the nature of consultation with those parties.

(b) A list of public meetings at which the Plan was discussed or considered by the Agency.

(c) Comments regarding the Plan received by the Agency and a summary of any responses by the Agency.

§354.10 (d)(2) Identification of opportunities for public engagement and a discussion of how public input and response will be used.

IDENTIFICATION OF STAKEHOLDERS

Upon GSA formation, the three GSAs in the SGP Subbasin defined a list of stakeholders to engage during the GSP development. Throughout GSP development, the GSAs revisited the list of stakeholders to ensure the list was current. Stakeholders were identified as entities that either directly or indirectly rely on a beneficial use of groundwater. These include the USFS, the Morongo Tribe, industry, developers, Riverside County, water agencies, and more.

BENEFICIAL USERS AND USES OF GROUNDWATER

Beneficial users and uses of groundwater are listed in Figure 2-12 below.

STAKEHOLDER OUTREACH MEETINGS

Throughout the GSP development process, stakeholders have been invited to attend the SGP Stakeholder Advisory Group meetings that cover the progress towards GSP development and offer opportunities and encouragement for stakeholder feedback. A list of the public meetings in which the plan was discussed is included in Table 2-5.

In addition to the Stakeholder Advisory Group meetings, the GSA Public Hearings to adopt the Final GSP in January 2022 also provided the opportunity for public comment. Those GSA Public Hearings to adopt the Final SGP GSP occurred on the following dates:

- *SGPGSA: January 11, 2022*
- *Verbenia GSA: January 12, 2022*
- *DWAGSA: January 4, 2022*

Newspaper notices were published as follows to support transparency of the GSA Public Hearings for GSP adoption. Proof of publication of the notices and GSP adoption resolutions are available in Appendix B – Noticing and Adoption Documentation.

DWAGSA

Newspaper: The Desert Sun
Publication Date: Sunday, December 19, 2021

SGPGSA – Verbenia GSA

Newspaper: Banning Record Gazette & Press-Enterprise
Publication Date for Record Gazette: Friday, December 24, 2021
Publication Date for P.E.: Sunday, December 26, 2021

SGP GSA

Newspaper: Banning Record Gazette & Press Enterprise
Publication Date for Record Gazette: Friday, December 24, 2021
Publication Date for P.E.: Sunday, December 26, 2021

NOTICE TO STAKEHOLDERS

Stakeholders were notified via letter of initial plans to develop the SGP GSP. After the administrative Draft GSP (or Public Draft GSP) was developed, the stakeholders received an email notifying the availability of the Public Draft GSP on the SGP GSA website and the defined 60-day public comment period. See Appendix B – Noticing and Adoption Documentation.

PUBLIC COMMENTS

A Public Review Draft GSP was made available on the SGP GSA website for public comment from October 1, 2021, to November 29, 2021. In advance of the document release, an email and mailed letter notice was released to interested parties and stakeholders, inviting their feedback on the Public Review Draft. In addition, a Stakeholder Advisory Group meeting was held on November 12, 2021, to provide an opportunity for discussion regarding any questions or clarifications needed on the Public Review Draft GSP. The public

comments received and a summary of the responses to public comment is outlined in **Appendix C – Public Comment & Response Log**.

INCORPORATION OF STAKEHOLDER FEEDBACK

Throughout the GSP process, stakeholder feedback obtained during SGP GSP Working Group Meetings, Stakeholder Advisory Group meetings, independent meetings with interested stakeholders, such as the Nature Conservancy, and the Public Comment period were considered and informed adaptations to the document. A list of Stakeholder Advisory Group meeting dates is available in **Table 2-5**. Stakeholder Advisory Meeting minutes, which include attendees and topics covered, are available on the SGPWA website. MBMI is a member entity of the SGP GSP Working Group. All member entities received meeting materials, including PowerPoints and draft copies of GSP chapters, to promote a transparent and collaborative process. A list of SGP GSP Working Group Meeting topics is listed in **Appendix F – San Gorgonio Pass Working Group Meeting Topics**.

Notable changes to the draft GSP based on stakeholder feedback during the GSP development process included, but was not limited to the following:

- *Consideration of the Apple Fire impacts on projected surface water supply and monitoring assumptions and estimations.*
- *Improved strategy to clarify the conditions in the Banning and Cabazon Storage Units concluded that potential GDEs cannot be supported due to significant depth to groundwater (**Section 3.2**).*
- *Estimations of MBMI groundwater historic and projected groundwater extractions.*

*In addition, response to comments on the Public Review Draft GSP is summarized in **Appendix C – Public Comment & Response Log.***

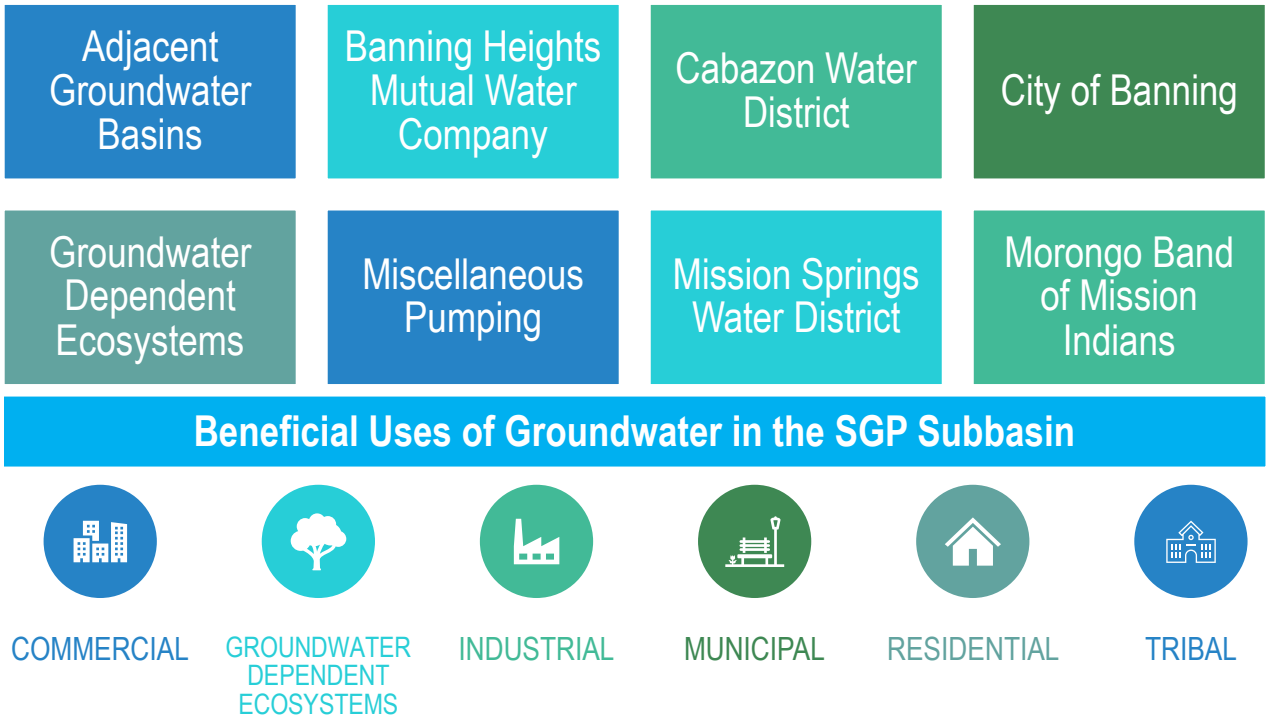


Figure 2-12 Beneficial Uses and Users of Groundwater in the San Gorgonio Pass Subbasin

Table 2-5 Public Engagement and Outreach

San Gorgonio Pass GSP Development	
Stakeholder Advisory Group Meetings	
June 12, 2019 San Gorgonio Pass Water Agency 1210 Beaumont Ave. Beaumont, CA 92223	May 11, 2020 Held via teleconference due to COVID-19 travel and gathering restrictions
August 6, 2020 Held via teleconference due to COVID-19 travel and gathering restrictions	November 10, 2020 Held via teleconference due to COVID-19 travel and gathering restrictions
January 26, 2021 Held via teleconference due to COVID-19 travel and gathering restrictions	April 6, 2021 Held via teleconference due to COVID-19 travel and gathering restrictions
July 13, 2021 Held via teleconference due to COVID-19 travel and gathering restrictions	November 12, 2021 Held via teleconference due to COVID-19 travel and gathering restrictions
*In January 2022, the GSAs held Public Hearings to adopt the Final SGP GSP. These meetings were open to all members of the public including listed stakeholders, and an opportunity for public comment was available. * Stakeholder Advisory Group meeting minutes, which include attendees and topics covered, are available on the SGPWA website (www.sgpwa.com/meeting_type/stakeholder-advisory-meeting/)	

2.5.2 DECISION MAKING PROCESS

Regulation Requirements:

§354.10 (d) A communication section of the Plan that includes the following:
An explanation of the Agency's decision-making process.

The SGP GSP participants signed an MOA, outlining the process for the GSA development (**Appendix A - MOA**). The participating member agencies send at least one representative to SGP GSP Working Group meetings in which feedback from stakeholders and the public are heard for consideration. The SGP GSP Working Group coordinates on technical and policy decision making at the meetings.

2.5.3 ENCOURAGING ACTIVE INVOLVEMENT

Regulation Requirements:

§354.10 (d)
(3) A description of how the Agency encourages the active involvement of diverse social, cultural, and economic elements of population within the basin.
(4) The method the Agency shall follow to inform the public about progress implementing the Plan, including the status of projects and actions.

Various methods of public engagement were used in the development of the GSP. These methods are summarized in **Figure 2-13** and further described below.

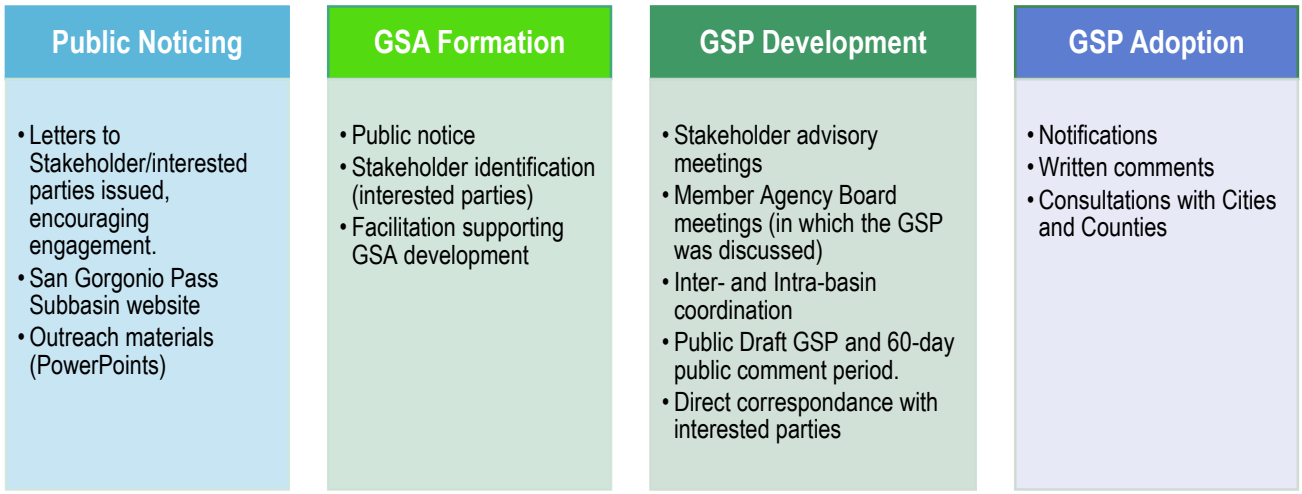


Figure 2-13 Methods of Public Engagement

2.5.3.1 PUBLIC ENGAGEMENT IN GSA FORMATION

Stakeholders and interested parties were invited to consult and comment on the formation of the GSAs of the SGP Subbasin, which culminated in a written notification to the California DWR by each respective GSA pursuant to Water Code §10723.8. Submittal of this notification followed Public Hearings held in accordance with Water Code §10723(b). Proof of publication of the notice of public hearings in accordance with Government Code §6066 was provided to DWR with its notification.

2.5.3.2 PUBLIC ENGAGEMENT IN GSP DEVELOPMENT

Opportunities for stakeholders and interested parties to engage and consult with GSAs during development of the GSP included the standing member agency board meetings, Stakeholder Advisory Group meetings, and the 60-day period to review the Public Draft GSP and provide public comments during that period.

2.5.3.3 DISADVANTAGED COMMUNITIES WITHIN THE SAN GORGONIO PASS SUBBASIN

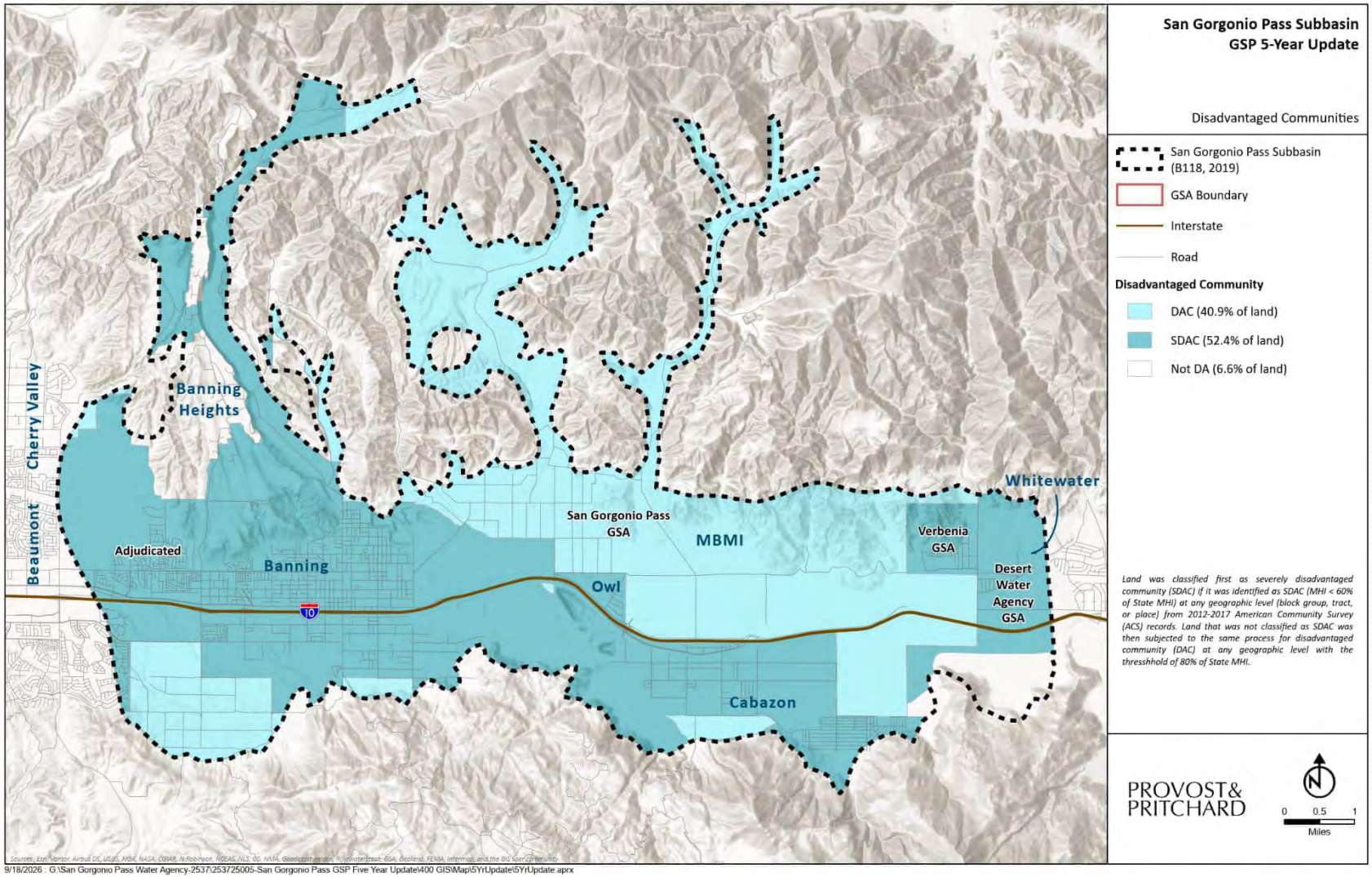
The Subbasin is supported by communities with diverse social, economic, and cultural backgrounds. During GSP Development, the GSAs considered the needs of all beneficial users of groundwater with an understanding of differences in resources across the Subbasin. To support groundwater sustainability, water needs, and future growth planning in conjunction with consideration of these resource discrepancies, the projects and management actions outlined in Chapter 6 – Projects and Management Actions prioritize benefits to Disadvantaged Communities, and the GSAs intend to support pursuance of grant funding to increase the likelihood of project and management action implementation.

Nearly all of the Subbasin is considered a Disadvantaged Community (DAC) or Severely Disadvantaged Community (SDAC). A DAC is defined as a community with a Median Household Income (MHI) less than 80 percent of the California statewide MHI. The California DWR compiled U.S. Census Bureau's American Community Survey (ACS) data from 2012 to 2017; these data were used in GIS to identify DACs within the San Gorgonio Pass Subbasin. Based on the DWR criteria, 40.9 percent of the geographic area of the Subbasin is considered disadvantaged. Furthermore, a community with an MHI of less than 60 percent of the California statewide MHI, meaning an MHI of less than or equal to $38,270, is considered an SDAC. According to the U.S. Census ACS 2012-2017 data, there are a number of SDACs throughout the Subbasin, totaling 52.4 percent of the Subbasin area. Figure 2-14 depicts the DAC and SDAC areas within the SGP Subbasin.

SGP Subbasin public water agencies, and the MBMI, are the predominant water supply source for DAC and SDAC areas. The service areas of the public water agencies essentially overly the DAC and SDAC areas, as can be seen by comparing Figure 2-3 with Figure 2-13. Based on locations of the small number of domestic wells shown in Figure 2-9, they are a water supply source primarily in the upstream canyons and adjacent non-groundwater basin areas. The lack of reliance on local domestic wells in the SGP Subbasin is likely based on the relatively high depth to water in the Banning and Cabazon storage units, which are the primary

groundwater resource for the SGP Subbasin as described in Chapter 3. Historical depths to water in the Banning and Cabazon Storage Units are hundreds of feet and the high costs of drilling wells would have been a significant barrier to domestic well construction historically. Development in the SGP Subbasin has occurred primarily in areas, like the City of Banning, which had access to a relatively low-cost municipal groundwater supply from Banning Canyon.

Figure 2-14 Disadvantaged Communities within the San Gorgonio Pass Subbasin



3 BASIN SETTING

3.1 HYDROGEOLOGIC CONCEPTUAL MODEL

This Hydrogeologic Conceptual Model (HCM) has been written by adhering to the requirements set forth in the California Code of Regulations, Title 23, Division 2, Chapter 1.5, Subchapter 2, Article 5, Subarticle 2 (§354.14). A description of the HCM contents is provided in Section 3.1.1

3.1.1 INTRODUCTION

Regulation Requirements:

> **§354.14(a)** Each Plan shall include a descriptive hydrogeologic conceptual model of the basin based on technical studies and qualified maps that characterizes the physical components and interaction of the surface water and groundwater systems in the basin.

The purpose of an HCM is to provide an easy-to-understand description of the general physical characteristics of the regional hydrology, land use, geology, geologic structure, water quality, principal aquifers, and principal aquitards in the basin setting. Once developed, an HCM is useful in providing the context to develop water budgets, monitoring networks, and identification of data gaps.

An HCM is not a numerical groundwater model or a water budget model. An HCM is rather a written and graphical description of the hydrologic and hydrogeologic conditions that lay the foundation for future water budget models. In addition, this HCM supports and provides the hydrogeologic setting to support the Groundwater Conditions (Section 3.2), and Water Budget, (Section 3.3) of this GSP.

The narrative HCM description provided in this Section of Chapter 3 is accompanied by graphical representations of the SGP Subbasin that have attempted to clearly portray the geographic setting, regional geology, basin geometry, and general water quality. This HCM has been prepared utilizing published studies and resources and will be periodically updated as data gaps are addressed, and new information becomes available.

Several topics are touched on in the HCM, including groundwater quality, groundwater flow, and groundwater budget which are discussed in greater detail in Groundwater Conditions (Section 3.2) and Water Budget (Section 3.3).

3.1.2 LATERAL BASIN BOUNDARIES

Regulation Requirements:

> **§354.14(b)(2)** The hydrogeologic conceptual model shall be summarized in a written description that includes lateral basin boundaries, including major geologic features that significantly affect groundwater flow.

The SGP Subbasin is the portion of the Coachella Valley Groundwater Basin that lies completely within the SGP. It is bounded on the north by semi-permeable rocks and the San Bernardino Mountains and to the south by the San Jacinto Mountains. The Upper Santa Ana Valley-San Timoteo (San Timoteo) Subbasin bounds the subbasin on the west and the eastern boundary is formed by a bedrock constriction that creates a groundwater cascade into the Indio Subbasin (DWR, 2004). Figure 2-1 in Chapter 2 depicts the San Timoteo and Indio Subbasins' relation to the SGP Subbasin.

3.1.3 REGIONAL GEOLOGIC AND STRUCTURAL SETTING

Regulation Requirements:

> **§354.14(b)(1)** The hydrogeologic conceptual model shall be summarized in a written description that includes the regional geologic and structural setting of the basin including the immediate surrounding area, as necessary for geologic consistency.

> **§354.14(b)(3)** The hydrogeologic conceptual model shall be summarized in a written description that includes the definable bottom of the basin.

3.1.3.1 REGIONAL GEOLOGIC AND STRUCTURAL SETTING

Active parts of the Banning, Garnet Hill, and SGP Thrust faults are associated with the San Andreas Fault through the Pass. Together, these faults accommodate strike-slip and reverse slip that contribute to both uplift of the San Bernardino Mountains and overall movement between the North American plate and the Pacific plate.

San Andreas Fault

The geologic structure of the region surrounding the SGP GSA is defined by the San Andreas Fault system, which includes a family of geologic features covering a large area. The San Andreas Fault is a right-lateral strike-slip fault that marks the transform boundary between the Pacific Tectonic Plate and North American Tectonic Plate. In the SGP region, the San Andreas Fault steps left in a restraining bend that has resulted in compression and evolved into a complex network of three-dimensionally irregular fault surfaces (Dair and Cooke, 2009). Yule (2009) has described the San Andreas Fault in this region as disaggregating into a family of irregular and discontinuous separate fault lines. The current San Andreas Fault trace lies just north of the SGP GSA along the base of the San Bernardino Mountains.

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. A fault system map is presented as Figure 3-1.

Banning Fault

The Banning Fault trends east-west through the SGP where it generally dips steeply north and juxtaposes crystalline rocks of the San Gabriel Mountains against Cenozoic (66 mya to the present) sedimentary deposits. The Banning Fault has been modified by Quaternary reverse, thrust, and tear faults of the younger SGP Fault Zone (Rewis, 2006).

San Gorgonio Pass Fault Zone

The SGP Fault Zone is a series of Quaternary (2.6 mya to the present) reverse, thrust, and tear faults that extends from Whitewater to the Calimesa area to the west. The SGP Fault Zone has a zig-zag trace caused by repetition of an L-shaped faulting pattern where the shorter base of the "L" is oriented east to northeast and the longer leg is oriented northwestward. Within the area, the SGP Fault Zone has produced several tectonically created landforms with the uplifted Banning Bench being a prime example. Along the extent, the SGP Fault Zone breaks and displaces the older Banning Fault in the subsurface (Rewis et al, 2006). Water-level and geochemical data indicate that multiple groundwater barriers are associated with the Banning/Cabazon MA and are interpreted to be multiple strands of the SGP Fault Zone (Rewis et al, 2006). Rewis maps (2006) these faults in the western portion of the SPG GSA area in the Banning/Cabazon MA. These faults are named the Central Banning Barrier Fault, Eastern Banning Barrier Fault, and the Banning Barrier Fault or collectively the Banning Barrier Faults (Figure 3-1). These faults do not have surface expressions and are interpreted by Rewis (2006) to be older than the faults that bound the Banning Bench.

Gandy Ranch Fault

The Gandy Ranch Fault extends approximately 8 miles to the northwest from the mouth of Millard Canyon and generally bisects the angle between the Banning Fault and the San Andreas Fault. East of Millard Canyon, the Gandy Ranch fault merges with the Banning Fault (Allen, 1954).

Lawrence Fault

The Lawrence Fault is located along the southern edge of the SGP. It is an inactive, pre-Quaternary fault that cuts through the metasedimentary rocks in the northern portion of the San Jacinto Mountains (Rewis, 2006).

3.1.3.2 DEFINABLE BOTTOM OF SUBBASIN

A large density contrast exists between the sedimentary deposits and denser basement rock in the San Gorgonio Subbasin. Using the relationship and isostatic gravity field data Langenheim et al. (2005) estimated the thickness of sedimentary deposits within the SGP Subbasin. Results of this study indicate that the depth to the top of the basement complex in the Subbasin ranges from 0 feet along the margins of the basin to greater than approximately 7,000 feet northwest of Banning in the adjudicated Beaumont Basin.

As shown in Figure 3-2, depth to the basement complex as mapped by Langenheim et al. is around 500 to 1,500 feet along the southern boundary of the basin. Across the main area of the basin, the depth of the basement complex is up to approximately 3,000 feet. Localized areas of deeper basement complex up to about 4,000 feet are located generally in the western Banning/Cabazon and in the Banning Canyon/Bench MAs. It is worth noting that the older sedimentary deposits tend to have a higher degree of compaction, consolidation, and cementation than the younger deposits and as a result have greatly reduced permeability in relation to younger sedimentary deposits (Rewis, 2006).

Figure 3-1. San Gorgonio Pass Fault System

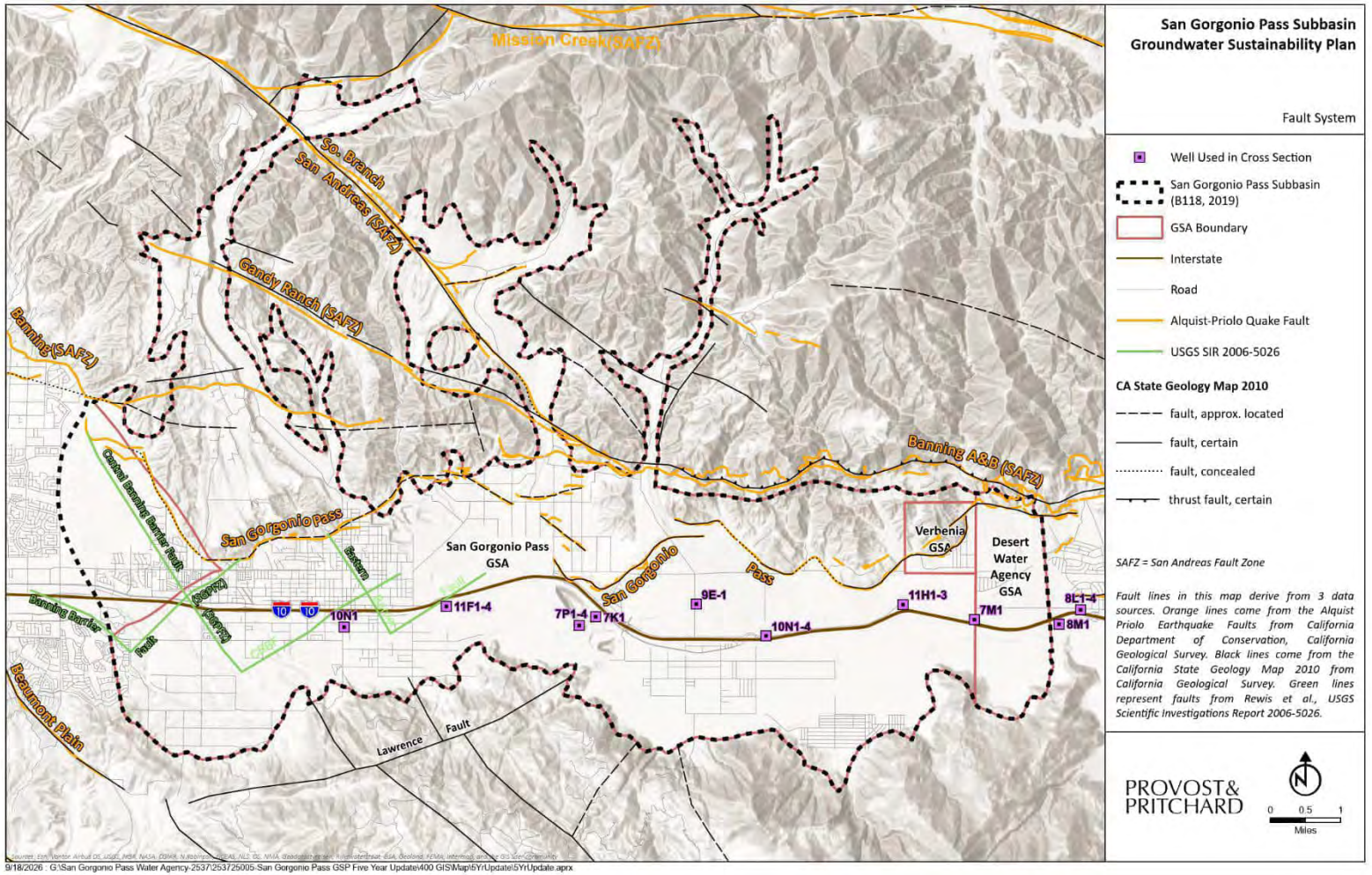
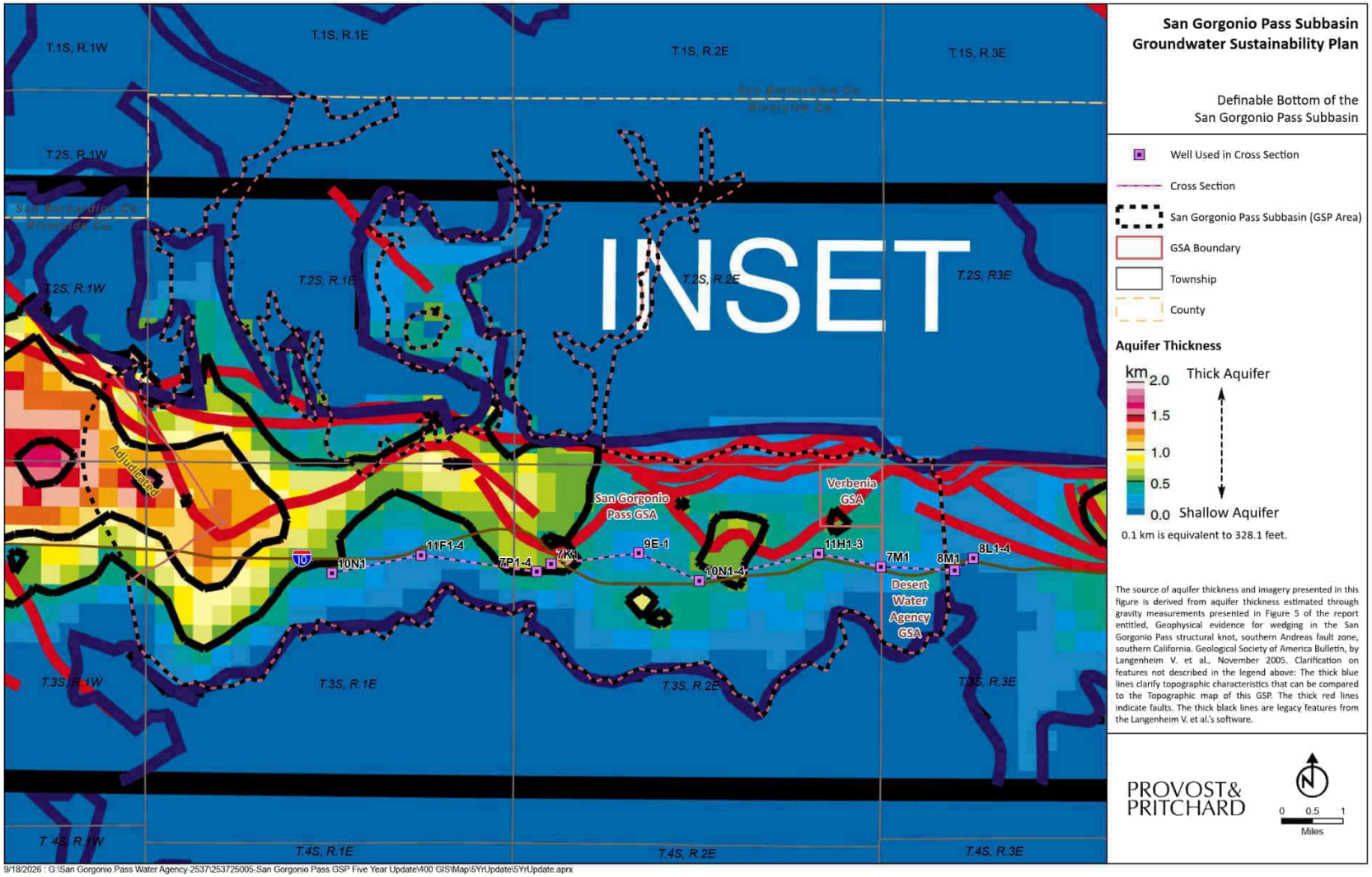


Figure 3-2. Definable Bottom of San Gorgonio Subbasin



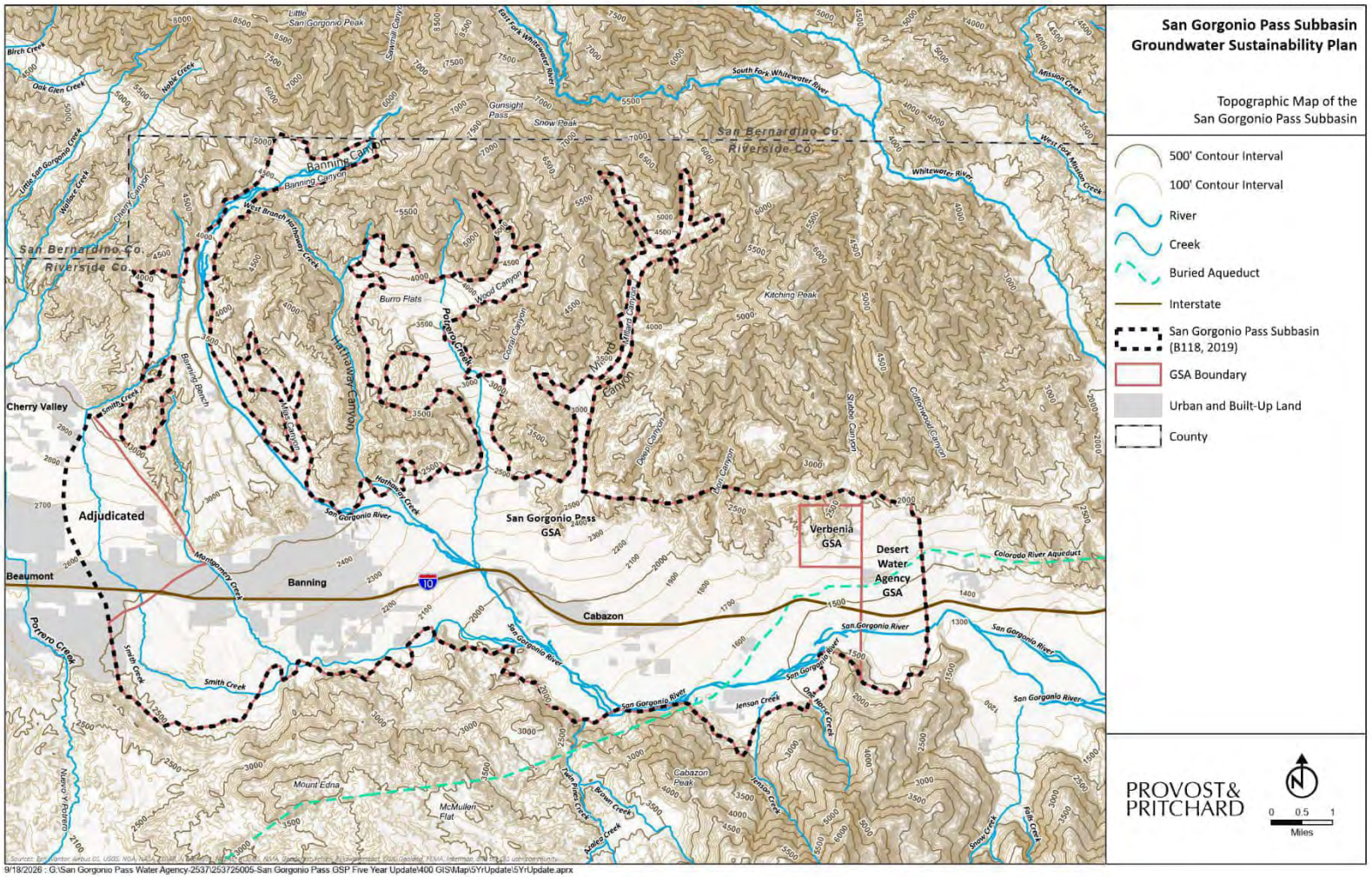
3.1.4 TOPOGRAPHIC INFORMATION

Regulation Requirements:

§354.14(d)(1) Physical characteristics of the basin shall be represented on one or more maps that depict topographic information derived from the U.S. Geological Survey or another reliable source.

A topographic map of the SGP GSA is presented in Figure 3-3. The SGP Subbasin main valley has an elevation of approximately 2,600 feet above mean sea level (msl) on its western edge and approximately 1,400 feet above msl on the eastern edge. The pass itself slopes gently to the southeast. The floor of Banning Canyon is at an elevation of approximately 5,200 feet above msl at the top and at an elevation of approximately 2,600 feet above msl at the bottom in the area where it grades into the Banning Bench. The floor of Potrero Canyon is at an elevation of approximately 5,800 feet above msl at the top and approximately 2,500 feet above msl at the bottom where it grades into the main valley. The floor of Millard Canyon is at an elevation of approximately 5,500 feet above msl at the top and at approximately 2,700 feet above msl at the bottom where it grades into the main valley. The mountains to the north and south of the SGP GSA rise abruptly to elevations approaching 9,000 feet higher than the pass itself.

Figure 3-3. Topographic Map of the San Gorgonio Pass Subbasin



3.1.5 SURFICIAL GEOLOGY

Regulation Requirements:

> **§354.14(d)(2)** Physical characteristics of the basin shall be represented on one or more maps that depict surficial geology derived from a qualified map including the locations of cross-sections required by this Section.

The SGP Subbasin topography is covered by numerous alluvial fan deposits derived from the San Bernardino and San Jacinto Mountains (USGS, 2017). These alluvial fans provide wide areas that can recharge surface flows into the underlying SGP Subbasin.

A generalized geologic map, pieced together from USGS geologic maps of the San Gorgonio Mountain, Morongo Valley, Beaumont, Cabazon, and White Water quadrangle maps by T.W. Dibblee, is shown in Figure 3-4. As shown in Figure 3-4, surficial geologic materials in the SGP Subbasin consist of consolidated rocks and unconsolidated deposits. The consolidated rocks are comprised of crystalline basement rocks of the Peninsular Ranges to the south (qdx/qdi) and crystalline basement rocks of the San Gabriel Mountains to the north (qr/qd). Millard Canyon, Potrero Canyon, and Banning Canyon to the north are filled by young surficial Quaternary deposits (Qa/Qg). Additional pockets of fanglomerate materials (Qcf) are scattered around the foothills to the north. More detailed geologic mapping (Figure 3-5 and Figure 3-6) was prepared by Matti and others (1992). As mapped by Matti and others, the consolidated rocks are comprised of Mesozoic, Paleozoic, and pre-Cambrian granitoid basement rocks of the Peninsular Ranges to the south (prb) and the San Gabriel Mountains (sgb). Millard Canyon and Potrero Canyon are filled by deposits of younger alluvial fans of Holocene and late Pleistocene age (Qyf). Banning Canyon is generally filled with very young surficial alluvial deposits (Qw) of Holocene age and Pleistocene age deposits of older alluvial fans (Qof). Old and very old surficial deposits of Pleistocene age (Qdf and QTst) comprise the surface of the Banning Bench. The surface deposits, as mapped by Matti and others, are shown on Conceptual Geologic A-A' to delineate contacts between surface deposits on the ground surface (Figure 3-8).

3.1.6 SOIL CHARACTERISTICS

Regulation Requirements:

> **§354.14(d)(3)** Physical characteristics of the basin shall be represented on one or more maps that depict soil characteristics as described by the appropriate Natural Resource Conservation Service soil survey or other applicable studies.

Using the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey of Riverside County, an analysis of the properties and qualities of soils pertinent to groundwater recharge in the area was performed. Using NRCS data, the soils textural category for the identified soils have been related to Saturated Hydraulic Conductivity (Ksat). Ksat is a quantitative measure of a soil's ability to transmit water when subjected to a hydraulic gradient. The relative Ksat rates for the NRCS soil types have been mapped on Figure 3-7.

As shown on Figure 3-7, soils within the SGP Subbasin generally have relatively high Ksat rates across the entire basin. Northwest trending strings of soils with very high Ksat rates are located within areas of intermittent stream channels and within Banning Canyon. Pockets of moderately high to very low Ksat rates are located within the Banning Bench area and against the mountainous areas in the northeast and southwest portions of the SGP Subbasin.

3.1.7 GEOLOGIC CROSS-SECTIONS

Regulation Requirements:

> **§354.14(c)** The hydrogeologic conceptual model shall be represented graphically by at least two scaled cross-sections that display the information required by this section and are sufficient to depict major stratigraphic and structural features in the basin.

Three geologic cross-sections (A-A', B-B', and C-C') are presented in Figure 3-8 through Figure 3-10, respectively. The locations of the cross-sections are shown on Figure 3-5.

- *Conceptual Cross-Section A-A' was generated based on the SGP Subbasin GSP groundwater model data, with more detailed geologic unit descriptions given in Rewis (2006) as shown on Cross-Section B-B'. Conceptual Cross-Section A-A' extends east from well 10N1 generally down the central portion of the SGP Basin. The geologic units below ground surface descriptions on Conceptual Cross-Section A-A' are based on those shown on B-B' (Rewis, 2006, Figure 6A). However, the Qo and Qvo units from Rewis (2006) are shown as a single layer from the model data on Conceptual Geologic Cross-Section A-A' (**Figure 3-8**).*
- *Cross-section B-B' (Rewis, 2006, Figure 6A) is along an east-west transect; however, it extends outside of the SGP GSA to the west and cuts through the Beaumont Basin and Banning/Cabazon MA. This cross-section is useful in demonstrating the relationship between the crystalline Peninsular Range rocks, older sedimentary deposits, and the younger sedimentary deposits which makeup the water bearing deposits of the Subbasin. (**Figure 3-9**)*
- *Cross-section C-C' (Langenheim, 2005, Figure 5B) is along a north-south transect and cuts through the subbasin entirely to the north and the south and shows the relationship of the SGP Fault Zone to the Banning Fault. (**Figure 3-10**)*

There are several locations where wells appear to be deeper than the bottom of the alluvial subbasin (e.g., 11F1-4, 23B1, and 8M1). Assuming that these wells were completed above bedrock, there appears to be some discrepancies in the thickness of the aquifer materials based on Langenheim (2005). For example, the DWR Well Completion Report for 11F1 (WCR No. e0094598) shows various alluvial materials down to 1,060 feet below ground surface. Similarly, WCR No. 441043 is for 23B1, a Cabazon County Water District well, and it also shows various alluvial materials down to a depth of 1,220 feet. This appears to indicate that in these locations, bedrock is deeper than indicated by Langenheim (2005).

Figure 3-4 Geologic Map of the San Gorgonio Pass Subbasin

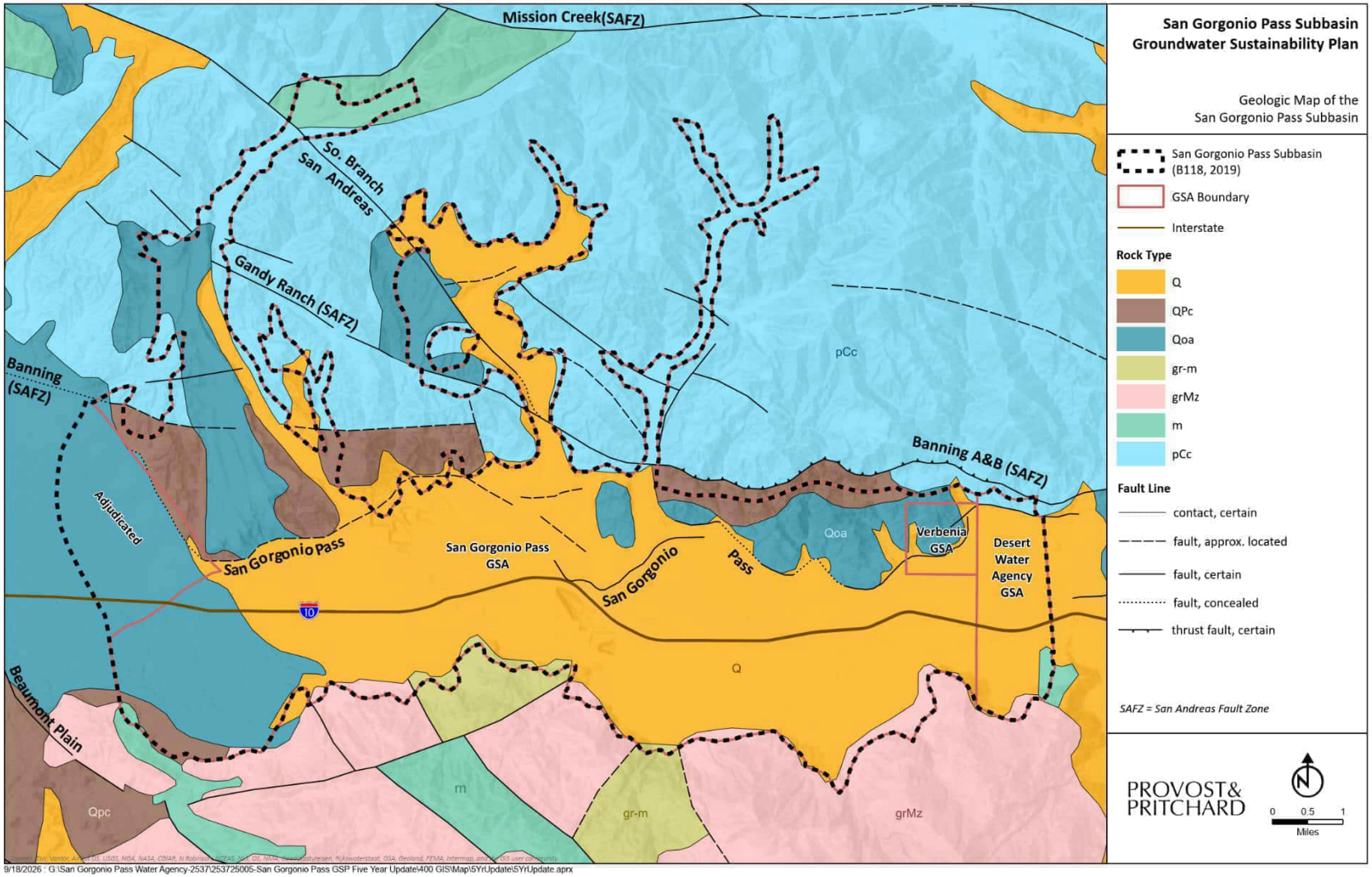


Figure 3-5 Surface Geology

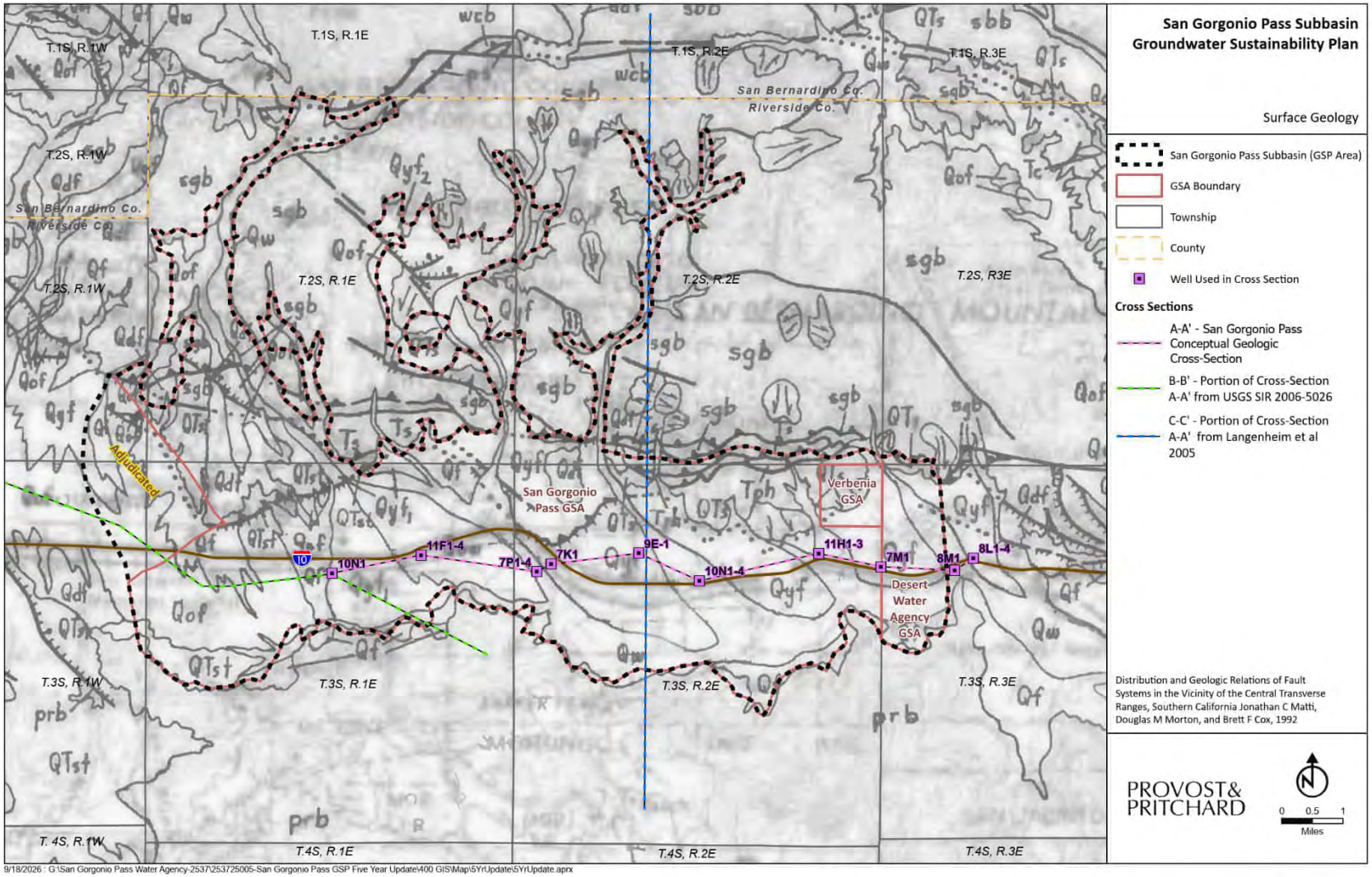
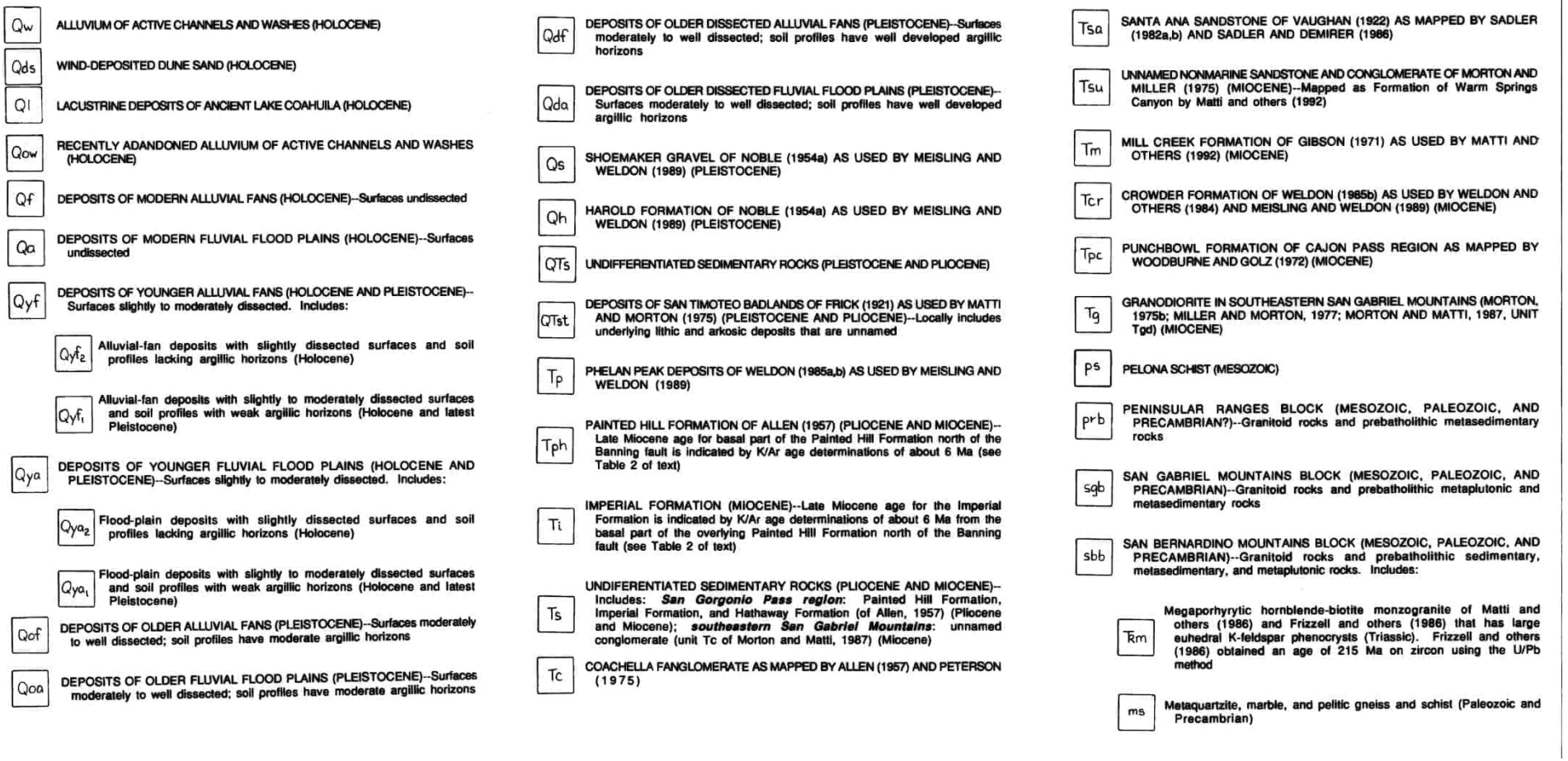


Figure 3-6 Geologic Unit Descriptions (Matti, Morton, and Cox, 1992)



Qw ALLUVIUM OF ACTIVE CHANNELS AND WASHES (HOLOCENE)

Qds WIND-DEPOSITED DUNE SAND (HOLOCENE)

Ql LACUSTRINE DEPOSITS OF ANCIENT LAKE COAHUILA (HOLOCENE)

Qow RECENTLY ADANDONED ALLUVIUM OF ACTIVE CHANNELS AND WASHES (HOLOCENE)

Qf DEPOSITS OF MODERN ALLUVIAL FANS (HOLOCENE)--Surfaces undissected

Qa DEPOSITS OF MODERN FLUVIAL FLOOD PLAINS (HOLOCENE)--Surfaces undissected

Qyf DEPOSITS OF YOUNGER ALLUVIAL FANS (HOLOCENE AND PLEISTOCENE)--Surfaces slightly to moderately dissected. Includes:

Qyf_2 Alluvial-fan deposits with slightly dissected surfaces and soil profiles lacking argillic horizons (Holocene)

Qyf_1 Alluvial-fan deposits with slightly to moderately dissected surfaces and soil profiles with weak argillic horizons (Holocene and latest Pleistocene)

Qya DEPOSITS OF YOUNGER FLUVIAL FLOOD PLAINS (HOLOCENE AND PLEISTOCENE)--Surfaces slightly to moderately dissected. Includes:

Qya_2 Flood-plain deposits with slightly dissected surfaces and soil profiles lacking argillic horizons (Holocene)

Qya_1 Flood-plain deposits with slightly to moderately dissected surfaces and soil profiles with weak argillic horizons (Holocene and latest Pleistocene)

Qof DEPOSITS OF OLDER ALLUVIAL FANS (PLEISTOCENE)--Surfaces moderately to well dissected; soil profiles have moderate argillic horizons

Qoa DEPOSITS OF OLDER FLUVIAL FLOOD PLAINS (PLEISTOCENE)--Surfaces moderately to well dissected; soil profiles have moderate argillic horizons

Qdf DEPOSITS OF OLDER DISSECTED ALLUVIAL FANS (PLEISTOCENE)--Surfaces moderately to well dissected; soil profiles have well developed argillic horizons

Qda DEPOSITS OF OLDER DISSECTED FLUVIAL FLOOD PLAINS (PLEISTOCENE)--Surfaces moderately to well dissected; soil profiles have well developed argillic horizons

Qs SHOEMAKER GRAVEL OF NOBLE (1954a) AS USED BY MEISLING AND WELDON (1989) (PLEISTOCENE)

Qh HAROLD FORMATION OF NOBLE (1954a) AS USED BY MEISLING AND WELDON (1989) (PLEISTOCENE)

QTs UNDIFFERENTIATED SEDIMENTARY ROCKS (PLEISTOCENE AND PLIOCENE)

QTst DEPOSITS OF SAN TIMOTEO BADLANDS OF FRICK (1921) AS USED BY MATTI AND MORTON (1975) (PLEISTOCENE AND PLIOCENE)--Locally includes underlying lithic and arkosic deposits that are unnamed

Tp PHELAN PEAK DEPOSITS OF WELDON (1985a,b) AS USED BY MEISLING AND WELDON (1989)

Tph PAINTED HILL FORMATION OF ALLEN (1957) (PLIOCENE AND MIOCENE)--Late Miocene age for basal part of the Painted Hill Formation north of the Banning fault is indicated by K/Ar age determinations of about 6 Ma (see Table 2 of text)

Ti IMPERIAL FORMATION (MIOCENE)--Late Miocene age for the Imperial Formation is indicated by K/Ar age determinations of about 6 Ma from the basal part of the overlying Painted Hill Formation north of the Banning fault (see Table 2 of text)

Ts UNDIFERENTIATED SEDIMENTARY ROCKS (PLIOCENE AND MIOCENE)--Includes: ***San Gorgonio Pass region***: Painted Hill Formation, Imperial Formation, and Hathaway Formation (of Allen, 1957) (Pliocene and Miocene); ***southeastern San Gabriel Mountains***: unnamed conglomerate (unit Tc of Morton and Matti, 1987) (Miocene)

Tc COACHELLA FANGLOMERATE AS MAPPED BY ALLEN (1957) AND PETERSON (1975)

Tsa SANTA ANA SANDSTONE OF VAUGHAN (1922) AS MAPPED BY SADLER (1982a,b) AND SADLER AND DEMIRER (1986)

Tsu UNNAMED NONMARINE SANDSTONE AND CONGLOMERATE OF MORTON AND MILLER (1975) (MIOCENE)--Mapped as Formation of Warm Springs Canyon by Matti and others (1992)

Tm MILL CREEK FORMATION OF GIBSON (1971) AS USED BY MATTI AND OTHERS (1992) (MIOCENE)

Tcr CROWDER FORMATION OF WELDON (1985b) AS USED BY WELDON AND OTHERS (1984) AND MEISLING AND WELDON (1989) (MIOCENE)

Tpc PUNCHBOWL FORMATION OF CAJON PASS REGION AS MAPPED BY WOODBURNE AND GOLZ (1972) (MIOCENE)

Tg GRANODIORITE IN SOUTHEASTERN SAN GABRIEL MOUNTAINS (MORTON, 1975b; MILLER AND MORTON, 1977; MORTON AND MATTI, 1987, UNIT Tgd) (MIOCENE)

ps PELONA SCHIST (MESOZOIC)

prb PENINSULAR RANGES BLOCK (MESOZOIC, PALEOZOIC, AND PRECAMBRIAN?)--Granitoid rocks and prebatholithic metasedimentary rocks

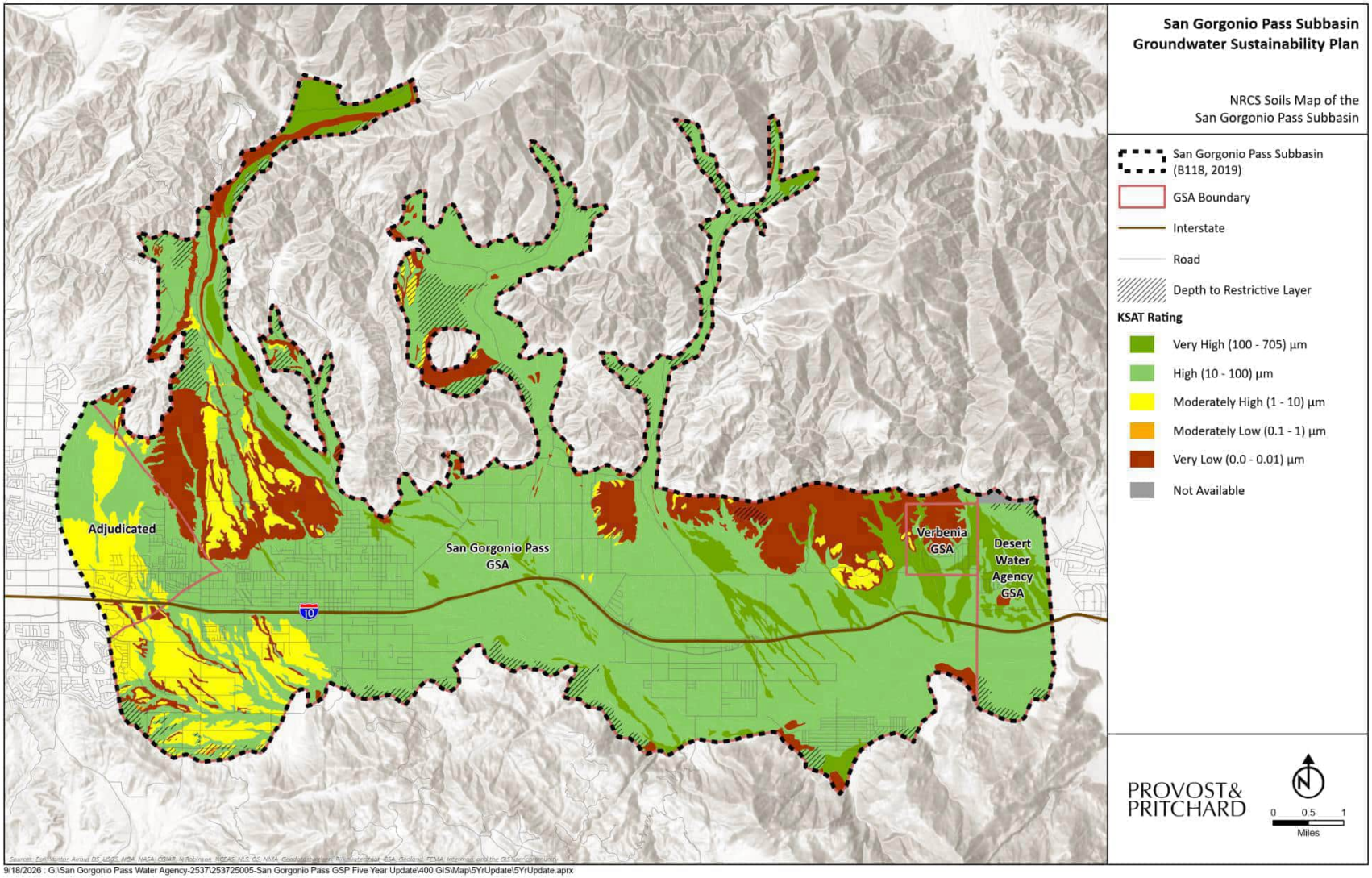
sgb SAN GABRIEL MOUNTAINS BLOCK (MESOZOIC, PALEOZOIC, AND PRECAMBRIAN)--Granitoid rocks and prebatholithic metaplutonic and metasedimentary rocks

sbb SAN BERNARDINO MOUNTAINS BLOCK (MESOZOIC, PALEOZOIC, AND PRECAMBRIAN)--Granitoid rocks and prebatholithic sedimentary, metasedimentary, and metaplutonic rocks. Includes:

Trm Megaporhyrytic hornblende-biotite monzogranite of Matti and others (1986) and Frizzell and others (1986) that has large euhedral K-feldspar phenocrysts (Triassic). Frizzell and others (1986) obtained an age of 215 Ma on zircon using the U/Pb method

ms Metaquartzite, marble, and pelitic gneiss and schist (Paleozoic and Precambrian)

Figure 3-7 NRCS Soils Map of the San Gorgonio Pass Subbasin



9/18/2026 . G:\San Gorgonio Pass Water Agency-2537\253725005-San Gorgonio Pass GSP Five Year Update\400 GIS\Map\5YrUpdate\5YrUpdate.aprx

Figure 3-8 Conceptual Geologic Cross Section A-A

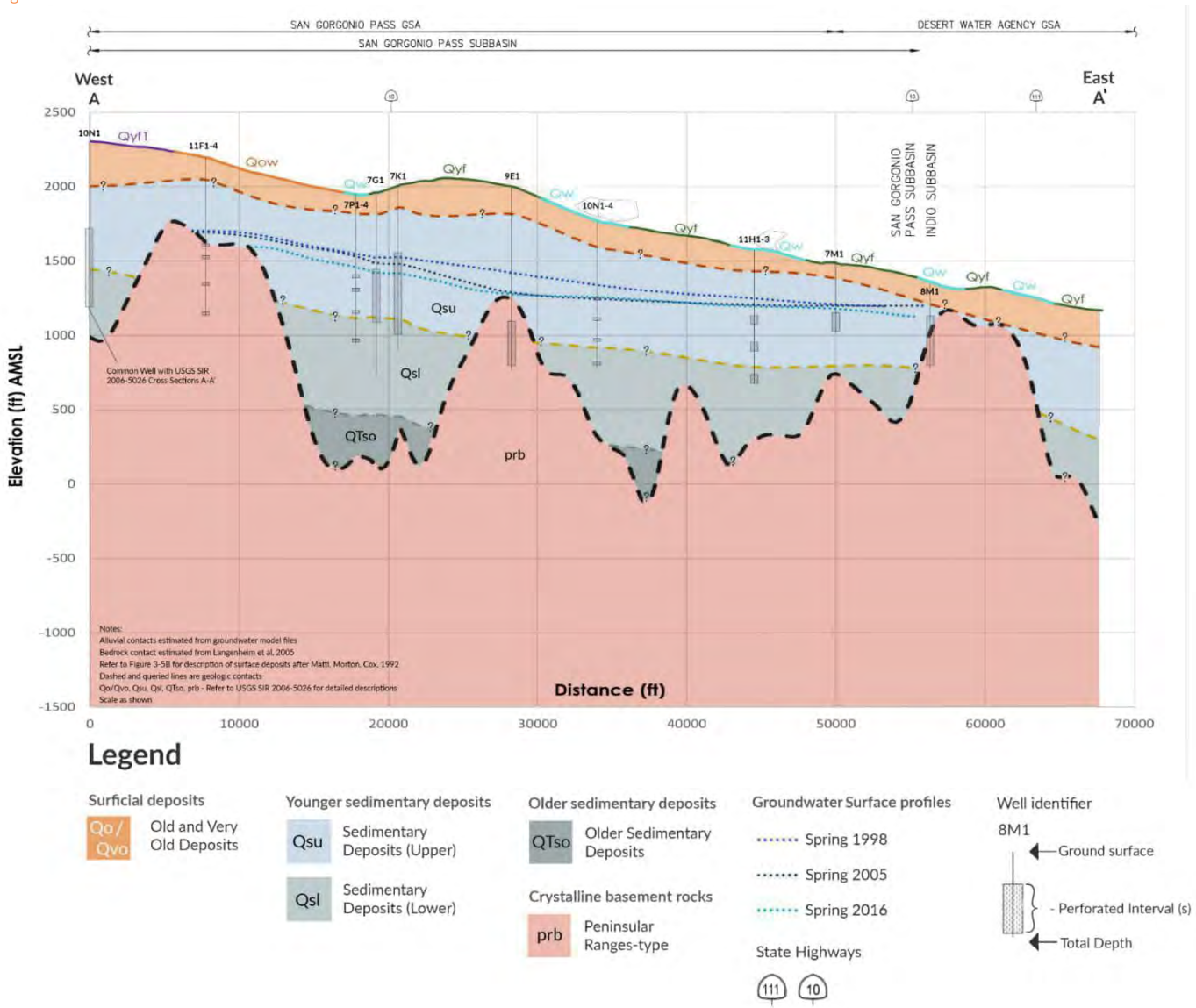


Figure 3-9 Conceptual Geologic Cross-Section B-B

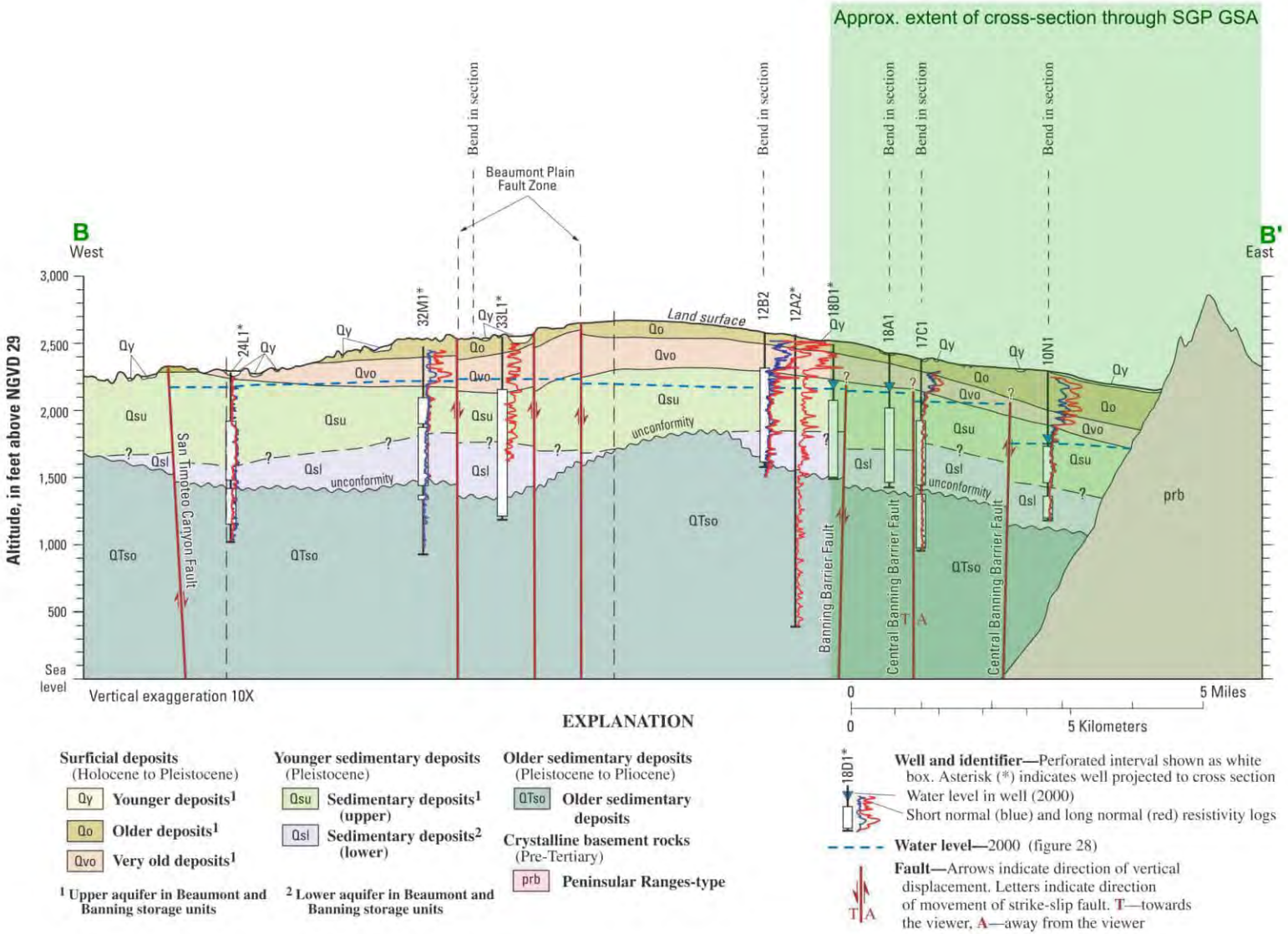
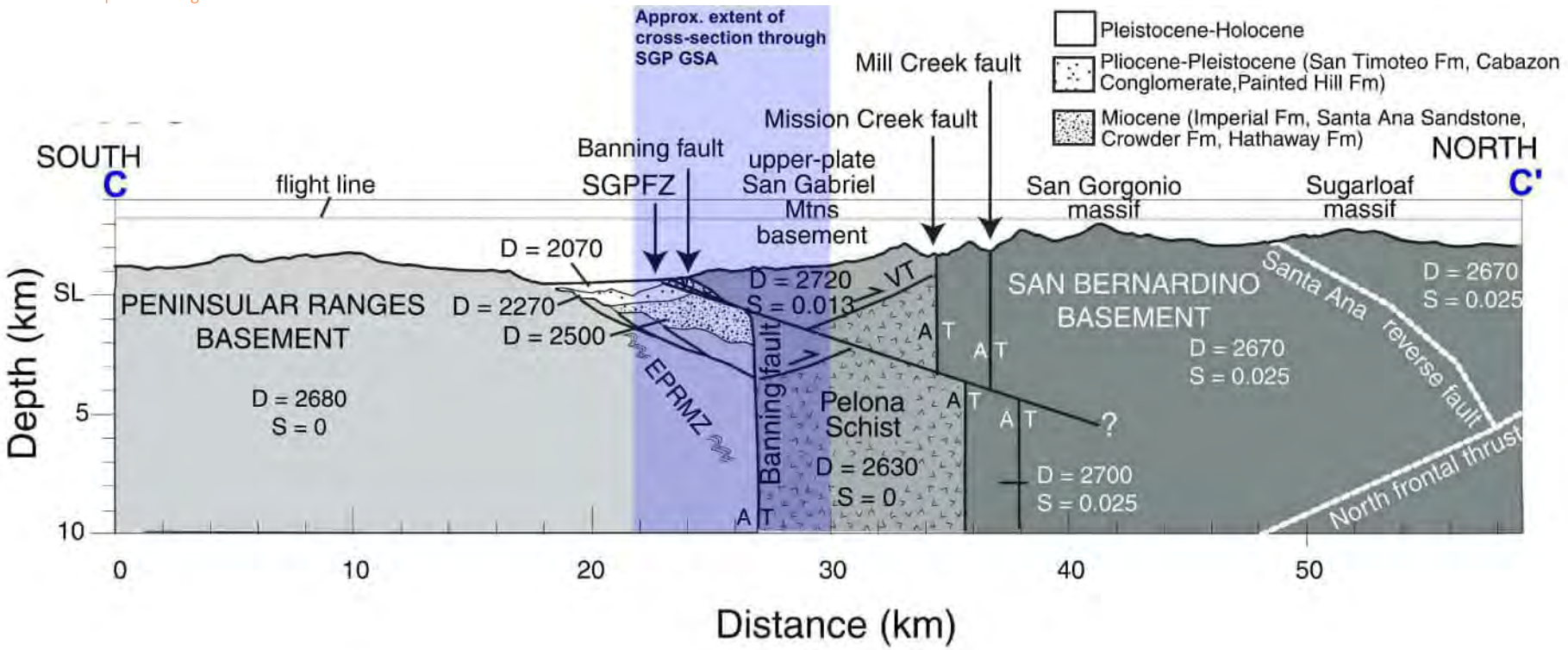


Figure 3-10 Conceptual Geologic Cross Section C-C



3.1.8 AQUIFER SYSTEM

Regulation Requirements:

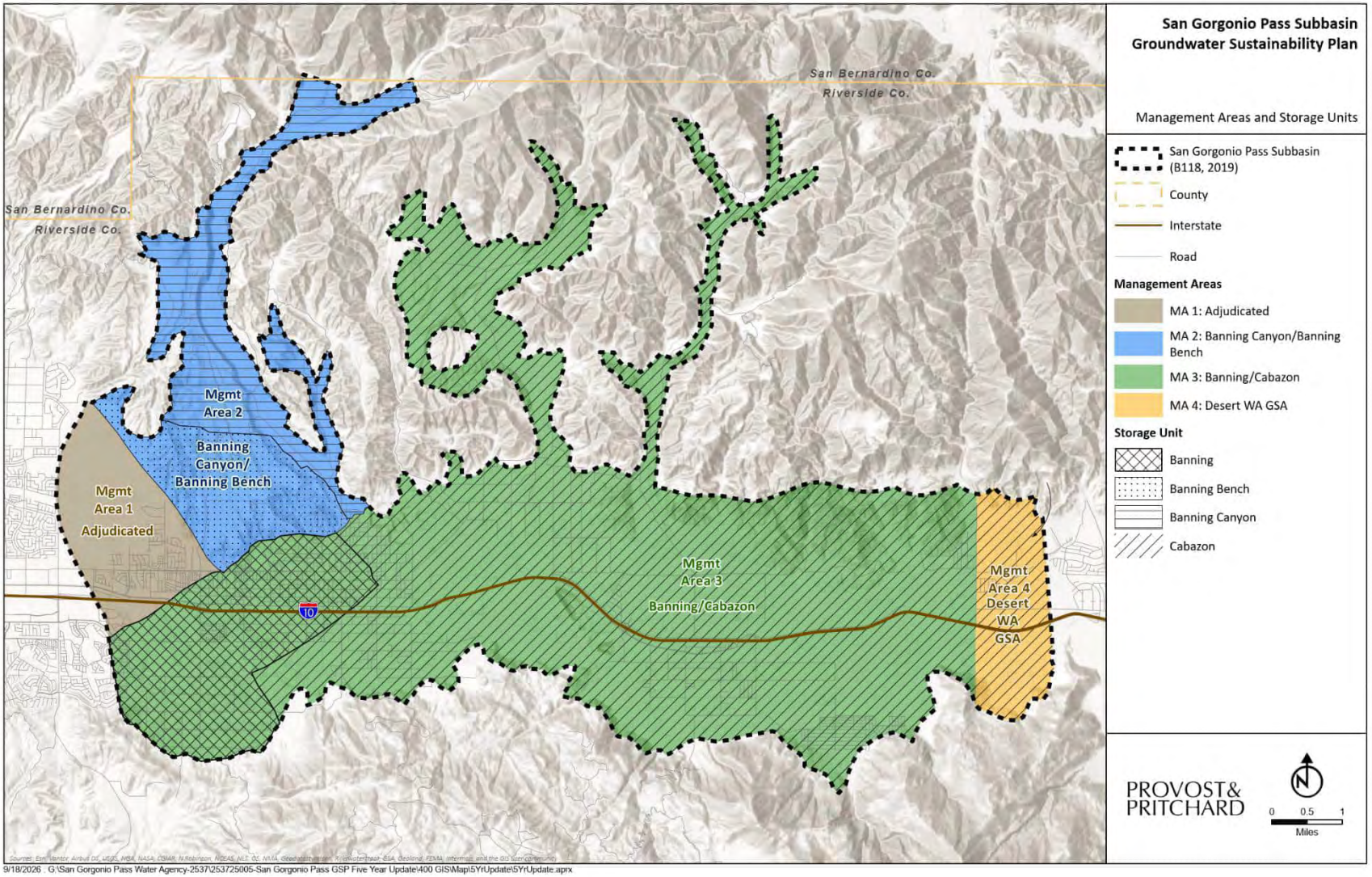
§354.14(b)(4) The hydrogeologic conceptual model shall be summarized in a written description that includes the principal aquifers and aquitards.

§354.14(b)(4)(c) Structural properties of the basin that restrict groundwater flow within the principal aquifers, including information regarding stratigraphic changes, truncation of units, or other features.

In general terms, Holocene (12,000 years ago to the present) and Pleistocene (2.6 mya to 12,000 years ago) age alluvium and the Pliocene to Pleistocene age San Timoteo Formation are the main water bearing deposits within the SGP Subbasin. Holocene alluvium is comprised of mostly gravel and sand. These deposits lie mostly above the groundwater surface and contribute little water to wells. Holocene alluvium is found in the subbasin tributaries and allows for infiltration of runoff for recharge. Pleistocene age alluvial sands, gravels, clays, and silts lie at deeper depths and yield moderate amounts of water to wells. The San Timoteo Formation is one of the main water-bearing deposits in the SGP Subbasin and extends to depths greater than 2,000 feet below the surface. It is Pliocene to Pleistocene in age and consists of poorly sorted to sorted, partly consolidated, fine to coarse sandstone with layers of gravel and thin interbedded clays (DWR, 2004).

Five hydraulically connected groundwater storage units have been identified within the SGP Subbasin. These storage units are defined by geologic faults that form barriers to lateral movement of groundwater leading to groundwater levels that vary significantly across adjacent storage units. Subbasin faulting is described in Section 3.2.1.1. The hydrologic storage unit boundaries were first defined by Bloyd (1971). In 2006, Rewis and others refined Bloyd's storage unit boundaries based on geologic and hydrologic data. The boundaries of the groundwater storage units, as mapped by the USGS (2006) are shown along with the SGP MAs in Figure 3-11. The storage units identified by the USGS include Beaumont Storage Unit, Banning Canyon Storage Unit, Banning Bench Storage Unit, Banning Storage Unit, and the Cabazon Storage Unit. The Beaumont Storage Unit has been adjudicated and because of the adjudication it is not subject to SGMA and will not be discussed in detail in this GSP. The relationship of the Storage Units with the MAs is shown in Figure 3-11. As described in Chapter 2, MA 1 is the adjudicated Beaumont Basin, which is exempt from SGMA and not evaluated in this GSP. MA 2 includes the Banning Canyon and Banning Bench storage units. MA 3 includes the Banning storage unit and most of the Cabazon storage unit. The eastern end of the Cabazon storage unit, the portion lying within Desert Water Agency GSA, is in MA 4.

Figure 3-11 Management Areas and Storage Units

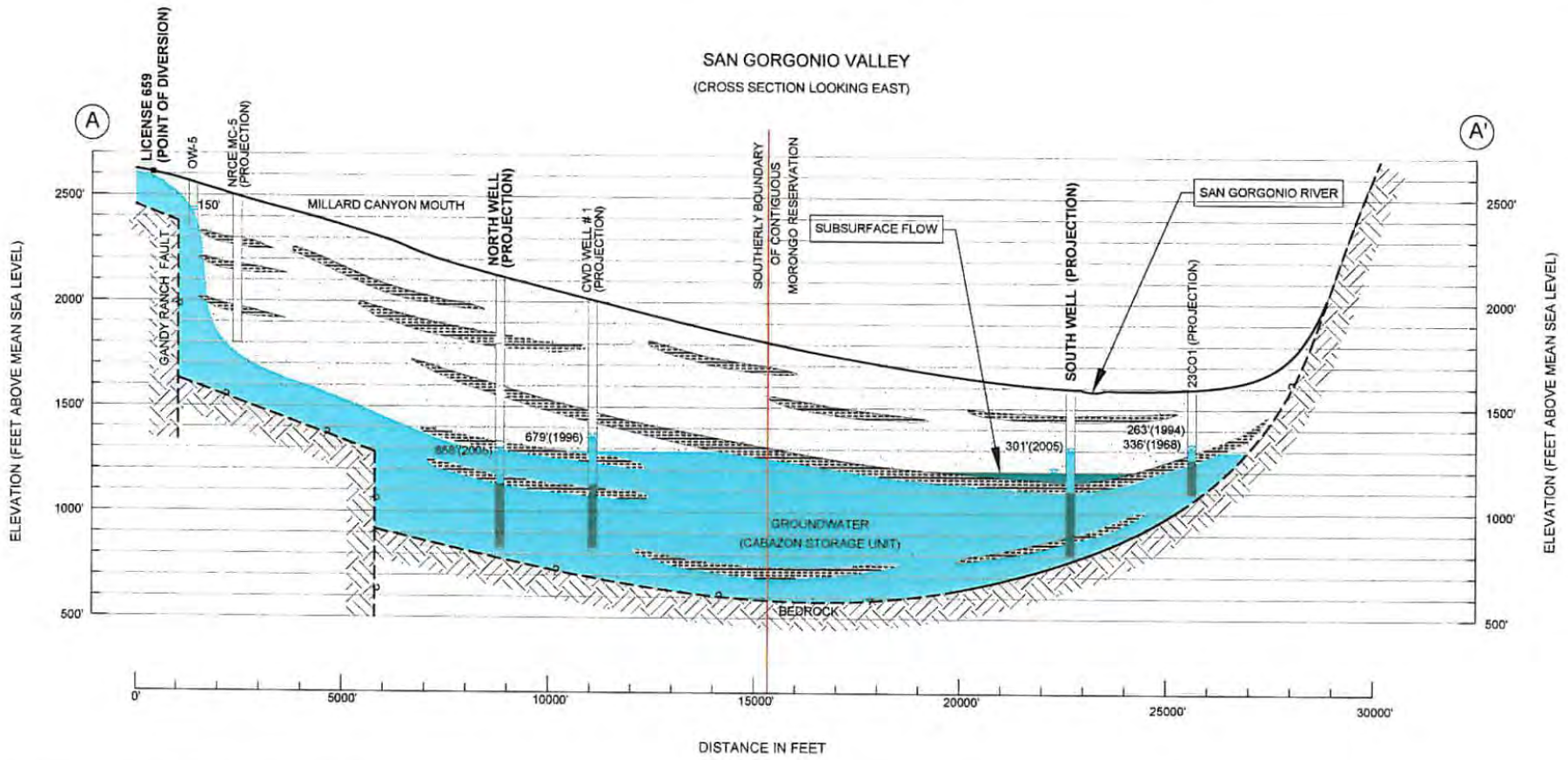


The main water-bearing deposits in the Banning and Cabazon storage units of the SGP Subbasin are the saturated portions of the Quaternary surficial deposits (Qy, Ql, Qo, and Qvo) and the younger sedimentary deposits (Qsu and Qsl). These deposits can be divided into three aquifers: (1) a perched aquifer, (2) an upper aquifer, and (3) a lower aquifer. The older sedimentary deposits (QTso) and the crystal-line basement rocks (prb and trb) surround and underlie the surficial and younger sedimentary deposits. These deposits and rocks generally are impermeable, yielding only small quantities of water to wells. Although the older sedimentary deposits have considerable lithologic variability, the various lithologies are similar in terms of their greater degree of compaction, consolidation, and cementation relative to the younger sedimentary deposits, which greatly reduces the permeability of the older sedimentary deposits. The crystalline rocks and older sedimentary deposits are considered non-water bearing and form the base and, in many areas, the lateral boundaries of the ground-water basin (Rewis, 2006).

Depths to water in the Banning and Cabazon storage units are typically greater than 200 feet, and often are several hundred feet deep. Groundwater in the Banning and Cabazon storage units is recharged by surface water and groundwater discharges from the canyons (Banning Canyon, Hathaway Canyon, Potrero Canyon and Millard Canyon) storage units (Rewis, 2006). Figure 3-12 shows a north-south cross section with water levels and subsurface flows in the eastern portion of the Cabazon storage unit (MBMI, 2012b). The alignment for this cross section is shown in Figure 3-13 (MBMI, 2012a). As shown on this cross section, subsurface groundwater discharges from Millard Canyon into the Cabazon storage unit at the northern boundary of the Cabazon storage unit and flows southward. Based on limited water level data, similar flow patterns also occur in other parts of the Cabazon storage unit, with recharge being provided by surface runoff and groundwater discharge from the Banning Canyon and other canyon storage units. Storage capacity in the Cabazon storage unit, as described in Section 3.2 is about 900,000 acre-feet and historical annual groundwater pumping, as described in Section 3.3, is relatively small.

While the USGS identified the Banning and Cabazon storage units based on the existence of the Central Banning Barrier Fault, the Eastern Barrier Fault and other presumed faults, the hydrogeologic significance of these definitions has not been confirmed. The water level differences across the Banning Barrier Fault (the boundary between the Banning and Beaumont Basin) are relatively small and the hydraulic significance of the Central Banning Barrier Fault at this location is not well defined. Similarly, there are no nearby water level measurements across the Eastern Barrier Fault (the boundary of the Cabazon and Banning Storage Units) and the presence of a hydraulic barrier between the Cabazon and Banning Storage Units is uncertain. Based on the closest available water level measurements, there are no apparent significant water level variations across the Cabazon/Banning storage unit boundary. Conversely, other faults may exist in the Banning and Cabazon storage units that affect groundwater flow in other portions of those basins. In part due to uncertainty related to the hydraulic significance of the Cabazon and Banning storage units as identified by the USGS, they have not been broken into distinct MAs and are combined into MAs 3 and 4 that are defined in Section 2.1.

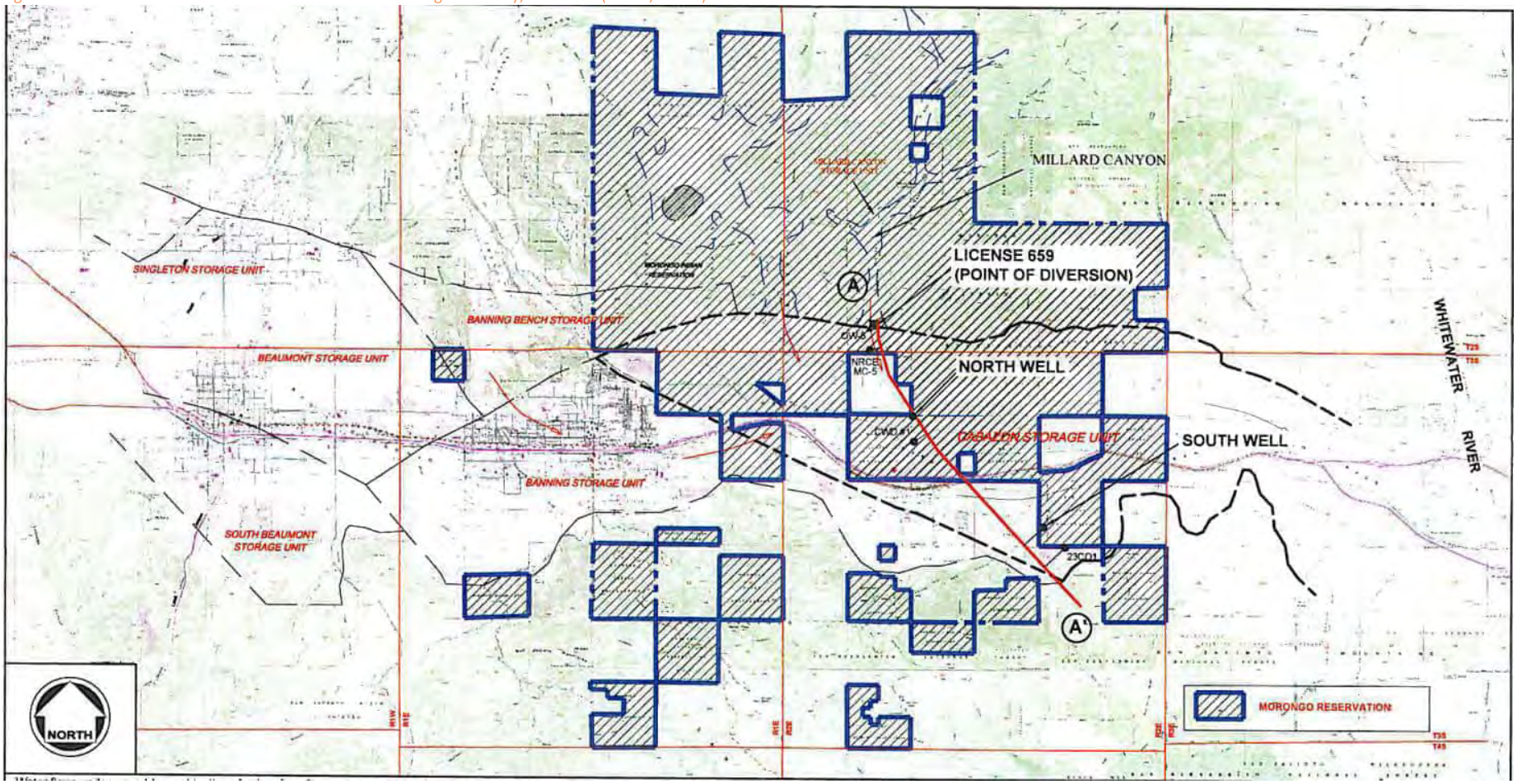
Figure 3-12 Surface Flow and Groundwater in the San Gorgonio Valley, Plan View (MBMI, 2021b)



NOTE : WATER ELEVATIONS ARE DEPTH TO WATER SURFACE

Water flows underground (a combination of subsurface flow and [illegible] Millard [illegible]

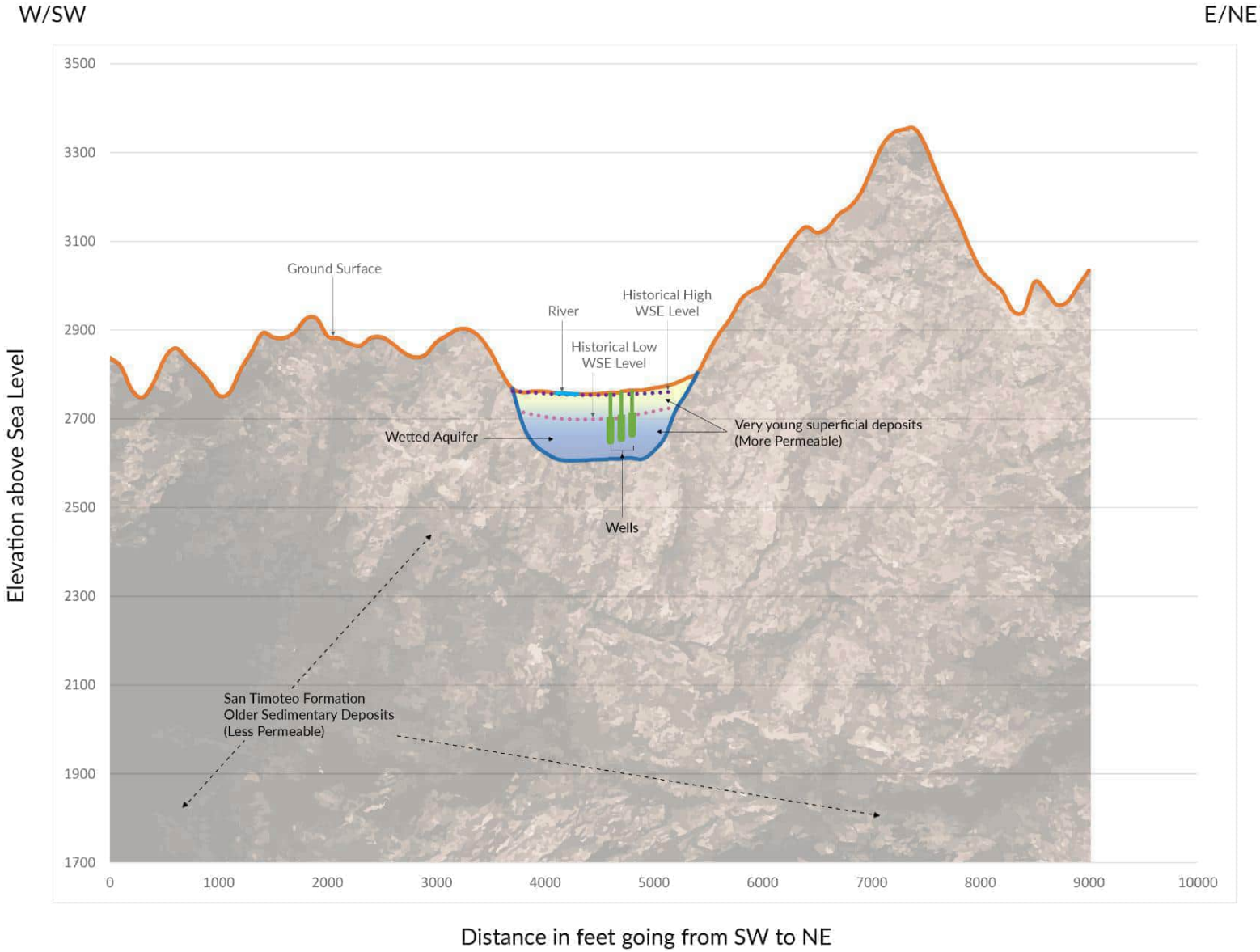
Figure 3-13 Subsurface Flow and Groundwater in the San Gorgonio Valley, Plan View (MBMI, 2021a)



The Banning Canyon is the largest canyon storage unit in the SGP and it has the majority of groundwater extractions as described in Section 3.3. Banning Canyon, similar to the other canyon storage units, is a shallow alluvial-filled canyon that is surrounded over much of its length by crystalline rocks of the San Bernardino Mountains.

The southern portion of the Banning Canyon overlies the Banning Bench storage unit and is surrounded there by the underlying older sedimentary (QTso) deposits of the Banning Bench. The older sedimentary deposits of the Banning Bench storage unit primarily consist of San Timoteo formation materials, with less permeability than the surficial and younger sedimentary deposits and providing only domestic water supplies (Rewis, 2006). A schematic cross section showing the southern portion of the Banning Canyon and Banning Bench overlap is shown in Figure 3-14. With one known exception, wells in the Banning Canyon are less than 150 feet in depth and extract groundwater from the relatively shallow alluvial deposits. The water supply from groundwater wells in Banning Canyon is dependent on annual runoff owing to the limited capacity of the Banning Canyon storage units (Rewis, 2006). Construction of a monitoring well pair in the Banning Canyon/Banning Bench overly area in Figure 3-14 supports the relative lack of importance of the Banning Bench as a productive aquifer. A monitoring well drilled in the area where the Banning Canyon overlies the Banning Bench had very coarse sand gravel deposits in the shallow alluvium to a depth of about 160 feet. Below that depth, where it presumably encountered the underlying Banning Bench storage unit, there was weathered and un-weathered bedrock with essentially no groundwater production.

Figure 3-14 Schematic Cross-Section View of Banning Canyon Storage Unit (southern portion overlap with Banning Bench Storage Unit)



3.1.8.1 AQUIFER CHARACTERISTICS AND PROPERTIES

Regulation Requirements:

§354.14(b)(4)(b) Physical properties of aquifers and aquitards, including the vertical and lateral extent, hydraulic conductivity, and storativity, which may be based on existing technical studies or other best available information.

The transmissivity of the Banning Storage Unit is approximately 15,000 to 34,000 gallons per day per foot (gpd/ft) with an average aquifer thickness of approximately 600 feet. The hydraulic conductivity ranges from 15 to 60 gpd/ft^2 (Geoscience, 1991). It is estimated that wells within the SGP Subbasin can yield 1,000 gpm from the San Timoteo formation. Aquifer transmissivity or hydraulic conductivity data in the Banning Canyon Storage Unit is unavailable; however, the saturated thicknesses range from 30 feet to 160 feet (Geoscience, 2011).

3.1.8.2 AQUIFER USES

Regulation Requirements:

§354.14(b)(4)(e) Identification of the primary use or uses of each aquifer, such as domestic, irrigation, or municipal water supply.

Groundwater has historically been the only source of potable water supply for agricultural, industrial, and residential users in the SGP Subbasin (Bloyd, 1971). To this day, beneficial uses of groundwater within the San Gorgonio Subbasin region includes agriculture, industrial, and municipal (IRWMP, 2018).

3.1.8.3 GEOLOGIC FORMATIONS

Regulation Requirements:

§354.14(b)(4)(a) Formation names, if defined.

Generalized descriptions of geologic formations are provided herein and illustrated on Figure 3-15 (Christensen, 2000).

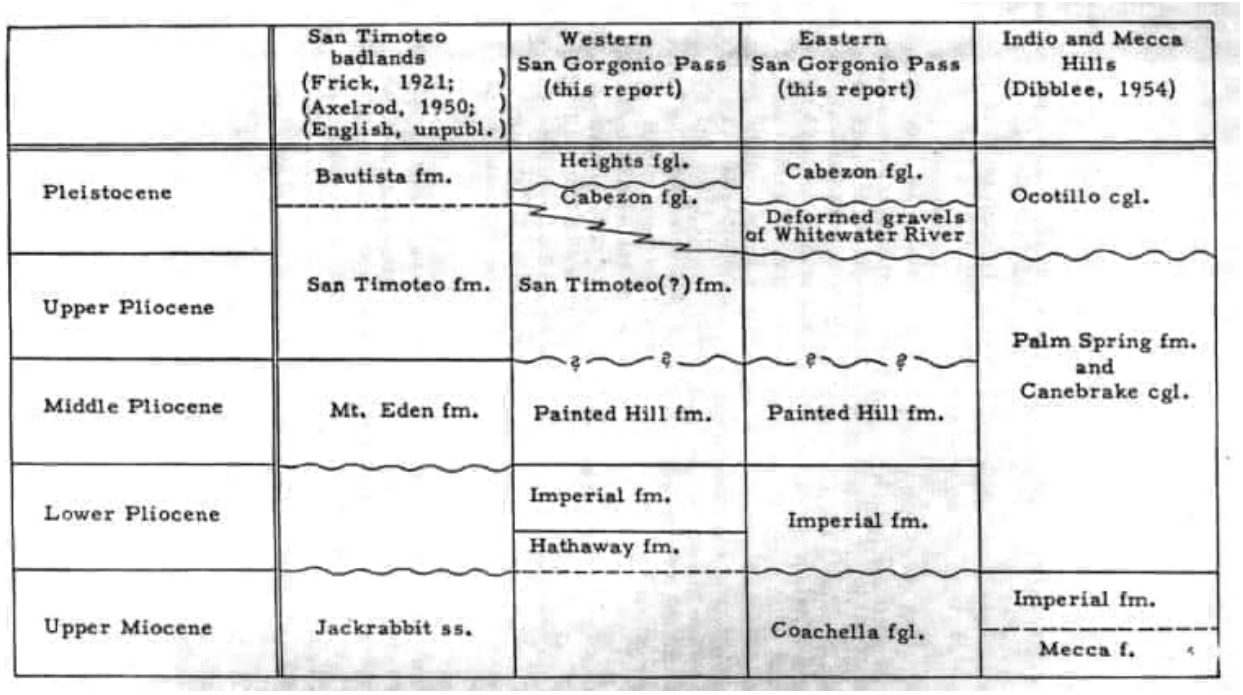


Figure 3-15 Geologic Formations (Christensen, 2000)

Painted Hill Formation

The Painted Hill Formation outcrops on the eastern side of the San Gorgonio River east of the Banning Bench. Additional areas of outcrops are located further east, approximately 3 miles northeast of Cabazon. The unit is characterized by pale-brown to light gray conglomeratic sandstone. Clasts found in the unit include basalt, gneiss, and pegmatites. A large portion of the formation is Pliocene in age; however, its lowest part is latest Miocene. This formation rests conformably on the Imperial Formation and at the same stratigraphic level as the San Timoteo Formation and the Mt. Eden Formation to the west (Allen, 1957; Christensen, 2000).

San Timoteo Formation

The San Timoteo Formation crops out mainly in the San Mateo Badlands, where it is traversed by Highway 60 (Matti and others, 2015). The San Timoteo Formation is Pliocene to Pleistocene age and comprised generally of poorly sorted to sorted, partly consolidated, fine to coarse sandstone along with layers of gravel and thin interbeds of clay. The San Timoteo Formation extends up to 2,000 feet below ground and is one of the major water-bearing deposits in the subbasin (DWR, 2004).

Mount Eden Formation

The Mount Eden Formation is located below the western SGP region, below the San Timoteo Formation and above the metamorphic schist, which is part of the basement complex of the Peninsular Ranges Batholith (Frick, 1921). The Mount Eden Formation has been divided into two members. The lower Red Bed member is characterized by coarse red to gray arkosic sandstone that grades upward to finer greenish-gray sandstone with a thickness estimated at 1,800 feet. It crops out approximately 5 to 6 miles south of Beaumont along Highway 79, north of the Claremont Fault. The upper unit is characterized by calcareous blue to green shale, limestone breccias, and massive beds of gray micaceous sandstones (Frick, 1921; Fraser, 1931).

Imperial Formation

The Imperial Formation is a marine unit that crops out within the SGP and approximately 3 miles northeast of Cabazon and has been described as sandstone containing marine fossil of Lower Pliocene age. The Imperial Formation has parallel bedding with the Hathaway Formation below and interfingers between the Painted Hill Formation above, which indicates the contacts above and below the Imperial Formation are conformable (Allen, 1957).

Hathaway Formation

The Hathaway Formation crops out on the east side of the San Gorgonio River, north of Banning and approximately two miles north-northeast of Cabazon. Two members of the Hathaway Formation have been documented. The Lower member has been described as a 1,100-foot thick arkosic sandstone with beds of conglomerate. The Upper member is a coarser conglomerate unit with clasts of gneiss as large as 3 feet in diameter (Allen, 1957).

3.1.9 GENERAL GROUNDWATER QUALITY

Regulation Requirements:

§354.14(b)(4)(d) General water quality of the principal aquifers, which may be based on information derived from existing technical studies or regulatory programs.

Groundwater within the SGP Subbasin is predominantly calcium-sodium bicarbonate type. Total Dissolved Solids (TDS) values for selected municipal wells have ranged from 106 to 205 mg/L (DWR, 2004).

The SGP Subbasin's groundwater quality is of generally good quality. Currently, the SWRCB GeoTracker database (referenced in Section 3.2.4) identifies no contaminant plumes, and historic contaminant sites are no longer active after successful mitigation. Based on current water quality standards, there is no need for additional treatment systems. Commercial, domestic, industrial, and municipal producers in the SGP

conduct regular water quality sampling and reporting as required by state and federal agencies. Additional discussions of groundwater quality in the SGP Subbasin are discussed in Section 3.2.

3.1.10 SURFACE WATER FEATURES

Regulation Requirements:

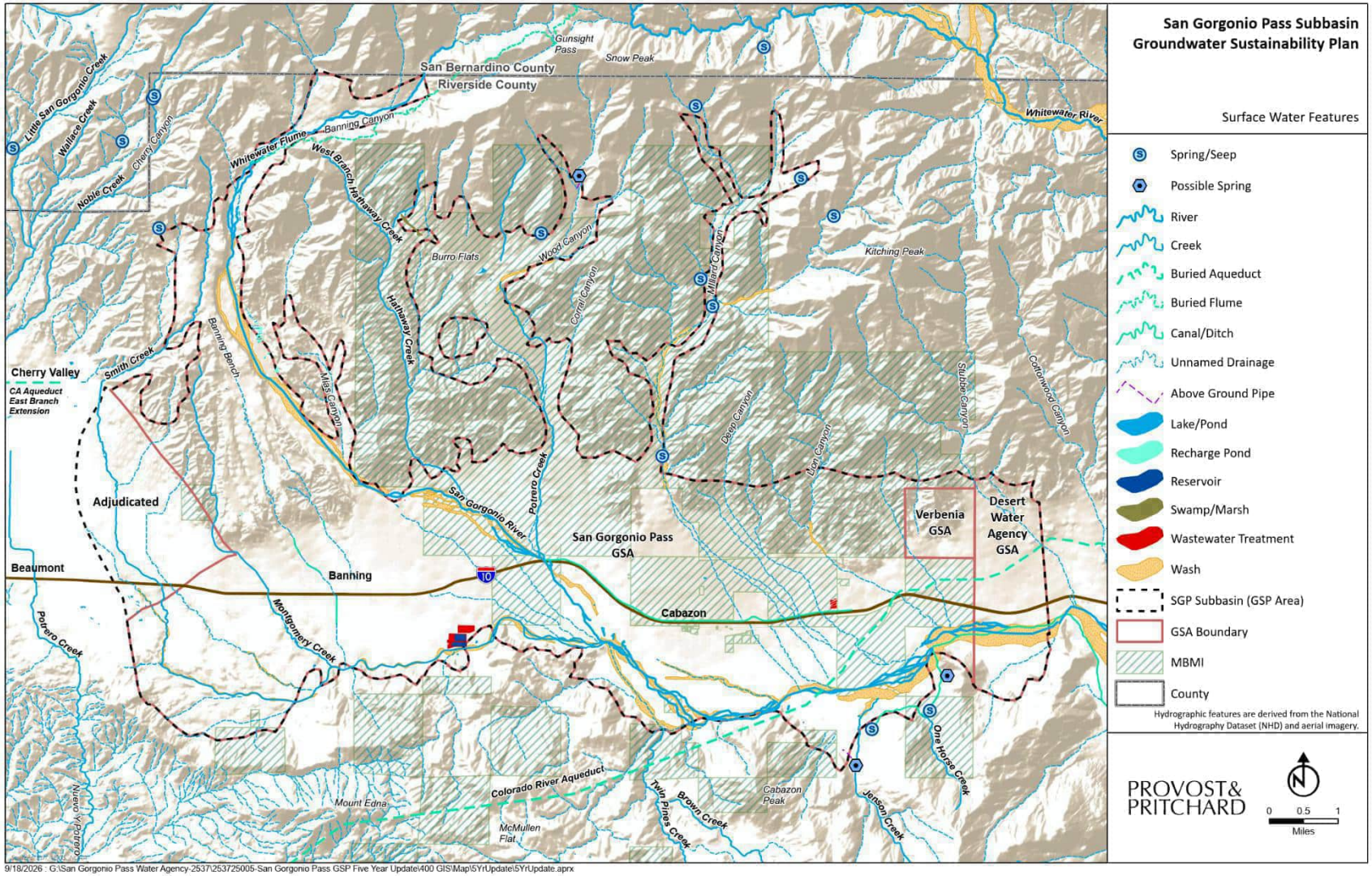
§354.14(d)(5) Physical characteristics of the basin shall be represented on one or more maps that depict surface water bodies that are significant to the management of the basin.

The surface-water drainage features of the SGP are part of the Salton Sea watershed, which drains to the Salton Sea. The main surface drainage feature of the SGP Subbasin is the San Gorgonio River which flows intermittently over the Subbasin (DWR, 2004). Smaller tributaries within the subbasin originating from the San Bernardino Mountains to the north or from the San Jacinto Mountains to the south include Smith Creek, Montgomery Creek, Hathaway Creek, Potrero Creek, Twin Pines Creek, Jensen Creek, and One Horse Creek. As shown in Figure 3-16, the subbasin drainage features tend to have a northwest-southeast orientation. The drainage features coalesce along the southern part of the SGP and drain eastward to the Indio Subbasin.

A few manmade ponds related to mining operations are located at the mouth of Banning Canyon and near the southern center of the SGP Subbasin. The Banning Wastewater Treatment Facility (WWTF) has several ponds and is located southeast of the City of Banning (Figure 3-16). The WWTF receives and treats on average 2.0 million gallons a day (mgd). The effluent from this plant is discharged to above-ground ponds that recharge the Cabazon Storage Unit and are quantified in Section 3.2.4. The MBMI also has a WWTF north of Cabazon, which is not shown on Figure 3-16.

The Colorado River Aqueduct crosses the SGP Subbasin east of Cabazon where it goes from the valley floor into and through Mount San Jacinto and out of the Region (IRWMP, 2018). While this Colorado River Aqueduct is not a surface water feature, it is an important water conveyance facility for southern California that runs through the SGP Subbasin and is therefore mentioned to provide general background.

Figure 3-16 Surface Water Features



3.1.11 SOURCE & POINT OF DELIVERY OF IMPORTED WATER

Regulation Requirements:

§354.14(d)(6) Physical characteristics of the basin shall be represented on one or more maps that depict the source and point of delivery for imported water supplies.

In 1961, the SGPWA contracted with the California DWR to receive up to 17,300 acre-ft/year of water to be delivered by the California SWP to supplement natural recharge. A pipeline delivers SWP water into the SGP area which the SGPWA uses to artificially recharge the ground-water system using ponds located along Little San Gorgonio Creek in the Cherry Valley area, just west of the SGP GSA (USGS, 2006).

SWP water originates as 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 California's lands. 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 (IRWMP, 2018).

The City of Banning purchases imported water from the SGPWA, which is discharged to Beaumont-Cherry Valley Water District (BCVWD) and SGPWA recharge facilities, and stored in the adjudicated Beaumont Basin. The City of Banning accesses this supply through five of its own wells and three additional wells co-owned with BCVWD. The supply produced from these wells is conveyed into the City of Banning's water supply system through pipelines also owned and operated by the city. The Region does not directly purchase any treated imported water supply.

3.1.12 RECHARGE AND DISCHARGE AREAS

Regulation Requirements:

§354.14(d)(4) Physical characteristics of the basin shall be represented on one or more maps that depict delineation of existing recharge areas that substantially contribute to the replenishment of the basin, potential recharge areas, and discharge areas, including significant active springs, seeps, and wetlands within or adjacent to the basin.

Holocene alluvium is found in the subbasin tributaries and allows for infiltration of runoff for recharge (DWR, 2004).

Under a 1928 Division of Water Rights determination that was confirmed by the 1938 Whitewater River adjudication, SCE, the City of Banning, and BHMWC jointly have rights to divert 13.26 cubic ft/second (cfs) of natural flow from the South Fork of 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 Whitewater Flume through a pipeline and a storage tank. This diverted water 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 Canyon Storage Unit. It is uncertain exactly how much of the diverted water is currently recharged into the aquifer of the Banning Canyon storage unit as the flows are not metered. BHMWC and the City of Banning jointly have appropriative diversion rights from the South Fork of the Whitewater River through the Whitewater Flume, which has been operated by SCE as part of a hydroelectric project. SCE ceased to operate the diversion for power generation in 1998 but continues to operate the flume per their Federal Energy Regulatory Commission license and agreements with BHMWC and the City of Banning for surface runoff diversion for irrigation and domestic beneficial use by BHMWC and the City of Banning (IRWMP, 2018).

The City of Banning diverts surface water from the San Gorgonio River into percolation ponds located in lower Banning Canyon to recharge this portion of the Banning Canyon Storage Unit. At the point of diversion, the San Gorgonio River includes the supplies diverted by the City of Banning from the upper

watershed of the Whitewater River. The contribution of the percolation ponds to subsurface groundwater flows into the lower portion of the Banning Canyon Storage Unit is unknown as it is not metered at the recharge basins (IRWMP, 2018). The location of the percolation ponds is shown on Figure 3-16.

Overall, surface water flows from the Plan Area's steep mountain areas are intermittent with runoff during the winter and spring months and during infrequent thundershowers. During such events, the gravel and sand bedded canyons provide for quick percolation, which contributes to the GSA's groundwater supply. The steep slopes and rapid percolation hinder flood capture projects and management actions. However, the City of Banning is evaluating opportunities for increased stormwater capture (Chapter 6). Atwell and Rancho San Gorgonio are planned developments within the Region, and both developments' Specific Plans incorporate stormwater capture. The Atwell Project includes design features that are estimated to capture and recharge approximately 600 AFY of stormwater flows from Smith Creek by around 2040 (PACE Engineering, 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 (IRWMP, 2018).

Additional recharge occurs at the City of Banning WWTF where the Cabazon Storage Unit receives recharge from secondary treated water. The WWTF receives and treats on average 2.0 mgd. The location of the WWTF ponds is shown on Figure 3-16.

The DWA, which is partially located within the SGP Subbasin, recharges purchased SWP water through exchange with the Metropolitan Water District. The DWA recharge areas are located in the Indio Subbasin, approximately five miles east of the SGP Subbasin eastern boundary and southwest of the Mission Creek Subbasin, where DWA owns and operates an additional recharge facility. This recharge may benefit the water levels within the boundaries of the DWAGSA by maintaining higher water levels in the adjacent Indio Subbasin which can reduce the groundwater gradient and subsurface outflow from the SGP Subbasin.

3.2 CURRENT AND HISTORICAL GROUNDWATER CONDITIONS

Regulation Requirements:

> §354.16 Each Plan shall provide a description of current and historical groundwater conditions in the basin, including data from January 1, 2015, to current conditions, based on the best available information that includes the following:

Current and historical groundwater conditions in the SGP Subbasin were evaluated based on information collected in prior studies and review of additional recent data. As described previously, SGP Subbasin groundwater conditions vary considerably within the Subbasin. Excluding the adjudicated portion of the Beaumont Basin (MA 1, which is not subject to SGMA), three MAs have been identified in this GSP that are described in this section: MA 2 (Banning Canyon and Banning Bench Storage Units), MA 3 (Banning Storage Unit, also known as the West Banning Storage Unit in the 2020 City of Banning Urban Water Management Plan, and Cabazon Storage Unit), and MA 4 (Desert Water Agency GSA). Groundwater conditions in these SGP Management Areas have been evaluated in prior USGS studies (USGS 2006, USGS 2021) and evaluations by other agencies. The four MAs are shown in Figure 3-11.

3.2.1 GROUNDWATER LEVEL DATA

Regulation Requirements:

> §354.16(a) Groundwater elevation data demonstrating flow directions, lateral and vertical gradients, and regional pumping patterns, including:
> 1. Groundwater elevation contour maps depicting the groundwater table or potentiometric surface associated with the current seasonal high and seasonal low for each principal aquifer within the basin.
> 2. Hydrographs depicting long-term groundwater elevations, historical highs and lows, and hydraulic gradients between principal aquifers.

Groundwater level data has been analyzed for the SGP Subbasin through preparation of groundwater elevation contour maps and evaluation of groundwater level hydrographs.

3.2.1.1 GROUNDWATER LEVEL CONTOURS AND FLOW

Groundwater elevation contour maps have been prepared for 1998 and 2025 for portions of the SGP Subbasin with available data, which correspond with the beginning and the end of the hydrologic period analyzed in the water budget. Groundwater level data for preparing contour maps has been concentrated in the Banning Canyon/Banning Bench MA, where groundwater production has historically been concentrated and multiple wells (primarily production wells) are available that provide generally consistent data. By contrast, water level measurements in the Cabazon/Banning and the DWA Mas are limited to a few municipal production wells and specifically constructed monitoring wells.

Figure 3-17 below shows groundwater elevation contours for 1998, which was selected as the start of the historical water budget period. A description of the groundwater levels by MA is available below. The MAs are defined based on geologic structures that impact water levels to create unique conditions in each unit.

Management Area 2. Figure 3-11 shows groundwater flow from the upper MA 2 downstream to the mouth of Banning Canyon, with water levels ranging from 4,400 feet above MSL at the northern end of Banning Canyon to 2,700 feet above MSL near the mouth of Banning Canyon.

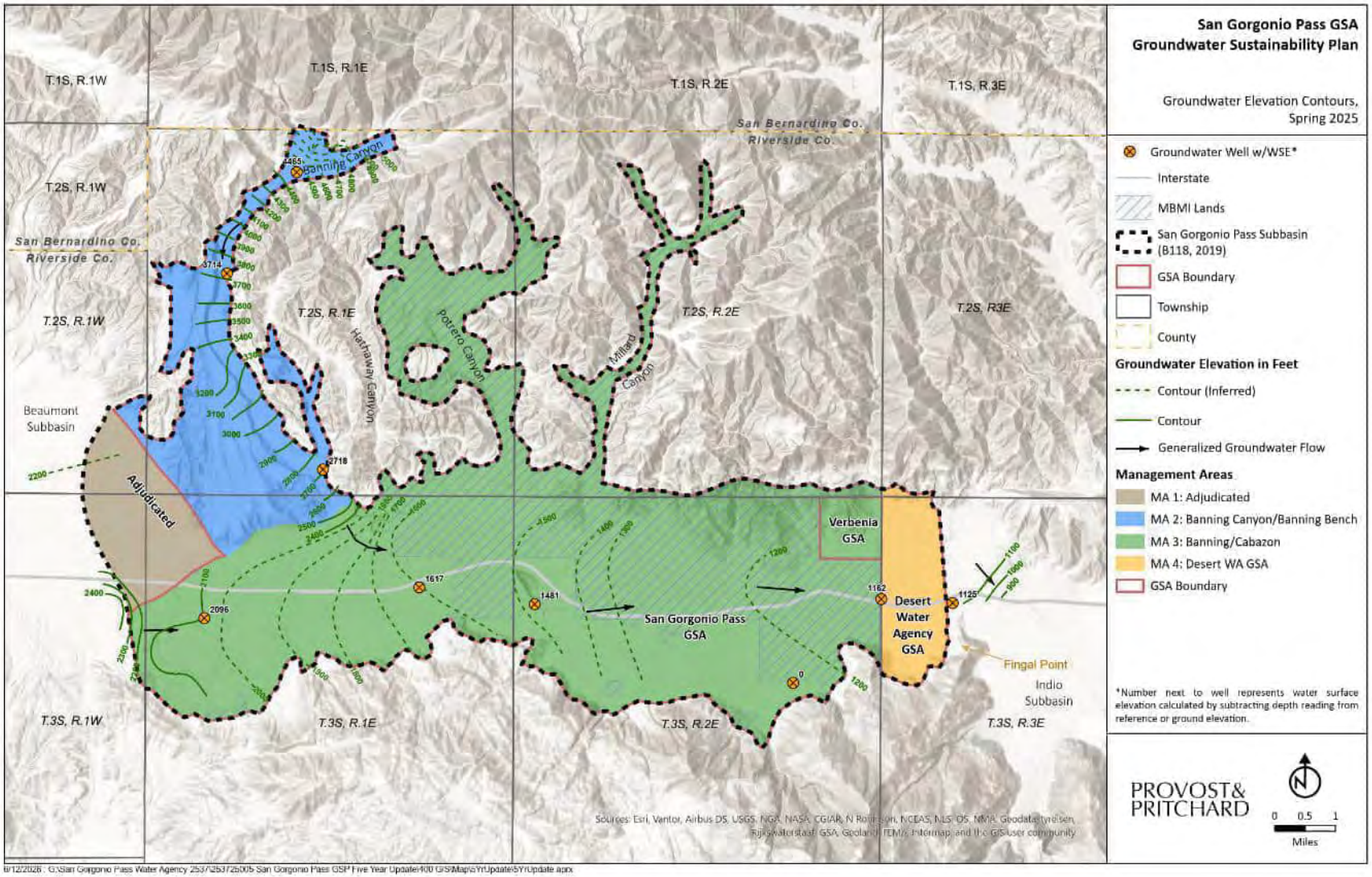
Management Area 3. MA 3 consists of portions of the Cabazon Storage Unit (consisting of roughly 80 percent of MA 3 in the east) and the Banning Storage Unit (the remaining 20 percent of MA 3 in the west). The Cabazon Storage Unit portion of MA 3 contains the greatest volume of groundwater storage in the SGP and water levels in this area are considerably lower than in MA 2. The Cabazon Storage Unit water levels show a gradient from recharge sources in the west to the outflow boundary to the Indio Subbasin at the eastern border of the SGP Subbasin. Water levels in the Cabazon Storage Unit fall from 1,700 feet above MSL at the western end to below 1,200 feet above MSL at the eastern boundary, a difference of about 500 feet in elevation over nearly 10 miles. There is a notable water level decline from the mouth of the Banning Canyon Storage Unit to the western end of the Cabazon Storage Unit with water levels falling from 2,600 feet above MSL to about 1,700 feet above MSL over a distance of less than one mile at the transition from MA 2 to MA 3.

Water levels in the Banning Storage Unit of MA 3 range from about 2,200 to 2,100 feet above MSL, with a slight gradient from west to east.

Management Area 4. MA 4 includes the eastern end of the Cabazon Storage Unit where water levels are relatively level, with a slight gradient from west to east.

Data Gaps. There are several distinct gaps in groundwater levels apparent in the area of the eastern Banning/extreme western Cabazon Storage Units of MA 3, in the Banning Bench Storage Unit, in several canyons in the northern portion of the Cabazon Storage Unit (Potrero, Hathaway and Millard Canyons), and in the northern portion of the Cabazon Storage Unit. The data gaps in the Cabazon Storage Unit partially reflect the lack of wells in the northern portion of the Storage Unit, where the aquifer is shallow as a result of its base being elevated above the main portion of the Cabazon Storage Unit. The Cabazon Storage Unit data gaps also reflect the lack of data from the MBMI lands, which account for about 37-percent of the SGP Subbasin acreage in total. More information on data gaps and the plan to address them are detailed in Chapter 5 – Monitoring Network.

Figure 3-17 Groundwater Elevation in Wells, Spring 1998

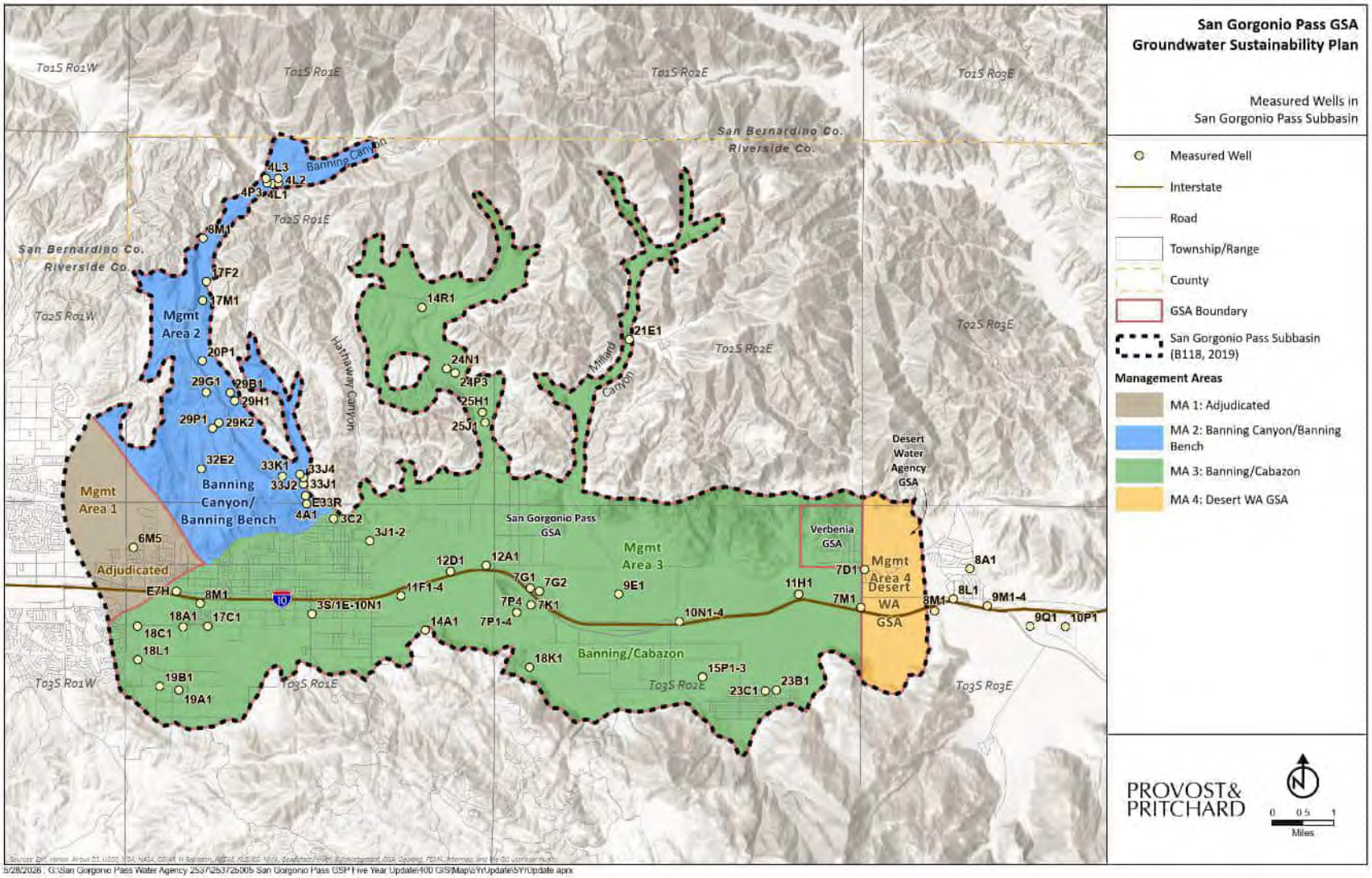


Contour maps for other periods show generally similar gradients as appear in the Spring 1998 maps. The data available for preparation of the contour maps in the Cabazon Storage Unit improves significantly beginning around 2006, when the USGS began constructing several monitoring wells.

Figure 3-18 shows water level contours for spring 2025, which shows similar groundwater flow patterns as for 1998 (Figure 3-17), although at lower elevations for some of the MAs. The contours for MA 2 show nearly identical levels and flow patterns after more than 25 years, reflecting very stable groundwater levels. The contours for the Banning Storage Unit show a similar west to east gradient, with the water levels being generally about 100 feet lower than in the 1998 contour map. The Cabazon Storage Unit also shows a consistent west to east gradient, with water levels having dropped about 100 feet from 1998 to 2019.

Also shown in Figure 3-18 are water level values at wells for Fall 2019 conditions. The Fall 2019 water levels are very consistent with the Spring 2019 water levels, and the resulting contours of water surface elevation are essentially identical to the Spring 2019 water levels. Based on the very similar water level measurements, the Spring 2019 water level contour map is considered to be representative of Fall 2019 water level contours, and representative of seasonal low water levels. The small seasonal difference in water levels (in the primary MA 3 areas) are consistent with the groundwater level hydrographs presented later in Figure 3-26 to Figure 3-33. Those hydrographs do not show significant seasonal water level variations. Instead, water level in MA 3 show consistent, long term trends, without seasonal water level variations that are common in many California groundwater basins.

Figure 3-18 Groundwater Elevation in Wells, Spring 2025

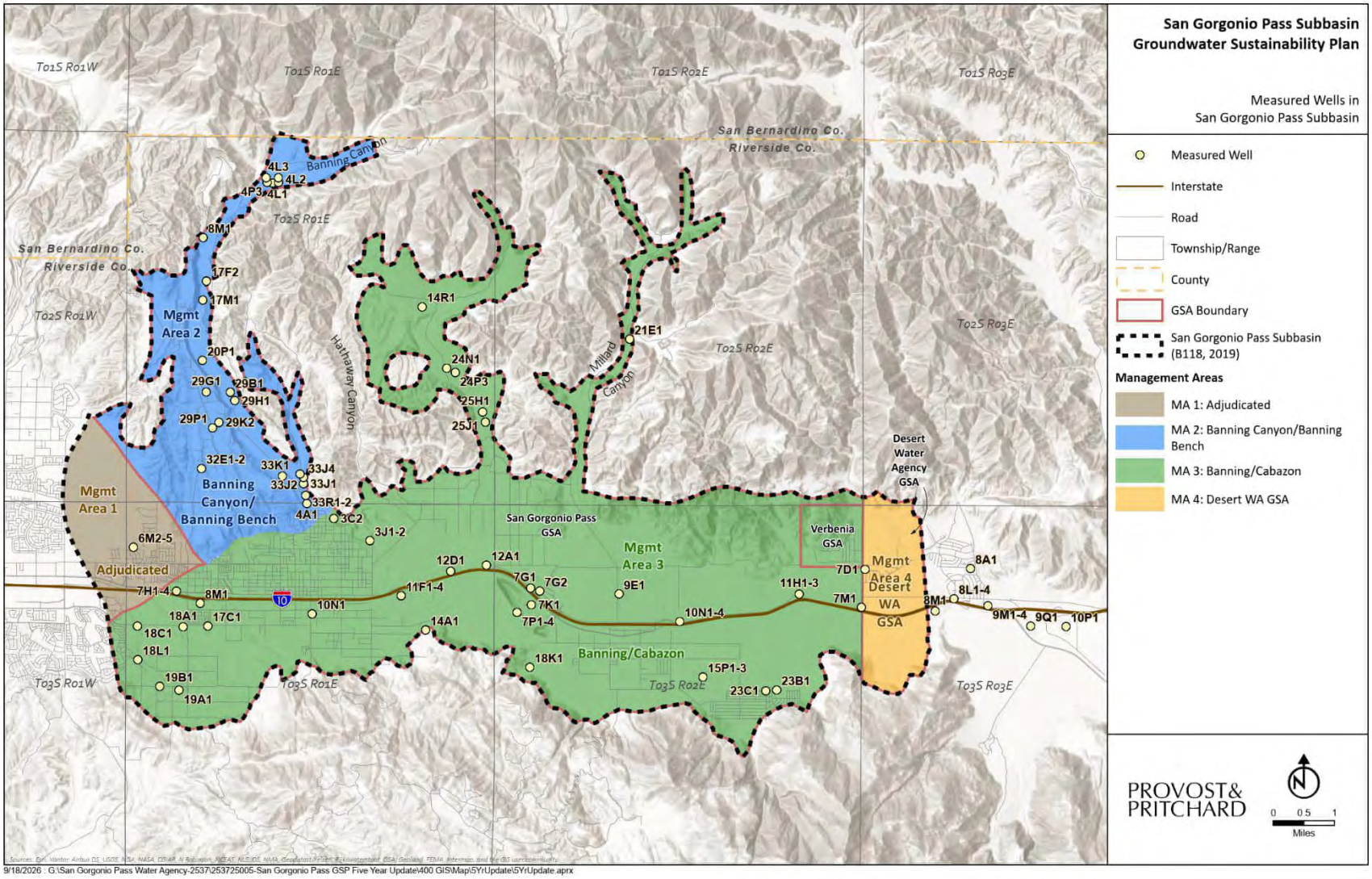


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3.2.1.2 GROUNDWATER LEVEL HYDROGRAPHS AND GRADIENTS

Groundwater level hydrographs were prepared for selected wells in the SGP Subbasin and are described here separately for the four MAs. Figure 3-19 shows the location of measured wells in the SGP Subbasin and the adjacent Indio Subbasin.

Figure 3-19 Measured Groundwater Wells



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Management Area 2 (Banning Canyon Storage Unit portion) – Banning Canyon, which constitutes only 10% acreage of the SGP Subbasin, has the longest history and largest quantities of groundwater production in the SGP Subbasin. The Banning Canyon Storage Unit portion of MA 2 lies in a canyon that has been eroded by the San Gorgonio River and contains coarse recent alluvial deposits. In addition to recharge in the riverbed from intermittent flows, the City of Banning recharges available high flows in spreading basins in the Canyon. The Banning Canyon Storage Unit is entirely within the SGP MA 2. Hydrographs of several typical wells in the Banning Canyon, shown on **Figure 3-20, Figure 3-21, Figure 3-22, and Figure 3-23**, show changes in water levels that are related to pumping and streamflow recharge in the nearby San Gorgonio River. Wells 4L1, 4L2, 4L3 and 4L4, shown in **Figure 3-20** and **Figure 3-21**, are located at the upper end of Banning Canyon, with well depths ranging from 107 to 162 feet and depths to water ranging from nearly zero to 100 feet. These wells show seasonal and annual variations that are in a range of about 50 feet, with long-term stable water levels.

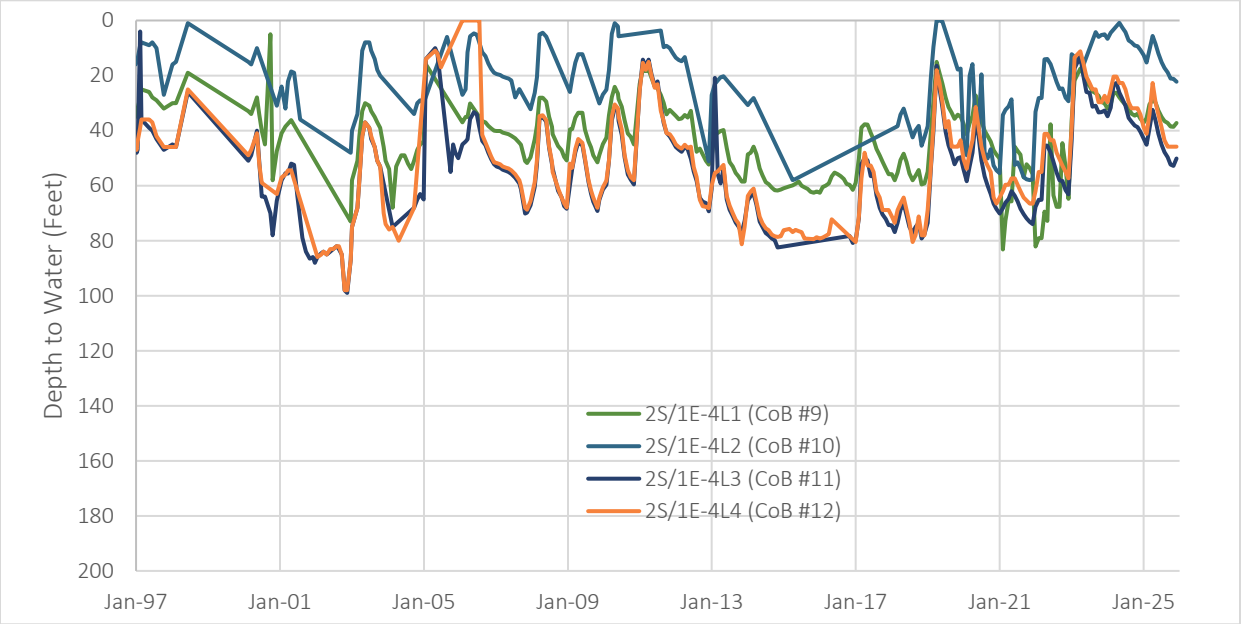


Figure 3-20 Depth to Water in Management Area 2 (Upper Portion of Banning Canyon Storage Unit)

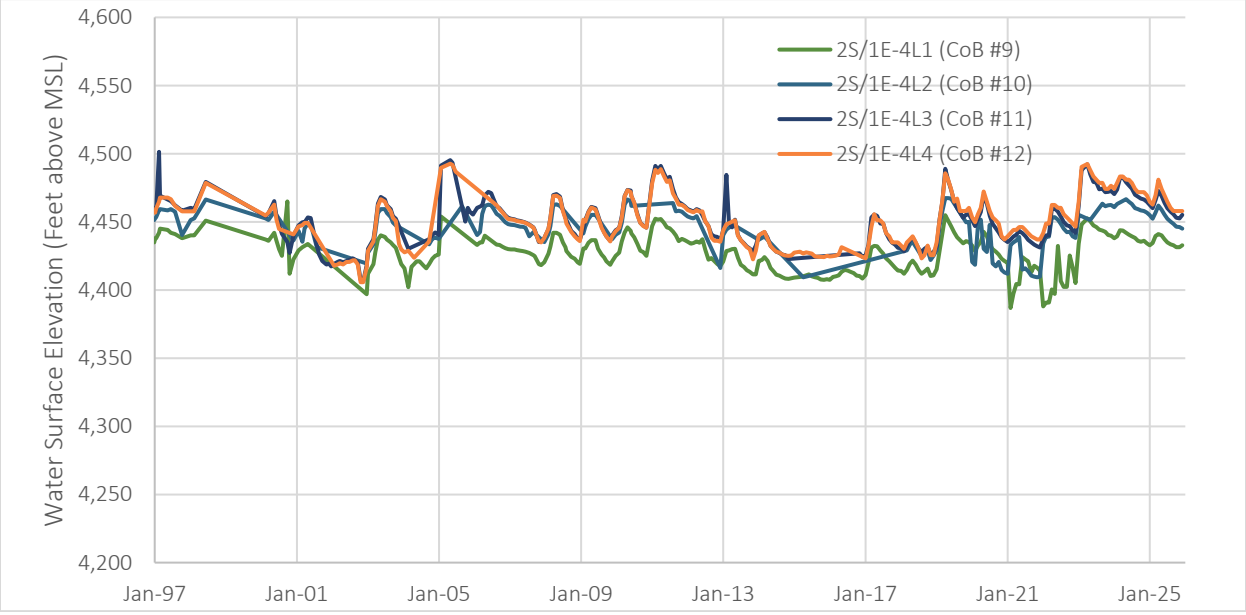


Figure 3-21 Water Surface Elevations in Management Area 2 (Upper Portion of Banning Canyon Storage Unit)

Wells 29H1 and 20P1, located in the middle portion of Banning Canyon, have depths of 117 feet and 212 feet respectively. As shown in **Figure 3-22** and **Figure 3-23**, wells 29H1 and 20P1 have seasonal and multi-annual water level variations, with no long-term trend and depths to water varying from about 10 feet to less than 100 feet. Depths to water in well CoB #5 (which does not have a State Well Number) range from about 10 feet to nearly 170 feet.

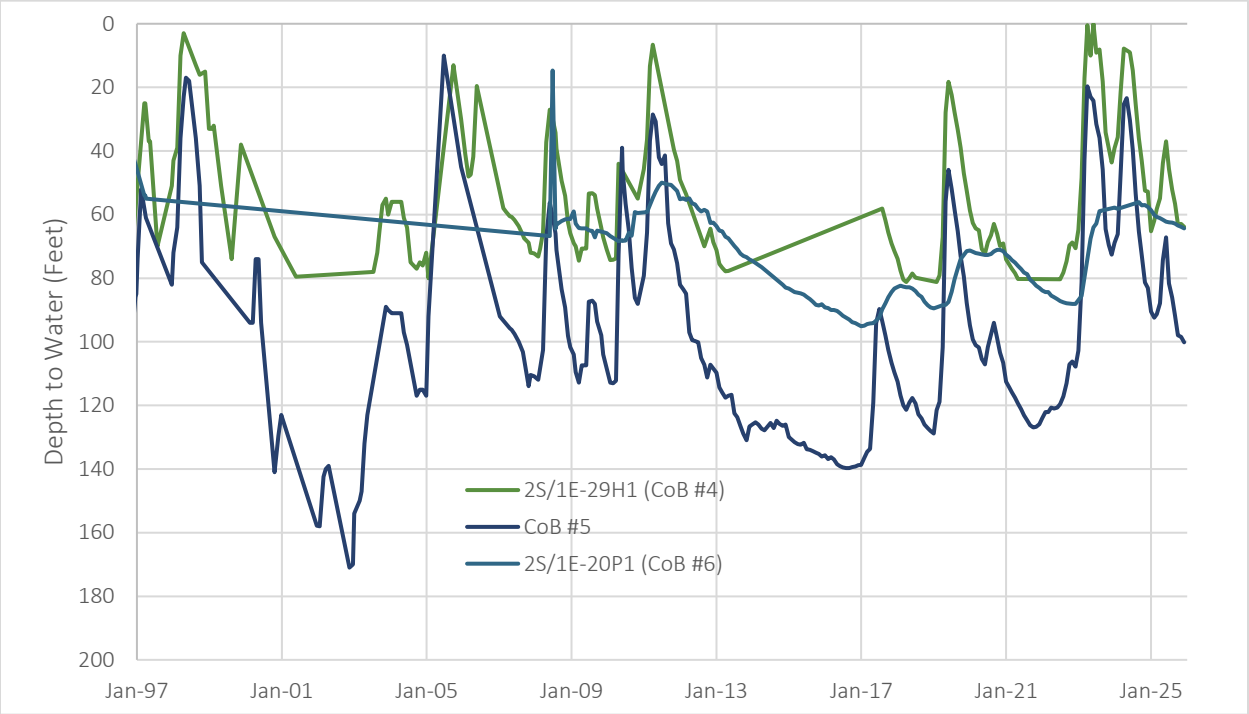


Figure 3-22 Depth to Water in Management Area 2 (Middle Portion of Banning Canyon Storage Unit)

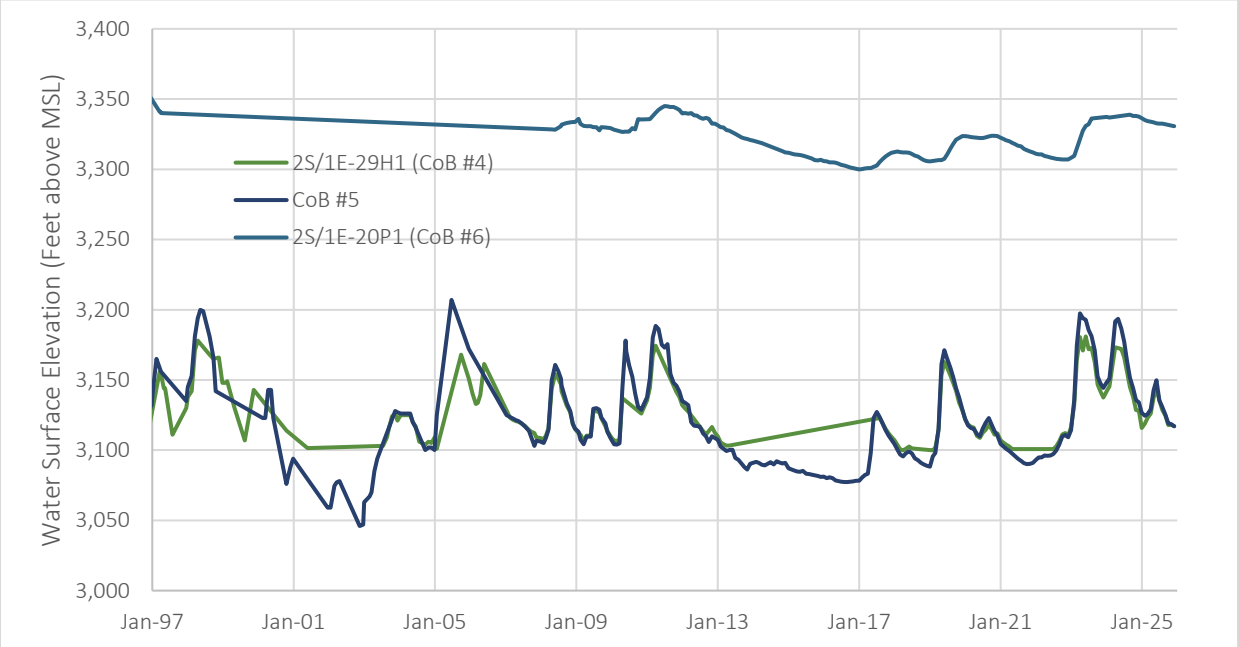


Figure 3-23 Water Surface Elevations in Management Area 2 (Middle Portion of Banning Canyon Storage Unit)

Management Area 2 (Banning Canyon Storage Unit overlying the Banning Bench Storage Unit) – As described in the HCM, the Banning Bench Storage Unit of MA 2 consists of partly consolidated sandstone that can extend to depths greater than 2,000 feet below ground surface. A portion of the Banning Bench Storage Unit is overlain by the San Gorgonio River, which has significantly eroded the Banning Bench

Storage Unit, creating the local topographic feature known as Banning Heights. All of the Banning Canyon Storage Unit and the nearby Banning Bench Storage Unit are located within the SGP MA 2. While the older consolidated materials in the Banning Bench Storage Unit itself have poor permeability and limited groundwater development, there is significant groundwater production from the shallow recent alluvium overlying the Banning Bench adjacent to the San Gorgonio River. Hydrographs of three City of Banning wells near the mouth of Banning Canyon Storage Unit overlying the Banning Bench are shown in **Figure 3-24** and **Figure 3-25**. The three wells are constructed to depths of 100 to 124 feet and appear to be located entirely in the overlying Banning Canyon Storage Unit. The hydrographs of the three wells have similar variations to those in the Banning Canyon, with shorter term seasonal and annual variations and no long-term trend. A multiple completion monitoring well drilled in 2025 (2S/1E-33R) showed a strong downward gradient, with piezometric levels in the 145 feet deep shallow casing about 149 feet shallower than the 260 feet deep casing which penetrated underlying bedrock. A second multiple completion monitoring well (2S/1E-32E) drilled in 2025 in the Banning Bench Storage Unit also had a downward gradient. Piezometric levels at the Banning Bench monitoring well were about 24 feet shallower in the 220 feet deep casing than in the 690 foot deep well casing (depth to water in the shallow casing was 220 deep and was 244 ft in the deep casing). The water levels in the two vertical zones in the new Banning Bench monitoring well were 2,992 feet above MSL for the upper zone and 2,968 feet above MSL for the lower zone.



Figure 3-24 Depth to Water in Management Area 2 (Adjacent to the Banning Bench Storage Unit)

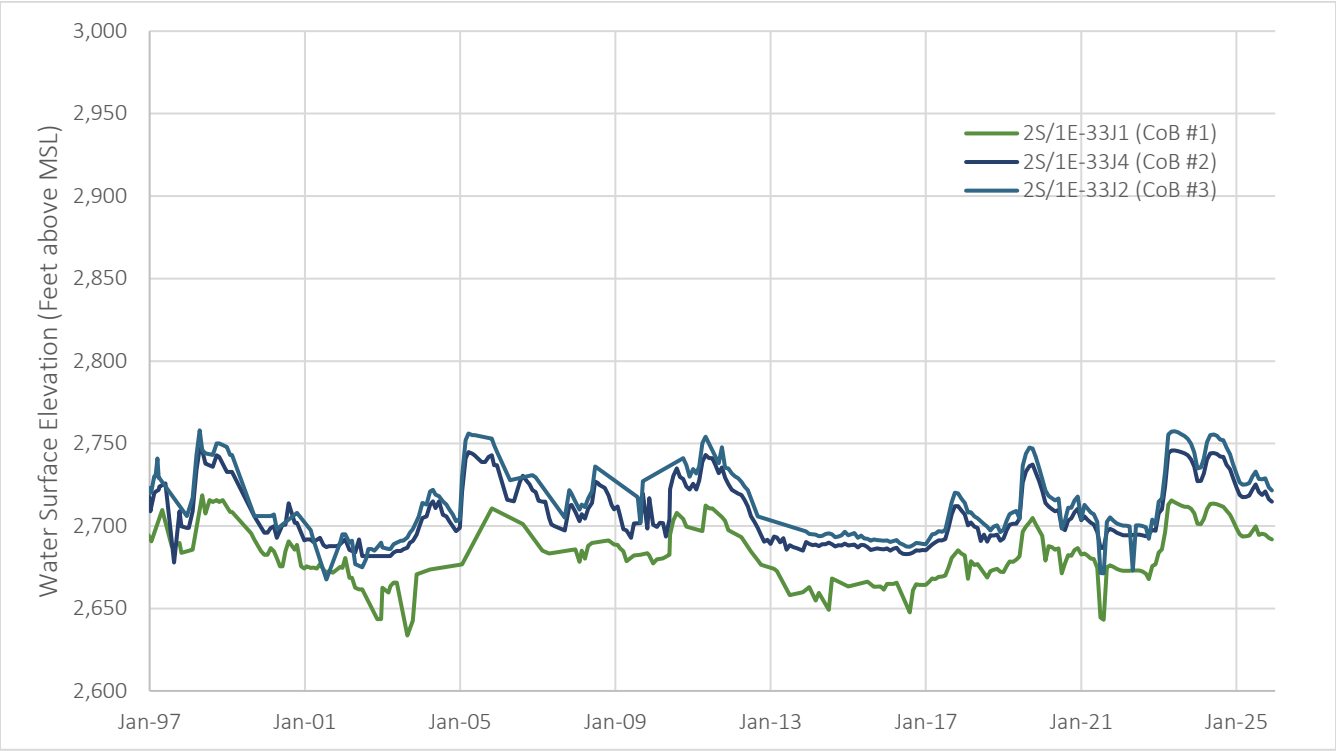


Figure 3-25 Water Surface Elevations in Management Area 2 (Adjacent to the Banning Bench Storage Unit)

Management Area 3 (Banning Storage Unit) – The Banning Storage Unit area is included entirely in the SGP MA 3 along with the majority of the neighboring Cabazon Storage Unit. There was extremely limited groundwater use in the Banning Storage Unit (also sometimes referred to as the West Banning Storage Unit) prior to 1992 and groundwater pumping there rose above 1,000 acre-feet per year only after 2000. During the 1998-2025 hydrologic period, the City of Banning used four production wells in the Banning Storage Unit (Wells C5, M10, M11 and M12) which collectively pumped nearly 2,000 acre-feet per year as of 2018. Since 2022, well production from the Banning Storage Unit has fallen below 1,000 acre-feet per year. Water level measurements from these production wells are available and hydrographs for the wells are presented in **Figure 3-26** and **Figure 3-27**. Although the water level measurements indicate whether the measurements are taken during static or pumping conditions, four of the wells (COB wells C5, M10, M11 and M8) are all located relatively close to each other, and anomalous results occasionally are apparent that may reflect pumping in adjacent wells or residual drawdown from a recent pump shutdown. Two of the wells (COB M4 and M5) are located more than a mile away from other wells and don't exhibit apparent well interference, either due to their distance from other wells or geological features. A multiple completion monitoring well was constructed in the Banning Storage Unit in 2026 at 3S/1E-7H. Based on water level measurements at this well, there was a consistent downward vertical gradient with piezometric levels about 50 feet deeper in the shallowest zone at 430 feet to the deepest zone at 910 feet.

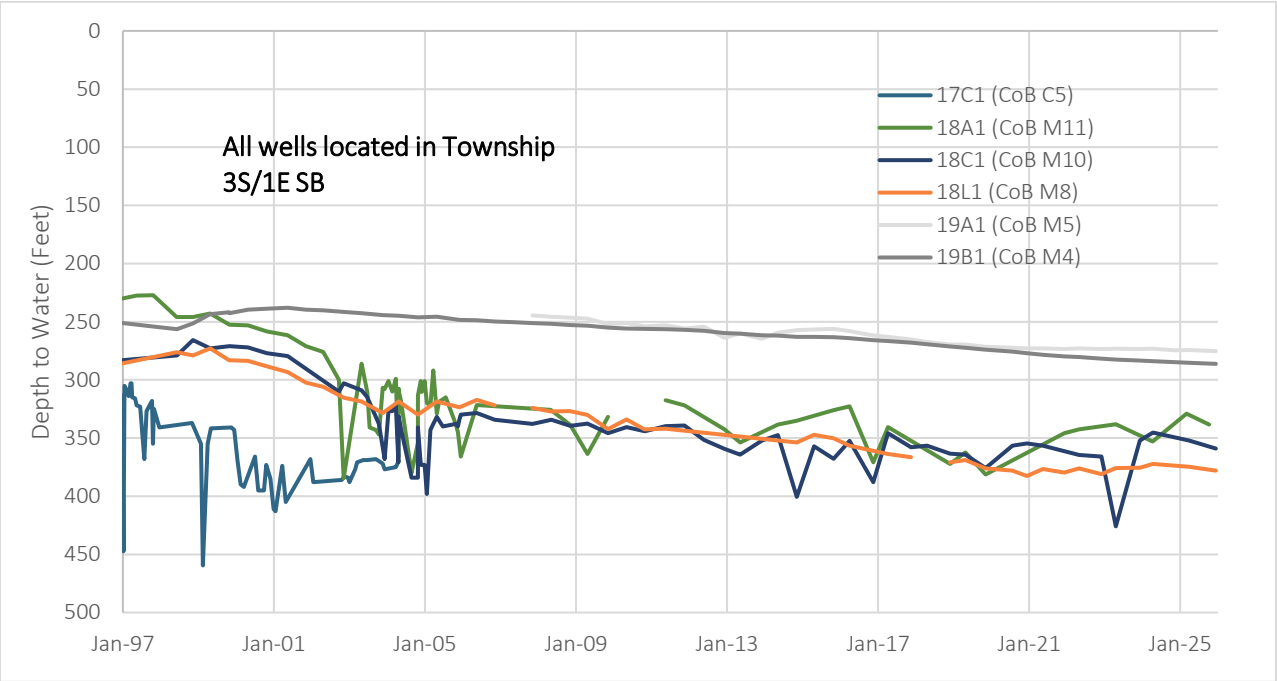


Figure 3-26 Depth to Water in Management Area 3 (Banning Storage Unit)

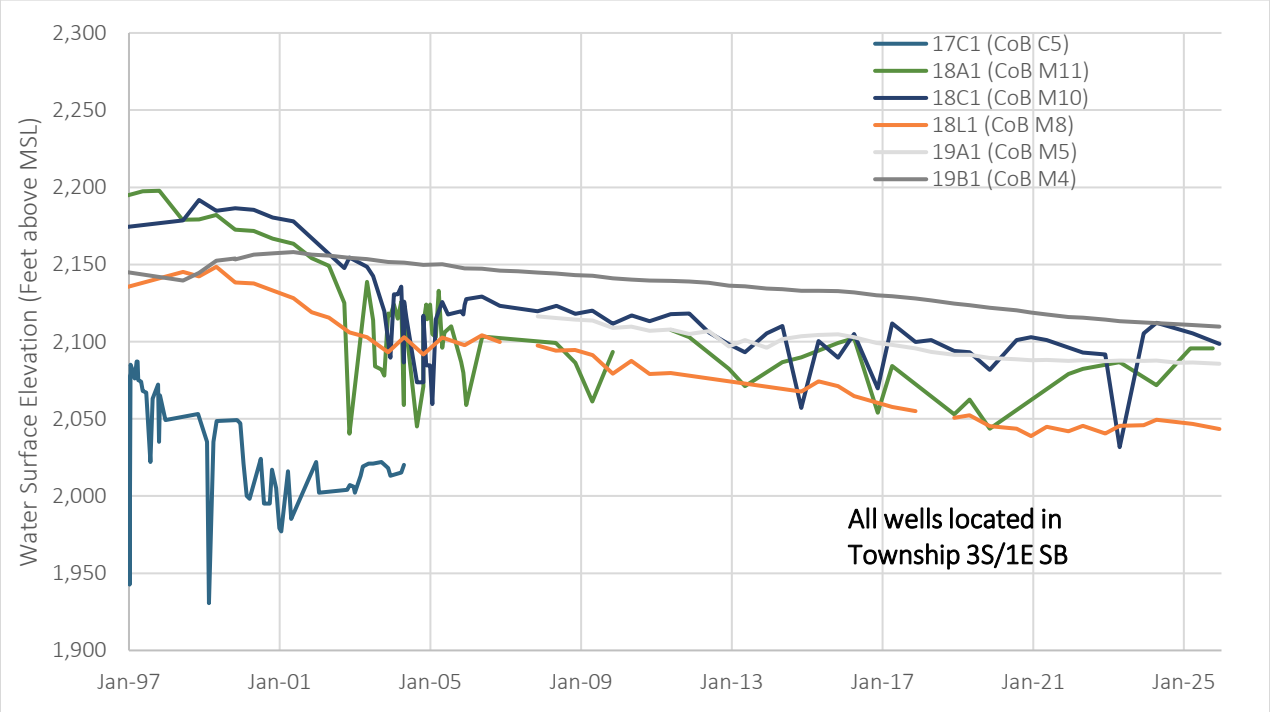


Figure 3-27 Water Surface Elevations in Management Area 3 (Banning Storage Unit)

The Banning Storage Unit hydrographs in **Figure 3-26** and **Figure 3-27** show generally consistent water level trends, with water levels gradually declining since about 1998 which corresponds with increased pumping and a prolonged drought period. The depths to water shown in **Figure 3-26** also show a significant depth to groundwater of 200 to 400 feet. The relatively high cost of drilling wells to obtain water in the Banning Storage Unit is likely to be at least a partial cause for its later development and higher reliance on groundwater in the Banning Canyon Storage Unit, where depths to water are typically less than 100 feet.

Management Areas 3 and 4 (Cabazon Storage Unit portion) – The Cabazon Storage Unit is by far the largest portion of the SGP Subbasin and is described in three parts here – the Western, Central, and Eastern portions. All of the Cabazon Storage Unit lies within the SGP MA 3, with the exception of the eastern 1-mile

edge which is in MA 4. Groundwater in the Cabazon Storage Unit generally flows from west to east, with subsurface outflows at Fingal Point draining into the Indio Subbasin. Over the past 20 years, SGPWA has provided funding to the USGS to install multiple completion monitoring wells at several locations in the Cabazon Storage Unit to provide data on vertical groundwater gradients. While these monitoring wells have generally short records, they provide consistent water level monitoring representing known aquifer conditions and provide reliable information on groundwater conditions. **Table 3-1** summarizes the construction information for these wells and the average groundwater level measurements. The vertical gradients at these wells are described below in the applicable section of the Cabazon Storage Unit.

Table 3-1 USGS Multiple Completion Well Clusters in the Cabazon Storage Unit

Well Cluster	Well	Depth of Top of Perforations (feet)	Depth of Bottom of Perforations (feet)	Begin Measurement	Last Measurement	Mean Water Surface Elevation (feet above MSL)	Vertical Gradient
3S/1E-11F1	11F4	580	600	17-Aug-09	11-Dec-20	1,638.05	-
	11F3	660	680	17-Aug-09	10-Dec-20	1,638.10	0.05
	11F2	840	860	17-Aug-09	9-Dec-20	1,636.87	-1.18
	11F1	1,040	1,060	17-Aug-09	8-Dec-20	1,636.61	-1.44
3S/1E-3J	3J2	598	618	9-Nov-04	9-Dec-20	1,804.97	-
	3J1	940	1,000	19-May-06	9-Dec-20	1,642.78	-162.19
3S/2E-7P	7P4	550	570	22-Feb-07	10-Dec-20	1,504.48	-
	7P3	640	660	22-Feb-07	10-Dec-20	1,506.80	2.32
	7P2	790	810	22-Feb-07	10-Dec-20	1,509.70	5.22
	7P1	980	1,000	22-Feb-07	10-Dec-20	1,531.81	27.32
3S/2E-10N	10N4	510	530	11-Jan-00	16-Aug-00	1,296.39	-
	10N3	650	670	11-Jan-00	16-Aug-00	1,295.20	-1.19
	10N2	790	810	11-Jan-00	16-Aug-00	1,295.28	-1.11
	10N1	950	970	6-Oct-99	16-Aug-00	1,295.50	-0.89
3S/2E-11H	11H3	520	540	29-Aug-19	11-Dec-20	1,191.98	-
	11H2	640	660	29-Aug-19	11-Dec-20	1,192.00	0.02
	11H1	860	880	29-Aug-19	11-Dec-20	1,191.99	0.01
3S/2E-15P	15P3	240	260	8-Dec-07	10-Dec-20	1,355.07	-
	15P2	330	350	8-Dec-07	9-Dec-20	1,252.79	-102.28
	15P1	373	383	8-Dec-07	9-Dec-20	1,244.78	-110.30
3S/3E-8L	8L4	390	410	24-Apr-19	11-Dec-20	1,057.80	-
	8L3	490	510	24-Apr-19	11-Dec-20	1,074.86	17.06
	8L2	660	680	24-Apr-19	11-Dec-20	1,078.17	20.38
	8L1	870	890	24-Apr-19	11-Dec-20	1,146.89	89.09
3S/3E-9M	9M4	600	620	24-Apr-19	11-Dec-20	883.50	-
	9M3	740	760	24-Apr-19	11-Dec-20	882.25	-1.24
	9M2	930	950	24-Apr-19	11-Dec-20	876.86	-6.64
	9M1	1,060	1,080	24-Apr-19	11-Dec-20	820.87	-62.63

The western portion of the Cabazon Storage Unit (generally identified as the portion within Township 3S/1E) has relatively small amounts of pumping, primarily at City of Banning Well C6 (10N1) which is itself very close to an assumed fault boundary at the border between the Cabazon and Banning Storage Units. Since the location of the fault boundary is not well known, the well may actually be within the Banning Storage Unit. Outside of the City of Banning C6 (10N1) well, water level measurements shown in **Figure 3-28** and **Figure 3-29** do not appear to show obvious pumping influences, with no visible anomalous variations in seasonal water levels. As with the Banning Storage Unit, depths to water in the western portion of the Cabazon Storage Unit are very deep – from about 350 feet to nearly 800 feet below the ground

surface. The high cost of developing wells at such deep depths is likely a cause of the small amount of pumping in this portion of the MA. The main trend apparent in the western portion of the Cabazon Storage Unit has been a long-term decline through about 2020 that has been followed by a recent rise in water levels beginning in 2023. This decline, levelling and rise appears in both USGS well clusters (03J and 11F) since their installation in 2004 and 2009, respectively. The long-term decline matches an extended period of below average precipitation through about 2020 and is similar to trends in other portions of the Cabazon Storage Unit.

Water levels in vertical zones at the 03J well cluster have a large downward gradient of 162 feet across a perforation interval of 362 feet. Water levels at the 11F multiple completion well have a very small average downward gradient of 1.4 feet across a perforation interval of 460 feet.

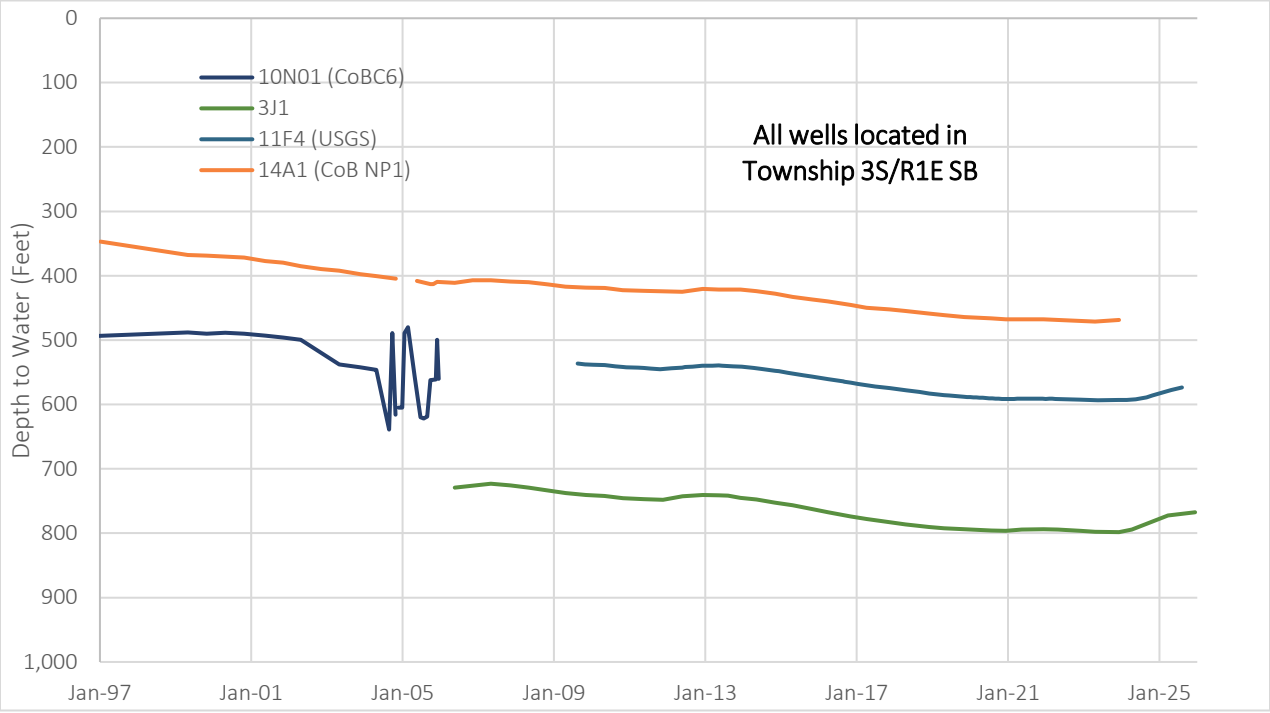


Figure 3-28 Depth to Water in Management Area 3 (Western Portion of the Cabazon Storage Unit)

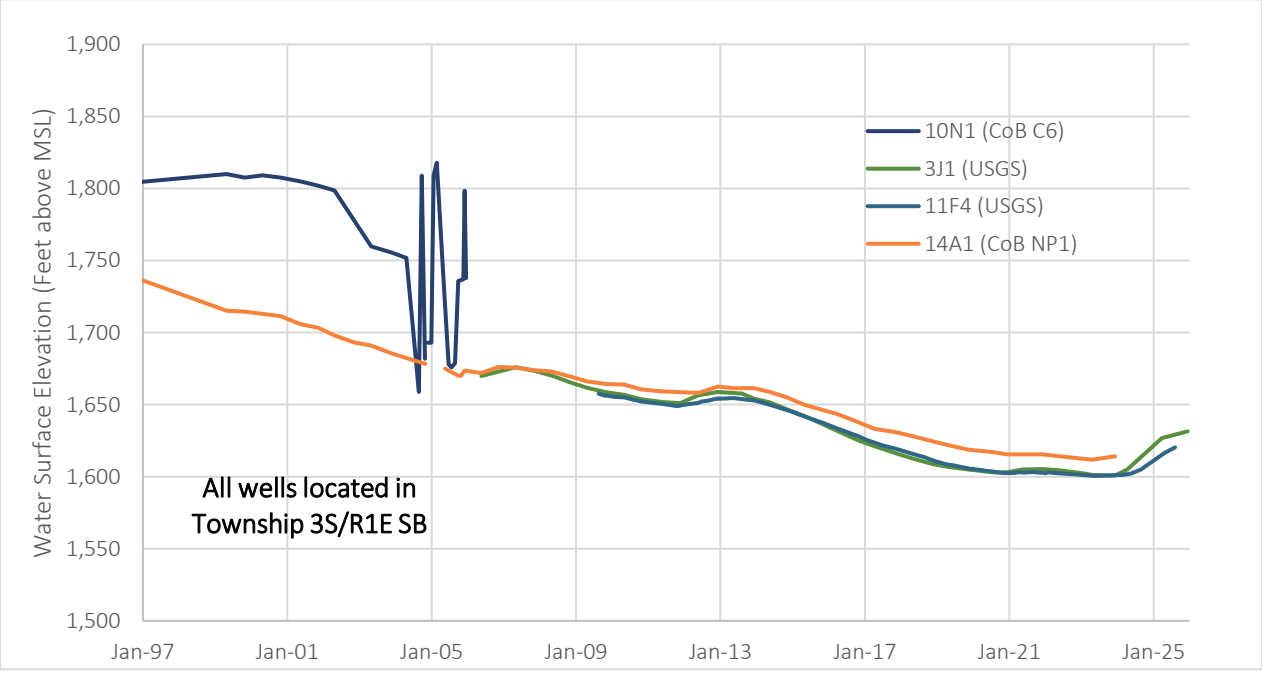


Figure 3-29 Water Surface Elevations in Management Area 3 (Western Portion of the Cabazon Storage Unit)

The central portion of the Cabazon Storage Unit (generally, the western half of Township 3S/Range 2E), has the majority of water use in the Cabazon Storage Unit. MBMI, Cabazon Water District and Robertson's Ready Mix pump groundwater from areas in the vicinity of the Morongo Casino and the Cabazon Outlets. As with the western portion of the Cabazon Storage Unit, the limited groundwater level data available indicate a long-term decline from 1998 through 2022 that is followed by a recent rise in water levels, which is shown in the hydrographs in **Figure 3-30** and **Figure 3-31**. Two of the Cabazon Water District wells (7K1 and 23B1) show parallel declines from 1998 through about 2009. Similar declines appear in the USGS monitoring wells (7P4 and 15P) after their installation in 2006 and 2008. Depths to water vary from more than 300 feet to nearly 800 feet below the ground surface. As with the Banning Storage Unit and the western portion of the Cabazon Storage Unit, the high costs for drilling deep groundwater wells and pumping groundwater has likely been the cause of low groundwater use in much of the Cabazon Storage Unit.

The USGS 7P monitoring well cluster has a definite upward vertical flow, with water levels in the deepest zone (980-1000 feet deep) having piezometric levels averaging 27 feet higher than shallower zones (the shallowest being 550-570 feet deep). The upward gradient at the 7P monitoring well cluster could be due to upwelling above a downstream fault or to variations in the base of the groundwater basin. USGS 15P monitoring well cluster had periods of both upward vertical flow (2007 to 2012) and downward vertical flow (since 2012). Vertical gradients are presented in **Table 3-1**. The 15P cluster is relatively shallow (the deepest measured zone being 383 feet deep) and the shallower zones measured there have been dry for extended periods since 2014. In recent years, even the deepest zone 15P well has been dry during some periods making it marginal for use as a representative monitoring site.

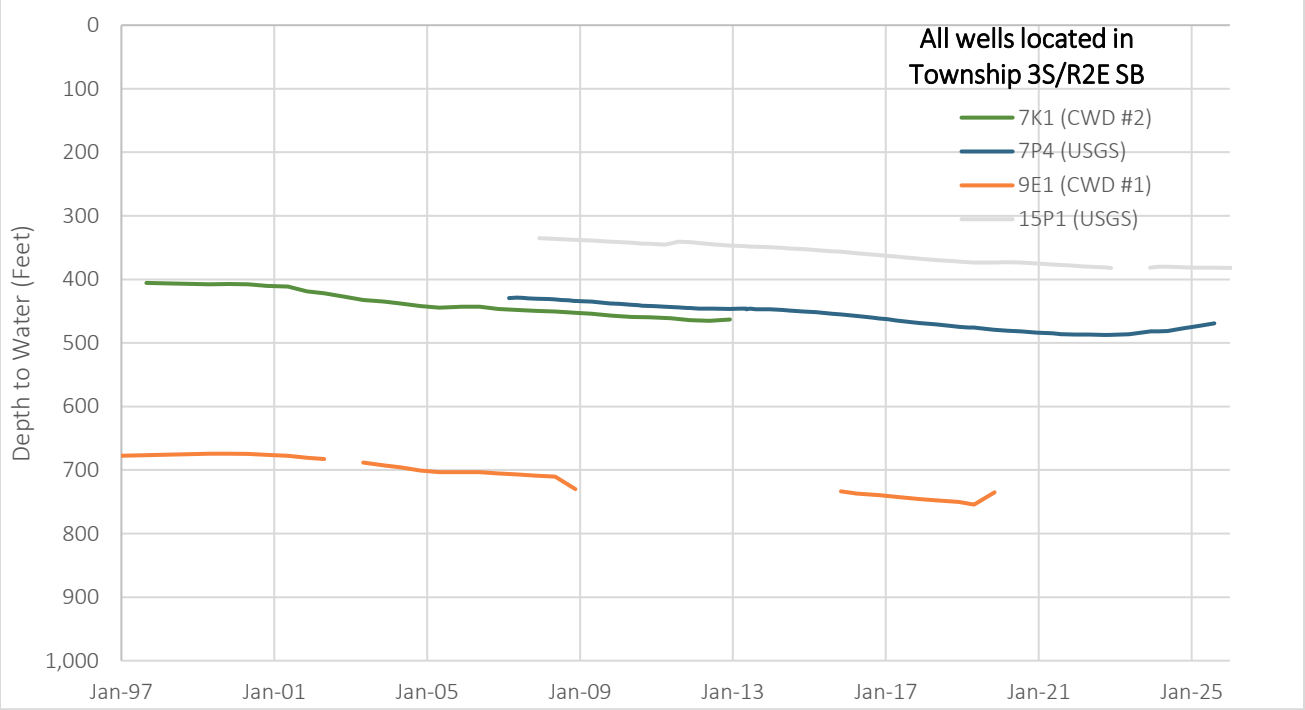


Figure 3-30 Depth to Water in Management Area 3 (Central Portion of the Cabazon Storage Unit)

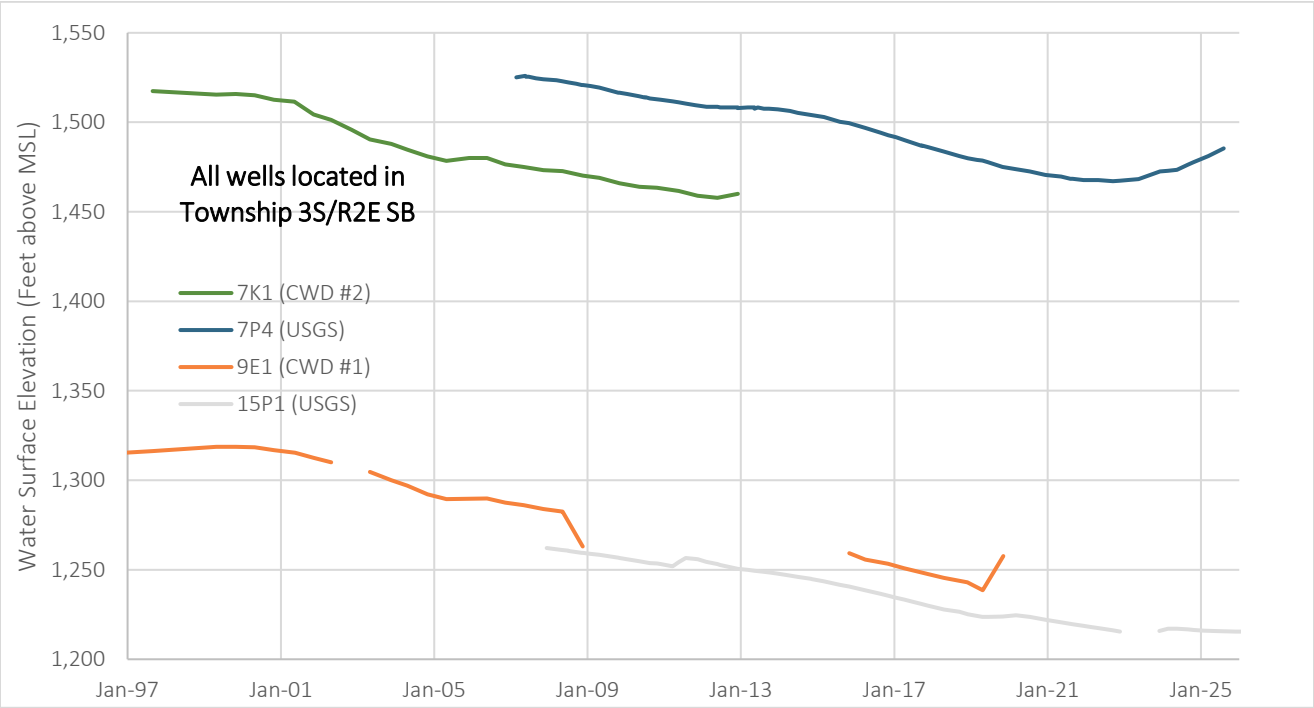


Figure 3-31 Water Surface Elevations in Management Area 3 (Central Portion of the Cabazon Storage Unit)

The eastern portion of the Cabazon Storage Unit (generally the eastern half of Township 3S/Range 2E, and a bordering area of Township 3S/3E) has the lowest water levels in the Cabazon Storage Unit with relatively minor groundwater use. The eastern portion of the Cabazon Storage Unit lies mainly in Management Area 3 and also includes the entire area of MA 4. Groundwater pumping is reported only for two Mission Springs Water District (MSWD) wells in MA 4 that supply water to an unincorporated portion of the Whitewater community.

Figure 3-32 and Figure 3-33 shows hydrographs for available well data in the eastern portion of the Cabazon Storage Unit. Depths to water are generally smaller than in the western and central portions of the Cabazon Storage Unit, varying from less than 200 feet to nearly 500 feet below the ground surface. The depths to water generally increase the farther west that a well is located. Two MWSD wells (7M1 and 8M1) have long term hydrographs that are very consistent with each other and indicate a continued decline in groundwater levels since 1998. In 2019, SGPWA funded USGS installation of three new multiple completion monitoring wells in the eastern portion of the Cabazon Storage Unit (11H, 8L and 9M) around the area of subsurface flow constriction at Fingal Point. The two western-most of the well clusters (11H and 8L) show consistent trends (as limited by the short period of record) with the longer-term production well measurements. The easternmost of the well clusters (9M) is located to the east of the presumed Fingal Point flow constriction and has a large increase in water levels that corresponds to recharge activities by Coachella Valley Water District and Desert Water Agency in the Indio Subbasin. It also has water levels that are nearly 300 feet lower than those of the other monitoring wells, some of which (8L) are located less than one mile away.

Wells at the 11H monitoring cluster have essentially no vertical flow gradient, with piezometric levels differing by only 0.02 feet across a perforation interval of 340 feet. Well cluster 8L appears to be located immediately adjacent to the Fingal Point outflow constraint and has a strong upward vertical flow. The lower zones at Well cluster 8L have piezometric levels 89 feet higher than shallower zones. This upward vertical flow likely results from the subsurface structure or possible faulting at that location. Well Cluster 9M is the farthest east of the USGS monitoring wells and has a strong downward vertical flow gradient of 63 feet across a perforation interval averaging 460 feet.

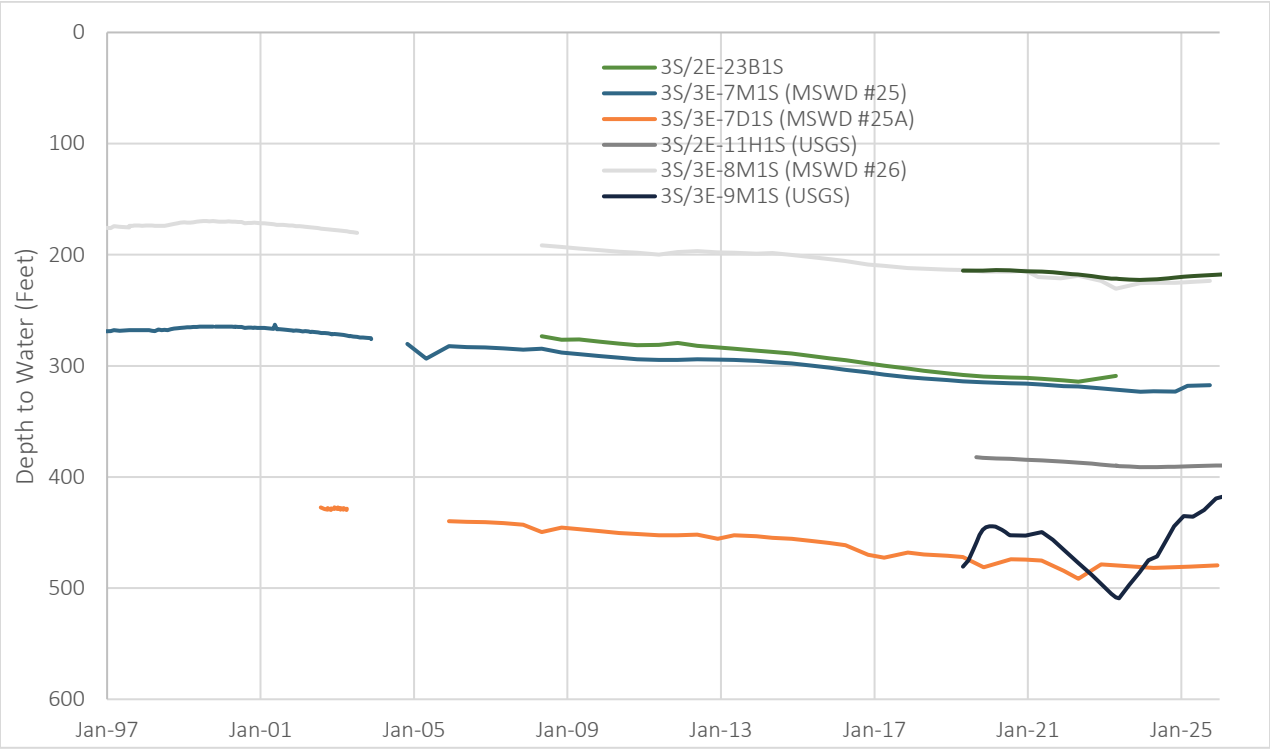


Figure 3-32 Depth to Water in Management Areas 3 and 4 (Eastern Portion of the Cabazon Storage Unit)

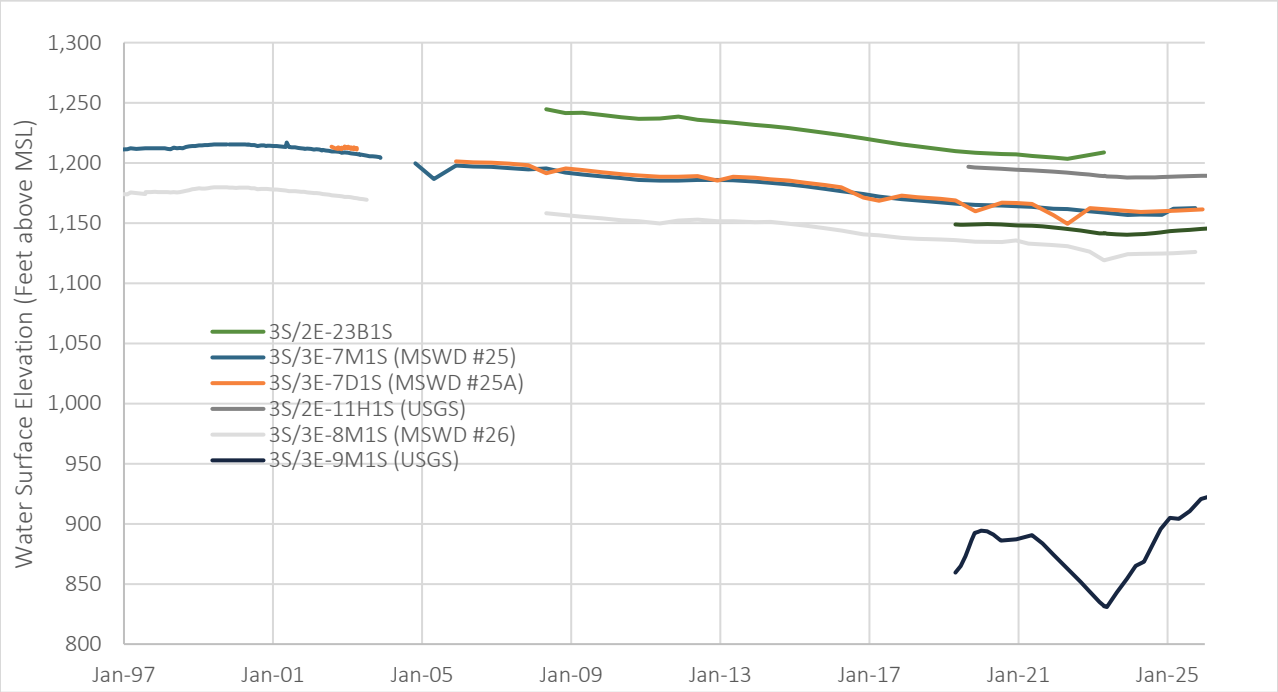


Figure 3-33 Water Surface Elevations in Management Areas 3 and 4 (Eastern Portion of the Cabazon Storage Unit)

3.2.2 ESTIMATE OF GROUNDWATER STORAGE

Regulation Requirements:

§354.16(b) A graph depicting estimates of the change in groundwater in storage, based on data, demonstrating the annual and cumulative change in the volume of groundwater in storage between seasonal high groundwater conditions, including the annual groundwater use and water year type.

Estimated annual groundwater storage change was developed using the SGP Groundwater Model for the SGP. Monthly groundwater level storage change amounts were summed annually for the SGP for water years 1998-2019 that are shown in **Figure 3-34.** During the 28-year base period (1998-2025), groundwater

levels in the SGP declined an average of 7,600 acre-feet per year and the cumulative storage change was a decline of 210,000 acre-feet. Groundwater levels rose slightly in 1998 and 1999 as a result of significant recharge in 1998 and prior years. However, groundwater levels declined starting in 2000 and continued their decline through 2019, after which groundwater leveled off. Variations in groundwater pumping had no apparent effect on the variable groundwater level declines in the years after 2000.

The current total volume of groundwater in storage, based on Spring 2025 groundwater levels and specific yields from the SGP groundwater model, was computed to be 39,000 acre-feet in MA 2, 902,000 acre-feet in MA 3 and 73,000 acre-feet in MA 4.

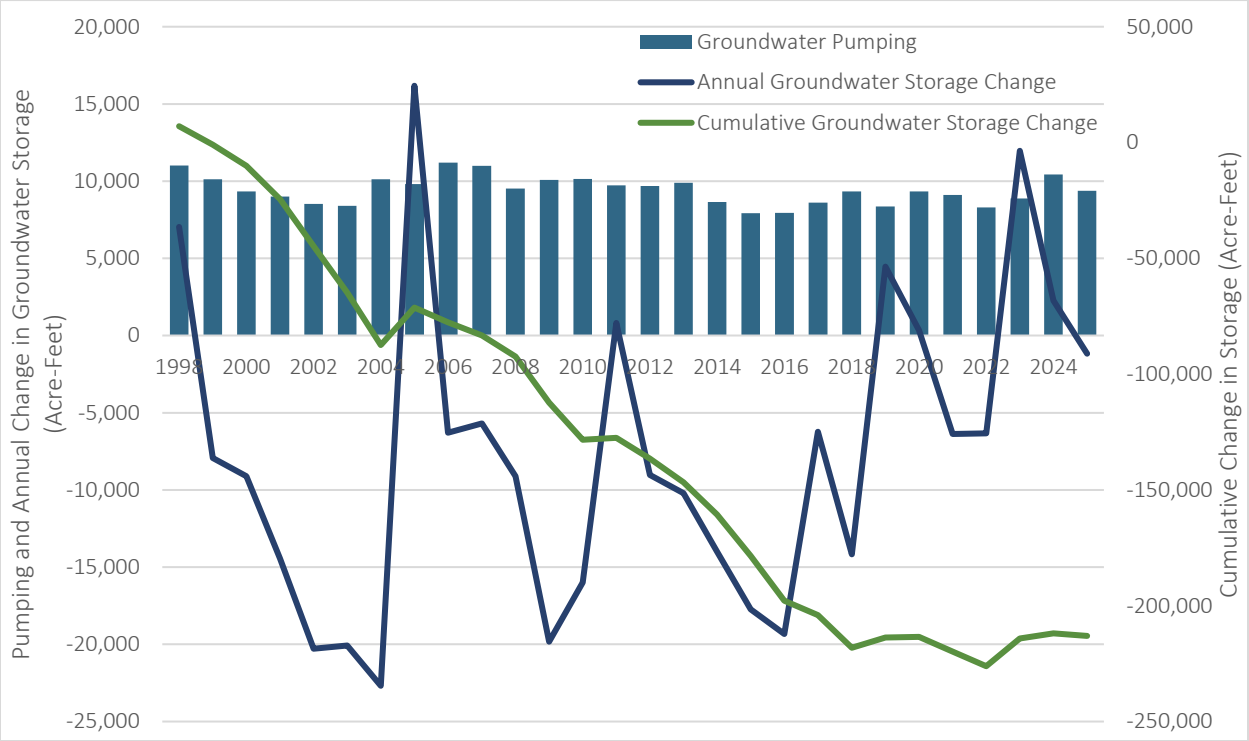


Figure 3-34 Change in Groundwater Storage in San Gorgonio Pass Subbasin

3.2.3 SEAWATER INTRUSION

Regulation Requirements:

§354.16(c) Seawater intrusion conditions in the basin, including maps and cross-sections of the seawater intrusion front for each principal aquifer.

Seawater intrusion is not an applicable sustainability index for the SGP Subbasin. The Subbasin is not adjacent to the Pacific Ocean, a bay, or an inlet.

3.2.4 GROUNDWATER QUALITY CONDITIONS

Regulation Requirements:

§354.16(d) Groundwater quality issues that may affect the supply and beneficial uses of groundwater, including a description and map of the location of known groundwater contamination sites and plumes.

The SGP Subbasin's groundwater is of generally good quality. Currently, there are no known contaminant plumes, and all historic contaminant sites are no longer active after successful mitigation. Based on current water quality standards, there is no need for additional treatment systems. Commercial, domestic, industrial, and municipal producers in the SGP conduct regular water quality sampling and reporting as required by state and federal agencies.

The GSAs acknowledge existing groundwater quality standards, such as Title 22 of California's Code of Regulations, which refers to state guidelines for how treated and recycled water is discharged and used. These guidelines are used to inform the groundwater quality assessment and representative monitoring, described in Chapter 5 – Monitoring Network.

Groundwater Quality Data

Groundwater within the SGP Subbasin is used to meet commercial, domestic, industrial, and municipal producers and GDE demands. The groundwater quality assessment for the SGP Subbasin has been prepared using available information obtained from the California Groundwater Ambient Monitoring and Assessment (GAMA) Program database, which includes water quality information collected by the California DWR, the State Water Resources Control Board (SWRCB), and the USGS. GAMA incorporates available data collected by state and federal agencies, as wells as locally collected data that is reported to the state and federal agencies. The GAMA dataset has been augmented with information available from previous scientific investigative data collection and reporting efforts.

Data was initially assembled by downloading available water quality from the GAMA database that fall within the SGP Subbasin boundary. This data set was then reviewed to distinguish between wells that had multiple years of water quality sampling data and wells with limited sampling though comprehensive in nature. For wells in which construction information was available, well perforation depths were evaluated for correlations in groundwater quality across the well depths. No meaningful or significant correlations across groundwater depths was found, and the general quality of the groundwater across the Subbasin has been sufficient to support the Subbasin's beneficial use needs.

Commercial, Domestic, Industrial, and Municipal producers of Groundwater

Most wells in the SGP Subbasin with water quality data are production wells for commercial, domestic, industrial, and municipal uses and have a groundwater quality record.

Depth to groundwater is significant in MA 3, which makes drilling new wells expensive and likely unaffordable for most de minimis rural residential groundwater users. Consequently, there are very few small residential wells compared to many other areas in the State. Most domestic groundwater users are connected to community groundwater systems, who are required to analyze constituents of concern related to drinking water and report their results to the state. As a result, there is a sufficient historic record of groundwater quality across the Subbasin to assess the general trends and quality conditions.

GDE Use of Groundwater

The City of Banning monitors groundwater quality at the city's production wells in areas adjacent to GDE in the Banning Canyon Storage Unit and reports the results to the state. This groundwater quality information was used to analyze groundwater quality related to the City's beneficial uses, as well as the potential GDEs near the city's wells. A discussion of groundwater dependent ecosystems is provided in Section 3.2.7.

Chapter 5 – Monitoring Network and Chapter 4 – Sustainable Management Criteria explain the subset of wells that were identified for focused monitoring throughout the GSP Implementation period related to groundwater quality.

Water Quality Hydrogeologic Conceptual Model

As discussed in Section 3.1, the depth to bedrock varies greatly in the SGP Subbasin due to faulting and recent geologic activity. No significant confining layer has been identified in the SGP Subbasin, resulting in a single primary aquifer across the various geologic Management Areas. The HCM also identified a significant depth to groundwater of several hundred feet, resulting in a lengthy time lag for recharge infiltration through the vadose zone to the aquifer. Because of the thickness of the vadose zone in most parts of the SGP Subbasin, there may be legacy contaminants that may appear and the GSAs' member agencies' commitment to ongoing groundwater quality monitoring is required in their reporting to the state and is described in Chapter 5 – Monitoring Network.

Benchmarks for Water Quality Characterization

To aide in the evaluation of existing groundwater quality a baseline should be defined for comparing current and future water quality constituents. The great majority of groundwater use in the SGP Subbasin is for commercial, domestic, industrial, and municipal producers' purposes, which require strict water quality regulation compliance for human consumption. The drinking water standards associated with the commercial, domestic, and municipal uses exceed the groundwater quality needs of the other remaining beneficial use of groundwater in the Subbasin, GDEs. There is currently no known agriculture activity in the SGP Subbasin; therefore, agriculture is not identified as a beneficial use.

Water quality standards for the United States were established with the enactment of the SDWA in 1974. Prior to the passage of this bill enforcement of water quality standards was difficult and often ineffectively applied by many states (AWWA, 1990). The SDWA requires the USEPA to develop enforceable water quality standards for public water systems. The regulatory standards are known as maximum contaminant levels (MCLs) which define the maximum concentration of specific constituent that are allowable in potable water sources. Each state is required to enforce the federal standards as a minimum, but they may create stricter standards at their discretion. The State of California has on a number of occasions developed more stringent standards. Since the promulgation of the initial regulatory standards the number of regulated constituents has steadily grown.

Water quality standards, as established by the USEPA, are of two categories: National Primary Drinking Water Regulations, which are enforceable standards that have been established based on health effects from contaminants; and Secondary Drinking Water Standards, which are unenforceable standards established for contaminants that may negatively affect the aesthetics of water quality. A list of screened contaminants and associated regulation standards is provided in Table 3-2.

Groundwater quality characterization for the SGP Subbasin is based on the data obtained from the GAMA online database, which is considered to be the best available information. As best practice, the groundwater assessment considers concerns from the perspective of human health for drinking water and suitability for the mentioned beneficial uses. Water quality information for each well has been compared to the outlined benchmarks. Based on review of the available data, the water quality constituents of concern within the Subbasin are provided in the following table and discussed further in this section. Other constituents commonly monitored in relation to drinking water standards were assessed; however, they were not considered relevant or significant to the region and are not included in the discussion below.

Table 3-2 Water Quality Constituents of Concern and Standard Category

Groundwater Quality Constituents of Concern and Standard Category	
Primary MCL	Secondary MCL
Arsenic	Iron
Chromium-6	Manganese
Fluoride	Total Dissolved Solids
Lead	
Nitrate	

As part of the water quality review an effort was undertaken to examine whether there were observed changes in individual water constituents over a 27-year period, from 1998 Water Year to 2025 Water Year. The period was selected to correspond with the hydrologic period used for the water budget (1998 Water Year to 2025 Water Year). Figures depicting the median results at each respective well within this period are available in this Section below.

National Primary Drinking Water Regulation Concentrations

The following discussion summarizes the constituents that were found at concentrations higher than established regulatory enforceable maximum contaminate levels in the SGP Subbasin within the 22-year period of groundwater quality analysis.

Much of the SGP Subbasin's water use is potable, resulting in many of the Subbasin's production wells complying with state and federal drinking water standards. In the case of constituent exceedances, those water producers have implemented appropriate treatment to supply adequate quality potable water.

Despite the positive overall assessment of groundwater quality conditions in the SGP Subbasin, municipal water supplies are required to continue groundwater quality monitoring at commercial, domestic, industrial, and municipal production wells. In addition, SGP Subbasin GSAs have committed to GSP-specific monitoring for nitrate (as nitrogen) and TDS, as they are identified as being a common concern in nearby subbasins. Future monitoring of TDS and nitrate (as nitrogen) is described in Chapter 4 and Chapter 5.

Arsenic. The presence of arsenic in groundwater can be attributed to natural desorption from arsenic-containing rocks and is often present in clay formations. Anthropogenic (caused or influenced by humans) sources include compounds used in manufacturing electronic components; processing of ceramics, paints, and textiles; and agricultural related pesticides and insecticides. Arsenic is listed as a carcinogen, and when ingested at elevated concentrations may increase the risk of bladder, kidney, liver, lung, and skin cancer. Prior to 2006, the MCL for arsenic was 50 µg/L, but following reevaluation by the USEPA at that time, the MCL was lowered to the present level of 10 µg/L (SWRCB, 2017a).

Based on the selected data set, arsenic concentrations in excess of the MCL occur in the deep aquifer formations. Concentrations in the moderate to shallow segments of the aquifer are largely below the MCL. This may indicate that lowering of groundwater levels may not impart a significant change in higher arsenic levels but may give cause for elevated concern if water within the areas of lower depths is withdrawn. Figure 3-35 summarizes the results of all arsenic monitoring events from 1998 to 2025 in relation to the MCL. Figure 3-36 below displays the location of water quality sampling in the 29-year analysis period and identifies six wells that have a recorded median arsenic result greater than half the MCL. One well had data that exceeded the MCL, however this well is periodically dry and has not been recently available for additional sampling.

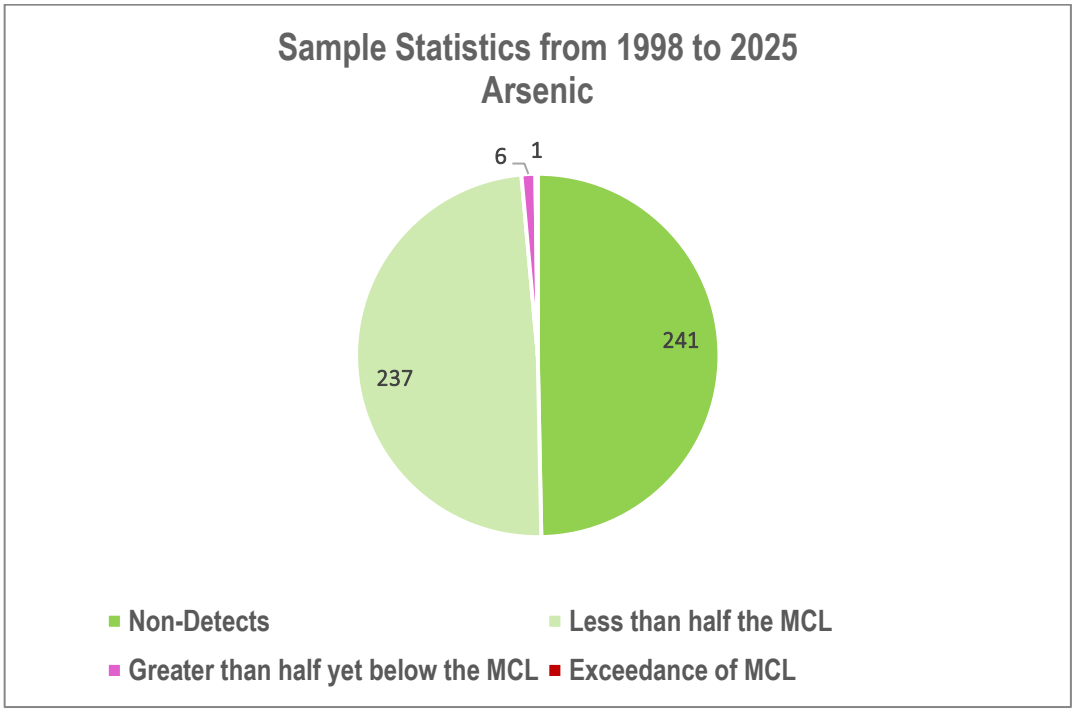
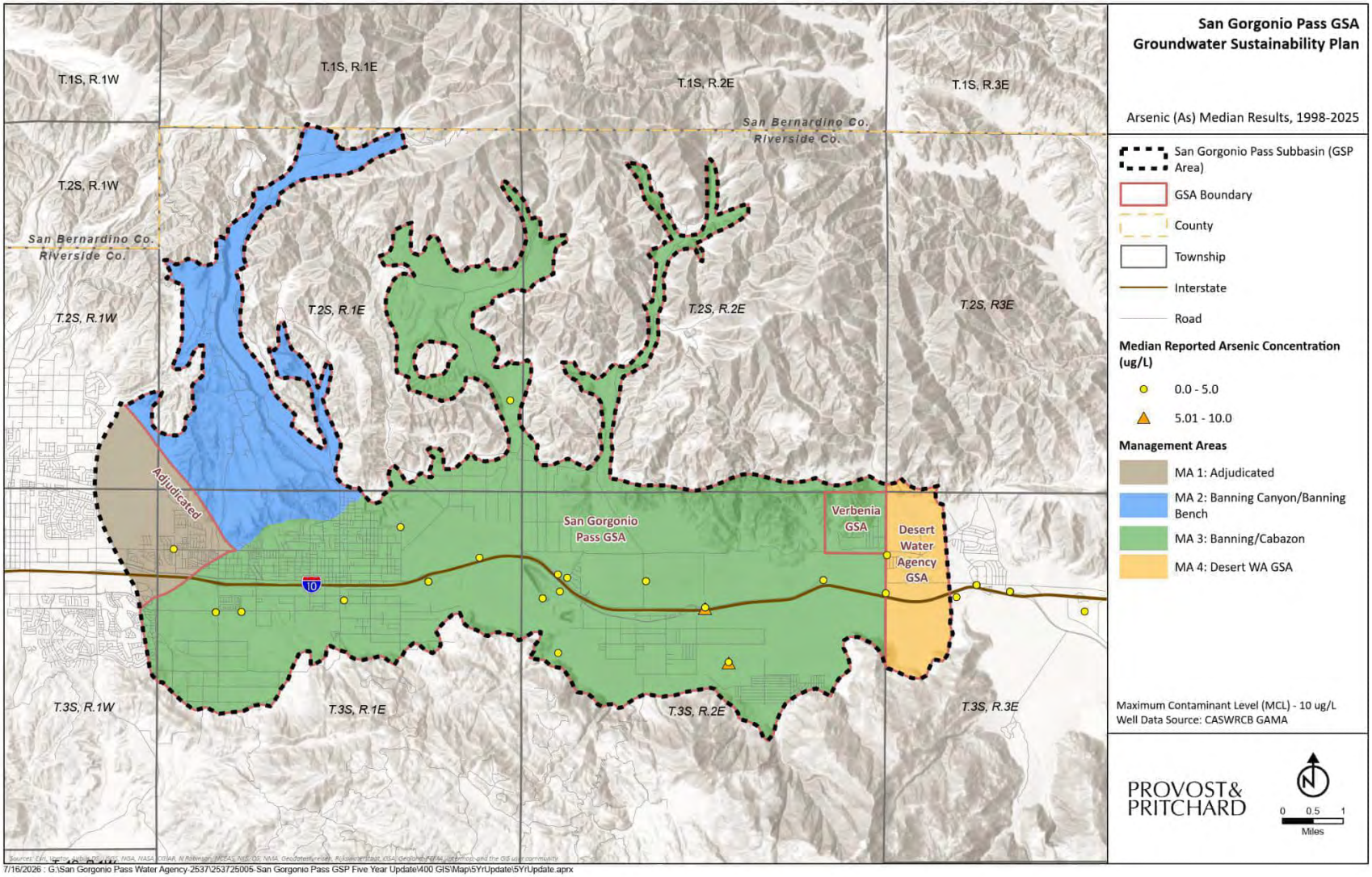


Figure 3-35 Arsenic Results (1997-2025)

Figure 3-36 Arsenic – Groundwater Quality Analysis



Chromium-6. Chromium is present in nature as trivalent chromium (Chrome-3) and hexavalent chromium (Chrome-6). Chrome-3 is an essential human dietary element and is found in food sources such as vegetables, fruits, meats, and grains (USEPA, website: chromium-drinking-water). The occurrence of Chrome-6 in groundwater is associated with erosion of natural chromium deposits. Anthropogenic sources of trivalent chromium include the discharges of dyes and paint pigments, wood preservatives, chrome plating liquid waste, and leaching from hazardous waste sites (SWRCB, 2017b). Exposure to hexavalent chromium through inhalation is known to cause increased risks of gastrointestinal cancer and may cause damage to the lining of the nose, throat, and lungs. The USEPA has established an MCL for Total Chromium (all forms of chromium) at 100 µg/L, while the State of California set the MCL for Total Chromium at 50 µg/L. In 2024, the SWRCB adopted an MCL for chromium-6 of 10 µg/L, which went into effect on October 1, 2024.

Water quality data shows many detections of chromium-6 across the Subbasin. Nearly one quarter of collected samples had chromium-6 levels exceeding the MCL and an additional 12% of the samples exceeded half of the MCL. The wells with higher chromium-6 values were concentrated in the Banning Storage Unit of Management Area 3 and appear to be naturally occurring. Water suppliers in the SGP are evaluating alternative approaches to addressing the localized high concentrations of chromium-6, including potential projects to reduce use of wells with high chromium-6 concentrations.

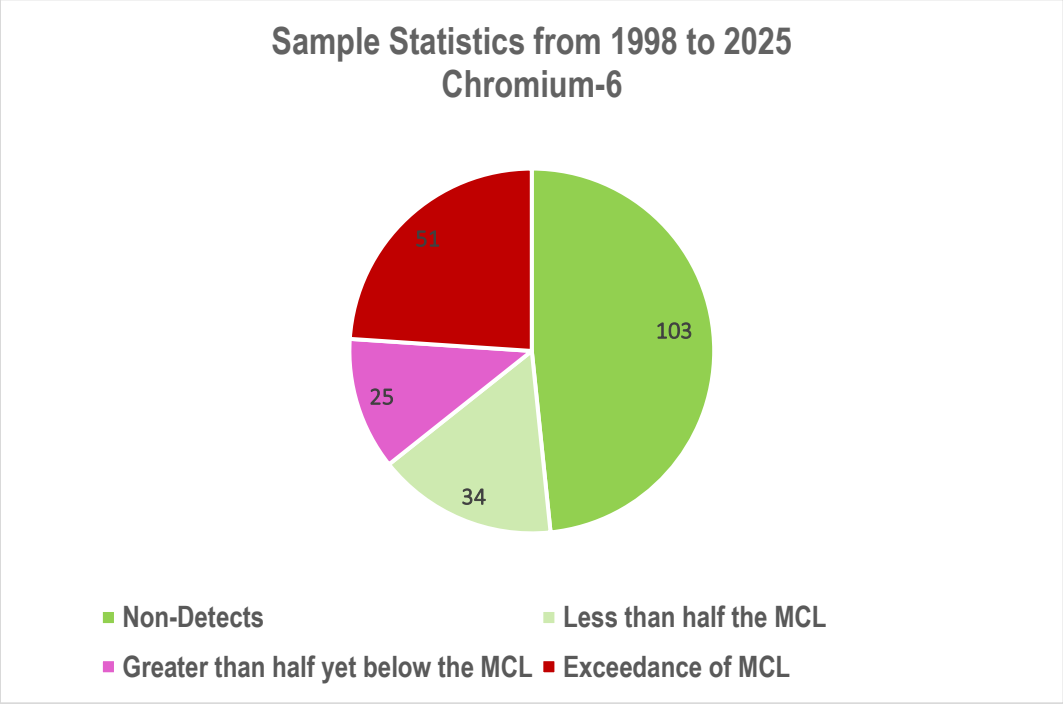
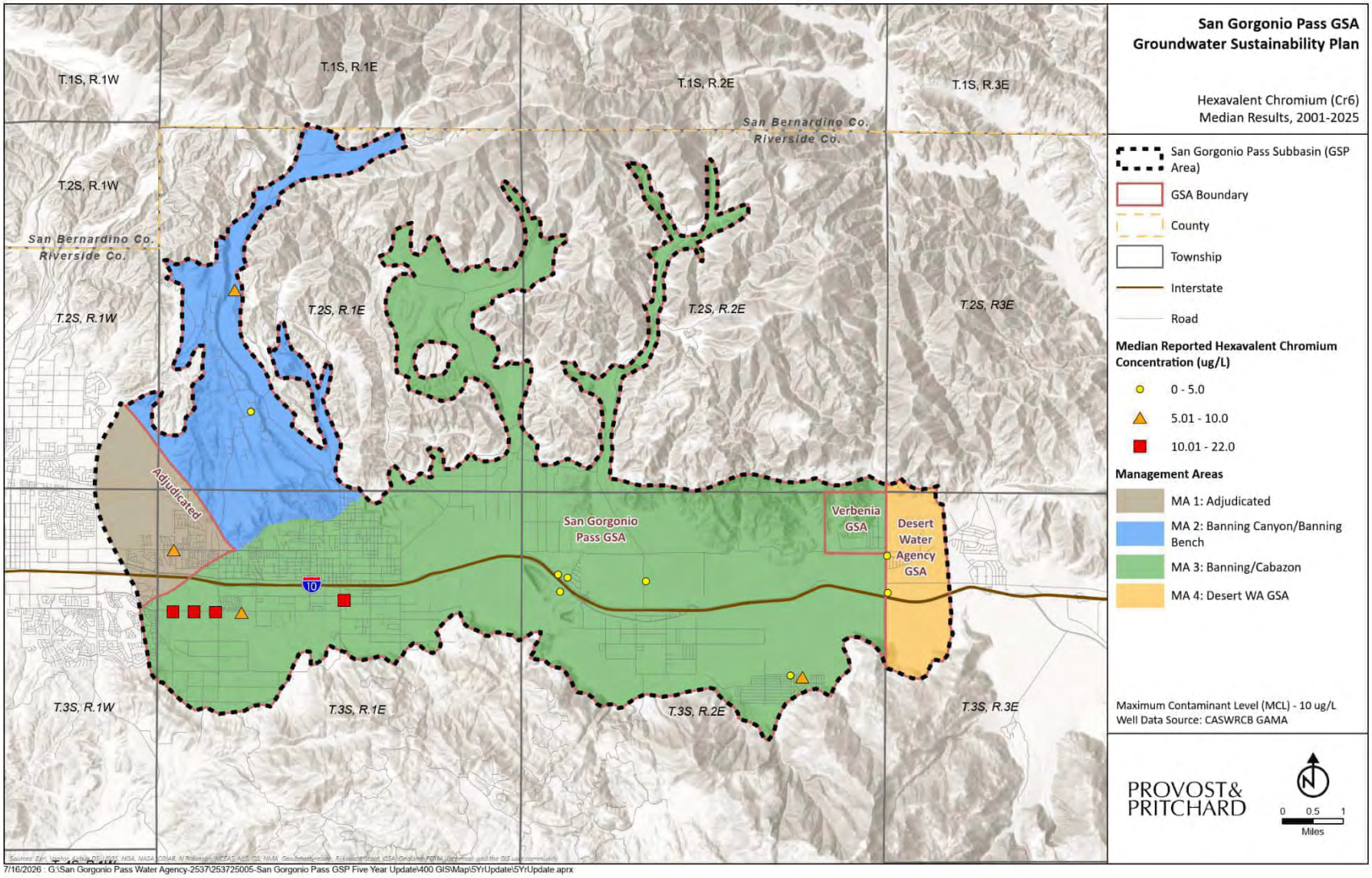


Figure 3-37 Chromium-6 Results (1997-2025)

Figure 3-38 Chrome 6 – Groundwater Quality Analysis



Fluoride. The presence of fluoride in groundwater drinking water occurs as rainwater percolates through deposits containing fluorine which then combines with minerals to form fluoride salts. Anthropogenic sources include discharge from fertilizers and aluminum factories. Fluoride offers health benefits by helping prevent tooth decay, however, long-term exposure to elevated concentrations of fluoride can be detrimental causing discoloration of teeth and skeletal fluorosis. The United States Public Health Service (USPHS, 2015) recommends an optimal fluoride concentration of 0.7 mg/L for prevention of dental cavities. The USEPA has established an MCL for fluoride at 2 mg/L (or 2,000 µg/L).

Fluoride exceedances of the MCL have not occurred in the SGP Subbasin within the 29-year period. **Figure 3-39** summarizes the results of all fluoride monitoring events from 1997 to 2025 in relation to the MCL. **Figure 3-40** depicts the median results of Fluoride in the Subbasin from 1997 to 2019. Water producers in the Subbasin have the capacity to treat for fluoride should there be a risk to human health or other beneficial use.

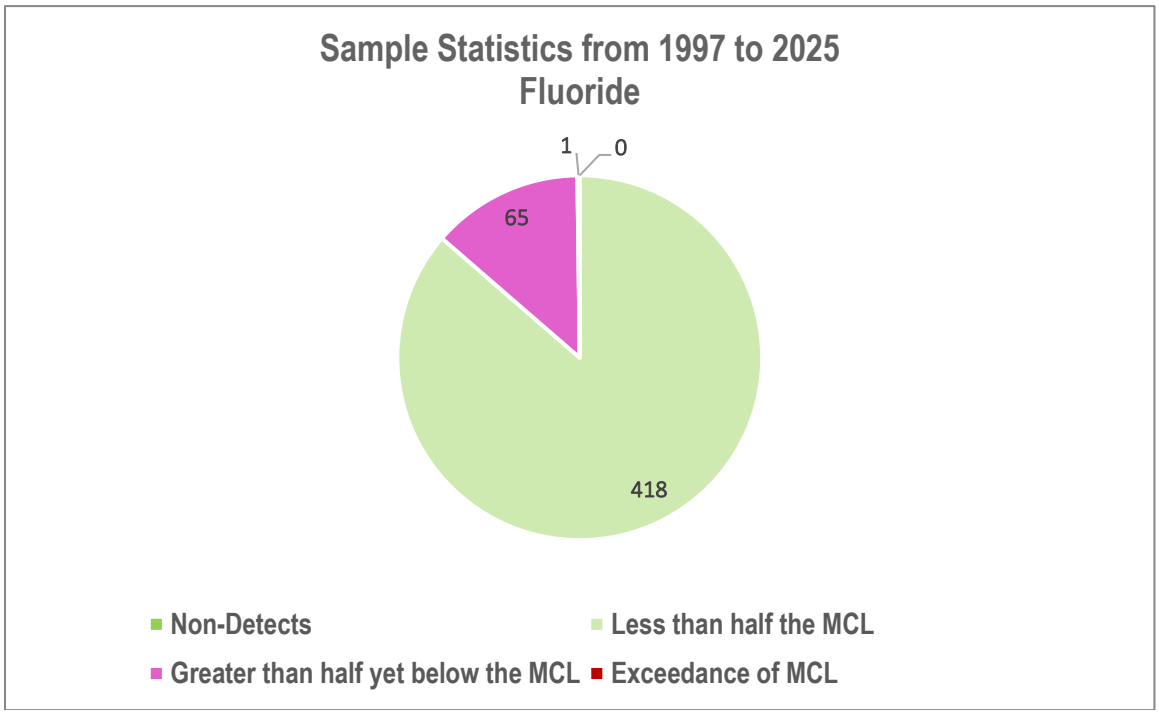
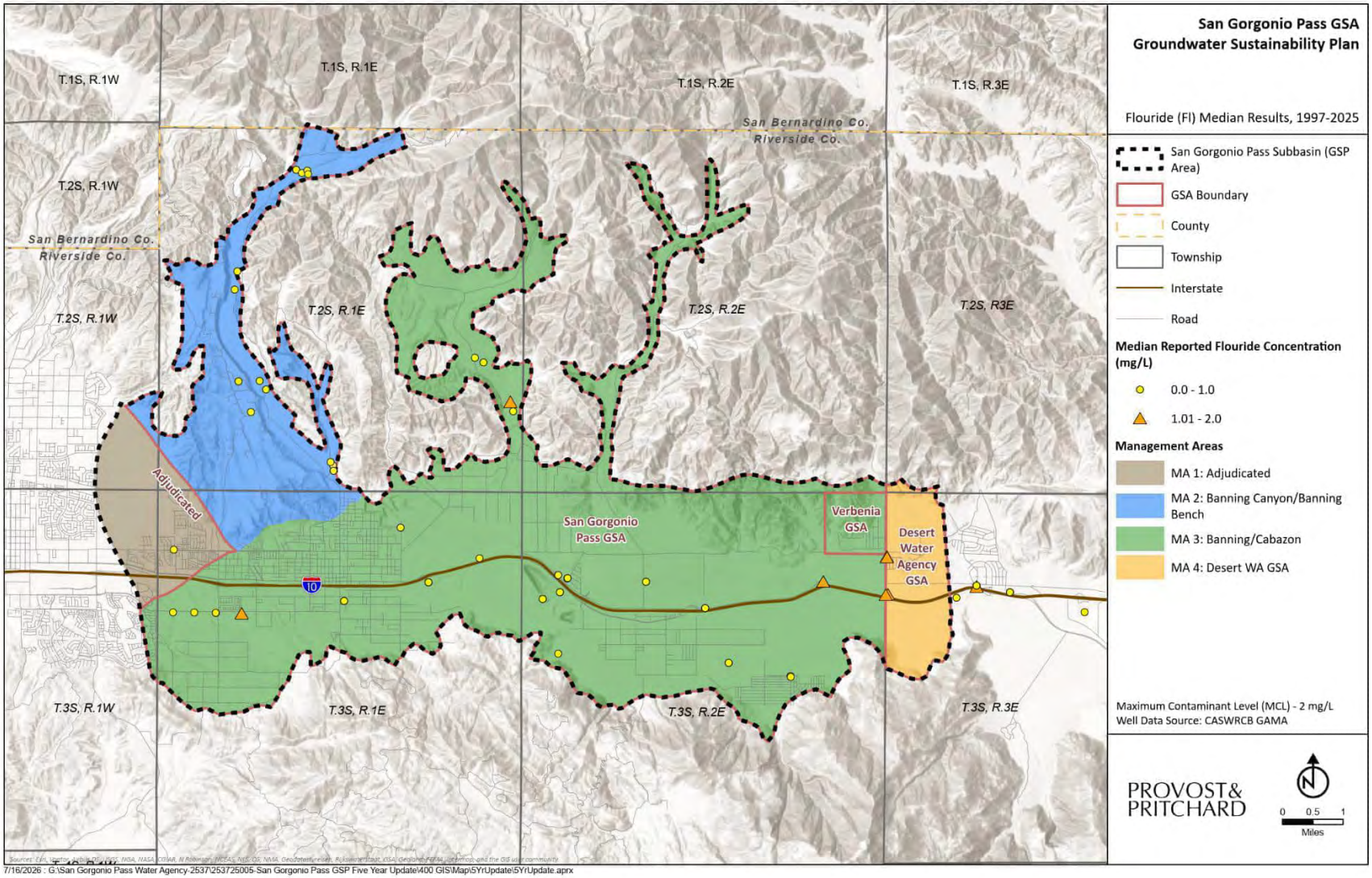


Figure 3-39 Fluoride Results (1997-2025)

Figure 3-40 Fluoride - Groundwater Quality Analysis (1997-2019)



Lead. Lead may be found in groundwater supplies through erosion of natural deposits. In recent years, significant concern about lead in drinking water has arisen from the highly publicized widespread contamination that occurred from lead leaching from water service lines in Flint, Michigan. No similar lead water quality concerns have been identified in the SGP Subbasin. Health effects from elevated concentration of lead include delays of mental and physical development in children, and high blood pressure and kidney disease in adults (SWRCB, 2017d). The USEPA regulates the concentration of lead in drinking water by an Action Level (AL), which is similar to an MCL but requires additional testing at customer services. The USEPA AL for lead is 15 µg/L.

Figure 3-41 summarizes the results of all lead monitoring events from 1998 to 2025 in relation to the action level. Lead occurs in low levels within the SGP Subbasin. Two lead sample exceedances of the MCL were identified within the 29-year analysis period (**Figure 3-42**). Water producers in the Subbasin have the capacity to treat for lead should there be a risk to human health or other beneficial use.

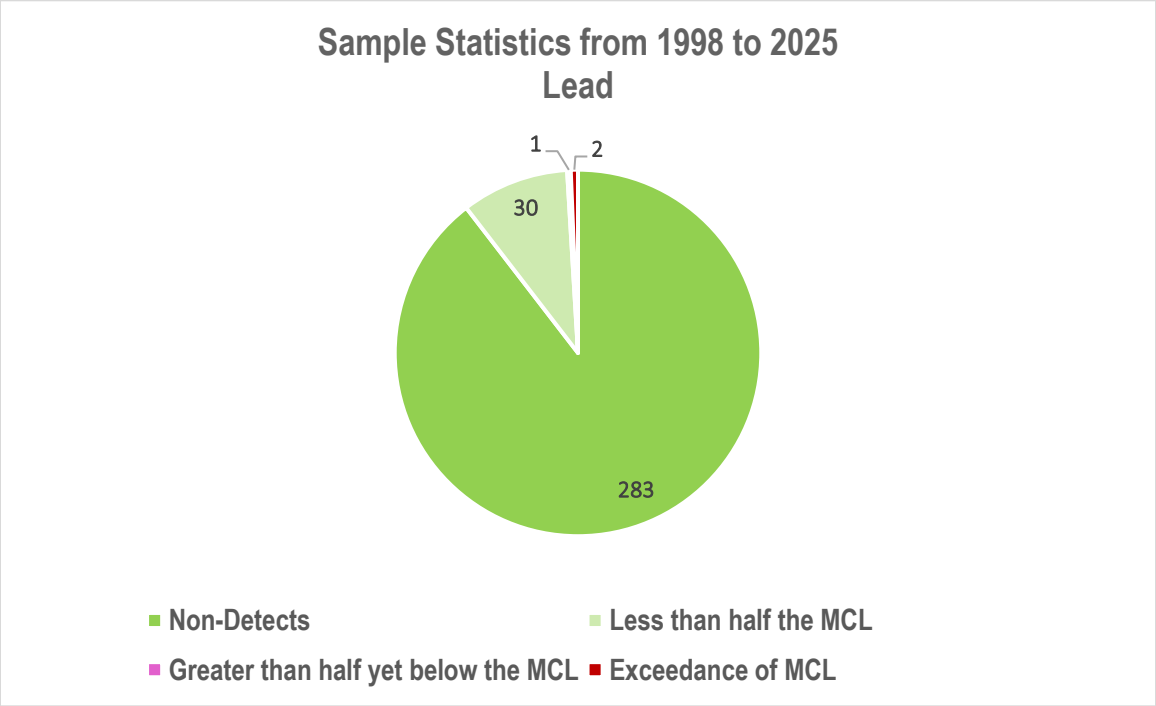
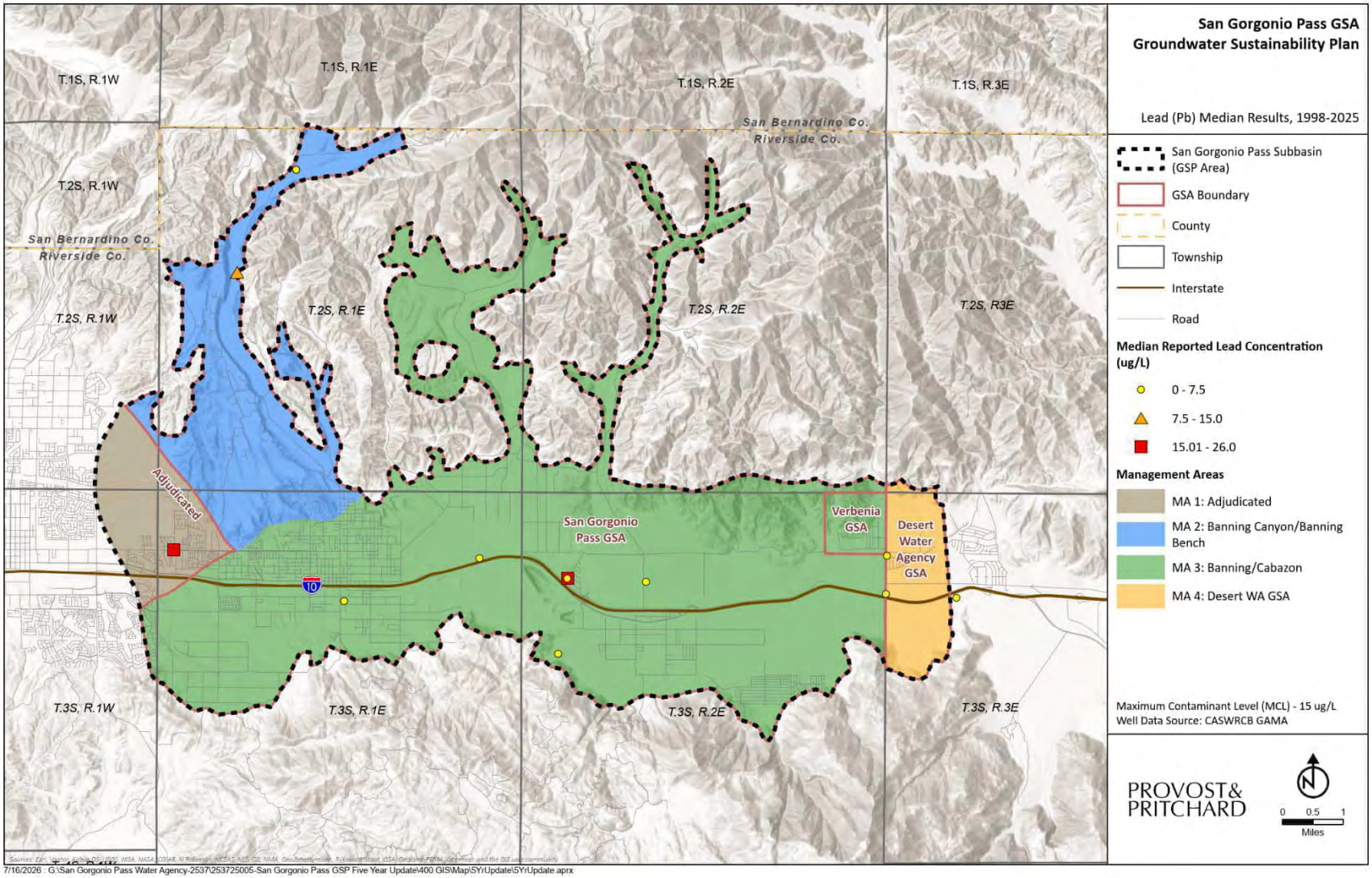


Figure 3-41 Lead Results (1998-2025)

Figure 3-42 Lead - Groundwater Quality Analysis (1998-2025)



Nitrate. The presence of nitrate in groundwater may occur from oxidation of atmospheric nitrogen gas by lightning, that may then naturally get into groundwater, but this generally produces low concentrations typically below 2 mg/L (as N) (SWRCB, 2017e). The largest contributors of nitrates in groundwater are anthropogenic sources, such as fertilizer applications, septic tanks, wastewater discharges, manure fertilizer applications, and agricultural ponds. Infants under the age of 6 months are the most susceptible to health-effects from nitrates, known as methemoglobinemia ("blue baby syndrome"). Methemoglobinemia is the result of ingesting nitrate and its subsequent conversion by digestive bacteria into the more toxic nitrite, which enters the bloodstream and hinders the body's ability to carry oxygen. The MCL for nitrate is 10 mg/L (as N). Use of public water systems monitoring information to identify nitrate concerns may be misleading as the public water sources are typically taken offline as soon as there is an exceedance. Use of only public water system water quality data in analysis may erroneously indicate that contamination has subsided, but it may persist in the area. Care needs to be exercised in making conclusions on contributory sources and causative groundwater impacts associated to the occurrence of nitrates in groundwater.

Nitrate (as nitrogen) is identified as a monitored constituent in the representative water quality monitoring network, described in **Chapter 5**, due to the prevalence of exceedance in nearby and similar Subbasins.

Figure 3-43 summarizes the results of reviewed nitrate monitoring events from 1997 to 2025 in relation to the MCL. As seen in **Figure 3-44,** all measurements in the Subbasin are below the MCL over the 29-year analysis period.

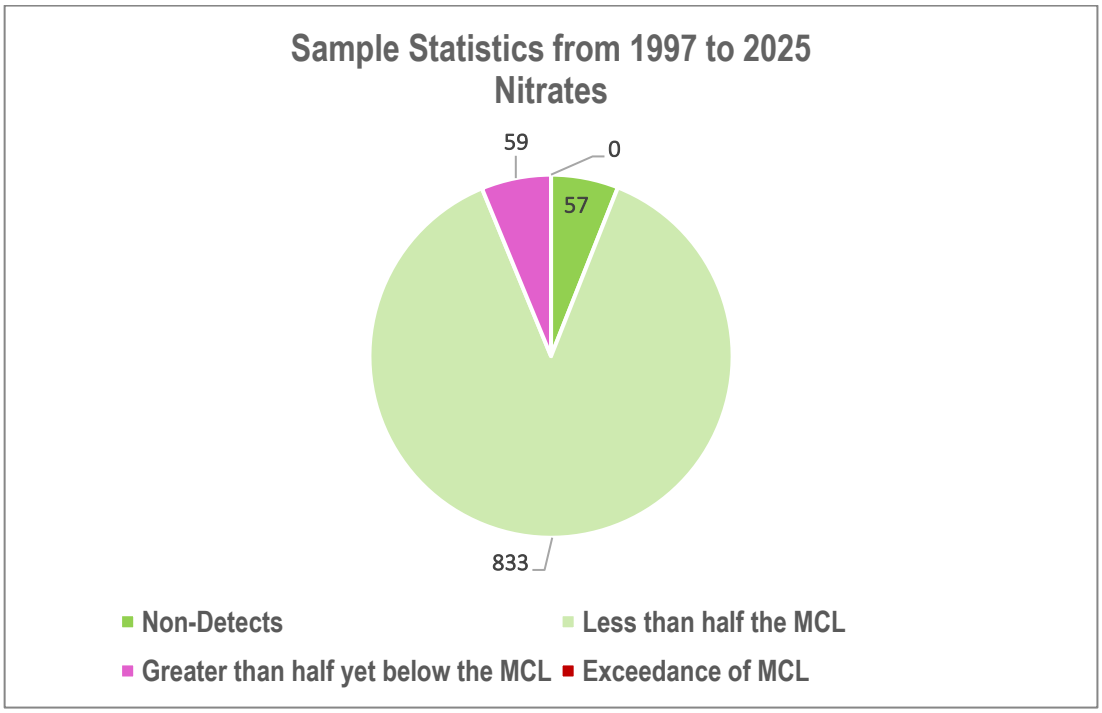
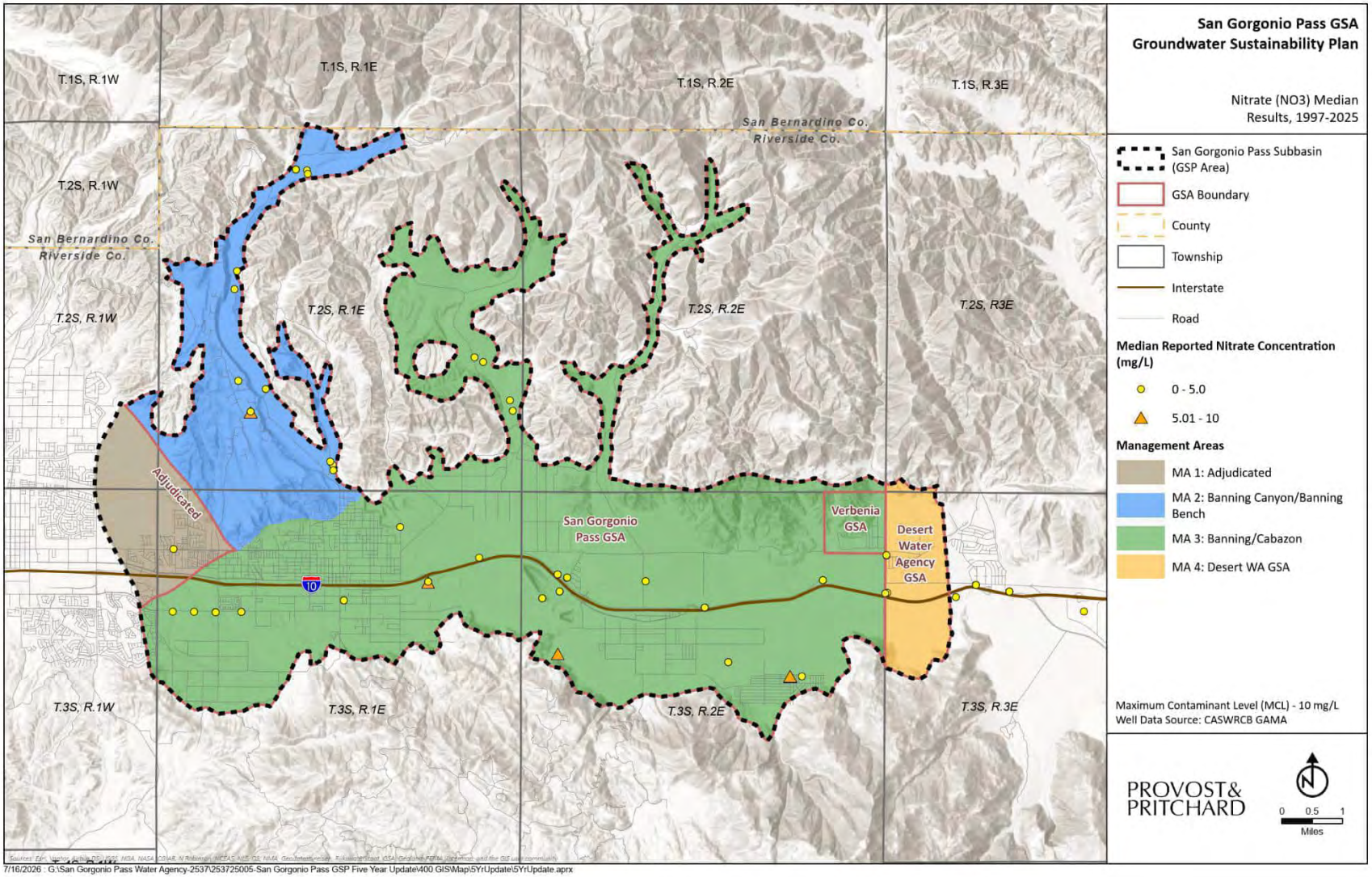


Figure 3-43 Nitrate Results (1997-2025)

Figure 3-44 Nitrate - Groundwater Quality Analysis (1997-2025)



Secondary Drinking Water Standard Concentrations

The following discussion summarizes the constituents that were found at concentrations higher than established secondary drinking water standards within the SGP Subbasin, secondary maximum contaminant levels (SMCL)[1]. To the degree possible with the available data, the variability of constituent concentrations by depth is provided. The constituents that are held to secondary drinking water standards are not health threatening at their respective SMCL. Public water systems only need to test for them on a voluntary basis. However, if these contaminants are present in water at levels above the SMCL, the contaminants may cause the water to appear cloudy or colored, or to taste or smell bad. This may cause a great number of people to stop using water from their public water system even though the water is actually safe to drink.

Secondary standards are set to give public water systems some guidance on removing these chemicals to levels that are below what most people will find to be noticeable.

Iron. Iron is found in nature in rocks, soils, and minerals. Groundwater passing through these materials will dissolve the iron, taking it into solution. Iron is considered an essential and beneficial element of human diet, and no primary MCL has been set. The USEPA has established a secondary maximum contaminant level (SMCL) for iron, for water aesthetics, at 0.3 mg/L (or 300 µg/L). Concentrations at or above this level can oxidize when exposed to oxygen causing the water to take on a rusty color which can stain laundry and will also have a metallic taste.

Eight wells experienced exceedances of the SMCL for iron, with ten samples exceeding the SMCL; however, those same wells had reported improved quality conditions in more recent years. **Figure 3-45** summarizes the results of all iron monitoring events from 1998 to 2024 in relation to the SMCL. **Figure 3-46** depicts the median results of iron in the Subbasin from 1998 to 2024.

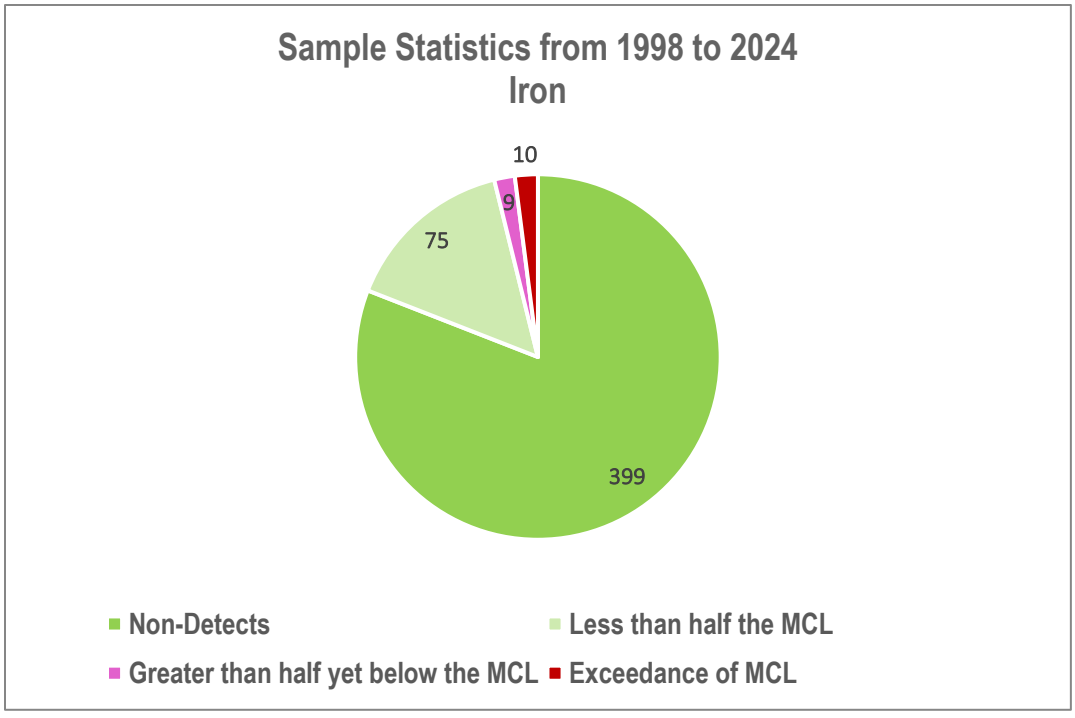
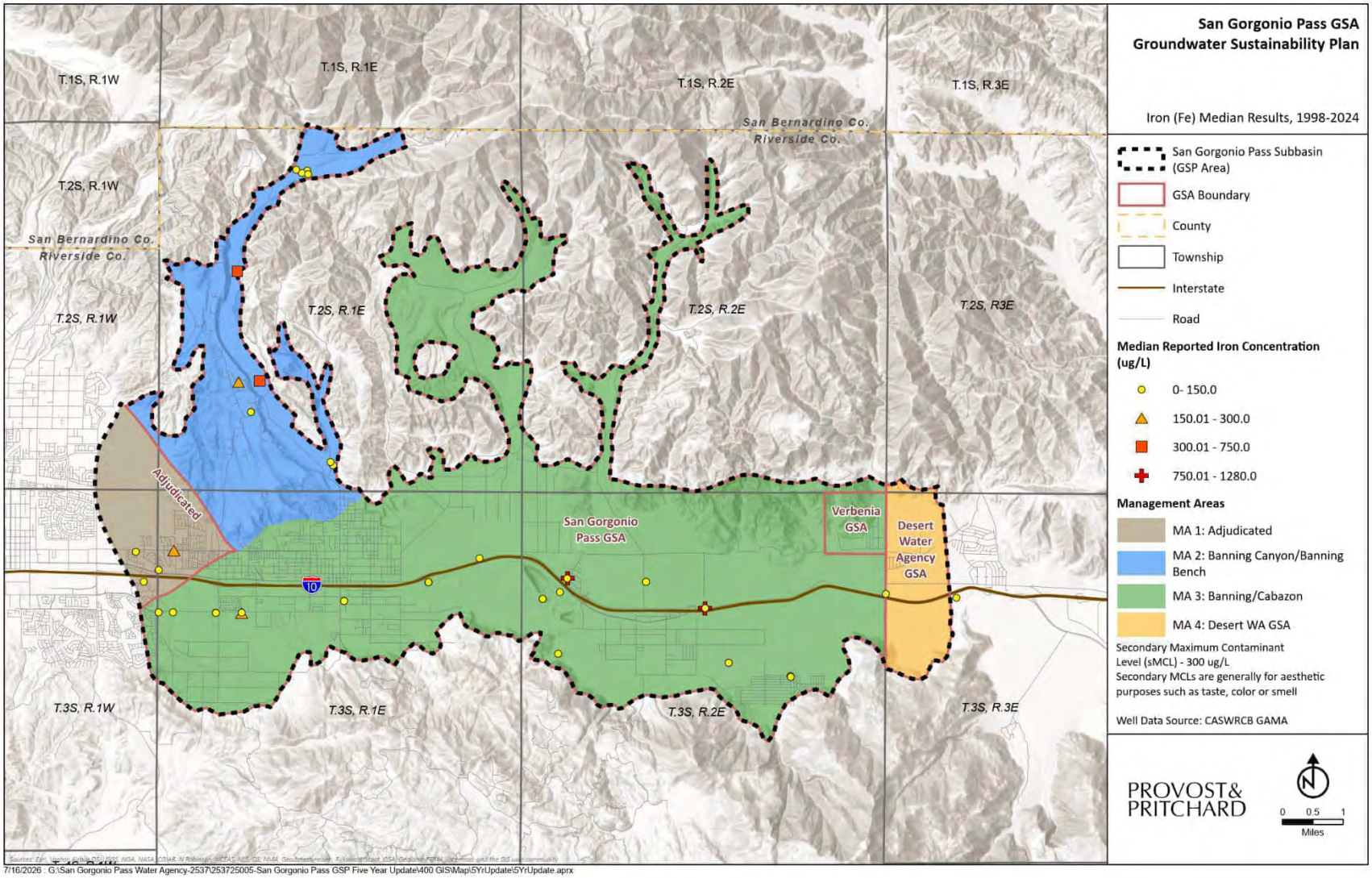


Figure 3-45 Iron Results (1997-2025)

[1] Secondary Drinking Water Standards: Guidance for Nuisance Chemicals | US EPA

Figure 3-46 Iron - Groundwater Quality Analysis (1998-2024)



Manganese. Manganese, like iron, is a naturally occurring element and is typically dissolved from rocks and minerals as water flows through formations containing this element. As with iron, manganese is considered an essential element in human diet, but there are health concerns from over-exposure that can cause neurological effects (USEPA, 2004). Manganese can cause objectionable aesthetic issues such as black discoloration of water. In a chlorinated domestic or municipal water system with elevated iron and manganese levels, iron is converted to the ferric state (rust) while the manganese is converted to manganese dioxide, which is a black precipitate. Together, these two reaction products can create permanent staining of fixtures and laundry leading to widespread customer complaints. The SMCL for manganese is 50 µg/L.

Manganese concentrations have exceeded their secondary MCL at three wells within the Subbasin within the 29-year period. During that period, the manganese concentrations have fluctuated and experienced positive quality conditions at those same sites. Figure 3-47 summarizes the results of all manganese monitoring events from 1997 to 2025 in relation to the SMCL. Figure 3-48 below reports the median concentration ranges at each well over the analysis period of 1997-2025. Water suppliers have the capacity to treat manganese contamination, and the groundwater producers will continue to monitor manganese as required by state regulations.

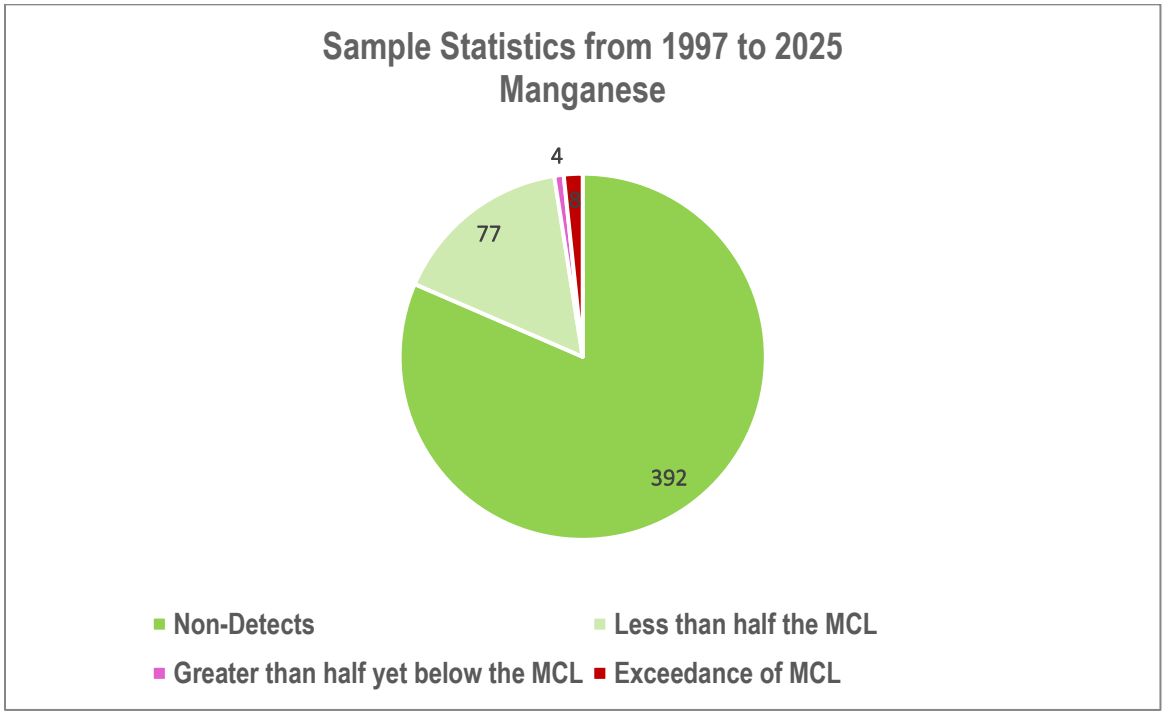
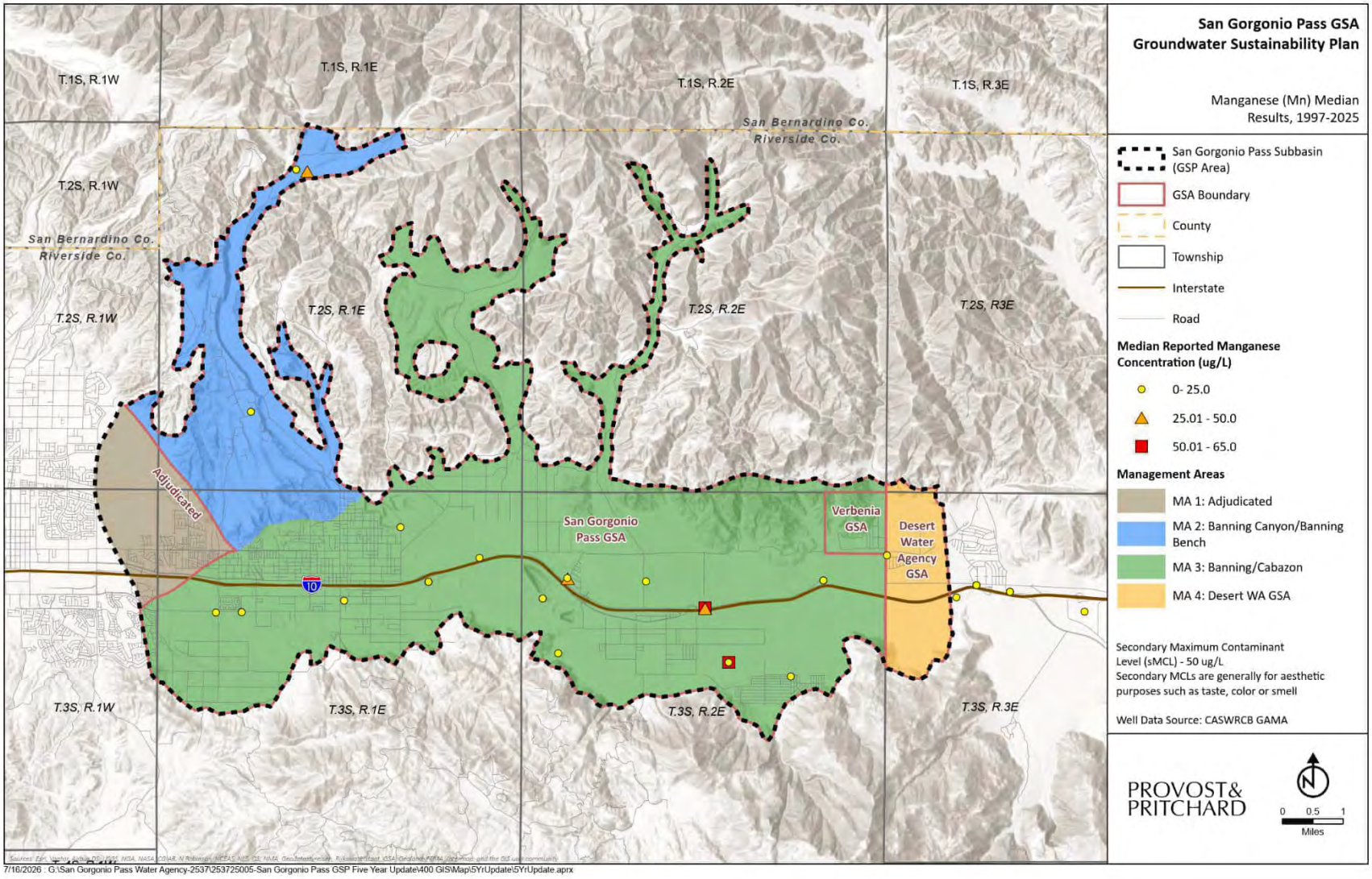


Figure 3-47 Manganese Results (1997-2025)

Figure 3-48 Manganese - Groundwater Quality Analysis (1997-2025)



Total Dissolved Solids. The presence and accumulation of dissolved solids in groundwater may be attributed to rainwater percolating through soil and rocks causing salts and minerals to leach from these formations. Anthropogenic sources include discharges from water softeners and wastewater plants, industrial discharges from cooling towers, food processors, legacy septic tanks and canning facilities (SWRCB, 2017g).

The secondary SMCL, for taste and odor, for TDS is provided as a range from 500 mg/L (recommended) to 1,000 mg/L. For rare and limited short-term durations concentrations up to 1,500 mg/L for TDS may be permissible. From the natural accumulation of salts via evapo-concentration, salinity can impact drinking water quality, GDE health, and other beneficial uses. TDS is a common constituent of concern in nearby and similar Subbasins, and therefore has been included in the Representative Water Quality Monitoring Network (**Chapter 5**).

Figure 3-49 summarizes the results of all TDS monitoring events from 1997 to 2025 in relation to the SMCL. The median concentration of TDS has remained below the SMCL in the SGP Subbasin within the period of 1997-2025, as shown in **Figure 3-50** below.

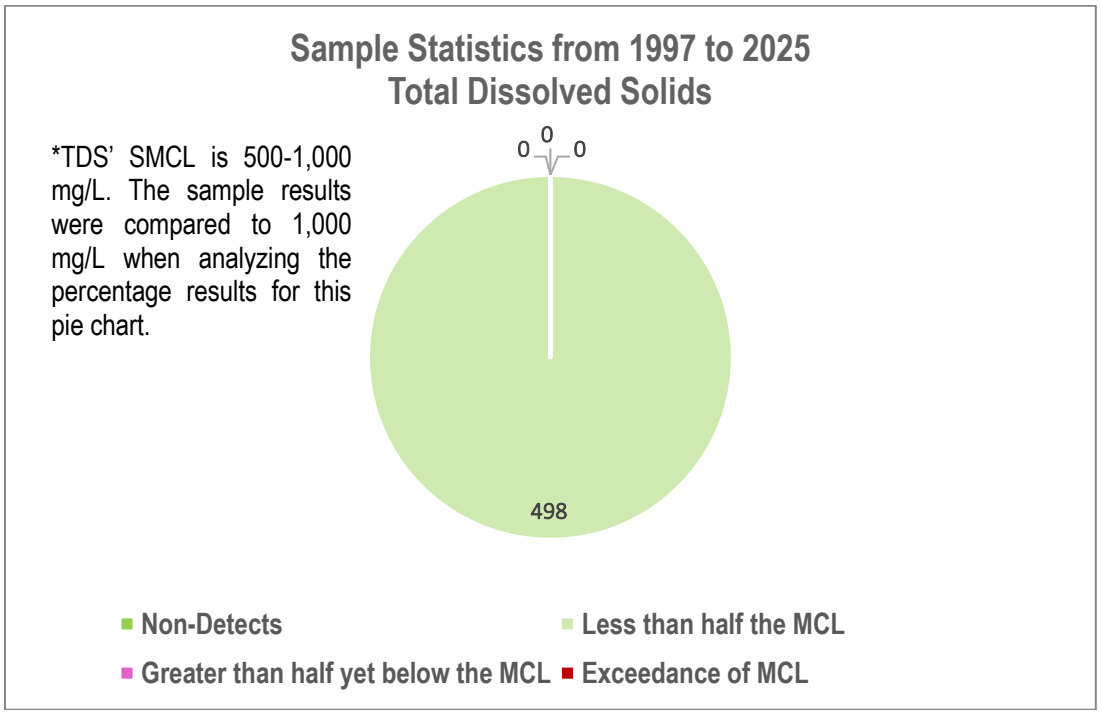
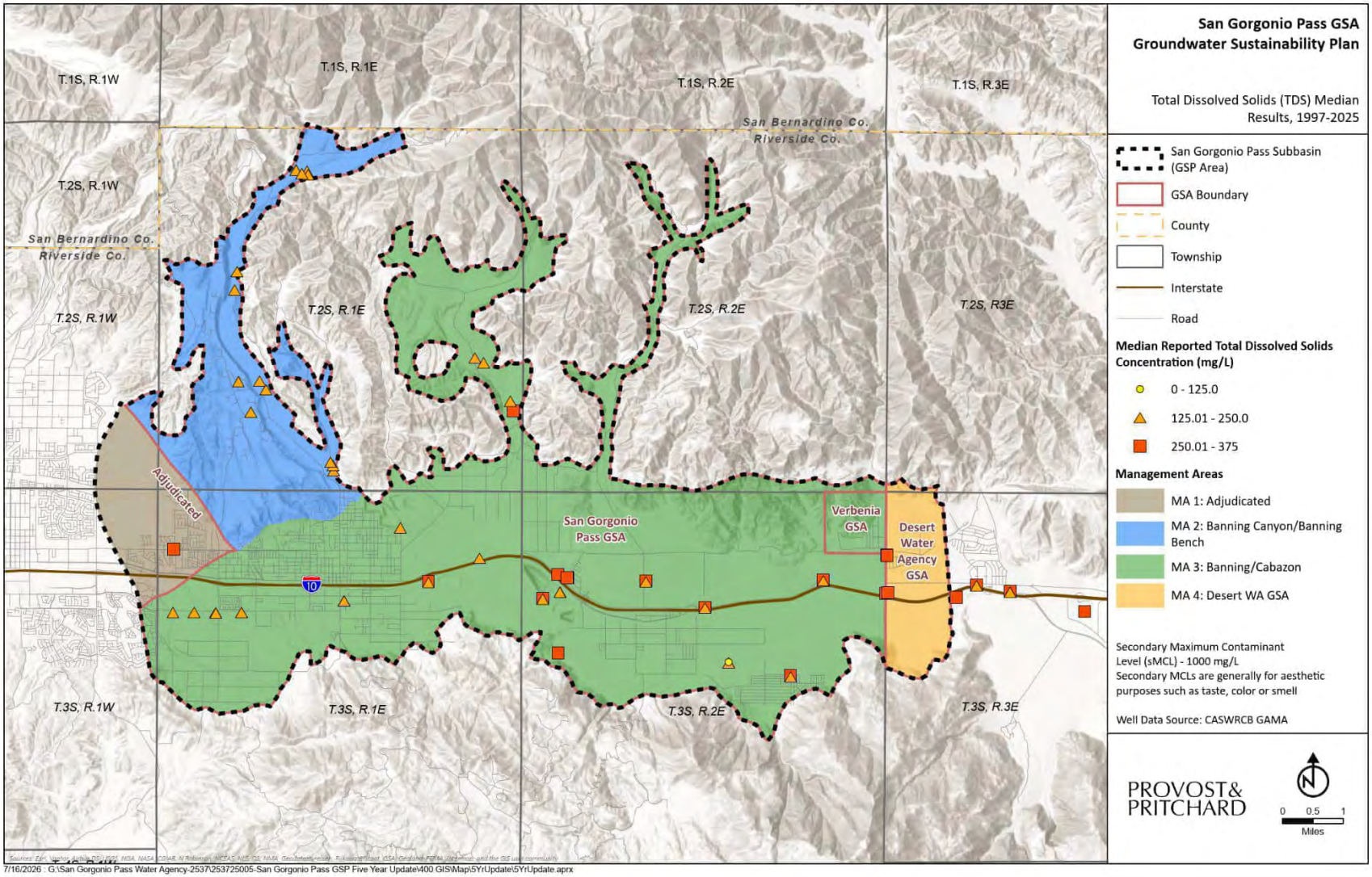


Figure 3-49 TDS Results (1997-2025)

Figure 3-50 TDS - Groundwater Quality Analysis (1997-2025)



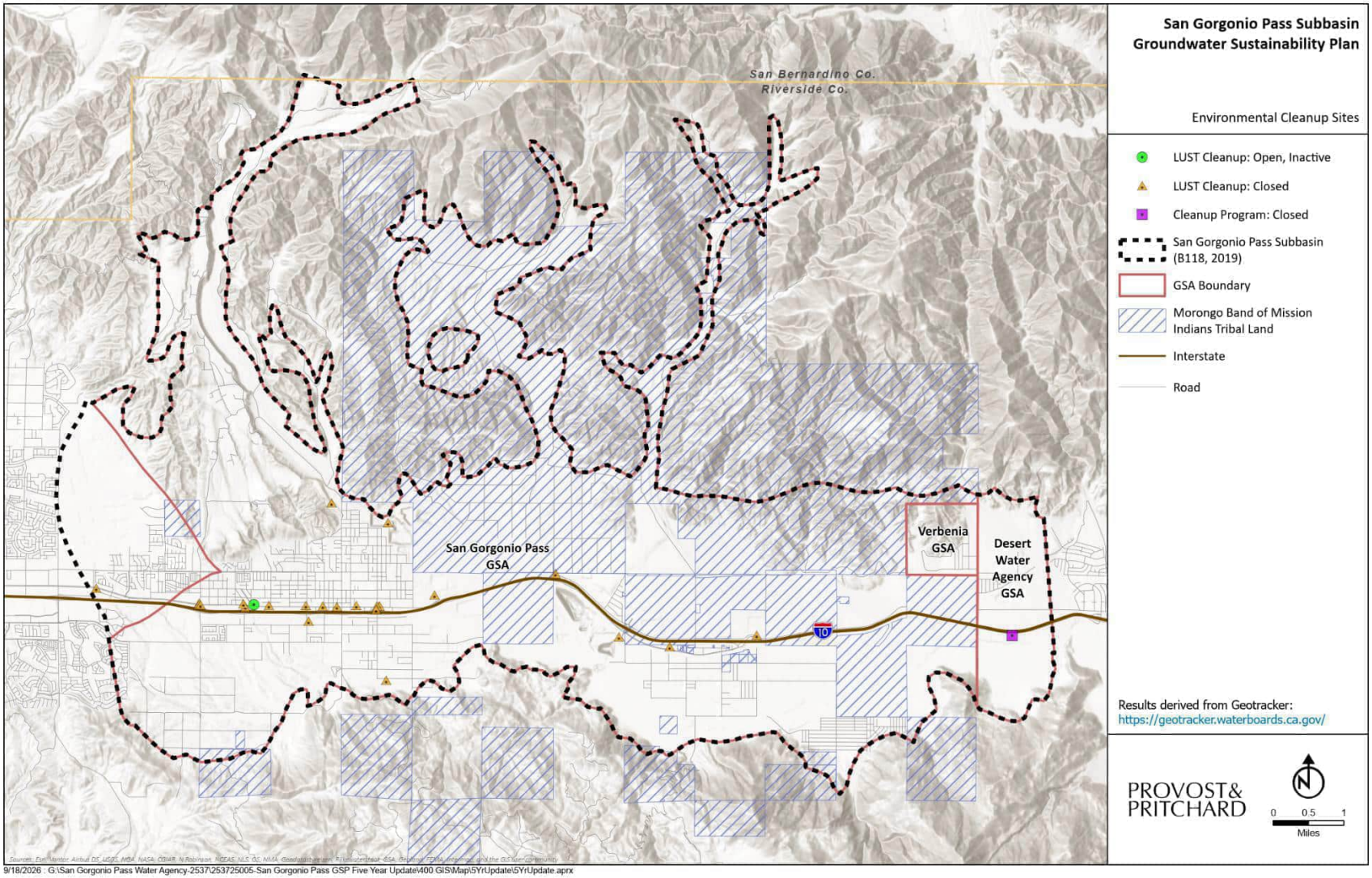
Known Contamination/Plumes

To identify known plumes and contamination within the Plan Area SWRCB GeoTracker was reviewed for active clean-up sites of all types. Although there have been numerous leaky underground storage tanks (LUST) and other cleanup sites identified within the SGP Subbasin, all these cases have been closed or inactive (Figure 3-51).

The single site that is currently open is identified as "open-inactive."[2] The W. Ramsey Street former USA Petroleum Gas site (T0606537906) case opened in January 2005. The site had four tanks removed on January 14, 2005. Soil Samples from piping, dispensers and tanks were analyzed. Two of the four tanks were clean, and the remaining two tanks had recorded 12 ppm total petroleum hydrocarbons gasoline (TPHg) and 3,400 ppm TPHg concentrations, requiring remedial action. The primary concern included soil and did not include groundwater contamination. Although there is no current risk to groundwater contamination, the GSAs will revisit the GeoTracker website annually to evaluate the status of this site and others in the SGP Subbasin.

[2] GeoTracker (ca.gov)

Figure 3-51 GeoTracker Contamination Review



3.2.5 LAND SUBSIDENCE CONDITIONS

Regulation Requirements:

> §354.16(e) The extent, cumulative total, and annual rate of land subsidence, including maps depicting total subsidence, utilizing data available from the Department, as specified in Section 353.2, or best available information.

Land subsidence can result from compression of clayey aquifer materials that are subject to groundwater level declines. The SGP Subbasin is located in an area of active geological activity. Compressible clay zones would not be expected to be present in the SGP Subbasin based on its geologic activity and none have been identified. Measured land subsidence from the TRE ALTAMIRA Interferometric Synthetic Aperture Radar (InSAR)[3] analysis for the SGP Subbasin is shown in Figure 3-52 which indicates measured ground surface elevation changes of -.25 to 0.25 feet for the 11-year period from June 2015 through January 2026. This small range of elevation change would include changes from factors such as tectonic activity, which is a potential cause for land surface elevation changes in the area. The reported change is potentially within a margin of error for this technology and is considered insufficient to indicate any observable land subsidence.

[3] https://data.cnra.ca.gov/dataset/tre-altamira-insar-subsidence

Figure 3-52 Ground Surface Elevation Changes



3.2.6 SURFACE WATER AND GROUNDWATER INTERCONNECTIONS

Regulation Requirements:

§354.16(f) Identification of interconnected surface water systems within the basin and an estimate of the quantity and timing of depletions of those systems, utilizing data available from the Department, as specified in Section 353.2, or best available information.

SGMA regulations require the GSA to quantify the volume or rate of surface water depletion caused by groundwater pumping in basins where surface water and groundwater are interconnected. Interconnected surface water systems are defined as surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted (Modeling Best Management Practices, DWR, 2016).

The purpose of this section is to identify any known areas within the SGP Subbasin where groundwater pumping has caused surface water depletion. The only waterway within the Subbasin that falls within SGMA's jurisdiction is San Gorgonio River, an ephemeral tributary of the Whitewater River that flows through the Banning Canyon. San Gorgonio River flows are also supplemented by diversions from the upper Whitewater River watershed through a flume system developed by SCE. At this time, there is no evidence that active wells along the San Gorgonio Pass River within the Banning Canyon are causing increased seepage loss or impacts to downstream beneficial uses. More information on the hydrologic patterns is explained in both Section 3.1 and Section 3.3.

Additional ephemeral distributaries from the Whitewater River are present in the Potrero, Hathaway, and Millard Canyons that fall within MBMI lands. These waterways and the downstream uses are confined to MBMI's jurisdiction, which is not subject to SGMA due to the Tribe's federally recognized status. Because of this, the description of interconnected surface water in this Section is limited to Banning Canyon and the respective San Gorgonio River. San Gorgonio River and canyons are identified in Chapter 2 and Figure 3-53.

Present Day Conditions

The head differential in the San Gorgonio River between stream water elevations and the underlying groundwater elevations induces seepage losses from the stream (losing stream). River flows within the Canyon result primarily from natural runoff from its watershed. and can be supplemented by diversions from the Southern California Edison's flume system into the Canyon.

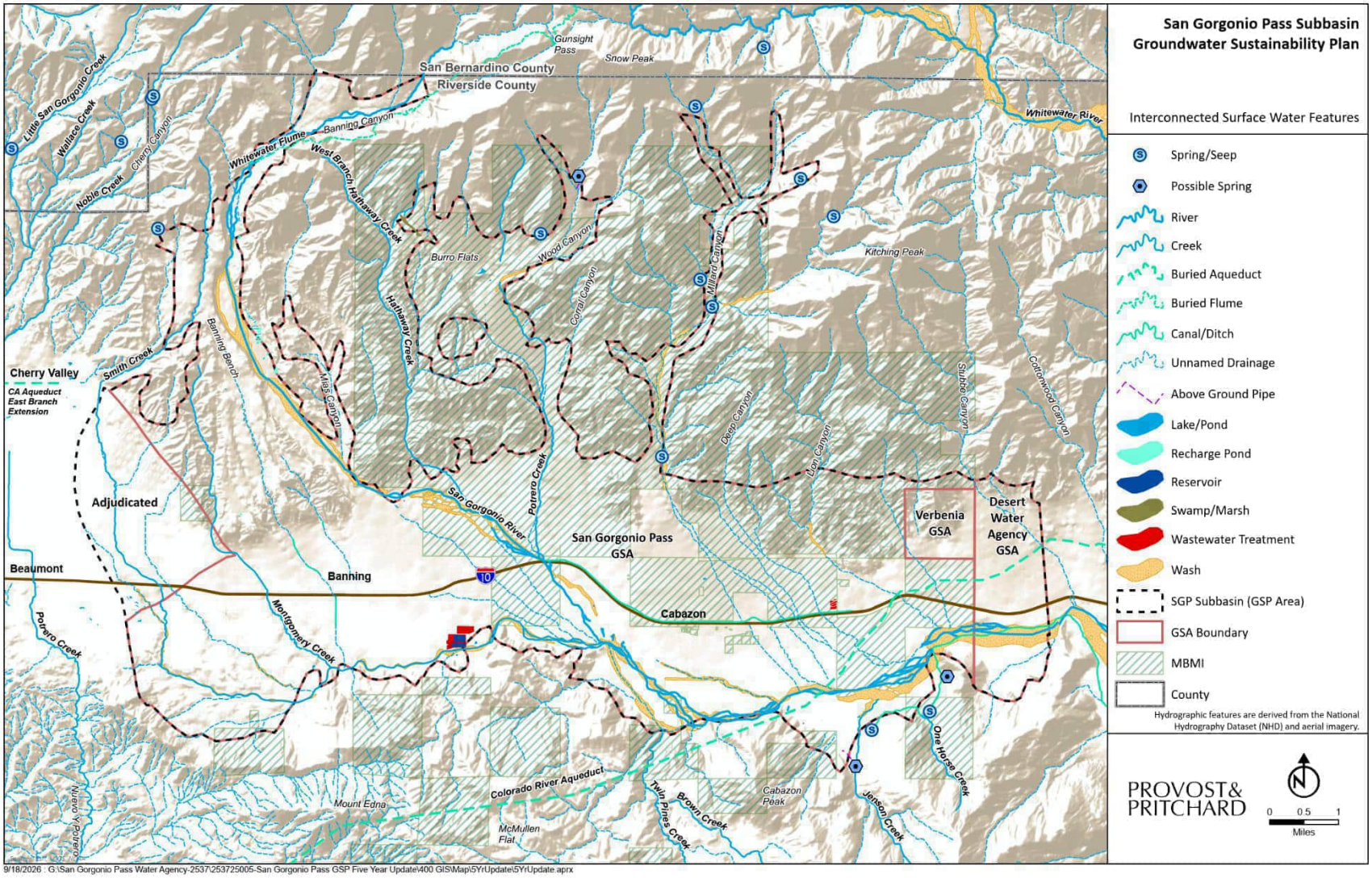
3.2.7 INTERCONNECTED SURFACE WATER SYSTEMS

San Gorgonio River is an interconnected surface water system during high precipitation years; however, these conditions are not consistent throughout the year and are not assured in all years. The river can have a hydraulic connection with groundwater in the Banning Canyon aquifer when San Gorgonio River flows are adequate to saturate the vadose zone between the river and the groundwater table.

The Banning Canyon has a shallow depth to bedrock, sloped bedrock, and is predominantly composed of highly permeable alluvial materials. These conditions generate rapid recharge rates of the San Gorgonio River and quick groundwater velocity.

During wet periods when the San Gorgonio River flows downstream to the mouth of the canyon, the connection tapers off as the canyon spreads into an alluvial fan in the Cabazon Storage Unit, and remaining surface waters recharge the lower aquifer in the Cabazon Storage Unit.
A depiction of all waterways, including ephemeral systems, are included in Figure 3-53 below.

Figure 3-53 Interconnected Surface Water Features in the SGP Subbasin



3.2.8 GROUNDWATER DEPENDENT ECOSYSTEMS

Regulation Requirements:

§354.16(g) Identification of groundwater dependent ecosystems within the basin, utilizing data available from the Department, as specified in Section 353.2, or best available information.

GDEs are defined as "ecological communities of species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface" (23 CCR § 351(m)). GDEs are organized into two primary types: (1) Vegetative GDEs, characterized as zones with wetland or facultative wetland vegetation that have rooting depths supported by a shallow groundwater table and (2) Wetland GDEs, characterized as areas that experience hydric soil conditions indicative of near-surface groundwater tables. A GDE can be identified as either a Vegetative GDE and a Wetland GDE, or in some instances, both.

GDEs have been identified using the approach recommended by the Nature Conservancy (TNC) in their 2018 Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act guidance document[4]:

Step 1. Where are GDEs?
Step 2. Are GDEs being impacted by current groundwater conditions, and could they be impacted by future groundwater conditions?
Step 3. How can management achieve sustainability and avoid adverse impacts to GDEs?
Step 4. How can progress and success be tracked through a monitoring network?
Step 5. What actions can be taken to achieve sustainability?

This Section describes how the SGP Subbasin's GSAs evaluated GDEs through the five-steps.

Step 1. Where are GDEs?

GDEs are recognized as requiring sufficiently shallow groundwater to support groundwater dependent vegetation or hydric soil conditions. Therefore, depth to groundwater was the primary metric for identifying potential GDEs in the Subbasin. TNC's GDE Pulse interactive mapping tool was used in conjunction with long-term groundwater level data, hydrogeologic cross-sections, and historic aerial imagery to analyze the potential for GDE presence.

Figure 3-54 depicts the potential GDEs in the SGP Subbasin, and the areas in which there was sufficient evidence to determine that the groundwater conditions required by GDEs were not present, despite TNC's identification of their presence via their GDE Pulse tool. It is important to acknowledge that there may be GDEs within the Potrero, Hathaway, and Millard Canyons; however, they are within the MBMI lands. MBMI lands are not subject to SGMA, and data are not generally available in those areas for full identification as GDEs. These areas have been identified as a data gap. To be conservative, these canyons are identified as potential GDE areas.

Groundwater levels in the Banning Bench, Banning, and Cabazon Storage Units have a significant depth to groundwater, which exceed hundreds of feet deep over most of those Management Areas. In addition, there is no presence of perched aquifers, or the shallow impermeable layers that can create conditions for a perched aquifer within the Banning Bench, Banning, and Cabazon Storage Units. These groundwater levels cannot sustain Vegetative GDE or Wetland GDEs for any part of any water year. The significant depth to groundwater is consistently supported by the groundwater level data across the historic hydrologic period. Maps showing the groundwater surface elevation contours, including in the Banning Canyon are available in **Figure 3-17**, representing the start of the hydrologic base period (1998), and in **Figure 3-18**, representing current conditions (2025). In addition, **Figure 3-55** depicts the depth to groundwater contours when the groundwater level was the shallowest in the SGP Subbasin.

[4] GWR_Hub_GDE_Guidance_Doc_2-1-18.pdf (groundwaterresourcehub.org)

Figure 3-54 Potential GDEs in the SGP Subbasin

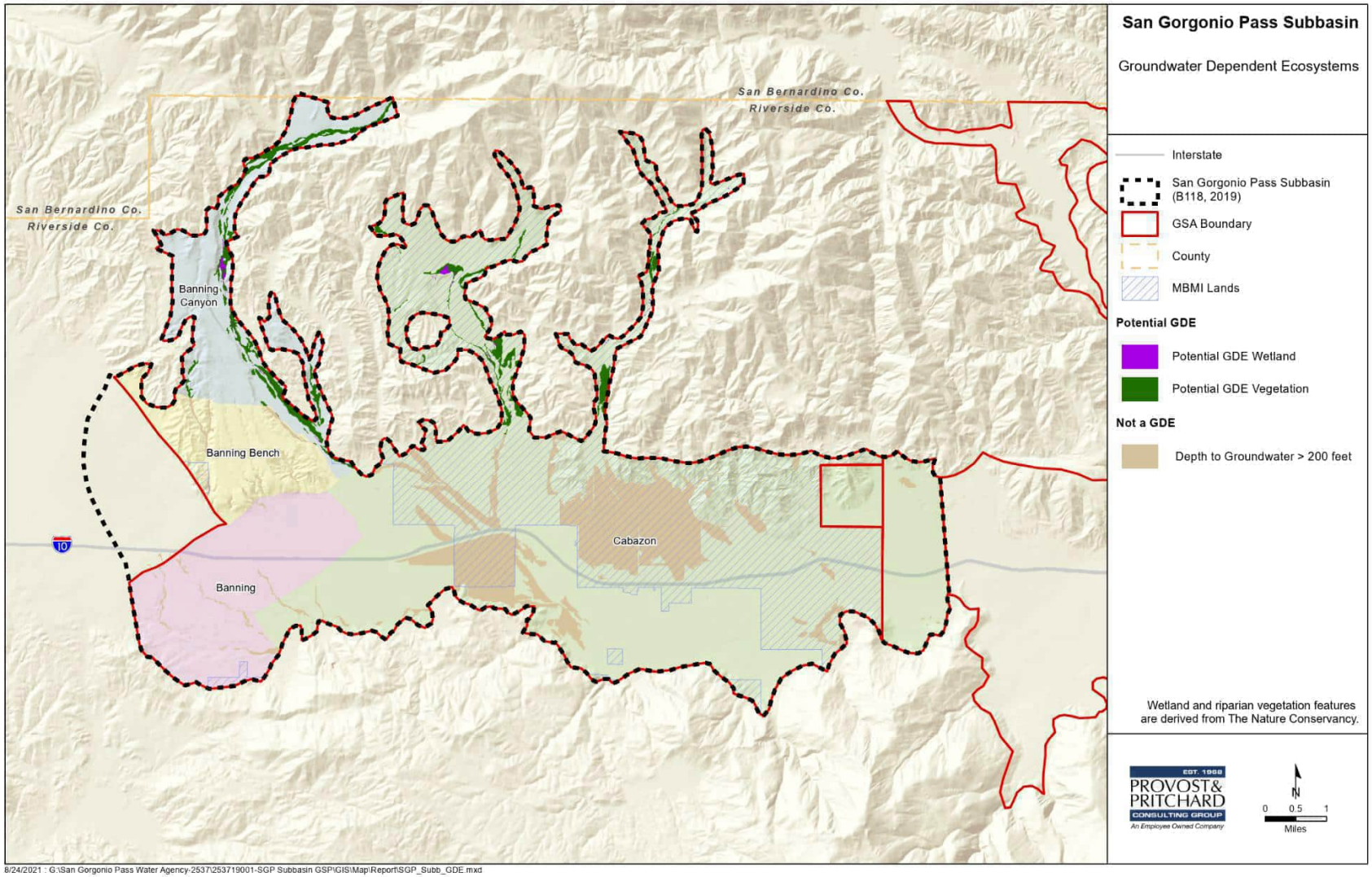
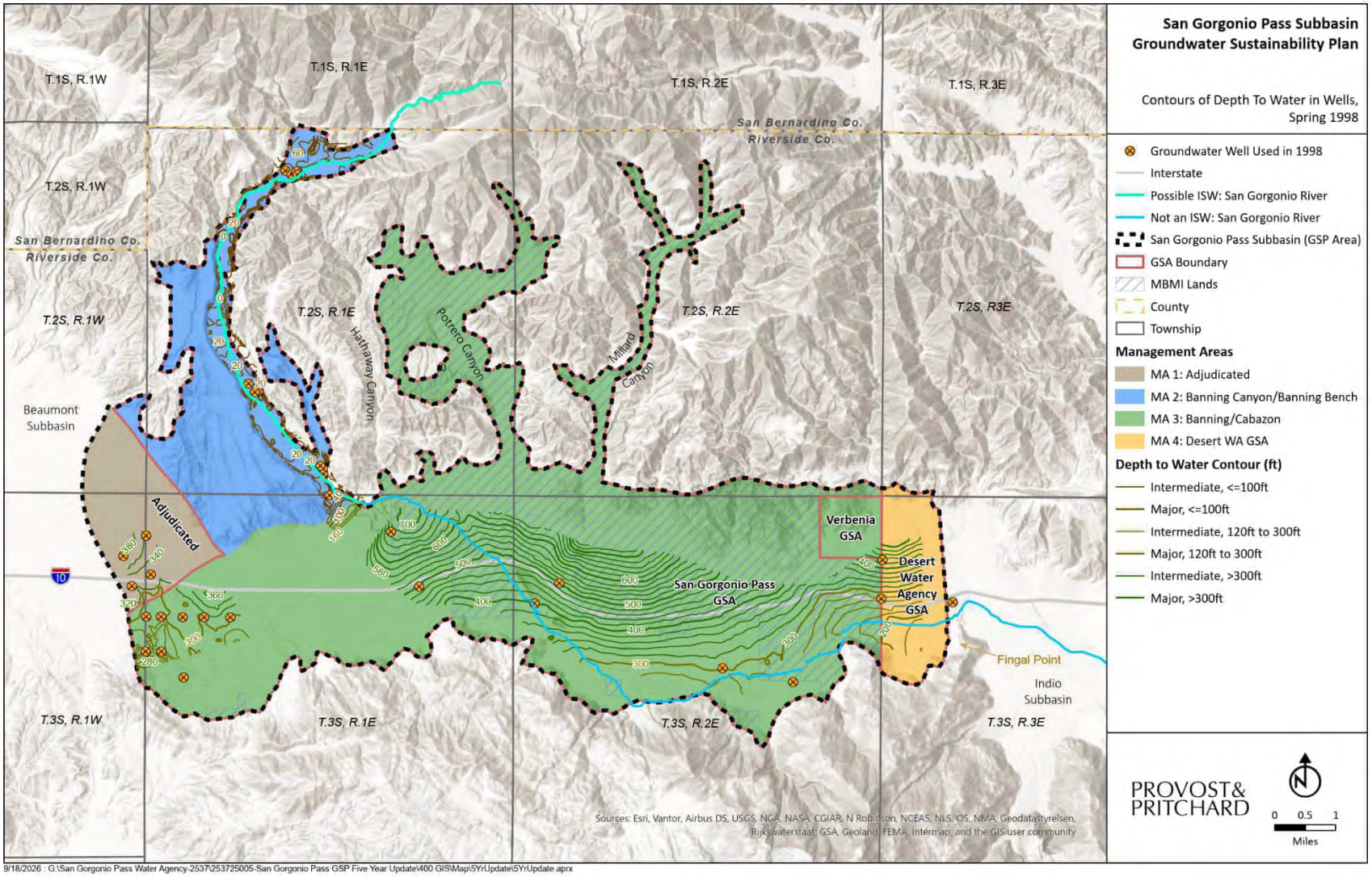


Figure 3-55 Depth to Groundwater Contours (1998)



Step 2. Are GDEs being impacted by current groundwater conditions, and could they be impacted by future groundwater conditions?

Current and projected conditions in the Banning Canyon portion of Management Area 2

The ephemeral San Gorgonio River feeds the groundwater of the Banning Canyon Storage Unit. The San Gorgonio River is supplied by upstream precipitation and snowpack. This climactically driven system experiences a significant variation in supply, as indicated in the historic precipitation and snowpack record. The SGP Subbasin's hydrologic base period lasts approximately twenty years, which include extended drought periods.

As a result, decreases and increases in GDE extent are a frequent occurrence in this ephemeral system. Capturing a full hydrologic cycle in the analysis of the change in GDE extent is critical for providing a representative assessment of significant and unreasonable Undesirable Results related to this beneficial user.

According to TNC's GDE Pulse tool's longest available period of record (1985 to 2018), the GDEs in the SGP Subbasin experienced "little or no change" (Figure 3-56). The 1985 to 2018 period includes a full hydrologic cycle and several years prior. The GDE Pulse tool did not have the option to select the exact period of the SGP Subbasin's most recent hydrologic period that was used for the GSP's groundwater model, water budget, and other trend analyses (1998 to 2019); however, the 1985 to 2018 period available via the GDE Pulse Tool covered enough years and a full variety of conditions to provide the most representative trend analysis of the analysis periods available.

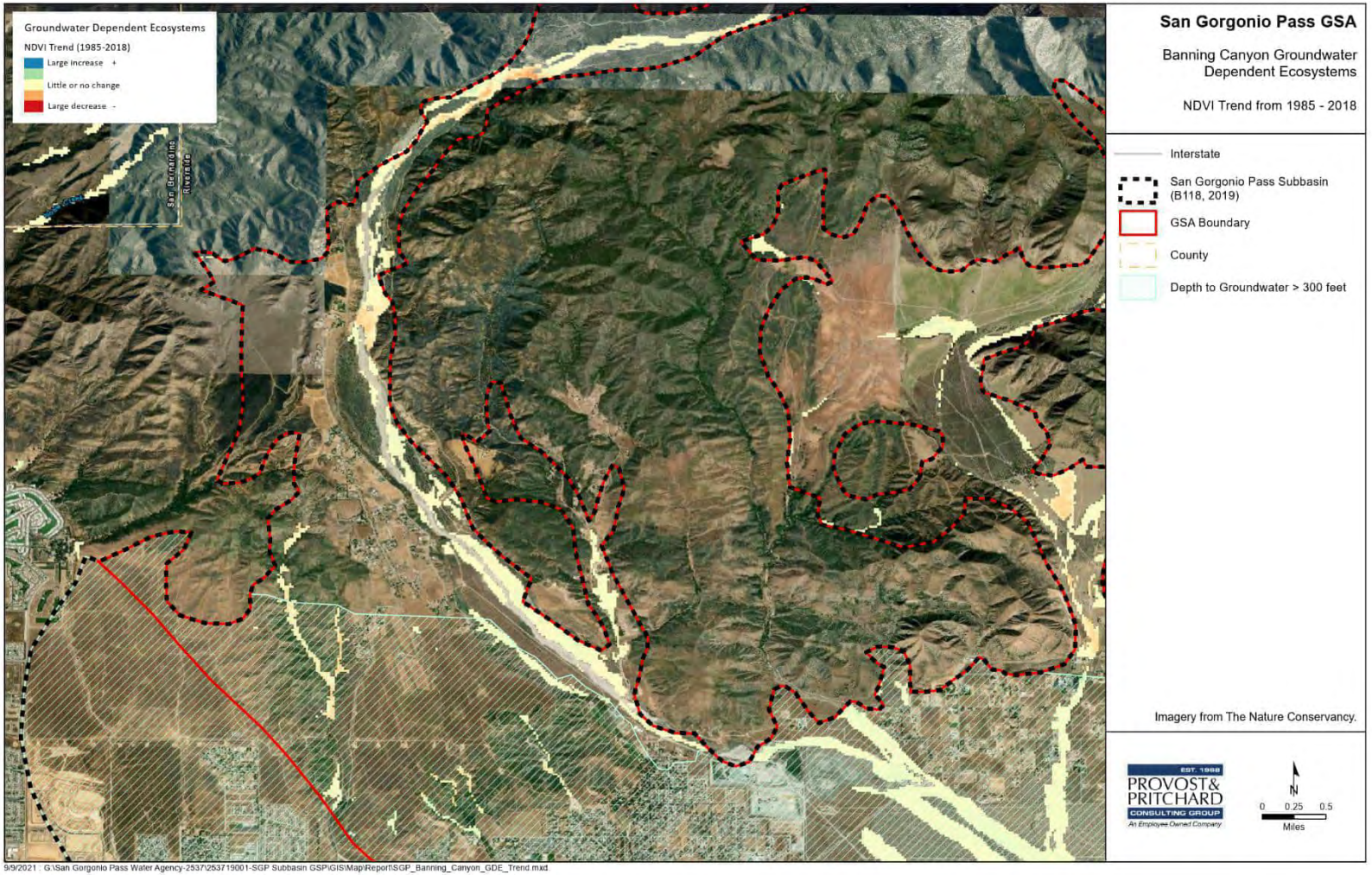
Current and projected conditions in Management Area 3

Depth to groundwater in Management Area 3 have historically and are projected to exceed hundreds of feet, which prevents them from supporting and sustaining GDEs. A tangible demonstration of these deep groundwater levels is a gravel quarry in the north-western edge of the Cabazon Storage Unit which is deeper than 100 feet below ground surface and does not have standing groundwater. Historic, current, and projected groundwater levels in the adjacent Banning geologic Management Area suggest comparable conditions.[5]

Groundwater conditions in the Banning Canyon Storage Unit have shallower depths to water historically, which supported GDE. The generally shallow groundwater levels in Banning Canyon are anticipated to behave similarly to historic circumstances, mostly due to the shallow depth to bedrock and variable recharge supplies that are characteristic of groundwater and surface water conditions in that vicinity.

[5] City of Banning, City Council Agenda. July 22, 2014. Review of Robertson's Ready Mix Conditions and Mining Tax.

Figure 3-56 GDE Trend (1985-2018)



Step 3. How can management achieve sustainability and avoid adverse impacts to GDEs?

Water resources management can support sustainability and consequently avoid adverse impacts to GDEs by maintaining the historic net trend within a hydrologic cycle. In the SGP Subbasin, a hydrologic period, a continuous period that reflects a representative and unbiased period of both averages and water level variability, is approximately twenty years. Although the GDE Pulse tool does not offer the ability to analyze the Subbasin's exact hydrologic period used for the historical water budget (1998-2019), the net trend from 1985 to 2018 was available for analysis and was identified as being "little to no change" across the Banning Canyon (Figure 3-56). When analyzing the next longest period via the GDE Pulse tool (2009 to 2018), which includes extended drought conditions, the majority of the Banning Canyon experienced "little to no change" with isolated and small areas identified as experiencing a decrease. Short term variability is expected to influence conditions within the Canyons and greater Subbasin area; however, a minimum of a full hydrologic cycle presents the most representative conditions and potential for sustained health of GDEs. The Banning Canyon's groundwater levels will be managed to the sustainable management criteria described in Chapter 4 – Sustainable Management Criteria that were assigned to maintain the groundwater conditions within the last hydrologic cycle.

Step 4. How can progress and success be tracked through a monitoring network?

Chapter 5 – Monitoring Network describes how the representative interconnected surface water monitoring network were assigned to assess impacts to beneficial uses of groundwater in the Banning Canyon, including GDEs. In addition to this monitoring, the SGP Subbasin's GSAs are interested in reviewing and supporting updates to TNC's GDE Pulse tool during the implementation period.

Step 5. What actions can be taken to achieve sustainability?

Sustainability of the groundwater conditions for beneficial users in the Banning Canyon can be supported by maintaining existing conditions across a full hydrologic cycle, as described in this Section. The Sustainable Management Criteria assigned for interconnected surface water in Chapter 4 – Sustainable Management Criteria were assigned with maintenance of historic conditions in mind.

3.3 WATER BUDGET INFORMATION

Regulation Requirements:

§354.18

(a) Each Plan shall include a water budget for the basin that provides an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin, including historical, current, and projected water budget conditions, and the change in the volume of water stored. Water budget information shall be reported in tabular and graphical form.

As specified in SGMA, a water budget has been prepared for the SGP Subbasin. The water budget quantifies the components of water supply and use along with change in groundwater storage. The water budget can be used as tools in numerous aspects of groundwater sustainability management including:

- Determining sustainable yield
- Identifying overdraft
- Identifying beneficial groundwater uses
- Identifying data uncertainties and monitoring needs
- Quantifying the effects of proposed projects and management actions
- Supporting development of sustainable management criteria

Historical, current, and projected water budgets have been developed from data that have been incorporated into or extracted from a groundwater model for the SGP Subbasin. The water budgets also rely on estimates of surface water flow and recharge that are developed by the San Gorgonio Pass Watershed Model (SGPWM) using the USGS INFIL watershed model. The SGP groundwater model was developed specifically for this GSP and is described in detail in **Appendix D,** SGPGM Technical Memorandum.

The SGP groundwater model is configured as two separate models **Figure 3-57** and **Figure 3-58.**

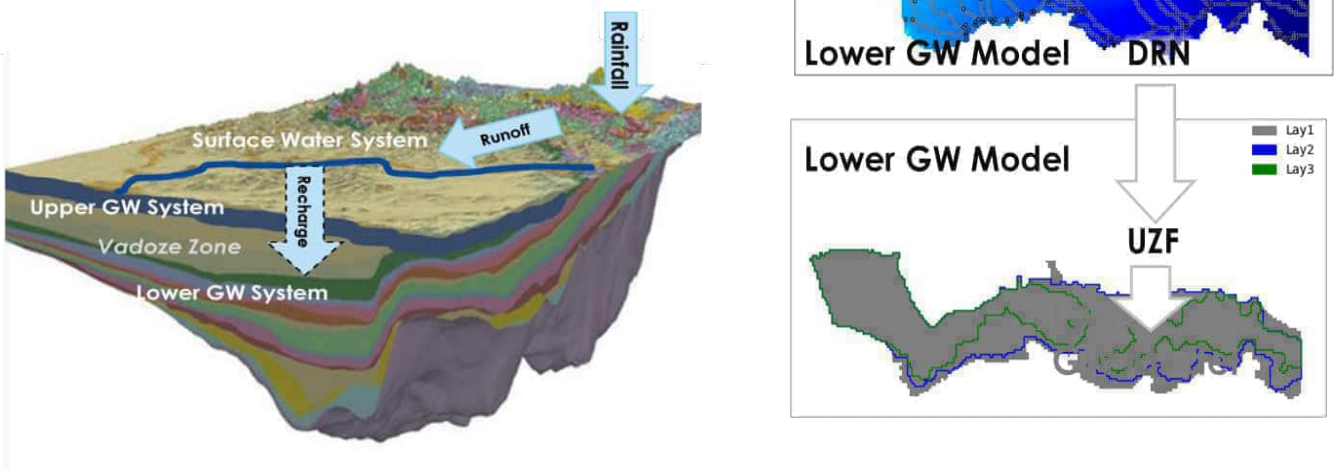


Figure 3-57 San Gorgonio Pass Groundwater Basin Groundwater Model Framework

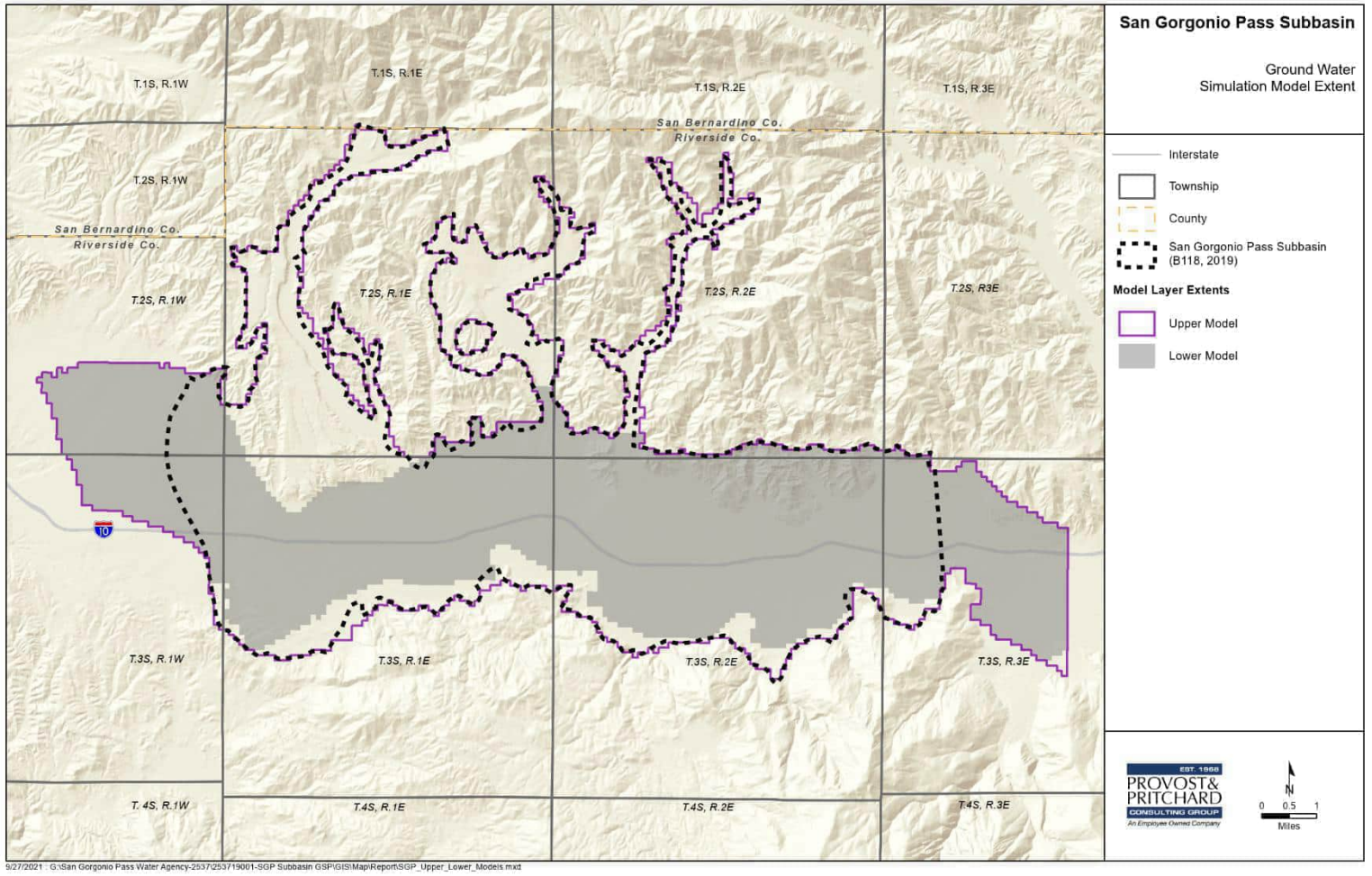
The upper model incorporates nearly the entire surface area of the SGP Subbasin, including the areas of the Banning Canyon, Banning Bench, Banning and Cabazon Storage Units, in addition to the upstream canyon areas of Potrero, Hathaway, and Millard Canyons. The upper model is meant to simulate

streamflows, shallow groundwater flow, and infiltration in the shallow subsurface. The thickness of the upper model varies over the simulation area. In the upstream canyon areas, the upper model is generally less than 200 feet thick and has limited storage capacity. Because of the dynamic nature of runoff and groundwater flows processes in the canyon areas of the upper model, it is usually not possible to accurately predict groundwater levels there. In MAs 3 and 4 (the Banning and Cabazon Storage Units), the upper model can be as deep as 500 feet and represents subsurface vadose zone conditions. There are no groundwater level measurements in MAs 3 and 4 that represent conditions in the shallower subsurface that is simulated by the upper model. Due to these limitations, the upper model cannot be calibrated to groundwater levels and serves only to approximate streamflow and infiltration processes in the shallower areas of the subsurface. Water draining through the upper model represents infiltration to the vadose zone. A portion of this infiltration reaches the groundwater table in the lower model as deep groundwater recharge. Storage and lag in the vadose zone represented by the upper model leads to attenuation of the recharge to the lower model.

The lower model, which varies from 400 to 4,300 feet deep, represents the primary deeper aquifers of the SGP Subbasin located in MAs 3 and 4. The water budget discussion includes both the upper and the lower models; however, the emphasis is on the lower model as it contains the preponderance of groundwater storage in the SGP Subbasin.
The water budgets quantify the following information in conformance with SGMA Regulation §354.18 (b):

(1) Total surface water entering or leaving the subbasin
(2) Inflows to the groundwater system by water source type, including subsurface groundwater inflow and infiltration of precipitation, applied water, and surface water systems, such as lakes, streams, rivers, canals, springs, and conveyance systems
(3) Outflows from the groundwater system by water use sector, including evapotranspiration, groundwater extraction, groundwater discharge to surface water sources, and subsurface groundwater outflow
(4) The change in the annual volume of groundwater in storage between seasonal high conditions
(5) Identification of overdraft over a period of years during which water year and water supply conditions approximate average conditions
(6) The water year type associated with the annual supply, demand, and change in groundwater stored
(7) An estimate of sustainable yield for the basin

Figure 3-58 San Gorgonio Pass Groundwater Basin Groundwater Model



3.3.1 DESCRIPTION OF WATER BUDGET

Regulation Requirements:

§354.18

(e) Each Plan shall rely on the best available information and best available science to quantify the water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow. If a numerical groundwater and surface water model is not used to quantify and evaluate the projected water budget conditions and the potential impacts to beneficial uses and users of groundwater, the Plan shall identify and describe an equally effective method, tool, or analytical model to evaluate projected water budget conditions.

(f) The Department shall provide the California Central Valley Groundwater-Surface Water Simulation Model (C2VSIM) and the Integrated Water Flow Model (IWFM) for use by Agencies in developing the water budget. Each Agency may choose to use a different groundwater and surface water model, pursuant to Section 352.4.

Historical water budgets were developed for the SGP Subbasin using information that was input to or derived from a numerical groundwater model. As described above, the numerical model includes an upper model and a lower model. Both the upper and lower models use the USGS MODFLOW software. Revisions to the model input data were identified for future climate change periods for predicted 2030 and 2070 conditions, which are described below. A schematic of the groundwater budget is shown below on Figure 3-59.

The historical water budget for the SGP Subbasin was developed for a base period of 1998 through 2025. This period was selected to conform to the SGMA requirement for using the most recent ten years of data and also provides an extended period for calibration of the groundwater model to demonstrate its ability to simulate the aquifer's response to different water year types. The 1998-2025 historical period has precipitation conditions that are about 83% of the long-term (1910-2025) estimated average precipitation. The lack of average precipitation conditions makes determination of overdraft (described in Section 3.3.9) more challenging, as overdraft is most directly determined through use of a recent period with average precipitation conditions. Other periods, such as the most recent ten-year period (2016-2025) were also considered for the historical base period; however, they also had precipitation conditions that are substantially lower than normal and do not provide the longer analysis period needed to evaluate aquifer responses. Ultimately, the 1998-2025 base period was retained for the historical analysis as the best combination of recent data with a longer period for a more robust groundwater model calibration.

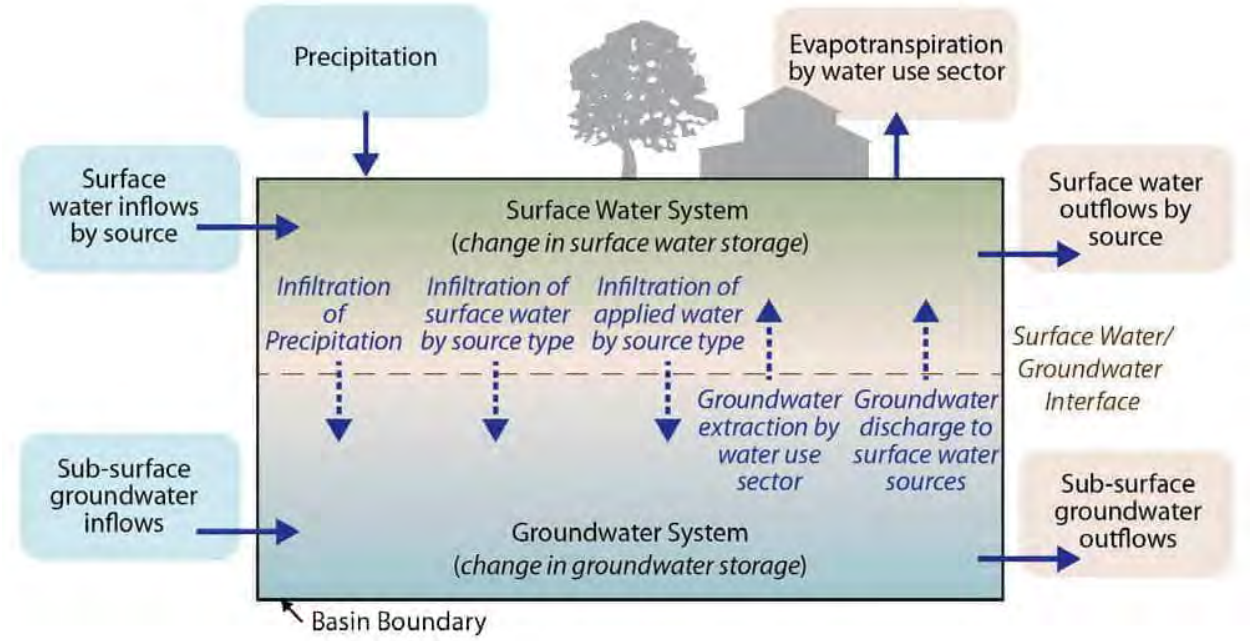


Figure 3-59 Groundwater Basin Water Budget Schematic

3.3.2 DESCRIPTION OF INFLOWS TO GROUNDWATER BASIN

Regulation Requirements:

§354.18(b) The water budget shall quantify the following, either through direct measurements or estimates based on data:
(1) Total surface water entering and leaving a basin by water source type.

Quantities of water entering the SGP Subbasin at the surface, either as surface flows or precipitation, are described and quantified in the following sections using the procedures described in each.

3.3.2.1 SURFACE WATER INFLOWS

The primary source of surface water to the SGP is the San Gorgonio River which has a drainage area of 44 square miles at the USGS San Gorgonio River at Banning gage location. The San Gorgonio River has been measured historically by the USGS only for brief periods at two locations within the GSP area, upstream in the Banning Canyon (San Gorgonio River near Banning, USGS Site #10256200) for the period October 1975 to September 1977 and east of Banning along Interstate 10 (San Gorgonio River at Banning, USGS Site #10256300) for the period February 1981 to September 1981. The San Gorgonio River has only infrequent flows below the canyon mouth, near Banning. When flows do occur, they are highly variable. Flows have not been measured in other watersheds in the SGP subarea.

In the absence of surface water measurements, flows have been estimated through use of the SGPWM (Hevesi and Christensen, 2015). SGPWM uses the USGS INFILtration version 3.0 (INFILv3) model with spatially distributed daily precipitation and temperature based on recorded or estimated values. SGPWM was developed to cover three primary watersheds – San Timoteo Creek, Potrero Creek, and San Gorgonio River – which are shown in Figure 3-60. SGPWM uses a 150-meter gridded discretization of the watershed to represent the spatial variability in climate and watershed characteristics in the SGP Subbasin. As developed by the USGS, SGPWM was used to simulate recharge and runoff for water years 1913-2012, providing inflows to the SGP groundwater model. SGPWM was calibrated by comparing predicted runoff with measured runoff at nearby watersheds. For purposes of this GSP, the SGPWM analysis period was extended to include more recent years through 2025.

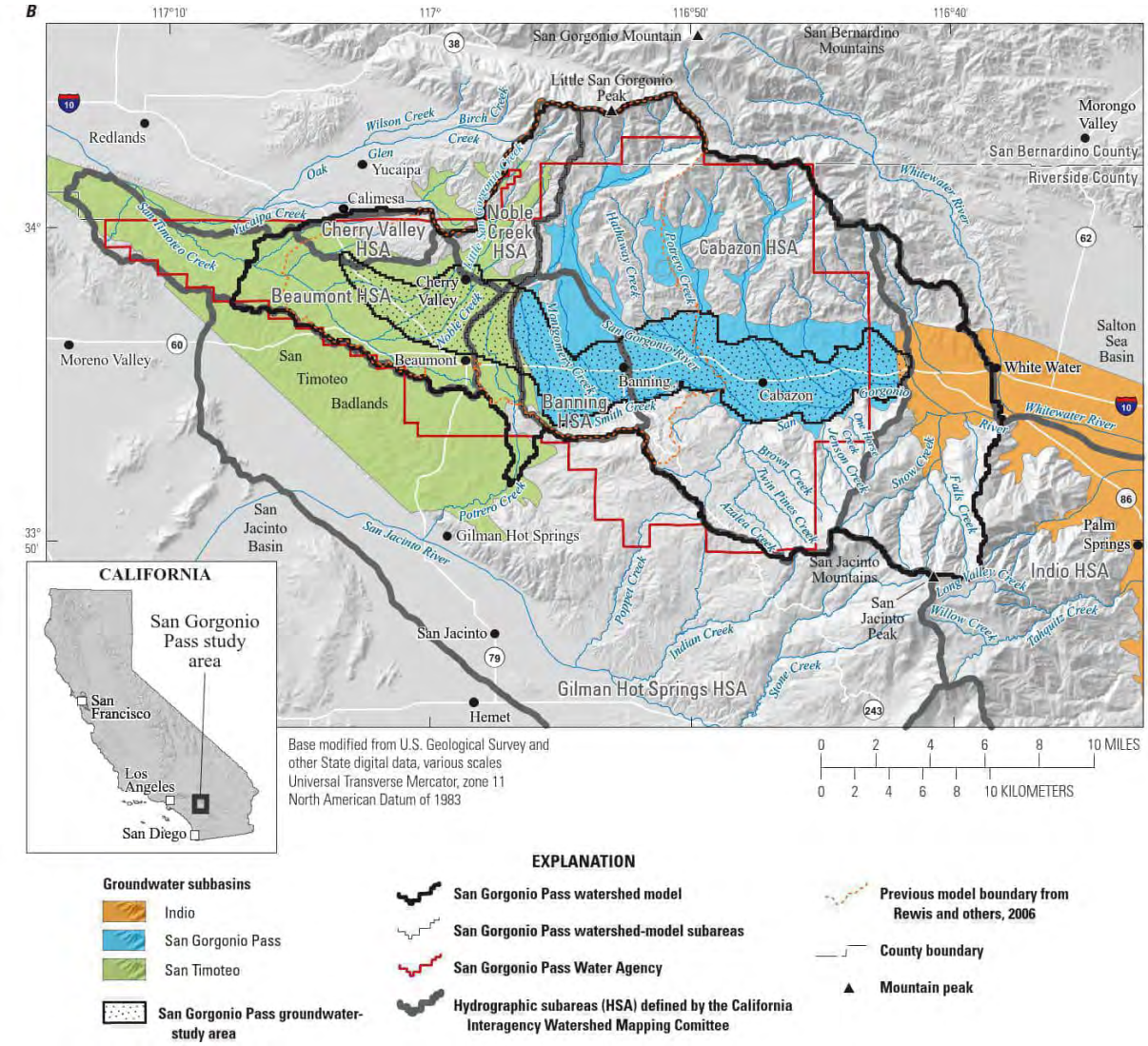


Figure 3-60 San Gorgonio Pass Watershed Model Study Area (Hevesi and Christensen, 2015)

The SGPWM watersheds contributing flows to the SGP Groundwater Model are located in the Cabazon and Banning HSAs. For the 1998-2025 historical period, these watersheds were identified as having surface runoff flows of 30,600 acre-feet. These flows were distributed as indicated in **Table 3-3**, and the runoff is incorporated into the upper model as inflows to streams at the locations shown in **Figure 3-61**. Streamflow runoff provides a source of supply for groundwater pumping in the upper model SGP groundwater model in the Banning, Potrero, and Millard Canyons. As described previously, the upper model also represents the vadose zone in MAs 1, 3 and 4 with leakage to the lower model that represents the primary water supply aquifer for the SGP Subbasin.

Table 3-3 SGPWM Estimated Runoff Tributary to SGP Groundwater Model

Sub-Watershed	Watershed Area (Acres)	1998-2025 Average Runoff (Acre-feet/Year)
Banning Bench	767	0
Brown Creek	11,503	3,500
Cabazon	33,304	6,100
Hathaway Creek	4,592	300
Indio	17,269	6,900
Lower San Gorgonio River	1,879	500
Millard Creek	6,283	2,700
Potrero Creek	3,447	2,100
San Timoteo	10,642	1,300
Smith Creek	4,453	200
Stubbe Canyon	3,970	500
Upper San Gorgonio River	6,277	6,500
Total	104,386	30,600

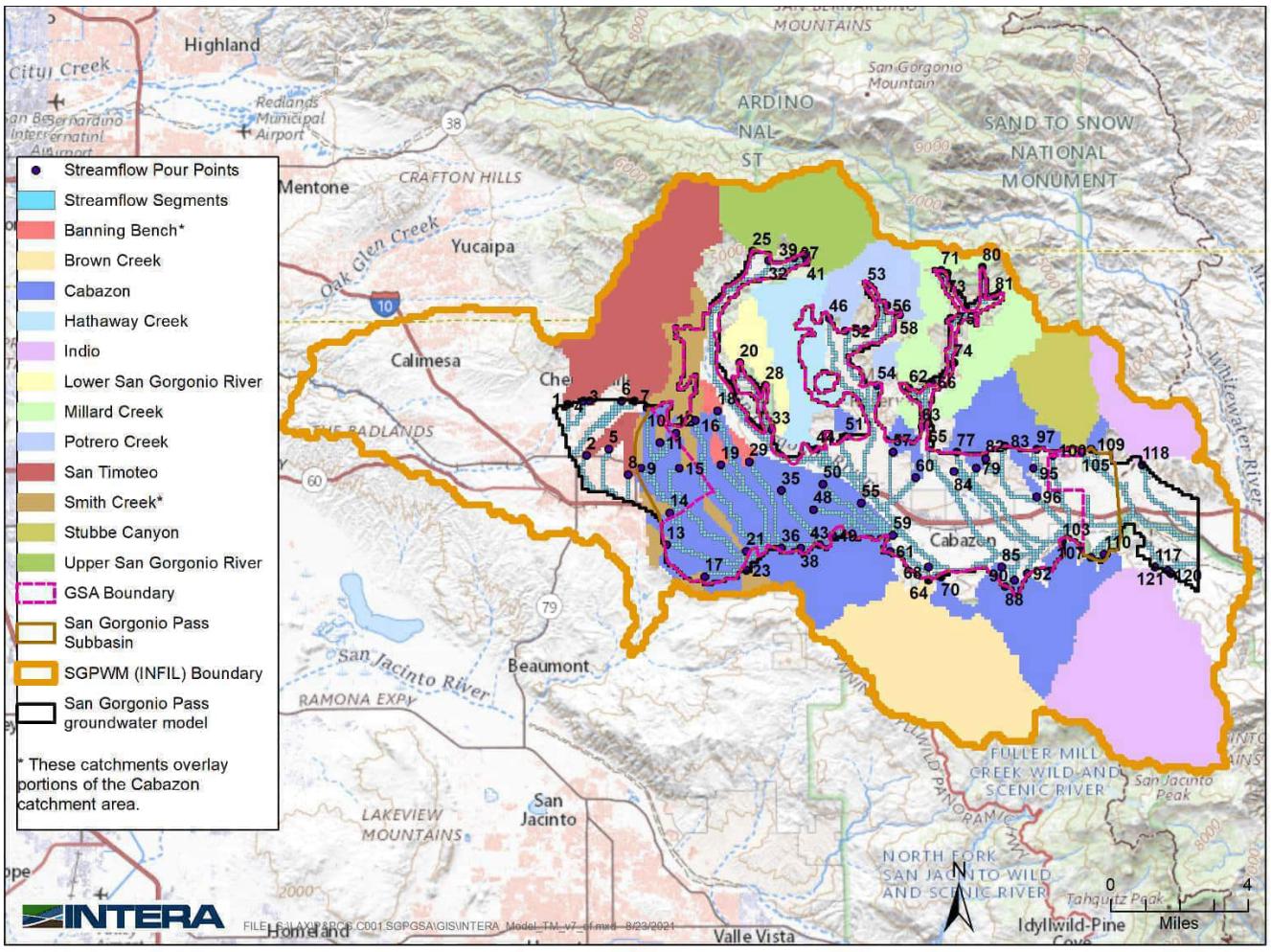


Figure 3-61 San Gorgonio Pass Subbasin Upper Model Streamflow Stream Inflow Locations

3.3.2.2 PRECIPITATION

Precipitation data for watersheds in the SGPWM was gathered from a network of 134 climate stations in southern California centered on the SGPWM that were averaged to estimate average monthly precipitation for grid cells and climate stations. The average precipitation from SGPWM summarized for watersheds[6] that are tributary to the SGP Groundwater model is shown in **Figure 3-62**. The average annual precipitation

[6] The watersheds also include the valley floor area for Cabazon and Banning Storage Units

for the 1926-2025 period is 19.1 inches. The average annual precipitation for the 1998-2025 historical period is 16.1 inches, which is 84-percent of the long-term average. The cumulative departure of annual precipitation from the long-term average is also shown in **Figure 3-62**. The cumulative departure shows that the 1998-2022 historical period has the driest extended dry period in the historical record.

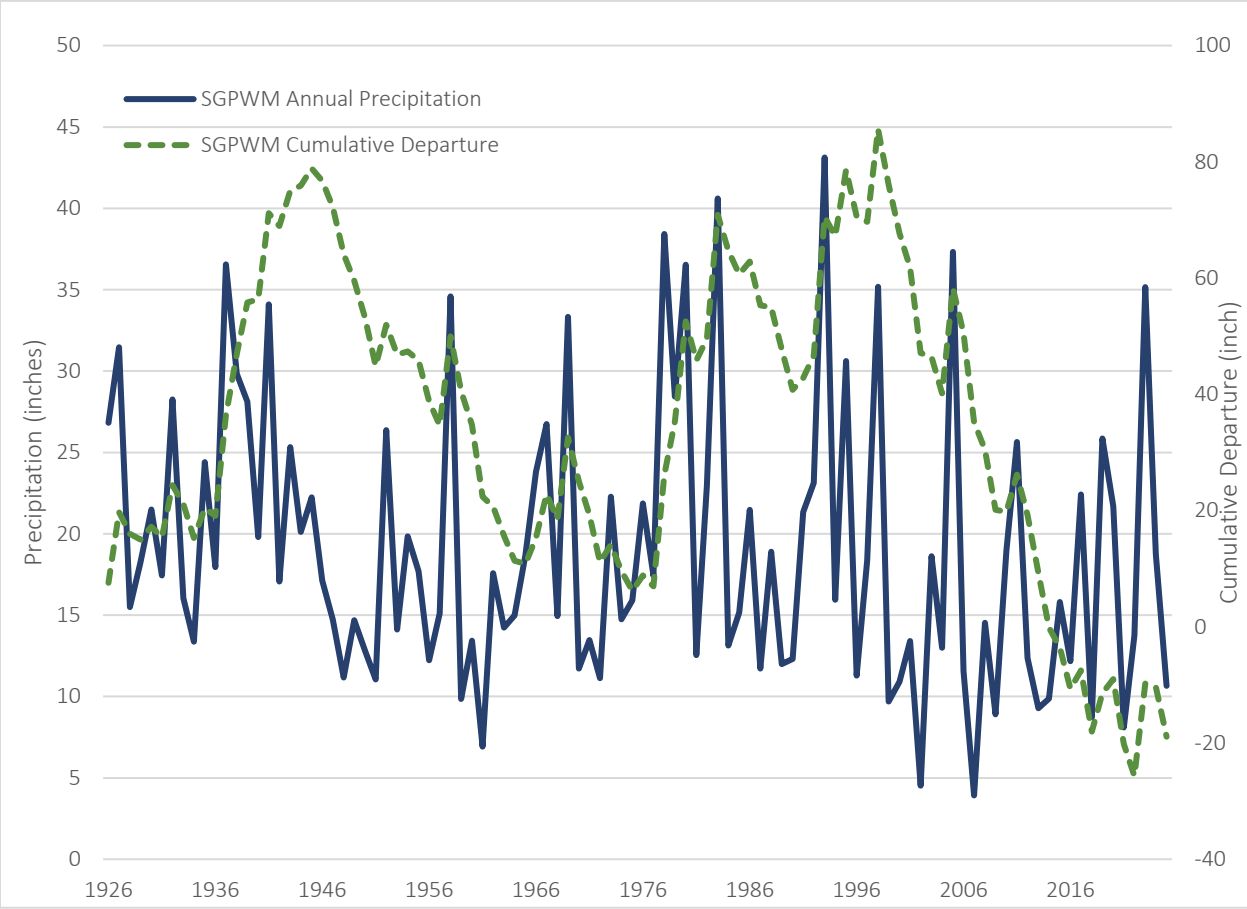


Figure 3-62 San Gorgonio Pass Watershed Model Study Area Precipitation

3.3.2.3 SURFACE WATER DIVERSIONS

The Whitewater Flume, originating outside of the San Gorgonio River watershed on the south and east forks of the Whitewater River, has historically diverted available flows about fourteen miles into the SGP watershed. The diversion is operated under a 1906 water right of 13.26 cubic feet per second under the 1938 Whitewater adjudication decree. The flume, operated by SCE, originally provided water to the BHMWC and the City of Banning. SCE has been in the process of transferring ownership to either BHMWC or the City of Banning. Diversions through the flume have not been measured in recent years, but historically were reported to provide 1,500 acre-feet of annual water supply (RMC, 2018). Water from the flume was historically treated by BHMWC for use in its service area and recharged in Banning Canyon for subsequent extraction by the City of Banning. Over time, portions of the flume have been damaged, and its capacity has deteriorated (Geoscience, 2011). Most recently, the Apple Fire in 2020 destroyed many segments of the flume and it is currently in the process of being repaired for use. For modeling and water balance purposes, continuing recharge of 1,000 acre-feet per year is assumed to occur in the upper Banning Canyon that provides for a portion of City of Banning pumping.

In addition to the Whitewater Flume diversion, the 1938 Whitewater adjudication decree provides the City of Banning (as successor to the Banning Water Company) with rights to divert San Gorgonio River natural flows for recharge and to subsequently pump that recharge for use in its service area. The 1938 Whitewater adjudication decree also provides water rights for to the MBMI for Hathaway Canyon and Potrero Canyon. MBMI also purchased the water rights for Millard Canyon that the Whitewater adjudication decree originally assigned to the Southern Pacific Railroad Company and Cabazon Water Company. MBMI

diversions based on these water rights are not reported for Hathaway and Potrero Canyons, and they are included in the groundwater model as groundwater pumping as described in Section 3.3.4.1.

3.3.2.4 GROUNDWATER INFLOWS

Groundwater can flow into the SGP Subbasin at the west end from the adjudicated Beaumont Basin. The source of this groundwater is a combination of local recharge in the Beaumont Basin and intentional recharge of imported water at the Noble Creek recharge basins. The SGP Groundwater model includes a portion of the adjudicated Beaumont Basin to the west, including the Noble Creek recharge basins. For the historical period, estimates of groundwater flows at the SGP Groundwater Model boundary were obtained from the Beaumont Basin watermaster and included in the groundwater model as time-varying flow amounts. Based on projections of the SGP Groundwater model, the average inflow from the Beaumont Basin into the SGP Subbasin is estimated to be 1,700 acre-feet during the 1998-2025 historical period.

3.3.3 DESCRIPTION OF FLOWS TO GROUNDWATER SYSTEM

Regulation Requirements:

> §354.18(b) The water budget shall quantify the following, either through direct measurements or estimates based on data:
> *(2) Inflow to the groundwater system by water source type, including subsurface groundwater inflow and infiltration of precipitation, applied water, and surface water systems, such as lakes, streams, rivers, canals, springs and conveyance systems.*

Quantities of water entering the groundwater body in the SGP Subbasin as forms of recharge are described and quantified in this section using the procedures described below.

3.3.3.1 PERCOLATION OF PRECIPITATION

Percolation of precipitation to groundwater was estimated by the SGPWM. SGPWM estimated the recharge based on distributed precipitation, evapotranspiration rates, and soil properties during the 1998-2025 historical period. SGPWM estimates the amount of precipitation that runs off or percolates into the soil column on a daily basis. Water in the soil column is used to meet native vegetation or developed evapotranspiration demands with the remainder considered to be percolation to the groundwater.

Because the depth to water in MAs 3 and 4 is several hundred feet deep in most of those management areas, there is a delay in recharge and recharge to the aquifers is attenuated. Consistent with assumptions used in the Beaumont and Banning groundwater model (Rewis, etal, 2005), the assumption is made that precipitation recharge to the lower model occurs at a constant rate. Based on the SGPWM, an estimated 7,300 acre-feet per year of recharge from precipitation is applied to the SGP upper groundwater model. As with other sources of surface water, this percolation is assumed to be subject to subsequent vadose zone consumptive losses that are discussed in Section 3.3.3.3.

3.3.3.2 DEEP PERCOLATION OF MUNICIPAL AND INDUSTRIAL WATER

Deep percolation of municipal and industrial (M&I) water includes two components: 1) Indoor water usage sent to treatment plants and septic systems and 2) Outdoor landscape water that percolates past the root zone.

Where sewer flows are measured or directly estimated at wastewater treatment plants, the volume percolated is equal to the plant deliveries minus percolation pond evaporation and bio-solids removal. The City of Banning measures its wastewater plant discharges into MA 3, which averaged 2,500 acre-feet per year for the historical period. MBMI wastewater plant, which serves the Morongo Casino, had estimated discharges into MA 3 for 2016 that are documented in San Gorgonio Integrated Regional Water Management Plan Appendix A – Morongo Reservation Water Demand Estimate of the San Gorgonio Water Supply Reliability Study (Woodard and Curran, 2018). For 2016, the MBMI discharges were estimated as 400 acre-feet, which was assumed to be an average that was applied to the entire 1998-2025 historical period.

The remaining municipal and rural developments in the SGP Subbasin (including BHMWC, CWD, and MSWD) use septic systems which discharge directly to the vadose zone. In areas with septic systems, about

30 % of the total groundwater pumping is assumed to be delivered indoors and supply return flows to groundwater. The estimate of 30% indoor use for septic systems was developed based on wastewater treatment plant discharges as a percent of delivered water for the City of Banning.

It is assumed that the primary outdoor water use is for landscape irrigation. All water applied in excess of landscape irrigation demands is assumed to percolate past the root zone and eventually reach the water table. USGS Scientific Investigations Report (SIR) 2006-5026 (Rewis et al, 2006) assumes return flows of 40% for outdoor landscape use, which implies consumptive use of 60% of irrigation applications. Based on the assumption that 30% of municipal and rural residential use is for indoor application, the remaining 70% of water use would be distributed 42% (0.6*70%) to outdoor Consumptive Use and 28% (0.4*70%) to Return Flows.

Portions of the City of Banning have remained on septic systems that do not discharge to the wastewater treatment plant and would discharge to the vadose zone. Return flows in the City of Banning from municipal use, including septic system flows, were computed by subtracting Wastewater Treatment Plant discharges and reported distribution seepage losses averaging about 900 acre-feet per year from the City's total groundwater pumping. The remainder was assumed to be applied to outdoor uses, of which 40% would constitute return flows to groundwater. About 54% of the City of Banning service area is located within the SGP Subbasin and provides a source of water supply to the SGP Subbasin.

Table 3-4 shows the average values for wastewater treatment plant discharges and municipal return flows for the various areas in the SGP Subbasin, which were an input to the upper groundwater model. As with other components in the upper groundwater model that can result in leakage to the lower model, these were potentially subject to vadose zone losses of approximately 60% as described below.

Table 3-4 San Gorgonio Pass Subbasin Wastewater Treatment Plant Discharges and Estimated Municipal Return Flows (Acre-Feet)

	City of Banning										
	Total			SGP Subbasin	MBMI		Robertson's Ready Mix	Cabazon WD	Mission Springs WD	Banning Heights MWC	SGP Subbasin Total
Year	Delivery Losses	Wastewater Discharge	M&I Return	Subtotal	Wastewater Discharge	M&I Return	Return Flow	M&I Return	M&I Return	M&I Return	Return Flows
1998	900	2,498	1,945	4,562	296	132	60	422	87	74	5,633
1999	900	2,520	1,886	4,445	313	132	65	550	87	140	5,732
2000	900	2,569	2,080	4,771	330	132	68	277	87	70	5,735
2001	900	2,532	2,016	4,970	346	132	0	604	87	89	6,228
2002	900	2,538	2,088	4,926	363	132	0	832	96	160	6,509
2003	900	2,547	2,067	5,016	380	132	0	512	98	120	6,258
2004	900	2,602	2,232	5,157	392	132	137	633	91	19	6,561
2005	900	2,974	1,546	5,089	392	132	90	531	99	42	6,375
2006	900	2,955	1,833	5,361	392	132	109	478	110	12	6,594
2007	900	2,737	2,028	5,199	392	132	288	535	119	13	6,678
2008	900	2,639	1,734	5,172	392	132	324	508	95	18	6,641
2009	900	2,461	1,737	4,727	392	132	142	525	31	2	5,951
2010	900	2,477	1,665	4,058	392	132	151	412	38	10	5,193
2011	900	2,421	1,635	4,019	392	132	192	295	37	8	5,075
2012	900	2,369	1,707	4,005	392	132	190	156	37	26	4,938
2013	900	2,357	1,768	4,030	392	132	175	495	38	40	5,302
2014	900	2,246	1,768	3,886	392	132	244	364	39	45	5,102
2015	900	2,207	1,263	3,481	392	132	273	299	35	17	4,629
2016	900	2,179	1,233	3,525	392	132	276	288	37	12	4,662
2017	900	2,216	1,336	3,668	392	132	564	295	37	5	5,093
2018	900	2,259	1,554	3,780	392	132	589	289	42	32	5,256
2019	900	2,234	1,519	3,608	392	132	692	274	37	23	5,158
2020	900	2,185	1,721	3,608	392	132	643	284	43	13	5,115
2021	900	2,222	1,917	3,608	392	132	668	313	37	18	5,168
2022	900	2,314	1,495	3,608	392	132	669	308	34	12	5,155
2023	900	2,323	1,066	3,608	392	132	618	274	42	53	5,119
2024	900	2,305	1,591	3,608	392	132	591	272	38	66	5,099
2025	900	2,237	1,857	3,608	392	132	592	259	32	92	5,107
1998-2025 Average	900	2,433	1,725	4,254	380	132	300	403	60	44	5,574

3.3.3.3 REJECTED INFILTRATION AND LOSSES IN THE VADOSE ZONE

In the majority of the SGP Subbasin (in areas where the lower groundwater model exists), depths to groundwater are several hundred feet. As such, the deep groundwater table is separated from the shallow subsurface by a thick vadose zone. The shallow subsurface is represented by the upper model, which simulates streamflows, shallow groundwater flow, and drainage into the underlying vadose zone.

Infiltration into the vadose zone is limited by the vertical hydraulic conductivity of the underlying (unsaturated) soil and rock matrix. Infiltration at rates higher than the (saturated) vertical conductivities of the vadose zone leads to “rejection of infiltration” (Niswonger et al., 2006; Hunt et al., 2008). There can also be undifferentiated losses within the vadose zone from evaporation (driven by high temperatures in this semi-arid environment) and transpiration from deep root water uptake. Hence, portions of the infiltrated water can be lost to these consumptive use processes. Similar issues with streamflow recharge reductions were identified in the USGS development of a groundwater model for the adjacent Beaumont and Banning Storage Units (Rewis et al., 2006). In the USGS Beaumont and Banning Storage Unit models, the recharge from stream channels was estimated to be an average of 42% lower than the estimated raw streamflow quantities. The San Gorgonio Model accounts for these losses by a) scaling recharge from the upper model to the lower model to account for consumptive losses in the vadose zone and b) routing the infiltration from the upper model through an Unsaturated Zone Flow (UZF) package in the lower model which limits recharge based on the vertical conductivity of the aquifer while lagging and attenuating the recharge signal. Due to these rejected recharge losses and undifferentiated vadose zone losses, the drainage from the upper model to the lower model SGP groundwater model reduced by an average of 36%, which varied from year to year. During the 1998-2025 historical period, the SGPWM estimated that the combined vadose zone and rejected recharge losses averaged 10,900 acre-feet.

3.3.4 DESCRIPTION OF OUTFLOWS FROM GROUNDWATER SYSTEM

Regulation Requirements:

> §354.18(b) The water budget shall quantify the following, either through direct measurements or estimates based on data:
> *(3) Outflows from the groundwater system by water use sector, including evapotranspiration, groundwater extraction, groundwater discharge to surface water sources, and subsurface groundwater outflow.*

Outflows from the groundwater body are underflow to the Indio Subbasin and groundwater pumping for M&I and other purposes. Evapotranspiration losses are expected to be predominantly in the shallow subsurface and the vadose zone (accounted for in the SGPWM and the UZF package); hence, evapotranspiration losses from the deep groundwater system are not expected to be significant. Outflows from the groundwater basin itself are also summarized based on results from the groundwater model.

3.3.4.1 GROUNDWATER PUMPING

Although historically there was some groundwater pumping for agricultural purposes, there were no identified commercial agricultural users that were active in the SGP Subbasin during the 1998-2025 historical period. M&I groundwater pumping by urban water suppliers was collected directly from the local urban agencies for the historical period. The City of Banning, Cabazon Water District and Mission Springs Water District have monthly records of pumped groundwater by well for all or part of the historical period, which were used as available and supplemented with tabulated annual pumping data were monthly data was missing. Miscellaneous other municipal water use and known private well use, as tabulated by San Gorgonio Pass Water Agency, were also included.

The MBMI also pumps groundwater for agricultural, commercial, municipal, and residential purposes on their reservation and at their casino from wells in Potrero Canyon and in the Cabazon Storage Unit. They also have groundwater wells in the Cabazon Storage Unit that can be used for municipal supply for a bottling plant in Cabazon within MBMI reservation boundaries. No data were provided by the MBMI on their historical or projected water use. Estimates for MBMI pumping were taken from the San Gorgonio Integrated Regional Water Management Plan Appendix A – Morongo Reservation Water Demand Estimate (Woodard and Curran, 2018). Based on the 2018 Appendix A, MBMI groundwater use in 2016 was approximately 1,007 acre-feet for water use in residential areas and at the Morongo Casino. In addition, there was an estimated 696 acre-feet of use at the Arrowhead Water Bottling Plant. Pumping for the MBMI was assumed to occur in Potrero Canyon and in the Cabazon Storage Unit. Pumping in Potrero Canyon was assumed as approximately 650 acre-feet per year based on relative size and watershed area to the Millard Canyon, which has had reported diversions averaging approximately 700 acre-feet per year. The remaining 357 acre-feet per year of MBMI pumping (1,007 AF less 650 AF Potrero Canyon supply) is assumed to occur in the Cabazon Storage Unit. As the Morongo Casino and Arrowhead Bottling Plants both went into operation during the 1998-2025 historical period, a rough approximation of historical groundwater pumping prior to 2016 was developed using known information on the installation of the casino and hotel, a bottling plant and estimated residential use. Pumping by MBMI from various sources is assumed to be based on water rights from the Whitewater River Decree, SWRCB water rights and the MBMI share of percolating groundwater in the SGP Subbasin.

The estimated groundwater pumping for the 1998-2025 historical period is shown in Table 3-5.

Table 3-5 San Gorgonio Pass Subbasin Measured and Estimated Historical Period Groundwater Pumping (Acre-Feet)[7]

	Potrero Canyon	Millard Canyon	Management Area 2 (Banning Canyon Storage Unit)			Management Area 3 (Banning and Cabazon Storage Units)					
Year	MBMI	MBMI	Banning Heights MWC	City of Banning	Other	MBMI	Cabazon WD	Mission Springs WD [1]	Robertson's Ready Mix	City of Banning	Total
1998	650	700	128	8,291	65	173	728	*65*	109	280	11,189
1999	650	700	242	6,898	65	205	949	*65*	114	424	10,312
2000	650	700	120	5,533	65	237	477	*65*	117	586	8,550
2001	650	700	153	5,814	75	269	1,042	*65*	4	849	9,621
2002	650	700	275	3,671	75	301	1,434	*65*	4	1,112	8,287
2003	650	700	207	3,246	82	333	882	*65*	4	2,389	8,558
2004	650	700	32	4,535	82	357	1,092	*65*	186	2,114	9,813
2005	650	700	73	5,945	76	357	915	*65*	139	1,494	10,414
2006	650	700	21	6,367	65	357	824	*65*	158	1,837	11,044
2007	650	700	22	4,761	75	357	923	*65*	337	2,512	10,402
2008	650	700	31	4,426	75	357	875	*65*	373	1,998	9,550
2009	650	700	4	4,108	75	357	905	70	191	2,788	9,848
2010	650	700	17	5,360	75	357	710	65	200	1,782	9,916
2011	650	700	13	5,127	75	357	509	62	241	1,844	9,578
2012	650	700	45	5,690	75	357	269	66	239	1,715	9,806
2013	650	700	69	4,849	75	357	854	62	224	1,758	9,599
2014	650	700	78	3,559	75	357	628	68	293	2,181	8,589
2015	650	700	29	3,110	75	357	515	59	322	1,735	7,552
2016	650	700	21	2,665	75	357	497	64	325	2,608	7,961
2017	650	700	8	3,455	75	357	508	65	613	2,608	9,039
2018	650	700	55	2,694	75	357	498	72	638	3,002	8,741
2019	650	700	40	3,405	75	357	473	64	692	2,035	8,491
2020	650	700	23	4,028	75	357	490	74	643	1,748	8,788
2021	650	700	172	3,428	75	357	539	64	672	1,666	8,323
2022	650	700	78	2,906	75	357	531	59	539	1,560	7,456
2023	650	700	91	4,125	75	357	473	71	562	901	8,005
2024	650	700	114	5,172	75	357	469	65	641	1,468	9,710
2025	650	700	159	4,446	75	357	452	56	581	1,529	9,005
Average	650	700	83	4,558	74	335	695	65	327	1,733	9,219

[1] Mission Springs Water District 1998-2008 Pumping estimated from subsequent years data

3.3.4.2 GROUNDWATER OUTFLOWS

Groundwater outflows to the Indio Subbasin were identified by the groundwater model based on simulated water levels and calibrated hydraulic properties at the SGP-Indio Subbasin boundary. The SGP groundwater model extends about two miles east of the SGP Subbasin boundary with the Indio Subbasin to attenuate boundary effects. Groundwater flows at the Subbasin and model boundaries are significantly affected by recharge activities adjacent to the Whitewater River by Desert Water Agency and Coachella Valley Water District. Groundwater levels at the SGP groundwater model eastern boundary were developed from groundwater model projections provided by the Indio Subbasin groundwater model.

Based on the SGP groundwater model, outflows from the SGP Subbasin to the Indio Subbasin averaged 25,700 acre-feet per year with variations from 22,112 acre-feet in 2025 to 29,043 acre-feet in 2004. These subsurface flow estimates were reviewed with comparable estimates from the Indio Subbasin groundwater model, which were not identical. The quantity of SGP Subbasin outflows to the Indio Subbasin has been identified as a data uncertainty for the GSP and will continue to be under review as the GSP is implemented.

[7] Pumping amounts shown do not differentiate among various water rights types and are believed to include Whitewater River Decree rights, percolating groundwater rights and other State water rights.

3.3.5 CHANGE IN GROUNDWATER IN STORAGE

Regulation Requirements:

§354.18(b) The water budget shall quantify the following, either through direct measurements or estimates based on data:
(4) The change in the annual volume of groundwater in storage between seasonal high conditions.

The SGP groundwater model computes annual changes in groundwater storage as a product of its groundwater model simulations. Storage change computed by the SGP groundwater model for the 1998-2025 historical period shown in **Figure 3-63** include results from the calibrated lower model and the uncalibrated upper model. As water levels from the calibrated lower model of the SGP groundwater model reasonably matched measured water levels for the 1998-2025 historical period, the model-generated storage change amounts are considered to be reasonable estimates for the primary Banning and Cabazon Storage Units. **Figure 3-63** also includes a minor amount (averaging five percent of the total storage change) of storage change from the uncalibrated upper model, representing the shallow canyon aquifers and near surface, mostly vadose, zones.

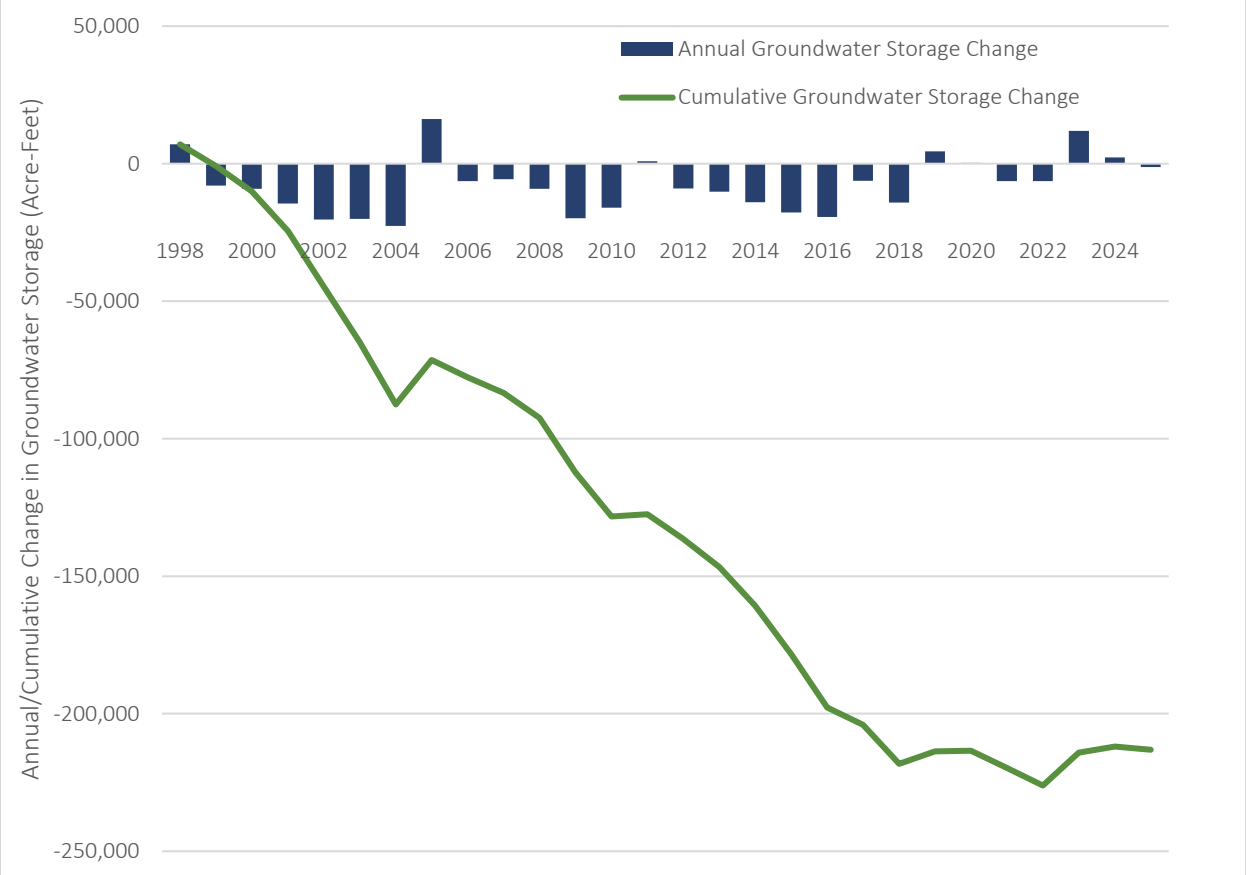


Figure 3-63 San Gorgonio Pass Groundwater Basin Annual and Cumulative Storage Change

The average annual storage change in the 1998-2025 historical period was -7,600 acre-feet and the cumulative storage change over the entire period was -210,000 acre-feet. Of the 7,600 acre-feet annual decline, 7,200 acre-feet was in the lower model representing MAs 3 and 4 (the Banning and Cabazon Storage Units). Annual storage change in the upper model (primarily MA 2), while occasionally large from year to year, was relatively small for the entire historical period – having an average decline of 400 acre-feet per year. As discussed earlier in this chapter, the 1998-2025 historical period represents a period with below average precipitation that is about 79-percent of the long-term average. **Because of the very dry conditions during the historical period, the groundwater storage decline in this period is not representative of average water supply conditions and as described in Section 3.3.10, does not by itself indicate that overdraft conditions are occurring.** The relationship of groundwater storage declines during the dry

historical period and average precipitation representative of long-term conditions is discussed later in the section on Sustainable Yield.

3.3.6 WATER YEAR TYPES

In the 2022 SGP GSP, the water year types from DWR's January 2021 report, "Water Year Type Dataset Development Report" (DWR, 2021) were used as representative of the SGP Subbasin. In the process of preparing Annual Reports for Water Years 2022 through 2025, it became apparent that the 2021 DWR Water Year Types did not adequately represent conditions in the SGP Subbasin, likely as the result of the DWR water year types being based on averages for a very large hydrologic unit that is not a good representation of the SGP Subbasin.

In the five year GSP review, an alternative water supply index was developed based on precipitation data available in the SGP Subbasin from the County of Riverside. Four precipitation stations that have a long historical record that are located in the SGP Subbasin or (in the case of one of the stations) closely adjacent. The four available precipitation stations are labelled Beaumont, Banning Bench, Banning Ponds and Cabazon. A subbasin-wide index was developed using weighting factors for the four stations that are representative of the portion of the SGP Subbasin they represent. The areal weighting factors used were Beaumont (8%), Banning Bench (22%), Cabazon (40%) and Banning Ponds (30%). The resulting precipitation index was computed for the period 1926 through 2025 and averaged 15.7 inches over that period. The precipitation index values were divided into quartiles that represent different water year types – Wet, Above Normal, Below Normal and Dry. **Table 3-6** shows the ranges assigned for the four year types. **Figure 3-64** shows the resulting SGP Subbasin precipitation index along with the SGP Water Year Types.

Table 3-6 San Gorgonio Pass Precipitation Year Type Bounds

Water Year Type	Lower Bound	Upper Bound
Dry	0	10.8
Below Normal	10.8	14.0
Above Normal	14.0	19.6
Wet	19.6	

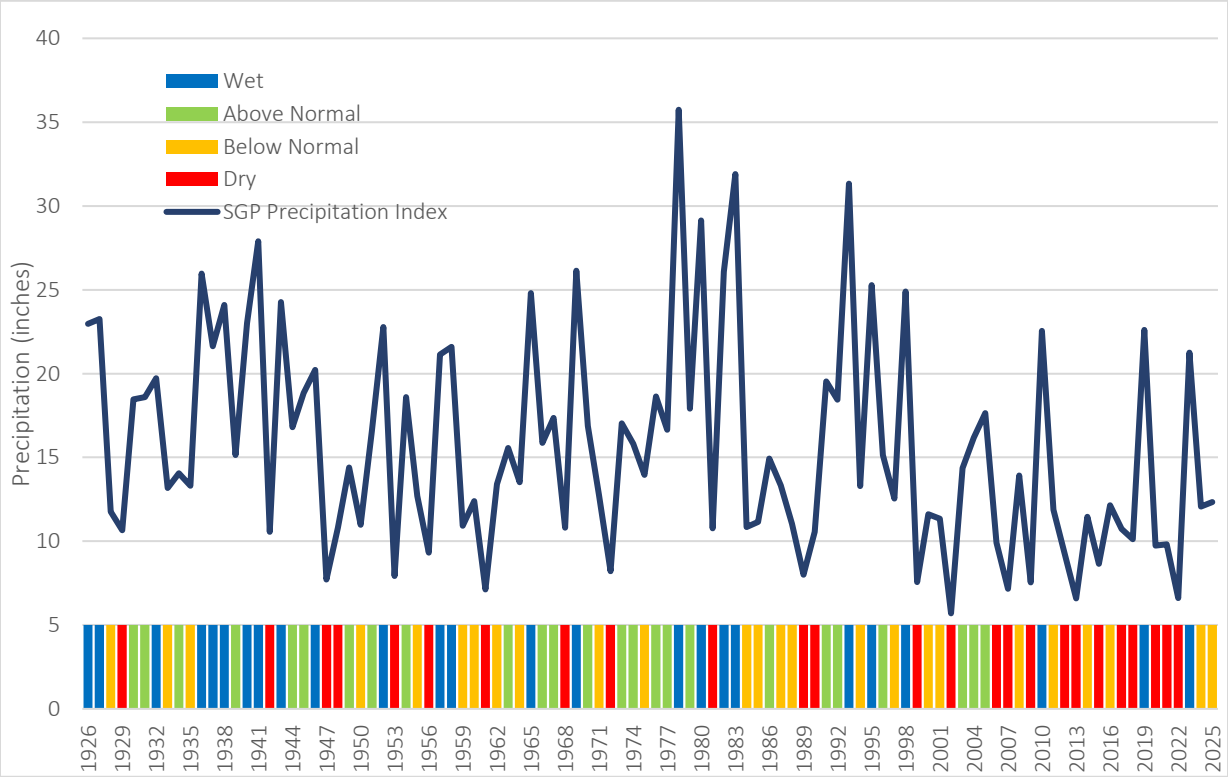


Figure 3-64 San Gorgonio Pass Subbasin Water Year Types

3.3.7 HISTORICAL WATER BUDGET

Regulation Requirements:

§354.18

(c) Each Plan shall quantify the current, historical, and projected water budget for the basin as follows:

(2) Historical water budget information shall be used to evaluate availability or reliability of past surface water supply deliveries and aquifer response to water supply and demand trends relative to water year type. The historical water budget shall include the following:

(A) A quantitative evaluation of the availability or reliability of historical surface water supply deliveries as a function of the historical planned versus actual annual surface water deliveries, by surface water source and water year type, and based on the most recent ten years of surface water supply information.

(B) A quantitative assessment of the historical water budget, starting with the most recently available information and extending back a minimum of 10 years, or as is sufficient to calibrate and reduce the uncertainty of the tools and methods used to estimate and project future water budget information and future aquifer response to proposed sustainable groundwater management practices over the planning and implementation horizon.

(C) A description of how historical conditions concerning hydrology, water demand, and surface water supply availability or reliability have impacted the ability of the Agency to operate the basin within sustainable yield. Basin hydrology may be characterized and evaluated using water year type.

(d) The Agency shall utilize the following information provided, as available, by the Department pursuant to Section 353.2, or other data of comparable quality, to develop the water budget:

(1) Historical water budget information for mean annual temperature, mean annual precipitation, water year type, and land use.

A water budget was prepared for the 1998-2025 historical period using the calibrated SGP groundwater model with input data as described above. Table 3-7 shows a groundwater system water budget for the SGP Subbasin, combining values from the upper and lower groundwater models.

As indicated in the water budget, the largest water outflow component in the basin is for underflows to the Indio Subbasin[8]. The largest component of water supply to the basin is stream channel percolation. Groundwater storage in the subbasin declines for all but seven years in the 27-year historical period. The average values for the water budget components show some very limited relationship to year types, with the relationship appearing to be most significant for wet years. There is a pronounced increase in stream channel percolation and more positive groundwater storage change in wet year types. However, the average values for other water use and water demand categories for other year types are similar and do not seem to vary based on year types. Another characteristic of the historical water budget is the predominance of unmanageable water budget components – mainly the stream channel percolation and Indio Subbasin outflow. Groundwater pumping in the historical period is about 21% of the amount of total water discharged.

As noted earlier, because this historical period has below average wetness conditions, **the presence of groundwater decline** (averaging 7,600 acre-feet) **does not necessarily indicate that overdraft conditions are occurring.** The current water budget presented in the next section uses an average hydrologic period for analysis that is more representative of mean conditions.

[8] The composite total for rejected recharge and vadose zone losses, while also a large amount, includes rejected recharge and vadose loss processes which are typically not considered part of the groundwater basin water budget. They are shown in this water budget to reflect the SGP groundwater model's use of an upper groundwater model that, in part, incorporates computations often applied externally to groundwater model inputs.

Table 3-7 San Gorgonio Pass Subbasin Historical Water Budget

San Gorgonio Pass Subbasin 1998-2025 Historical Base Period (Acre-Feet)											
		Water Supply					Water Use				
Hydrologic Year	Year Type	Stream Channel Percolation	Precipitation Percolation	Return Flows from M&I Use/Artificial Recharge	Beaumont Basin Subsurface Flow	Total Supply	Rejected Recharge/ Vadose Zone Losses	Groundwater Pumping	Indio Subasin Subsurface Flow	Total Use	Change in Groundwater Storage
1998	Wet	43,138	7,294	6,997	1,903	59,332	15,389	11,007	25,919	52,315	7,029
1999	Dry	25,388	7,294	7,074	1,790	41,546	14,337	10,112	25,049	49,498	-7,938
2000	Below Normal	22,793	7,294	7,060	1,591	38,739	12,925	9,325	25,612	47,861	-9,115
2001	Below Normal	17,474	7,294	7,416	1,581	33,765	12,255	8,995	26,949	48,200	-14,438
2002	Dry	10,867	7,294	7,746	1,448	27,355	11,046	8,529	28,078	47,652	-20,291
2003	Above Normal	10,312	7,294	7,654	1,850	27,111	9,927	8,401	28,855	47,184	-20,069
2004	Above Normal	9,115	7,294	7,880	2,215	26,504	10,027	10,122	29,043	49,192	-22,684
2005	Above Normal	51,496	7,294	7,858	2,381	69,029	14,130	9,800	29,042	52,973	16,177
2006	Dry	28,095	7,294	7,985	2,196	45,570	12,543	11,192	28,170	51,905	-6,302
2007	Dry	27,132	7,294	8,010	2,333	44,770	13,015	10,999	26,364	50,378	-5,693
2008	Below Normal	21,671	7,294	7,975	2,246	39,186	11,872	9,518	26,909	48,299	-9,123
2009	Dry	10,917	7,294	7,544	2,349	28,104	10,067	10,077	27,810	47,954	-19,826
2010	Wet	15,291	7,294	6,791	2,388	31,764	9,532	10,138	28,090	47,760	-15,998
2011	Below Normal	31,413	7,294	6,555	2,411	47,672	10,836	9,724	26,280	46,841	821
2012	Dry	17,852	7,294	6,410	2,386	33,942	9,880	9,684	23,419	42,982	-9,027
2013	Dry	15,572	7,294	6,552	2,507	31,925	9,532	9,893	22,729	42,155	-10,219
2014	Below Normal	11,342	7,294	6,510	2,407	27,553	8,748	8,639	24,155	41,543	-14,013
2015	Dry	8,483	7,294	6,043	2,611	24,432	8,167	7,931	26,071	42,169	-17,742
2016	Below Normal	8,101	7,294	5,987	2,664	24,046	8,390	7,948	27,034	43,372	-19,326
2017	Dry	23,267	7,294	6,151	2,556	39,269	9,725	8,615	27,175	45,514	-6,236
2018	Dry	12,860	7,294	6,381	2,484	29,019	8,671	9,325	25,189	43,184	-14,163
2019	Wet	29,069	7,294	6,381	2,537	45,282	9,794	8,362	22,669	40,825	4,453
2020	Dry	25,746	7,294	6,645	2,616	42,301	9,778	9,336	22,856	41,969	331
2021	Dry	17,584	7,294	7,047	2,494	34,419	9,373	9,112	22,314	40,799	-6,376
2022	Dry	17,430	7,294	7,128	2,368	34,220	9,394	8,288	22,905	40,587	-6,342
2023	Wet	39,956	7,294	6,921	2,571	56,742	11,539	8,883	24,360	44,782	11,957
2024	Below Normal	31,481	7,294	7,023	2,625	48,423	11,501	10,429	24,203	46,134	2,274
2025	Below Normal	24,071	7,294	7,071	2,412	40,848	10,542	9,368	22,112	42,023	-1,174
Average	All Years	21,711	7,294	7,028	2,283	38,317	10,819	9,420	25,691	45,930	-7,609
	Averages by Year Types										
	Wet	31,864	7,294	6,772	2,350	48,280	11,563	9,598	25,259	46,421	1,860
	Above Normal	23,641	7,294	7,798	2,149	40,882	11,361	9,441	28,980	49,783	-8,859
	Below Normal	21,043	7,294	6,950	2,242	37,529	10,884	9,243	25,407	45,534	-8,012
	Dry	18,553	7,294	6,978	2,318	35,144	10,425	9,469	25,241	45,134	-9,986

3.3.8 CURRENT WATER BUDGET

Regulation Requirements:

§354.18

(c) Each Plan shall quantify the current, historical, and projected water budget for the basin as follows:
(1) Current water budget information shall quantify current inflows and outflows for the basin using the most recent hydrology, water supply, water demand, and land use information.

(d) The Agency shall utilize the following information provided, as available, by the Department pursuant to Section 353.2, or other data of comparable quality, to develop the water budget:
(2) Current water budget information for temperature, water year type, evapotranspiration, and land use.

A current water budget for the SGP Subbasin was prepared to represent current water demands with long-term average hydrologic conditions. The current water budget uses a simulation of historical natural water supply that is adjusted to reflect current development (pumping and artificial recharge) and regulation conditions. The current water budget was developed using the groundwater model by applying a similar methodology to the historical period. The 50-year baseline selected for use was the 1949-1998 period, which has hydrologic conditions (as indicated by precipitation estimated by SGPWM for the SGP groundwater model watershed) that are about 2.1% above normal as compared to the 1910-2025 long-term period of record. The 1949-1998 hydrologic period stream channel flows, recharge from precipitation, and other natural vegetation processes were computed by the SGPWM based on historical estimates of precipitation and evapotranspiration. Estimated stream channel percolation of 26,600 acre-feet was substantially higher (22-percent higher) than during the 1998-2025 historical period, as would be expected based on the higher level of precipitation in the 1949-1998 hydrologic period.

Groundwater pumping estimates and return flows from municipal use for current conditions were estimated based on average pumping and return flows for the last five years of the historical period (2021-2025). The prior five-year period is a reasonable estimate of current levels of water use. The estimated current pumping, municipal return flows, and wastewater treatment plant discharges are summarized in Table 3-8 which also includes projected future amounts of pumping, municipal return flows and wastewater treatment plant discharges for 2070 conditions that are described in Section 3.3.11.

Estimates of SGPWA imported water recharge in the Noble Creek recharge basins, while not directly recharging the SGP Subbasin, were needed for the SGP groundwater model as they affect subsurface flows from the adjudicated Beaumont Basin. SGPWA imported water supplies include State Water Project supplies, in addition to smaller amounts of other supplies. The availability of imported SWP water supplies for Noble Creek was based on the pattern of DWR CALSIM (model) estimates of SGPWA deliveries in the 2025 SWP Delivery Capability Report. Based on data from the Delivery Capability Report, considering other non-SWP supplies available to SGPWA and adjusting for the share of SGPWA supply to the SGP Groundwater model area, an average of 15,000 acre-feet of water would be recharged at the Noble Creek recharge facilities.

Estimates were also made of Colorado River Aqueduct recharge at the Whitewater Spreading facilities located east of the SGP Subbasin, which affects the SGP groundwater model general head boundary at the eastern boundary. The Whitewater recharge amounts were based on water year types for the Sacramento Valley Index, which represent variations in Whitewater recharge supplies that are derived primarily from State Water Project deliveries. These values were provided by the Indio Subbasin groundwater modeling consultants (Todd Groundwater).

The “current” level groundwater model inputs described above were then applied to a groundwater model projection beginning in 2020 with historical groundwater levels (as projected by the historical groundwater model). The groundwater model projection proceeds to project future groundwater conditions with fixed “current” levels of groundwater pumping and artificial recharge. This projection represents the groundwater basin operation over a long period of representative average water supply conditions and shows variations between wet and dry periods for fixed current groundwater pumping amounts.

Table 3-8 SGP Subbasin Current Level and Projected Groundwater Pumping, Municipal Return Flows and Wastewater Treatment Plant Discharge for SGP Subbasin Demands (Acre-Feet)[9]

Year		2021	2022	2023	2024	2025	2021-25 Average (Current)	2070 (2050)[1] Projection
Groundwater Pumping by Storage Unit/Agency								
Potrero Canyon								
	MBMI	650	650	650	650	650	650	650
Millard Canyon								
	MBMI	700	700	700	700	700	700	700
Management Area 3 (Banning and Cabazon Storage Units)								
	MBMI	357	357	357	357	357	357	357
	Cabazon WD	539	531	473	469	452	493	493
	Mission Springs WD [2]	64	59	71	65	56	63	63
	Robertson's Ready Mix	672	539	562	641	581	599	599
	City of Banning	1,666	1,560	901	1,468	1,529	1,425	2,638
Management Area 2 (Banning Canyon Storage Unit)								
	Banning Heights MWC	172	78	91	114	159	123	123
	City of Banning	3,110	2,666	3,455	2,696	3,256	3,037	5,060
	Summit Cemetery Dist.	75	75	75	75	75	75	75
Total Pumping		**8,323**	**7,456**	**8,005**	**9,710**	**9,005**	**8,500**	**10,758**
M&I Return Flows by Agency								
	City of Banning	1,917	1,495	1,066	1,591	1,857	1,585	1,660
	Banning Heights MWC	100	46	53	66	92	71	71
	Cabazon WD	313	308	274	272	262	286	286
	Mission Springs WD	37	34	41	38	32	37	37
	MBMI	132	132	132	132	132	130	130
	Subtotal M&I Return Flows	2,498	2,015	1,567	2,099	2,376	2,111	2,190
Wastewater Treatment Plant Discharge by Agency								
	City of Banning	2,222	2,314	2,323	2,305	2,237	2,280	4,620
	MBMI	392	392	392	392	392	390	390
	Subtotal Wastewater Discharge	2,614	2,706	2,715	2,697	2,629	2,670	5,010

[1] Where estimates are available, 2070 projected amounts are based on the UWMP forecasted 2050 level projections, which are the farthest projections available
[2] Mission Springs Water District 1998-2008 Pumping estimated from subsequent years data

The Current Water Budget is summarized in Table 3-9. As with the historical period, the biggest components of water supply and use are natural processes – streamflow percolation and outflow to the Indio Subbasin – that have limited capability for management. Also, similar to the historical period, most water budget components were relatively constant. Only the stream channel percolation and the vadose zone losses had significant variations by year type. Other water budget components did not vary significantly by water year type.

Groundwater pumping averaged just less than 20 percent of the total water use, meaning there is limited ability to manage basin conditions through adjustments only in pumping amounts. The other opportunity currently available for managing the Subbasin water levels is imported water recharged in the existing Noble Creek recharge basins in the adjudicated Beaumont Basin, which can increase subsurface flows to MA 3 of the SGP Subbasin.

[9] Pumping amounts shown do not differentiate among various water rights types and are believed to include Whitewater River Decree rights, percolating groundwater rights and other State water rights.

Table 3-9 SGP Subbasin Current Water Budget

San Gorgonio Pass Subbasin Current (1949-1998 Hydrology) Projection
(Acre-Feet)

			Water Supply					Water Use				
Hydrologic Year	Projection Year	Year Type	Stream Channel Percolation	Precipitation Percolation	Return Flows from M&I Use/ Artificial Recharge	Beaumont Basin Subsurface Flow	Total Supply	Rejected Recharge/ Vadose Zone Losses	Groundwater Pumping	Indio Subasin Subsurface Flow	Total Use	Change in Groundwater Storage
1949	2020	Above Normal	4,623	7,294	7,145	2,518	21,581	14,743	8,581	23,172	46,496	-24,940
1950	2021	Below Normal	5,496	7,294	7,220	2,355	22,366	10,120	8,630	23,505	42,255	-19,890
1951	2022	Above Normal	5,387	7,294	7,086	2,234	22,000	9,700	8,500	23,092	41,293	-19,289
1952	2023	Wet	17,051	7,294	6,948	2,228	33,522	11,622	8,461	22,091	42,174	-8,657
1953	2024	Dry	10,889	7,294	7,124	2,300	27,607	10,371	8,493	21,901	40,766	-13,158
1954	2025	Above Normal	17,005	7,294	7,180	2,349	33,828	10,511	8,581	22,108	41,200	-7,381
1955	2026	Below Normal	10,711	7,294	7,197	2,404	27,607	9,958	8,630	22,401	40,989	-13,387
1956	2027	Dry	8,363	7,294	7,123	2,382	25,162	9,414	8,500	22,224	40,139	-14,963
1957	2028	Wet	8,287	7,294	6,923	2,382	24,885	8,931	8,461	21,822	39,214	-14,338
1958	2029	Wet	44,580	7,294	7,131	2,415	61,420	12,410	8,493	20,945	41,849	19,561
1959	2030	Below Normal	20,853	7,294	7,194	2,472	37,813	11,637	8,581	20,739	40,957	-3,150
1960	2031	Below Normal	20,440	7,294	7,177	2,460	37,371	12,422	8,630	21,024	42,076	-4,751
1961	2032	Dry	12,699	7,294	7,102	2,416	29,512	11,210	8,500	21,293	41,004	-11,492
1962	2033	Below Normal	9,578	7,294	6,952	2,327	26,151	9,965	8,461	21,270	39,697	-13,550
1963	2034	Above Normal	7,441	7,294	7,110	2,310	24,155	9,646	8,493	21,075	39,215	-15,075
1964	2035	Below Normal	7,293	7,294	7,186	2,301	24,074	9,239	8,581	20,777	38,597	-14,522
1965	2036	Wet	18,004	7,294	7,206	2,297	34,801	9,325	8,630	20,357	38,312	-3,510
1966	2037	Above Normal	30,431	7,294	7,074	2,332	47,131	12,551	8,500	20,064	41,116	6,024
1967	2038	Above Normal	34,517	7,294	6,966	2,403	51,180	13,083	8,461	19,380	40,924	10,268
1968	2039	Dry	23,905	7,294	7,126	2,432	40,757	12,497	8,493	19,356	40,347	418
1969	2040	Wet	59,704	7,294	7,184	2,538	76,720	17,912	8,581	19,144	45,636	31,070
1970	2041	Above Normal	29,849	7,294	7,211	2,567	46,921	15,848	8,630	19,365	43,844	3,084
1971	2042	Below Normal	32,087	7,294	7,085	2,642	49,108	16,044	8,500	20,172	44,717	4,410
1972	2043	Dry	16,548	7,294	6,944	2,612	33,399	12,873	8,461	20,940	42,275	-8,855
1973	2044	Above Normal	21,774	7,294	7,153	2,575	38,796	11,939	8,493	20,900	41,332	-2,515
1974	2045	Above Normal	13,400	7,294	7,175	2,589	30,458	10,560	8,581	20,497	39,638	-9,149
1975	2046	Below Normal	10,584	7,294	7,208	2,623	27,709	9,842	8,630	20,421	38,893	-11,137
1976	2047	Above Normal	12,572	7,294	7,070	2,671	29,606	9,972	8,500	20,645	39,118	-9,480
1977	2048	Above Normal	13,095	7,294	6,943	2,701	30,033	10,001	8,461	20,662	39,125	-9,058
1978	2049	Wet	70,381	7,294	7,163	2,702	87,540	16,726	8,493	19,870	45,089	42,480
1979	2050	Above Normal	68,898	7,294	7,162	2,597	85,951	21,795	8,581	19,747	50,123	35,863
1980	2051	Wet	87,914	7,294	7,203	2,592	105,003	30,230	8,630	20,459	59,319	45,718
1981	2052	Dry	60,010	7,294	7,072	2,608	76,984	26,245	8,500	21,520	56,266	20,766
1982	2053	Wet	48,783	7,294	6,977	2,650	65,705	20,983	8,461	21,503	50,948	14,808
1983	2054	Wet	60,006	7,294	7,127	2,705	77,133	23,330	8,493	21,224	53,047	24,129
1984	2055	Below Normal	32,361	7,294	7,174	2,805	49,633	17,754	8,581	21,729	48,064	1,617
1985	2056	Below Normal	30,971	7,294	7,217	2,819	48,301	16,243	8,630	22,263	47,137	1,205
1986	2057	Above Normal	27,484	7,294	7,085	2,783	44,646	14,618	8,500	22,193	45,311	-625
1987	2058	Below Normal	13,562	7,294	6,935	2,761	30,552	11,729	8,461	22,815	43,005	-12,413
1988	2059	Below Normal	14,965	7,294	7,128	2,703	32,090	11,089	8,493	23,444	43,026	-10,904
1989	2060	Dry	10,319	7,294	7,205	2,543	27,361	10,272	8,581	23,480	42,333	-14,945
1990	2061	Dry	8,967	7,294	7,148	2,447	25,857	9,390	8,630	23,494	41,515	-15,628
1991	2062	Above Normal	21,836	7,294	7,098	2,360	38,588	10,376	8,500	23,499	42,375	-3,751
1992	2063	Above Normal	31,418	7,294	6,936	2,317	47,965	10,472	8,461	23,378	42,311	5,687
1993	2064	Wet	75,424	7,294	7,143	2,289	92,149	18,396	8,493	23,198	50,088	42,077
1994	2065	Below Normal	53,659	7,294	7,139	2,210	70,302	19,138	8,581	23,305	51,024	19,293
1995	2066	Wet	76,899	7,294	7,222	2,258	93,672	25,334	8,630	23,586	57,550	36,145
1996	2067	Above Normal	37,439	7,294	7,093	2,210	54,036	18,822	8,500	24,004	51,326	2,762
1997	2068	Below Normal	26,988	7,294	6,937	2,311	43,530	14,641	8,461	23,501	46,603	-3,030
1998	2069	Wet	44,461	7,294	7,143	2,526	61,424	16,708	8,493	22,943	48,144	13,310
Average		All Years	28,598	7,294	7,109	2,481	45,482	13,973	8,533	21,650	44,156	1,343
		Averages by Year Types										
		Wet	50,958	7,294	7,114	2,465	67,831	17,659	8,527	21,429	47,614	20,233
		Above Normal	23,573	7,294	7,093	2,470	40,430	12,790	8,520	21,486	42,797	-2,348
		Below Normal	20,682	7,294	7,125	2,514	37,615	12,844	8,561	21,955	43,360	-5,729
		Dry	18,963	7,294	7,105	2,468	35,830	12,784	8,520	21,776	43,080	-7,232

PROJECTED WATER BUDGET

Regulation Requirements:

§354.18

(c) Each Plan shall quantify the current, historical, and projected water budget for the basin as follows:

(3) Projected water budgets shall be used to estimate future baseline conditions of supply, demand, and aquifer response to Plan implementation, and to identify the uncertainties of these projected water budget components. The projected water budget shall utilize the following methodologies and assumptions to estimate future baseline conditions concerning hydrology, water demand and surface water supply availability or reliability over the planning and implementation horizon:

(A) Projected hydrology shall utilize 50 years of historical precipitation, evapotranspiration, and streamflow information as the baseline condition for estimating future hydrology. The projected hydrology information shall also be applied as the baseline condition used to evaluate future scenarios of hydrologic uncertainty associated with projections of climate change and sea level rise.

(B) Projected water demand shall utilize the most recent land use, evapotranspiration, and crop coefficient information as the baseline condition for estimating future water demand. The projected water demand information shall also be applied as the baseline condition used to evaluate future scenarios of water demand uncertainty associated with projected changes in local land use planning, population growth, and climate.

(C) Projected surface water supply shall utilize the most recent water supply information as the baseline condition for estimating future surface water supply. The projected surface water supply shall also be applied as the baseline condition used to evaluate future scenarios of surface water supply availability and reliability as a function of the historical surface water supply identified in Section 354.18(c)(2)(A), and the projected changes in local land use planning, population growth, and climate.

(d) The Agency shall utilize the following information provided, as available, by the Department pursuant to Section 353.2, or other data of comparable quality, to develop the water budget:

(3) Projected water budget information for population, population growth, climate change, and sea level rise.

Projected water budgets (future water budgets) have been developed for late future (2070 level) conditions. The late future (2070 level) conditions are based on the 1949-1998 hydrologic sequence used for the current level model projections, with adjustments for climate change as described below. The future water budget was summarized by water year type to identify changes resulting from differing hydrologic conditions with the focus on achieving sustainability in the planning and implementation period.

Water supply changes for future conditions were estimated based on available climate change projection datasets provided by DWR (DWR, 2018) at their SGMA climate change website[10]. The DWR climate change datasets were developed for the California Water Commission's Water Storage Investment Program (WSIP). As described by DWR, the WSIP dataset is consistent with other DWR programs, is based on best available science, builds on previous efforts, incorporates latest advances in projections, and follows Climate Change Technical Advisory Group guidance. The available datasets include central tendency projections of ensembles of general circulation models for 2030 and 2070 levels. The datasets also include climatic bookends for late future (2070 level) conditions, with a drier, extreme warming scenario and a wetter, moderate warming scenario being provided. Only the central tendency simulation is used for preparing late future (2070 level) water budgets for the SGP Subbasin, which DWR considers to be the most likely future conditions.

The WSIP climate change factors for precipitation and evapotranspiration for the Whitewater watershed (USGS Hydrologic Unit Code 18100201) were applied to the precipitation, temperature, and evaporation assumptions used in the SGPWM. With these adjusted factors, updated streamflow runoff, precipitation, and other natural water budget components were estimated for the 1949-1998 hydrologic period. Overall, these adjustments for climate change had minimal effect on water budget components for the SGP groundwater model. The streamflow percolation estimates from SGPWM incorporating the 2070 climate change factors all remained within 1% of the current level amounts.

[10] https://data.cnra.ca.gov/dataset/sgma-climate-change-resources

Future (2070 level) Hydrologic Conditions

Natural components of the future water balance, including estimated streamflow, precipitation, and native evapotranspiration were developed using the SGPWM with 2070-level climate change factors from the WSIP studies provided by DWR. These adjustments result in minimal impacts to the projected streamflow percolation amounts.

Municipal pumping estimates for the City of Banning and BCVWD were developed based on 2050-projected groundwater pumping estimates from their respective draft 2025 UWMPs. The 2050 water use projection was used as that is the most distant forecast available in the 2020-UWMPs, which are considered to be the best forecasts available. While these resulted in higher estimates of groundwater pumping in the SGP groundwater model, much of the increase from current-level to early-future and late-future conditions occurred in the Beaumont Basin portion of the SGP groundwater model and are not displayed in the SGP Subbasin water budget. Municipal groundwater pumping by other agencies in the SGP Subbasin was left at the recent historical values (2021-2025 average) used for the current-level model projection. The future (2070 level) forecast pumping, wastewater discharge and M&I return flow estimated were included in Table 3-8.

Recharge to the SGP groundwater model at the Noble Creek recharge facilities was updated based on the 2070-level WSIP CALSIM studies and include some imported water sources in addition to SGPWA's primary SWP supplies. The average recharge at the Noble Creek facilities was reduced to 12,100 acre-feet, based on minor reductions in overall SWP water supply availability resulting from climate change at the 2070-level. The 2070-level WSIP CALSIM studies for SWP were also used to update the Colorado River Aqueduct spreading at the Whitewater spreading facilities in the Indio Subbasin, which are based on an exchange of SWP deliveries for Colorado River Aqueduct water. As with the current-level, the Indio Subbasin area groundwater model was used as the source of variable groundwater level boundary conditions at the SGP groundwater eastern boundary.

The projected future (2070 level) water budget is shown in Table 3-10. Predicted future (2070 level) groundwater storage decreases were about 1,300 acre-feet per year, which is the result of additional increases in groundwater use and projected additional reductions in streamflow recharge resulting from climate change.

Table 3-10 SGP Subbasin Future (2070) Average Water Budget

San Gorgonio Pass Subbasin Future (1949-1998 Hydrology, 2070 Climate) Projection
(Acre-Feet)

			Water Supply					Water Use				
Hydrologic Year	Projection Year	Year Type	Stream Channel Percolation	Precipitation Percolation	Return Flows from M&I Use/ Artifical Recharge	Beaumont Basin Subsurface Flow	Total Supply	Rejected Recharge/ Vadose Zone Losses	Groundwater Pumping	Indio Subasin Subsurface Flow	Total Use	Change in Groundwater Storage
1949	2020	Above Normal	4,139	7,309	9,288	2,451	23,187	16,735	11,351	23,005	51,091	-27,921
1950	2021	Below Normal	4,847	7,309	9,327	2,270	23,753	12,049	11,450	22,915	46,413	-22,662
1951	2022	Above Normal	4,956	7,309	9,074	2,170	23,508	11,495	11,216	22,185	44,896	-21,394
1952	2023	Wet	14,242	7,309	8,951	2,163	32,665	13,116	11,009	20,729	44,854	-12,242
1953	2024	Dry	9,665	7,309	9,136	2,199	28,309	12,101	11,173	20,438	43,712	-15,453
1954	2025	Above Normal	14,899	7,309	9,323	2,195	33,726	12,233	11,370	20,846	44,450	-10,760
1955	2026	Below Normal	9,761	7,309	9,288	2,206	28,563	11,768	11,356	21,288	44,413	-15,862
1956	2027	Dry	7,924	7,309	9,112	2,177	26,522	11,053	11,148	21,101	43,302	-16,842
1957	2028	Wet	7,679	7,309	8,917	2,154	26,059	10,614	11,086	20,720	42,420	-16,359
1958	2029	Wet	39,032	7,309	9,171	2,145	57,657	13,545	11,154	19,606	44,305	13,360
1959	2030	Below Normal	20,067	7,309	9,280	2,178	38,834	13,069	11,294	19,460	43,823	-4,935
1960	2031	Below Normal	18,447	7,309	9,323	2,162	37,241	13,706	11,424	19,951	45,081	-7,779
1961	2032	Dry	11,765	7,309	9,070	2,142	30,286	12,573	11,242	20,332	44,148	-13,798
1962	2033	Below Normal	8,742	7,309	8,958	2,112	27,121	11,307	11,179	20,326	42,813	-15,651
1963	2034	Above Normal	7,072	7,309	9,142	2,111	25,633	11,173	11,211	19,988	42,372	-16,696
1964	2035	Below Normal	6,398	7,309	9,288	2,119	25,114	10,949	11,200	19,635	41,784	-16,613
1965	2036	Wet	16,202	7,309	9,335	2,108	34,954	11,115	11,125	19,129	41,370	-6,427
1966	2037	Above Normal	26,587	7,309	9,060	2,104	45,060	13,667	11,242	18,675	43,583	1,447
1967	2038	Above Normal	31,212	7,309	8,970	2,137	49,628	14,085	11,179	17,662	42,926	6,693
1968	2039	Dry	20,585	7,309	9,122	2,132	39,148	13,782	11,231	17,678	42,691	-3,541
1969	2040	Wet	55,461	7,309	9,333	2,212	74,316	18,455	11,370	17,285	47,110	27,256
1970	2041	Above Normal	25,956	7,309	9,298	2,174	44,737	15,842	11,450	17,471	44,763	17
1971	2042	Below Normal	27,155	7,309	9,086	2,223	45,773	15,529	11,203	18,327	45,059	767
1972	2043	Dry	14,205	7,309	8,942	2,189	32,644	13,062	11,128	19,160	43,350	-10,671
1973	2044	Above Normal	19,255	7,309	9,162	2,157	37,883	12,784	11,231	19,121	43,135	-5,212
1974	2045	Above Normal	12,254	7,309	9,303	2,164	31,030	11,789	11,370	18,652	41,811	-10,731
1975	2046	Below Normal	8,897	7,309	9,302	2,158	27,666	11,171	11,450	18,550	41,170	-13,456
1976	2047	Above Normal	14,225	7,309	9,071	2,151	32,756	11,429	11,216	18,882	41,527	-8,724
1977	2048	Above Normal	12,756	7,309	8,953	2,176	31,194	11,612	11,179	18,936	41,727	-10,483
1978	2049	Wet	65,704	7,309	9,165	2,266	84,444	17,662	11,231	17,843	46,736	37,764
1979	2050	Above Normal	60,072	7,309	9,275	2,071	78,727	21,231	11,370	17,536	50,138	28,642
1980	2051	Wet	82,511	7,309	9,323	2,087	101,230	28,783	11,437	18,174	58,395	42,917
1981	2052	Dry	55,887	7,309	9,072	2,050	74,318	24,951	11,229	19,127	55,307	19,039
1982	2053	Wet	43,306	7,309	8,974	2,071	61,660	20,554	11,160	18,800	50,515	11,250
1983	2054	Wet	54,911	7,309	9,133	2,104	73,457	22,771	11,218	18,252	52,240	21,208
1984	2055	Below Normal	29,557	7,309	9,313	2,238	48,417	18,131	11,345	18,849	48,324	172
1985	2056	Below Normal	26,883	7,309	9,304	2,221	45,717	15,972	11,431	19,535	46,937	-1,165
1986	2057	Above Normal	24,625	7,309	9,108	2,217	43,258	14,597	11,222	19,360	45,179	-1,866
1987	2058	Below Normal	12,182	7,309	8,915	2,196	30,602	12,878	11,179	20,183	44,240	-13,583
1988	2059	Below Normal	13,413	7,309	9,161	2,157	32,039	12,344	11,192	21,028	44,564	-12,515
1989	2060	Dry	9,443	7,309	9,316	2,054	28,122	11,586	11,370	21,050	44,006	-15,840
1990	2061	Dry	8,512	7,309	9,276	1,965	27,062	10,882	11,299	21,126	43,306	-16,178
1991	2062	Above Normal	19,825	7,309	9,092	1,915	38,141	11,615	11,142	21,227	43,983	-5,790
1992	2063	Above Normal	29,638	7,309	8,942	1,904	47,794	11,752	11,179	21,114	44,045	3,805
1993	2064	Wet	68,733	7,309	9,150	1,929	87,121	17,859	11,231	20,816	49,906	37,277
1994	2065	Below Normal	48,351	7,309	9,289	1,825	66,773	18,428	11,313	20,797	50,538	16,321
1995	2066	Wet	68,860	7,309	9,327	1,864	87,360	23,356	11,431	20,968	55,755	31,753
1996	2067	Above Normal	33,180	7,309	9,077	1,807	51,373	18,295	11,229	21,184	50,708	837
1997	2068	Below Normal	24,793	7,309	8,946	1,903	42,950	15,019	11,167	20,339	46,526	-3,473
1998	2069	Wet	37,040	7,309	9,160	2,008	55,517	16,004	11,211	19,501	46,717	8,875
Average		All Years	25,836	7,309	9,158	2,118	44,421	14,730	11,256	19,777	45,763	-1,304
		Averages by Year Types										
		Wet	46,140	7,309	9,162	2,093	64,703	17,819	11,222	19,319	48,360	16,386
		Above Normal	21,291	7,309	9,134	2,119	39,852	13,771	11,260	19,740	44,771	-4,883
		Below Normal	18,535	7,309	9,199	2,141	37,183	13,737	11,299	20,084	45,120	-7,888
		Dry	17,248	7,309	9,131	2,113	35,801	13,749	11,227	20,001	44,978	-9,161

Future (2070 level) Hydrologic Conditions with Projects and Management Actions

The 2070 level water budget indicates the potential need for implementation of projects or management identified in the Chapter 6 – Projects and Management Actions. The future (2070 level) water budgets are an early indication of the need for planning to implement individual or combined projects or management actions to maintain sustainable groundwater conditions in the SGP Subbasin. To evaluate the utility of projects and management actions (PMA) towards avoiding undesirable conditions for groundwater indicators, the groundwater model was used to predict the effects of a selected subset of projects and management actions. Project 3 (Additional imported water spreading at Noble Creek Spreading Basins) and Project 4 (New Pipeline with additional imported water spreading in Management Area 3). For these projections, an assumption was made that SWP transfer agreements for supplemental water supply were continued that provide additional water supplies to the SGP for additional recharge at Noble Creek and recharge at a new recharge basin adjacent to the San Gorgonio river in MA 3. The combined amount of recharge available for the PMA is 17,800 acre-feet per year, which is split 14,000 acre-feet per year at Noble Creek and 3,800 acre-feet per year at the new recharge basins along the San Gorgonio River. The availability of these additional supplies is considered to be likely based on SGPWA active participation in transfers of water (primarily in wet years), groundwater banking, Sites Reservoir and other potential water supply projects.

The projected future (2070 level) water budget with PMAs is shown in Table 3-11. Predicted future (2070 level) groundwater storage increases were about 1,900 acre-feet per year, which is the result of proposed supply augmentation activities from the PMAs compensating for increased groundwater use and projected additional reductions in streamflow recharge resulting from climate change.

Table 3-11 SGP Subbasin Future (2070) with PMAs Average Water Budget

San Gorgonio Pass Subbasin Late Future with Projects/MAs (1949-1998 Hydrology, 2070 Climate) Projection (Acre-Feet)												
			Water Supply					Water Use				
Hydrologic Year	Projection Year	Year Type	Stream Channel Percolation	Precipitation Percolation	Return Flows from M&I Use/ Artificial Recharge	Beaumont Basin Subsurface Flow	Total Supply	Rejected Recharge/ Vadose Zone Losses	Groundwater Pumping	Indio Subasin Subsurface Flow	Total Use	Change in Groundwater Storage
1949	2020	Above Normal	4,140	7,309	10,534	2,450	24,432	16,721	11,351	23,005	51,077	-26,656
1950	2021	Below Normal	4,847	7,309	13,881	2,270	28,307	11,934	11,450	22,915	46,299	-17,994
1951	2022	Above Normal	4,957	7,309	14,029	2,180	28,475	11,404	11,210	22,185	44,798	-16,348
1952	2023	Wet	14,242	7,309	14,781	2,185	38,518	12,981	11,009	20,731	44,721	-6,269
1953	2024	Dry	9,666	7,309	13,309	2,235	32,519	12,065	11,211	20,447	43,723	-11,218
1954	2025	Above Normal	14,899	7,309	13,695	2,247	38,150	12,171	11,370	20,865	44,406	-6,291
1955	2026	Below Normal	9,760	7,309	10,662	2,267	29,999	11,752	11,356	21,324	44,432	-14,430
1956	2027	Dry	7,924	7,309	13,823	2,237	31,293	11,099	11,148	21,159	43,406	-12,085
1957	2028	Wet	7,678	7,309	11,253	2,210	28,449	10,618	11,086	20,807	42,511	-14,034
1958	2029	Wet	39,028	7,309	14,638	2,191	63,165	13,462	11,167	19,724	44,353	18,882
1959	2030	Below Normal	20,068	7,309	11,811	2,221	41,408	12,958	11,370	19,614	43,942	-2,536
1960	2031	Below Normal	18,449	7,309	13,036	2,199	40,993	13,625	11,450	20,144	45,219	-4,190
1961	2032	Dry	11,770	7,309	11,012	2,176	32,267	12,504	11,242	20,568	44,314	-12,003
1962	2033	Below Normal	8,741	7,309	12,736	2,146	30,933	11,294	11,179	20,605	43,078	-12,095
1963	2034	Above Normal	7,069	7,309	14,467	2,152	30,997	11,086	11,160	20,310	42,555	-11,509
1964	2035	Below Normal	6,398	7,309	10,792	2,170	26,668	10,838	11,207	20,001	42,045	-15,347
1965	2036	Wet	16,207	7,309	14,472	2,161	40,149	11,000	11,170	19,540	41,710	-1,533
1966	2037	Above Normal	26,584	7,309	12,145	2,160	48,199	13,575	11,242	19,130	43,946	4,294
1967	2038	Above Normal	31,219	7,309	15,092	2,193	55,813	13,913	11,179	18,163	43,255	12,612
1968	2039	Dry	20,585	7,309	12,978	2,190	43,062	13,607	11,231	18,235	43,073	38
1969	2040	Wet	55,457	7,309	14,821	2,268	79,855	17,935	11,370	17,893	47,198	32,691
1970	2041	Above Normal	25,958	7,309	14,499	2,242	50,008	15,396	11,443	18,139	44,978	5,094
1971	2042	Below Normal	27,150	7,309	13,056	2,291	49,806	15,117	11,165	19,059	45,341	4,540
1972	2043	Dry	14,201	7,309	11,042	2,259	34,811	12,821	11,160	19,955	43,936	-9,068
1973	2044	Above Normal	19,254	7,309	13,782	2,229	42,574	12,367	11,231	19,973	43,571	-939
1974	2045	Above Normal	12,259	7,309	14,428	2,230	36,226	11,172	11,351	19,563	42,086	-5,786
1975	2046	Below Normal	8,898	7,309	13,984	2,227	32,418	10,575	11,379	19,524	41,478	-8,991
1976	2047	Above Normal	14,225	7,309	9,860	2,228	33,622	11,148	11,242	19,923	42,313	-8,629
1977	2048	Above Normal	12,757	7,309	9,267	2,258	31,591	11,439	11,179	20,039	42,658	-11,010
1978	2049	Wet	65,703	7,309	15,015	2,341	90,368	16,512	11,231	19,001	46,743	43,715
1979	2050	Above Normal	60,067	7,309	12,683	2,162	82,221	20,060	11,370	18,775	50,206	32,064
1980	2051	Wet	82,091	7,309	14,239	2,183	105,822	27,331	11,431	19,496	58,258	47,628
1981	2052	Dry	55,929	7,309	12,035	2,160	77,432	24,090	11,222	20,540	55,853	21,623
1982	2053	Wet	43,277	7,309	15,681	2,188	68,455	19,336	11,167	20,275	50,778	17,759
1983	2054	Wet	54,917	7,309	15,833	2,225	80,284	21,594	11,218	19,798	52,610	27,694
1984	2055	Below Normal	29,558	7,309	14,523	2,364	53,753	17,442	11,358	20,479	49,279	4,510
1985	2056	Below Normal	26,885	7,309	12,324	2,349	48,866	15,755	11,424	21,240	48,420	505
1986	2057	Above Normal	24,623	7,309	14,193	2,337	48,462	14,032	11,222	21,134	46,388	2,143
1987	2058	Below Normal	12,186	7,309	9,719	2,303	31,517	12,888	11,179	22,042	46,109	-14,561
1988	2059	Below Normal	13,395	7,309	10,490	2,260	33,454	12,574	11,186	22,957	46,717	-13,209
1989	2060	Dry	9,442	7,309	13,442	2,151	32,343	11,443	11,370	23,035	45,848	-13,452
1990	2061	Dry	8,508	7,309	10,933	2,071	28,820	10,723	11,299	23,170	45,191	-16,340
1991	2062	Above Normal	19,826	7,309	10,343	2,030	39,508	11,684	11,148	23,323	46,156	-6,599
1992	2063	Above Normal	29,646	7,309	10,858	2,025	49,838	11,747	11,179	23,255	46,182	3,706
1993	2064	Wet	68,728	7,309	13,925	2,001	91,963	17,193	11,192	22,999	51,384	40,608
1994	2065	Below Normal	48,355	7,309	11,969	2,001	69,634	18,397	11,319	23,039	52,755	16,877
1995	2066	Wet	68,876	7,309	14,951	2,042	93,177	22,656	11,450	23,254	57,360	35,877
1996	2067	Above Normal	33,184	7,309	13,994	1,961	56,448	17,701	11,229	23,534	52,463	4,035
1997	2068	Below Normal	24,792	7,309	13,482	2,064	47,647	14,770	11,167	22,707	48,643	-977
1998	2069	Wet	37,056	7,309	14,997	2,182	61,544	15,489	11,218	21,888	48,595	12,968
Average		All Years	25,829	7,309	12,990	2,197	48,325	14,400	11,258	20,790	46,447	1,915
		Averages by Year Types										
		Wet	46,105	7,309	14,550	2,181	70,146	17,176	11,226	20,450	48,852	21,332
		Above Normal	21,292	7,309	12,742	2,193	43,535	13,476	11,257	20,707	45,440	-1,864
		Below Normal	18,534	7,309	12,319	2,224	40,386	13,566	11,299	21,118	45,983	-5,564
		Dry	17,253	7,309	12,322	2,185	39,068	13,544	11,235	20,889	45,668	-6,563

3.3.9 QUANTIFICATION OF OVERDRAFT

Regulation Requirements:

§354.18(b) The water budget shall quantify the following, either through direct measurements or estimates based on data:

(5) If overdraft conditions occur, as defined in Bulletin 118, the water budget shall include a quantification of overdraft over a period of years during which water year and water supply conditions approximate average conditions.

Based on the DWR Bulletin 118 definition of overdraft as occurring when groundwater storage declines over a period of years during which water supply conditions approximate average conditions, no overdraft is identified in the SGP Subbasin for current conditions. The water budget projections with future (2070 level) climate change conditions have very slight amounts of long-term groundwater level decline. While

there was a significant extended period of groundwater level declines from 1998-2025, that period had water supply conditions that were about 20-percent below the long-term average. Based on the water budgets for current conditions, which have close to average long-term precipitation, a very small increase in water levels and groundwater storage is projected. The projections show that future climate change, combined with projected additional development, would result in slight amounts of overdraft for future (2070 level) conditions that could be addressed through possible implementation of projects or management actions described in Chapter 6 – Projects and Management Actions.

3.3.10 WATER YEAR TYPE ASSOCIATED WITH WATER BUDGET COMPONENTS

Regulation Requirements:

§354.18(b) The water budget shall quantify the following, either through direct measurements or estimates based on data:
(6) The water year type associated with the annual supply, demand, and change in groundwater stored.

As described earlier, water year types were identified for the SGP Subbasin and compared to water budget components for the different historical and predictive projections. The average values for water budget components and the percentage of the long-term average by water year type are shown in Table 3-12. There was a consistent correlation of high streamflow percolation values (as a percent of the long-term average) with wet water year types. Other relationships for water budget components with water year types were not as apparent and appear to be very weak or non-existent. Many of the water budget components appear to be relatively invariable and do not change according to water year types.

Table 3-12 SGP Subbasin Historical, Current, and Projected Water Budget by Year Type

	Year Type	Stream Channel Percolation	Precipitation Percolation	Return Flows/ Artificial Recharge	Beaumont Basin Subsurface Flow	Total Supply	Rejected Recharge/ Vadose Zone Losses	Groundwater Pumping	Indio Subasin Subsurface Flow	Total Use
Historical (1998-2025)										
	Average (Acre-feet)	21,711	7,294	7,028	2,283	38,317	10,819	9,420	25,691	45,930
	Wet	147%	100%	96%	103%	126%	107%	102%	98%	101%
	Above Normal	109%	100%	111%	94%	107%	105%	100%	113%	108%
	Below Normal	97%	100%	99%	98%	98%	101%	98%	99%	99%
	Dry	85%	100%	99%	102%	92%	96%	101%	98%	98%
Current Level										
	Average (Acre-feet)	28,598	7,294	7,109	2,481	45,482	13,973	8,533	21,650	44,156
	Wet	178%	100%	100%	99%	149%	126%	100%	99%	108%
	Above Normal	82%	100%	100%	100%	89%	92%	100%	99%	97%
	Below Normal	72%	100%	100%	101%	83%	92%	100%	101%	98%
	Dry	66%	100%	100%	99%	79%	91%	100%	101%	98%
Future (2070)										
	Average (Acre-feet)	25,836	7,309	9,158	2,118	44,421	14,730	11,256	19,777	45,763
	Wet	179%	100%	100%	99%	146%	121%	100%	98%	106%
	Above Normal	82%	100%	100%	100%	90%	93%	100%	100%	98%
	Below Normal	72%	100%	100%	101%	84%	93%	100%	102%	99%
	Dry	67%	100%	100%	100%	81%	93%	100%	101%	98%
Future with PMAs (2070)										
	Average (Acre-feet)	25,829	7,309	12,990	2,197	48,325	14,400	11,258	20,790	46,447
	Wet	179%	100%	112%	99%	145%	119%	100%	98%	105%
	Above Normal	82%	100%	98%	100%	90%	94%	100%	100%	98%
	Below Normal	72%	100%	95%	101%	84%	94%	100%	102%	99%
	Dry	67%	100%	95%	99%	81%	94%	100%	100%	98%

3.3.11 ESTIMATE OF SUSTAINABLE YIELD FOR THE BASIN

Regulation Requirements:

§354.18(b) The water budget shall quantify the following, either through direct measurements or estimates based on data:
(7) An estimate of sustainable yield for the basin.

As shown by the current level water budget, current groundwater pumping of 8,500 AFY resulted in a small groundwater storage increase of 1,300 AFY over close to long-term average conditions. Assuming that 1,300 AF of additional pumping could occur without causing groundwater storage declines, an approximate

estimate of the sustainable yield for the SGP Subbasin is 9,700 AFY, which is slightly more than a 10-percent increase in current pumping levels.

While the water budget for current conditions suggests a sustainable yield of 9,700 AFY, the SGMA definition of sustainable yield is the amount of pumping that can occur without causing undesirable results. The level of pumping that does not result in undesirable results is not necessarily the same as the amount of pumping that would result in no storage change based on the water budget. The sustainable yield will be evaluated in the future based on monitoring data that indicate the presence or absence of undesirable results.

The late future (2070 level) water budget indicates slight declines in long term storage, which are one indication of potential undesirable results. The future (2070 level) projections developed by the model and presented in Chapter 4 – Sustainable Management Criteria do not indicate the occurrence of undesirable results. Based on those projections, the 2070 level projected conditions would be sustainable, even though the long-term water budgets indicate a slight decline in storage. This apparent discrepancy between model projections and the water budget likely includes the benefits of temporary surplus in the basin and ongoing monitoring would need to be closely reviewed to confirm that undesirable results have not occurred or are not imminent.

4 SUSTAINABLE MANAGEMENT CRITERIA

Regulation Requirements:

§354.22 This Subarticle describes criteria by which an Agency defines conditions in its Plan that constitute sustainable groundwater management for the basin, including the process by which the Agency shall characterize undesirable results, and establish minimum thresholds and measurable objectives for each applicable sustainability indicator.

The SGMA defines Sustainable Groundwater Management as "*the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.*" The avoidance of undesirable results is crucial to the success of the GSP. Several requirements from GSP regulations have been grouped together under the heading of sustainable management criteria, including a sustainability goal, undesirable results, minimum thresholds (MT), and measurable objectives (MO) for various indicators of groundwater conditions. These terms are described in Table 4-1 below:

Table 4-1 Sustainable Management Criteria Definitions

Term	Definition
Sustainability Goal	A succinct qualitative statement including objectives and desired conditions of the groundwater basin, how the basin will get to that desired condition, and why the measures planned will lead to success.
Measurable Objective	Quantitative goals that reflect the basin's desired groundwater conditions and allow the GSA to achieve the sustainability goal within 20 years.
Minimum Threshold	The quantitative value that represents the groundwater conditions at a monitoring site that, when exceeded individually or in combination with minimum thresholds at other monitoring sites, may cause undesirable result(s) in the basin.
Undesirable Result	A situation that occurs when conditions related to any of the six sustainability indicators become significant and unreasonable.

Sustainability indicators for the management of groundwater were identified in the SGMA legislation based on what is important to the health and general well-being of the public. In the SGP Subbasin, five of the six sustainability indicators have been identified as applicable due to the specific physical circumstances in the Subbasin. The five applicable sustainability indicators that must be monitored throughout the planning and implementation period of the GSP are shown below in Figure 4-1 along with the one sustainability indicator that is not applicable (Seawater Intrusion).

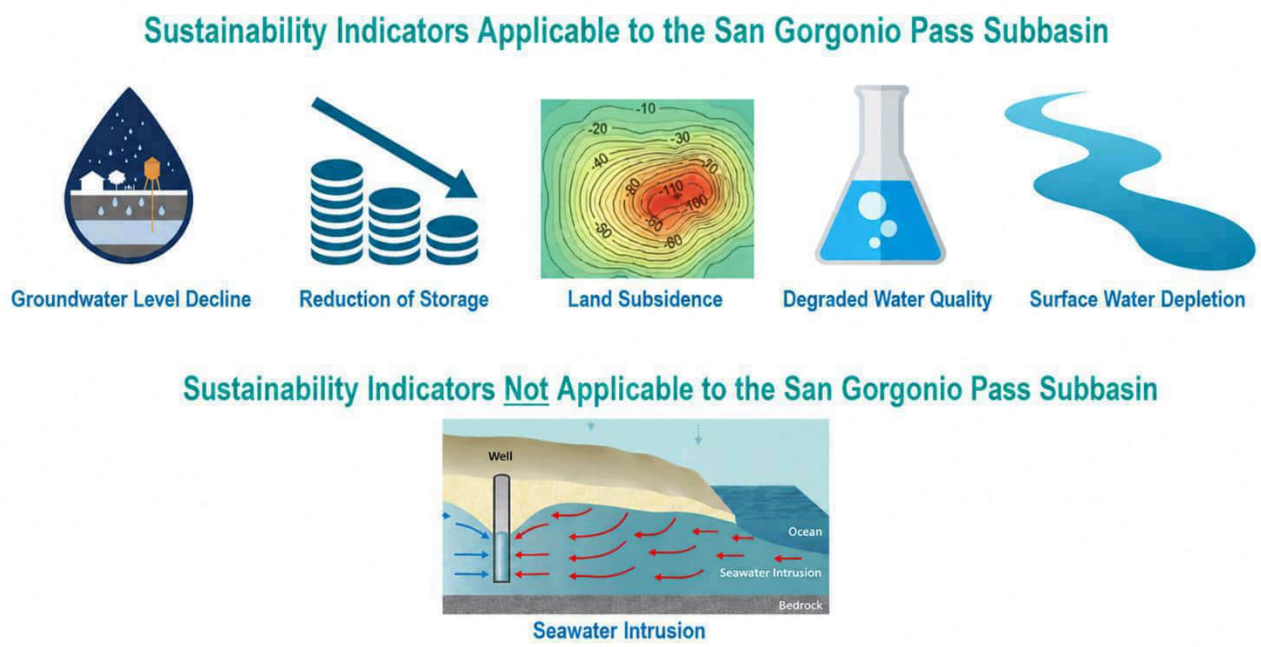


Figure 4-1 Sustainability Indicators

This chapter will describe each indicator, explain why it is significant, and define sustainable management criteria. Development of these Sustainable Management Criteria is dependent on basin information developed and presented in the Hydrogeologic Conceptual Model, Current and Historical Groundwater Conditions, and the Water Budget Information chapters of this GSP.

4.1 SUSTAINABILITY GOAL

Regulation Requirements:

> **§354.24** Each Agency shall establish in its Plan a sustainability goal for the basin that culminates in the absence of undesirable results within 20 years of the applicable statutory deadline. The Plan shall include a description of the sustainability goal, including information from the basin setting used to establish the sustainability goal, a discussion of the measures that will be implemented to ensure that the basin will be operated within its sustainable yield, and an explanation of how the sustainability goal is likely to be achieved within 20 years of Plan implementation and is likely to be maintained through the planning and implementation horizon.

The sustainability goal of the San Gorgonio Pass Subbasin is to support the Subbasin's efforts to operate and maintain a reliable water supply for current and future beneficial uses without experiencing undesirable results by 2042. This goal will be met by balancing water demand with available water supply to stabilize groundwater levels without significantly and unreasonably impacting groundwater levels, groundwater storage, water quality, land subsidence, or interconnected surface water. The beneficial users and uses of groundwater are detailed in Chapter 2 – Plan Area.

Seawater intrusion is not an applicable sustainability indicator to the San Gorgonio Pass Subbasin due to geographic distance from the Pacific Coast.

The goal of the Subbasin management is to generally stabilize long-term groundwater levels, while maintaining the historical trend of cyclical water table variations with the understanding that water levels will fluctuate based on the season, hydrologic cycle, and changing groundwater demands within the subbasin.

Conditions within the SGP Subbasin will be considered sustainable when groundwater levels are maintained to prevent undesirable results of applicable sustainability indicators.

For several years, the three GSAs within the SGP Subbasin have been coordinating efforts on how to reach and maintain sustainability. As described in Chapter 3 – Basin Setting, the SGP Subbasin has significant local variations in geologic conditions, water supplies, groundwater quality, and land uses that lead to different conditions and obligations within each GSA. The degree of groundwater level variations in the SGP Subbasin varies by location and is primarily affected by local land use and locally available surface water supplies.

Collectively, the SGP Subbasin's GSAs are responsible for implementing projects and management actions required to maintain sustainability and avoid overdraft. The measures to be implemented to operate the Subbasin within the sustainable yield are described in Chapter 6 – Projects and Management Actions to Achieve Sustainability. These projects and management actions have been identified to guide Subbasin sustainability through 2042 and beyond. Projects and management actions will be developed as necessary throughout the 20-year implementation period, but many benefits may not be seen until the latter years of the implementation period and beyond. The descriptions of projects and management actions include technical data and estimates of project benefits that will support sustainability in the Subbasin. The GSAs will continue to coordinate through the implementation period in reviewing data, evaluating impacts, and ensuring that all GSAs are meeting their milestones and that sustainability is being maintained.

4.2 UNDESIRABLE RESULTS

SGMA regulations define an undesirable result as a situation when a sustainability indicator becomes significant and unreasonable; however, the term "significant and unreasonable" is not defined in the regulations. Rather, the conditions leading to this classification are determined by the GSA with input from stakeholders.

4.2.1 DEFINITION OF SIGNIFICANT AND UNREASONABLE

The SGP Subbasin GSAs' qualitative definition of significant and unreasonable effects (undesirable results) and quantitative measure are detailed in Table 4-2. The quantitative measure refers to "minimum thresholds" which are explained in detail in Section 4.3.

As previously stated, seawater intrusion is not an applicable sustainability indicator and, therefore, not described in this section. More information on those sustainability indicators can be found in Section 4.5.

The Undesirable Result No. 1 in Table 4-2 includes two categories, (1) MA 2 (Banning Canyon/Banning Bench) and (2) MAs 3 and 4 (Banning/Cabazon and DWA). This is due to the unique hydrology and conditions in the Banning Canyon, as compared to the rest of the Subbasin.

The Banning Canyon Storage Unit within MA 2 is perched upstream of the rest of the Subbasin in the alluvium of the San Gorgonio River and that alluvium is usually less than 200 feet deep, with very limited storage capacity. Groundwater storage in the canyon's aquifer varies on a seasonal basis, increasing with runoff and snowmelt in the winter and decreasing with underflow and pumping in the summer. The seasonal hydrologic cycle in the canyon is markedly different from the long term (20+ year) hydrologic cycle seen in the rest of the subbasin.

Banning Canyon has been pumped for beneficial uses since the early 1900s with groundwater levels decreasing due to pumping each summer until they are replenished with annual precipitation each winter/spring. Although the City of Banning pumps groundwater from Banning Canyon until the groundwater levels naturally drop due to the outflow from the steep gradient and limited capacity, groundwater levels routinely recover because of the canyon's unique hydrology and geology. Whereas the rest of the Subbasin has relatively deep aquifers and experiences decadal cycles of groundwater level declines and recovery, the Banning Canyon has maintained conditions of annual depletion and annual recharge for the last fifty years. This is further explained in Section 3.2.

Table 4-2 Undesirable Results in the San Gorgonio Pass Subbasin

	Qualitative Definition	Quantitative Definition	Sustainability Indicator
Undesirable Result No. 1	Management Area 2: The groundwater levels in the Banning Canyon develop a declining multi-year trend uncharacteristic of the usual annual fluctuations that include rebound of water levels during the annual wet season.	Undesirable Result No. 1 is defined as two of the three representative water level monitoring sites in the Banning Canyon below (i.e., exceeding) their minimum threshold in any seasonal monitoring period for two consecutive years, as a result of basin management activities. This would be an indicator that the annual fluctuations are trending to a chronic decline, rather than a short-term deviation from the historic groundwater level trends. In the event the conditions of Undesirable Result No. 1 were to occur, the GSAs can investigate if the declining trend is caused by groundwater management. Upon the first year of being below its respective threshold, the GSAs can evaluate the need for projects and management actions.	Groundwater Levels
	Management Areas 3 and 4: The groundwater level has declined to a depth such that multiple wells need to be deepened (where feasible) to provide the minimum necessary groundwater supplies for beneficial uses.	Undesirable Result No. 1 is defined as two of the six representative water level monitoring wells in the Banning/Cabazon and Desert Water agency MAs falling below their minimum threshold in any seasonal monitoring period for 2 consecutive years at each of the respective sites, as a result of basin management activities. Two wells are selected to ensure isolated anomalies related to well monitoring or construction failures in one well are not misconstrued to represent the entire Subbasin.	
Undesirable Result No. 2	Groundwater storage drops below levels that are consistent with groundwater level minimum thresholds	Undesirable Result No. 2 is defined as the volume of groundwater storage consistent with groundwater level minimum thresholds that provide adequate groundwater reserves for the subbasin.	Groundwater Storage

	Qualitative Definition	Quantitative Definition	Sustainability Indicator
Undesirable Result No. 3	As a result of groundwater management actions, the groundwater quality diminishes to the point that the water producer is responsible for expensive treatment adjustments.	Undesirable Result No. 3 is defined as two representative water quality monitoring sites exceeding their groundwater quality minimum threshold of either nitrate (as nitrogen or N) or TDS in two consecutive normal monitoring periods occurring every three years, as a result of groundwater management actions.[1] The normal monitoring would be accelerated to annually (for affected wells) in the event that the groundwater quality measurable objective is exceeded. Sampling will return to three-year periods when the affected well is no longer exceeding the measurable objective.	Groundwater Quality
Undesirable Result No. 4	The groundwater levels in Banning Canyon have resulted in a significant decline in GDEs compared to historic conditions in prolonged drought periods.	Undesirable Result No. 4. is defined as two of the three Banning Canyon representative water level/interconnected surface water monitoring sites experiencing levels below minimum thresholds for two consecutive years, consistent with the quantitative definition for water levels. Two consecutive years of these exceedances would indicate that the annual fluctuations are trending to a long-term, rather than short-term, decline from the historic groundwater level trends. In the event these conditions occur, the GSAs can further investigate if groundwater management caused the undesirable result and if the potential GDE footprint experiences a "large decrease" compared to 2014 conditions as defined by GDE Pulse.[2]	Interconnected Surface Water
Undesirable Result No. 5	Land subsidence that causes impacts to surface structures such as flood channels, conveyance or transportation facilities.	Undesirable Result No. 5 is defined as either an annual decline in measured ground surface elevations of no more than approximately 0.1 foot year as a result of basin management actions or a cumulative decline in measured ground surface elevations of more than 1 during the implementation period and zero feet after 2042.	Land Subsidence

	Qualitative Definition	Quantitative Definition	Sustainability Indicator
[1] Constituents of concern were identified as being Total Dissolved Solids (TDS) or Nitrate (as N) for the SGP Subbasin, as defined in **Section 3.2 – Groundwater Conditions**. [2] The Nature Conservancy's (TNC) GDE Pulse evaluation of GDE footprints are produced in approximately 5-year increments. (GDE Pulse (codefornature.org)). SGMA was signed into law in 2014, informing the baseline period for the GDE analysis as 2014. In the event a quantitative undesirable result occurs, the conditions that led to the occurrence and the presence of qualitative undesirable results will be assessed by the GSAs to evaluate if the occurrence is related to anomalous circumstances or if the occurrence is representative of the qualitative definition of undesirable results. In the event qualitative undesirable results are present at any point, independent of a quantitative undesirable result occurrence, the GSAs will consider opportunities of mitigation and adaptive management opportunities, such as projects and management actions listed in Chapter 6.			

4.2.2 CRITERIA TO DEFINE UNDESIRABLE RESULTS AND CAUSES LEADING TO GROUNDWATER UNDESIRABLE RESULTS

The GSAs reviewed potential causes of groundwater conditions that could result in significant and unreasonable impacts. This information was considered when developing criteria to define undesirable results.

Regulation Requirements:

§354.26 (a) Each Agency shall describe in its Plan the processes and criteria relied upon to define undesirable results applicable to the basin. Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin.

§354.26 (b) The description of undesirable results shall include the following:

(1) The cause of groundwater conditions occurring throughout the basin that would lead to or has led to undesirable results based on information described in the basin setting, and other data or models as appropriate.

(2) The criteria used to define when and where the effects of the groundwater conditions cause undesirable results for each applicable sustainability indicator. The criteria shall be based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin.

(3) Potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results.

4.2.2.1 GROUNDWATER LEVELS

To define undesirable results related to groundwater levels, the GSAs identified potential significant and unreasonable impacts to the beneficial uses of groundwater in the Subbasin, including management impacts, economic impacts, and environmental impacts.

Considering the significant depth to groundwater in MAs 3 and 4, potential undesirable results could possibly include increased groundwater pumping costs, lowering pump settings, and drilling deeper wells to access available groundwater storage. The potential undesirable results in the shallow aquifer of the Banning Canyon Storage Unit of MA 2 differ from the rest of the subbasin and are associated with avoiding significant reductions to groundwater levels and damage to Groundwater Dependent Ecosystems, which may be present. Table 4-2 presents the two components of the SGP Subbasin's definition of undesirable results for groundwater levels by MA.

Currently, the SGP Subbasin has not experienced undesirable results caused by groundwater level decline. In the future, various factors, such as increased pumping due to drought conditions, have the potential to cause changes leading to undesirable results. The groundwater elevation at which an undesirable result could possibly occur varies throughout the Subbasin and within each GSA and MA.

A continued decline of groundwater levels below the minimum threshold for two consecutive years as a result of basin management activities may indicate the potential for an undesirable result. The decline of the water table below minimum threshold levels could be caused by:

- *The future hydrologic cycle being significantly drier than historic conditions (e.g., such as replicating the historic 2008-2019 drought).*
- *Adjacent groundwater Subbasins and entities significantly increasing their groundwater extraction activities.*
- *Increased demand and pumping within the SGP Subbasin beyond what is planned in the water budget.*
- *Fire damage, or another natural disaster, impacting water infrastructure and reducing surface water supply, such as the near-term impacts related to the 2020 Apple Fire*[1].

[1] Watershed Emergency Response Team Evaluation APPLE and EL DORADO FIRES. Cal Fire. California Dept. of Conservation. November 2, 2020.

The potential effect of prolonged lowering of groundwater levels would be a need to deepen wells and/or pumps to maintain their productivity in areas of the Subbasin in which that is possible. In the event hydrologic conditions deviate significantly from the projected conditions, and if identified of projects and management actions (noted in Chapter 6 – Projects and Management Actions) are not implemented, then there is potential for various areas in the Subbasin to require further deepening of wells, which would result in increased financial burden on stakeholders, particularly those who are classified as DACs or SDACs. In the event it is necessary to implement projects and management actions to maintain sustainable groundwater levels above the minimum thresholds (Section 4.3), doing so would prevent significant and unreasonable undesirable results and support sustainable long-term conditions within the Subbasin.

4.2.2.2 GROUNDWATER STORAGE

Beneficial Users for the Groundwater Storage sustainability indicator are consistent with those for the Groundwater Level sustainability indicator in the SGP Subbasin, which include municipal, tribal, and domestic water users. Groundwater storage is directly related to the water levels identified for groundwater level undesirable results, which were identified as a point that preserves current extraction capacities for beneficial users. The amount of groundwater storage necessary to preserve water user extractions was computed based on a calculation of groundwater storage utilizing an estimated aquifer thickness, storage capacity and water levels. The water levels used for this determination are consistent with those identified to determine undesirable impacts for declining water levels.

4.2.2.3 GROUNDWATER QUALITY

An undesirable result for degraded water quality is defined under SGMA as "significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies" (CWC 10721 (x)). Within the SGP Subbasin, undesirable results for groundwater quality will be based initially on MCLs assigned in the California Title 22 Code of Regulations. Title 22 of California's Code of Regulations refers to state guidelines for how treated and recycled water is discharged and used.

The intent of SGMA is that GSAs be responsible for significant and unreasonable degradation of water quality as a result of groundwater management activities (i.e., pumping, recharge, conjunctive use projects, etc.) within the respective subbasin. Other existing regulatory agencies and programs, such as the Regional Water Quality Control Board (RWQCB) and the Department of Toxic Substances Control, are generally responsible for tracking and remediation of groundwater quality. The sustainable management criteria assigned for this sustainability indicator are based on the efforts of these existing agencies and programs.

As described in Section 3.2, the SGP Subbasin generally has an overall positive assessment of groundwater quality conditions. Of the list of screened COCs within the Subbasin, SMCs were only established for Nitrate (as nitrogen or N) and TDS at representative groundwater quality monitoring sites. The GSAs have designated TDS and nitrate (as N) as the primary COCs to monitor in this GSP for several reasons: their prevalence in nearby and similarly managed basins, sufficient historic record, their ability to negatively impact the beneficial uses of groundwater in the Subbasin, and the cost required to mitigate concentrations with treatment operations or replacement well construction. Additionally, TDS and nitrate (as N) are complementary indicators of groundwater conditions.

To evaluate undesirable results related to groundwater quality, analytical results from groundwater sampling will be reviewed and compared against the respective SMCL values for TDS and MCL for nitrate (as N). Undesirable results related to groundwater quality for the Subbasin's constituents of concern are defined in Table 4-2. The sustainable management criteria related to groundwater quality in the SGP Subbasin are presented in Table 4-4 below.

There are several potential causes of groundwater quality degradation that could lead to undesirable results. These include but are not limited to the following potential basin management actions:

- *Accumulated effects of fertilizer nutrient application for municipal, domestic, and commercial landscaping;*
- *Accumulated effects of waste discharge streams from wastewater treatment facilities, septic systems, industry, and food processors;*
- *Mobilization of groundwater contaminant plumes by groundwater pumping;*
- *Improperly located recharge projects, causing either downward movement of contaminants in the vadose zone or mobilization groundwater contaminant plumes; and*
- *Overall increase in dissolved constituents (TDS) from lowering the groundwater levels or other practices as a result of basin management activities.*
- *Lateral migration from adjacent basins with poorer groundwater quality*

The potential effects on beneficial users of reaching undesirable results may vary by location and which constituent has been exceeded. Agencies that provide drinking water are legally required to regularly sample groundwater from their wells, compare the results to potable water standards (MCL), and report these results in publicly available Consumer Confidence Reports, which has allowed the GSAs to analyze the water quality conditions in the Subbasin (Section 3.2). Degraded groundwater quality can make drinking water treatment more difficult and expensive. Based on review of quality conditions in Section 3.2, there are currently no known significant groundwater quality concerns in the SGP Subbasin.

4.2.2.4 LAND SUBSIDENCE

An undesirable result for land subsidence would be the significant and unreasonable loss of functionality of important infrastructure such as bridges, roads or highways, wells, and pumps, levees, canals, and structures due to land subsidence. Due to the subbasin's depositional environment, specifically the lack of identified compressible clay material, it is unlikely that changes in groundwater levels would cause subsidence in the SGP Subbasin. In the unlikely event that inelastic subsidence occurs, potential impacts could include damage to existing infrastructure. Based on the relatively steep gradients across much of the SGP Subbasin, several feet of subsidence would likely be required to result in significant and unreasonable impacts to critical infrastructure. Therefore, the sustainability threshold has been conservatively established at no more than 1 foot of subsidence over the sustainability period, which is substantially lower than the level anticipated to affect critical infrastructure.

4.2.2.5 INTERCONNECTED SURFACE WATER

Documentation of interconnected surface waters in the SGP Subbasin is limited to the Banning Canyon storage unit in MA 2. The Millard, Hathaway, and Potrero Canyons are excluded because they are located within MBMI lands which are not subject to SGMA and are outside of the GSP's jurisdiction. The potential interconnected surface water within the Subbasin is of interest as it can correlate with areas of GDEs as a beneficial user of groundwater. Potential GDEs that fall within the lands subject to SGMA are located within MA 2 (Banning Canyon). As shown by the groundwater elevation data in Section 3.2, the depth to groundwater in MAs 3 and 4 is hundreds of feet below the ground surface which is hydraulically disconnected from the land surface and unable to support GDEs.

The criteria to define undesirable results related to interconnected surface water (Table 4-2) are informed by the most limiting beneficial use, which are GDEs. The groundwater levels in the Banning Canyon are unique in that the depth to bedrock is very shallow (Section 3.2) and at a sloped gradient draining into the Cabazon Storage Unit of MAs 3 and 4. In addition, the alluvial material composing the Canyon is highly permeable and swiftly reflects changes in the hydrology. The Banning Canyon has a lower storage capacity than the rest of the Subbasin. Its source water is San Gorgonio River, which is an ephemeral stream with flows generated from precipitation and upstream snowmelt.

Although there are periods in which groundwater levels can support wetland vegetation, for much of the year, the depth to groundwater in Banning Canyon falls below 50 feet. This depth to groundwater for most of the year is consistent with groundwater management activities prior to implementation of SGMA in

2015. Additionally, groundwater depths are greatly influenced by the steep gradient of the canyon, limited aquifer capacity, and climactic conditions. See Section 3.2 for a detailed description of the GDE analysis.

In addition to GDEs, the City of Banning is another beneficial user with interest in maintaining historic groundwater conditions in the Banning Canyon because it uses the groundwater to support production demands and supplement its groundwater extractions in MA 3 and MA 1. In addition, groundwater in the Banning Canyon has historically supported Banning Heights Mutual Water Company in times of emergency, such as after the 2020 Apple Fire impacted their water supply infrastructure.

There are several potential causes that could lead to undesirable results related to interconnected surface water. These include but are not limited to:

- *Climate change impacting snowpack and upstream runoff.*
- *Fire damage impacting water conveyance infrastructure that had previously contributed seepage from the Whitewater River flume into the Banning Canyon.*

4.3 MINIMUM THRESHOLDS

Minimum thresholds are defined by SGMA as "the quantitative value that represents the groundwater conditions at a monitoring site that, when exceeded individually or in combination with minimum thresholds at other monitoring sites, may cause undesirable result(s) in the subbasin." The GSAs' quantitative definitions of specific minimum thresholds for each sustainability indicator are outlined in Table 4-3 and Table 4-4.

4.3.1 DEFINITION OF MINIMUM THRESHOLDS

Regulation Requirements:

§354.26 (c) The Agency may need to evaluate multiple minimum thresholds to determine whether an undesirable result is occurring in the basin. The determination that undesirable results are occurring may depend upon measurements from multiple monitoring sites, rather than a single monitoring site.

§354.28 (a) Each Agency in its Plan shall establish minimum thresholds that quantify groundwater conditions for each applicable sustainability indicator at each monitoring site or representative monitoring site established pursuant to Section 354.36. The numeric value used to define minimum thresholds shall represent a point in the basin that, if exceeded, may cause undesirable results as described in Section 354.26.

(d) An Agency may establish a representative minimum threshold for groundwater elevation to serve as the value for multiple sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence.

The representative monitoring network for each sustainability indicator is described in Chapter 5 – Monitoring Network. These sites are distributed widely across the Subbasin, providing helpful coverage to assess the variety of groundwater conditions by MA.

A unique minimum threshold is defined at each of the representative monitoring sites (RMS). Due to the occasional anomalous measurements of water levels or water quality, it is not reasonable for a single minimum threshold exceedance to lead to an undesirable result for the entire SGP Subbasin; therefore, an undesirable result determination will be based on multiple monitoring locations within the SGP Subbasin continually falling below MTs over a defined period. The number of minimum threshold exceedances and the defined period that would constitute a significant and unreasonable impact (undesirable result) are described in Table 4-2.

4.3.1.1 GROUNDWATER LEVELS, AND INTERCONNECTED SURFACE WATER

Groundwater levels are used as a proxy for interconnected surface water. Three wells in the Banning Canyon, 4L3 (COB #11), 17F2 (COB #8), and 33J4 (COB #2) are proxy wells for interconnected surface water (depletion of interconnected surface water). The sustainable management criteria for representative water level and interconnected surface water monitoring sites are presented in Table 4-3.

Table 4-3 Groundwater Levels - Sustainable Management Criteria

Representative Monitoring Site	Measurable Objective	Minimum Threshold	Sustainability Indicator		
	Water Surface Elevation in Feet (Above Mean Sea Level)		Groundwater Levels		Interconnected Surface Water
Management Area 2					
4L3 (COB #11)	4,425	4,400	✔		✔
17F2 (COB #8)	3,665	3,640	✔		✔
32E2	TBD*	TBD*	✔		
33J4 (COB #2)	2,705	2,680	✔		✔
Management Area 3					
18A1 (COB #M11)	1,955	1,905	✔		
11F4	1,570	1,520	✔		
7P4	1,440	1,390	✔		
11H3	1,163	1,138	✔		
Management Area 4					
8L1	1,130	1,114	✔		

*There are no water level data available for 32E2. SMCs are to be determined (TBD) and will be developed using future data collected during GSP Implementation

4.3.1.2 GROUNDWATER STORAGE

Minimum thresholds for groundwater storage were estimated based on water levels, aquifer depth, and aquifer properties for each MA. The water levels used were those identified for minimum thresholds for the representative monitoring sites, which were extended across the entire SGP Subbasin. Based on these computations, the groundwater storage minimum threshold is 16,600 acre-feet for MA 2 (Banning Canyon), 855,000 acre-feet for MA 3 (Banning/Cabazon) and 78,000 acre-feet for MA 4 (DWA).

4.3.1.3 GROUNDWATER QUALITY

Groundwater quality in the SGP Subbasin is generally suited for commercial, domestic, industrial, and municipal use. In the Banning Canyon, groundwater quality is also suitable for GDEs. The minimum thresholds have been set consistent with State and local groundwater quality standards to be protective of water uses and users and are intended to be protective of human health (Title 22 of the CCR).

Groundwater pollution characterization and mitigation are typically the responsibility of local agencies and state programs. The GSAs will review and analyze publicly available routine groundwater monitoring data reported by the municipal, community, and non-community public production wells to assess whether groundwater pumping or other groundwater management actions may be contributing to or exacerbating groundwater quality concerns. This evaluation will also help identify areas where pumping restrictions or other mitigation measures may be enforced, if necessary.

Because groundwater from the SGP Subbasin is used as a potable water source, the minimum thresholds for groundwater quality are exceedances of the MCL for nitrate (as N) and the SMCL for TDS. These constituents can potentially be influenced by groundwater management actions in the SGP Subbasin. MCLs are defined with respect to human health, and SMCLs are defined mainly for aesthetics, taste, and odor. There are no recent or historical concentrations above the SMCL for TDS and MCL for nitrate (as N) in the representative monitoring wells.

It is speculated that declining water levels can potentially lead to increased concentrations of some constituents that reside in larger proportions in deeper aquifer zones. Conversely, rising water levels can also lead to increased concentrations of some constituents of concern. For example, nitrates that may reside in unsaturated soils at shallower depths can enter the groundwater if the water table rises. However,

groundwater levels will not be used as a proxy for water quality due to a lack of clear correlation between groundwater levels and changes in water quality in the SGP Subbasin. Water quality conditions in the Subbasin are further described in Section 3.2. The sustainable management criteria for water quality are outlined in Table 4-4 and the representative water quality monitoring sites are included on Figure 4-3.

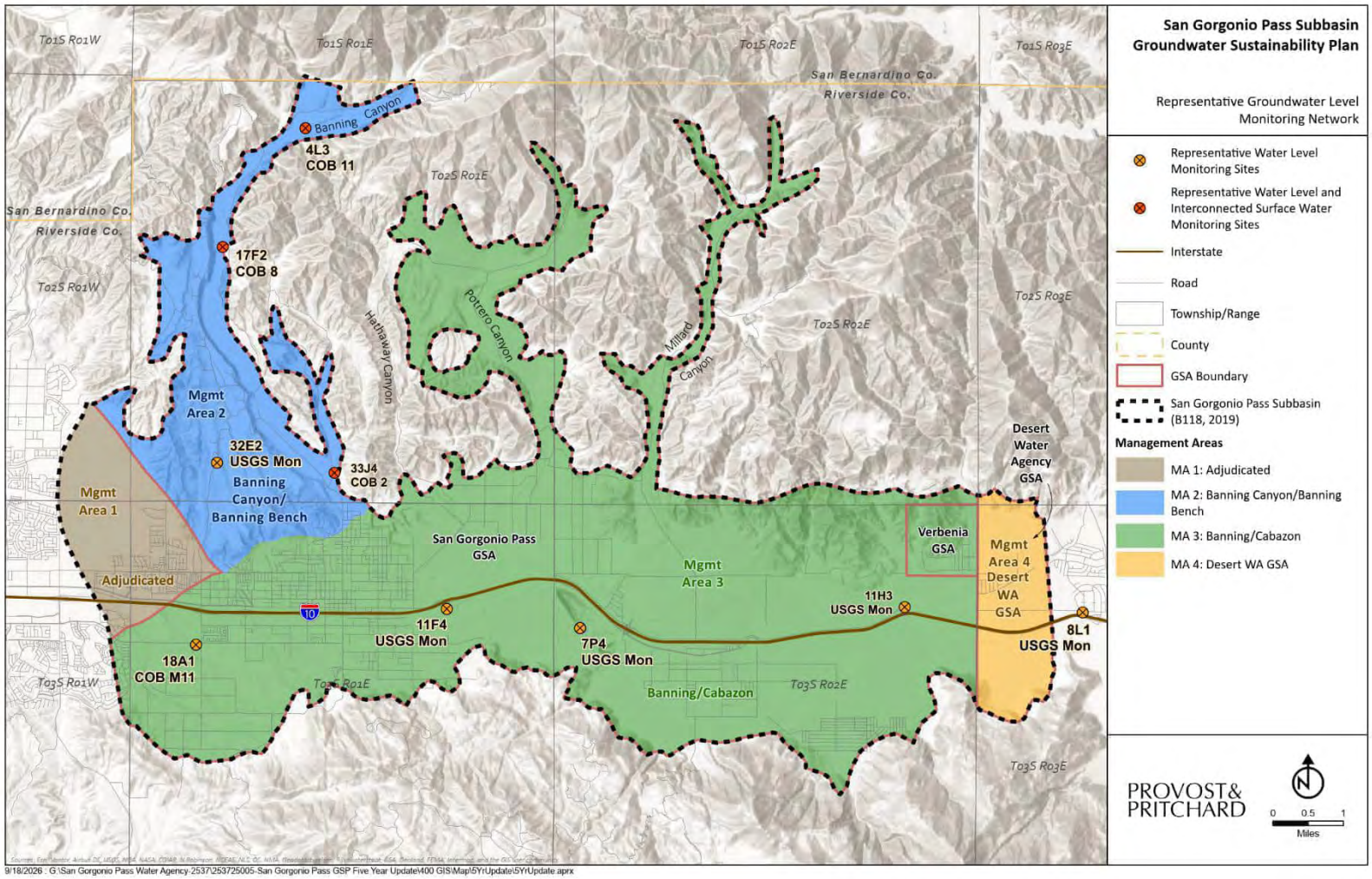
Table 4-4 Groundwater Quality - Sustainable Management Criteria

Management Area	Storage Unit	Representative Monitoring Site	2027 Interim Milestone	2032 Interim Milestone	2037 Interim Milestone	2042 Interim Milestone	Measurable Objective	Minimum Threshold
TDS (mg/L)[1]								
2	Banning Canyon	17M1 (COB #7)	800				800	1000
3	Banning	18A1 (COB #M11)						
3	Cabazon	9E1 (CWD #1)						
3	Cabazon	7K1 (CWD #2)						
4	Cabazon	7D1 (MSWD #25A)						
Nitrate as N (mg/L)[2]								
2	Banning Canyon	17M1 (COB #7)	8				8	10
3	Banning	18A1 (COB #M11)						
3	Cabazon	9E1 (CWD #1)						
3	Cabazon	7K1 (CWD #2)						
4	Cabazon	7D1 (MSWD #25A)						
	[1]The SMCL for TDS is a range, 500 mg/L to 1,000 mg/L with 1000 mg/L correlating with the MCL for normal continuous use when better quality water is not reasonable/feasible. With consideration of the beneficial uses of groundwater, 800 mg/L is defined as the measurable objective and 1,000 mg/L is defined as the minimum threshold.							
	[2]The MCL of 10 mg/L for nitrates is defined as the minimum threshold, with 80% of the minimum threshold (8 mg/L) serving as the measurable objective.							

4.3.1.4 LAND SUBSIDENCE

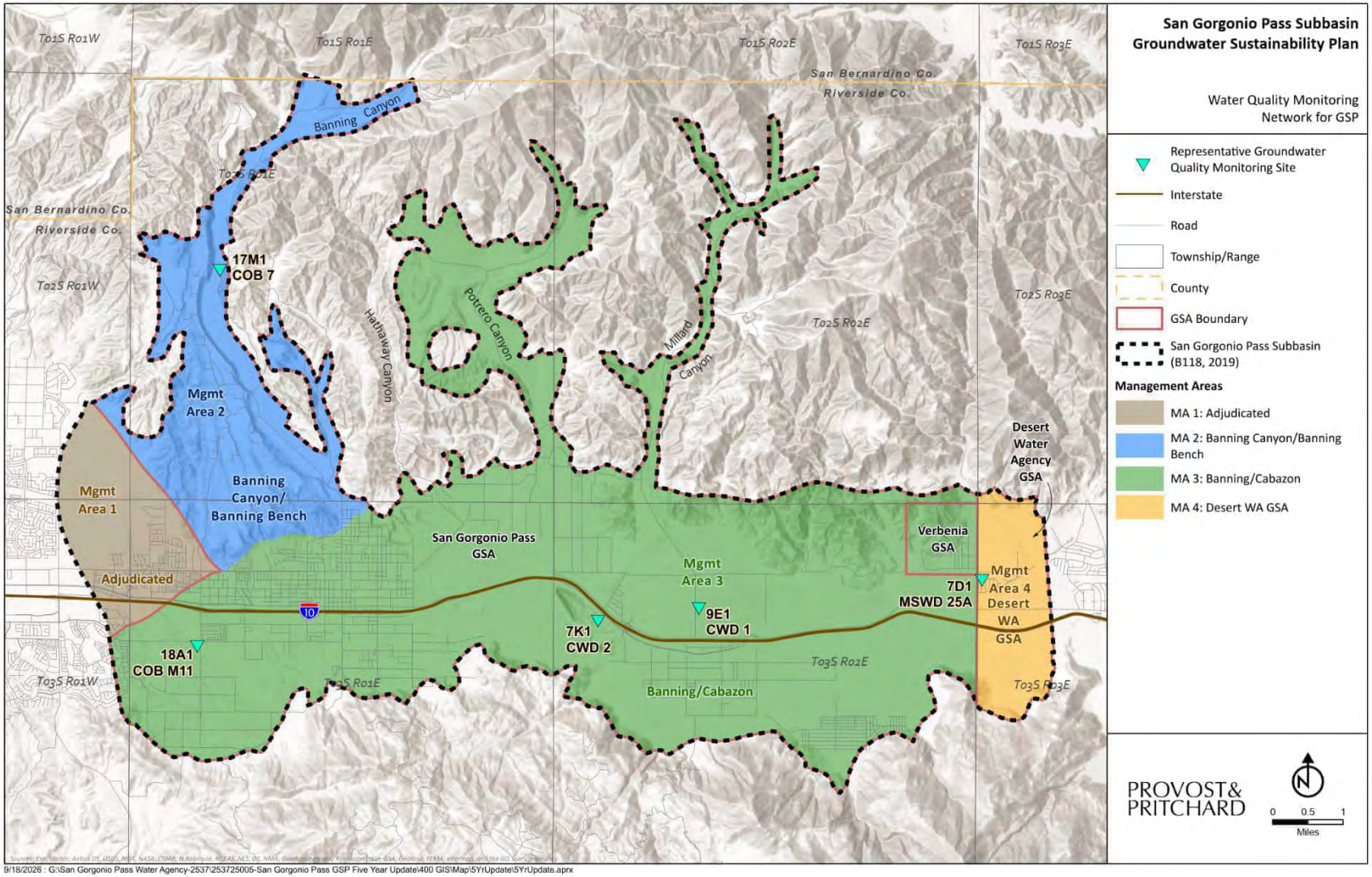
Based on deposition conditions in the SGP Subbasin, particularly the lack of compressible clay layers, it is considered extremely unlikely that any subsidence will occur. Occurrence of land subsidence could result in different rates of subsidence that cause alterations in land surface gradients. Any alteration in land surface gradients could affect factors such as drainage patterns and other infrastructure that are sensitive to changed gradients. The minimum thresholds for land subsidence caused by groundwater level decline were identified to avoid damage to existing infrastructure, particularly from flooding resulting from changes in land surface gradients. Finally, the land subsidence minimum threshold applies only to land subsidence caused by groundwater level declines, and would not apply to land subsidence resulting from other factors such as tectonic activity.

Figure 4-2 Representative Groundwater Level and Interconnected Surface Water Monitoring Network



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Figure 4-3 Representative Groundwater Quality Monitoring Network



4.3.2 CRITERIA TO DEFINE MINIMUM THRESHOLDS

Regulation Requirements:

§354.28 (b) The description of minimum thresholds shall include the following:
(1) The information and criteria relied upon to establish and justify the minimum thresholds for each sustainability indicator. The justification for the minimum threshold shall be supported by information provided in the basin setting, and other data or models as appropriate, and qualified by uncertainty in the understanding of the basin setting.

§354.28 (c) Minimum thresholds for each sustainability indicator shall be defined as follows:
(1) Chronic Lowering of Groundwater Levels. The minimum threshold for chronic lowering of groundwater levels shall be the groundwater elevation indicating a depletion of supply at a given location that may lead to undesirable results. Minimum thresholds for chronic lowering of groundwater levels shall be supported by the following:

(A) The rate of groundwater elevation decline based on historical trends, water year type, and projected water use in the basin.
(B) Potential effects on other sustainability indicators.

(2) Reduction of Groundwater Storage. The minimum threshold for reduction of groundwater storage shall be a total volume of groundwater that can be withdrawn from the basin without causing conditions that may lead to undesirable results. Minimum thresholds for reduction of groundwater storage shall be supported by the sustainable yield of the basin, calculated based on historical trends, water year type, and projected water use in the basin.
(4) Degraded Water Quality. The minimum threshold for degraded water quality shall be the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the Agency that may lead to undesirable results. The minimum threshold shall be based on the number of supply wells, a volume of water, or a location of an isocontour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin. In setting minimum thresholds for degraded water quality, the Agency shall consider local, state, and federal water quality standards applicable to the basin.
(5) Land Subsidence. The minimum threshold for land subsidence shall be the rate and extent of subsidence that substantially interferes with surface land uses and may lead to undesirable results. Minimum thresholds for land subsidence shall be supported by the following:

(A) Identification of land uses and property interests that have been affected or are likely to be affected by land subsidence in the basin, including an explanation of how the Agency has determined and considered those uses and interests, and the Agency's rationale for establishing minimum thresholds in light of those effects.
(B) Maps and graphs showing the extent and rate of land subsidence in the basin that defines the minimum threshold and measurable objectives

Minimum thresholds were defined for each representative monitoring network. This section details the criteria to define them.

4.3.2.1 GROUNDWATER LEVELS

As shown in Table 4-3 above and the hydrographs in Figure 4-4 through Figure 4-11, the minimum threshold water surface elevation (WSE) is set below the measurable objective. The water level range between the minimum threshold and measurable objective defines a range of operational flexibility that allows for periods of increased groundwater pumping during drought periods without causing undesirable results. The operational flexibility occurring between the measurable objective and the minimum threshold provides for the ability to conjunctively use groundwater and supports the ability to recharge available water supplies in wet years for use in subsequent dry years.

The establishment of each respective minimum threshold is based on review of actual and projected groundwater elevations at each of the wells included in the representative monitoring network. The method for assigning minimum thresholds is as follows:

1. *Historic groundwater elevation data (where available) were plotted for each representative monitoring network site.*
2. *In MAs 3 and 4(Banning and Cabazon Storage Units), groundwater elevations were projected into the future for 50 years, incorporating impacts from both climate change and projected groundwater pumping within and adjacent to the GSAs. The projected groundwater elevations were generated from the modeling effort described in* ***Chapter 3 – Basin Setting****. In the Banning Canyon Storage Unit of MA 2, groundwater levels are projected to remain within the general range of historic*

groundwater conditions; therefore, historic groundwater levels were more relevant for the Banning Canyon Storage Unit analysis than model-projected groundwater levels. Groundwater level projection analyses were completed that included (1) projects and management action impacts, (2) climate change impacts and (3) projected pumping changes. Only the latter two were used to assess sustainable management criteria because projects and management actions may not be necessary to support maintaining sustainability in the SGP Subbasin. Because the groundwater model does not always exactly represent current absolute groundwater levels, most of the hydrographs include an offset of the actual model projections to represent the difference between current water levels as actually measured and projected by the model.

3. *Well construction information at representative monitoring sites was compared to the projected groundwater elevation hydrograph to consider the potential need to deepen wells or adjust pump settings.*
4. *Minimum thresholds were assigned based on unique criteria in response to the most limiting significant and unreasonable undesirable result. These criteria and rationale are presented in* ***Table 4-4****.*
5. *Projected and historic data from wells nearest to representative monitoring sites were examined to see if the minimum threshold and measurable objectives were in alignment with their projected trends.*
6. *Construction information for non-representative wells were reviewed alongside nearby representative monitoring wells to evaluate whether the sustainable management criteria fit local groundwater use needs of the other non-representative wells..*

Minimum thresholds in the Banning Canyon Storage Unit of MA 2 are set to generally maintain the annual historical fluctuations observed in that Storage Unit and to maintain historical operations which have not resulted in undesirable results in the past.

Minimum thresholds in MAs 3 and 4 (Banning and Cabazon Storage Units) generally represent the minimum projected water level through the Implementation Period, ending in 2042. The minimum projected Implementation Period water levels did not result in identified significant and unreasonable impacts on the beneficial uses of the representative monitoring wells, such as the need for lowering pump settings or drilling new wells. A more detailed rationale for minimum thresholds of water levels and groundwater storage is outlined in Table 4-5.

The Banning Canyon has been pumped for beneficial uses since the early 1900s with groundwater levels decreasing due to natural drainage and pumping each summer until they are replenished with annual precipitation and snowpack melt in the winter and spring. Although the City of Banning pumps from Banning Canyon until the production slows down, groundwater levels always recover because of the Canyon's unique hydrology and geology. Whereas the rest of the Subbasin has experienced 20-year cycles of groundwater level decline and recovery, the status quo in Banning Canyon for the past 50 years has been annual depletion met with annual recharge.

4.3.2.2 GROUNDWATER STORAGE

Groundwater storage minimum thresholds are defined as storage volumes in each MA that are equivalent to the groundwater level minimum thresholds defined for RMS and contoured across the entire SGP Subbasin. Minimum thresholds for groundwater storage were estimated based on water levels (MT for water levels), aquifer depth, and aquifer properties for each MA.

4.3.2.3 GROUNDWATER QUALITY

The minimum thresholds for groundwater quality are defined as the MCL for nitrate (as N) and the SMCL for TDS.

The SMCL for TDS is a range of 500 mg/L to 1,000 mg/L. With consideration for the beneficial uses of groundwater, sustainable management criteria are consistent with existing water quality standards. The measurable objective for TDS is defined as 800 mg/L and the minimum threshold is defined as 1,000 mg/L. The minimum threshold for nitrate (as N) is defined as the MCL (10 mg/L) and the measurable objective is defined as 80-percent of the MCL (8 mg/L).

There are currently no water quality concerns of this GSP's COC in the SGP Subbasin and none are expected during the implementation period. TDS and nitrate were selected as the constituents for representative monitoring due to their prevalence in nearby and similarly managed basins, sufficient historic record, and their ability to negatively impact the beneficial uses of groundwater in the Subbasin.

4.3.2.4 LAND SUBSIDENCE

Based on the depositional environment in the SGP Subbasin, particularly the lack of compressible clay layers, it is considered extremely unlikely that any subsidence will occur. However, to be extremely protective, a minimum threshold has been identified as no more than 1 foot of land surface decline across any 160-acre contiguous area within the SGP Subbasin during the implementation period. Zero feet of subsidence is anticipated after 2042. DWR's INSAR will be used annually to quantify changes in land surface elevation since 2015. Any land subsidence that is caused by water level declines averaging more than 1-foot for an area of at least 160-acres would be an exceedance of the minimum threshold.

4.3.2.5 INTERCONNECTED SURFACE WATER

The establishment of each respective minimum threshold is based on actual and projected groundwater elevations at each of the wells selected for the representative monitoring network for interconnected surface water. There are no stream gages in or adjacent to the SGP Subbasin to monitor flows from the San Gorgonio River; therefore, a volumetric analysis to inform sustainable management criteria is not feasible. The method for assigning minimum thresholds is as follows:

1. *Historic groundwater elevation data were plotted for each representative monitoring network site in Banning Canyon.*
2. *The minimum threshold was assigned at the point in which groundwater extractions from the Banning Canyon Storage Unit of MA 2 typically halt and the City of Banning converts to pumping in the Banning Storage Unit to supply the needs of the city. This minimum threshold was defined to maintain the status quo, which has not caused undesirable results related to interconnected surface water.*
3. *To consider the interests of the beneficial use of groundwater by GDEs, the historic canyon groundwater elevation and extraction data were compared to historic GDE footprints documented by TNC's GDE Pulse, which confirmed there were no undesirable results because of groundwater management during the most significant drought periods.*

It is important to acknowledge that the vegetation in Banning Canyon, identified as potential GDE area, may be composed of surface water dependent vegetation (rather than interconnected or groundwater dependent). The depth to groundwater in the Canyon falls below 50 feet for most of the year and can remain greater than 50-feet depth to groundwater during the wet season in dry, critical, and below normal water year types. Depth to groundwater in Banning Canyon across water year types is presented in hydrographs Section 3.2.1.

Table 4-5 Rationale for Assigning Sustainable Management Criteria

Rationale for Assigning Groundwater Level Sustainable Management Criteria					
Management Area	*Storage Unit*	*Representative Monitoring Site*	*Minimum Threshold (qualitative definition)*	*Measurable Objective (qualitative definition)*	*Rationale for Assigning Minimum Threshold and Measurable Objective*
2	***Banning Bench***	*The only publicly available wells in the vicinity of the Banning Bench Storage Unit appear to be perforated only in the overlying Banning Canyon storage units and are not representative of Banning Bench groundwater conditions. This area is considered a high-priority data gap.*			
2	***Banning Canyon***	*4L3 (COB #11)* *17F2 (COB #8)* *33E2* *33J4 (COB #2)*	*The minimum threshold is assigned at the point in which groundwater extractions from the Banning Canyon typically halt, and the City of Banning converts to pumping in the Banning Storage Unit to supply the needs of the city.*	The measurable objective is set to 25-feet WSE above the minimum threshold. The measurable objective is set to reflect the groundwater levels during the wet period in winter and spring.	*The Banning Canyon has a distinctly different hydrologic cycle than the rest of the Subbasin, lasting a single water year with seasonal fluctuations. The minimum threshold and measurable objective are assigned to maintain the historic fluctuations and natural range in groundwater levels within the Banning Canyon. The historic groundwater level has not produced undesirable results; therefore, maintenance of these conditions is expected to continue avoidance of undesirable results.* *With the Banning Canyon Storage Unit's sustainable management criteria correlated with maintaining historic conditions, the projected groundwater levels can support the immediate and long-term needs of beneficial users of groundwater. Consequently, the projected groundwater levels are predicted to avoid significant and unreasonable impacts to the Banning Canyon's potential GDEs.*
3	***Banning***	*18A1 (COB #M11)*	*The minimum threshold is defined as the projected groundwater level low, which can support the needs of City of Banning.*	*The Measurable objective is defined as 25-feet WSE above the minimum threshold, which would allow a minimum of 10-year reaction period before reaching the minimum threshold if the groundwater*	*The minimum threshold was defined to avoid requiring the local beneficial users of groundwater to require deepening wells or installing new wells because of declined water levels. These beneficial users of groundwater include the residential, commercial, industrial,*

				levels continue at the same rate.	*and municipal uses supplied by City of Banning.*
3	***Cabazon*** *Western Area*	*11F4* *7P4* *11H3*	*The minimum threshold is defined as the projected lowest groundwater level which can support the demands of Cabazon Water District.*	*The measurable objective is defined as 50-feet WSE above the minimum threshold for 11F4 and 7P4. These were defined to reflect conditions which would allow a minimum of 10-year reaction period before reaching the minimum threshold at those respective sites.*	*The minimum threshold was defined to avoid requiring the local beneficial users of groundwater to require deepening wells or installing new wells because of declined water levels. These beneficial users of groundwater include the residential, commercial, industrial, municipal, and tribal uses supplied within and adjacent to Cabazon Water District.*
4	***Cabazon*** *Eastern Area*	*8L1*	*The minimum thresholds are assigned at the water level in which MSWD can continue to meet the current and projected demands.*	*The measurable objective is defined as 25-feet WSE above the minimum threshold. This was considered reasonable considering the variability in groundwater levels is less than conditions near wells 11F4 and 7P4 in the western and central areas of the Cabazon Storage Unit, where the differential between minimum threshold and measurable objective is 50-feet.*	*The projected groundwater levels are below the top of perforation for MSWD production wells. However, MSWD's lowest production (current and projected) and consequential drawdown is not anticipated to render significant and unreasonable Undesirable results, defined in* ***Table 4-1****.* *The measurable objective is defined to allow a minimum of 10-year reaction period before hitting the minimum threshold.* *In addition, the minimum threshold is within 10-feet of the lowest historic groundwater level. No undesirable results were experienced historically, further validating the sustainable management criteria as conservatively assigned.*

4.3.3 RELATIONSHIP BETWEEN MINIMUM THRESHOLDS AND SUSTAINABILITY INDICATORS

Regulation Requirements:

§354.28 (b) The description of minimum thresholds shall include the following:
(2) The relationship between the minimum thresholds for each sustainability indicator, including an explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.

§354.28 (c) Minimum thresholds for each sustainability indicator shall be defined as follows:
(1) Chronic Lowering of Groundwater Levels. The minimum threshold for chronic lowering of groundwater levels shall be the groundwater elevation indicating a depletion of supply at a given location that may lead to undesirable results. Minimum thresholds for chronic lowering of groundwater levels shall be supported by the following:
(B) Potential effects on other sustainability indicators.

The following provides an explanation of the relationship between the groundwater level minimum thresholds and the other sustainability indicators and the rational for determining that the minimum thresholds will avoid undesirable results for each sustainability indicator:

- *Groundwater Storage. Minimum thresholds used for groundwater storage were developed to be consistent with groundwater level minimum thresholds and represent the overall groundwater storage volume desired to be maintained for sustaining groundwater beneficial uses in the SGP Subbasin during extended drought periods.*
- *Sea Water Intrusion. This indicator is not applicable to the SGP Subbasin because of its geographic distance from the Pacific Coast and the absence of saline plumes within or adjacent to the Subbasin.*
- *Groundwater Quality. This GSP has set separate groundwater quality sustainable management criteria and the GSAs will monitor water quality as water levels change. Changing groundwater levels can positively or negatively impact groundwater contaminant concentrations. There are no known contaminant plumes that are expected to migrate because of changes in groundwater levels. The groundwater quality minimum thresholds were compared with known contaminants of concern where data was available on groundwater quality by elevation. Groundwater levels are not used as proxy for groundwater quality conditions.*
- *Land Subsidence. This indicator is likely insignificant due to the absence of the type of compressible clay material that can generate inelastic subsidence. Minimum thresholds developed for land subsidence would avoid significant and unreasonable impacts to local infrastructure and would require more significant water level declines than those provided for by the groundwater level minimum thresholds.*
- *Interconnected Surface Water. The minimum thresholds used for groundwater levels in the Banning Canyon Storage Unit of MA 2 are also applicable for monitoring impacts to interconnected surface water, specifically as groundwater levels may pertain to potential GDEs present in the Banning Canyon.*

4.3.4 IMPACT OF MINIMUM THRESHOLDS ON BENEFICIAL USES, USERS, AND ADJACENT BASINS

Regulation Requirements:

§354.28 (b) The description of minimum thresholds shall include the following:
(3) How minimum thresholds have been selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.
(4) How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.

A description of how the minimum thresholds considered avoidance of impacts to beneficial users and uses of groundwater in the SGP Subbasin as well as in adjacent basins is detailed below. Table 4-6 details each representative monitoring network's relationship to beneficial uses and their applicability of monitoring impacts of adjacent basins.

Table 4-6 Beneficial Uses of Groundwater by Management Area and Representative Monitoring Sites

Beneficial Uses of Groundwater by Management Area and Representative Monitoring Sites						
Beneficial Uses of Groundwater	**Management Area**					
	Management Area 2	Management Area 3				Management Area 4
	Banning Canyon Storage Unit	Banning Storage Unit	Cabazon Storage Unit			Cabazon Storage Unit
	Representative Monitoring Network Sites					
	4L3 (COB #11), 17F2 (COB #8), 32E2, 33J4 (COB #2),	18A1 (COB #M11)	11F4	7P4	11H3	8L1
Groundwater Dependent Ecosystems	✔					
City of Banning	✔	✔	✔			
Banning Heights Mutual Water Company	✔					
Cabazon Water District				✔		
Morongo Band of Mission Indians			✔	✔	✔	
Mission Springs Water District					✔	✔
Miscellaneous Pumping[1]	✔	✔	✔	✔	✔	✔
Adjacent Groundwater Basins		✔				✔
	[1]Miscellaneous pumping includes de minimis groundwater extractors, including private domestic supplies.					

4.3.4.1 GROUNDWATER LEVELS

The minimum thresholds for water levels have been established using varying approaches that reflect the conditions in different parts of the SGP Subbasin. The minimum thresholds have been established to allow for continued beneficial uses within the SGP Subbasin and help achieve long-term groundwater availability for beneficial users.

MANAGEMENT AREA 2 - BANNING CANYON AND BANNING BENCH STORAGE UNITS

The groundwater level conditions vary throughout the year and in different water year types in MA 2, also referred to as the Banning Canyon and Banning Bench Storage Units. The beneficial uses of groundwater within the Banning Canyon consists of potential GDEs as well as the municipal, commercial, and domestic uses supplied by City of Banning production wells in the Canyon. Beneficial uses of groundwater within the Banning Bench include rural domestic wells, however the aquifer there consists of older sedimentary deposits with limited capability for supply and limited available data. A detailed description of the potential GDEs in the Banning Canyon is outlined in Section 3.2.8.

The Banning Canyon consists of highly permeable shallow alluvium, with underlying low permeability bedrock, and resultant low storage capacity. Because of this, the City of Banning's groundwater production wells in the Banning Canyon Storage Unit are shallow and cannot sustain large water level declines. Banning Canyon is a unique area in the subbasin due to its seasonal hydrologic cycle and its long history of use for water supply. Groundwater storage in the canyon's aquifer changes on a seasonal basis, increasing with runoff and snowmelt in the winter and spring and decreasing with pumping in the summer.

The sustainable management criteria for the Banning Canyon Storage Unit's representative monitoring network are based on maintaining historic groundwater levels. Section 4.2.1 describes the historic groundwater pumping and established status quo for management in the Banning Canyon.

The minimum threshold is assigned at the groundwater level where groundwater extractions from the Banning Canyon Storage Unit is typically impaired, and the City of Banning switches to pumping in other areas such as the Banning Storage Unit or the Banning Basin to supply the city's needs. The measurable objective is set to 25-feet higher groundwater levels than the minimum threshold. The difference between the measurable objective and the minimum threshold creates a reasonable operational flexibility given the limited storage capacity; however, it also reflects the annual hydrologic cycle and seasonality of the groundwater level changes in the Banning Canyon Storage Unit. The Banning Canyon Storage Unit's sustainable management criteria is set to maintain historic conditions and the projected groundwater levels can support the immediate and long-term needs of beneficial users of groundwater. The rationale for the sustainable management criteria designations is further defined in Figure 4-6.

MANAGEMENT AREAS 3 AND 4 - BANNING AND CABAZON STORAGE UNITS

Minimum thresholds for water levels in MAs 3 and 4 were developed using an iterative process that used groundwater model projections and historical water level data. Initially, groundwater levels were projected using the groundwater model under current conditions for the long-term hydrologic period. These projected water levels were then compared to well construction characteristics at representative monitoring wells and other known nearby production wells to identify the level of impacts. Where the groundwater level projections did not result in significant and unreasonable impacts to known beneficial uses (production for the domestic, commercial, municipal, and industrial uses), the minimum threshold was set to the lowest level of the projections for wells 18A1 (COB #M11), 11F4 (USGS Mon), 11H3, and 7P4. Where significant and unreasonable impacts to beneficial uses were identified in the projections (such as water levels falling below pump settings or well depth), the minimum thresholds were revised upward to levels that would avoid those impacts. In addition to the groundwater level projections, the identification of minimum thresholds also considered long-term water level hydrographs where that data was available. The historical lows of these long-term hydrographs also indicate an upper bound on the risk of significant

and unreasonable impacts from groundwater levels on beneficial uses, as no significant impacts were noted at the time of those historical water level lows. The long-term hydrographs were only available for areas on the eastern edge of the Cabazon Storage Unit and were not a consideration for the Banning Storage Unit and the remainder of the Cabazon Storage Unit.

The minimum thresholds for the wells on the eastern end of the Subbasin, 8L1 and 11H3 were assigned based on construction and operation conditions, then confirmed to be within 10-feet of the historic groundwater level lows. These thresholds meet the production demands of MSWD, generally maintain conditions within the area as well as flows to the neighboring Indio Subbasin, and avoid the need to install new wells or deepen existing wells. The rationale for the SMC designations is further defined in Table 4-5.

The beneficial uses of groundwater that were considered during the development of the sustainable management criteria, including the minimum thresholds, are outlined in Table 4-6 below.

ADJACENT BASINS

Implementation of this GSP is expected to positively support the groundwater management of the adjacent adjudicated Beaumont Basin and the Indio Subbasin. The SGP Subbasin groundwater elevations and storage are influenced by groundwater extractions in areas that are not subject to SGMA, including the adjudicated Beaumont Basin to the west and MBMI in the SGP GSA. The SGP Subbasin's easterly groundwater flows often enter the Indio Subbasin by spilling over a steeply vertical, impermeable, underground bedrock structure near Fingal Point. DWA and Coachella Valley Water District groundwater recharge activities in the Indio Subbasin, which are adjacent to the SGP Subbasin, appear to have affected the groundwater gradient between the two Subbasins, having a net positive impact on both Subbasins' groundwater levels, storage, and changing the amount of boundary flows.

The consultant teams for the SGP GSAs and Indio Subbasin GSAs have met and discussed modeling results, boundary flows, and other inter-basin analyses. DWA, which is a GSA in both the Indio and SGP Subbasins, was particularly helpful in review and discussions of boundary flows, sustainable management criteria, potential impacts, and consistency across both groundwater subbasins methodology and results for both subbasins. In addition, the SGP GSAs have also coordinated with the adjudicated Beaumont Basin to refine projected groundwater extraction estimates, which are included as a parameter in projecting groundwater levels used to define the minimum threshold and measurable objectives of the representative monitoring sites.

4.3.4.2 GROUNDWATER STORAGE

The identified groundwater storage minimum thresholds are consistent with the groundwater level minimum thresholds and would avoid impacts to beneficial uses and adjacent basins.

4.3.4.3 GROUNDWATER QUALITY

There are currently no known chronic or migratory groundwater quality issues in SGP Subbasin. The established minimum threshold for groundwater quality is protective of groundwater uses and users, will prevent causing undesirable results in adjacent basins, and will not affect the ability of adjacent basins to achieve their sustainability goals.

4.3.4.4 LAND SUBSIDENCE

The identified land subsidence minimum thresholds would avoid impacts to beneficial uses and adjacent basins.

4.3.4.5 INTERCONNECTED SURFACE WATER

The impacts of interconnected surface water in the Banning Canyon are limited to the SGP Subbasin and will not impact adjacent basins.

4.3.5 MEASUREMENT OF MINIMUM THRESHOLDS

Regulation Requirements:

§354.28 (b) The description of minimum thresholds shall include the following:
(6) How each minimum threshold will be quantitatively measured, consistent with the monitoring network requirements described in Subarticle 4.

Groundwater level measurements and groundwater quality analytical results will be measured at the representative groundwater level monitoring sites and groundwater quality monitoring sites in accordance with water level and groundwater quality measurement protocols described in Chapter 5 – Monitoring Network. Groundwater levels and groundwater quality data will be compared to minimum thresholds on an annual basis in the Subbasin's SGMA Annual Reports. The groundwater level monitoring in the Banning Canyon serves as the monitoring for both groundwater levels and interconnected surface water. Groundwater storage volumes will be computed from aquifer thicknesses, storage capacity and the groundwater level contour map developed based on annual Fall water level measurements. Land subsidence will be estimated annually based on DWR's InSAR surveys, with adjustments for surface elevation changes that result from non-groundwater level induced impacts (e.g., tectonic activity.)

4.3.6 CURRENT STANDARDS RELEVANT TO SUSTAINABILITY INDICATOR

Regulation Requirements:

§354.28 (b) The description of minimum thresholds shall include the following:
(5) How state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the Agency shall explain the nature of and basis for the difference.

Details of existing regulatory standards applicable to the sustainability indicators are outlined below.

4.3.6.1 GROUNDWATER LEVELS

There are currently no state, federal, or local regulatory standards applicable to groundwater levels. This GSP will become the basis for local regulatory standards.

4.3.6.2 GROUNDWATER STORAGE

There are currently no state, federal, or local regulatory standards applicable to groundwater storage. This GSP will become the basis for local regulatory standards.

4.3.6.3 GROUNDWATER QUALITY

The minimum thresholds for groundwater quality are protective of human health and intended beneficial uses and are based on MCLs found in Title 22 of the California Code of Regulations. The intent of SGMA is that GSAs be responsible for groundwater management related to pumping, projects, and management actions. Other existing agencies and programs are generally responsible for groundwater quality remediation.

4.3.6.4 LAND SUBSIDENCE

There are currently no state, federal, or local regulatory standards applicable to land subsidence. This GSP will become the basis for local regulatory standards.

4.3.6.5 INTERCONNECTED SURFACE WATER

There is existing legislation in place to mitigate and conserve wetland habitat, most notably the federal No Net Loss Wetlands policy. The GSAs do not have the authority to enforce wetland protections however, they can support groundwater sustainability which may have a positive impact for potential wetland vegetation in the Banning Canyon.

4.4 MEASURABLE OBJECTIVES

4.4.1 DESCRIPTION OF MEASURABLE OBJECTIVES

Regulation Requirements:

§354.30 (a) Each Agency shall establish measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin with 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon.
(b) Measurable objectives shall be established for each sustainability indicator, based on quantitative values using the same metrics and monitoring sites as are used to define the minimum thresholds.

The measurable objectives were developed differently across the various geologic conditions in the Subbasin. The rationale and relationship between the minimum threshold, measurable objective, beneficial users of groundwater, and undesirable results are captured in Table 4-5.

4.4.1.1 GROUNDWATER LEVELS

MANAGEMENT AREA 2 - BANNING CANYON STORAGE UNIT:

As described earlier, the measurable objective in the Banning Canyon is set at the elevation of pump settings for City of Banning production wells, which correlates with a 25-foot operational flexibility buffer between the minimum threshold and measurable objective. This is a conservative level for the measurable objective and reflects long-term historical operational practices of the City of Banning. The Banning Canyon sustainable management criteria are assigned to maintain the hydrologic system with respect to the annual hydrologic cycle unique to the canyon and protect the beneficial uses of groundwater (Table 4-6) in doing so.

MANAGEMENT AREA 2 - BANNING BENCH STORAGE UNIT:

There are no representative monitoring wells within the Banning Bench, therefore the area is recognized as a data gap. There are few de minimis groundwater extraction activities within the Banning Bench. The SGP Subbasin installed a representative monitoring site in the Banning Bench, which will be monitored for the near future to determine appropriate measurable objectives for the storage unit. The City of Banning has historically monitored their wells COB #1, COB #2, and COB #3 which occur in the geologic overlap region the Banning Canyon overlies the Banning Bench Storage Unit. Based on the new monitoring wells that were constructed in the area, the underlying Banning Bench consists of hard rock and is not a usable aquifer.

MANAGEMENT AREA 3 - BANNING STORAGE UNIT:

The measurable objectives within the Banning Storage Unit of MA 3 were established at a level 25-feet higher than the minimum threshold. This 25-foot differential was identified as providing a measure of operational flexibility for effective conjunctive use of groundwater storage in the Banning Storage Unit. Based on water levels projected by the groundwater model, this 25-foot difference considers water level declines corresponding to at least ten years of operational flexibility. This level of operational flexibility provides adequate time for possible implementation of required projects or management actions to avoid unreasonable impacts to beneficial uses of groundwater, should those actions be required. Well construction was considered in the development of the sustainable management criteria.

MANAGEMENT AREAS 3 AND 4 - CABAZON STORAGE UNIT:

The Cabazon Storage Unit area of MAs 3 and 4 covers the majority of the SGP Subbasin, yet conditions vary across the geological storage unit including depth to bedrock, historic groundwater level trends, and average groundwater extraction intensity. Different average groundwater extraction intensity in the western, middle, and eastern portions of the Cabazon Storage Unit support the decision to assign differing groundwater level operational flexibility ranges across the Cabazon Storage Unit:

> *Cabazon – Western and Central Area (Management Area 3): The representative monitoring wells 11F4 and 7P4 in the western and middle portions of MA 3(Cabazon Storage Unit) have a 50-foot differential between the minimum threshold and the measurable objective. Jensen #2, located in the mid-eastern portion of the Cabazon Storage unit has a 25-foot differential between the minimum threshold and measurable objective. The measurable objectives for the three wells are assigned with consideration of the projected groundwater levels allowing for an estimated 10-year period for mitigation in the event a well is approaching its minimum threshold. The assigned sustainable management criteria consider the well construction information of the representative monitoring site and nearby production wells.*

Cabazon – Eastern Area (Management Areas 3 and 4): The representative monitoring wells in the eastern portion of the Cabazon Storage Unit(MAs 3 and 4) have a 25-foot differential between the minimum threshold and the measurable objective. The operational flexibility of the production wells in the eastern portion of the Cabazon Storage Unit are informed by the current groundwater levels that are below the top of the screened interval of the well. Despite this, there is no current or historic record of significant and unreasonable undesirable results in the Cabazon Storage Unit. A 25-foot differential was selected as appropriate because groundwater levels vary less than those near wells 11F4 and 7P4 of the western and central Cabazon Storage Unit, and the existing, historic, and near future groundwater levels would all be near or below the measurable objective if it were set higher. The 25-foot differential allows for a more realistic approach at managing the eastern Cabazon groundwater levels.

The historical lack of significant and unreasonable undesirable results in the eastern portion of MAs 3 and 4(Cabazon Storage Unit) is mostly attributed to the significant length of the screened intervals and the low volume of groundwater extractions at existing MSWD production wells. When assigning the minimum threshold and sustainable management criteria, projected groundwater demand within and adjacent to this area was considered to ensure the beneficial uses can be successfully and sustainably met by groundwater levels remaining above the bottom of the screened interval. In addition, the minimum threshold is correlated with the lowest groundwater level in the historic record with no past instances of undesirable results, further validating that this is an appropriate and conservative minimum threshold.

The measurable objective for each representative groundwater level monitoring site is indicated in Table 4-3 and the hydrographs presented in Figure 4-4 through Figure 4-11. The groundwater level measurable objective applies to both the groundwater level sustainability indicator and the groundwater storage sustainability indicator. In addition, the groundwater level measurable objectives for the three representative monitoring sites located within Banning Canyon (4L3 (COB #11), 17F2 (COB #8), and 33J4 (COB #2)) are also applicable to the interconnected surface water sustainability indicator.

The interim milestones are a supplemental measure to gauge progress toward implementation, reported in 5-year increments from the start of the GSP implementation in January 2022 to the end of the 20-year planning horizon, which concludes in 2042. The Interim Milestones (presented in Table 4-7) correspond with the groundwater levels that are projected to occur during those 5-year increments (2027, 2032, 2037, and 2042). Current groundwater levels may be at or below the measurable objective but are expected to reach the measurable objective with the implementation of projects and management actions. Based on the long-term hydrologic record, water supply conditions are expected to improve and a return to average water supply conditions would result in improved groundwater levels.

Table 4-7 Interim Milestones -- Groundwater Levels and Groundwater Storage

Management Area	Representative Monitoring Site	2027 Interim Milestone	2032 Interim Milestone	2037 Interim Milestone	2042 Interim Milestone
		Water Surface Elevation (ft about MSL)			
2	4L3 (COB #11)	4,425	4,425	4,425	4,425
	17F2 (COB #8)	3,665	3,665	3,665	3,665
	32E2	TBD	TBD	TBD	TBD
	33J4 (COB #2)	2,705	2,705	2,705	2,705
3	18A1 (COB #M11)	1940	1,930	1,920	1,910
	11F4	1,555	1,545	1,525	1,540
	7P4	1,425	1,410	1,390	1,390
	11H3	1,163	1,163	1,163	1,163
4	8L1	1,130	1,130	1,130	1,130

Interim Milestones are defined as the projected groundwater level at each respective 5-year mark for the wells in MAs 3 and 4.
Interim Milestones are defined as the measurable objective for the Banning Canyon Storage Unit wells in MA 2*; see explanation in* ***Section 4.2.2****..*

4.4.1.2 GROUNDWATER STORAGE

Groundwater storage measurable objectives are defined as storage volumes in each MA that are equivalent to the groundwater level measurable objectives defined for each RMS and contoured across the entire SGP Subbasin. Based on these computations, the groundwater storage measurable objective for MA 2 (Banning Canyon) is 23,000 acre-feet, for MA 3 (Banning/Cabazon) is 906,000 acre-feet and for MA 4 (Desert Water Agency) is 78,000 acre-feet.

4.4.1.3 GROUNDWATER QUALITY

The measurable objectives for groundwater quality are presented in Table 4-4. Groundwater within the SGP Subbasin is generally used beneficially for municipal, commercial, industrial, domestic, and GDE consumption. The minimum threshold for degraded water quality has been set at values that are protective of human health and the intended beneficial use and users of groundwater resources (i.e., CCR Title 22).

The measurable objective for groundwater quality is to maintain potable water standards (below SMCL for TDS and MCL for nitrate as nitrogen). In each case, the measurable objective is defined as 80-percent of the minimum threshold. The 80-percent criterion allows for enough time to identify a changing trend in groundwater quality and prepare mitigation measures, if needed, to avoid exceedances of the minimum threshold and/or experiencing significant and unreasonable undesirable results. The interim milestones for water quality are defined as below the measurable objective and remains constant across the implementation period. The interim milestone for TDS is <800 mg/L and <8 mg/L for nitrate (as N).

4.4.1.4 LAND SUBSIDENCE

A measurable objective has been identified as no more than 0.1 foot per year of land surface decline across any 160-acre contiguous area within the SGP Subbasin. DWR's InSAR data will be used annually to quantify changes in land surface elevation from October of the current water year to October of the previous water year. These analyses will be conducted in the Subbasin's Annual Reports.

4.4.1.5 INTERCONNECTED SURFACE WATER

The measurable objectives for the three representative interconnected monitoring sites are outlined in Table 4-3. The measurable objective is set 25-feet higher than the minimum threshold and considers both the well construction and the historic groundwater trends. The beneficial users of interconnected surface water and groundwater in the SGP Subbasin are potential GDEs and the City of Banning. Neither type of beneficial user has historically experienced significant and unreasonable undesirable results related to interconnected surface water.

The impact analysis for interconnected surface water in the Subbasin is limited to locations with surface water and locations where the GSAs have jurisdiction. Only Banning Canyon meets these criteria. Although Potrero Canyon, Hathaway Canyon, and Millard Canyon are located in the Subbasin, have surface water, and may have interconnected surface waters, these areas belong to MBMI, a federally recognized tribe which is not subject to SGMA . Groundwater levels in Banning Canyon are expected to be maintained at levels consistent with historic conditions in the multi-decadal hydrologic cycle due to both the absence of proposed increased pumping and the potential for improved surface water conveyance infrastructure into the canyon for recharge, described in Chapter 6– Project and Management Actions.

Impacts from climate change may result in increased annual variability in Banning Canyon. Potential impacts from climate change or other variables will be examined by the GSAs during the 5-year updates and Annual Reporting required by SGMA.

4.4.2 OPERATIONAL FLEXIBILITY

Regulation Requirements:

> §354.30 (c) Measurable objectives shall provide a reasonable margin of operational flexibility under adverse conditions which shall take into consideration components such as historical water budgets, seasonal and long-term trends, and periods of drought, and be commensurate with levels of uncertainty.

Operational flexibility is defined as the range of water levels that that will accommodate droughts, climate change, conjunctive use operations, or other groundwater management activities.

4.4.2.1 GROUNDWATER LEVELS, GROUNDWATER STORAGE, LAND SUBSIDENCE AND INTERCONNECTED SURFACE WATER

The range of operational flexibility is defined as the difference between the measurable objective and the minimum threshold. This range provides the flexibility that the GSAs have under adverse groundwater conditions to continue groundwater extractions and water management practices while maintaining sustainability.

4.4.2.2 GROUNDWATER QUALITY

There are no recent historical concentrations above the SMCL for TDS and MCL for nitrate in the monitoring network wells. Therefore, the GSAs aim to maintain groundwater quality within the MCL and SMCL for nitrate and TDS, respectively. The minimum threshold and measurable objectives for groundwater quality are presented in Table 4-4. The operational flexibility is defined as the difference between the minimum threshold and measurable objective. For TDS, that is the range of >800 mg/L to <1,000 mg/L. For nitrate, the operational flexibility is the range of >8 mg/L to <10 mg/L. Despite this definition of operational flexibility, the groundwater management will continue to support good quality groundwater in the Subbasin, at or below the measurable objective for both constituents.

4.4.3 REPRESENTATIVE MONITORING

Regulation Requirements:

> §354.30 (d) An Agency may establish a representative measurable objective for groundwater elevation to serve as the value for multiple sustainability indicators where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual measurable objectives as supported by adequate evidence.

The measurable objective for groundwater levels serves as an appropriate proxy for the sustainability indicators of groundwater storage and interconnected surface water (in the case of the three Banning Canyon representative monitoring sites). Table 4-3 outlines the measurable objectives in relation to the sustainability indicators being monitored.

Groundwater levels will not be used as a proxy for groundwater quality due to a lack of clear correlation between groundwater levels and changes in groundwater quality in the SGP Subbasin.

4.4.4 PATH TO ACHIEVE MEASURABLE OBJECTIVES

Regulation Requirements:

> §354.30 (e) Each Plan shall describe a reasonable path to achieve the sustainability goal for the basin within 20 years of Plan implementation, including a description of interim milestones for each relevant sustainability indicator, using the same metric as the measurable objective, in increments of five years. The description shall explain how the Plan is likely to maintain sustainable groundwater management over the planning and implementation horizon.

To monitor the progress towards implementation, the SGP Subbasin Annual Report will include an assessment of the representative monitoring site results as compared to the sustainability criteria, including the measurable objective, interim milestones, and minimum thresholds. Additionally, a more comprehensive review will be conducted during the GSAs' opportunities to update this GSP during the five-year GSP Updates.

4.4.4.1 GROUNDWATER LEVELS, GROUNDWATER STORAGE AND LAND SUBSIDENCE

The SGP GSAs recognizes their ability to implement projects, programs, and management actions, as needed, to support sustainability in the Subbasin. Based on the five-year GSP Updates, the Subbasin's success in achieving interim milestones will be evaluated and projects and management actions will be implemented as appropriate to maintain sustainability. The potential actions are described in Chapter 6– Projects and Management Actions of this GSP and the plan for implementing the projects and management actions is discussed in Chapter 7 – Plan Implementation of the GSP.

4.4.4.2 GROUNDWATER QUALITY

Groundwater pollution characterization and remediation are enforced by local agencies and state level programs. According to SGMA, the GSAs will only have authority related to groundwater management activities such as groundwater pumping policies, recharge supply, and conjunctive use projects. However, the GSAs will review and analyze publicly available routine groundwater monitoring data reported by community and non-community public supply wells in order to understand how and if groundwater pumping is exacerbating groundwater quality concerns, and when and where to enforce pumping restrictions or other mitigation measures if necessary. Management of groundwater pumping will occur over the planning and implementation time horizon through 2042, therefore the interim milestones match the measurable objective.

If an undesirable result occurs with regards to groundwater quality, and groundwater management actions are identified as a contributing factor, management actions will be evaluated that may include:

- *Increased sampling frequency of monitoring wells;*
- *Additional data analysis;*
- *Increased groundwater recharge in the area(s) of concern if that recharge would improve water quality conditions;*
- *Increased use of surface water in the area(s) of concern to reduce groundwater pumping; and*
- *Collaboration with state and local groundwater quality protection agencies and programs.*

Within the SGP Subbasin, the measurable objective shall be to maintain water quality at potable water standards, or in other words, below MCLs for constituents of concern.

4.4.4.3 INTERCONNECTED SURFACE WATER

Water levels in the Banning Canyon will be assessed annually and compared to the most recently available data from TNC's GDE Pulse. In addition, historic trends will be analyzed using available aerial photography that can depict the general vegetative extent of GDEs, particularly in similar historic water year types. If the interconnected surface water representative monitoring network sites fall below their respective minimum thresholds for two consecutive years, field visits may be considered to assess conditions and aid in mitigation planning. The measurable objectives and interim milestones for Interconnected Surface Water are provided in Table 4-7.

It is important to acknowledge that significant wildfires, such as the 2020 Apple Fire, likely result in substantial impacts to vegetative GDEs in the canyons, which may not be reflected in aerial imagery or GDE Pulse based on the periods of image capture occurring prior to the 2020 fire event.

4.5 NOT APPLICABLE SUSTAINABILITY INDICATOR

Regulation Requirements:

§354.26 (d) An Agency that is able to demonstrate that undesirable results related to one or more sustainability indicators are not present and are not likely to occur in a basin shall not be required to establish criteria for undesirable results related to those sustainability indicators.
§354.28 (c) (3) Seawater Intrusion. The minimum threshold for seawater intrusion shall be defined by a chloride concentration isocontour for each principal aquifer where seawater intrusion may lead to undesirable results. Minimum thresholds for seawater intrusion shall be supported by the following: (A) Maps and cross-sections of the chloride concentration isocontour that defines the minimum threshold and measurable objective for each principal aquifer. (B) A description of how the seawater intrusion minimum threshold considers the effects of current and projected sea levels.
§354.28 (e) An Agency that has demonstrated that undesirable results related to one or more sustainability indicators are not present and are not likely to occur in a basin, as described in Section 354.26, shall not be required to establish minimum thresholds related to those sustainability indicators.

Only one sustainability indicator, seawater intrusion, has been identified as not present in the Subbasin and would not be required to establish criteria for undesirable results. Seawater intrusion occurs when saline water from the ocean infiltrates the groundwater system and begins to flow into areas of freshwater due to pressure differentials, in many cases caused by groundwater pumping. The influence of seawater intrusion on groundwater quality is not applicable to the San Gorgonio Pass Subbasin because its location is a significant distance from the coast and is geologically separated from coastal hydrologic influences (Figure 4-1).

4.6 HYDROGRAPHS DEPICTING SUSTAINABLE MANAGEMENT CRITERIA

Figure 4-4 through Figure 4-11 present hydrographs of the groundwater level representative monitoring wells that depict sustainable management criteria and projected groundwater levels. The influences of projected changes in groundwater extractions and climate change are incorporated in the hydrographs.

The hydrographs vary in period presented. As discussed previously, only historical water levels were evaluated for the Banning Canyon Storage Unit of MA 2. In MAs 3 and 4, the groundwater model was used to project long term water level conditions with average precipitation. Where long term historical water level data were available, that historical data is also shown along with projected groundwater levels. The rationale for the presented periods, based on the availability of data to inform development of the sustainable management criteria, is described in detail below. For wells in MA 3 and 4, with available projected groundwater levels, the 1949-1998 hydrologic period was selected for analysis. The 1949-1998 period has near long-term normal water supply conditions that start with an extended dry period that is followed by wetter conditions. Consequently, the beginning of the projected period included a continuation of the prolonged ongoing drought period. Because of hydrologic variations in the 1949-1998 hydrologic period that was used in the projections, the projected hydrographs all show groundwater levels recovering towards the end of the implementation period (2042).

MANAGEMENT AREA 2 - BANNING CANYON HYDROGRAPHS (4L3 (COB #11), 17F2 (COB #8), 33E2, AND 33J4 (COB #2))

Because the SGP Upper Groundwater Model was not calibrated for the Banning Canyon Storage Unit of MA 2, the representative monitoring wells in that area (4L3 (COB #11), 17F2 (COB #8), and 33J4 (COB #2)) do not include groundwater level projections and instead report historic groundwater levels. 33E2 does not have any historic water level data available to display on a hydrograph. The historic period was used to inform the sustainable management criteria in the Banning Canyon. The annual hydrologic cycle in the Banning Canyon is markedly shorter than the long term (20+ year) hydrologic cycle seen in the rest of the subbasin and includes significantly less storage capacity. The sustainability of the status quo pumping of the canyon is apparent both in its annual replenishment and in the absence of significant and unreasonable

impacts in the historical record. Future conditions are expected to mimic historical conditions with respect to average and minimum groundwater levels.

MANAGEMENT AREA 3 - BANNING REPRESENTATIVE MONITORING WELL HYDROGRAPH (18A1 COB #M11)

The hydrograph for Well 18A1 (COB #M11) includes projected groundwater levels only as the limited long term water level measurements available do not represent historical drought conditions. The projected groundwater levels are presented are indicated as "2020 Base" and "2070 Base" on the hydrographs. The "2020-Base" and "2070 Base" refer to the modeled projections using 1949-1998 hydrologic conditions as a baseline, with adjustment for climate change and estimated increased pumping. While lengthy historic water level data was not available at this site, the limited available historic water level records were used to calibrate the groundwater model. The projected water levels for this RMS for current conditions (2020 Base) remain above the MO and MT for the entire projection. However, the projected water levels for future (2070) climate conditions are below the MT for an extended period, indicating the likely need for Projects and Management Actions to improve groundwater conditions.

MANAGEMENT AREA 3 - WESTERN AND CENTRAL CABAZON HYDROGRAPHS (11F4, 7P4, AND 11H3)

Wells 11F4, 7P4 and 11H3 are specially constructed USGS monitoring wells that are relatively new and have short historic records. Therefore, only model-projected groundwater levels ("2020 Base" and "2070 Base") are presented in their hydrographs. Despite the lack of historic record, they were selected for inclusion in the representative monitoring network due to their location near the beneficial users' production wells and their design as monitoring wells. The projections show that all three wells stay above the MO and MT for current climate conditions ("2020 Base"). However, well 7P4 is projected to fall below the MT for an extended period with future climate conditions ("2070 Base") which indicates the potential need for Projects and Management Actions to improve groundwater conditions.

MANAGEMENT AREA 4 – DESERT WATER AGENCY GSA (8L1)

Well 8L1 is a relatively new specially constructed USGS monitoring well with a short historic record. It is located less than a mile east of the SGP Subbasin boundary with the Indio Subbasin and was selected as a RMS due to the lack of other wells within MA 4. Due to the lack of a long historical period record, only model-projected groundwater levels ("2020 Base" and "2070 Base") are presented in its hydrograph.

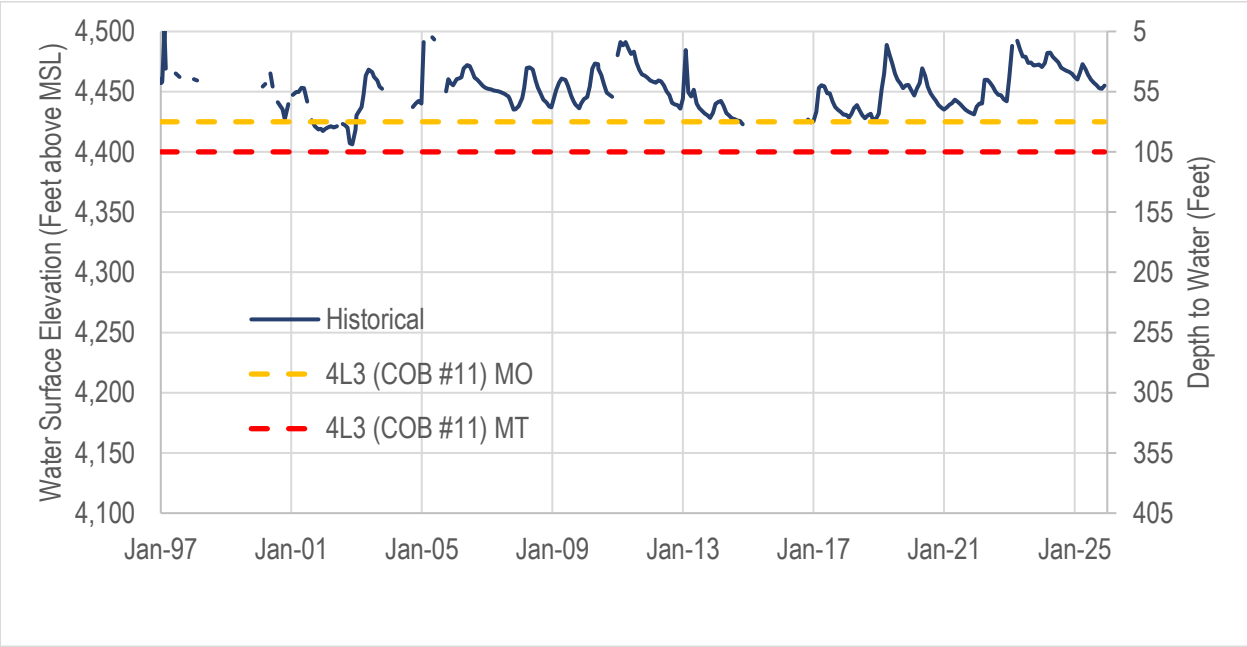


Figure 4-4 Well 4L3 (COB #11) - Historical Groundwater Level and Sustainable Management Criteria

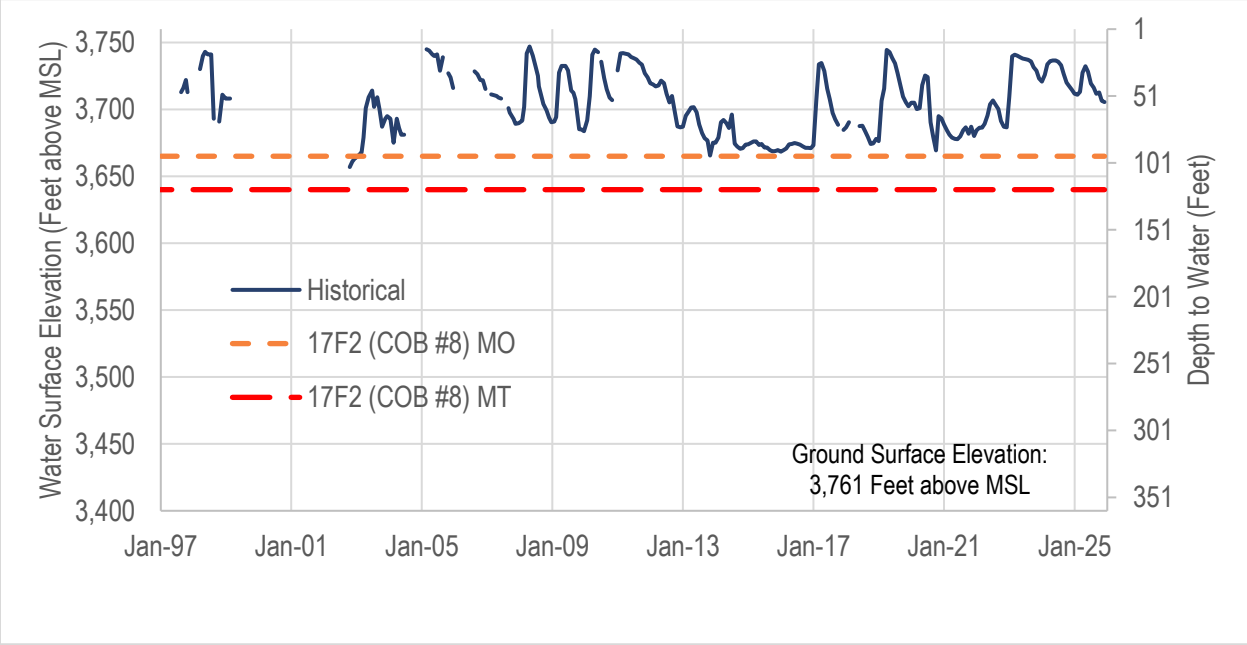


Figure 4-5 Well 17F2 (COB #8) - Historical Groundwater Level and Sustainable Management Criteria

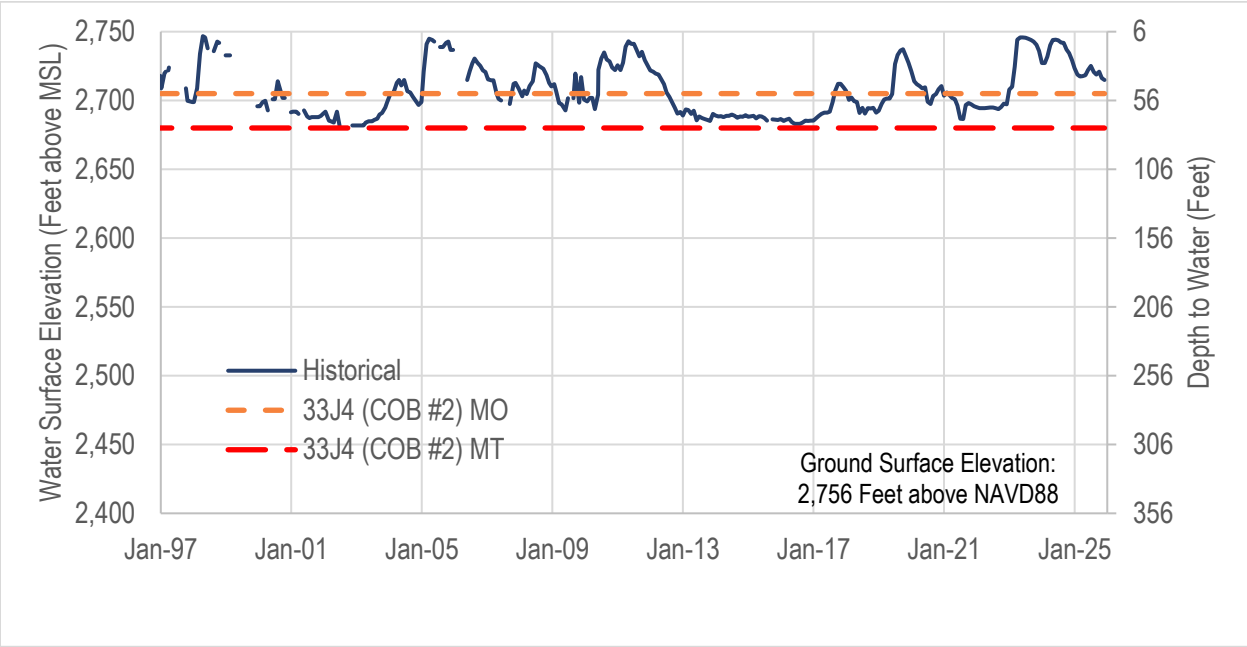


Figure 4-6 Well 33J4 (COB #2) - Historical Groundwater Level and Sustainable Management Criteria

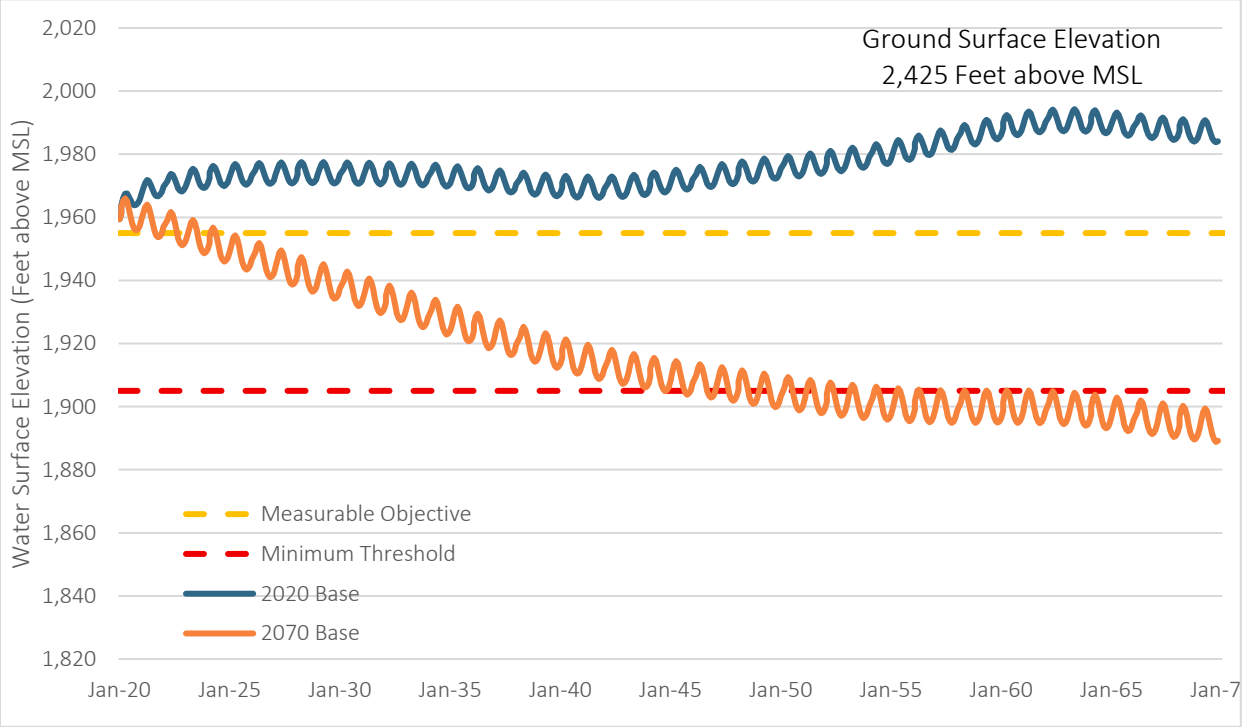


Figure 4-7 Well 18A1 (COB #M11) - Projected Groundwater Level and Sustainable Management Criteria

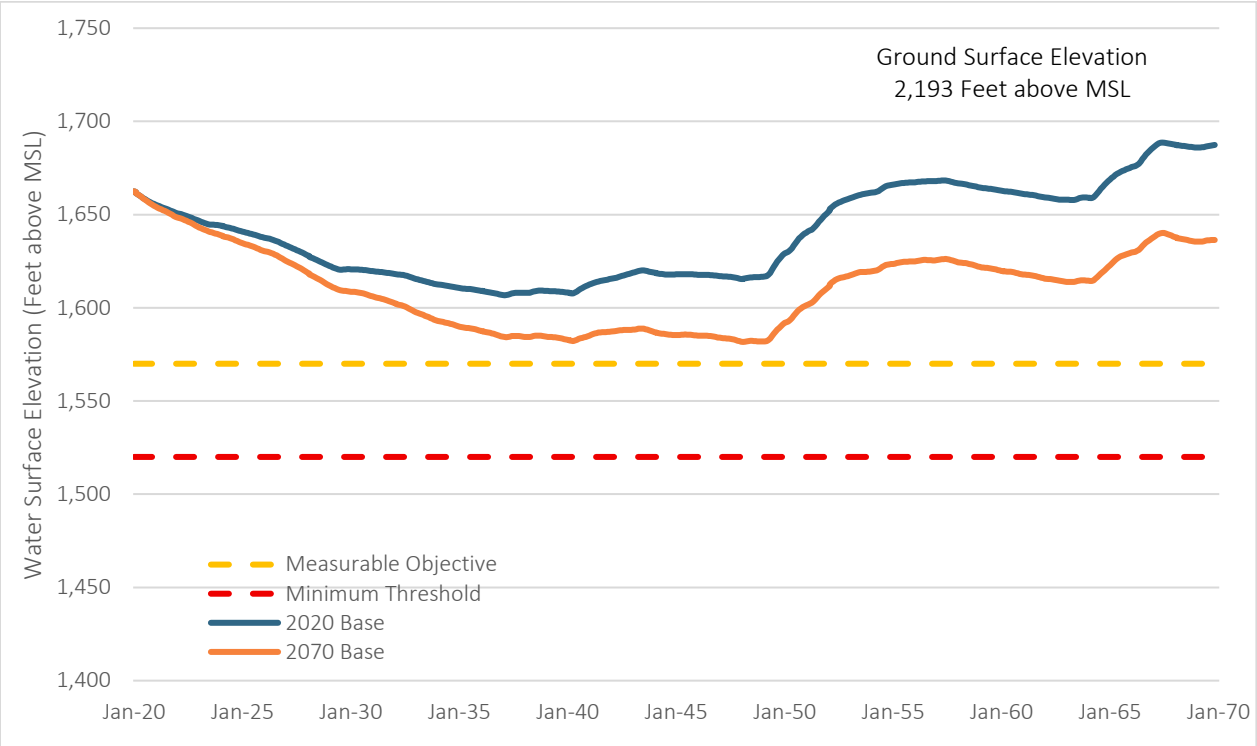


Figure 4-8 Well 11F4 (USGS) - Projected Groundwater Level and Sustainable Management Criteria

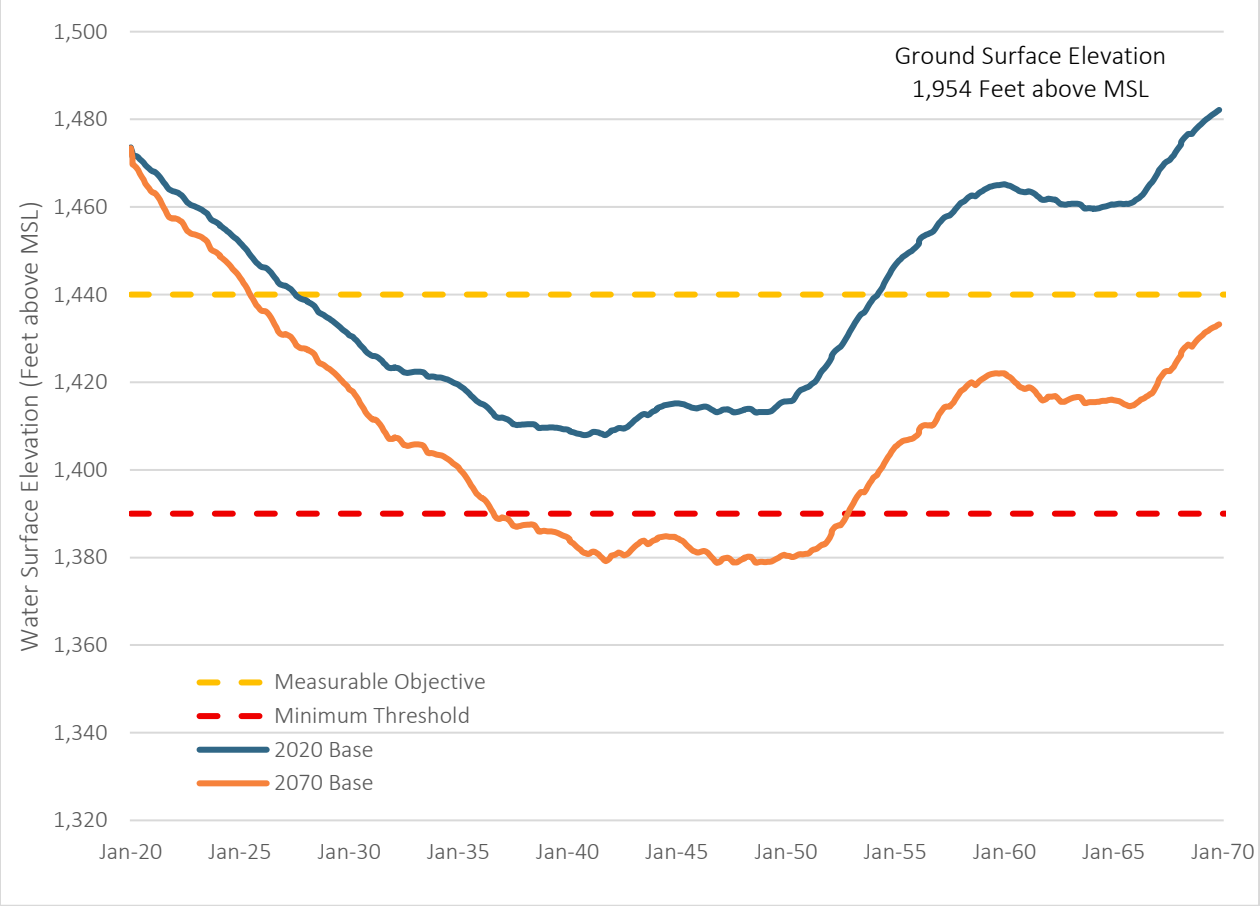


Figure 4-9 Well 7P4 (USGS) - Projected Groundwater Level and Sustainable Management Criteria

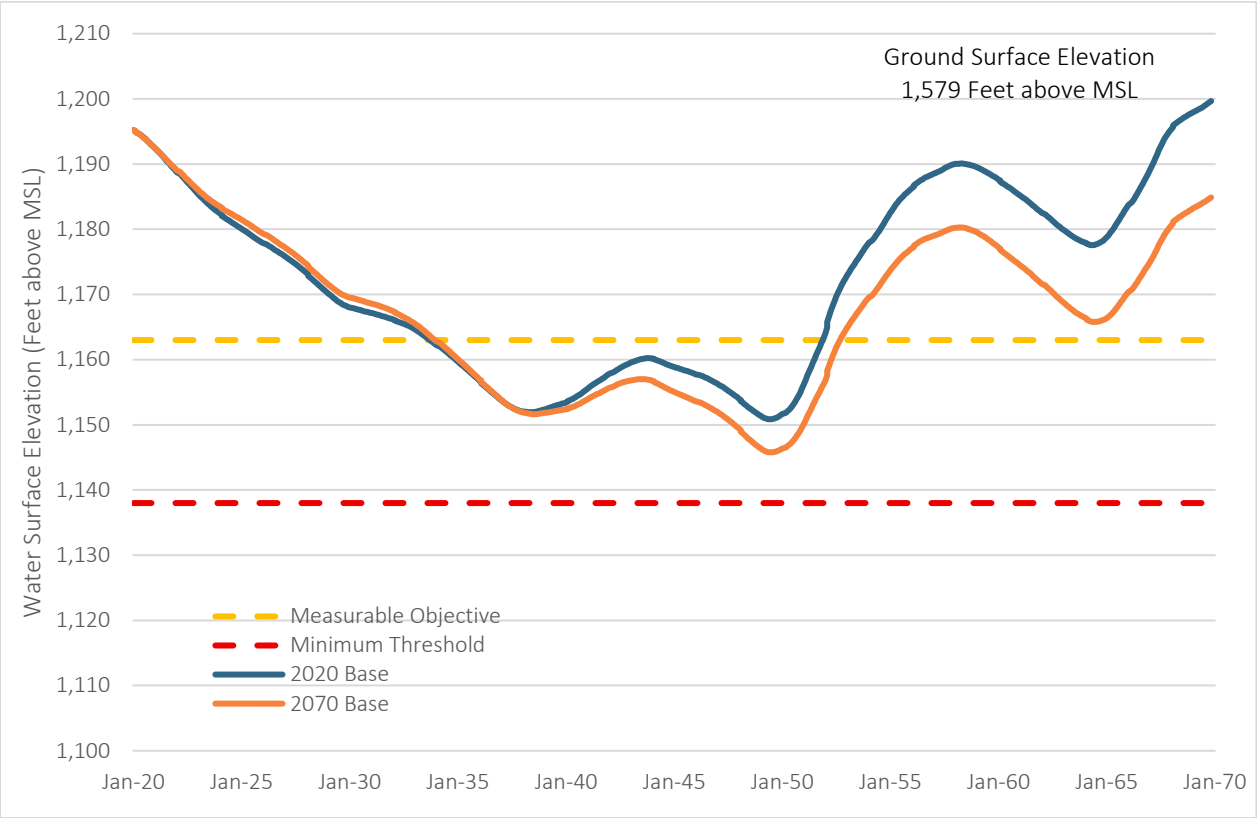


Figure 4-10 Well 11H3 (USGS) –Projected Groundwater Level and Sustainable Management Criteria

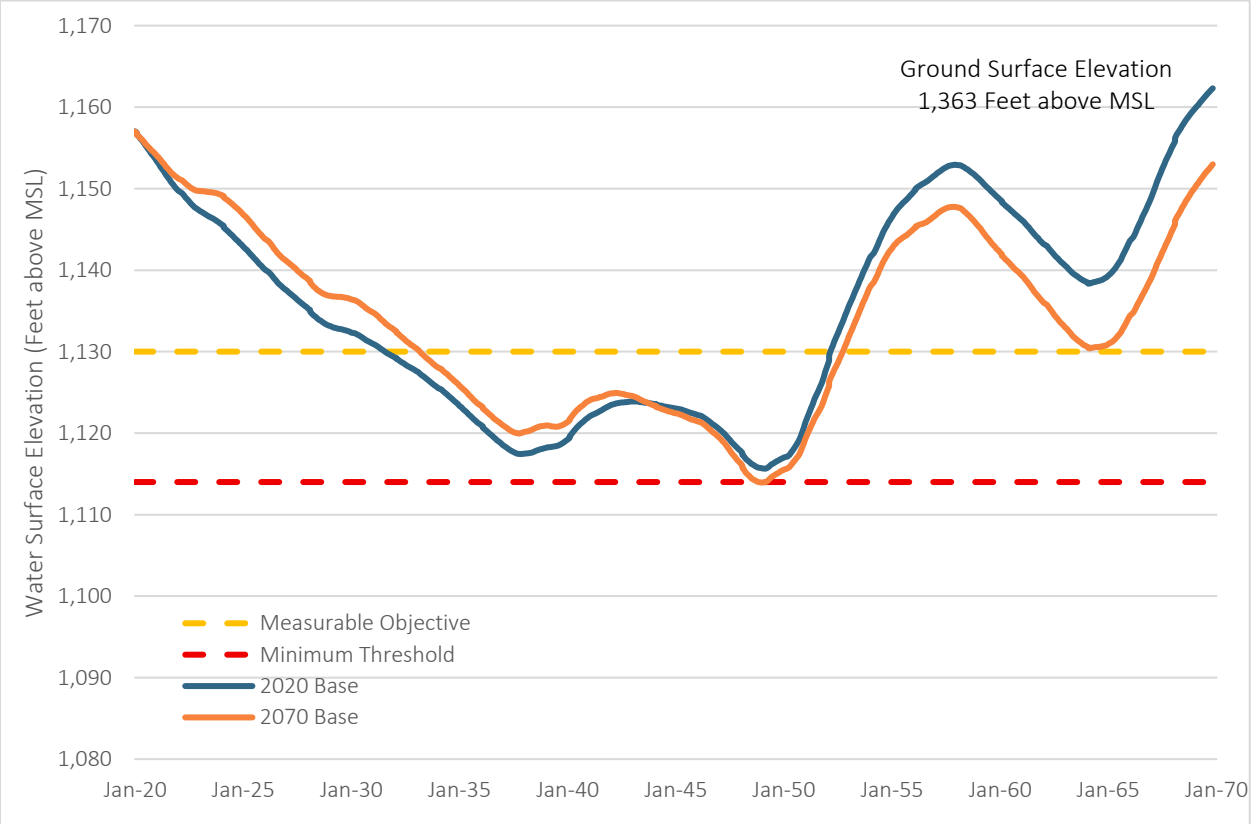


Figure 4-11 Well 8L1 (USGS) – Projected Groundwater Level and Sustainable Management Criteria

4.7 MEASURABLE OBJECTIVES FOR ADDITIONAL PLAN ELEMENTS

Regulation Requirements:

§354.30 (f) Each Plan may include measurable objectives and interim milestones for additional Plan elements described in Water Code Section 10727.4 where the Agency determines such measures are appropriate for sustainable groundwater management in the basin.
§354.30 (g) An Agency may establish measurable objectives that exceed the reasonable margin of operational flexibility for the purpose of improving overall conditions in the basin, but failure to achieve those objectives shall not be grounds for finding of inadequacy of the Plan.

The SGP Subbasin will not be setting measurable objectives or interim milestones for additional plan elements described in Water Code Section 10727.4. since they are not applicable, as discussed above.

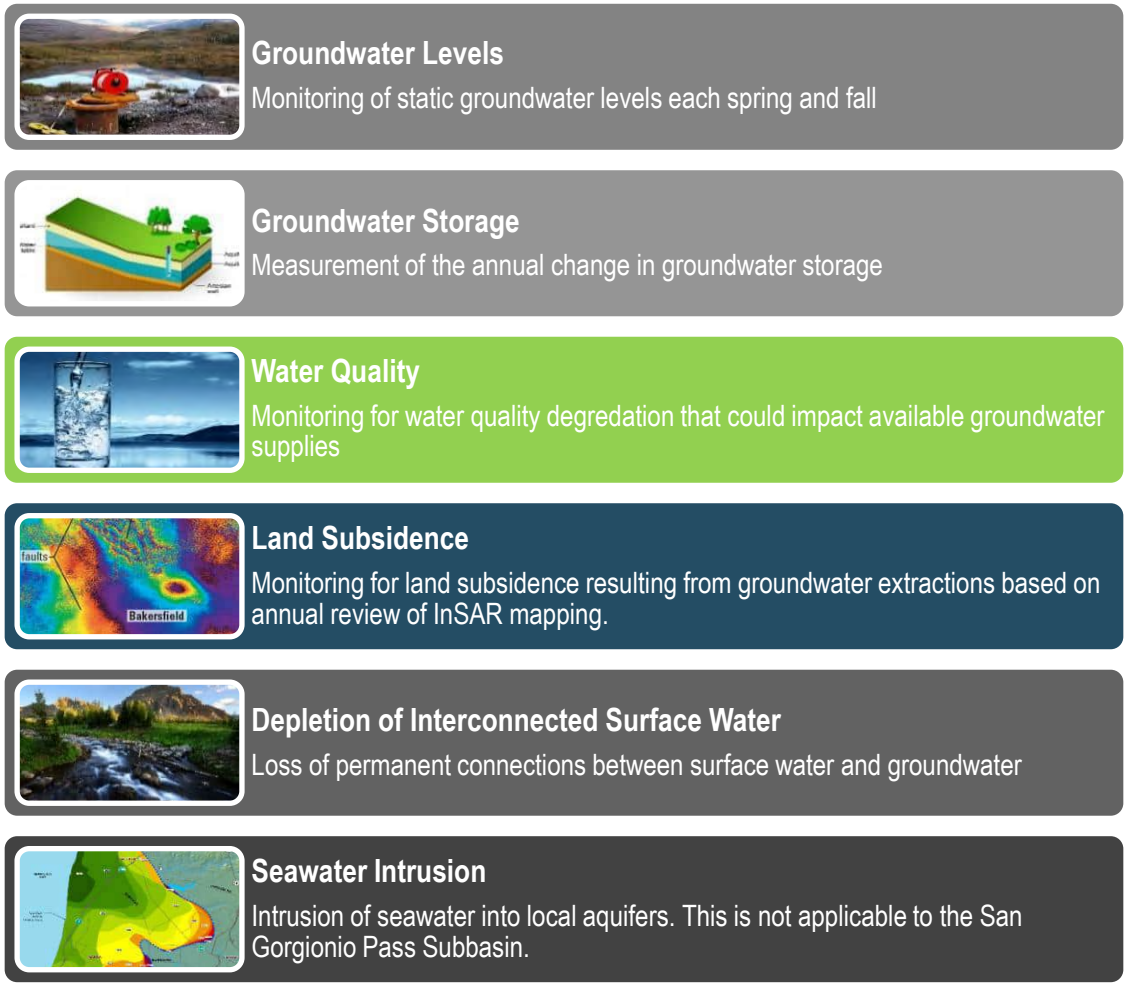
5 MONITORING NETWORK

Regulation Requirements:

§354.32 This Subarticle describes the monitoring network that shall be developed for each basin, including monitoring objectives, monitoring protocols, and data reporting requirements. The monitoring network shall promote the collection of data of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in the basin and evaluate changing conditions that occur through implementation of the Plan.

A comprehensive monitoring network is a fundamental component of groundwater management and is needed to measure progress toward groundwater sustainability. Table 5-1 indicates the monitoring programs needed to comply with SGMA monitoring and reporting requirements.

Table 5-1 Monitoring Requirements



Of the six sustainability indicators, only seawater intrusion is not applicable to the SGP Subbasin. The Subbasin is located a considerable distance from the Pacific Coast or another saltwater-rich groundwater source. Based on conditions in the SGP Subbasin, the sustainability indicators that are applicable for monitoring during the GSP implementation phase are: groundwater levels, groundwater storage, groundwater quality, land subsidence and depletion of interconnected surface water.

Monitoring programs for these indicators are described below including the history of the monitoring programs, proposed monitoring to comply with SGMA, and the adequacy and scientific rationale for the representative monitoring network. Historic monitoring of groundwater pumping, groundwater recharge, and surface water deliveries is discussed in Section 3.3.

5.1 INTRODUCTION

Regulation Requirements:

> **§354.34(a)** Each Agency shall develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan Implementation.

This chapter describes the existing and proposed monitoring networks in the SGP Subbasin that will provide data to determine short-term, seasonal, and long-term trends in groundwater and surface conditions related to the sustainability indicators. Data collected from the monitoring networks will yield information necessary to support the implementation of this Plan, evaluate the effectiveness of this Plan, and guide decision making by the SGP GSP participants' management. Information and data from historical monitoring efforts can be found in Section 3.2.

Figure 5-1 and Figure 5-2 show the currently proposed monitoring site locations for groundwater levels and groundwater storage (Figure 5-1) and groundwater quality (Figure 5-2). Areas of potential monitoring for interconnected surface water are also shown on Figure 5-1, including three sites in Banning Canyon.

A monitoring program for the seawater intrusion sustainability indicator is not applicable, considering the geographic distance from the Pacific Ocean. Despite the lack of potential for groundwater management activities to induce seawater intrusion in the SGP Subbasin, the SGP GSP participants will continue to evaluate publicly available TDS in the Plan Area. See Section 5.1.3 regarding Supplemental Monitoring Network.

Figure 5-1 Representative Water Level Monitoring Network

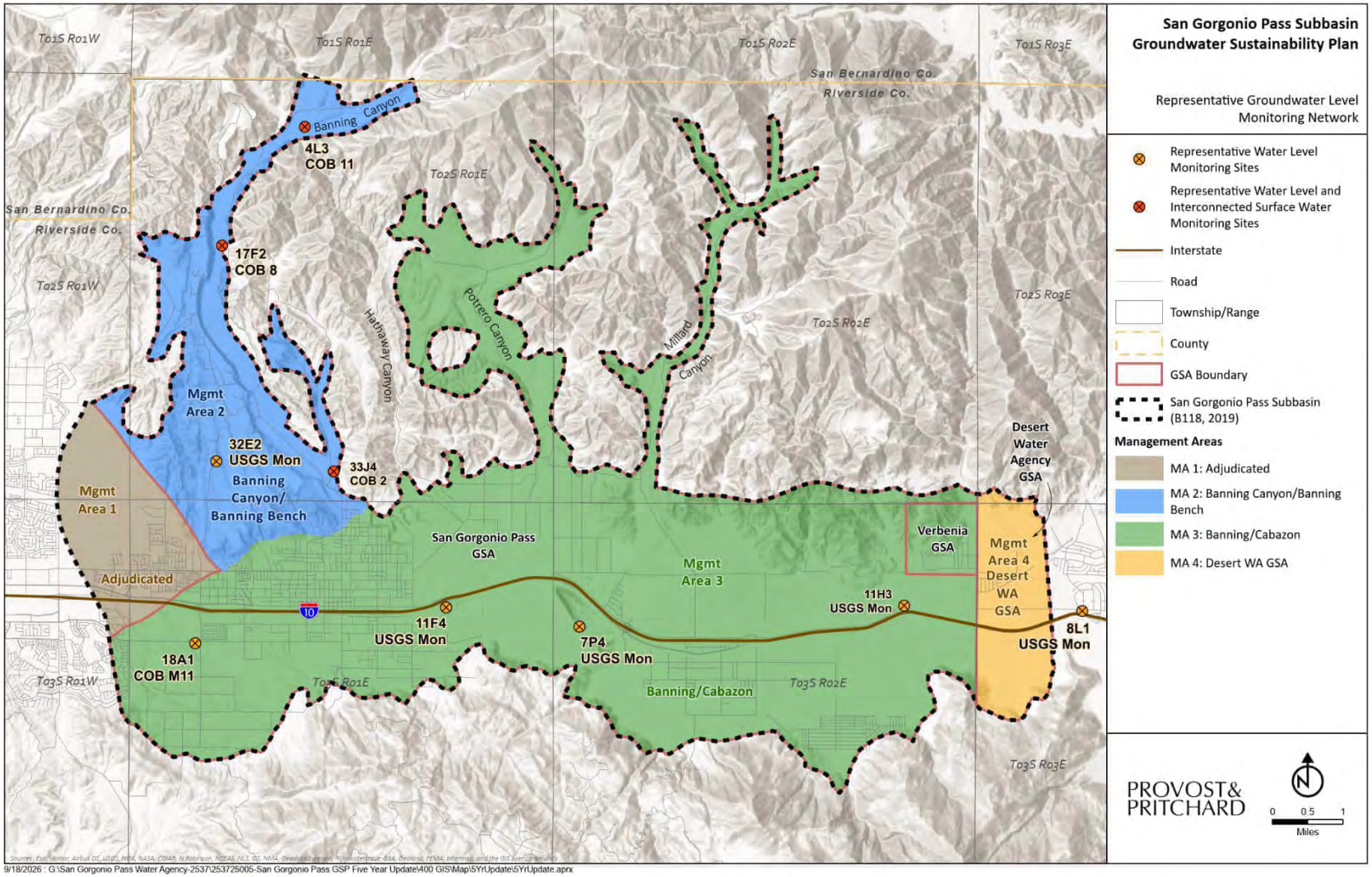
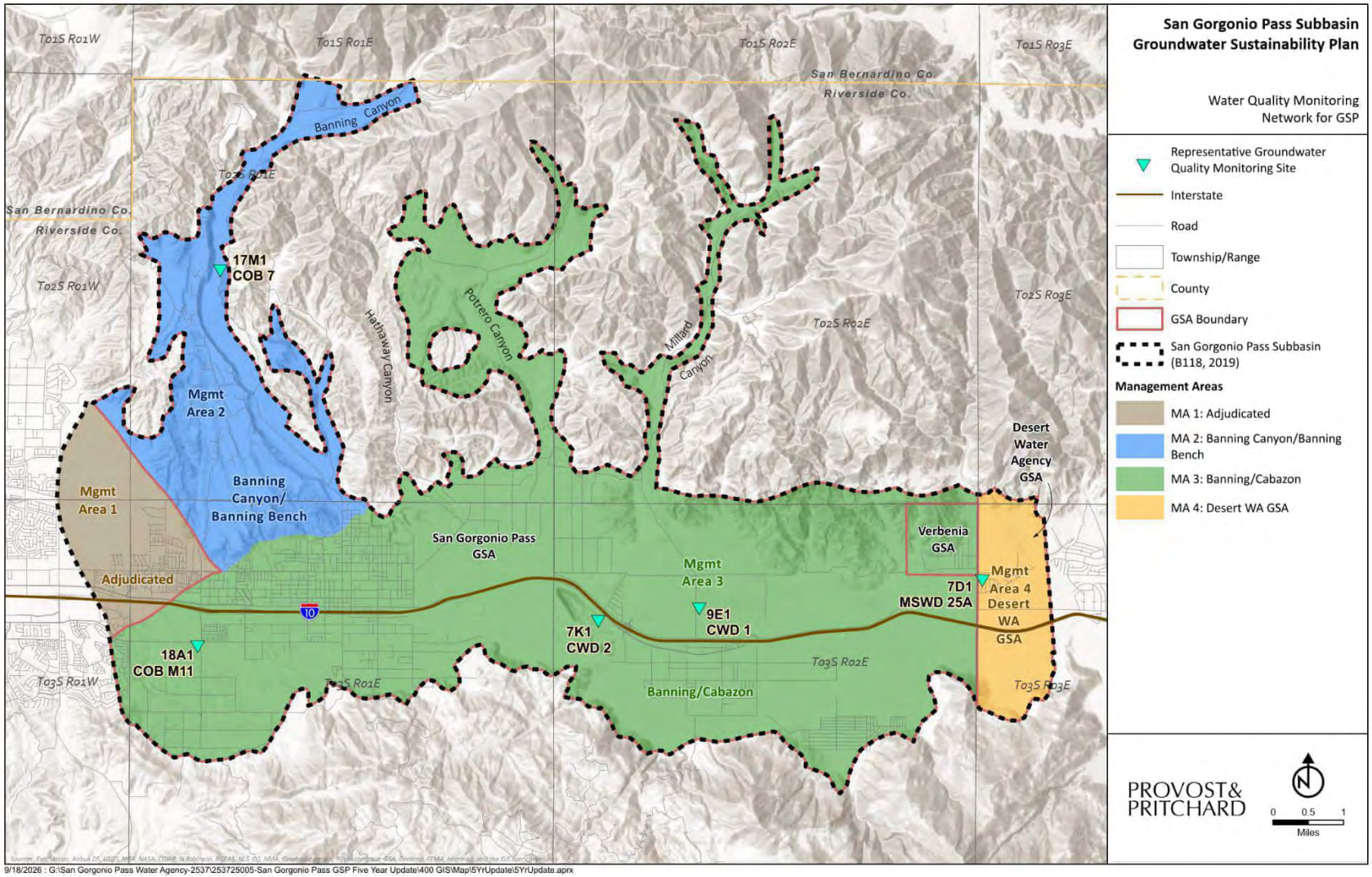


Figure 5-2 Representative Groundwater Quality Monitoring Network



5.1.1 MONITORING NETWORK OBJECTIVES

Regulation Requirements:

> **§354.34(b)** Each Plan shall include a description of the monitoring network objectives for the basin, including an explanation of how the network will be developed and implemented to monitor groundwater and related surface conditions, and the interconnection of surface water and groundwater, with sufficient temporal frequency and spatial density to evaluate the affects and effectiveness of Plan implementation. The monitoring network objectives shall be implemented to accomplish the following:
> 1) Demonstrate progress toward achieving measurable objectives described in the Plan.
> 2) Monitor impacts to the beneficial uses or users of groundwater.
> 3) Monitor changes in groundwater conditions relative to measurable objectives and minimum thresholds.
> 4) Quantify annual changes in water budget components.

The objectives of the various monitoring programs include the following:

1. Establish or enhance a baseline for future monitoring;
2. Provide warning of potential future problems;
3. Use data gathered to generate information for water resources evaluation;
4. Help to quantify annual changes in water budget components;
5. Develop meaningful long-term trends in groundwater characteristics;
6. Provide comparable data from various places in the Subbasin;
7. Demonstrate progress toward achieving measurable objectives described in the Plan;
8. Monitor changes in groundwater conditions relative to minimum thresholds;
9. Monitor impacts to the beneficial uses or users of groundwater; and
10. Provide sufficient detail to guide annual water management actions for the current water year.

5.1.2 NETWORK DEVELOPMENT PROCESS

Regulation Requirements:

> **§354.34(c)** Each monitoring network shall be designed to accomplish the following for each sustainability indicator:
> [§354.34(c)(1) through §354.34(c)(6) are individually listed below]

Sections 5.2 and 5.3 describe existing networks within the boundary of the Subbasin used to track groundwater levels, groundwater storage, land subsidence and depletion of interconnected surface water. Section 5.4 describes the groundwater quality monitoring network. Sections 5.5 and 5.6 describe the inapplicability of seawater intrusion to the SGP Subbasin.

For each applicable sustainability indicator, the adequacy of the monitoring network is discussed, as well as the quantitative values for minimum thresholds, measurable objectives, and interim milestones. The sections also include a review of each monitoring network for monitoring frequency and density, identification of data gaps, plans to fill data gaps, and future site selection. The supporting monitoring network information will be reviewed and evaluated during each five-year GSP assessment.

5.1.3 DESCRIPTION OF EXISTING MONITORING RESOURCES

The SGP Subbasin GSAs defined a representative monitoring network (Figure 5-1 and Figure 5-2) to monitor applicable sustainability indicators in relation to sustainable management criteria (defined in Chapter 4 – Sustainable Management Criteria). Those applicable indicators include groundwater levels, groundwater storage, groundwater quality, and interconnected surface water.

The SGP Representative Monitoring Network is a subset of the broader monitoring activities within and adjacent to the Subbasin, referred to as the "Supplemental Monitoring Network." Components of the Supplemental Monitoring Network include but are not limited to the resources described below. The Supplemental Monitoring Network's monitoring activities and resources allow for analysis of all six sustainability indicators and GDEs; include federal, state, and local sources; and are available as resources

to support the understanding of groundwater conditions through the implementation period. Figure 5-3 summarizes the relationship between the supplemental monitoring network and the representative monitoring network.

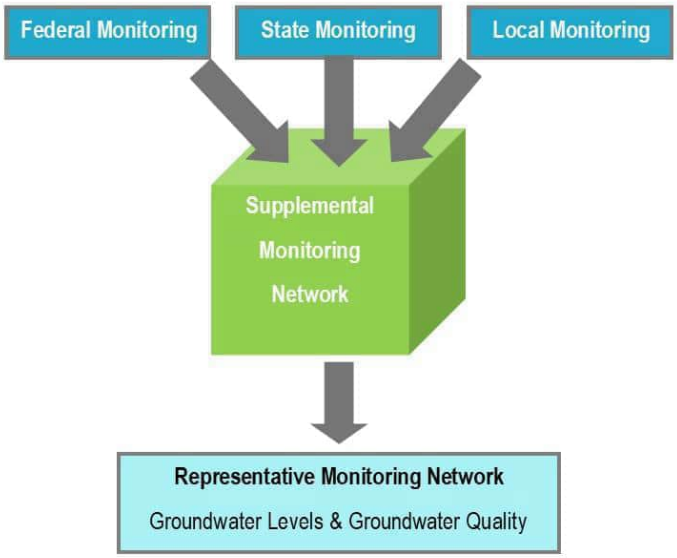


Figure 5-3 Monitoring Network Resource Process

SUPPLEMENTAL MONITORING NETWORK

The Supplemental Monitoring Network is an evolving accumulation of hydrogeologic and water resources data. This network includes a wide variety of sources, programs, and parameters of study that have been useful in the development of this GSP. The SGP GSAs recognize the continuing value of the Supplemental Monitoring Network during the implementation phase of the GSP.

The Supplemental Monitoring Network is intended as an additive collection of monitoring resources, housing historic and current data and incorporating newly available monitoring programs and data. A summary of the existing data resources that makeup the current Supplemental Monitoring Network is included below and organized by monitoring parameter.

Supplemental Monitoring Network: Groundwater Levels and Groundwater Storage

Groundwater surface elevation and depth to water data are monitored by federal, state, and local programs and agencies. Most of the publicly available data is consolidated and reported in the DWR Water Data Library (WDL) and the SGMA Monitoring Network Module. These databases include data from DWR, USGS, municipalities, and other available data sources.

In addition to the WDL, groundwater level data provided by local agencies within and adjacent to the SGP Subbasin have been consolidated into a database system and, where sufficient attributes were available, used in the development of the groundwater model described in Chapter 3 – Basin Setting and the understanding of the groundwater conditions.

Supplemental Monitoring Network: Land Subsidence

Changes in land surface elevation are monitored via the supplemental monitoring network (InSAR remote sensing data) and will continue to be examined through the GSP implementation via DWR's SGMA Data Viewer website[1].

Supplemental Monitoring Network: GDEs and Interconnected Surface Water

The Groundwater Resources Hub[2] and associated GDE Pulse[3] from TNC are DWR's preferred resource for evaluating GDEs. The data and references from TNC are used in conjunction with available groundwater level data and geologic conditions to refine the understanding.

Supplemental Monitoring Network: Groundwater Quality

Groundwater quality is measured by the local water districts, water agencies, and municipalities that provide groundwater to their respective customers, many of which provide annual groundwater quality monitoring reports to the RWQCB.

Several other agencies play important roles in the monitoring of groundwater quality. These include the State Water Quality Control Board, USEPA, Department of Toxic Substances Control, USGS, and the U.S. Bureau of Reclamation. The SGP Subbasin's GSAs make efforts to collect and review pertinent water quality data published by these agencies.

Supplemental Monitoring Network: Subsidence

Although there is an absence of geologic materials conducive to groundwater extraction related subsidence in the SGP Subbasin, changes in land surface elevation can be evaluated via the NASA Jet Propulsion Laboratory's Interferometric Synthetic Aperture Radar (InSAR) data. These data and more subsidence related data in the state are available on DWR's SGMA Data Viewer.[4]

Supplemental Monitoring Network: Land Use

Land use data are relevant to study when considering evapotranspiration and historic, current, and projected water demand estimates. Land use resources are available from the City of Banning, City of Beaumont, and Riverside County General Plans and websites.

Supplemental Monitoring Network: Hydrogeology

To support the analysis of the geology and associated hydrogeology in the Subbasin, reports, data, and coordination with the USGS have served as critical resources to identify faulting location and hydrologic impacts, groundwater levels, base of the aquifer, and parent materials.

5.2 GROUNDWATER LEVELS AND GROUNDWATER STORAGE

Groundwater level monitoring can be used to evaluate groundwater storage. This section details the representative groundwater level monitoring network for the SGP Subbasin.

5.2.1 DESCRIPTION OF REPRESENTATIVE GROUNDWATER LEVELS MONITORING NETWORK

Regulation Requirements:

[1] https://sgma.water.ca.gov/webgis/
[2] Groundwater Resource Hub
[3] GDE Pulse (codefornature.org)
[4] Web Map Viewer (ca.gov)

§354.34(c)(1) Chronic Lowering of Groundwater Levels. Demonstrate groundwater occurrence, flow directions, and hydraulic gradients between principal aquifers and surface water features by the following methods:

A) A sufficient density of monitor wells to collect representative measurements through depth-discrete perforated intervals to characterize the groundwater table or potentiometric surface for each principal aquifer.

B) Static groundwater elevation measurements shall be collected at least two times per year, to represent seasonal low and seasonal high groundwater conditions.

§354.36 Each Agency may designate a subset of monitoring sites as representative of conditions in the basin or an area of the basin, as follows:

§354.36(a) Representative monitoring sites may be designated by the Agency as the point at which sustainability indicators are monitored, and for which quantitative values for minimum thresholds, measurable objectives, and interim milestones are defined.

SGP Subbasin water level monitoring network will utilize existing wells that are currently monitored for groundwater levels including but not limited to USGS, municipality, DWR, agency, and private wells. New wells specifically designed for monitoring will be added to the network as funding is available and a monitoring record is available to correlate with historically collected nearby wells with a long monitoring record. Data gap areas have been identified in Section 5.7 and opportunities to install new wells or access private wells will be revisited during the Annual Reporting and 5-year GSP Update periods. The groundwater elevation measurements will be collected every April 1 to May 31 and October 1 to November 30 to provide data on the seasonal low and seasonal high groundwater conditions. Each GSA will upload their respective data for inclusion in the SGP Subbasin's Data Management System and Annual Reports.

There were approximately 70 wells identified within the SGP Subbasin; however, in many instances critical attributes, such as construction information, active status, and/or site access were either not available or publicly disclosed. Wells with unidentified construction characteristics could be perforated in multiple aquifer zones and it is unknown which aquifer zone is being reflected in measured water levels. Of the 70 wells, approximately 25 active production wells and less than 10 active monitoring wells had sufficient construction information and the necessary site access to be considered for inclusion in the representative water level monitoring network.

Figure 5-1 shows the locations of the wells in the representative water level monitoring network and a table of the well information is presented in Table 5-2. Wells not included in the representative monitoring network but were considered and are part of the supplemental monitoring network are included in Section 3.2. The applicable beneficial uses of groundwater by management area are further clarified in Chapter 2 – Plan Area. The current water level monitoring network is a combination of production wells and dedicated monitoring wells.

During 2025 and 2026, SGPWA (with grant funding from DWR) contracted with the USGS for construction of four new monitoring wells to address identified data gaps in the Beaumont, Banning, Banning Bench and Banning Canyon storage units. One of the new wells, Well 2S/1E-32E02 is included in the representative monitoring network described below, as it was drilled in an area without pre-existing measured wells. The other three wells will be monitored and correlated with adjacent measured wells over the next five years. After comparable water levels are collected over the next five years, and if those levels show correlations with water levels from pre-existing non-monitoring wells, the new wells are intended to be incorporated into the representative monitoring network in the future as substitutes for the existing production wells that are currently being used as representative monitoring sites.

Table 5-2 Representative Water Level Monitoring Network

San Gorgonio Pass Subbasin Representative Water Level Monitoring Network			
Management Area	**Storage Unit**	**Representative Monitoring Well**	**Sustainability Indicators**
Management Area 2	Banning Canyon	2S/1E-4L03S (COB #11) 2S/1E-17F02S (COB #8) 2S/1E-33J04S (COB #2)	Water Levels Interconnected Surface Water Groundwater Storage
	Banning Bench	2S/1E-32E02S	Water Levels Groundwater Storage
Management Area 3	Banning	3S/1E-18A01S (COB #M11)	Water Levels Groundwater Storage
	Cabazon	3S/1E-11F04S 3S/2E-7P04S 3S/2E-11H03S	Water Levels Groundwater Storage
Management Area 4	Cabazon	3S/3E-8L1S --	Water Levels Groundwater Storage

5.2.1.1 ADEQUACY OF REPRESENTATIVE WATER LEVELS MONITORING NETWORK

Regulation Requirements:

§354.34(d) The monitoring network shall be designed to ensure adequate coverage of sustainability indicators. If management areas are established, the quantity and density of monitoring sites in those areas shall be sufficient to evaluate conditions of the basin setting and sustainable management criteria specific to that area.

§354.34(e) A Plan may utilize site information and monitoring data from existing sources as part of the monitoring network.

Regulation Requirements:

§354.34(f) The Agency shall determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon the following factors:

1) Amount of current and projected groundwater use.
2) Aquifer characteristics, including confined or unconfined aquifer conditions, or other physical characteristics that affect groundwater flow.
3) Impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal.
4) Whether the Agency has adequate long-term existing monitoring results or other technical information to demonstrate an understanding of aquifer response.

The SGP Subbasin's Representative Monitoring Network was designed with consideration of spatial density, hydrogeologic variability in the Subbasin, and the beneficial uses of groundwater in each geologic storage unit.

In the Banning, Banning Bench, and Cabazon Storage Units, the beneficial use of groundwater includes commercial, domestic, industrial, and municipal groundwater extractions. This includes the categories of extraction use within the stakeholder MBMI lands that are not subject to SGMA but still use the SGP Subbasin's primary aquifer.

The Banning Canyon Storage Unit includes groundwater uses for commercial, domestic, and municipal purposes, as well as use by potential GDEs. Three representative monitoring sites were included in the Banning Canyon to indicate the potential groundwater management influences on the shallow aquifer's climactically driven hydrologic system.

In addition to consideration of the geologic storage unit boundaries, the representative monitoring network also met sufficient coverage to analyze the groundwater conditions in the non-adjudicated management areas. The SGP Subbasin has established four management areas that correspond with the following boundaries: (1) Adjudicated Beaumont Basin, (2) Banning Canyon/Banning Bench storage units, (3) SGP GSA and Verbenia GSA areas within the Banning and Cabazon storage unit and (4) DWA GSA portion of Cabazon storage unit.

MANAGEMENT AREA 1: ADJUDICATED BEAUMONT BASIN

The adjudicated Beaumont Basin is not subjected to SGMA and this GSP does not specify representative monitoring in this area of the SGP Subbasin. The Beaumont Basin Watermaster is responsible for assembling and reviewing groundwater level monitoring data, which is documented in periodic report. The SGP GSP Working Group has requested and reviewed available data and information from MA 1 to identify impacts to the SGP Subbasin.

MANAGEMENT AREA 2: SGP GSA

MA 2 includes the Banning Canyon and Banning Bench Storage Units. An assessment was completed to identify a minimum of one well in each of these storage units to ensure adequate coverage, in alignment with DWR's Monitoring Network Best Management Practices guidance document. Three wells were identified in the Banning Canyon storage unit, which are existing production wells that cover a large range of elevation differences. One well was identified in the Banning Bench, which is a new monitoring well in an area without a record of historical water level measurements.

MANAGEMENT AREA 3: SGP GSA & VERBENIA GSA

MA 3 includes the Cabazon and Banning Storage Units. An assessment was completed to identify a minimum of one well in each of these storage units to ensure adequate coverage, in alignment with DWR's Monitoring Network Best Management Practices (BMP) guidance document. Based on this evaluation, three wells were identified for MA 3 in the Cabazon storage unit and one for the Banning storage unit

Although there was limited groundwater level data available in the Cabazon storage unit prior to 2008, the existing groundwater-level monitoring network has generally adequate data to prepare groundwater contour maps and identify groundwater level trends over the years in the areas subject to SGMA: SGP GSA, Verbenia GSA, and DWA GSA. However, the MBMI lands cover a sizeable portion of the SGP Subbasin and are not required to publicly release water levels or extraction information through the SGMA process or other state and federal groundwater monitoring programs. Therefore, in the absence of possible future voluntary agreements to obtain MBMI data, the monitoring of groundwater levels will be limited to the areas that are subject to SGMA.

To minimize discrepancies with privately held MBMI water level data and groundwater conditions, the SGP GSP Working Group and the MBMI have cooperated via Stakeholder Outreach throughout the GSP development.

MANAGEMENT AREA 4: DWA GSA

DWA GSA is identified as a management area with regard to the GSA's unique groundwater conditions. DWA GSA in the SGP Subbasin has minimal to no groundwater extractions and benefits from groundwater replenishment through recharge at the Whitewater Spreading Area operated by DWA and Coachella Valley Water District (CVWD), just outside of the SGP Subbasin Boundary. To represent groundwater conditions in MA 4, USGS monitoring well 8L1 has been selected as a representative monitoring network site. Well 8L1 is slightly outside of the SGP Subbasin SGMA boundary; however, the well is located near the geologic boundary between the SGP Subbasin and the Indio Subbasin at Fingal Point, described in **Chapter 3 – Basin Setting**. Well 8L1's location on the geologic boundary with the Indio Basin serves as a prime location to determine boundary flows to the Indio Subbasin and to evaluate the groundwater level influences of the groundwater recharge activities by DWA on the SGP Subbasin.

Monitoring Frequency

The groundwater elevation measurements will be collected every April 1 to May 31 and October 1 to November 30 to provide data on the seasonal low and seasonal high groundwater conditions (**Table 5-3**).

Table 5-3 Representative Water Level Monitoring Frequency

San Gorgonio Pass Subbasin Coordinated Representative Water Level Monitoring Frequency		
Monitoring Parameter	**Frequency**	**Period of Measurement Notes**
Groundwater Levels	Semi-Annually (spring & fall)	Spring: April 1 to May 31 Fall: October 1 to November 30

5.2.2 REPRESENTATIVE WATER LEVELS MONITORING NETWORK INFORMATION

This section details the rationale for representative monitoring site selection and location.

5.2.2.1 SCIENTIFIC RATIONALE FOR SITE SELECTION

Regulation Requirements:

> **§354.34(g)** Each Plan shall describe the following information about the monitoring network:
> **(1)** Scientific rationale for the monitoring site selection process.
> **§354.34(g)** Each Plan shall describe the following information about the monitoring network:
> **(2)** Consistency with data and reporting standards described in Section 352.4. If a site is not consistent with those standards, the Plan shall explain the necessity of the site to the monitoring network, and how any variation from the standards will not affect the usefulness of the results obtained.
> **§354.34(g)(3)** For each sustainability indicator, the quantitative values for the minimum threshold, measurable objective, and interim milestones that will be measured at each monitoring site or representative monitoring sites established pursuant to Section 354.36.

The representative monitoring network sites (RMS) were selected with the following scientific criteria prioritized:

1. Ability to monitor a variety of groundwater level conditions in the Subbasin by assigning a representative monitoring site in each geologic storage unit[5]
2. Minimum of five years of historic data to assign meaningful projections and sustainable management criteria
3. Location at or near groundwater production sites to analyze the impacts to beneficial users more directly

[5] There were no wells with public access in the Banning Bench Storage Unit, and this area is considered a data gap.

4. A minimum of two sites in Banning Canyon to inform assessments of groundwater level impacts on GDEs and surface water groundwater interactions
5. Location at or near the adjudicated Beaumont Basin to study groundwater inflows
6. Location at or near the Indio Subbasin to study groundwater outflows and influences of Desert Water Agency groundwater recharge activities on the outflow gradient and Subbasin storage

After the first draft of monitoring sites were selected, those sites underwent another qualification analysis, with the following factors considered:

1. Can the proposed monitoring site represent impacts to beneficial uses of groundwater?
2. Does the proposed monitoring site consider the perforated intervals and depths of neighboring wells to maximize representation of storage unit beneficial uses?
3. Is there a historic record of at least 5-years of data to assign sustainable management criteria?
4. Is the proposed monitoring site expected to be retired within the planning horizon?
5. Is there access to monitor the proposed site?
6. Does the proposed monitoring site consider projected development changes in groundwater use?
7. Are there enough wells to represent the boundary conditions of the adjudicated Beaumont Basin's inflows and the outflows to the Indio Subbasin?

Data from nearby recently constructed USGS multiple completion wells has been and will continue to be reviewed during the 5-year GSP Update process to reconsider if they should be added to or replace the representative monitoring network sites in the SGP Subbasin. Based on the availability of additional data and new monitoring wells, three wells were added during the process leading to the 2027 periodic update of the SGP GSP. With more than five years of groundwater level data available that indicated a close correlation of water levels, the multiple completion monitoring well 3S/2E-11H3 was substituted for the previously used 3S/2E-7M1 (MSWD #25) well. Also, the multiple completion monitoring well 3S/3E-8L1 was substituted for the previously used 3S/3E-8M1 (MSWD #26), with measured water levels since 2019 indicating a close correlation. The new monitoring multiple completion monitoring well 2S/1E-32E2, located in the Banning Bench was added even though it does not have a five-year period of data collection, as it is the only well identified in the Banning Bench storage unit. Finally, well 3S/2E-23B1S was dropped from the monitoring network as it was vandalized and is not usable for groundwater level measurements since 2024.

In 2025 and 2026, SGP Subbasin consultant staff coordinated with the consultant staff of the Indio Subbasin and Desert Water Agency, who has GSAs in both the SGP Subbasin and the Indio Subbasin to compare data and understanding of the groundwater conditions at this site and outflow estimations. SGP Subbasin consultant staff also coordinated with consultant staff for the adjudicated Beaumont Basin to compare data and understanding of the groundwater conditions and underflow estimates at the Beaumont-SGP boundary.

All other representative monitoring sites within the SGP Subbasin are aligned with the data and reporting standards.

5.2.2.2 REPRESENTATIVE WATER LEVELS MONITORING NETWORK LOCATION

Regulation Requirements:

§354.34(h) The location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used.

The representative groundwater level monitoring network's spatial distribution was selected to assess the groundwater conditions that vary across the management areas of the SGP Subbasin. The management areas and sites are depicted on Figure 5-1 and included in Table 5-2.

Regulation Requirements:

§354.36 Each Agency may designate a subset of monitoring sites as representative of conditions in the basin or an area of the basin, as follows:

§354.36(a) Representative monitoring sites may be designated by the Agency as the point at which sustainability indicators are monitored, and for which quantitative values for minimum thresholds, measurable objectives, and interim milestones are defined.

The representative monitoring network identified on Figure 5-1 and in Table 5-2 include a subset of the total wells available for consideration in the SGP Subbasin. The selected wells are considered to be the most representative of the Subbasin conditions, as explained in Section 5.2.2.1.

The sustainable management criteria assigned for the representative monitoring sites are explained in detail in Chapter 4 – Sustainable Management Criteria.

5.2.2.3 USE OF GROUNDWATER ELEVATIONS AS PROXY FOR OTHER SUSTAINABILITY INDICATORS

Regulation Requirements:

§354.36(b) Groundwater elevations may be used as a proxy for monitoring other sustainability indicators if the Agency demonstrates the following:

1) Significant correlation exists between groundwater elevations and the sustainability indicators for which groundwater elevation measurements serve as a proxy.
2) Measurable objectives established for groundwater elevation shall include a reasonable margin of operational flexibility taking into consideration the basin setting to avoid undesirable results for the sustainability indicators for which groundwater elevation measurements serve as a proxy.

The representative monitoring network accounts for the applicable sustainability indicators in the SGP Subbasin: declining water levels, interconnected surface water, and groundwater storage, all with the ability to use groundwater level measurements to evaluate trends and impacts.

Groundwater levels are used as the basis for analytical computation of the volume of groundwater in storage. Groundwater levels from the RMS and other available monitoring are used to develop contour maps of groundwater levels each year for the Annual Report. The contour maps, along with estimated aquifer thickness and specific yield are then used to estimate the total quantity of groundwater remaining in storage in the SGP.

As described in Chapter 3 – Basin Setting, depths to groundwater in management areas 3 and 4 exceed 200 feet throughout the basin which is too deep to allow for interconnection of surface water and groundwater. The Banning Canyon's aquifer in management area 2 is uniquely shallow. Although groundwater management is not the primary influence of the variability in Banning Canyon, based on historic records and aerial imagery of dry year conditions, the interconnection of surface water and groundwater is to be considered through representative monitoring of groundwater levels as a proxy.

Sustainable management criteria, including measurable objectives and operational flexibility, are further explained in Chapter 4 – Sustainable Management Criteria.

5.2.3 REPRESENTATIVE WATER LEVELS MONITORING PROTOCOLS

Regulation Requirements:

§352.2 Each Plan shall include monitoring protocols adopted by the Agency for data collection and management, as follows:
(a) Monitoring protocols shall be developed according to best management practices.
(b) The Agency may rely on monitoring protocols included as part of the best management practices developed by the Department, or may adopt similar monitoring protocols that will yield comparable data.
(c) Monitoring protocols shall be reviewed at least every five years as part of the periodic evaluation of the Plan, and modified as necessary.

§354.34(i) The monitoring protocols developed by each Agency shall include a description of technical standards, data collection methods, and other procedures or protocols pursuant to Water Code Section 10727.2(f) for monitoring sites or other data collection facilities to ensure that the monitoring network utilizes comparable data and methodologies.

The Data Quality Objectives (DQO) process will be used to develop monitoring protocols that assist in meeting measurable objectives and sustainability goals of this GSP. The DQO process includes the following:

1. State the problem;
2. Identify the goal;
3. Identify the inputs;
4. Define the boundaries of the area/issue being studied;
5. Develop an analytical approach;
6. Specify performance or acceptance criteria; and
7. Develop a plan for obtaining data.

Groundwater level monitoring will generally follow the protocols identified in the *Monitoring Protocols, Standards, and Sites BMP* (DWR, December 2016b)[6]. The SGP Subbasin may develop standard monitoring forms in the future, if deemed necessary.

The following comments and exceptions to the DWR Monitoring Protocols, Standards, and Site BMP[7] should be noted:

1. SGMA regulations require that groundwater levels be measured to the nearest 0.1 foot. The BMP suggests measurements to the nearest 0.01 foot. This is not practical for many measurement methods. This level of accuracy would have little value since groundwater contour maps typically have 10-foot intervals, and storage calculations are based on groundwater levels rounded to the nearest foot. The accuracy of groundwater level measurements will vary based on the well type and condition. For instance, for wells with nearby pumping wells, measurements can be affected if that pumping is ongoing or recently terminated.
2. Well sounding equipment has to be decontaminated after use if used in a well with suspected or known contamination or if there are obvious signs of contamination, such as oil.

Regulation Requirements:

§354.36(c) The designation of a representative monitoring site shall be supported by adequate evidence demonstrating that the site reflects general conditions in the area.

The representative monitoring network locations were identified to represent the various conditions across the Subbasin by assigning wells in each management area and geologic storage unit. The groundwater level data of wells nearby to each representative monitoring site were examined in comparison to the selected site to verify that the representative monitoring site reflected the localized conditions of the area.

[6] *Monitoring Protocols, Standards, and Sites BMP* (DWR, December 2016b)
[7] *Monitoring Protocols, Standards, and Sites BMP* (DWR, December 2016b)

Therefore, the designation of each site and the greater representative monitoring network adequately reflects the general conditions in the area and in the Subbasin. The adequacy of the representative water level monitoring network is expanded on in Section 5.2.1.1.

5.3 REPRESENTATIVE INTERCONNECTED SURFACE WATER MONITORING NETWORK

Groundwater level data, storage capacity of the Banning Canyon, and the seasonal fluctuations in precipitation and snowmelt that feed into the Banning Canyon were analyzed to define the representative water level monitoring network.

5.3.1 DESCRIPTION OF REPRESENTATIVE INTERCONNECTED SURFACE WATER MONITORING NETWORK

Regulation Requirements:

§354.34(c)(6) Depletions of Interconnected Surface Water. Monitor surface water and groundwater, where interconnected surface water conditions exist, to characterize the spatial and temporal exchanges between surface water and groundwater, and to calibrate and apply the tools and methods necessary to calculate depletions of surface water caused by groundwater extractions. The monitoring network shall be able to characterize the following:

A) Flow conditions including surface water discharge, surface water head, and baseflow contribution.

B) Identifying the approximate date and location where ephemeral or intermittent flowing streams and rivers cease to flow, if applicable.

C) Temporal change in conditions due to variations in stream discharge and regional groundwater extraction.

D) Other factors that may be necessary to identify adverse impacts on beneficial uses of the surface water.

§354.36(c) The designation of a representative monitoring site shall be supported by adequate evidence demonstrating that the site reflects general conditions in the area.

On the SGP Subbasin valley floor in MAs 3 and 4 (Cabazon and Banning Subbasins), there is limited potential for interactions between surface water and groundwater, because of the significant depth to water (greater than 200 feet), as explained in Section 3.1. Therefore, the assessment of sustainable management criteria related to interconnected surface water and associated GDEs is focused within the canyon zones of the Subbasin where interconnected surface water is present.

The canyon regions within the SGP Subbasin may experience seasonal surface water interconnection with the underlying groundwater. The canyons in the SGP Subbasin include, from west to east, Banning Canyon, Hathaway Canyon, Potrero Canyon, and Millard Canyon. Of these canyons, Hathaway, Potrero and Millard Canyons are both located entirely on MBMI properties and cannot be directly monitored.

Banning Canyon, which is traversed by the San Gorgonio River, is the largest of the SGP canyons with GDE. San Gorgonio River has ephemeral flows through the Banning Canyon during the wet season and only when enough volume is possible to flow. The wet season ranges from December to March, and the San Gorgonio River is usually dry the remaining months of the year. A fault exists mid-way in the Banning Canyon and subsurface groundwater may flow to the surface at that fault in some months of wet years.

Flow conditions in Banning Canyon are not currently measured to provide data on surface water head and baseflow contributions. The soil conditions within the canyon are gravelly with high hydraulic conductivity, resulting in the Banning Canyon functioning as a natural recharge area. The storage capacity available for recharge is limited by the Banning Canyon's shallow aquifer, explained in Section 3.1.

The beneficial uses of groundwater in the Banning Canyon include potential GDEs and groundwater pumping by the City of Banning and other entities when sufficient groundwater is available. The hydrologic

conditions in Banning Canyon are highly dependent on climactic conditions. The source water in Banning Canyon is from precipitation, natural stream discharge, and Whitewater River water diversions into the San Gorgonio River via a flume, which is also subjected to the same natural source limitations as the San Gorgonio River.

The representative monitoring in the Banning Canyon includes three sites, spatially distributed from the north, center, and south of the canyon. These sites are included in the representative monitoring network shown on Figure 5-1 and in Table 5-2. The intention of these three sites is to evaluate the water levels in the canyon, and as they relate to potential variable climactic and management impacts on water levels, groundwater storage, and interconnected surface water in this portion of the SGP Subbasin.

As noted previously, the Potrero, Hathaway, and Millard Canyons are located on MBMI lands and data are not currently available for directly monitoring those areas.

5.3.2 ADEQUACY OF REPRESENTATIVE INTERCONNECTED SURFACE WATER MONITORING NETWORK

Regulation Requirements:

§354.34(d) The monitoring network shall be designed to ensure adequate coverage of sustainability indicators. If management areas are established, the quantity and density of monitoring sites in those areas shall be sufficient to evaluate conditions of the basin setting and sustainable management criteria specific to that area.
§354.34(e) A Plan may utilize site information and monitoring data from existing sources as part of the monitoring network.
§354.34(g) Each Plan shall describe the following information about the monitoring network:
(1) Scientific rationale for the monitoring site selection process.

The Banning Canyon storage unit in MA 2 is the only area in the SGP Subbasin that is subject to SGMA with respect to interconnected surface water and has a history of depth to water occurring seasonally at less than 50-feet within the historic period (1998-2019). To ensure adequate coverage, three representative monitoring sites were identified that are spatially distributed to assess conditions at the northern, center, and southern (outlet) portions of the Banning Canyon.

5.3.2.1 DENSITY OF MONITORING SITES AND FREQUENCY OF MEASUREMENTS

Regulation Requirements:

§354.34(f) The Agency shall determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon the following factors:
1) Amount of current and projected groundwater use.
2) Aquifer characteristics, including confined or unconfined aquifer conditions, or other physical characteristics that affect groundwater flow.
3) Impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal.
4) Whether the Agency has adequate long-term existing monitoring results or other technical information to demonstrate an understanding of aquifer response.

The current and projected groundwater use as well as potential impacts to beneficial uses of the Banning Canyon groundwater was considered in the assignment of the sustainable management criteria detailed in Chapter 4 – Sustainable Management Criteria.

There are no known significant groundwater extraction activities directly upgradient of the Banning Canyon's aquifer. The decades of historic data in the Banning Canyon indicate the greatest influence on groundwater levels, groundwater storage, and interconnected surface water are rainfall and snowpack conditions of the water year and the current point in the water year hydrologic cycle. Impacts to beneficial uses of this storage unit aquifer must be with consideration for its highly variable and climate-driven nature.

Aquifer characteristics are detailed in Chapter 3 – Basin Setting.

5.3.3 REPRESENTATIVE INTERCONNECTED SURFACE WATER MONITORING NETWORK INFORMATION

This section details consistency with data and reporting standards, where to find the qualitative values to analyze interconnected surface water, and the use of groundwater elevation as a proxy for interconnected surface water in the Banning Canyon.

5.3.3.1 CONSISTENCY WITH DATA AND REPORTING STANDARDS

Regulation Requirements:

> **§354.34(g)** Each Plan shall describe the following information about the monitoring network:
> **(2)** Consistency with data and reporting standards described in Section 352.4. If a site is not consistent with those standards, the Plan shall explain the necessity of the site to the monitoring network, and how any variation from the standards will not affect the usefulness of the results obtained.

The interconnected surface water monitoring includes the three sites in the representative water level monitoring network (Figure 5-1) that are located in the Banning Canyon. See Section 5.2.1.1 for clarification on the consistency of data and reporting.

5.3.3.2 QUANTITATIVE VALUES

Regulation Requirements:

> **§354.34(g)(3)** For each sustainability indicator, the quantitative values for the minimum threshold, measurable objective, and interim milestones that will be measured at each monitoring site or representative monitoring sites established pursuant to Section 354.36.
> **§354.36(a)** Representative monitoring sites may be designated by the Agency as the point at which sustainability indicators are monitored, and for which quantitative values for minimum thresholds, measurable objectives, and interim milestones are defined.

The sustainable management criteria assigned for the representative monitoring sites are explained in detail in Chapter 4 – Sustainable Management Criteria.

5.3.3.3 USE OF GROUNDWATER ELEVATIONS AS PROXY FOR OTHER SUSTAINABILITY INDICATORS

Regulation Requirements:

> **§354.36(b)** Groundwater elevations may be used as a proxy for monitoring other sustainability indicators if the Agency demonstrates the following:
> 1) Significant correlation exists between groundwater elevations and the sustainability indicators for which groundwater elevation measurements serve as a proxy.
> 2) Measurable objectives established for groundwater elevation shall include a reasonable margin of operational flexibility taking into consideration the basin setting to avoid undesirable results for the sustainability indicators for which groundwater elevation measurements serve as a proxy.

See Section 5.2.2.3, which details how water levels are appropriate for use as a proxy for evaluating groundwater storage and interconnected surface water.

5.3.4 REPRESENTATIVE INTERCONNECTED SURFACE WATER MONITORING PROTOCOLS

Regulation Requirements:

§354.34(h) The location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used.

§352.2 Each Plan shall include monitoring protocols adopted by the Agency for data collection and management, as follows:

(a) Monitoring protocols shall be developed according to best management practices.

(b) The Agency may rely on monitoring protocols included as part of the best management practices developed by the Department, or may adopt similar monitoring protocols that will yield comparable data.

(c) Monitoring protocols shall be reviewed at least every five years as part of the periodic evaluation of the Plan, and modified as necessary.

§354.34(i) The monitoring protocols developed by each Agency shall include a description of technical standards, data collection methods, and other procedures or protocols pursuant to Water Code Section 10727.2(f) for monitoring sites or other data collection facilities to ensure that the monitoring network utilizes comparable data and methodologies.

See Table 5-2 and Figure 5-1 for information on the three representative interconnected surface water sites. The frequency of monitoring and monitoring protocols matches that of the representative water level monitoring detailed in Table 5-3.

5.4 REPRESENTATIVE GROUNDWATER QUALITY MONITORING

The representative groundwater quality monitoring network is detailed in this section.

5.4.1 DESCRIPTION OF REPRESENTATIVE GROUNDWATER QUALITY MONITORING NETWORK

Regulation Requirements:

§354.34(c)(4) Degraded Water Quality. Collect sufficient spatial and temporal data from each applicable principal aquifer to determine groundwater quality trends for water quality indicators, as determined by the Agency, to address known water quality issues.

§354.34(h) The location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used.

As described in Section 3.1, there are no existing significant quality concerns that can be linked to groundwater management influences in the Subbasin. However, the SGP Subbasin GSAs are committed to using the representative groundwater quality monitoring network (Figure 5-2) to evaluate impacts of groundwater management activities on groundwater quality.

The sites identified in Table 5-4 were selected for inclusion in the representative groundwater quality monitoring network.

Water quality monitoring is an important aspect of groundwater management and serves the following purposes:

1. Spatially characterize water quality according to soil types, soil salinity, geology, surface water quality, and land use;
2. Compare constituent levels at a specific well over time;
3. Determine the extent of groundwater quality problems in specific areas;
4. Identify groundwater quality protection and enhancement needs;
5. Determine water treatment needs;
6. Identify impacts of associated land use;
7. Identify impacts of recharge projects on water quality; and
8. Monitor the development and migration of potential contaminant plumes (such as nitrate).

A discussion of groundwater conditions and the high-quality potable groundwater in the SGP Subbasin is detailed in Section 3.2. The data used for the water quality analysis is primarily from the California GAMA Program database, which includes water quality information collected by the DWR, California State Water Resources Control Board (SWRCB), DDW, and the USGS. The network of wells used for assessing groundwater quality in the Subbasin was selected based on availability of well construction information and recurrence of sampling events.

Table 5-4 Representative Groundwater Quality Monitoring Network

San Gorgonio Pass Subbasin Representative Groundwater Quality Monitoring Network		
Management Area	**Geologic Storage Unit**	**Representative Monitoring Well**
Management Area 2	Banning Canyon	17M1 (COB #7)
Management Area 3	Banning	18A1 (COB #M11)
Management Area 3	Cabazon	9E1 (CWD #1)
Management Area 3	Cabazon	7K1 (CWD #2)
Management Area 4	Cabazon	7D1 (MSWD #25A)

5.4.2 ADEQUACY OF REPRESENTATIVE GROUNDWATER QUALITY MONITORING NETWORK

Regulation Requirements:

§354.34(d) The monitoring network shall be designed to ensure adequate coverage of sustainability indicators. If management areas are established, the quantity and density of monitoring sites in those areas shall be sufficient to evaluate conditions of the basin setting and sustainable management criteria specific to that area.
§354.34(e) A Plan may utilize site information and monitoring data from existing sources as part of the monitoring network.

The representative groundwater quality network was selected considering spatial coverage and geologic and hydrologic differences within the SGP Subbasin. The density and location spread of the representative groundwater quality monitoring wells meet the DWR BMP[8] criteria for a sufficient monitoring network.

There are no representative monitoring sites within the MBMI lands or the Beaumont Basin. This is because MBMI and the adjudicated the Beaumont Basin are not within the jurisdiction of SGMA.

5.4.2.1 DENSITY OF MONITORING SITES AND FREQUENCY OF MEASUREMENTS

Regulation Requirements:

§354.34(f) The Agency shall determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon the following factors:
1) Amount of current and projected groundwater use.
2) Aquifer characteristics, including confined or unconfined aquifer conditions, or other physical characteristics that affect groundwater flow.
3) Impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal.
4) Whether the Agency has adequate long-term existing monitoring results or other technical information to demonstrate an understanding of aquifer response.
§354.36(c) The designation of a representative monitoring site shall be supported by adequate evidence demonstrating that the site reflects general conditions in the area.

[8] *Monitoring Protocols, Standards, and Sites BMP* (DWR, December 2016b)

The selection process used for the water quality network identified wells with water quality data from several years that are expected to continue to be monitored regularly in the future as part of their respective regulatory programs.

The water quality network wells are well distributed in the SGP Subbasin. They are suitable for providing a representative characterization of current groundwater conditions. The water quality network is also distributed vertically across the various aquifer zones in the Subbasin, such as in the Banning Canyon and on the Subbasin's valley floor. Many of the wells are community drinking water sources; thus, the network is informed by existing monitoring programs and biased towards a more sensitive beneficial use (municipal drinking water).

The SGP Subbasin area is approximately 56 square-miles, with four representative water quality monitoring sites. This is a sufficient monitoring level based on Hopkins (1984)[9]'s recommendation of four monitoring wells per basin for those that extract more than 10,000 acre-feet per 100 miles^2. Hopkins (1984) was a recommended resource to assign monitoring density in the DWR BMP[7] criteria.

Table 5-5 details the monitoring frequency for the representative groundwater quality monitoring network. As described in Section 4.4, the monitoring frequency would be accelerated to an annual basis for any representative monitoring site that exceeds the measurable objective and would continue being monitored annually until it dropped below the measurable objective.

Table 5-5 Representative Water Level Monitoring Frequency

San Gorgonio Pass Subbasin Coordinated Representative Groundwater Quality Monitoring Frequency		
Monitoring Parameter	**Frequency**	**Period of Measurement Notes**
Nitrates	every 3 years	June-August
TDS	every 3 years	June-August

5.4.3 REPRESENTATIVE GROUNDWATER QUALITY MONITORING NETWORK INFORMATION

The rationale behind the representative groundwater quality monitoring site selection are described below.

5.4.3.1 SCIENTIFIC RATIONALE FOR SITE SELECTION

Regulation Requirements:

§354.34(g) Each Plan shall describe the following information about the monitoring network:
(1) Scientific rationale for the monitoring site selection process.

§354.34(g) Each Plan shall describe the following information about the monitoring network:
(2) Consistency with data and reporting standards described in Section 352.4. If a site is not consistent with those standards, the Plan shall explain the necessity of the site to the monitoring network, and how any variation from the standards will not affect the usefulness of the results obtained.

The scientific rationale for selecting water quality monitoring sites include:

- Select dedicated monitoring wells over production wells where feasible;

[9] Hopkins, J., 1994. Explanation of the Texas Water Development Board groundwater level monitoring program and water-level measuring manual: UM-52, 53 p. http://www.twdb.texas.gov/groundwater/docs/UMs/UM-52.pdf

- Select wells with available construction information (i.e., depth, perforated interval);
- Determine spatial distribution so that water quality can be defined across the SGP Subbasin;
- Select sites so that each aquifer is represented (vertical distribution); and
- Consider nearby beneficial uses.

The data gathered through the monitoring networks is and will continue to be consistent with the standards identified in Section 352.4 of the California Code of Regulations related to Groundwater Sustainability Plans. The main topics of Section 352.4 are outlined below.

- Data reporting units and accuracy;
- Monitoring site information;
- Well attribute reporting;
- Map standards;
- Hydrograph requirements.
- Groundwater and surface water models; and
- Availability of input and output files to DWR.

5.4.3.2 QUANTITATIVE VALUES

Regulation Requirements:

§354.34(g)(3) For each sustainability indicator, the quantitative values for the minimum threshold, measurable objective, and interim milestones that will be measured at each monitoring site or representative monitoring sites established pursuant to Section 354.36.

§354.36(a) Representative monitoring sites may be designated by the Agency as the point at which sustainability indicators are monitored, and for which quantitative values for minimum thresholds, measurable objectives, and interim milestones are defined.

§354.36 Each Agency may designate a subset of monitoring sites as representative of conditions in the basin or an area of the basin, as follows:

Because groundwater from the SGP Subbasin is used as a potable source, the minimum thresholds for groundwater quality are exceedances of MCLs or other applicable regulatory limits that are directly attributable to groundwater management actions in the SGP Subbasin that prevent the use of groundwater for its intended purpose.

Chapter 4 – Sustainable Management Criteria documents the sustainable management criteria for each representative monitoring site.

5.4.4 REPRESENTATIVE GROUNDWATER QUALITY MONITORING PROTOCOLS

Regulation Requirements:

§352.2 Each Plan shall include monitoring protocols adopted by the Agency for data collection and management, as follows:
(a) Monitoring protocols shall be developed according to best management practices.
(b) The Agency may rely on monitoring protocols included as part of the best management practices developed by the Department, or may adopt similar monitoring protocols that will yield comparable data.
(c) Monitoring protocols shall be reviewed at least every five years as part of the periodic evaluation of the Plan, and modified as necessary.

§354.34(i) The monitoring protocols developed by each Agency shall include a description of technical standards, data collection methods, and other procedures or protocols pursuant to Water Code Section 10727.2(f) for monitoring sites or other data collection facilities to ensure that the monitoring network utilizes comparable data and methodologies.

Groundwater quality monitoring will generally follow the protocols identified in the *Monitoring Protocols, Standards, and Sites BMP* (DWR, December 2016b)[10]. The SGP Subbasin GSAs may develop standard monitoring forms in the future if deemed necessary.

5.5 SEAWATER INTRUSION MONITORING

Regulation Requirements:

§354.34(c)(3) Seawater Intrusion. Monitor seawater intrusion using chloride concentrations, or other measurements convertible to chloride concentrations, so that the current and projected rate and extent of seawater intrusion for each applicable principal aquifer may be calculated.

§354.34(j) An Agency that has demonstrated that undesirable results related to one or more sustainability indicators are not present and are not likely to occur in a basin, as described in Section 354.26, shall not be required to establish a monitoring network related to those sustainability indicators.

By definition, seawater intrusion occurs when saline water from the ocean infiltrates the groundwater system and begins to flow into areas of freshwater due to pressure differentials, in many cases caused by groundwater pumping. The influence of seawater intrusion on groundwater quality is not applicable to the SGP Subbasin, considering the distance from the coast and geologic separation from coastal hydrologic influences. Due to the lack of potential seawater intrusion in the SGP Subbasin, no monitoring network is needed.

5.6 LAND SUBSIDENCE MONITORING

Regulation Requirements:

§354.34(c)(5) Land Subsidence. Identify the rate and extent of land subsidence, which may be measured by extensometers, surveying, remote sensing technology, or other appropriate method.

§354.34(j) An Agency that has demonstrated that undesirable results related to one or more sustainability indicators are not present and are not likely to occur in a basin, as described in Section 354.26, shall not be required to establish a monitoring network related to those sustainability indicators.

Lowering of groundwater levels can directly impact inelastic land subsidence when compressible clay deposits are excessively dewatered or depressurized. Due to the active geological deposition conditions in the SGP Subbasin, the confining clay aquitards that are susceptible to inelastic subsidence have not been identified in the SGP Subbasin. Therefore, it is extremely unlikely that groundwater management activities would cause land subsidence in the Subbasin. However, changes in land surface elevation are monitored via the supplemental monitoring network (InSAR remote sensing data) and will continue to be examined through the GSP implementation via DWR's SGMA Data Viewer website (https://sgma.water.ca.gov/webgis/).

Since DWR's InSAR remote monitoring became available in 2015, the cumulative land subsidence in the SGP Subbasin has been undetectable (less than 0.1 feet). Because of the low likelihood of land subsidence

[10] *Monitoring Protocols, Standards, and Sites BMP* (DWR, December 2016b)

in the SGP Subbasin, direct measurements of land surface elevations through monitoring methods such as high precision surveying, dedicated GPS network or extensometers were not considered necessary. Instead, the InSAR remote monitoring will be used to track subsidence of land surfaces on an annual basis. Any land surface subsidence detected through InSAR will be evaluated to determine whether tectonic activity may be a cause.

5.7 ASSESSMENT AND IMPROVEMENT OF THE REPRESENTATIVE MONITORING NETWORK

The GSAs have identified data gaps and ways to improve their representative monitoring network in the future with additional resources and time to implement. A discussion of those data gaps and potential improvements are detailed below.

5.7.1 REVIEW AND EVALUATION OF REPRESENTATIVE MONITORING NETWORK

Regulation Requirements:

§354.38(a) Each Agency shall review the monitoring network and include an evaluation in the Plan and each five-year assessment, including a determination of uncertainty and whether there are data gaps that could affect the ability of the Plan to achieve the sustainability goal for the basin.

This section includes a description of the different types of data gaps, a summary of existing data gaps in each monitoring network and plans to fill the data gaps. The SGP Subbasin plans to reevaluate these data gap impacts on the ability to achieve the sustainability goal throughout the implementation process.

5.7.2 IDENTIFICATION OF DATA GAPS

Regulation Requirements:

§354.38(b) Each Agency shall identify data gaps wherever the basin does not contain a sufficient number of monitoring sites, does not monitor sites at a sufficient frequency, or utilizes monitoring sites that are unreliable, including those that do not satisfy minimum standards of the monitoring network adopted by the Agency.

§354.38(c) If the monitoring network contains data gaps, the Plan shall include a description of the following:

1) The location and reason for data gaps in the monitoring network.
2) Local issues and circumstances that limit or prevent monitoring.

The data gap areas in the SGP Subbasin are identified on Figure 5-4. The data gap areas are clarified below:

Banning Bench:

There are minimal publicly available water well measurements in the Banning Bench area. Additionally, groundwater extractions in the area are de minimis, with extractions of less than 2 acre-feet per year per well. The limited groundwater use in the Banning Bench is due to groundwater deposits with poor recharge supply and limited yield. A resultant spatial data gap for groundwater levels, groundwater storage, and groundwater quality is identified in the Banning Bench Storage Unit.

There are no expected plans for increased groundwater production in the Banning Bench Storage Unit, hindering the opportunity for a joint production-monitoring well. The Banning Heights Mutual Water Company, that comprises most of this storage unit, is primarily supplied via the Whitewater Flume system with supplemental water available from the City of Banning in emergency situations, such as during periods of flume outages such as occurred from the Apple Fire in 2020.

A monitoring site was identified in the northern edge of the in the Banning Bench that would support SGP monitoring and therefore is included in the data gap area depicted on Figure 5-4. With availability of funding from DWR, SGPWA contracted with the USGS to construct well 2S/1E-32E01S in 2025. Lithologic information from that well has been obtained. Water level measurements and water quality are both being

collected that will provide valuable information for interpreting groundwater conditions in the Banning Bench and supporting development of sustainable management criteria in the future.

Banning (eastern portion):

The Banning Storage Unit includes a variety of wells considered for inclusion in the representative monitoring network; however, a spatial data gap exists in the eastern portion of the Banning Storage Unit. Measurements in this area would be useful in identifying potential differences in groundwater levels between the Banning and Cabazon storage units and the significance of the identified faults in the area on groundwater hydrology. There currently are no active wells in this area to select for monitoring.

MBMI:

The MBMI lands are not subjected to SGMA, as MBMI is a federally recognized tribe. Over 36,000 acres of the Subbasin fall within MBMI's jurisdiction. It is within MBMI's right to keep water level and other data private. Therefore, this area is considered a permanent data gap in the SGP Subbasin.

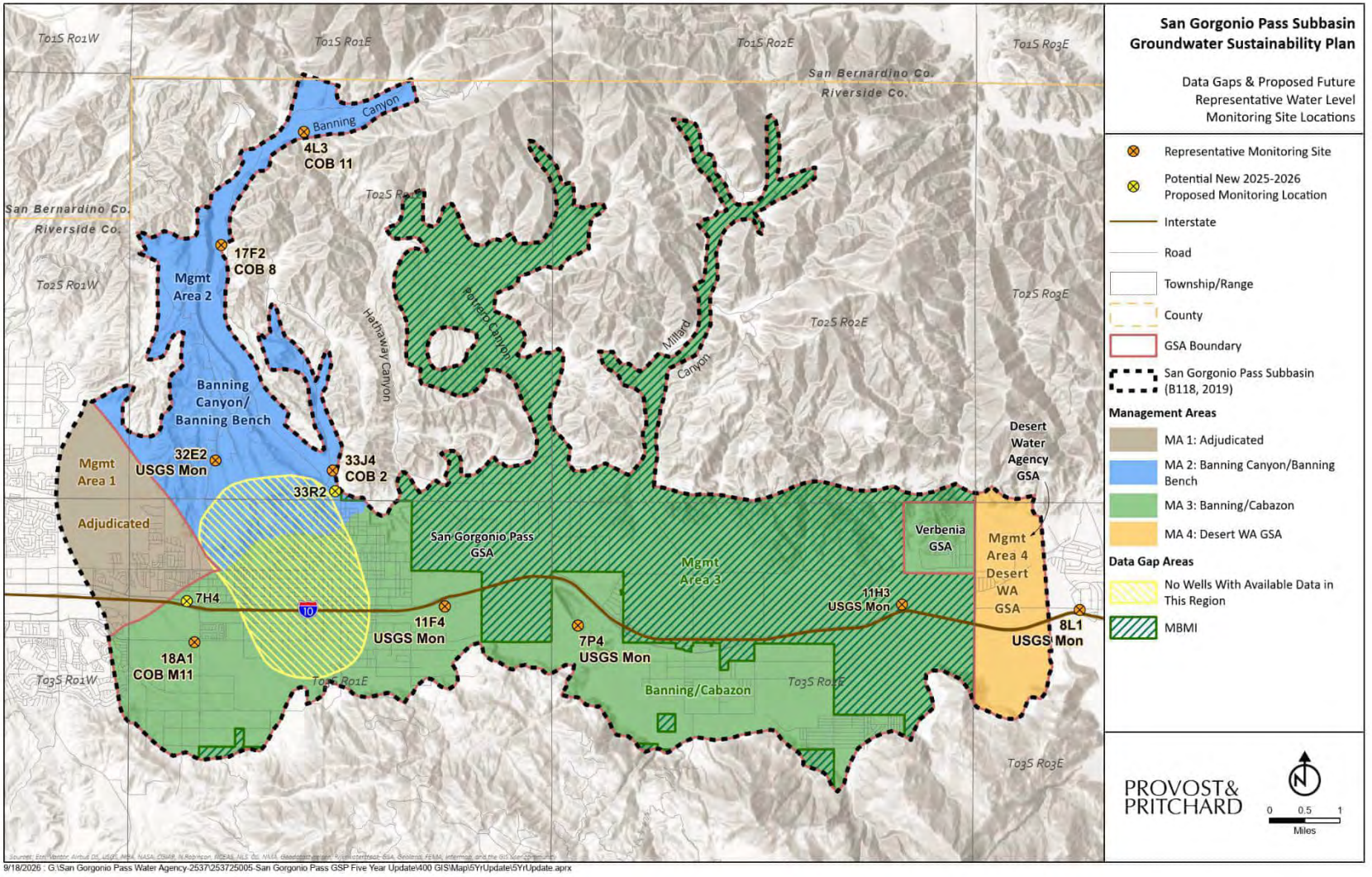
Beaumont Basin Boundary:

The Beaumont Basin was adjudicated in 2004 and has been managed by a watermaster since then. Management of the Beaumont Basin is supported by ongoing data collection efforts (similar to those required by SGMA) and development of a groundwater model. The level of hydraulic connection between the Beaumont Basin and the Banning storage unit of the SGP is a data gap. The SGP Subbasin is currently coordinating with the Beaumont Basin Watermaster in evaluating the consistency of the groundwater models in the two areas. The evaluation of the groundwater models will be the basis for improving estimates of groundwater flow between the Beaumont Basin and the SGP Subbasin. Monitoring of two new multiple completion monitoring wells in 2025-26 will provide useful data in calibrating the groundwater models and quantifying boundary effects between the two basins.

Indio Subbasin Boundary:

The quantity of subsurface outflow at the SGP Subbasin eastern boundary with the Indio Subbasin represents one of the largest unknowns in the water budget and groundwater modeling. Ongoing data collection following the 2019 grant-supported installation of three multiple-completion monitoring wells has provided useful data for refining the subsurface flow estimate. SGP Subbasin agencies have worked with agencies in the Indio Subbasin in reviewing the newly available water level information. Based on additional evaluations and coordination efforts, the SGP and Indio Subbasins estimates of subsurface flow at the SGP-Indio boundary have been updated and are consistent with each other. Work on this data gap will continue in the future, but the level of uncertainty has been reduced.

Figure 5-4 Data Gap Areas and Proposed Future Water Level Monitoring Site Locations



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5.7.3 PLANS TO FILL DATA GAPS

Regulation Requirements:

> §354.38 (d) Each Agency shall describe steps that will be taken to fill data gaps before the next five-year assessment, including the location and purpose of newly added or installed monitoring sites.

The SGP GSP Working Group was successful in securing funding assistance for installation of new monitoring wells in the Banning Bench, Banning Canyon, Banning and Beaumont Storage Units and completed installation of wells in those areas that was identified in the 2022 SGP GSP. Additional data gaps have been identified in the eastern portion of the Banning Storage Unit, in the eastern half of the Cabazon Storage Unit and in areas on MBMI lands. Unlike the data gap areas in other storage units, the MBMI data gap area is not anticipated to have opportunities to monitor during the implementation period, based on MBMI's right to retain data privately.

Specific locations of newly completed monitoring wells, proposed additional future monitoring wells, intended to mitigate the most significant data gap regions, are identified in Figure 5-4.

5.7.4 ADJUSTMENT TO DENSITY OF MONITORING SITES AND FREQUENCY OF MEASUREMENTS

Regulation Requirements:

> §354.38(e) Each Agency shall adjust the monitoring frequency and density of monitoring sites to provide an adequate level of detail about site-specific surface water and groundwater conditions and to assess the effectiveness of management actions under circumstances that include the following:
> 1) Minimum threshold exceedances.
> 2) Highly variable spatial or temporal conditions
> 3) Adverse impacts to beneficial uses and users of groundwater.
> 4) The potential to adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of sustainability goals in an adjacent basin.

The frequency and density of the proposed monitoring programs are discussed in previous sections. The criteria are considered adequate to provide the monitoring data to satisfy SGMA requirements. Since the beginning of the GSP Implementation period in January 2022, the SGP GSP Working group has compared groundwater conditions to sustainability goals and will modify or enhance the monitoring network in the future if deemed necessary.

5.8 REPORTING MONITORING DATA TO THE DEPARTMENT

Regulation Requirements:

> §354.40 Monitoring data shall be stored in the data management system developed pursuant to Section 352.6. A copy of the monitoring data shall be included in the Annual Report and submitted electronically on forms provided by the Department.

The SGP Subbasin GSAs have coordinated in development of a Data Management System (DMS) for SGMA annual reporting and ongoing data evaluations. More information on the DMS is included in Chapter 7. The GSAs are coordinating on annual reporting requirements and data submittal to the DWR data and monitoring portal.

6 PROJECTS AND MANAGEMENT ACTIONS TO ACHIEVE SUSTAINABILITY

Regulation Requirements:

§354.42 Introduction to Projects and Management Actions. This Subarticle describes the criteria for projects and management actions to be included in a Plan to meet the sustainability goal for the basin in a manner that can be maintained over the planning and implementation horizon.

§354.44(a) Each Plan shall include a description of the projects and management actions the Agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin.

(b) Each Plan shall include a description of the projects and management actions that include the following:

(1) A list of projects and management actions proposed in the Plan with a description of the measurable objective that is expected to benefit from the project or management action. The list shall include projects and management actions that may be utilized to meet interim milestones, the exceedance of minimum thresholds, or where undesirable results have occurred or are imminent. The Plan shall include the following:

(A) A description of the circumstances under which projects or management actions shall be implemented, the criteria that would trigger implementation and termination of projects or management actions, and the process by which the Agency shall determine that conditions requiring the implementation of particular projects or management actions have occurred.

(B) The process by which the Agency shall provide notice to the public and other agencies that the implementation of projects or management actions is being considered or has been implemented, including a description of the actions to be taken.

(2) If overdraft conditions are identified through the analysis required by Section 354.18, the Plan shall describe projects or management actions, including a quantification of demand reduction or other methods, for the mitigation of overdraft.

(3) A summary of the permitting and regulatory process required for each project and management action.

(4) The status of each project and management action, including a time-table for expected initiation and completion, and the accrual of expected benefits.

(5) An explanation of the benefits that are expected to be realized from the project or management action, and how those benefits will be evaluated.

(6) An explanation of how the project or management action will be accomplished. If the projects or management actions rely on water from outside the jurisdiction of the Agency, an explanation of the source and reliability of that water shall be included.

(7) A description of the legal authority required for each project and management action, and the basis for that authority within the Agency.

(8) A description of the estimated cost for each project and management action and a description of how the Agency plans to meet those costs.

(9) A description of the management of groundwater extractions and recharge to ensure that chronic lowering of groundwater levels or depletion of supply during periods of drought is offset by increases in groundwater levels or storage during other periods.

(c) Projects and management actions shall be supported by best available information and best available science.

(d) An Agency shall take into account the level of uncertainty associated with the basin setting when developing projects or management actions.

6.1 INTRODUCTION

Multiple projects and management actions have been identified that will support the SGP Subbasin in maintaining its sustainability goals. Projects include actions that would improve water supply conditions in the SGP Subbasin, such as additional recharge projects. Management actions include efforts that would facilitate efficient groundwater management in the SGP Subbasin.

The projects and management actions identified below fall into two phases. Phase 1 includes projects and management actions that could be implemented upon approval of the GSP, in the event their need is apparent. Phase 2 includes projects and management actions that would be considered for future implementation, after five-year GSP updates, or earlier in the event of increased water demands. Phase 2 projects would generally be projects that are not needed in the near term and would only proceed based on future water supply conditions. The SGP Subbasin is projected to maintain sustainability, independent of project and management action influence under current management policies and hydrologic conditions. The Phase 2 projects and management actions presented may support increased groundwater pumping or climactic condition changes.

This chapter describes the proposed projects and management actions, including available information on required facilities and costs. These descriptions refer to Appendix E which contains more detailed information on specific aspects of the projects and management actions, such as permitting, implementation plans, and other SGMA regulation §354.44 requirements. The evaluation of project

impacts and water supply improvements corresponds to the level of detail that has been developed. At this stage, some of the projects and management actions are conceptual and their benefits are described qualitatively. Other projects have been developed in more detail and their impacts to groundwater levels were evaluated with the SGP Groundwater Model.

6.2 PROJECTS

Seven projects have been identified in the SGP Subbasin that would improve groundwater conditions. As described below, one of the projects has been determined to be infeasible and is shown as "Removed". This removed project remains in this list to provide continuity with prior GSP versions. The identified projects include the following as shown in Table 6-1.

Table 6-1 Projects

Project No.	Project Title
Project 1	Municipal Water Conservation (Phase 1)
Project 2	Stormwater Capture (Phase 2)
Project 3	Additional Imported Water Spreading at Noble Creek Spreading Basins (Phase 2)
Project 4	New Pipeline with Additional Imported Water Spreading in the Cabazon Storage Unit (Phase 2)
Project 5 (Removed)	~~New Pipeline with Additional Imported Water Spreading in the Banning Storage Unit (Phase 2)~~ (Removed)
Project 6	New Imported Colorado River Aqueduct Spreading in the Cabazon Storage Unit (Phase 2)
Project 7	Hub and Spoke Project

As the GSP is being implemented, the GSAs will maintain a standing list of proposed projects and their characteristics, along with their development status, and will use this list to prioritize and secure funding as opportunities become available. The GSAs will seek out and encourage projects that provide multi-benefits if feasible.

6.2.1 PROJECT #1 MUNICIPAL WATER CONSERVATION (PHASE 1)

The major anthropogenic water use in the SGP Subbasin is municipal water supply, either from pumping by local municipal water agencies or pumping by groundwater users such as the MBMI. The City of Banning, which is the largest municipal local water supplier, currently has a high efficiency in its water supply with total urban use of 8,575 acre-feet (AF) for year 2025, corresponding to 238 gallons per capita day (GPCD), which meets the City of Banning's 2020 water use target of 252 GPCD as identified in their 2025 UWMP. Other local water suppliers, including CWD and MSWD, have similarly high-water use efficiency to the City of Banning.

The City of Banning 2025 UWMP (West, 2026) indicates that the City is already implementing the Urban Water Management Planning Act required Demand Management Measures (DMM):

1. *Water Waste Prevention Ordinances*
2. *Metering*
3. *Conservation Pricing*
4. *Public Education & Outreach*
5. *Programs to Assess and Manage Distribution Systems Real Loss*
6. *Water Conservation Program Coordination and Staffing Support*
7. *Other DMM that have a significant impact on water use*

While there is already high efficiency in local water use within the SGP Subbasin, additional water conservation measures that result in increased water use efficiency can be investigated as a future project for the SGP GSP or its individual member agencies. While many water conservation measures are available

that reduce water use, these measures, while providing possible energy saving benefits, would likely provide minimal improvements to the overall water supply. A municipal water conservation measure that focuses on reducing outdoor water uses, such as vegetation transpiration or evaporation from water surfaces, would be most beneficial for the SGP GSP.

The potential future project would implement a water conservation measure in order to reduce demand for potable water and increase water use efficiency. The yield of a water conservation measure would be dependent on customer interest in potential water use programs in the future. The San Gorgonio Water Supply Reliability Study (Woodard & Curran (formerly RMC), 2018) identified the following potential water use conservation programs:

- *Turf removal rebates*
- *High-efficiency toilet rebates*
- *High-efficiency nozzle distribution*
- *Large landscape surveys and retrofits*
- *Sprinkler giveaways or rebates*
- *Smart controller rebates*
- *Urinal retrofits*
- *Water surveys*

Initially, Turf Replacement may be the most impactful and implementable option in the list of water conservation programs, as landscape irrigation is estimated to account for about 42 percent of annual residential water consumption statewide. In the Desert Zone/Inland Empire area, like Riverside County, the average residential lots use 0.35 AFY and turf replacement is estimated to save 51 gallons/square-foot for the conversion of turf with less water-intensive landscaping plants being drip irrigated (Public Policy Institute of California, 2006). Turf Replacement could result in an estimated water conservation of 0.16 AF/year assuming that the average area replaced is 1,000 square-feet (1,000 ft^2. x 51 gal/ft^2. ÷ 325,851 gal/AF = 0.157 AF).

6.2.2 PROJECT #2 STORMWATER CAPTURE (PHASE 2)

The SGP Subbasin is a generally arid area, however occasional heavy precipitation events result in surface runoff that can recharge local aquifers, or on occasion result in downstream outflows to adjacent subareas. There are extremely limited measurements of local runoff in the SGP, however there have been some very infrequent observations of runoff from the San Gorgonio River and its tributaries to the Indio Subbasin to the east.

To estimate the approximate volumes of water that might be available for stormwater capture, the INFIL watershed model (SGP Groundwater Model Technical Memorandum, 2026) was used to quantify runoff volume and frequency for a small 250-acre representative watershed in the Pershing Creek watershed at the SGP Subbasin's western end. In general, rainfall decreases to the east, so the selected western location would likely be a high estimate of available stormwater. Additionally, no estimate was available of how much of this runoff may have percolated downstream to the SGP groundwater basin under natural conditions in the absence of a stormwater capture project. Because of these optimistic assumptions, the estimate of volume that could be captured is likely overestimated.

Considering the assumptions described above, a typical potential stormwater capture program was identified for the representative watershed conditions identified above. Based on the INFIL watershed model runoff for the representative 250-acre watershed, runoff would have occurred in ten months during the 94-year analysis period (1926-2019). The total average runoff from the representative 250-acre watershed would have been 0.6 AF. Assuming that a 1-acre-detention basin is constructed with a depth of 2 feet, an ability for 2 AF to be retained from each storm event is assumed. Over the 94-year analysis period, the average actual amount retained is estimated at about 0.11 AF. This is considerably less than the average amount of flow that is estimated to occur, as the great majority of the average runoff would have occurred in two individual months during the analysis period. At most, only 2 AF of runoff would be retained in an

individual event and flows averaging about 0.5 AF would flow past a potential detention basin and be lost to the SGP Subbasin

The land purchase and construction costs for the representative 1-acre detention basin were estimated very approximately as $150,000 per acre. With a project interest rate of 5.5% and a thirty-year repayment period, the construction cost would equate to about $10,300 per year and result in an estimated cost of nearly $100,000 per acre-foot of water retained. All estimated costs are subject to change, pending results from feasibility studies, environmental planning costs, and other unknown variables.

Based on the high cost identified for a stormwater capture project, construction of detention basins for purposes of stormwater capture does not appear to be an affordable water supply source. As the City of Banning and other urban areas of the SGP GSP develop and expand, it is expected that detention basins will be constructed as appropriate for purposes of flood peak attenuation and as part of land development projects. As discussed in the City of Banning's 2025 UWMP, a preliminary stormwater capture evaluation of the City's Atwell and Rancho San Gorgonio developments estimated approximately 1,370 AFY and 199 AFY of stormwater capture and recharge, respectively. For purposes of GSP planning, no additional quantifiable yield is assumed from stormwater capture. However, if a stormwater basin were constructed as part of land development in a favorable recharge area and imported surface water supplies could also be recharged in the facility, it would increase the flexibility to recharge in the Subbasin and create more area for overall recharge.

6.2.3 PROJECT #3 ADDITIONAL IMPORTED WATER SPREADING AT NOBLE CREEK SPREADING BASINS (PHASE 2)

This Phase 2 project would provide increased groundwater recharge at existing spreading basins adjacent to Noble Creek in the adjudicated Beaumont Basin. BCVWD has constructed the Noble Creek Recharge Facility containing about 23 acres of spreading basins along Noble Creek[1] and SGPWA has constructed the Brookside Recharge Facility containing about 25 acres that are also adjacent to Noble Creek [2]. SWP water that has been contracted for by SGPWA is supplied through the East Branch Extension for recharge at the BCVWD and SGPWA spreading basins along Noble Creek. Recharge at this location directly supplies the adjudicated Beaumont groundwater basin and flows downstream (and southeasterly) to supplement groundwater supplies in the Banning Storage Unit. The location of the project facilities for Project #3, along with other potential project facilities for Projects #4 and #5 that are described later, is shown on **Figure 6-1**.

Currently, water spreading at the Noble Creek Spreading Basins includes the existing SGPWA water supplies, which consist of SWP Table A Amounts, purchased water from La Hacienda Corporation (Nickel Water), an ongoing SWP water transfer from the City of Ventura and water transfers from other sources such as the Yuba Accord. These current water supply sources may need to be supplemented to meet SGPWA projected future need in the SGP Subbasin and other areas. Project #3 would provide for increased purchases of available water supplies for recharge at the Noble Creek Spreading Basins, which could supplement groundwater supply in the Banning Storage Unit of the SGP Subbasin as identified in the 2025 UWMP prepared by the City of Banning[3].

For evaluation purposes, a target water supply increase for the Noble Creek spreading basins of 1,900 AF was assumed. Providing this average amount of additional water supply deliveries would require an equivalent of 3,500 acre-feet of SWP Table A Amounts based on an estimated 54% SWP delivery capability. Estimated purchase costs for SWP Table A Amounts are $5,000 per acre-foot, with resulting total purchase costs of about $17.6 million. The purchase cost would be equivalent to an annual cost of $605 per acre-foot (assuming a 5.5% interest rate with a 30-year supply period). In addition to purchase costs, SWP

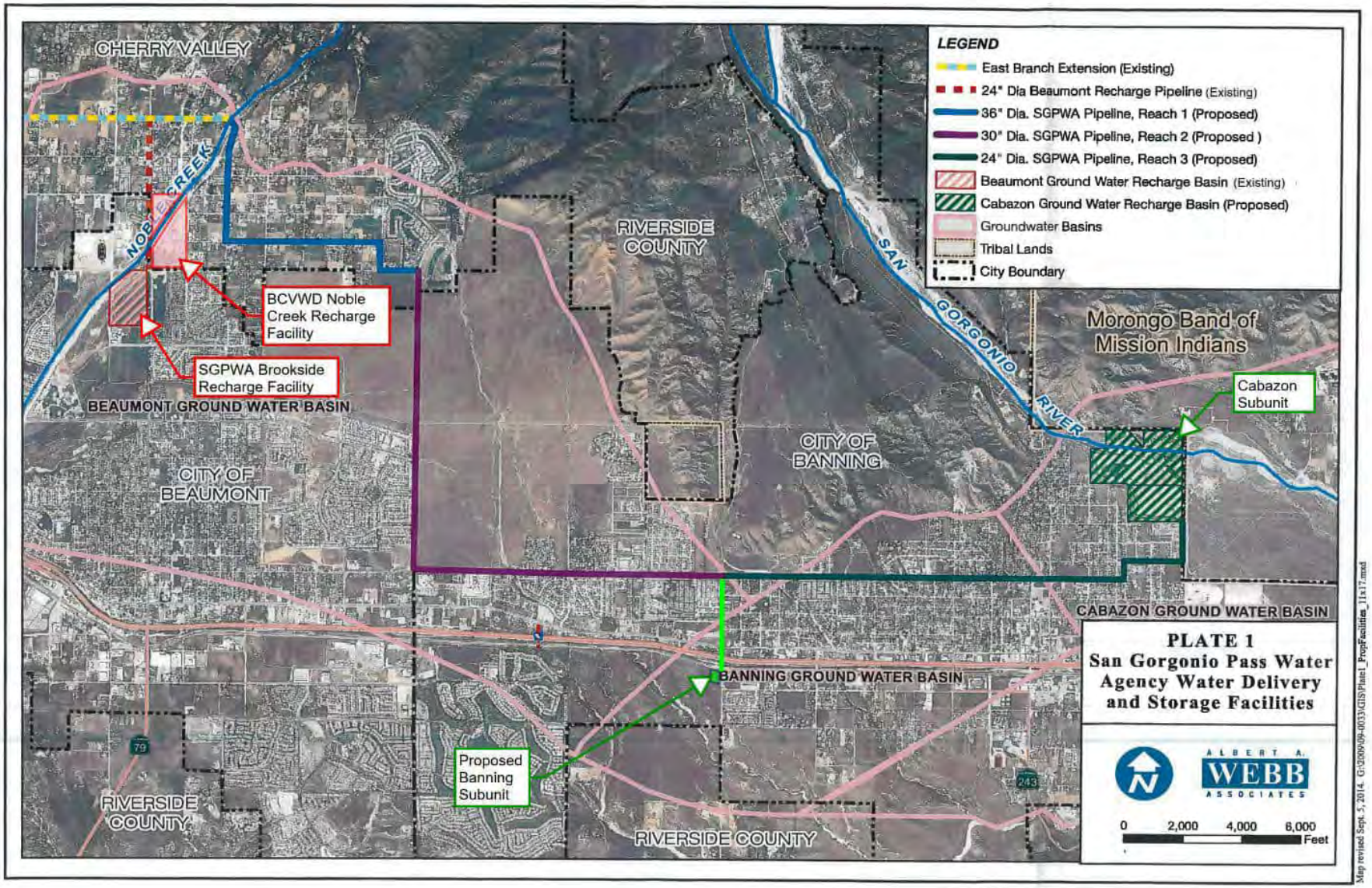
[1] https://bcvwd.org/noblecreekrecharge/ retrieved June 10, 2021
[2] https://www.sgpwa.com/groundwater-recharge-facility-construction-notice/ retrieved June 10, 2021
[3] https://www.sgpwa.com/2020-urban-water-management-plan-adopted/

operational costs of $490 to 590[4]/AF would be required to pay for conveyance access and pumping costs. No incremental costs for operating the Noble Creek spreading basins were assumed. The total annual cost of this alternative is estimated to range from $1,100 to $1,200 /AF. All estimated costs are preliminary and subject to change, pending actual purchase prices for SWP supplies, results from feasibility studies, environmental planning costs, and other unknown variables.

The effects of the proposed project on groundwater levels were evaluated along with Project #4 using the SGP Groundwater Model at the 2070 level of climate change. The project was evaluated as a 1,900 acre-foot increase in Noble Creek recharge in addition to the 2070 level of 12,100 acre-feet of imported supply. The 14,000 acre-feet of total imported water recharge is within the 20,000 acre-feet capacity of the BCVWD and SGPWA Noble Creek recharge facilities. Peak imported water supply amounts in high water supply years would occasionally exceed the 20,000 acre-foot capacity of the Noble Creek Recharge facilities and could require carryover to a subsequent year at the SWP San Luis Reservoir or a groundwater bank. As noted earlier, the assumed 1,900 AF imported water supply increase was based on preliminary water demand projections and potentially overstates the potential need for additional supply. In addition, the assumed 1,900 acre-foot increase in imported water supply was developed based on projected demands in the adjacent Beaumont Basin, in addition to those within the SGP Subbasin

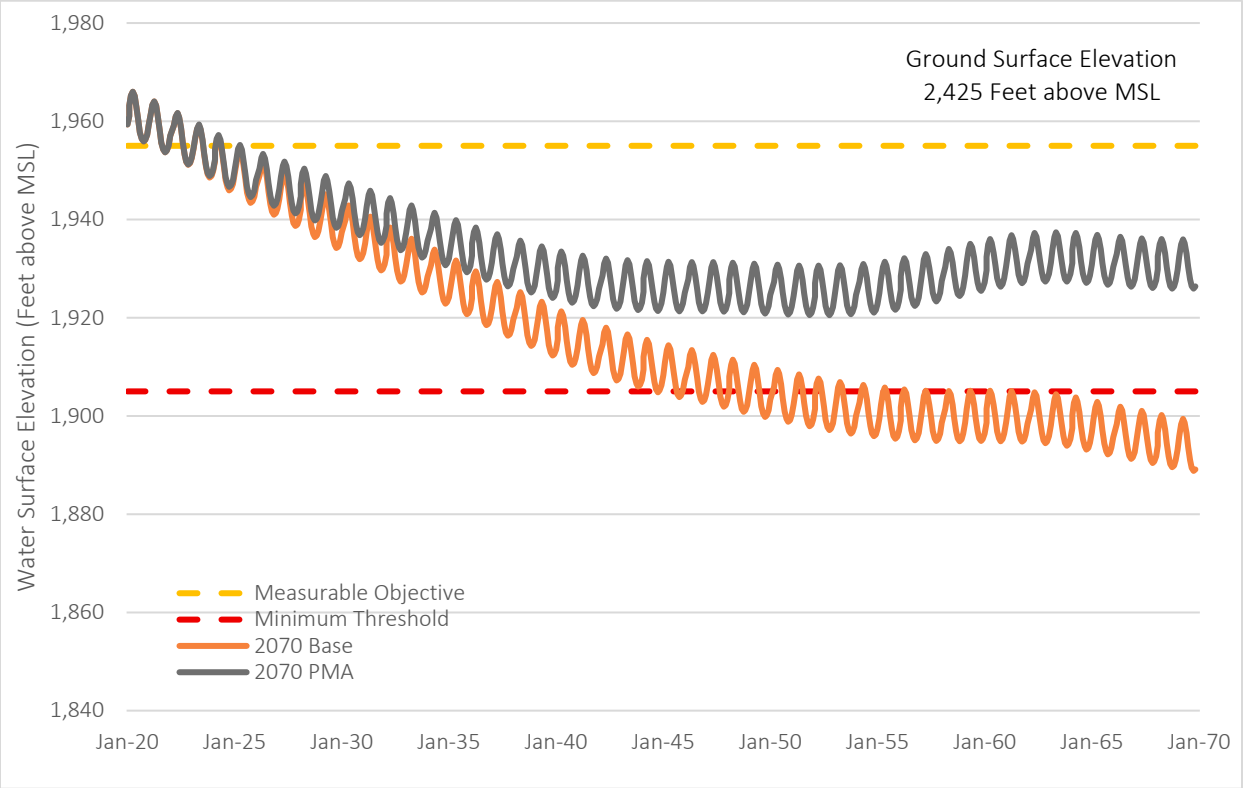
[4] The indicated SWP costs would vary depending on which SWP contractor that additional water supply is purchased from, which determined the amount of fixed costs that a purchasers would need to pay.

Figure 6-1 San Gorgonio Pass Water Agency Water Delivery and Storage Facilities (Webb, 2020)



The groundwater model projections for Project #3 at the 2070 level of development and climate change are shown in **Figure 6-2** for the Banning Storage Unit representative monitoring well 3S/1E-18A01.

Figure 6-2 Projected Groundwater Levels for Project #3 at Representative Monitoring Site 3S/1E-18A`



6.2.4 PROJECT #4 NEW PIPELINE WITH ADDITIONAL IMPORTED WATER SPREADING IN THE CABAZON STORAGE UNIT (PHASE 2)

Project #4 is a potential Phase 2 recharge program that could be implemented in the future to address future uncertain potential water use increases in the Cabazon Storage Unit. In projecting groundwater levels for the SGP GSP, the groundwater model is provided with estimates of future groundwater pumping by all parties for 2070-level conditions. Where available, projections of future groundwater extractions have been used from sources such as UWMP for urban areas within the SGP GSP.

The potential Project #4 uses a proposed new pipeline extension from the terminus of the East Branch Extension to MA 3 near the San Gorgonio River that has been evaluated as a conceptual project by SGPWA. The preliminary alignment and features of the proposed new pipeline are shown in **Figure 6-1.** The pipeline would have three reaches. Reach 1 from Noble Creek to the intersection of Highland Springs Avenue and Brookside Avenue would have a 36-inch diameter and an estimated capacity of 52 cfs. Reach 2 would extend from the end of Reach 1 to the intersection of Sunset Avenue and Wilson Street, with a diameter of 30 inches and an estimated flow capacity of 30 cfs. Reach 3 would continue from the end of Reach 2 to proposed recharge basins adjacent to the San Gorgonio River. The recharge basins would consist of 54 acres of developed basins at the Robinson's Ready Mix Quarry site in the City of Banning. The pipeline alignment and recharge basin locations are all preliminary and were used for purposes of cost estimation for SGPWA (Webb & Associates, 2020).

The estimated costs for the conceptual pipeline are $36.3 million and for the proposed recharge basins as $14.2 million, with both estimates including a 15% contingency. The total cost for the facilities would be $50.4 million. The pipeline and recharge basins would have the capacity to provide up to 22 cfs of recharge at the proposed new recharge basins, which would have a total annual capacity of 15,540 AF. In addition to the capital costs, the project would require imported water purchase and annual operational costs estimated as $1,100 to $1,200 per AF as with Project #3. Responsibility for payment of these costs has not

been determined and would depend on how much Subbasin entities benefit from the increased recharge. SGPWA is continuing to evaluate projects for supplemental supply to MA 3 and are likely to consider other variations of Project #4 that provide similar groundwater augmentation benefits.

Water supply for the new pipeline and recharge facilities would exceed the currently available SGPWA contracted supplies. SGPWA is currently evaluating potential supplemental water supply sources, which could include supply augmentation actions such as purchased SWP Table A amounts (either permanent or on a year-to-year basis), participation in the Sites Reservoir Project, and participation in the Delta Conveyance Project. Additionally, other possible imported supply augmentation projects could be developed by MBMI for any proposed increase in their use.

For purposes of evaluating the effect of Project # 4 on groundwater levels and storage, a groundwater model simulation was prepared that includes the combination of Projects #3 and #4. Project #4 is included in the simulation as an option that provides a long-term average supply of 3,800 AF per year, with the delivery pattern taken to be proportional to the SWP projected water supplies to the SGPWA. The actual sources of imported supplies have not been determined and could be obtained from various imported, purchased, transferred or exchanged sources. For analysis purposes, a SWP supply sources was assumed, which could vary considerably from year to year based on water supply conditions in Northern California. While SWP supplies might not be the specific supply used for this Project, it is likely that the availability of any imported water source made available for this Project would vary based on Northern California wetness conditions for modeling purposes. The supply identified in this projection varied from a minimum of 600 AF per year in 1977 to a maximum of 6,700 AF in 1983, with a long-term average of 3,800 AF per year.

The groundwater level projections are based on 2070-level climate change conditions and water use projections as described in Chapter 3 – Basin Setting. The groundwater level projections also incorporate additional recharge of 1,900 AF for Project #3 in addition to the additional recharge from Project #4. While the model projections include recharge from Project #3, the effects of any recharge from Project #3 on groundwater conditions in the Cabazon Storage Unit are considered to be minimal and the effects on Cabazon Storage Unit water levels described below are primarily the result of Project #4. The results of these projections for groundwater conditions in MA 3 in the Cabazon Storage Unit are shown in Figure 6-3 and Figure 6-4.

Figure 6-3 Projected Groundwater Levels for Project #4 at Representative Monitoring Site 3S/1E-11F4

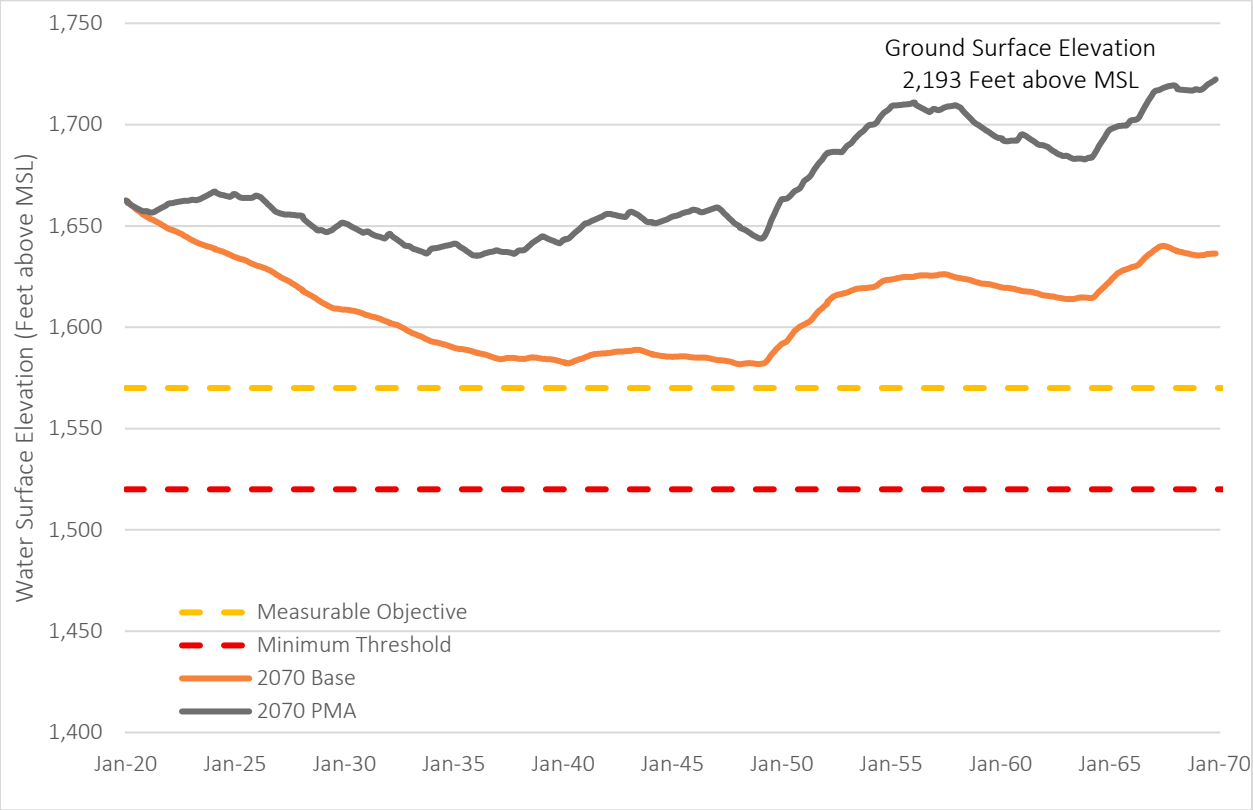


Figure 6-4 Projected Groundwater Levels for Project #4 at Representative Monitoring Site 3S/1E-7P4

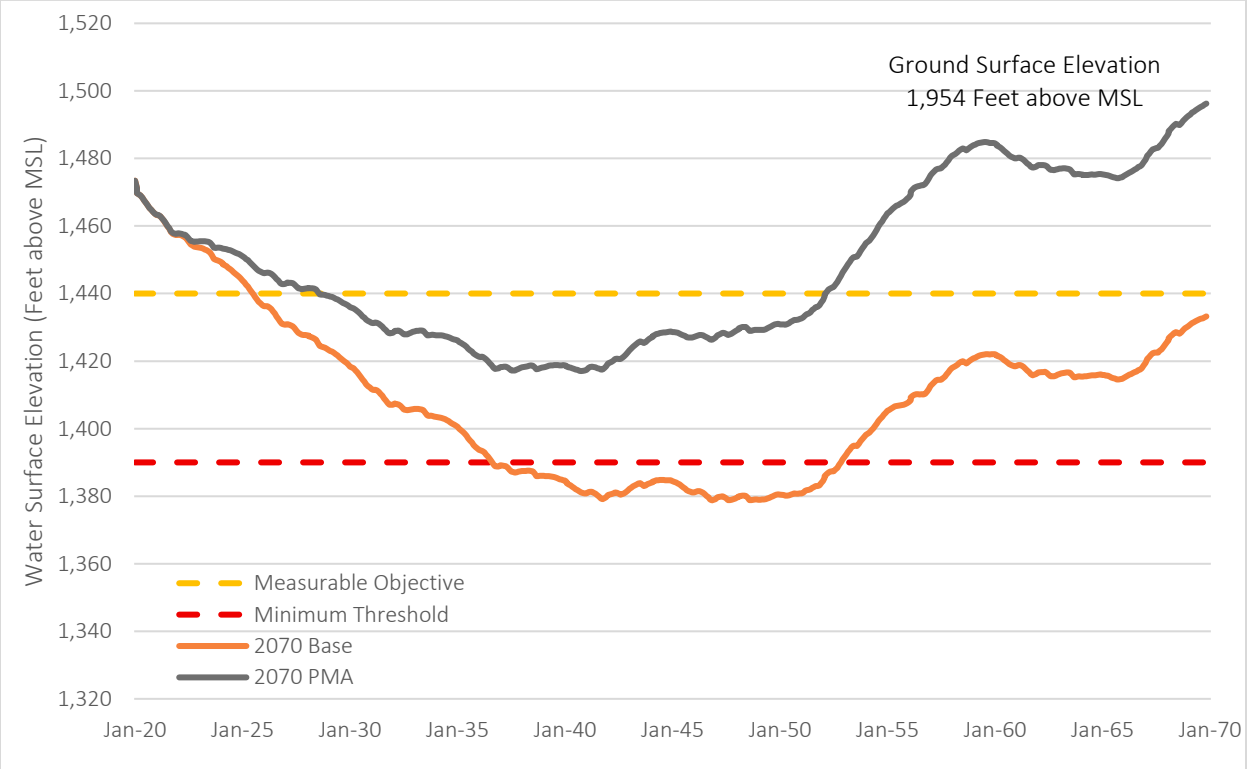


Figure 6-3 and Figure 6-4 shows projected groundwater levels for Project #4 in MA 3 in the western portion of the Cabazon Storage Unit. The projections show the 2070 Base projections (labelled 2070 Base) along with the combined results of Project #3 and #4, which are shown as 2070 PMA. The projected water levels in the western Cabazon Storage Unit are closest to the proposed groundwater recharge source and show considerable improvements as compared to the 2070 base projection. Projected water levels for well

3S/1E-11F4 (**Figure 6-3**) show that groundwater levels in MA 3 in the western area of the Cabazon Storage unit are maintained above the proposed minimum thresholds, primarily as a result of Project # 4. For Well 3S/2E-7P4 (**Figure 6-4**), groundwater levels for the 2070 climate conditions that previously fell below the minimum threshold, are maintained above the minimum threshold for the entire simulation period. The resulting higher water levels in Well 3S/2E-7P4 are improved primarily through Project #4.

Figure 6-5 Projected Groundwater Levels for Project #4 at Cabazon Storage Unit Monitoring Well 3S/2E-11H3

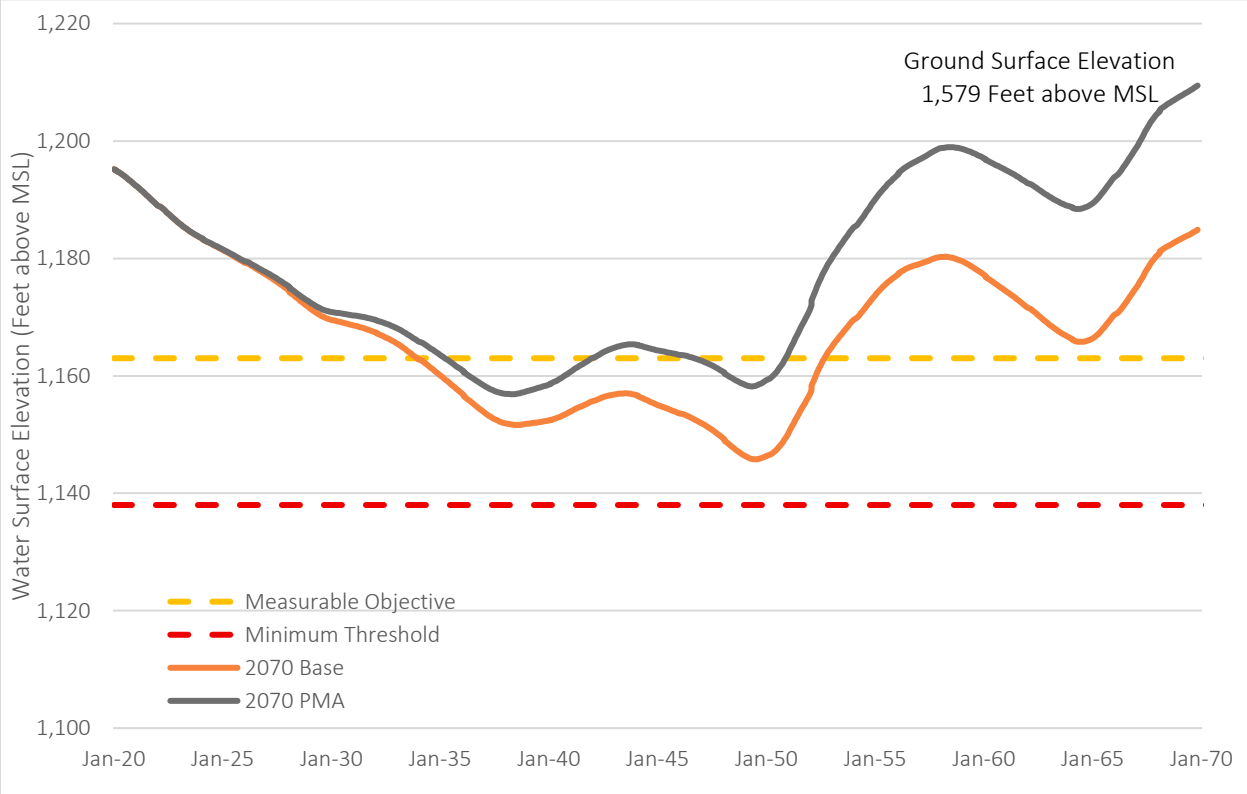


Figure 6-5 shows projected groundwater levels at representative monitoring well 3S/2E-11H3 in MA3 in the eastern portion of the Cabazon Storage Unit. As with the western Cabazon Storage Unit, the projected water levels predict water levels for the 2070 Baseline (labeled 2070 Base) and for the combined Projects #3 and #4 (labeled 2070 PMA). The projected Projects #3 and #4 water levels show lesser improvement as compared to the 2070 Baseline than those in the western Cabazon Storage Unit (Well 3S/1E-11F4), which likely represents the more distant location of recharge in the western portion of the Cabazon Storage Unit. The projected groundwater levels for Well 3S/2E-11H3 are typical of the remaining RMS locations in MA 3 – water levels there were projected to remain above the Minimum Threshold are kept at even higher levels and are frequently higher than the Measurable Objective.

6.2.5 PROJECT #5 NEW PIPELINE WITH ADDITIONAL IMPORTED WATER SPREADING IN THE BANNING STORAGE UNIT (REMOVED)

Project #5 was defined in the 2022 SGP GSP as a Phase 2 project using a new pipeline to provide for additional recharge in the SGP Subbasin, as shown in **Figure 6-1** and described in Project # 4 (New Pipeline with Additional Imported Water Spreading in the Cabazon Storage Unit). Project #5 (New Pipeline with Additional Imported Water Spreading in the Banning Storage Unit) would have used Reaches 1 and 2 of the new pipeline to provide additional recharge to the Banning Storage Unit (the Five Bridges Recharge Site in the San Gorgonio Integrated Water Management Water Supply Reliability Study, Woodards and Curran, 2018). This Phase 2 potential project would have included use of Reaches 1 and 2 in the Project #4 pipeline, with a smaller lateral pipeline to be constructed at the end of Reach 2. The lateral pipeline would begin at the end of Reach 2 and run southerly along Sunset Avenue south of Interstate 10. A 10-acre spreading basin would be constructed at a location generally along the west side of Sunset Avenue between Interstate 10

and the extension of Bobcat Road, with the precise location not yet determined. The pipeline alignment and preliminary recharge basin location are shown in Figure 6-1.

Based on subsequent review of soil characteristics and subsurface conditions, it appears that surface recharge at this location is likely to be very inefficient. Recharge rates are expected to be very low, which would result in relatively high evaporation losses. Finally, costs for delivery to this location are high and the land at this location is high in value for other purposes. Based on these factors, this project appears to be infeasible, and the project is not considered to be a viable option for the SGP Subbasin. The project is being retained on the list of GSP projects to maintain continuity with the 2022 SGP GSP and subsequent GSP amendments and/or revisions, however, it is considered to be functionally removed from the list of potential projects and management actions.

6.2.6 PROJECT #6 NEW IMPORTED COLORADO RIVER AQUEDUCT SPREADING IN THE CABAZON STORAGE UNIT (PHASE 2)

Project #6 is a Phase 2 project that would include additional recharge in the Cabazon Storage Unit based on a potential exchange of imported SWP water with Colorado River Aqueduct water. As shown in Figure 6-6, the project would take water from the Colorado River Aqueduct portal south of Cabazon and supply the proposed recharge basins. This potential Phase 2 Project #6 would potentially provide supplemental water supplies to water users in the eastern portion of Cabazon Storage Unit as necessary to maintain their ongoing groundwater extractions.

A new turnout would be constructed on Metropolitan Water District of Southern California's Colorado River Aqueduct at the eastern portal of the San Jacinto Tunnel, just south of Cabazon. To meet Cabazon Water District's 750 AF average demands, a new recharge basin of 4 acres is assumed to be constructed in the vicinity of the San Jacinto Tunnel east portal. Assuming recharge rates of 1 AF per acre, this recharge facility would have a 2.5 cfs maximum recharge rate and provide a maximum of 1,200 AF per year of recharge with an 80% usage factor. The reconnaissance level estimated cost for the proposed turnout is $3 million and $300,000 for the recharge facilities, resulting in a total capital cost of $3.3 million. In addition to the initial capital costs, the project would likely require purchase cost for additional imported water supplies and operations costs as for Project #3, totaling $1,070 to $1,170 per AF. No groundwater model projections were made to show the effects of this additional recharge. All estimated costs are subject to change, pending results from feasibility studies, environmental planning costs, and other unknown variables.

A potential concern with Project #6 could be adverse effects on SGP Subbasin salinity from Colorado River Aqueduct water, which has salinity (total dissolved solids) that generally varies from about 550 to 700 mg/L. By comparison, SGP Subbasin groundwater salinity in the vicinity of Cabazon Water District averages less than 500 mg/L of TDS. Using a conservative estimate of the total groundwater storage in the Cabazon Storage Unit of 800,000 AF and an average TDS of 400 mg/L for the Cabazon Storage Unit, use of 750 AF of Colorado River Aqueduct water with an assumed salinity of 700 mg/L would increase SGP Subbasin TDS from 400 mg/L to 433 mg/L over 50 years, which is less than the Secondary Maximum Contaminant Level for TDS of 500 mg/L, primarily related to aesthetic and preferred human consumption considerations (taste, odor, etc.). This computation is very conservative as it doesn't account for drainage of some of the recharged salinity out of the SGP Subbasin during that period.

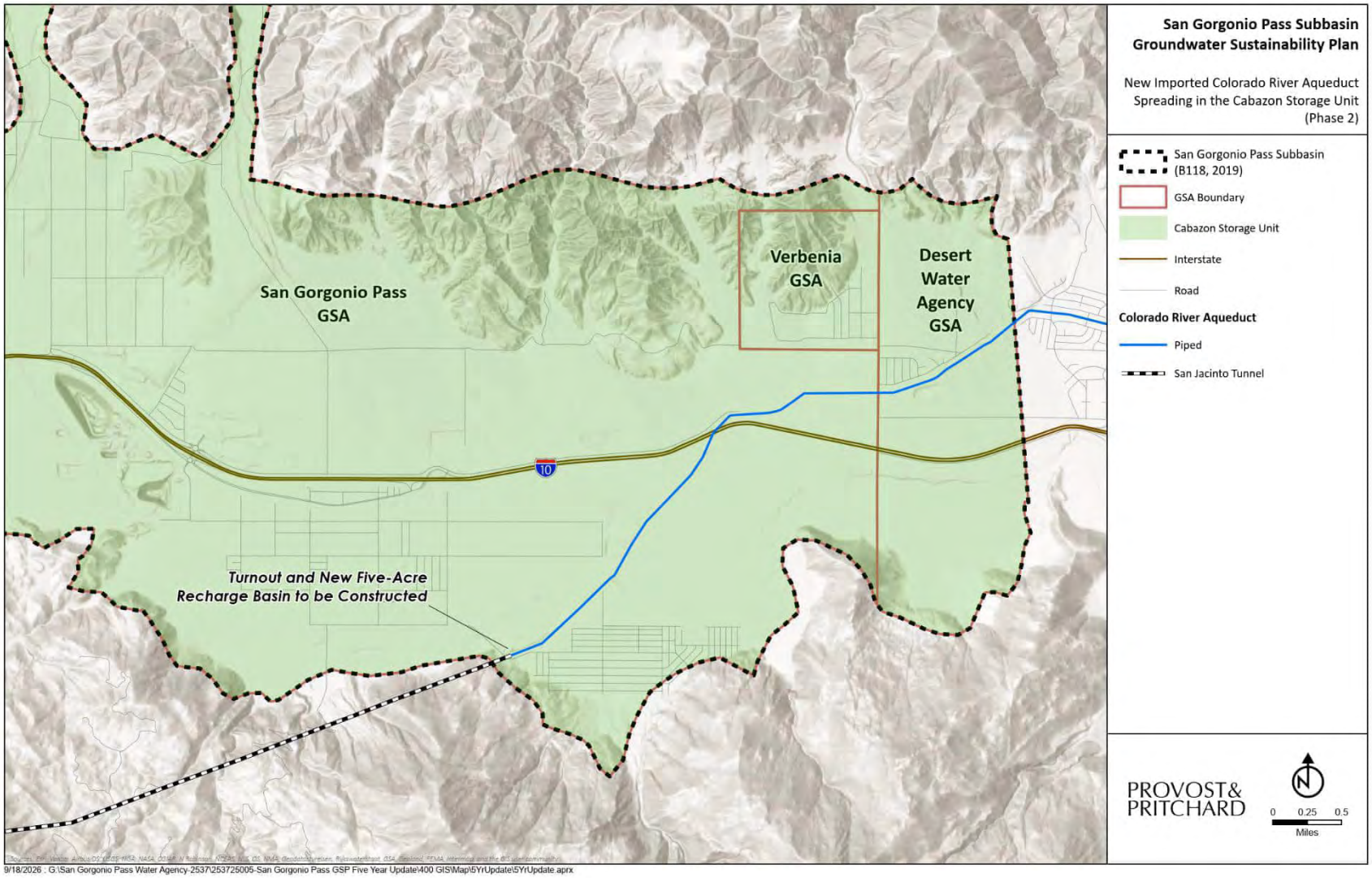
6.2.7 PROJECT #7 HUB AND SPOKE PROJECT (PHASE 2)

Project #7 is a Phase 2 conceptual project that would modify and redistribute groundwater pumping to improve the use of recharged surface water and the quality of delivered groundwater. The proposed project would shift groundwater pumping from locations in the Banning Storage Unit of MA 2 and MA 1 (the southern portion of the Beaumont Basin) to areas adjacent to Noble Creek. This project would capitalize on available capacity in the BCVWD and the City of Banning existing water supply distribution system resulting from water conservation efforts. As a result of water conservation, some wells in the Beaumont Basin now have unused pumping capacity, while the BCVWD and City of Banning distributions systems also have available conveyance capacity that could be utilized by the project.

The project would result in reduced groundwater pumping in the Banning Storage Unit of MA 2 and improved groundwater levels in the project vicinity. Shifting groundwater pumping closer to the source of recharge along Noble Creek would facilitate recovery of recharged groundwater closer to its recharge source and could reduce pumping and energy costs. Secondary project benefits may also include alleviating groundwater consumption in areas with potential groundwater quality concerns, such as hexavalent chromium.

This project has been identified at a conceptual level and would require additional analysis to define its potential feasibility. The project would rely primarily on modified management and use of existing facilities. However, some additional infrastructure, such as new pipelines, may be required to optimize the project. Additionally, the project would need to be developed jointly by BCVWD and the City of Banning through a mutual agreement, as it would involve the shared use of facilities owned and operated by both agencies.

Figure 6-6 Project #6 New Imported Colorado River Aqueduct Spreading in the Cabazon Storage Unit (Phase 2)



6.3 MANAGEMENT ACTIONS

Several management actions have been identified for the SGP Subbasin to support GSP implementation efforts. The identified management actions include the following Table 6-2.

Table 6-2 Management Actions

Management Action No.	Management Action Title
Management Action 1	Implement Action Plan if Groundwater Levels Fall Below Minimum Thresholds
Management Action 2	Well Head Requirements
Management Action 3	Investigate Issues Promptly Regarding Water Quality and Unexpected Water Pumping
Management Action 4	Impose SGMA or Other Available Fees on Pumpers to Encourage Reduced Pumping and Conservation
Management Action 5	Groundwater Pumping Allocation
Management Action 6	Groundwater Basin Adjudication

6.3.1 MANAGEMENT ACTION #1 IMPLEMENT ACTION PLAN IF GROUNDWATER LEVELS FALL BELOW MINIMUM THRESHOLDS

The SGP GSP implementing GSAs plan to comply with the GSP which will facilitate avoidance of significant and unreasonable impacts to groundwater resources. Reports of ongoing groundwater monitoring, as compiled in the SGMA annual reports, will provide visibility to the status of groundwater indicators, especially the measurable objectives and minimum thresholds.

The measurable objective provides an initial indication of a threat to groundwater sustainability indicators. If groundwater levels at representative monitoring wells fall below measurable objectives, an initial reaction would be to review hydrologic conditions and compare groundwater extractions to the sustainable yield. If hydrologic conditions have been below the long-term average, and extractions have averaged less than the sustainable yield, then that indicates that a drought period is occurring and the Subbasin is appropriately using its operational flexibility to facilitate long-term conjunctive use. Alternatively, if recent hydrologic conditions have been average or above average, and groundwater extractions have been higher than the sustainable yield, that is an indication that the Subbasin may be operating unsustainably. If the initial indication is that the Subbasin is operating unsustainably, then measures need to be taken to implement one or more of the projects or management actions identified in this Section. To ensure the GSP is being followed by all pumpers in the Subbasin, the GSAs will consider adopting rules, regulations and ordinances as means of enforcement, including imposing fines and penalties as allowed under law.

A parallel approach to the above should be taken if measured water quality at representative monitoring sites exceeds the measurable objective. The GSAs would then work together with the RWQCB, as the primary enforcer of water quality regulations, to address the issues.

6.3.2 MANAGEMENT ACTION #2 WELL HEAD REQUIREMENTS

The GSAs recognize that community involvement and outreach alone will not curtail groundwater overdraft if management actions must be implemented to reduce water demand. Additional well requirements may be required to manage and understand the dynamic groundwater conditions more effectively. Within the Subbasin, well construction permitting is managed by Riverside County Environmental Health Division (EHD) as detailed in Chapter 2 – Plan Area. Obtaining a well permit is currently a ministerial process, not requiring discretionary action or CEQA. The intent of this management action is to have the GSAs work with the EHD to increase well requirements for new wells without disrupting the current ministerial permit process. Additionally, the GSAs would promote regular communication with the EHD and would seek to maintain more monitoring responsibility. The GSAs may adopt a policy to augment the current well requirements set by the State/EHD and establish new permit criteria, enforce GSA policies, and require

GSAs' approval of all permit paperwork for non-de minimis extractors (<2 AFY) before EHD permit issuance. The policy would affect permits to construct, deepen, destroy, recondition, or repair a well. In order to increase data collection, reporting, and ongoing groundwater management efforts, the additional well requirements policy may contain the following information:

- *Registration of extraction facilities with the GSAs to supplement and confirm information obtained from a well canvass of the GSA(s) area.*
- *Require the installation of flowmeters on all new or repaired wells, and installation of sounding tubes on all new wells.*
- *Require the well owner to self-report groundwater extraction volumes, static water levels, and water quality data.*

The GSAs will request that the County notify the GSAs of any new well permits or well destructions, as well as well completion reports and water quality test data of new wells be submitted to the GSAs. The GSAs may consider separating the additional well requirements management action into multiple policies or be silent on various bulleted components until the GSAs deem them necessary. For example, the requirement of installing a flow meter on the pump discharge may be enacted before the requirement of installing a sounding tube. Further explanation and detail of the potential additional well requirements are continued below.

The desired outcome of additional well permitting requirements is the ability to monitor groundwater extractions, water levels, and water quality in a thorough, accurate, and efficient manner across the GSAs. The evaluation criteria differ among the bulleted considerations.

MBMI, which may construct wells in the SGP Subbasin, is a sovereign nation and would be exempt from required compliance with any well head construction requirements. Documentation of any proposed well head requirements would be provided to the MBMI along with description of the expected benefits to the SGP Subbasin, and MBMI could choose to voluntarily comply with the proposed well head requirements, or alternatives that they identify.

REGISTRATION OF EXTRACTION FACILITIES

As stated in SGMA Section 10725.6, "a GSA may require the registration of a groundwater extraction facility within the management area of the GSA." The GSAs may adopt this policy to hopefully improve and supplement the existing well records housed by the EHD and DWR and provide a complete record of the number of wells within the GSAs. The GSAs have greatly benefited from the current exchange of well information and use of the online DWR Well Completion Report Map Application tool[5]. However, through local outreach and research of the proposed well monitoring network, the GSAs suspect many existing wells do not have the State and EHD well completion reports (the well driller documentation on the geology and well construction details) or the reports have not been entered into the DWR database and/or EHD records. Unfortunately, the historic well completion reports (especially the older ones) and available DWR 429 Forms (Well Data Form indicating the state well number and detailed well location information) often have insufficient information to confidently locate the exact position of an older well, which is necessary to match up water level and water quality information with the area in which pumping is occurring. In recent decades, the advances in technology, standardization of forms, and accessibility to GPS location have significantly improved the accuracy of well completion reports through better location identification and recordkeeping. The intent of registration of groundwater extraction facilities would be to complement existing well recordkeeping and ensure that the GSAs can fully understand and quantify the potential impacts of groundwater decline. Coupled with the registration of extraction facilities, the GSAs may invest in a complete well canvass study to verify the number of wells and presence or absence of a flow meter.

[5] https://dwr.maps.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37

INSTALLATION OF WELL FLOW METERS

The GSAs will investigate options for quantifying groundwater use by individual landowners and may require the installation of a flow meter on all groundwater extraction facilities (with extractions greater than the SGMA de-minimis level of 2 AFY) in the future to provide accurate quantities of groundwater extraction and serve as the nexus to other management actions. The policy would describe the acceptable types of flow measurement devices, installation standards and requirements, operation and maintenance requirements, and penalties for tampering, neglect, or misconduct. For example, the flow meter would be installed inline on the pump discharge before any other connections or discharge points in accordance with the meter manufacturer's specifications. The meter must accurately quantify the volume of extracted groundwater in AF and be routinely maintained by the well owner. The policy for flow meter installation may require a meter equipped with telemetry for remote reading of the groundwater extraction by the GSAs. Failure to comply with the policy may result in civil penalty or criminal fine in accordance with SGMA Section 10732. Once the meter installation was complete, a certification report would be submitted by the landowner or agency documenting that the work was completed in accordance with the GSAs' well requirements policy.

INSTALLATION OF SOUNDING TUBES AND WATER QUALITY SAMPLE PORTS

The GSAs may require the installation of a well sounding tube, air line, electric depth gauge, and/or other water level sensor in selected locations for the purpose of measuring water levels throughout the Subbasin especially on new well installations. In addition, the GSAs may require the installation of a sample port on the well discharge piping in selected locations for the purpose of potentially collecting water quality samples throughout the Subbasin. The accurate and widespread collection of water level and water quality data will supplement the monitoring network information and provide the GSAs with additional information to monitor the success/failure of the GSP against the established Sustainable Management Criteria in Chapter 4 – Sustainable Management Criteria. The policy would describe the acceptable types of water level measuring devices and sample ports, installation requirements, and penalties for tampering, neglect, or misconduct. The installation must provide or allow for the accurate measurement of static groundwater level in feet below the ground surface and water sample collection. If applicable, the water level measurement device must be routinely maintained by the well owner. Once the installation was complete, a certification report would be submitted by the landowner or agency documenting that the work was completed in accordance with the GSAs' well requirements policy.

SELF-REPORTING OF GROUNDWATER EXTRACTION

If the GSAs select flow meters as the method of quantifying groundwater extraction, and if the installed meters are not equipped with telemetry, then the GSAs may require the well owner to self-report to the GSAs the metered groundwater extraction volumes on an annual basis. The policy would describe the frequency and various methods of reporting, due dates, and specific instructions for data submission. The GSAs may provide extractors with a self-addressed mailer for return mailing. The mailer may include information for reporting instructions such as requiring that the groundwater extraction volume be reported in AF and include the current flow meter totalizer reading. Other information requests may include self-reporting of static water level readings if the well is equipped with a sounding tube, along with instructions on how static water level measurements should be measured twice per year once water levels have stabilized after pump shutdown. If there is limited compliance with self-reporting, the GSAs may elect to gather the appropriate data with their own staff. The policy would describe that the frequency of the reporting may be temporarily increased if minimum thresholds are exceeded.

6.3.3 MANAGEMENT ACTION #3 INVESTIGATE ISSUES PROMPTLY REGARDING WATER QUALITY AND UNEXPECTED WATER PUMPING

The GSAs intend to take full advantage of the powers granted to them under SGMA by promptly investigating for all the purposes outlined in Water Code section 10725.4, particularly when water quality concerns or unexpected groundwater extraction impacts are identified.

The GSAs will have the opportunity to review groundwater quality conditions as drinking water producers are required to monitor and report groundwater quality, which become publicly available. In addition, groundwater levels and storage will be assessed on an annual basis, as part of the Annual Reporting

required by SGMA. Anomalies or significant changes in water levels are to be studied as part of data quality assurance protocols. In the event water quality sampling identifies exceedances of measurable objectives or groundwater level data reveals significant unexpected groundwater extraction impacts, the GSAs intend to investigate further to understand causation and support mitigation planning that may involve implementation of projects and management actions listed in this chapter.

6.3.4 MANAGEMENT ACTION #4 IMPOSE SGMA OR OTHER FEES ON PUMPERS TO ENCOURAGE REDUCED PUMPING AND CONSERVATION

The GSAs have been granted the authority to impose fees by ordinance or resolution to fund costs of a groundwater sustainability program including preparation, adoption, and amendment to a groundwater sustainability plan, and investigations, inspections, compliance assistance, enforcement, and program administration. Once the GSP is adopted, GSAs have the authority to imposed fixed fees or volumetric-based fees to cover the costs of (1) GSP administration, operation, and maintenance; (2) Acquisition of lands or other property, facilities, and services; (3) Supply, production, treatment, or distribution of water; and (4) Other activities necessary or convenient to implement the plan. Revenue collected through fixed fees or volumetric-based feeds would support ongoing GSP implementation activities, project development and implementation of actions to address data gaps. The pumping fee revenues would also be available for use in developing projects, and applying for grant funds, to improve groundwater infrastructure in the SGP Subbasin, especially in areas with DAC or SDAC.

While initially there may be limited necessity for any new fees, the GSAs may choose to implement new fees if measurable objectives have been exceeded, to encourage conservation and reduced groundwater extractions, and assist in avoiding exceedances of minimum thresholds. The fees would not apply to pumping by the MBMI who, as a federally recognized tribe, are not subject to SGMA jurisdiction. Groundwater producers throughout the Subbasin, or in the vicinity of a nearby measurable objective exceedance, may be subject to the fees within 2 years of the groundwater level exceedance. If the GSA chooses to proceed with developing a fixed or volumetric-based fee, the GSA would consider developing the details of the fee framework, including potential fee amounts, guidelines for using the funds, and potential programs to support GSP implementation.

Although MBMI is not subject to SGMA, they are recognized as a water producer from the SGP Subbasin that may affect the overall condition of the SGP Subbasin. Additionally, MBMI may benefit from the activities and projects funded through pumping fees, and therefore, they will be invited to participate in funding said activities and projects although their participation is not mandatory.

6.3.5 MANAGEMENT ACTION #5 GROUNDWATER PUMPING ALLOCATION

As part of SGMA, GSAs have been granted authority to regulate the quantity of pumped groundwater. Regulating groundwater pumping is a potential GSP tool that could reduce pumping in the event that it exceeded the sustainable yield of a Subbasin. The regulation of pumping would likely take the form of allocation of a share of the sustainable yield to groundwater users in the Subbasin. Other rules could be established that would allow for a user's allocation over multiple years to transfer to other users and other rules that would facilitate effective water management. While SGMA provides GSAs with the authority to regulate groundwater pumping quantities, it also specifies that this is not the final determination of water rights, which remains with the courts. As noted later in this section, a major limitation to a groundwater pumping allocation action is that it would not constrain federally recognized tribal water users such as the MBMI, who are large groundwater users in the SGP. Based on this limited jurisdiction and without the voluntary participation of the MBMI, the groundwater pumping allocation approach based on GSA authorities described here could be difficult to implement and meet SGMA requirements for sustainable groundwater management.

GSAs experiencing large amounts of continuous annual groundwater overdraft, including in wet years, may pursue individual groundwater allocations if the development of projects and new water supplies cannot solely offset the current groundwater demands and overdraft conditions over the planning and

implementation horizon. Demand management may become increasingly more important in the event of further reduced reliability of imported and flood water supplies, especially when taking into consideration the historical drought periods, the uncertain role of climate change, and increased competition for available water supplies. Specific program details may be developed and adopted by the GSAs in the future.

The GSAs' future policy may provide a finite groundwater allocation on a per acre basis for the GSAs as a whole, or for sub-areas of a GSA. The policy would identify and forecast the demands associated with prior rights (including MBMI), domestic and environmental uses. The sustainable yield and ultimate groundwater allocation would take into consideration the existing water rights holders, DACs, community service districts (CSDs), public utility districts (PUDs), public water systems (PWS), and GDEs. The GSAs, through collaboration with its beneficial uses and users, may consider whether an equal-, reduced-, or zero-allocation is given to lands with unexercised groundwater rights. The report *Groundwater Pumping Allocations under California's Sustainable Groundwater Management Act (Environmental Defense Fund et. al, 2018)* identifies four possible methods of establishing groundwater pumping allocations.

There are multiple advantages and disadvantages associated with different methods of establishing groundwater pumping allocations, which are described in more detail in the report (EDF, 2018). The "Comprehensive Allocation Method," which establishes allocations based on a comprehensive consideration of California groundwater law to the extent practical, and is recommended by EDF, is one possible approach that could be considered because it offers GSAs the important advantage of presenting to the Court an allocation methodology that tracks judicial precedent if an adjudication is ultimately initiated.

The goals of any groundwater pumping management action would be to ensure a fair groundwater allocation, allow groundwater users time to adjust, provide future flexibility in allocation determinations, and to quantify groundwater extractions accurately and efficiently, while also respecting federal reserved water rights (FRWR).

The method of evaluation of groundwater extraction depends upon the GSAs' selected quantification method or combination of methods. The GSAs' evaluation of various methods may consider a wide range of factors including cost, accuracy, reliability, timeliness, functionality, personnel required, and legal defense. Once the GSAs have established a consistent quantification method, the evaluation of the "ramp-down" gradual allocation decrease could be analyzed in the annual comparison of groundwater extraction. Though the annual groundwater extraction amount would be affected by other factors such as weather and available surface water supplies, the total extraction amount could be normalized to an average water year for comparative purposes. The GSAs may adopt policies indicating an adaptive management approach, whereby the groundwater allocation may be reviewed, changed, and reestablished periodically or during extreme drought as necessary to achieve long-term sustainability instead of a ramp down gradual allocation.

As noted earlier in this summary, a significant limitation on the efficacy of this management action is that it would not constrain water use by federally recognized tribal water users, such as the MBMI. FRWR are distinct from water rights that are based in State law and SGMA directs that FRWR be respected in full. The FRWR of the MBMI have not been quantified and could directly affect the ability of a SGMA-based pumping allocation approach to achieve identified goals. Based on the limitation of a groundwater pumping allocation to a specific set of groundwater pumpers, and without the voluntary participation of entities with FRWR (such as MBMI), a groundwater pumping allocation approach based on GSA authorities could be difficult to implement and meet SGMA requirements for sustainable groundwater management.

6.3.6 MANAGEMENT ACTION #6 GROUNDWATER BASIN ADJUDICATION

Groundwater pumpers or landowners in the Subbasin could initiate the process for groundwater adjudication to occur in the Subbasin if sustainability does not appear to be occurring during the SGMA implementation period. In 2015, largely as a "follow on" to the enactment of SGMA, two bills - AB 1390 and

SB 226 - were enacted and became law on January 1, 2016. Those two bills restructured the groundwater adjudication process in California by attempting to streamline the process and to provide clarification as to how adjudications relate to SGMA. These laws require that any judgments issued in an adjudication be consistent with SGMA and allow the courts to issue preliminary orders to achieve consistency. Among other things, these bills allow GSAs, cities, counties, and the State to intervene in adjudication actions and require the court to manage proceedings consistently with the timeframes laid out for groundwater sustainability in SGMA. Under SGMA, unreconciled differences over GSP provisions are likely to result in adjudications. However, even with the new legislation, adjudications will remain complex, lengthy, and expensive to pursue (EDF, 2018). Additionally, the GSAs would continue to be responsible for SGMA compliance in the event of a groundwater adjudication, provided in Water Code Section 10737.2

As described in Management Action #5, a potential allocation of groundwater pumping amounts will be considered, along with other potential projects, as an early response to any increases in groundwater pumping or identified long term changes in local water supply availability, that can adversely affect achieving groundwater sustainability. As indicated in Management Action #5, any allocation of groundwater pumping amounts could be challenged by groundwater pumpers in the SGP Subbasin as not being consistent with their rights under California groundwater law and would not be applicable to the MBMI, unless pursuant to a court decree.

If local disagreements over allocated pumping amounts in Management Action #5 and/or increased groundwater pumping in the Subbasin results in increased challenges in meeting its sustainability goals during the SGMA implementation period, water users in the SGP may sue to bring about an eventual groundwater adjudication. An adjudication would proceed under state laws, including the 2016 changes to the water code that streamline the adjudication process. Even with a streamlined adjudication, an adjudication, particularly a contested adjudication, would likely take multiple years or decades to be resolved and implemented. Assuming that SGP water users did not voluntarily participate in SGP GSP implementation efforts (such as a groundwater pumping allocation), it could be difficult for the SGP to meet its sustainable groundwater management responsibilities during an extended period while the court adjudication proceeds.

7 PLAN IMPLEMENTATION

The SGP GSP was adopted on January 4, 2022, initiating the official start of the Plan Implementation. The GSAs will continue their efforts to engage the public and secure necessary funding to successfully monitor and manage groundwater resources within the SGP Subbasin in a sustainable manner. While the GSP is being reviewed by DWR, the GSAs will coordinate with various stakeholders and beneficial users to, as appropriate, refine the monitoring networks and begin the implementation of ready projects and management actions.

7.1 ESTIMATE OF GSP IMPLEMENTATION COSTS

Regulation Requirements:

§ 354.6. Agency Information

When submitting an adopted Plan to the Department, the Agency shall include a copy of the information provided pursuant to Water Code Section 10723.8, with any updates, if necessary, along with the following information:

(e) An estimate of the cost of implementing the Plan and a general description of how the Agency plans to meet those costs.

The GSAs' preliminary estimate of plan implementation costs includes five categories:

1. *Regular/Ongoing SGMA Compliance Activities;*
2. *GSP Five-Year Update;*
3. *Plans to Fill Data Gaps;*
4. *Projects; and*
5. *Management Actions.*

Table 7-1 provides a cost estimate for items 1 through 5 listed above. The projects and management actions are summarized in two categories: Phase 1 (Priority) and Phase 2 (Optional). Throughout the implementation period, should funding become available, the Phase 2 projects and management actions will have the opportunity to be revisited regarding their urgency to supporting subbasin sustainability and potential feasibility.

The list below summarizes the Phase 1 and Phase 2 projects and management actions. Phase 1 projects are considered priority projects and Phase 2 projects are noted as optional. Within each phase, there is no prioritization of projects based on name or order. For example, Project 1 is not more important than Project 3. Phase 2 projects and management actions are identified based on: (1) the project is less cost effective than a priority project and/or management action, (2) the project is an alternative to a priority project that provides similar benefits, (3) the project or management action is unlikely to be developed within the implementation period, unless additional funding is secured, or (4) future conditions differ substantially from projections thereby necessitating additional measures. In the case of Project 6, it serves as an alternative to Project 4. Project 5, shown crossed out below, was initially viewed as an optional project but after further consideration, the project is infeasible due to costs for delivery and low recharge rates. More information on each project and management action, including a description and cost estimate for all projects and management actions are included in Chapter 6.

Phase 1 (Priority) Projects and Management Actions

Project 1: Municipal Water Conservation

Management Action 1: Implement Action Plan if Groundwater Levels Fall Below Minimum Thresholds

Management Action 2: Well Head Requirements

Management Action 3: Investigate Issues Promptly Regarding Water Quality and Unexpected Water Pumping

Phase 2 (Optional) Projects and Management Actions

Project 2: Stormwater Capture
Project 3: Additional Imported Water Spreading at Noble Creek Spreading Basins
Project 4: New Pipeline with Additional Imported Water Spreading in the Cabazon Storage Unit
~~Project 5: New Pipeline with Additional Imported Water Spreading in the Banning Storage Unit~~ (Removed)
Project 6: New Imported Colorado River Aqueduct Spreading in the Cabazon Storage Unit
Project 7: Hub and Spoke Project
Management Action 4: Impose SGMA or Other Available Fees on Pumpers to Encourage Reduced Pumping and Conservation
Management Action 5: Groundwater Pumping Allocation
Management Action 6: Groundwater Basin Adjudication

Table 7-1 SGP Plan Implementation Cost Estimate

SGP PLAN IMPLEMENTATION COST ESTIMATE

	2022 – 2027 (Actual)		2027 - 2032		2032 - 2037		2037 - 2042		2022 - 2042	
	Capital Cost	Annual O&M Cost	Capital Cost	Annual O&M Cost	Capital Cost	Annual O&M Cost	Capital Cost	Annual O&M Cost	Total Cost	Explanation of Cost/Notes
1. Regular/Ongoing SGMA Compliance Activities										
Administration	$ -	$ 10,000	$ -	$ 10,000	$ -	$ 10,000	$ -	$ 10,000	$ 200,000	Costs for administration and outreach are in-house expenses.
Correspondence and Outreach Materials	$ -	$ 5,000	$ -	$ 6,000	$ -	$ 7,000	$ -	$ 8,000	$ 130,000	
Database Management System		$ 5,000	$ -	$ 5,000	$ -	$ 5,000	$ -	$ 5,000	$ 100,000	These estimated costs include only external costs and do not include each member agency's in-house fees.
Annual Reporting	$ -	$ 25,000	$ -	$ 25,000	$ -	$ 25,000	$ -	$ 25,000	$ 500,000	
Enforcement	$ -	$ 1,000	$ -	$ 3,000	$ -	$ 6,000	$ -	$ 20,000	$ 150,000	
								Subtotal	**$ 1,080,000**	
2. GSP Five-Year Update										
Engineering Consultant	$ 340,000	$ -	$ 360,000	$ -	$ 380,000	$ -	$ 400,000	$ -	$ 1,360,000	These estimated costs include only external costs and do not include each member agency's in-house fees.
								Subtotal	**$ 1,360,000**	
3. Plans to Fill Data Gaps										
Coordination and Implementation	$ 850,000	$ 25,000	$ -	$ 25,000	$ -	$ 25,000	$ -	$ 25,000	$ 1,350,000	These estimated costs include cost share and projected funds for grant applications in regard to solutions to data gaps. The identified data gaps include four monitoring wells and a tracer study at the Indio Subbasin boundary. The Subbasin was awarded a Prop 1 SGMA grant to construct additional monitoring wells in the eastern portion of the Subbasin.
								Subtotal	**$ 1,350,000**	
4. Phase 1 (Priority) Projects										
P1 - Municipal Water Conservation	$ -	$ -	$ -	$ -	$ 400,000	$ -	$ -	$ -	$ 400,000	Refer to Chapter 6 – Projects and Management Actions for details on cost rationalization.
5. Phase 2 (Optional) Projects										
Phase 2 projects are assumed not to be implemented within the Implementation Period. However, their status as Phase 2 projects is contingent to changes based on future planning and/or project funding opportunities.										
P2 - Stormwater Capture	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	Refer to Chapter 6 – Projects and Management Actions and Appendix E for details on cost rationalization. No costs are listed in this table with consideration that the Phase 2 projects are
P3 - Additional Imported Water Spreading at Noble Creek Spreading Basins	$ -	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ 20,000	

SGP PLAN IMPLEMENTATION COST ESTIMATE										
	2022 – 2027 (Actual)		2027 - 2032		2032 - 2037		2037 - 2042		2022 - 2042	
	Capital Cost	Annual O&M Cost	Capital Cost	Annual O&M Cost	Capital Cost	Annual O&M Cost	Capital Cost	Annual O&M Cost	Total Cost	Explanation of Cost/Notes
P4 - New Pipeline with Additional Water Spreading in the Cabazon Storage Unit	$ 500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 500,000	unlikely to be implemented during the 20-year Implementation period.
~~P5 - New Pipeline with Additional Water Spreading in the Banning Storage Unit~~ (Removed)	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	~~$ -~~	
P6 - New Imported Colorado River Aqueduct Spreading in the Cabazon Storage Unit (Phase 2)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
P7 – Hub and Spoke Project	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
								Subtotal	$ 920,000	
6. Phase 1 (Priority) Management Actions										
MA1 - Implementation Plan	$ 75,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75,000	
MA2 - Well Head Requirements	$ 50,000	$ 25,000	$ -	$ 25,000	$ -	$ 25,000	$ -	$ 25,000	$ 550,000	
MA3 - Investigate Issues Promptly Regarding Water Quality and Unexpected Water Pumping	$ -	$ 5,000	$ -	$ 5,000	$ -	$ 5,000	$ -	$ 5,000	$ 100,000	Refer to Chapter 6 – Projects and Management Actions and Appendix E for details on cost rationalization.
7. Phase 2 (Optional) Management Actions										
Phase 2 projects are assumed to not be implemented within the Implementation Period.										
MA4 - Impose SGMA or Other Available Fees on Pumpers to Encourage Reduced Pumping and Conservation	$ -	$ -	$ 50,000	$ -	$ -	$ -	$ -	$ -	$ 50,000	Phase 2 management actions are unlikely to be implemented during the 20-year implementation period. Estimated costs are $50,000 initially and are associated with the legal, consultant, and coordination associated with fee development are estimated.
MA5 - Groundwater Pumping Allocation	$ -	$ -	$ 50,000	$ -	$ -	$ -	$ -	$ -	$ 50,000	
MA6 - Groundwater Basin Adjudication	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
								Subtotal	$ 825,000	
								TOTAL	$ 5,740,000	

7.2 IDENTIFY FUNDING ALTERNATIVES

Regulation Requirements:

§ 354.6. Agency Information

When submitting an adopted Plan to the Department, the Agency shall include a copy of the information provided pursuant to Water Code Section 10723.8, with any updates, if necessary, along with the following information:

(e) An estimate of the cost of implementing the Plan and a general description of how the Agency plans to meet those costs.

The annual operational costs are ongoing. GSA members fund various agency operations and activities that are required by SGMA, including retaining consulting firms and legal counsel to provide agency oversight and lead the agencies through the steps for SGMA compliance. Expenses consist of administrative support, GSP development, annual reporting, and GSP implementation. GSP updates will occur every five years, and GSA administration, GSP implementation, and annual reporting are anticipated to be on-going expenses.

Actual GSP implementation costs during the initial five-year period following GSP adoption in 2022 included approximately $46,000/year for annual/on-going SGMA compliance activities and roughly $340,000 for the GSP Five-Year Update. These costs are expected to remain constant over the implementation period through 2042. The projects and management actions in the GSP will require supplemental funding.

The GSAs will actively be pursuing Technical Support Services and Sustainable Groundwater Management Implementation grant funding as available from Proposition 1, Proposition 4, and/or other potential state and federal funding sources that may become available. These funds will be used to offset some of the capital improvement costs associated with model calibrations and the development of new monitoring wells to fill identified data gaps in the monitoring network. The GSAs will be exploring all federal and state grant funding opportunities and low interest loans to help finance the initial steps of plan implementation. If local, state, and federal funding is not readily available, the GSAs may consider implementing various management actions to impose fees as discussed in Chapter 6 which could generate an ongoing revenue stream for future GSP implementation costs.

7.3 SCHEDULE FOR IMPLEMENTATION

Regulation Requirements:

§ 350.4. General Principles

Consistent with the State's interest in groundwater sustainability through local management, the following general principles shall guide the Department in the implementation of these regulations.

(f) A Plan will be evaluated, and its implementation assessed, consistent with the objective that a basin be sustainably managed within

20 years of Plan implementation without adversely affecting the ability of an adjacent basin to implement its Plan or achieve and maintain its sustainability goal over the planning and implementation horizon.

The initial schedule for implementing projects and management actions is provided in Table 7-2 below. This schedule is an estimate based on experience developing and implementing projects and management actions within the Subbasin; however, there may be changes induced by funding availability, environmental documentation, or other schedule influences.

Table 7-2 SGP Plan Implementation Schedule

SGP PLAN IMPLEMENTATION SCHEDULE

Estimated Projects and Management Actions	2022 - 2027		2027 - 2032		2032 - 2037		2037 - 2042		2042+
Plans to Fill Data Gaps									
P1 - Municipal Water Conservation									
P2 - Stormwater Capture									
P3 - Additional Imported Water Spreading at Noble Creek Spreading Basins									
P4 - New Pipeline with Additional Imported Water Spreading in the Cabazon Storage Unit									
~~P5 - New Pipeline with Additional Water Imported Water Spreading in the Banning Storage Unit~~ ***(Removed)***									
P6 - New Imported Colorado River Aqueduct Spreading in the Cabazon Storage Unit (Phase 2)									
P7 - Hub and Spoke Project									
MA1 - Implement Action Plan if Groundwater Levels Fall Below Minimum Thresholds									
MA2 - Well Head Requirements									
MA3 - Investigate Issues Promptly Regarding Water Quality and Unexpected Water Pumping									
MA4 - Impose SGMA or Other Fees on Pumpers to Encourage Reduced Pumping and Conservation									
MA5 - Groundwater Pumping Allocation									
MA6 - Groundwater Basin Adjudication									

Legend	Priority PMA	Optional PMA
Planning		
Implementation		
Benefits Realized		
Ongoing O&M		

[1] Projects will only be implemented if needed to achieve sustainability. Priority projects would be implemented before optional projects.

The SGP Subbasin's projected path to sustainable groundwater conditions will consider the highly variable water supplies in the region. The historic record indicates that the Subbasin's hydrologic cycle spans a minimum of 21 years (Chapter 3 – Basin Setting) which means that extended drought periods occur. Based on the estimated current and projected water budgets, the Subbasin should be able to remain sustainable. However, as the Subbasin is approximately 20-years into an extended dry period, with no certainty that conditions will revert to more normal conditions in the foreseeable future, the GSAs will closely monitor groundwater conditions during the implementation period. Since the planning horizon of twenty years is comparable to the span of a full hydrologic cycle in the Subbasin, the GSAs recognize that they will need to carefully monitor conditions identified in the five-year assessments for potential future modifications to the implementation plan.

The additional challenges of addressing uncertain future pumping amounts related to potential increased pumping based on unknown FRWR are also factors that could affect the implementation schedule. The implementation schedule shown in Table 7-2 is based on current known projected groundwater use in the SGP Subbasin. As described in Section 6.3.6 and other sections of the GSP, the MBMI are a sovereign nation and are not required to participate in SGP GSP implementation. While the SGP will work to include the MBMI in the SGP GSP planning and implementation process, their involvement would be strictly voluntary and ultimately there is no certainty that advance information on potential increased used of FRWR would be available. In the absence of advance notice of pumping increases, ongoing visual observation of development activities in the SGP Subbasin will provide some indication of potential groundwater use in advance of full development. Any identified development likely to result in increased water use will be routinely monitored and groundwater projections will be updated based on revised pumping use at least as frequently as the five-year updates. As an example of potential impacts, the increased water use in Project #4 would result in declines of 26 feet after five years at the 3S/1E-11F4 representative monitoring site, which is the area that would be most affected by the Project #4 assumed additional development. Any unexpected development would result in many months of visual indication prior to water use, have some period where water use would increase incrementally and, once fully implemented, would result in a maximum of up to 26 feet of water level impacts after five years. The GSAs would update the implementation schedule based on observed development, which would likely result in multiple years of lead time to anticipate potential groundwater impacts. This kind of adaptation of the implementation is not ideal but is anticipated to be a feasible approach given potential uncertain forecasts.

7.4 DATA MANAGEMENT SYSTEM

Regulation Requirements:

§ 352.6. Data Management System

Each Agency shall develop and maintain a data management system that is capable of storing and reporting information relevant to the development or implementation of the Plan and monitoring of the basin.

In a coordinated effort, the GSAs of the Subbasin have developed and maintained a spreadsheet-based DMS to share data and store the necessary information for annual reporting and ongoing groundwater analyses. It serves as the single repository for data aggregation and analysis for the Subbasin and is designed to generate the required annual reporting information that will be submitted to DWR. GSA representatives have access to all data in the DMS upon request. The DMS currently includes the necessary elements required by the regulations, including:

- *Well location and construction information (where available)*
- *Water level readings and hydrographs including water year type*
- *Seasonal groundwater elevation contours*
- *Estimated groundwater extraction by water use category*
- *Total water use by source type*
- *Estimated groundwater storage change, including map and tables*
- *Graphs with water year type, groundwater use, and annual cumulative storage change*

Although much of the data associated with reporting requirements are stored in the DMS and uploaded into the Annual Report templates, several components of the Annual Report are produced external to the DMS. These include groundwater level contours, groundwater storage calculations and groundwater estimates. Groundwater level contours are prepared outside of the DMS because of the need to evaluate the integrity of the data collected and to generate a static contour set that has been reviewed and will not change once approved. Groundwater storage calculations are performed in accordance with the method described in Chapter 3.2, outside of the DMS, then the results of those calculations are saved to the DMS for annual reporting and trend monitoring.

Not all the pumping data in the Subbasin is accessible due to lack of measurements, de minimis qualification, or location being within tribal lands that are not subject to SGMA. Therefore, groundwater pumping estimates are also calculated outside of the DMS using the agreed Subbasin-wide water budget approach and then saved to the DMS for annual reporting and trend analysis.

7.5 ANNUAL REPORTING

Regulation Requirements:

§ 356.2. Annual Reports

Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:

(a) General information, including an executive summary and a location map depicting the basin covered by the report.

(b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan:

(1) Groundwater elevation data from monitoring wells identified in the monitoring network shall be analyzed and displayed as follows:

(A) Groundwater elevation contour maps for each principal aquifer in the basin illustrating, at a minimum, the seasonal high and seasonal low groundwater conditions.

(B) Hydrographs of groundwater elevations and water year type using historical data to the greatest extent available, including from January 1, 2015, to current reporting year.

(2) Groundwater extraction for the preceding water year. Data shall be collected using the best available measurement methods and shall be presented in a table that summarizes groundwater extractions by water use sector, and identifies the method of measurement (direct or estimate) and accuracy of measurements, and a map that illustrates the general location and volume of groundwater extractions.

(3) Surface water supply used or available for use, for groundwater recharge or in-lieu use shall be reported based on quantitative data that describes the annual volume and sources for the preceding water year.

(4) Total water use shall be collected using the best available measurement methods and shall be reported in a table that summarizes total water use by water use sector, water source type, and identifies the method of measurement (direct or estimate) and accuracy of measurements. Existing water use data from the most recent Urban Water Management Plans or Agricultural Water Management Plans within the basin may be used, as long as the data are reported by water year.

(5) Change in groundwater in storage shall include the following:

(A) Change in groundwater in storage maps for each principal aquifer in the basin.

(B) A graph depicting water year type, groundwater use, the annual change in groundwater in storage, and the cumulative change in groundwater in storage for the basin based on historical data to the greatest extent available, including from January 1, 2015, to the current reporting year.

(c) A description of progress towards implementing the Plan, including achieving interim milestones, and implementation of projects or management actions since the previous annual report.

Each GSA will continue to provide the Subbasin Point of Contact with the required information of groundwater levels, groundwater extraction volume, surface water use, total water use, and groundwater storage change, which will be stored in the Subbasin's spreadsheet-based DMS. Each GSA will also continue to provide the Basin Point of Contact with a progress update on GSP implementation for the Subbasin Annual Report in accordance with the timelines required to meet the April 1 deadline each year.

7.6 PERIODIC EVALUATIONS

Regulation Requirements:

§ 356.4. Periodic Evaluation by Agency

Each Agency shall evaluate its Plan at least every five years and whenever the Plan is amended and provide a written assessment to the Department. The assessment shall describe whether the Plan implementation, including implementation of projects and management actions, are meeting the sustainability goal in the basin, and shall include the following:

(a) A description of current groundwater conditions for each applicable sustainability indicator relative to measurable objectives, interim milestones and minimum thresholds.

(b) A description of the implementation of any projects or management actions, and the effect on groundwater conditions resulting from those projects or management actions.

(c) Elements of the Plan, including the basin setting, management areas, or the identification of undesirable results and the setting of minimum thresholds and measurable objectives, shall be reconsidered and revisions proposed, if necessary.

(d) An evaluation of the basin setting in light of significant new information or changes in water use, and an explanation of any significant changes. If the Agency's evaluation shows that the basin is experiencing overdraft conditions, the Agency shall include an assessment of measures to mitigate that overdraft.

(e) A description of the monitoring network within the basin, including whether data gaps exist, or any areas within the basin are represented by data that does not satisfy the requirements of Sections 352.4 and 354.34(c). The description shall include the following:

(1) An assessment of monitoring network function with an analysis of data collected to date, identification of data gaps, and the actions necessary to improve the monitoring network, consistent with the requirements of Section 354.38.

(2) If the Agency identifies data gaps, the Plan shall describe a program for the acquisition of additional data sources, including an estimate of the timing of that acquisition, and for incorporation of newly obtained information into the Plan.

(3) The Plan shall prioritize the installation of new data collection facilities and analysis of new data based on the needs of the basin.

(f) A description of significant new information that has been made available since Plan adoption or amendment, or the last five-year assessment. The description shall also include whether new information warrants changes to any aspect of the Plan, including the evaluation of the basin setting, measurable objectives, minimum thresholds, or the criteria defining undesirable results.

(g) A description of relevant actions taken by the Agency, including a summary of regulations or ordinances related to the Plan.

(h) Information describing any enforcement or legal actions taken by the Agency in furtherance of the sustainability goal for the basin.

(i) A description of completed or proposed Plan amendments.

(j) Where appropriate, a summary of coordination that occurred between multiple Agencies in a single basin, Agencies in hydrologically connected basins, and land use agencies.

(k) Other information the Agency deems appropriate, along with any information required by the Department to conduct a periodic review as required by Water Code Section 10733.

The GSAs will have the opportunity to develop and submit an updated GSP every five years. Certain components of the GSP may be re-evaluated more frequently than every five years, if deemed necessary. The GSAs intend to include updates or interim changes to the GSP and identify potential policy changes in the SGP Subbasin Annual Reports that will be submitted to DWR.

In addition, the GSAs will provide an assessment to DWR at least every five years, in accordance with the regulatory requirements. The assessment will include an update on progress in achieving sustainability that considers updates to groundwater conditions, status of projects or management actions, evaluation of undesirable results relating to measurable objectives and minimum thresholds, changes in monitoring network, summary of enforcement or legal actions, and agency coordination efforts in accordance with SGMA law §356.4. Periodic Evaluation by Agency.

8 REFERENCES

Regulation Requirements:

§ 354.4. General Information
Each Plan shall include the following general information:
(a) An executive summary written in plain language that provides an overview of the Plan and description of groundwater conditions in the basin.
(b) A list of references and technical studies relied upon by the Agency in developing the Plan. Each Agency shall provide to the Department electronic copies of reports and other documents and materials cited as references that are not generally available to the public. Note: Authority cited: Section 10733.2, Water Code.
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APPENDICES

Appendix A – Memorandum of Agreement (MOA)
Appendix B – Noticing and Adoption Documentation
Appendix C – Public Comment & Response Log
Appendix D – Model Technical Memorandum
Appendix E – Projects & Management Actions
Appendix F – San Gorgonio Pass Working Group Meeting Topics
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Appendix A – Memorandum of Agreement (MOA)

MEMORANDUM OF AGREEMENT TO FORM A GROUNDWATER SUSTAINABILITY AGENCY FOR A PORTION OF THE SAN GORGONIO PASS SUBBASIN AND TO COORDINATE WITH OTHER GROUNDWATER SUSTAINABILITY AGENCIES

This 2017 Memorandum of Agreement (MOA) is entered into by and among Cabazon Water District (CWD), City of Banning (Banning), Banning Heights Mutual Water Company (BHMWC), San Gorgonio Pass Water Agency (SGPWA), Mission Springs Water District (MSWD), and Desert Water Agency (DWA), which may be referred to herein individually as a "Party" and collectively as the "Parties."

Pursuant to the Sustainable Groundwater Management Act (SGMA) and as further set forth herein, the purposes of this MOA are to form a Groundwater Sustainability Agency (GSA) for a portion of the San Gorgonio Pass Subbasin, as described in greater detail below (Basin), the members of which GSA shall be CWD, Banning, BHMWC, and SGPWA (herein, the SGP-GSA), and to establish that the SGP-GSA will coordinate and cooperate with other GSAs that already exist and will be formed in the Basin.

WHEREAS, on September 16, 2014, Governor Jerry Brown signed into law Senate Bills 1168 and 1319, and Assembly Bill 1739, collectively known as the Sustainable Groundwater Management Act (SGMA), codified in certain provisions of the California Government Code, commencing with Section 65350.5, and in Part 2.74 of Division 6 of the California Water Code, commencing with Section 10720; and

WHEREAS, SGMA went into effect on January 1, 2015; and

WHEREAS, various clarifying amendments to SGMA were signed into law in 2015, including Senate Bills 13 and 226, and Assembly Bills 617 and 939, allowing, among other things, mutual water companies and water corporations regulated by the Public Utilities Commission to participate in a GSA through a memorandum of agreement or other legal agreement; and

WHEREAS, the San Gorgonio Pass Subbasin (Basin), as further depicted in **Exhibit A** to this MOA, is identified by the California Department of Water Resources (DWR) Bulletin 118 as Subbasin No. 7-21.04 of the Coachella Valley Groundwater Basin, and is designated by DWR as medium priority, and therefore, except as provided by SGMA, the Basin is subject to the requirements of SGMA; and

WHEREAS, the Parties recognize and agree that a portion of the Basin (the "Adjudicated Area") is subject to the Beaumont Basin adjudication and Judgment in the case referred to as *San Timoteo Watershed Management Authority v. City of Banning, et al.*, Riverside County Superior Court Case No. RIC 389197, and that pursuant to SGMA Section 10720.8(a)(1), said portion of the Basin generally is not subject to the requirements of SGMA and will not be managed by the SGP-GSA; and

WHEREAS, SGMA Section 10720.7 requires the Basin, as a medium priority basin which is not designated by DWR as being subject to critical conditions of overdraft, to be managed by a Groundwater Sustainability Plan (GSP) or coordinated GSPs by January 31, 2022; and

WHEREAS, SGMA Section 10727(b) authorizes (1) a single GSP covering the entire Basin developed and implemented by one GSA, (2) a single GSP covering the entire Basin developed and

implemented by multiple GSAs, or (3) multiple GSPs developed and implemented by multiple GSAs and coordinated pursuant to a single coordination agreement that covers the entire Basin; and

WHEREAS, SGMA Section 10735.2 requires the formation of a GSA or multiple GSAs for the Basin by June 30, 2017; and

WHEREAS, SGMA Section 10723.6(a) authorizes a combination of local agencies to form a GSA pursuant to a joint powers agreement, a memorandum of agreement, or other legal agreement, and SGMA Section 10723.6(b) authorizes a water corporation regulated by the Public Utilities Commission or a mutual water company to participate in a GSA through a memorandum of agreement or other legal agreement; and

WHEREAS, for purposes of forming the SGP-GSA, as further depicted in **Exhibit B** to this MOA, CWD, Banning, and SGPWA are local agencies as defined by SGMA, and BHMWC is a mutual water company, wherein each overlies at least a portion of the Basin and each has respective water supply, water management, and/or land use responsibilities within the Basin, and thus each is authorized by SGMA to become part of the SGP-GSA; and

WHEREAS, pursuant to SGMA Section 10723(c)(1)(C), DWA has been established as the exclusive GSA for a certain portion of the Basin (herein, the DWA-GSA), as further specified and depicted in **Exhibit C** to this MOA; and

WHEREAS, on or about September 28, 2016, MSWD filed an amended notice of intent to be a GSA for an approximately one-square mile area in the northeastern portion of the Basin that lies within the service areas of MSWD and SGPWA, which one-square mile area is further specified and depicted in **Exhibit D** to this MOA and is referred to herein as the "Verbenia Area"; and

WHEREAS, on or about January 10, 2017, SGPWA also filed a notice of intent to be a GSA for the Verbenia Area, as further specified and depicted in **Exhibit D** to this MOA; and

WHEREAS, on or about January 13, 2017, DWR designated the Verbenia Area to be in overlap for purposes of the competing GSA notices filed by MSWD and SGPWA, and thus MSWD and SGPWA are working together to establish a separate GSA for the Verbenia Area (herein, the Verbenia-GSA); and

WHEREAS, in accordance with the terms of this MOA, and in furtherance of the shared intent of the Parties to maximize funding opportunities for the Basin and avoid potential intervention in the Basin by the State Water Resources Control Board, the Parties agree that the SGP-GSA formed by this MOA will cover the entire Basin except (A) that portion of the Basin covered by the DWA-GSA wherein DWA is the exclusive GSA, (B) that portion of the Basin to be covered by the Verbenia-GSA to be established by MSWD and SGPWA, and (C) the Adjudicated Area portion of the Basin, and the Parties mutually desire and intend that the SGP-GSA, the DWA-GSA, and the Verbenia-GSA will cooperate and coordinate in subsequently preparing and implementing one or more GSPs for sustainable management of the Basin; and

WHEREAS, the Parties mutually desire and intend to work with local stakeholders and interested entities in the Basin that are not Parties to this MOA, including but not limited to the Morongo Band of Mission Indians (MBMI), the County of Riverside, High Valleys Water District,

overlying landowners, and others, and as further specified in this MOA, to carry out the policy, purposes, and requirements of SGMA in the Basin; and

WHEREAS, in accordance with SGMA Section 10720.3 and other applicable law, the Parties mutually understand and agree that nothing in SGMA and nothing in this MOA grants or confers any new or additional authority, discretion, or jurisdiction to any of the Parties over any Tribal lands or activities of the MBMI, and that any ongoing or continued participation by MBMI in relation to this MOA or the Parties' implementation of SGMA in the Basin is completely voluntary on the part of MBMI.

NOW, THEREFORE, in consideration of the promises, terms, conditions, and covenants contained herein, it is mutually understood and agreed as follows:

I. Incorporation of Recitals

The Recitals stated above are incorporated herein by reference.

II. Purposes

The purposes of this MOA are as follows:

A. To form the SGP-GSA for a portion of the Basin as specified herein and as depicted in **Exhibit B** to this MOA pursuant to applicable provisions and requirements of SGMA, including but not limited to SGMA Sections 10723 and 10723.6; and

B. To establish initial terms for the SGP-GSA, the DWA-GSA, and the Verbenia-GSA to cooperate and coordinate with each other in preparing and implementing one or more GSPs for the Basin and carrying out the policy, purposes, and requirements of SGMA in the Basin.

III. Approval of MOA and Formation of the SGP-GSA

Approval of this MOA and formation of the SGP-GSA shall be accomplished as follows:

A. CWD, Banning, and SGPWA each will hold its own noticed public hearing pursuant to SGMA Section 10723(b) and Government Code Section 6066 and at such hearing will consider approval of a Resolution by its governing board to enter this MOA and jointly form the SGP-GSA as specified in this MOA;

B. BHMWC will conduct an official meeting in accordance with any articles of incorporation, bylaws, or other laws applicable to BHMWC and at such meeting will consider approval of a Resolution by its governing board to enter this MOA and jointly form the SGP-GSA as specified in this MOA;

C. DWA and MSWD each will hold its own regular or special meeting and at such meeting will consider approval of a Resolution by its governing board to enter this MOA;

D. Upon the foregoing approvals by CWD, Banning, BHMWC, and SGPWA, there shall be established the San Gorgonio Pass Subbasin Groundwater Sustainability Agency (SGP-GSA), the members of which shall be CWD, Banning, BHMWC, and SGPWA as provided in this MOA.

IV. Definitions

The following terms, whether used in the singular or plural, and when used with initial capitalization, shall have the meanings specified herein. The Parties agree that any definitions set forth herein are intended to be consistent with SGMA, and in the event of any discrepancy between a defined term in this MOA and a defined term in SGMA, the terms of SGMA shall control.

A. **Adjudicated Area** refers to that portion of the Basin that is subject to the Beaumont Basin adjudication and Judgment in the case referred to as *San Timoteo Watershed Management Authority v. City of Banning, et al.*, Riverside County Superior Court Case No. RIC 389197.

B. **Basin** refers to the San Gorgonio Pass Subbasin, designated by the California Department of Water Resources Bulletin 118 as Subbasin No. 7-21.04, as further specified and depicted in **Exhibit A** to this MOA.

C. **Banning** means the City of Banning.

D. **BHMWC** means the Banning Heights Mutual Water Company.

E. **CWD** means the Cabazon Water District.

F. **DWA** means the Desert Water Agency.

G. **DWR** means the California Department of Water Resources.

H. **DWA-GSA** refers to the GSA that has been established for a certain portion of the Basin pursuant to SGMA Section 10723(c)(1)(C), wherein DWA has been designated as the exclusive GSA, as further specified and depicted in **Exhibit C** to this MOA.

I. **GSA** means Groundwater Sustainability Agency, as defined by SGMA.

J. **GSP** means Groundwater Sustainability Plan, as defined by SGMA.

K. **MBMI** means the Morongo Band of Mission Indians.

L. **Memorandum of Agreement** or **MOA** refers to this Memorandum of Agreement.

M. **MSWD** means the Mission Springs Water District.

N. **Party** or **Parties** refers individually or collectively to Cabazon Water District, City of Banning, Banning Heights Mutual Water Company, Mission Springs Water District, San Gorgonio Pass Water Agency, and Desert Water Agency, as signatories to this MOA.

O. **SGMA** refers to the Sustainable Groundwater Management Act.

P. **SGP-GSA** refers to the San Gorgonio Pass Subbasin GSA formed under this MOA, the members of which GSA are CWD, Banning, BHMWC, and SGPWA.

Q. **SGPWA** means the San Gorgonio Pass Water Agency.

R. **Verbenia-GSA** refers to a GSA to be formed by MSWD and SGPWA for an approximately one-square mile area in the northeastern portion of the Basin that lies within the service areas of MSWD and SGPWA, as further specified and depicted in **Exhibit D** to this MOA.

V. Boundaries of GSAs

A. The boundaries of the SGP-GSA shall be the entire Basin except (A) that portion of the Basin covered by the DWA-GSA wherein DWA is the exclusive GSA, as further specified and depicted in **Exhibit C** to this MOA, (B) that portion of the Basin to be covered by the Verbenia-GSA to be established by MSWD and SGPWA, as further specified and depicted in **Exhibit D** to this MOA, and (C) that portion of the Basin constituting the Adjudicated Area.

B. The boundaries of DWA-GSA are that portion of the Basin within which DWA is the exclusive GSA pursuant to SGMA Section 10723(c)(1)(C), as further specified and depicted in **Exhibit C** to this MOA.

C. The boundaries of the Verbenia-GSA are the approximately one-square mile area in the northeastern portion of the Basin that lies within the service areas of MSWD and SGPWA, as further specified and depicted in **Exhibit D** to this MOA.

D. The Parties understand and agree that pursuant to SGMA Section 10720.8, the portion of the Basin which is subject to the Beaumont Basin adjudication and Judgment in the case referred to as *San Timoteo Watershed Management Authority v. City of Banning, et al.*, Riverside County Superior Court Case No. RIC 389197, generally is not subject to the requirements of SGMA.

E. The Parties understand and agree in accordance with SGMA Section 10720.3 and other applicable law that nothing in SGMA and nothing in this MOA grants or confers any new or additional authority, discretion, or jurisdiction to any of the Parties over any Tribal lands or activities of the MBMI, and that any ongoing or continued participation by MBMI in relation to this MOA or the Parties' implementation of SGMA in the Basin is completely voluntary on the part of MBMI.

VI. Coordination and Cooperation

A. Continued Cooperation. The Parties to this MOA will continue to meet, confer, coordinate, and collaborate to discuss and develop technical, managerial, financial, and other criteria and procedures for the preparation, governance, and implementation of a GSP or coordinated GSPs in the Basin and to carry out the policy, purposes, and requirements of SGMA in the Basin.

B. Points of Contact. Each Party shall designate a principal contact person for that Party, who may be changed from time to time at the sole discretion of the designating Party. The principal contact person for each Party shall be responsible for coordinating with the principal contact persons for the other Parties in scheduling meetings and other activities under this MOA.

C. Management Areas. The Parties acknowledge that SGMA, and provisions of the SGMA regulations promulgated by DWR, including but not limited to Section 354.20 (23 C.C.R. § 354.20), authorize the establishment of management areas for the development and implementation of sustainable groundwater management within the Basin, and accordingly the Parties acknowledge and agree that the establishment of management areas within the Basin is a governance alternative that the Parties may explore.

VII. Roles and Responsibilities

A. The Parties agree to jointly establish their roles and responsibilities for implementing a GSP or coordinated GSPs for the Basin in accordance with SGMA.

B. The Parties agree to work in good faith and coordinate all activities to carry out the purposes of this MOA in implementing the policy, purposes, and requirements of SGMA in the Basin.

C. CWD, Banning, BHMWC, and SGPWA, as members of the SGP-GSA, shall coordinate with each other to cause all applicable noticing and submission of required information to DWR regarding formation of the SGP-GSA.

D. SGPWA shall continue to undertake ongoing CASGEM reporting activities in the Basin as provided by terms outside of this MOA.

E. As provided in this MOA, the Parties will continue to meet, confer, coordinate, and collaborate to discuss and develop governance, management, technical, financial, and other matters, including respective roles and responsibilities for activities such as, but not limited to, the following:

i. Modeling;
ii. Metering;
iii. Monitoring;
iv. Hiring consultants;
v. Developing and maintaining list of interested persons under SGMA Section 10723.4;
vi. Budgeting; and
vii. Other initial tasks as determined by the Parties.

VIII. Funding and Budgeting

The Parties agree to cooperate and coordinate in pursuing state and/or federal grant and loan funding opportunities that may apply to carrying out SGMA in the Basin. The Parties shall mutually develop reasonable budgets and cost sharing agreements or arrangements for work to be undertaken in carrying out SGMA in the Basin.

IX. Stakeholder Access

A. The Parties agree to work together in ensuring public outreach and involvement of the public and other interested stakeholders throughout the SGMA process, including but not limited to all beneficial uses and users of groundwater as provided in SGMA Section 10723.2.

B. The Parties acknowledge, agree, and desire that the preparation, adoption, and implementation of one or more GSPs for the Basin, and the ongoing process of ensuring compliance with the requirements of SGMA in the Basin, will involve close coordination and cooperation with the Morongo Band of Mission Indians.

X. Term, Termination, and Withdrawal

A. Term. This MOA shall continue and remain in effect unless and until terminated by the unanimous written consent of the Parties, or as otherwise provided in this MOA or as authorized by law.

B. Withdrawal. Any Party may decide, in its sole discretion, to withdraw from this MOA by providing ninety (90) days written notice to the other Parties. A Party that withdraws from this MOA shall remain obligated to pay its share of costs and expenses incurred or accrued under this MOA and any related cost sharing agreement or arrangement up to the date the Party provides its notice of withdrawal as provided herein. Withdrawal by a Party shall not cause or require the termination of this MOA or the existence of the SGP-GSA with respect to the non-withdrawing Parties.

1. In the event of withdrawal by BHMWC from this MOA and the SGP-GSA, CWD, Banning, and SGPWA, as the local agency parties to the SGP-GSA, shall meet and confer regarding: (i) whether the SGP-GSA wishes to retain its GSA status over the affected portion of the Basin; (ii) whether one or more of the local agency parties of the SGP-GSA wishes to retain GSA status over the affected portion of the Basin; or (iii) whether to address the GSA issues in a different manner. Any resolution of such and other GSA issues shall be undertaken in a manner that satisfies all requirements of SGMA and DWR, including any requirement to file new GSA notices.

2. In the event of withdrawal by CWD, Banning, or SGPWA from this MOA and the SGP-GSA, said three local agency parties shall meet and confer regarding whether the withdrawing local agency party wishes to seek GSA status for a portion of the Basin underlying the service area or management area of the withdrawing party. Said three local agency parties also shall meet and confer regarding: (i) whether the SGP-GSA, or one or both of the non-withdrawing

local agency parties, wishes to retain GSA status over the affected portion of the Basin; (ii) whether to enter a co-GSA management or other arrangement with the withdrawing party; or (iii) whether to address the GSA issues in a different manner. Any resolution of such and other GSA issues shall be undertaken in a manner that satisfies all requirements of SGMA and DWR, including any requirement to file new GSA notices.

3. Any decision by DWA or MSWD not to execute this MOA, or any decision by DWA or MSWD to withdraw after executing this MOA shall not cause or require the termination of this MOA and shall not affect the formation or continued existence of the SGP-GSA.

XI. Notice Provisions

All notices required by this MOA shall be made in writing and delivered to the respective representatives of the Parties at their respective addresses as follows:

Banning Heights Mutual Water Company
President
7091 Bluff Street
Banning, CA 92220, Fax: 951-849-6068

City of Banning
City Manager
99 East Ramsey Street
Banning, CA 92220, Fax: 951-922-3128

Cabazon Water District
General Manager
14618 Broadway
P.O. Box 297
Cabazon, CA 92230, Fax: 951-849-2519

Desert Water Agency
General Manager
1200 S Gene Autry Trail
Palm Springs, CA 92264, Fax: 760-325-6505

San Gorgonio Pass Water Agency
General Manager
1210 Beaumont Avenue
Beaumont, CA 92223, Fax: 951-845-0281

Mission Springs Water District
General Manager
66575 Second Street
Desert Hot Springs, CA 92240, Fax: 760-329-2482

Any Party may change the address to which notices are to be given under this MOA by providing the other Parties with written notice of such change at least fifteen (15) calendar days prior to the effective date of the change. All notices shall be effective upon receipt and shall be deemed received upon confirmed personal service, confirmed facsimile delivery, confirmed courier service, or on the fifth (5^{th}) calendar day following deposit of the notice in registered first class mail.

XII. General Terms

A. Amendments. Amendments to this MOA require unanimous written consent of all Parties and approval by the Parties' respective governing boards; provided, however, that amendments to this MOA pertaining to the SGP-GSA only require unanimous written consent and board approval of the members of the SGP-GSA.

B. Successors and Assigns. The terms of this MOA shall be binding upon all successors in interest and assigns of each Party; provided, however, that no Party shall assign its

rights or obligations under this MOA without the signed written consent of all other Parties to this MOA.

C. Waiver. No waiver of any provision of this MOA by any Party shall be construed as a further or continuing waiver of such provision or any other provision of this MOA by the waiving Party or any other Party.

D. Authorized Representatives. Each person executing this MOA on behalf of a Party hereto affirmatively represents that such person has the requisite authority to sign this MOA on behalf of the respective Party.

E. Exemption from CEQA. The Parties recognize and agree that, pursuant to SGMA Section 10728.6 and Public Resources Code Section 21065, neither this MOA nor the preparation or adoption of a GSP constitutes a "project" or approval of a project under the California Environmental Quality Act (CEQA) or the State CEQA Guidelines, and therefore this MOA is expressly exempt from CEQA review.

F. Governing Law and Venue. This MOA shall be governed by and construed in accordance with the laws of the State of California. Any suit, action, or proceeding brought under the scope of this MOA shall be brought and maintained to the extent allowed by law in the County of Riverside, California.

G. Attorney's Fees, Costs, and Expenses. In the event of a dispute among any or all of the Parties arising under this MOA, each Party shall assume and be responsible for its own attorney's fees, costs, and expenses.

H. Entire Agreement/Integration. This MOA constitutes the entire agreement among the Parties regarding the specific provisions of this MOA, and the Parties hereto have made no agreements, representations or warranties relating to the specific provisions of this MOA which are not set forth herein.

I. Construction and Interpretation. The Parties agree and acknowledge that this MOA has been developed through a negotiated process among the Parties, and that each Party has had a full and fair opportunity to review the terms of this MOA with the advice of its own legal counsel and to revise the terms of this MOA, such that each Party constitutes a drafting Party to this MOA. Consequently, the Parties understand and agree that no rule of construction shall be applied to resolve any ambiguities against any particular Party as the drafting Party in construing or interpreting this MOA.

J. Force Majeure. No Party shall be liable for the consequences of any unforeseeable force majeure event that (1) is beyond its reasonable control, (2) is not caused by the fault or negligence of such Party, (3) causes such Party to be unable to perform its obligations under this MOA, and (4) cannot be overcome by the exercise of due diligence. In the event of the occurrence of a force majeure event, the Party unable to perform shall promptly notify the other Parties in writing to the extent practicable. It shall further pursue its best efforts to resume its obligations under this MOA as quickly as possible and shall suspend performance only for such period of time as is necessary as a result of the force majeure event.

K. Execution in Counterparts. This MOA may be executed in counterparts, each of which shall be deemed an original and all of which when taken together shall constitute one and the same instrument.

L. No Third Party Beneficiaries. This MOA is not intended, and will not be construed, to confer a benefit or create any right on a third party or the power or right of any third party to bring an action to enforce any of the terms of this MOA.

M. Timing and Captions. Any provision of this MOA referencing a time, number of days, or period for performance shall be measured in calendar days. The captions of the various articles, sections, and paragraphs of this MOA are for convenience and ease of reference only, and do not define, limit, augment, or describe the scope, content, terms, or intent of this MOA.

IN WITNESS WHEREOF, the Parties hereto have approved and executed this MOA as of the respective dates specified in the adopting Resolution of each Party as provided above in Article III of this MOA.

[*Signature Pages to Follow*]

IN WITNESS WHEREOF, the Parties hereto have approved and executed this MOA as of the respective dates specified in the adopting Resolution of each Party as provided above in Article III of this MOA.

CITY OF BANNING

By: _____
Michael Rock, City Manager

Dated: 4-13-17

IN WITNESS WHEREOF, the Parties hereto have approved and executed this MOA as of the respective dates specified in the adopting Resolution of each Party as provided above in Article III of this MOA.

CABAZON WATER DISTRICT

By: _____
Robert Lynk, Board Chair

IN WITNESS WHEREOF, the Parties hereto have approved and executed this MOA as of the respective dates specified in the adopting Resolution of each Party as provided above in Article III of this MOA.

BANNING HEIGHTS MUTUAL WATER COMPANY

By: Julie L. Hutchinson
Julie L. Hutchinson
Board President

By: Lawrence E. Ellis
Lawrence E. Ellis
Director

IN WITNESS WHEREOF, the Parties hereto have approved and executed this MOA as of the respective dates specified in the adopting Resolution of each Party as provided above in Article III of this MOA.

SAN GORGONIO PASS WATER AGENCY

By: Jeffrey W Davis

IN WITNESS WHEREOF, the Parties hereto have approved and executed this MOA as of the respective dates specified in the adopting Resolution of each Party as provided above in Article III of this MOA.

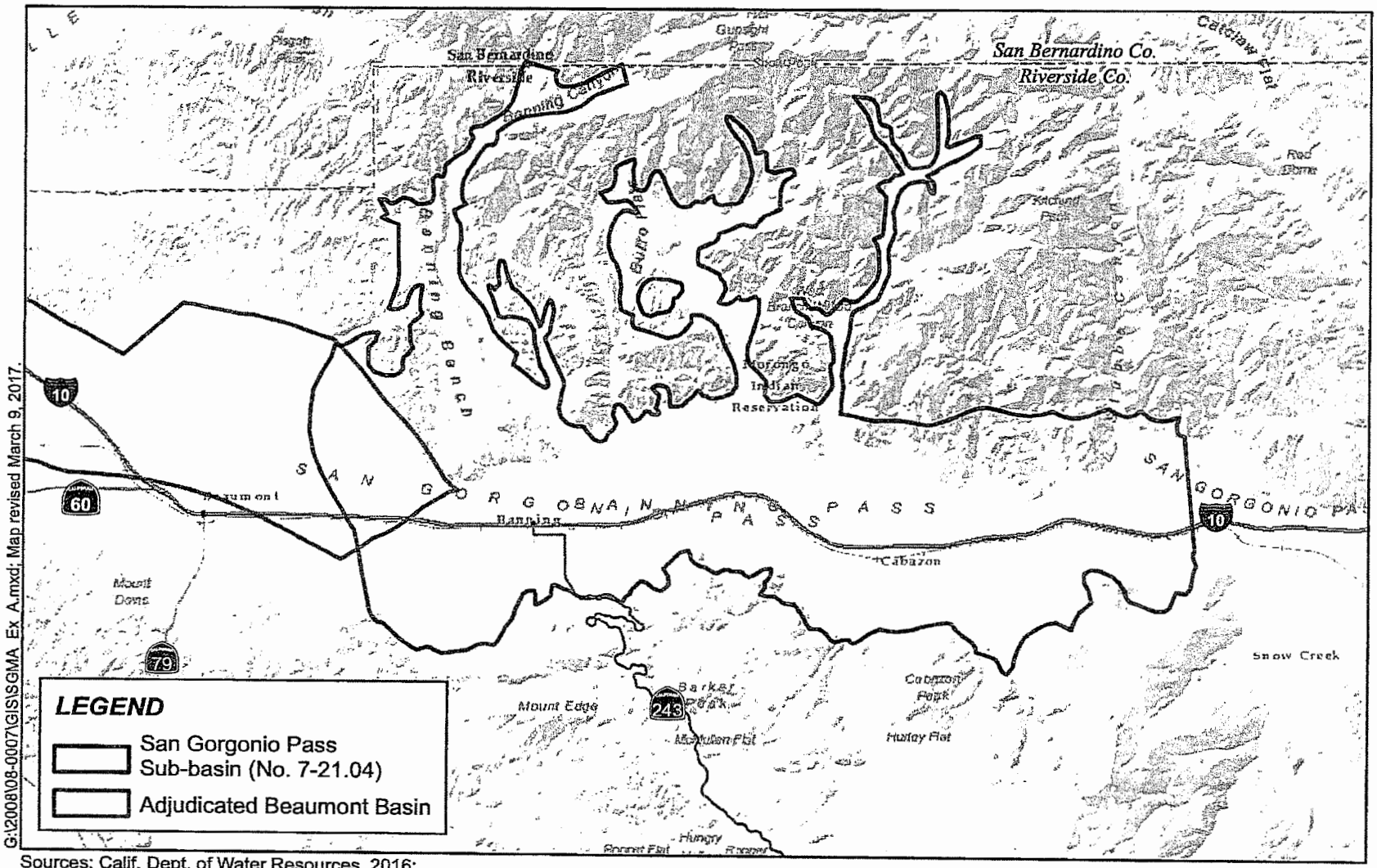
MISSION SPRINGS WATER DISTRICT

By:_____

IN WITNESS WHEREOF, the Parties hereto have approved and executed this MOA as of the respective dates specified in the adopting Resolution of each Party as provided above in Article III of this MOA.

DESERT WATER AGENCY

By: Mark S. Krause



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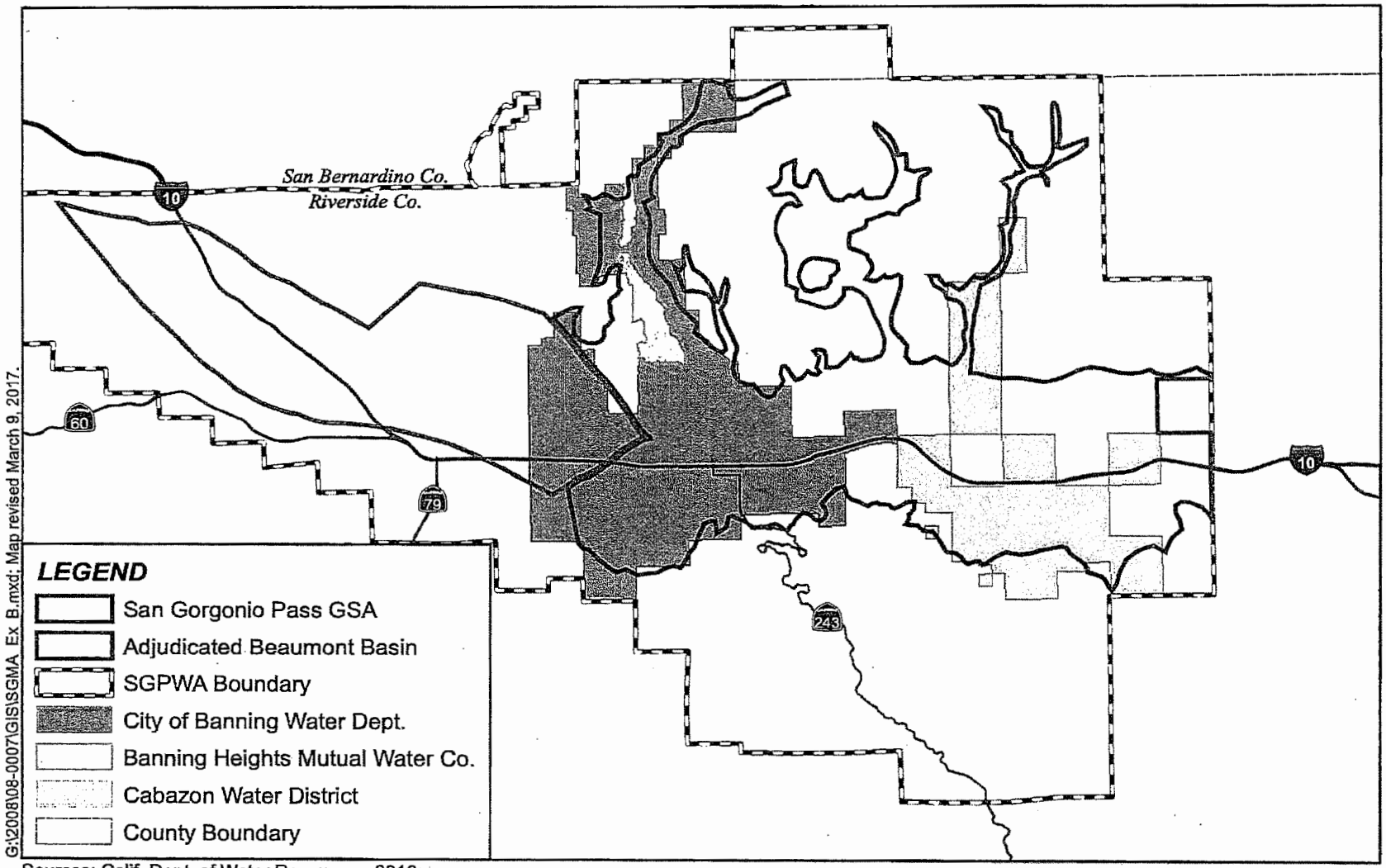
Sources: Calif. Dept. of Water Resources, 2016;
Riverside Co. GIS, 2016.

0 2 4 6 Miles

Exhibit A

San Gorgonio Pass Sub-basin

ALBERT A. WEBB ASSOCIATES



G:\2008\08-0007\GIS\SGMA_Ex_B.mxd; Map revised March 9, 2017.

Sources: Calif. Dept. of Water Resources, 2016; LAFCO 2010; Riverside Co. GIS, 2017.

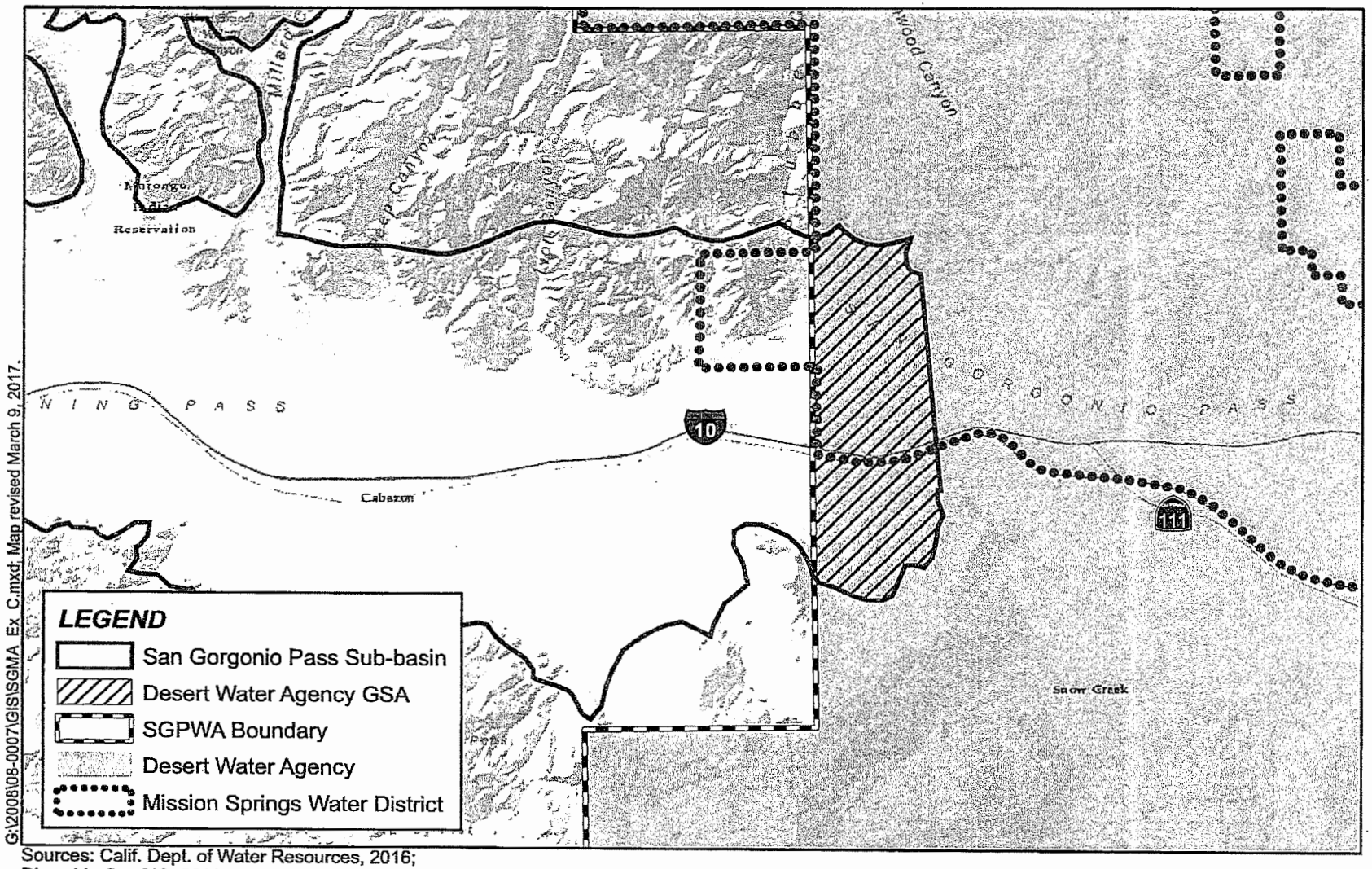
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0 2 4 6 Miles

Exhibit B

SGP GSA Portion of Sub-basin

ALBERT A. WEBB ASSOCIATES



G:\2008\08-0007\GIS\SGMA Ex C.mxd, Map revised March 9, 2017.

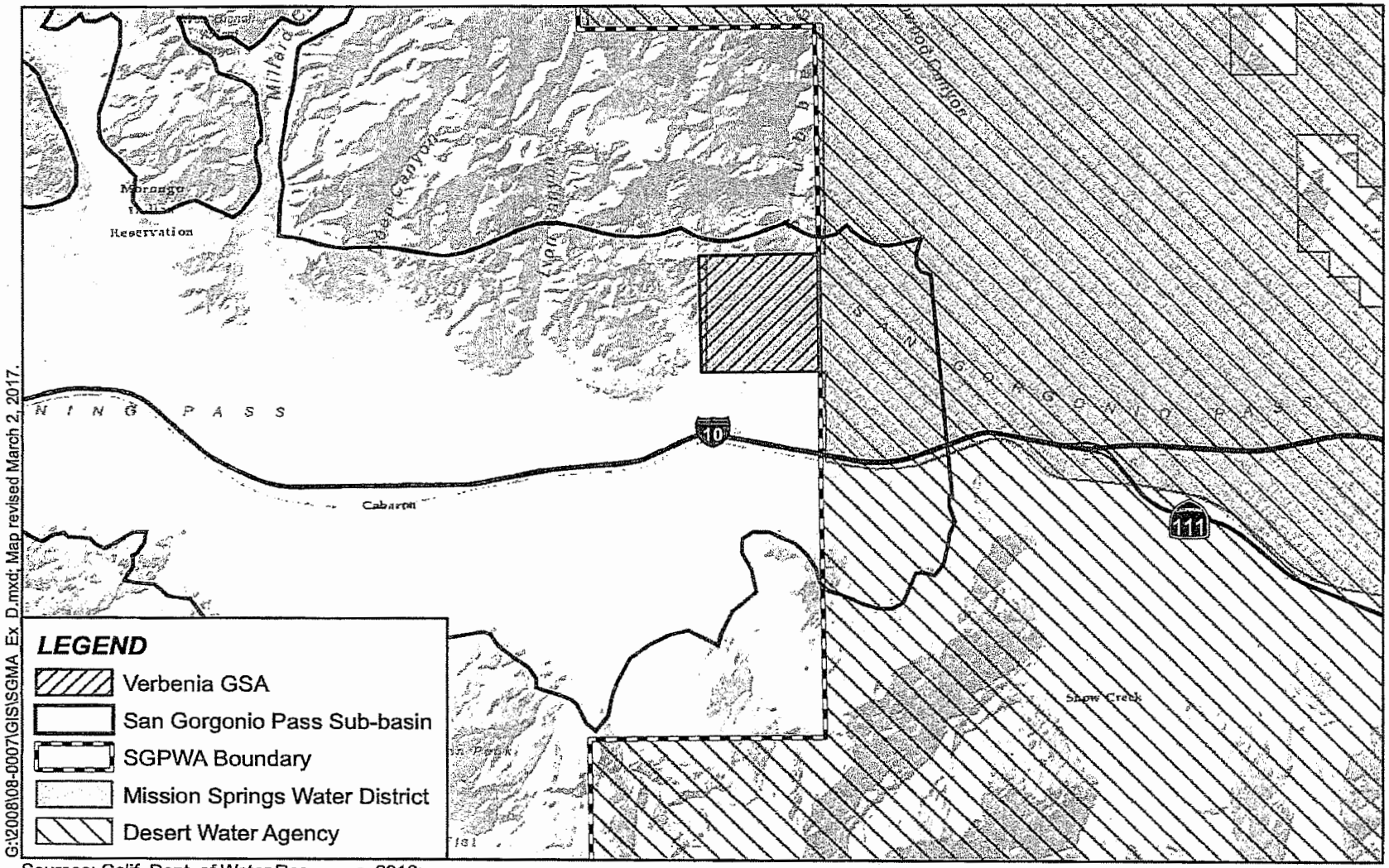
Sources: Calif. Dept. of Water Resources, 2016;
Riverside Co. GIS, 2016.

0 1 2 3 Miles

Exhibit C

Desert Water Agency GSA

ALBERT A. WEBB ASSOCIATES



G:\2008\08-0007\GIS\SGMA Ex. D.mxd; Map revised March 2, 2017.

Sources: Calif. Dept. of Water Resources, 2016; LAFCO 2010; Riverside Co. GIS, 2017.

0 1 2 3 Miles

Exhibit D

Verbenia GSA

ALBERT A. WEBB ASSOCIATES

In Progress

In Progress

Will be available in November 2026

Municipal Water Conservation — Project #1

Project Type

Water Use Efficiency/Water Conservation

Project Location

City of Banning, CA - Latitude: 33.925928°, Longitude: -116.875888° (City Hall)

Implementing Agency

City of Banning in cooperation with the San Gorgonio Pass Groundwater Sustainability Agency (SGPGSA).

Description - 354.44**(a)**

Although there are many municipal water conservation programs that could be implemented, the proposed project is initially proposed to be a Turf Replacement. Landscape irrigation is estimated to account for about 42 percent of annual residential water consumption statewide. In the Desert Zone/Inland Empire area like Riverside County, the average residential lots uses 0.35 AF/year and turf replacement is estimated to save 51 gallons/square foot for the conversion of turf with less water-intensive plants being drip irrigated (Public Policy Institute of California, 2006).

For simplicity, it can be assumed that turf replacement occurs only in the front yard and that the area replaced is 50 feet by 20 feet or 1,000 square feet. Therefore, for each household that converts their turf, the savings is estimated at about 0.16 AF/year (1,000 sq. ft. * 51 gallons/sq. ft. ÷ 325,851 gallons/AF = 0.157 AF). In 2020, the City of Banning had 3,966 single family residential customers (West & Associates, 2020). If about five percent of the City of Banning single family residential customers, or 200 customers converted their turf, savings are estimated to be 32 AF per year (200 customers * 0.16 AF/year = 32 AF/year) and the savings over 15 years (estimated life of the irrigation system) could be as much as 480 AF. Typical turf rebates in other southern California locations have been as high as $2/square foot. For the 200 customers replacing 1,000 square foot of turf, costs (excluding administrative costs) would approximate $400,000 (200 customers * 1,000 sq. ft./customer * $2/sq. ft. = $400,000). Therefore, agency costs for the water generated are about $800/AF ($400,000 ÷ 480 AF = $833/AF). These estimated costs do not include administrative expenses to run the program.

Measurable Objective(s) Addressed - 354.44**(b)(1)**

- ☒ Chronic Lowering of Groundwater Levels
- ☐ Seawater Intrusion – *not applicable*
- ☐ Land Subsidence
- ☒ Reduction of Groundwater Storage
- ☒ Degraded Water Quality
- ☐ Depletion of Interconnected Surface Water

Circumstances and Criteria for Implementation - 354.44**(b)(1)(a)**

This project can be implemented even prior to GSP adopted as soon as funds are available for the development of the water conservation program.

Process to Provide Notice of Implementation - 354.44**(b)(1)(b)**

The project would be noticed publicly through the implementing agency, the City of Banning City Council meetings, in addition to the city website and as a flyer with customer water utility bills.

Estimated Annual Project Benefits (AF/yr) - 354.44**(b)(2)**

For 200 customers who convert 1,000 square feet of turf to less water-intensive plants being drip irrigated, total water saved is estimated at 32 AF/year.

Permitting and Regulatory Requirements - 354.44**(b)(3)**

Municipal Water Conservation	**Project #1**

The turf replacement program is likely to qualify for one or more of the categorical exemptions under the California Environmental Quality Act (CEQA).

Schedule - 354.44**(b)(4)** Anticipated Start & Completion, Timeframe to accrue benefits

With appropriate funding, the project could start as soon as the program requirements are developed and approved by the City of Banning.

Evaluation of Benefits - 354.44**(b)(5)**

Benefits would be documented by the acreage of turf removed and water savings estimated.

How will this be accomplished, and what is the water source? - 354.44**(b)(6)**

Through implementation of the program, water will be saved by conservation and reduction in groundwater pumping by the City of Banning.

Legal Authority - 354.44**(b)(7)**

City of Banning.

Cost - 354.44**(b)(8)** Estimated Capital Cost

Funding for the rebate is estimated at $400,000 based on the noted estimates. Administrative costs are not included in the estimate.

Funding Source - 354.44**(b)(8)**

Grant funding if available.

Management of Groundwater Extractions and Recharge - 354.44**(b)(9)**

Groundwater extraction would be reduced due to water conservation measures implemented.

Level of Uncertainty - 354.44**(d)**

There is a level of uncertainty associated with residential customers applying for the program and complying with program requirements. However, similar programs have been successfully implemented in other Southern California location in recent years.

Stormwater Capture — Project #2

Project Type

Surface Water Recharge

Project Location

City of Banning, CA - Latitude: 33.925928°, Longitude: -116.875888° (City Hall)

Implementing Agency

San Gorgonio Pass Groundwater Sustainability Agency (SGPGSA).

Description - 354.44**(a)**

The SGP Subbasin is a generally arid area, however occasional heavy precipitation events result in surface runoff that can recharge local aquifers, or on occasion result in downstream outflows to adjacent subareas. There are extremely limited measurements of local runoff in the SGP, however there have been some very infrequent observations of runoff from the San Gorgonio River and its tributaries to the Indio Subbasin to the east.

To estimate the approximate volumes of water that might be available for stormwater capture, the INFIL watershed model (SGP Groundwater Model Technical Memorandum, 2021) was used to quantify runoff volume and frequency for a small 250-acre representative watershed in the Pershing Creek watershed at the western end of the SGP Subbasin. In general, rainfall decreases to the east, so the selected western location would likely be a high estimate of available stormwater. Additionally, no estimate was available of how much of this runoff may have percolated downstream to the SGP groundwater basin under natural conditions in the absence of a stormwater capture project. Because of these optimistic assumptions, the estimate of volume that could be captured is likely overestimated.

Measurable Objective(s) Addressed - 354.44**(b)(1)**

- ☒ Chronic Lowering of Groundwater Levels
- ☐ Seawater Intrusion – *not applicable*
- ☐ Land Subsidence
- ☒ Reduction of Groundwater Storage
- ☒ Degraded Water Quality
- ☐ Depletion of Interconnected Surface Water

Circumstances and Criteria for Implementation - 354.44**(b)(1)(a)**

This project can be implemented as part of land development projects that are approved by the cities in the subbasin or Riverside County. Based on the costs involved for the minimal capture of runoff, separate projects outside of land development are unlikely to be initiated.

Process to Provide Notice of Implementation - 354.44**(b)(1)(b)**

The project would be noticed publicly through the agency with oversite for land development in the subbasin.

Estimated Annual Project Benefits (AF/yr) - 354.44**(b)(2)**

Considering the assumptions described above, a typical potential stormwater capture program was identified for the representative watershed conditions identified above. Based on the INFIL watershed model runoff for the representative 250-acre watershed, runoff would have occurred in ten months during the 94-year analysis period (1926-2019). The total average runoff from the representative 250-acre watershed would have been 0.6 AF. Assuming that a 1-acre-detention basin is constructed with a depth of 2 feet, an assumed ability for 2 AF to be retained from each storm event. Over the 94-year analysis period, the average actual amount retained is estimated at about 0.11 AF. This is considerably less than the average amount of flow that is estimated to occur, as the great majority of the average

Stormwater Capture — Project #2

runoff would have occurred in two individual months during the analysis period. At most, only two AF of runoff would be retained in an individual event and flows averaging about 0.5 AF would flow past a potential detention basin and be lost to the SGP Subbasin. Extrapolating for a potential drainage area of 14,000 acres for the western portion of the City of Banning, development of 54 acres of detention basins would result in average water retained of approximately 6 AF per year on an average annual basis.

Permitting and Regulatory Requirements - 354.44**(b)(3)**

The County of Riverside and cities with authority to regulate land development as part of their General Plans and Subdivision Map Act would have oversight.

Schedule - 354.44**(b)(4)** Anticipated Start & Completion, Timeframe to accrue benefits

No schedule has been identified, though stormwater capture projects as part of approved land development in the region are ongoing.

Evaluation of Benefits - 354.44**(b)(5)**

Monitoring of rainfall events to estimate infiltrated amounts. Based on the estimates of runoff, it is unlikely that monitoring of groundwater levels would indicate any change in groundwater levels due to the recharge amounts.

How will this be accomplished, and what is the water source? - 354.44**(b)(6)**

The water available is local runoff that may be captured infrequently through the construction of recharge facilities as part of land development projects.

Legal Authority - 354.44**(b)(7)**

Agencies with authority through their General Plans can incorporate storm drainage requirements as part of land development projects.

Cost - 354.44**(b)(8)** Estimated Capital Cost

The land purchase and construction costs for the representative 1-acre detention basin were estimated very approximately as $150,000 per acre. With a project interest rate of 5.5% and a thirty-year repayment period, the construction cost would equate to about $10,300 per year and result in an estimated cost of nearly $100,000 per AF of water retained.

Based on the high cost identified for a stormwater capture project, construction of detention basins for purposes of stormwater capture does not appear to be an affordable water supply source. As the City of Banning and other urban areas of the SGP GSP develop, it is expected that detention basins will be constructed as appropriate for purposes of flood peak attenuation and as part of land development projects. However, the amount of additional stormwater that is retained is likely to be minimal (6 AF per year for an assumed 54 acres of detention basins). For purposes of GSP planning, no additional quantifiable yield is assumed from stormwater capture. However, if a basin was constructed as part of land development in a favorable recharge area and imported surface water supplies could also be recharge in the facility, it would increase the flexibility to recharge in the subbasin and create more area for overall recharge.

Funding Source - 354.44**(b)(8)**

Developers would pay for most of the infrastructure as part of any land development projects within the cities or County as they currently are for storm water being captured off the properties and roads within the subbasin.

Stormwater Capture	Project #2

Management of Groundwater Extractions and Recharge - 354.44**(b)(9)**

This project could contribute minimally to the replenishment of extracted groundwater, for recovery in dry periods.

Level of Uncertainty - 354.44**(d)**

Based on the high costs involved compared to the minimal yield, there is likely that the dedicated projects would not be built to capture stormwater runoff, except as part of ongoing land development projects that already require the management of stormwater runoff.

Additional Imported Water Spreading at Noble Creek Spreading Basins — Project #3

Project Type

Surface Water Recharge

Project Location

Northeast and Southwest of the intersection of Brookside and Beaumont Avenues in Beaumont, CA.
Noble Creek Recharge - Latitude: 33.961610°, Longitude: -116.977072°,
Brookside Recharge - Latitude: 33.960820°, Longitude: -116.977773°

Implementing Agency

San Gorgonio Pass Groundwater Sustainability Agency (SGPGSA) in cooperation either with San Gorgonio Pass Water Agency (SGPWA) and Beaumont-Cherry Valley Water District (BCVWD).

Description - 354.44**(a)**

The proposed project would provide increased groundwater recharge at existing spreading basins adjacent to Noble Creek in the adjudicated Beaumont Basin. Beaumont-Cherry Valley Water District has constructed the Noble Creek Recharge Facility containing about 23 acres of spreading basins along Noble Creek and SGPWA has constructed the Brookside Recharge Facility containing about 25 acres that are also adjacent to Noble Creek. State Water Project water that has been contracted for by SGPWA is supplied through the East Branch Extension for recharge at the BCVWD and SGPWA spreading basins along Noble Creek. Recharge at this location directly supplies the adjudicated Beaumont groundwater Basin and flows downstream (and southward) to supplement groundwater supplies in the Banning Storage Unit. Currently, water spreading at the Noble Creek Spreading Basins is limited by the SGPWA water supplies, which include State Water Project Table A Amounts, purchased water from La Hacienda Corporation (Nickel Water), and water transfers from other sources such as the Yuba Accord. These current water supply sources are not adequate to meet SGPWA projected future need in the SGP Subbasin and other areas. This proposed project would provide for increased purchases of available water supplies for recharge at the Noble Creek Spreading Basins, which could meet increased local needs in the Banning Storage Unit of the SGP Subbasin.

Measurable Objective(s) Addressed - 354.44**(b)(1)**

- ☒ Chronic Lowering of Groundwater Levels
- ☐ Seawater Intrusion – *not applicable*
- ☐ Land Subsidence
- ☒ Reduction of Groundwater Storage
- ☒ Degraded Water Quality
- ☐ Depletion of Interconnected Surface Water

Circumstances and Criteria for Implementation - 354.44**(b)(1)(a)**

This project can be implemented even prior to GSP adopted as soon as funds are available for the purchase of additional surface water supplies.

Process to Provide Notice of Implementation - 354.44**(b)(1)(b)**

The project would be noticed publicly through the implementing agencies Board of Directors meetings as well as any other noticing needed by specific regulatory requirements.

Estimated Annual Project Benefits (AF/yr) - 354.44**(b)(2)**

With a recharge area footprint of about 48 acres between the two existing sites and estimated recharge rate of 0.5 feet/day, the two sites would recharge about 24 AF/day. For each month of operations, recharge is therefore estimated at 720 AF. The project can be used throughout the year when water is available and the recharge sites are not in use by the owner agencies.

Permitting and Regulatory Requirements - 354.44**(b)(3)**

Additional Imported Water Spreading at Noble Creek Spreading Basins Project #3

Since the recharge facilities are existing, environmental documents would be limited to those required for the purchase or permanent transfer of surface water supplies, which would likely include an initial study and negative declaration required by the California Environmental Quality Act (CEQA).

Schedule - 354.44**(b)(4)** Anticipated Start & Completion, Timeframe to accrue benefits

With funding, additional project planning could start immediately. However, it is likely to only commence after additional monitoring occurs during the first five years of the implementation period, and only if the data indicates the Subbasin is not operating sustainably.

Evaluation of Benefits - 354.44**(b)(5)**

Monitoring of groundwater levels and measurement of surface water recharged.

How will this be accomplished, and what is the water source? - 354.44**(b)(6)**

Since the San Gorgonio Pass Water Authority is a State Water Project Contractor the purchase of available State Water Project supplies is the most likely source of water. Non-State Water Project supplies could also be purchased from willing sellers North of the Delta and transferred to the local agency.

Legal Authority - 354.44**(b)(7)**

San Gorgonio Pass Water Authority is a State Water Project contractor.

Cost - 354.44**(b)(8)** Estimated Capital Cost

No new physical facilities would be required for this project, but the assumed 2,000 acre-feet per year of average supply would need to be purchased from an outside source. One-time purchase costs of State Water Project supplies or other outside supply sources are not well defined and could vary depending on purchase terms. For this project an approximate up-front purchase cost of $10,000 per acre-foot was assumed, resulting in total capital costs of approximately $20 million for purchase of 2,000 acre-feet of average supply.

Funding Source - 354.44**(b)(8)**

Grant funding if available, or future land-based assessments or groundwater extraction charges.

Management of Groundwater Extractions and Recharge - 354.44**(b)(9)**

This project will contribute to the replenishment of extracted groundwater, for recovery in dry periods.

Level of Uncertainty - 354.44**(d)**

There is a level of uncertainty associated with the effects of groundwater replenishment and fluctuations in groundwater elevations. The GSA will take this into account when developing the benefit to the Subbasin, through monitoring of the groundwater.

New Pipeline with Additional Imported Water Spreading in the Cabazon Storage Unit — Project #4

Project Type

Surface Water Recharge

Project Location

Northwest of the Hathaway and Theodore Streets alignment on the edge of the City of Banning, CA. Cabazon Storage Unit Recharge - Latitude: 33.938877°, Longitude: -116.860103°

Implementing Agency

San Gorgonio Pass Groundwater Sustainability Agency (SGPGSA) in cooperation with the San Gorgonio Pass Water Agency.

Description - 354.44**(a)**

SGPWA reviewed a potential new pipeline extension from the terminus of the East Branch Extension at Noble Creek to the Cabazon Storage Unit near the San Gorgonio River. The preliminary pipeline design would have three reaches. Reach 1 from Noble Creek to the intersection of Highland Springs/Brookside Avenues with a 36" diameter and an estimated capacity of 52 cfs. Reach 2 would extend from the end of Reach 1 to the intersection of Sunset Avenue/Wilson Street, with a diameter of 30 inches and an estimated flow capacity of 30 cfs. Reach 3 would continue from the end of Reach 2 to proposed recharge basins adjacent to the San Gorgonio River. The recharge basins would consist of 54 acres of developed basins at the Robinson's Ready Mix Quarry site in the City of Banning. The pipeline alignment and recharge basin locations are all preliminary and were used for purposes of cost estimation by Webb 2020.

Webb 2020 estimated the costs for the conceptual pipeline as $36.3 million and for the proposed recharge basins as $14.2 million, with both estimates including a 15% contingency. The total cost for the facilities would be $50.4 million. The pipeline and recharge basins would have the capacity to provide up to 22 cfs of recharge at the proposed new recharge basins, which would have a total annual capacity of 15,540 AF.

Water supply for the new pipeline and recharge facilities would likely exceed the currently available SGPWA contracted supplies. SGPWA is currently conducting an infrastructure study to identify necessary water supply sources, which could include supply augmentation actions such as purchased SWP Table A amounts (either permanent or on a year-to-year basis), participation in Sites Reservoir Project, participation in Delta Conveyance Project or other possible augmentation projects. Recharge in the Cabazon Storage Unit with the proposed new facilities would require access to some of the additional water supply being evaluated by the SPWA Infrastructure Study.

Measurable Objective(s) Addressed - 354.44**(b)(1)**

- ☒ Chronic Lowering of Groundwater Levels
- ☐ Seawater Intrusion – *not applicable*
- ☐ Land Subsidence
- ☒ Reduction of Groundwater Storage
- ☒ Degraded Water Quality
- ☐ Depletion of Interconnected Surface Water

Circumstances and Criteria for Implementation - 354.44**(b)(1)(a)**

Additional project planning can start as soon as the GSP is adopted and funds are available for the project and purchase of additional surface water supplies. In the event that the subbasin exceeds the

New Pipeline with Additional Imported Water Spreading in the Cabazon Storage Unit — Project #4

identified SMC for levels or storage, the project would be a critical component for groundwater sustainability.

Process to Provide Notice of Implementation - 354.44**(b)(1)(b)**

The project would be noticed publicly through the implementing agencies Board of Directors meetings as well as any other noticing needed by specific regulatory requirements.

Estimated Annual Project Benefits (AF/yr) - 354.44**(b)(2)**

5,300 AF/year average based on the model simulation noted below.

For purposes of evaluating the effect of this project on groundwater levels and storage, a groundwater model simulation was prepared. The simulation was based on an alternative 2030 water budget, with assumed increased water use by MBMI that is external to the GSP but affects SGP water supplies. A project was evaluated that provides a long-term average of 5,300 AF per year, with the delivery pattern taken to be proportional to the SWP projected water supplies to the SGPWA. The supply identified in this projection varied from a minimum of 1,200 AF per year in 1977 to a maximum of 8,800 AF in 1983.

Permitting and Regulatory Requirements - 354.44**(b)(3)**

Through the initial study (IS) required by the California Environmental Quality Act (CEQA) for the construction and purchase or permanent transfer of surface water supplies, the required permits and regulatory requirements would be identified. The breadth of construction is likely to require a mitigated negative declaration (MND) or environmental impact report (EIR).

At a minimum, work in public road rights-of-way would require encroachment permits from Riverside County, and Cities of Beaumont and Banning. A crossing of Noble Creek and possible other drainages would requirement a 1600 Agreement with the California Department of Fish and Wildlife. Changes to the existing gravel pits for the recharge sites may require compliance with existing requirements under jurisdiction of the Surface Mining and Reclamation Act of 1975 (SMARA) and conditional use permit from Riverside County.

Schedule - 354.44**(b)(4)** Anticipated Start & Completion, Timeframe to accrue benefits

With funding, additional project planning could start immediately. However, it is likely to only commence after additional monitoring occurs during the first five years of the implementation period, and only if the data indicates the Subbasin is not operating sustainably.

Evaluation of Benefits - 354.44**(b)(5)**

Monitoring of groundwater levels and measurement of surface water recharged.

How will this be accomplished, and what is the water source? - 354.44**(b)(6)**

Since the San Gorgonio Pass Water Authority is a State Water Project contractor the purchase of available State Water Project supplies is the most likely source of water. Non-State Water Project supplies could also be purchased from willing sellers North of the Delta and transferred to the local agency.

Legal Authority - 354.44**(b)(7)**

San Gorgonio Pass Water Authority is a State Water Project contractor.

Cost - 354.44**(b)(8)** Estimated Capital Cost

New Pipeline with Additional Imported Water Spreading in the Cabazon Storage Unit — Project #4

Capital costs (2020 preliminary level) were estimated by Webb at $50.4 million for the recharge facilities, pipeline and land purchase One-time purchase costs of State Water Project supplies or other outside supply sources are not well defined and could vary depending on purchase terms. For this project an approximate up-front purchase cost of $10,000 per acre-foot was assumed, resulting in capital costs of approximately $53 million for purchase of 5,300 acre-feet of average supply.

Funding Source - 354.44**(b)(8)**

A portion of funding is based on development connection fees obtained from residential/commercial development. Also, grant funding if available, as well as future land-based assessments.

Management of Groundwater Extractions and Recharge - 354.44**(b)(9)**

This project will contribute to the replenishment of extracted groundwater, for recovery in dry periods.

Level of Uncertainty - 354.44**(d)**

The proposed project would be developed to meet increased groundwater use for additional development on MBMI lands. MBMI, As the primary beneficiary of the increased use, the project is assumed to be developed and funded primarily by the MBMI. As a federally recognized tribe, the MBMI are not subject to SGMA and, in the absence of a process such as adjudication, they would not have a regulatory obligation to develop a new water supply for their increased groundwater use. Additionally, there is a level of uncertainty associated with the effects of groundwater replenishment and fluctuations in groundwater elevations, as the groundwater replenishment activities would be in excess of past such activities. The GSA will take this into account when developing the benefit to the Subbasin, through monitoring of the groundwater.

New Pipeline with Additional Imported Water Spreading in the Banning Storage Unit (Dropped from Consideration) — Project #5

Project Type

Surface Water Recharge

Project Location

Southwesterly of the intersection of Sunset Avenue and Interstate 10 in the City of Banning, CA. Banning Storage Unit Recharge - Latitude: 33.923147°, Longitude: -116.912172°

Implementing Agency

San Gorgonio Pass Groundwater Sustainability Agency (SGPGSA) in cooperation with the San Gorgonio Pass Water Agency and the City of Banning.

Description - 354.44**(a)**

Based on subsequent review of soil characteristics and subsurface conditions, it appears that surface recharge at this location is likely to be very inefficient. Recharge rates are expected to be very low, which would result in relatively high evaporation losses. Finally, costs for delivery to this location are high and the land at this location has high value for other purposes. Based on these factors, this project appears to be infeasible, and the project is not considered to be a viable option for the SGP. The project is being retained on the list of GSP projects to maintain continuity with prior SGP GSPs, however, it is considered to be functionally removed from the list of potential projects and management actions.

An open piece of land was identified near the City of Banning that could provide additional recharge to the Banning Storage Unit. This variation would include use of Reaches 1 and 2 in the Project #4 pipeline, with a smaller lateral pipeline to be constructed at the end of Reach 2. The lateral pipeline would take off from the end of Reach 2 and run in a southerly along Sunset Avenue south of Interstate 10. A 10-acre spreading basin would be constructed along the west side of Sunset Avenue between Interstate 10 and the extension of Bobcat Road. Assuming recharge rates of 1 AF per acre per day and a use factor of 80%, this recharge facility would have a capacity for 2,900 AF per year. Assuming a supply source of SWP imported water, recharge at this site would average about 1,700 AF per year over the long term, with projected annual recharge varying from a minimum of 500 AF to a maximum of 2,900 AF. Recharge at the Project #5 site would, in part, substitute for recharge at the Project #3 site, with the total amount of recharge at the two sites remaining at the 2,000 AF per year level indicated in Project #3.

As discussed as part of Project #3, water supply for the new pipeline and recharge facilities would likely exceed the currently available SGPWA contracted supplies. SGPWA is currently conducting an infrastructure study to identify necessary water supply sources, which could include supply augmentation actions such as purchased SWP Table A amounts (either permanent or on a year-to-year basis), participation in Sites Reservoir Project, participation in Delta Conveyance Project or other possible augmentation projects. Recharge in the Banning Storage Unit with the proposed new facilities would require access to some of the additional water supply being evaluated by the SPWA Infrastructure Study.

Measurable Objective(s) Addressed - 354.44**(b)(1)**

☒ Chronic Lowering of Groundwater Levels ☒ Reduction of Groundwater Storage

New Pipeline with Additional Imported Water Spreading in the Banning Storage Unit (Dropped from Consideration) — Project #5

- ☐ Seawater Intrusion – *not applicable*
- ☐ Land Subsidence
- ☒ Degraded Water Quality
- ☐ Depletion of Interconnected Surface Water

Circumstances and Criteria for Implementation - 354.44**(b)(1)(a)**

Project planning can start as soon as the GSP is adopted and funds are available for the project and purchase of additional surface water supplies. In the event that the subbasin exceeds the identified SMC for levels or storage, the project would be a critical component for groundwater sustainability. Also, land development in the City of Banning could also cause the project to be implemented to provide the needed water supply for new development.

Process to Provide Notice of Implementation - 354.44**(b)(1)(b)**

The project would be noticed publicly through the implementing agencies Board of Directors meetings as well as any other noticing needed by specific regulatory requirements.

Estimated Annual Project Benefits (AF/yr) - 354.44**(b)(2)**

With an initial recharge area footprint of about 10 acres and estimated recharge rate of 1.0 feet/day, the site would recharge about 10 AF/day and have the ability to recharge 300 AF for each month of operation. With a use factor of 80%, the recharge facility would have a capacity of 2,900 acre-feet per year. The project can be used throughout the year when water is available.

Permitting and Regulatory Requirements - 354.44**(b)(3)**

Through the initial study (IS) required by the California Environmental Quality Act (CEQA) for the construction and purchase or permanent transfer of surface water supplies, the required permits and regulatory requirements would be identified. Based on the extent of project construction, it is likely to require a mitigated negative declaration (MND) or environmental impact report (EIR).

At a minimum, work in public road rights-of-way would require encroachment permits from Riverside County, and Cities of Beaumont and Banning. A crossing of Noble Creek and possible other drainages would requirement a 1600 Agreement with the California Department of Fish and Wildlife. Crossing Interstate 10 would require an encroachment permit from CalTrans.

Schedule - 354.44**(b)(4)** Anticipated Start & Completion, Timeframe to accrue benefits

The project could start immediately but would start if there is a need for additional supplies for recharge. It is anticipated that monitoring will occur for the first five year of the GSP implementation period to determine if additional recharge is needed while conceptual and feasibility level studies are conducted to develop the project further.

Evaluation of Benefits - 354.44**(b)(5)**

Monitoring of groundwater levels and measurement of surface water recharged.

How will this be accomplished, and what is the water source? - 354.44**(b)(6)**

Since the San Gorgonio Pass Water Authority is a State Water Project Contractor the purchase of available State Water Project supplies is the most likely source of water. Non-State Water Project supplies could also be purchased from willing sellers North of the Delta and transferred to the local agency.

Legal Authority - 354.44**(b)(7)**

San Gorgonio Pass Water Authority is a State Water Project contractor.

New Pipeline with Additional Imported Water Spreading in the Banning Storage Unit (Dropped from Consideration) — Project #5

Cost - 354.44**(b)(8)** Estimated Capital Cost

The portions of the cost for Reach 1 and Reach 2 of Project #4 are estimated by Webb (2020) as about $22 million. If Project #4 was already constructed, additional costs to bring the surface water to the Banning Storage Unit for recharge are about $2 million (based on proportioning the Webb estimate).

One-time purchase costs of State Water Project supplies or other outside supply sources are not well defined and could vary depending on purchase terms. For this project an approximate up-front purchase cost of $10,000 per acre-foot was assumed, resulting in total capital costs of approximately $20 million for purchase of 2,000 acre-feet of average supply.

Funding Source - 354.44**(b)(8)**

Grant funding if available, or future land-based assessments or groundwater extraction charges.

Management of Groundwater Extractions and Recharge - 354.44**(b)(9)**

This project will contribute to the replenishment of extracted groundwater, for recovery in dry periods.

Level of Uncertainty - 354.44**(d)**

There is a level of uncertainty associated with the effects of groundwater replenishment and fluctuations in groundwater elevations. The GSA will take this into account when developing the benefit to the Subbasin, through monitoring of the groundwater.

New Imported Colorado River Aqueduct Spreading in the Cabazon Storage Unit (Phase 2) — Project #6

Project Type

Surface Water Recharge

Project Location

Latitude: 33.900892°, Longitude: -116.771617°

Implementing Agency

San Gorgonio Pass Groundwater Sustainability Agency (SGPGSA) in cooperation with the San Gorgonio Pass Water Agency and Cabazon Water District.

Description - 354.44**(a)**

Project #6 is a Phase 2 project that would include additional recharge in the Cabazon Storage Unit based on a potential exchange of imported SWP water with Colorado River Aqueduct water. The project would take water from the Colorado River Aqueduct portal south of Cabazon and infiltrate surface water in yet to be constructed recharge basins. This potential Phase 2 Project would potentially provide supplemental water supplies to water users in the Cabazon Water District as necessary to maintain their ongoing groundwater extractions.

A new turnout would be constructed on Metropolitan Water District of Southern California's Colorado River Aqueduct at the eastern portal of the San Jacinto Tunnel, just south of Cabazon. To meet Cabazon Water District's 750 AF average demands, a new recharge basin of 5 acres is assumed to be constructed in the vicinity of the San Jacinto Tunnel east portal. Assuming recharge rates of 1 AF per acre, this recharge facility would have a 2.5 cfs maximum recharge rate, or 5 AF/day when operating. No groundwater model projections were made to show the effects of this additional recharge.

A potential concern with Project #6 could be adverse effects on SGP Subbasin salinity from Colorado River Aqueduct water, which has salinity (total dissolved solids) that generally varies from about 550 to 700 mg/L. By comparison, SGP Subbasin groundwater salinity in the vicinity of Cabazon Water District averages less than 500 mg/L TDS. Using a conservative estimate of the total groundwater storage in the Cabazon Storage Unit of 800,000 AF and an average TDS of 400 mg/L for the Cabazon Storage Unit, use of 750 AF of Colorado River Aqueduct water with an assumed salinity of 700 mg/L would increase SGP Subbasin TDS from 400 mg/L to 433 mg/L over fifty years. This computation is very conservative as it doesn't account for drainage of some of the recharged salinity out of the SGP Subbasin during that period.

Measurable Objective(s) Addressed - 354.44**(b)(1)**

- ☒ Chronic Lowering of Groundwater Levels
- ☐ Seawater Intrusion – *not applicable*
- ☐ Land Subsidence
- ☒ Reduction of Groundwater Storage
- ☒ Degraded Water Quality
- ☐ Depletion of Interconnected Surface Water

New Imported Colorado River Aqueduct Spreading in the Cabazon Storage Unit (Phase 2) — Project #6

Circumstances and Criteria for Implementation - 354.44**(b)(1)(a)**

Project planning can start as soon as the GSP is adopted and funds are available for the project and purchase of additional surface water supplies. If the Subbasin exceeds the identified minimum threshold for groundwater levels or storage, the project would be a critical component for groundwater sustainability. Also, land development in the community of Cabazon could also cause the project to be implemented to provide the needed water supply for new development.

Process to Provide Notice of Implementation - 354.44**(b)(1)(b)**

The project would be noticed publicly through the implementing agencies Board of Directors meetings as well as any other noticing needed by specific regulatory requirements.

Estimated Annual Project Benefits (AF/yr) - 354.44**(b)(2)**

With an initial recharge area footprint of about 4 acres and estimated recharge rate of 1.0 feet/day, the site would recharge about 4 AF/day and could recharge 100 AF for each month of operation assuming an 80% usage factor. The project can be used throughout the year when water is available.

Permitting and Regulatory Requirements - 354.44**(b)(3)**

Through the initial study (IS) required by the California Environmental Quality Act (CEQA) for the construction and purchase or permanent transfer of surface water supplies, the required permits and regulatory requirements would be identified. Based on the extent of project construction, it is likely to require a mitigated negative declaration (MND) or environmental impact report (EIR).

At a minimum, work in public road rights-of-way would require encroachment permits from Riverside County. A crossing of possible drainages would requirement a 1600 Agreement with the California Department of Fish and Wildlife. An encroachment permit would be required from Metropolitan Water District of Southern California for the turnout construction.

Schedule - 354.44**(b)(4)** Anticipated Start & Completion, Timeframe to accrue benefits

The project could start immediately upon securing the necessary funding but would start if there is a need for additional supplies for recharge. It is anticipated that monitoring will occur for the first five year of the GSP implementation period to determine if additional recharge is needed while conceptual and feasibility level studies are conducted to develop the project further.

Evaluation of Benefits - 354.44**(b)(5)**

Monitoring of groundwater levels and measurement of surface water recharged.

How will this be accomplished, and what is the water source? - 354.44**(b)(6)**

Since the San Gorgonio Pass Water Authority is a State Water Project contractor the purchase of available State Water Project supplies is the most likely source of water. Non-State Water Project supplies could also be purchased from willing sellers North of the Delta and transferred to the local agency.

New Imported Colorado River Aqueduct Spreading in the Cabazon Storage Unit (Phase 2) — Project #6

Legal Authority - 354.44**(b)(7)**

San Gorgonio Pass Water Authority is a State Water Project contractor.

Cost - 354.44**(b)(8)** Estimated Capital Cost

The preliminary order of magnitude estimated cost for the project is about $3.3 million which includes the proposed turnout at $3 million, the estimated cost for the recharge facilities is $300,000. Additional capital costs of $6.5 million would be involved for the purchase of equivalent Table A Amounts of 1,300 acre-feet (750 acre-feet/59% SWP Supply Capability).

Funding Source - 354.44**(b)(8)**

Grant funding if available, and possibly a cost share sourced by future land-based assessments or groundwater extraction charges.

Management of Groundwater Extractions and Recharge - 354.44**(b)(9)**

This project will contribute to the replenishment of extracted groundwater, for recovery in dry periods.

Level of Uncertainty - 354.44**(d)**

There is a level of uncertainty associated with the effects of groundwater replenishment and fluctuations in groundwater elevations. The GSA will take this into account when developing the benefit to the Subbasin, through monitoring of the groundwater.

Hub and Spoke Project (Phase 2) — Project #7

Project Type

Change in Management of Distribution and Extraction Facilities

Project Location

Latitude: 33.900892°, Longitude: -116.771617°

Implementing Agency

San Gorgonio Pass Groundwater Sustainability Agency (SGPGSA) in cooperation with the San Gorgonio Pass Water Agency and Cabazon Water District.

Description - 354.44**(a)**

Project #7 is a Phase 2 conceptual project that would modify and redistribute groundwater pumping to improve the use of recharged surface water and the quality of delivered groundwater. The proposed project would shift groundwater pumping from locations in the Banning Storage Unit of Management Area 2 and Management Area 1 (the southern portion of the Beaumont Basin) to areas adjacent to Noble Creek. This project would capitalize on available capacity in the Beaumont-Cherry Valley Water District (BCVWD) and the City of Banning existing water supply distribution system resulting from water conservation efforts. As a result of water conservation, some wells in the Beaumont Basin now have unused pumping capacity, while the BCVWD and City of Banning distributions systems also have available conveyance capacity that could be utilized by the project.

Measurable Objective(s) Addressed - 354.44**(b)(1)**

- ☒ Chronic Lowering of Groundwater Levels
- ☐ Seawater Intrusion – *not applicable*
- ☐ Land Subsidence
- ☒ Reduction of Groundwater Storage
- ☒ Degraded Water Quality
- ☐ Depletion of Interconnected Surface Water

Circumstances and Criteria for Implementation - 354.44**(b)(1)(a)**

Project planning can start as soon as the GSP is adopted and funds are available for the project and purchase of additional surface water supplies. If the Subbasin exceeds the identified minimum threshold for groundwater levels or storage, the project would be a critical component for groundwater sustainability.

Process to Provide Notice of Implementation - 354.44**(b)(1)(b)**

The project would be noticed publicly through the implementing agencies Board of Directors meetings as well as any other noticing needed by specific regulatory requirements.

Estimated Annual Project Benefits (AF/yr) - 354.44**(b)(2)**

Hub and Spoke Project (Phase 2) — Project #7

The primary anticipated benefit of the project is improved groundwater quality of produced groundwater for the SGP. While there may be some incidental water supply benefits through more efficient management of groundwater in the SGP, those benefits have not been identified to date.

Permitting and Regulatory Requirements - 354.44**(b)(3)**

Through the initial study (IS) required by the California Environmental Quality Act (CEQA) for the construction and purchase or permanent transfer of surface water supplies, the required permits and regulatory requirements would be identified. Based on the extent of project construction, it is likely to require a mitigated negative declaration (MND) or environmental impact report (EIR).

At a minimum, work in public road rights-of-way would require encroachment permits from Riverside County.

Schedule - 354.44**(b)(4)** Anticipated Start & Completion, Timeframe to accrue benefits

The project could start immediately upon securing the necessary funding. It is anticipated that monitoring will occur for the second five years of the GSP implementation period to determine if additional the groundwater quality of produced groundwater can be improved and what specific additional facilities and revised management would be needed for project implementation.

Evaluation of Benefits - 354.44**(b)(5)**

Monitoring of groundwater levels and measurement of groundwater quality conditions.

How will this be accomplished, and what is the water source? - 354.44**(b)(6)**

This project is primarily intended to provide water quality improvements and does not involve the use of additional water supplies.

Legal Authority - 354.44**(b)(7)**

San Gorgonio Pass Water Authority is a State Water Project contractor.

Cost - 354.44**(b)(8)** Estimated Capital Cost

This project is presented here as a conceptual proposal that has not been evaluated for capital or operational costs. While the project would generally involve the use of capacity already existing in current facilities, there would likely be some additional capital costs for construction of new facilities. Costs for new facilities are likely to be in the range of $500,000 to $5,000,000 depending on the identified project scale.

Funding Source - 354.44**(b)(8)**

Grant funding if available, and possibly a cost share sourced by future land-based assessments or groundwater extraction charges.

Management of Groundwater Extractions and Recharge - 354.44**(b)(9)**

This project will contribute to improved groundwater quality and the replenishment of extracted groundwater, through more efficient management of existing project infrastructure.

Hub and Spoke Project (Phase 2)	**Project #7**

Level of Uncertainty - 354.44**(d)**

There is a level of uncertainty associated with the effects of fluctuations in groundwater elevations and produced groundwater quality. The GSA will take this into account when developing the benefit to the Subbasin, through monitoring of the groundwater.

Implementation Plan if Groundwater Levels Fall Below Minimum Threshold	Management Action #1

Project Type

Management Action – Plan Implementation

Project Location

San Gorgonio Pass Subbasin

Implementing Agency

San Gorgonio Pass Groundwater Sustainability Agency (SGPGSA), Verbenia GSA and Desert Water Agency.

Description - 354.44**(a)**

The SGP GSP implementing GSAs plan to comply with the GSP which will facilitate avoidance of significant and unreasonable impacts to groundwater resources. Reports of ongoing groundwater monitoring, as compiled in the GSP annual reports will provide visibility to the status of groundwater indicators, especially the measurable objectives and minimum thresholds.

The measurable objective provides an initial indication of a threat to groundwater sustainability indicators. As groundwater levels at representative monitoring wells fall below measurable objectives, an initial reaction is to review hydrologic conditions and compare groundwater extractions to the sustainable yield. If hydrologic conditions for recent years have been below the long-term average, and extractions have averaged less than the sustainable yield, then that indicates that a drought period is occurring, and the basin is appropriately using its operational flexibility to facilitate long-term conjunctive use. Alternatively, if recent hydrologic conditions have been average or above average, and groundwater extractions have been higher than the sustainable yield, that is an indication that the basin is operating unsustainably. If the initial indication is that the basin is operating unsustainably, then measures need to be taken to implement one or more of the projects or management actions identified in this section.

Measurable Objective(s) Addressed - 354.44**(b)(1)**

- ☒ Chronic Lowering of Groundwater Levels
- ☐ Seawater Intrusion – *not applicable*
- ☐ Land Subsidence
- ☒ Reduction of Groundwater Storage
- ☒ Degraded Water Quality
- ☐ Depletion of Interconnected Surface Water

Circumstances and Criteria for Implementation - 354.44**(b)(1)(a)**

Additional Management Action #1 planning can start as soon as the GSP is adopted; however, the Management Action #1 would be implemented if and when it is deemed helpful or applicable.

Process to Provide Notice of Implementation - 354.44**(b)(1)(b)**

The project would be noticed publicly through the implementing agencies Board of Directors meetings as well as any other noticing needed by specific regulatory requirements.

Estimated Annual Project Benefits (AF/yr) - 354.44**(b)(2)**

Implementation Plan if Groundwater Levels Fall Below Minimum Threshold	Management Action #1

Quantification of benefits in AF/yr is not available at this time. From a qualitative measure, Management Action #1 would support the GSAs ability to manage the groundwater levels based on the sustainable management criteria defined in the SGP GSP.

Permitting and Regulatory Requirements - 354.44**(b)(3)**

No permitting or regulatory requirements are anticipated to be required of GSAs to implement Management Action #1.

Schedule - 354.44**(b)(4)** Anticipated Start & Completion, Timeframe to accrue benefits

With funding, additional project planning could start immediately. However, it is likely to only commence after additional monitoring occurs during the first five years of the implementation period, and only if the data indicates the Subbasin is not operating sustainably.

Evaluation of Benefits - 354.44**(b)(5)**

Monitoring and evaluation of groundwater levels and measurement of surface water recharged.

How will this be accomplished, and what is the water source? - 354.44**(b)(6)**

No outside water source needed to accomplish. To accomplish Management Action #1, GSA coordination and review of data would be required, as is also required for the concurrent Annual Report development efforts.

Legal Authority - 354.44**(b)(7)**

GSAs have the authority to develop clarified Implementation Plans in support of managing to their sustainable management criteria.

Cost - 354.44**(b)(8)** Estimated Capital Cost

Estimated costs would be associated with Implementation Plan development costs, any policies that are developed by the GSAs to support implementation, as well as the costs to ensure successful implementation of the plan. That is estimated to be approximately $75,000 initially and thereafter annual costs; however, a refined cost estimate can be determined after receiving initial monitoring results following GSP Implementation.

Funding Source - 354.44**(b)(8)**

Funding can be secured by grant opportunities or future land-based assessments or groundwater extraction charges.

Management of Groundwater Extractions and Recharge - 354.44**(b)(9)**

Not applicable.

Level of Uncertainty - 354.44**(d)**

Not applicable.

Well Head Requirements	Management Action #2

Project Type

Management Action – Well Head Requirements

Project Location

San Gorgonio Pass Subbasin

Implementing Agency

San Gorgonio Pass Groundwater Sustainability Agency (SGPGSA), Verbenia GSA and Desert Water Agency.

Description - 354.44**(a)**

Well head requirements may be required to manage and understand the dynamic groundwater conditions within the subbasin more effectively. Well construction permitting is managed by Riverside County Environmental Health Divisions (EHD). Obtaining a well permit is currently a ministerial process, not requiring discretionary action or CEQA. The intent of this management action is to have the GSAs with the EHD to increase well requirements for new wells without disrupting the current ministerial permit process. Additionally, the GSAs would promote regular communication with the EHD and would seek to maintain more monitoring responsibility. The GSAs may adopt a policy to augment the current well requirements set by the State/EHD and establish new permit criteria, enforce GSA policies, and require GSA approval of all permit paperwork for non-de minimis extractors before EHD permit issuance. The policy would affect permits to construct, deepen, destroy, recondition, or repair a well. In order to increase data collection, reporting, and ongoing groundwater management efforts, the additional well requirements policy may contain the following information:

- Registration of extraction facilities with the GSA to supplement and confirm information obtained from a well canvass of the GSA area.
- Require the installation of flowmeters on all new or repaired wells, and installation of sounding tubes on all new wells.
- Require the well owner to self-report groundwater extraction volumes, static water levels, and water quality data.

The GSAs will request that the counties notify the GSAs of any new well permits or abandonments, and that well completion reports and water quality test data of new wells be submitted to the GSAs. The GSAs may consider separating the additional well requirements management action into multiple policies or be silent on various bulleted components until the GSAs deems them necessary. For example, the requirement of installing a flow meter on the pump discharge may be enacted before the requirement of installing a sounding tube. Further explanation and detail of the potential additional well requirements are continued below.

The desired outcome of additional well permitting requirements is the ability to monitor groundwater extractions, water levels, and water quality in a thorough, accurate, and efficient manner across the GSAs. The evaluation criteria differ amongst the bulleted considerations.

Registration of Extraction Facilities

As stated in SGMA Section 10725.6, "a GSA may require the registration of a groundwater extraction facility within the management area of the GSA." The GSAs may adopt this policy to hopefully improve and supplement the existing well records housed by the EHD and DWR and provide a complete record of the number of wells within the GSA. Unfortunately, the historic well completion reports (especially the older ones) and available DWR 429 Forms (Well Data Form indicating the state

well number and detailed well location information) often have insufficient information to confidently locate the exact position of an older well, which is necessary to match up water level and quality information with the area pumping is occurring. In recent decades, the advances in technology, standardization of forms, and accessibility to GPS location have significantly improved the accuracy of well completion reports through better location identification and recordkeeping. The intent of registration of groundwater extraction facilities would be to complement existing well recordkeeping and ensure that the GSAs can fully understand and quantify the potential impacts of groundwater decline. Coupled with the registration of extraction facilities, the GSAs may invest in a complete well canvass study to verify the number of wells and presence or absence of a flow meter.

Installation of Well Flow Meters

The GSAs will investigate options for quantifying groundwater use by individual landowners and may require the installation of a flow meter on all groundwater extraction facilities in the future to provide accurate quantities of groundwater extraction and serve as the nexus to other management actions. The policy would describe the acceptable types of flow measurement devices, installation standards and requirements, operation and maintenance requirements, and penalties for tampering, neglect, or misconduct. For example, the flow meter would be installed inline on the pump discharge before any other connections or discharge points in accordance with the meter manufacturer's specifications. The meter must accurately quantify the volume of extracted groundwater in AF and be routinely maintained by the well owner. The policy for flow meter installation may require a meter equipped with telemetry for remote reading of the groundwater extraction by the GSAs. Failure to comply with the policy may result in civil penalty or criminal fine in accordance with SGMA Section 10732. Once the meter installation was complete, a certification report would be submitted by the landowner or agency documenting that the work was completed in accordance with the GSAs well requirements policy.

Installation of Sounding Tubes and Water Quality Sample Ports

The GSAs may require the installation of a well sounding tube, air line, electric depth gauge, and/or other water level sensor in selected locations for the purpose of measuring water levels throughout the GSAs, especially on new well installations. In addition, the GSAs may require the installation of a sample port on the well discharge piping in selected locations for the purpose of potentially collecting water quality samples throughout the GSAs. The accurate and widespread collection of water level and water quality data will supplement the monitoring network information and provide the GSAs with additional information to monitor the success/failure of the GSP against the established Sustainable Management Criteria. The policy would describe the acceptable types of water level measuring devices and sample ports, installation requirements, and penalties for tampering, neglect, or misconduct. The installation must provide or allow for the accurate measurement of static groundwater level in feet below the ground surface and water sample collection. If applicable, the water level measurement device must be routinely maintained by the well owner. Once the installation was complete, a certification report would be submitted by the landowner or agency documenting that the work was completed in accordance with the GSAs well requirements policy.

Self-Reporting of Groundwater Extraction

If the GSAs selects flow meters as the method of quantifying groundwater extraction, and if the installed meters are not equipped with telemetry, then the GSAs may require the well owner to self-report to the GSAs the metered groundwater extraction volumes on a semi-annual or annual basis. The policy would describe the frequency of reporting, various methods of reporting, due dates, and specific instructions for data submission. The GSAs may provide extractors with self-addressed mailer for return mailing. The mailer may include information for reporting instructions such as, the well owner must report the groundwater extraction volume in AF and include the current flow meter totalizer

Well Head Requirements **Management Action #2**

reading. Other information requests may include self-reporting of static water level readings if the well is equipped with sounding tubes, along with instructions on how static water level measurements should be taken twice per year once water levels have stabilized after pump shutdown. If there is limited compliance with self-reporting, the GSAs may elect to gather the appropriate data with their own staff. The policy would describe that the frequency of the reporting may be temporarily increased if minimum thresholds are exceeded.

Measurable Objective(s) Addressed - 354.44**(b)(1)**

- ☒ Chronic Lowering of Groundwater Levels
- ☐ Seawater Intrusion – *not applicable*
- ☐ Land Subsidence
- ☒ Reduction of Groundwater Storage
- ☐ Degraded Water Quality
- ☐ Depletion of Interconnected Surface Water

Circumstances and Criteria for Implementation - 354.44**(b)(1)(a)**

Additional Management Action #2 planning can start as soon as the GSP is adopted; however, the Management Action #2 would be implemented if and when it is deemed helpful or applicable.

Process to Provide Notice of Implementation - 354.44**(b)(1)(b)**

The project would be noticed publicly through the implementing agencies Board of Directors meetings as well as any other noticing needed by specific regulatory requirements.

Estimated Annual Project Benefits (AF/yr) - 354.44**(b)(2)**

Quantification of benefits in AF/yr is not currently available. From a qualitative measure, Management Action #2 would support the GSAs ability to manage the groundwater levels and understand groundwater trends with additional data support.

Permitting and Regulatory Requirements - 354.44**(b)(3)**

No permitting or regulatory requirements are anticipated to be required of the GSAs to implement Management Action #1.

Schedule - 354.44**(b)(4)** Anticipated Start & Completion, Timeframe to accrue benefits

With funding, additional project planning could start immediately. However, it is likely to only commence after additional monitoring occurs during the first five years of the implementation period, and only if the data indicates the Subbasin is not operating sustainably.

Evaluation of Benefits - 354.44**(b)(5)**

Monitoring and evaluation of groundwater levels and measurement of surface water recharged.

How will this be accomplished, and what is the water source? - 354.44**(b)(6)**

No outside water source needed to accomplish. To accomplish Management Action #1, GSA coordination and review of data would be required, as is also required for the concurrent Annual Report development efforts.

Legal Authority - 354.44**(b)(7)**

GSAs have the authority to investigate impacts to their ability to successfully implement the GSP and maintain Subbasin sustainability.

Cost - 354.44**(b)(8)** Estimated Capital Cost

Estimated costs would be associated with the legal, consultant, and coordination costs associated with the development of the policy to determine any Well Head Policy, estimated to be about $50,000

Well Head Requirements	Management Action #2

initially. Estimated costs would also be associated with ensuring well head requirements are implemented and GSA coordination with Riverside County costs, as well as the costs to ensure successful implementation of the GSP for the development of a database to store the meter information and extraction data. Cost will also depend on whether any policy ultimately developed has the well owner pay for any needed improvements or if the GSAs pay for flowmeter installations for example. That is estimated to be approximately $50,000 for initial development and $25,000 annually for monitoring costs; however, a refined cost estimate can be determined after receiving initial monitoring results following GSP Implementation.

Funding Source - 354.44**(b)(8)**

Funding can be secured by grant opportunities or future land-based assessments or groundwater extraction charges.

Management of Groundwater Extractions and Recharge - 354.44**(b)(9)**

Not applicable.

Level of Uncertainty - 354.44**(d)**

Not applicable.

Investigate Issues Promptly Regarding Water Quality and Unexpected Water Pumping — Management Action #3

Project Type

Management Action -Water Quality/Unexpected Pumping Investigation

Project Location

San Gorgonio Pass Subbasin

Implementing Agency

San Gorgonio Pass Groundwater Sustainability Agency (SGPGSA), Verbenia GSA and Desert Water Agency.

Description - 354.44**(a)**

The GSAs intend to take full advantage of the powers granted them under SGMA by promptly investigating for all the purposes outlined in Water Code section 10725.4 particularly to the extent specified, water quality or other issues are identified.

The GSAs will have the opportunity to review groundwater quality conditions as drinking water producers are required to monitor and report groundwater quality, which become publicly available. In addition, groundwater levels and storage will be assessed on an annual basis, as part of the Annual Reporting required by SGMA. Anomalies or significant changes in water levels are to be studied as part of data quality assurance protocols. In the event significant water quality impairments or groundwater level data reveals significant unexpected groundwater extraction impacts, the GSAs intend to investigate further to understand causation and support mitigation planning that may involve implementation of projects and management actions listed in this chapter.

Measurable Objective(s) Addressed - 354.44**(b)(1)**

- ☒ Chronic Lowering of Groundwater Levels
- ☐ Seawater Intrusion – *not applicable*
- ☐ Land Subsidence
- ☒ Reduction of Groundwater Storage
- ☒ Degraded Water Quality
- ☒ Depletion of Interconnected Surface Water

Circumstances and Criteria for Implementation - 354.44**(b)(1)(a)**

Additional Management Action #3 planning can start as soon as the GSP is adopted; however, the Management Action #3 would be implemented if and when it is deemed helpful or applicable.

Process to Provide Notice of Implementation - 354.44**(b)(1)(b)**

The project would be noticed publicly through the implementing agencies Board of Directors meetings as well as any other noticing needed by specific regulatory requirements.

Estimated Annual Project Benefits (AF/yr) - 354.44**(b)(2)**

Quantification of benefits in AF/yr is not currently available. From a qualitative measure, Management Action #3 would support the GSAs ability to manage the groundwater levels based on the sustainable management criteria defined in the SGP GSP.

Permitting and Regulatory Requirements - 354.44**(b)(3)**

No permitting or regulatory requirements are anticipated to be required of the GSAs to implement Management Action #3.

Schedule - 354.44**(b)(4)** Anticipated Start & Completion, Timeframe to accrue benefits

Investigate Issues Promptly Regarding Water Quality and Unexpected Water Pumping	**Management Action #3**

With funding, additional project planning could start immediately. However, it is likely to only commence after additional monitoring occurs during the first five years of the implementation period, and only if the data indicates the Subbasin is not operating sustainably.

Evaluation of Benefits - 354.44**(b)(5)**

Evaluation of groundwater levels and improve depth of study regarding groundwater extraction impacts.

How will this be accomplished, and what is the water source? - 354.44**(b)(6)**

No outside water source needed to accomplish. To accomplish Management Action #1, GSA coordination and review of data would be required, as is also required for the concurrent Annual Report development efforts.

Legal Authority - 354.44**(b)(7)**

GSAs have the authority to investigate impacts to their ability to successfully implement the GSP and maintain Subbasin sustainability.

Cost - 354.44**(b)(8)** Estimated Capital Cost

Estimated costs would be associated with investigation of water quality and unexpected significant impacts from groundwater extractions costs, as well as the costs to ensure successful implementation of the GSP. That is estimated to be approximately an additional $5,000/year and incorporated as a duty of existing staff; however, a refined cost estimate can be determined after receiving initial monitoring results following GSP Implementation.

Funding Source - 354.44**(b)(8)**

Funding can be secured by grant opportunities or future land-based assessments or groundwater extraction charges.

Management of Groundwater Extractions and Recharge - 354.44**(b)(9)**

Not applicable.

Level of Uncertainty - 354.44**(d)**

Not applicable.

Impose SGMA or Other Available Fees on Pumpers to Encourage Reduced Pumping and Conservation — Management Action #4

Project Type

Management Action – Pumping Fees for Groundwater Extraction

Project Location

San Gorgonio Pass Subbasin

Implementing Agency

San Gorgonio Pass Groundwater Sustainability Agency (SGPGSA), Verbenia GSA and Desert Water Agency.

Description - 354.44**(a)**

The GSAs have been granted the authority to impose fees by ordinance or resolution to fund costs of a groundwater sustainability program including preparation, adoption, and amendment to a groundwater sustainability plan, and investigations, inspections, compliance assistance, enforcement and program administration. Once the GSP is adopted, GSAs have the authority to imposed fixed fees or volumetric based fees to cover the costs of (1) GSP administration, operation and maintenance, (2) Acquisition of lands or other property, facilities, and services, (3) Supply, production, treatment, or distribution of water, and (4) other activities necessary or convenient to implement the plan.

While initially there may be limited necessity for any new fees, the GSAs may choose to implement new fees if measurable objectives have been exceeded, to encourage conservation and reduced groundwater extractions and assist in avoiding exceedances of minimum thresholds. The fees would not apply to pumping by the MBMI who, as a federally recognized tribe, are not subject to SGMA jurisdiction. Groundwater producers throughout the subbasin, or in the vicinity of a nearby measurable objective exceedance, may be subject to the fees within 2-years of the groundwater level exceedance.

Revenue collected through potential pumping fees would support ongoing GSP implementation activities, project development and implementation of actions to address data gaps The pumping fee revenues would also be available for use in developing projects, and applying for grant funds, to improve groundwater infrastructure in the SGP Subbasin, especially in areas with DAC or SDAC. Details on the methodology to develop the fee, potential fee amounts, guidelines for using the funds and potential programs developed to support GSP implementation, would be developed upon approval of the GSP.

Although MBMI is not subject to SGMA, they are recognized as a water producer from the SGP Subbasin that may affect the overall condition of the SGP Subbasin. Additionally, MBMI may benefit from the activities and projects funded through pumping fees and therefore they will be invited to participate in funding said activities and projects although their participation is not mandatory.

Measurable Objective(s) Addressed - 354.44**(b)(1)**

- ☒ Chronic Lowering of Groundwater Levels
- ☐ Seawater Intrusion – *not applicable*
- ☐ Land Subsidence
- ☒ Reduction of Groundwater Storage
- ☐ Degraded Water Quality
- ☐ Depletion of Interconnected Surface Water

Circumstances and Criteria for Implementation - 354.44**(b)(1)(a)**

Impose SGMA or Other Available Fees on Pumpers to Encourage Reduced Pumping and Conservation — Management Action #4

Additional Management Action #4 planning can start as soon as the GSP is adopted; however, the Management Action #4 would be implemented if and when it is deemed helpful or applicable.

Process to Provide Notice of Implementation - 354.44**(b)(1)(b)**

The project would be noticed publicly through the implementing agencies Board of Directors meetings as well as any other noticing needed by specific regulatory requirements.

Estimated Annual Project Benefits (AF/yr) - 354.44**(b)(2)**

Quantification of benefits in AF/yr is not currently available. From a qualitative measure, Management Action #4 would support the GSAs ability to manage the groundwater levels based on the sustainable management criteria defined in the SGP GSP.

Permitting and Regulatory Requirements - 354.44**(b)(3)**

No permitting or regulatory requirements are anticipated to be required of the GSAs to implement Management Action #4.

Schedule - 354.44**(b)(4)** Anticipated Start & Completion, Timeframe to accrue benefits

Additional project planning could start immediately. However, implementation would commence after additional monitoring occurs during the first five years of the implementation period, and only if the data indicates the Subbasin is not operating sustainably.

Evaluation of Benefits - 354.44**(b)(5)**

Evaluation of groundwater levels and reduced groundwater extractions by incentivizing groundwater extractors to pump in a sustainable fashion.

How will this be accomplished, and what is the water source? - 354.44**(b)(6)**

No outside water source needed to accomplish. To accomplish Management Action #4, GSA coordination and review of data would be required, as is also required for the concurrent Annual Report development efforts.

Legal Authority - 354.44**(b)(7)**

GSAs have the authority as outlined in SGMA to adopt ordinances, impose fees, and enforce policies to successfully implement the GSP and maintain Subbasin sustainability.

Cost - 354.44**(b)(8)** Estimated Capital Cost

Estimated costs would be associated with the legal, consultant, and coordination costs associated with the development of the policy to determine groundwater extraction fees, estimated to be about $50,000. Additional costs to implement the policy and document extractions would be determined by the frequency of meter readings and the number of well locations in the subbasin, which are unknown at this time, but would be determined at the time of policy development. Once adopted the fees may help fund other projects and management actions.

Funding Source - 354.44**(b)(8)**

A portion of funding can be secured with technical assistance or implementation funding from grant sources, or future land-based assessments or groundwater extraction charges.

Management of Groundwater Extractions and Recharge - 354.44**(b)(9)**

Not applicable.

Impose SGMA or Other Available Fees on Pumpers to Encourage Reduced Pumping and Conservation	**Management Action #4**

Level of Uncertainty - 354.44**(d)**

Not applicable.

Groundwater Pumping Allocation	**Management Action #5**

Project Type

Management Action – Groundwater Pumping Allocation

Project Location

San Gorgonio Pass Subbasin

Implementing Agency

San Gorgonio Pass Groundwater Sustainability Agency (SGPGSA), Verbenia GSA and Desert Water Agency.

Description - 354.44**(a)**

As part of SGMA, GSAs have been granted authority to regulate the quantity of pumped groundwater. Regulating groundwater pumping is a potential GSP tool that could reduce pumping in the event that it exceeded the sustainable yield of a Subbasin. The regulation of pumping would likely take the form of allocation of a share of the sustainable yield to groundwater users in the Subbasin. Other rules could be established that would allow for a user's allocation over multiple years to transfer to other users and other rules that would facilitate effective water management. While SGMA provides GSAs with the authority to regulate groundwater pumping quantities, it also specifies that this is not the final determination of water rights, which remains with the courts. As noted later in this section, a major limitation to a groundwater pumping allocation action is that it would not be constraining on federally recognized tribal water users such as the MBMI, who are large groundwater users in the SGP. Based on this limited jurisdiction and without the voluntary participation of the MBMI, the groundwater pumping allocation approach based on GSA authorities described here could be difficult to implement and meet SGMA requirements for sustainable groundwater management.

GSAs experiencing large amounts of continuous annual groundwater overdraft, including in wet years, may pursue individual groundwater allocations if the development of projects and new water supplies cannot solely offset the current groundwater demands and overdraft conditions over the planning and implementation horizon. Demand management may become increasingly more important in the event of further reduced reliability of imported and flood water supplies, especially when taking into consideration the historical drought periods, the uncertain role of climate change, and increased competition for available water supplies. Specific program details may be developed and adopted by the GSAs in the future.

The GSAs' future policy may provide a finite groundwater allocation on a per acre basis for the GSAs as a whole, or for sub-areas of a GSA. The policy would identify and forecast the demands associated with prior rights (including MBMI), domestic and environmental uses. The sustainable yield and ultimate groundwater allocation would take into consideration the existing water rights holders, disadvantaged communities (DACs), community service districts (CSDs), public utility districts (PUDs), public water systems (PWS), and groundwater-dependent ecosystems (GDEs). The GSAs, through collaboration with its users and beneficial users, may consider whether an equal-, reduced-, or zero-allocation is given to lands with unexercised groundwater rights. The report *Groundwater Pumping Allocations under California's Sustainable Groundwater Management Act (Environmental Defense Fund et. al, 2018)* identifies four possible methods of establishing groundwater pumping allocations.

There are multiple advantages and disadvantages associated with different methods of establishing groundwater pumping allocations, which are described in more detail in the report (EDF, 2018). The "Comprehensive Allocation Method," which establishes allocations based on a comprehensive

Groundwater Pumping Allocation **Management Action #5**

consideration of California groundwater law to the extent practical, and is recommended by EDF, is one possible approach that could be considered because it offers GSAs the important advantage of presenting to the Court an allocation methodology that tracks judicial precedent if an adjudication is ultimately initiated.

The goals of any groundwater pumping management action would be to ensure a fair groundwater allocation, allow groundwater users time to adjust, provide future flexibility in allocation determinations, and to quantify groundwater extractions accurately and efficiently, while also respecting federal reserved rights (FRWR).

The method of evaluation of groundwater extraction depends upon the GSAs' selected quantification method or combination of methods. The GSAs' evaluation of various methods may consider a wide range of factors including cost, accuracy, reliability, timeliness, functionality, personnel required, and legal defense. Once the GSAs have established a consistent quantification method, the evaluation of the "ramp-down" gradual allocation decrease could be analyzed in the annual comparison of groundwater extraction. Though the annual groundwater extraction amount would be affected by other factors such as weather and available surface water supplies, the total extraction amount could be normalized to an average water year for comparative purposes. The GSAs may adopt policies indicating an adaptive management approach, whereby the groundwater allocation may be reviewed, changed, and reestablished periodically or during extreme drought as necessary to achieve long term sustainability instead of a ramp down gradual allocation.

As noted earlier in this summary, a significant limitation on the efficacy of this management action is that it would not constrain water use by federally recognized tribal water users, such as the MBMI. FRWR are distinct from water rights that are based in State law and SGMA directs that FRWR be respected in full. The FRWR of the MBMI have not been quantified and could directly affect the ability of a SGMA-based pumping allocation approach to achieve identified goals. Based on the limitation of a groundwater pumping allocation to a specific set of groundwater pumpers, and without the voluntary participation of entities with FRWR (such as MBMI), a groundwater pumping allocation approach based on GSA authorities could be difficult to implement and meet SGMA requirements for sustainable groundwater management.

Measurable Objective(s) Addressed - 354.44**(b)(1)**

- ☒ Chronic Lowering of Groundwater Levels
- ☐ Seawater Intrusion – *not applicable*
- ☐ Land Subsidence
- ☒ Reduction of Groundwater Storage
- ☐ Degraded Water Quality
- ☐ Depletion of Interconnected Surface Water

Circumstances and Criteria for Implementation - 354.44**(b)(1)(a)**

Additional Management Action #5 planning can start as soon as the GSP is adopted; however, the Management Action #5 would be implemented if and when it is deemed helpful or applicable.

Process to Provide Notice of Implementation - 354.44**(b)(1)(b)**

The project would be noticed publicly through the implementing agencies Board of Directors meetings as well as any other noticing needed by specific regulatory requirements.

Estimated Annual Project Benefits (AF/yr) - 354.44**(b)(2)**

Quantification of benefits in AF/yr is not available at this time. From a qualitative measure, Management Action #5 would support the GSAs ability to manage the groundwater levels based on the sustainable management criteria defined in the SGP GSP.

Groundwater Pumping Allocation	**Management Action #5**

Permitting and Regulatory Requirements - 354.44**(b)(3)**

No permitting or regulatory requirements are anticipated to be required of the GSAs to implement Management Action #5.

Schedule - 354.44**(b)(4)** Anticipated Start & Completion, Timeframe to accrue benefits

With funding, additional project planning could start immediately. However, it is likely to only commence after additional monitoring occurs during the first five years of the implementation period, and only if the data indicates the Subbasin is not operating sustainably.

Evaluation of Benefits - 354.44**(b)(5)**

Clarified groundwater extraction volumes.

How will this be accomplished, and what is the water source? - 354.44**(b)(6)**

No outside water source needed to accomplish. To accomplish Management Action #5, GSA coordination and review of data would be required, as is also required for the concurrent Annual Report development efforts.

Legal Authority - 354.44**(b)(7)**

GSAs have the authority to impose allocations to successfully implement the GSP and maintain Subbasin sustainability.

Cost - 354.44**(b)(8)** Estimated Capital Cost

Estimated costs would be associated with the legal, consultant, and coordination costs associated with the development of the policy to assign an allocation, estimated to be $50,000 initially. Additional costs to implement the policy and monitor extractions are unknown and would be developed at the time of policy development.

Funding Source - 354.44**(b)(8)**

A portion of funding can be secured with technical assistance or implementation funding from grant sources, or or future land-based assessments or groundwater extraction charges.

Management of Groundwater Extractions and Recharge - 354.44**(b)(9)**

Not applicable.

Level of Uncertainty - 354.44**(d)**

Not applicable.

Groundwater Basin Adjudication	**Management Action #6**

Project Type

Management Action – Groundwater Adjudication

Project Location

San Gorgonio Pass Subbasin

Implementing Agency

California Court system with process initiated by the San Gorgonio Pass Groundwater Sustainability Agency (SGPGSA), Verbenia GSA, Desert Water Agency or landowner(s) in the subbasin.

Description - 354.44**(a)**

Groundwater pumpers or landowners in the Subbasin could initiate the process for groundwater adjudication to occur in the Subbasin if sustainability does not appear to be occurring during the SGMA implementation period. In 2015, largely as a "follow on" to the enactment of SGMA, two bills - AB 1390 and SB 226 - were enacted and became law on January 1, 2016. Those two bills restructured the groundwater adjudication process in California by attempting to streamline the process and to provide clarification as to how adjudications relate to SGMA. These laws require that any judgments issued in an adjudication be consistent with SGMA and allow the courts to issue preliminary orders to achieve consistency. Among other things, these bills allow GSAs, cities, counties, and the State to intervene in adjudication actions and require the court to manage proceedings consistently with the timeframes laid out for groundwater sustainability in SGMA. Under SGMA, unreconciled differences over GSP provisions are likely to result in adjudications. However, even with the new legislation, adjudications will remain complex, lengthy, and expensive to pursue (EDF, 2018). Additionally, the GSAs would continue to be responsible for SGMA compliance in the event of a groundwater adjudication, provided in Water Code Section 10737.2

As described in Management Action #5, a potential allocation of groundwater pumping amounts will be considered, along with other potential projects, as an early response to any increases in groundwater pumping, or identified long term changes in local water supply availability, that can adversely affect achieving groundwater sustainability. As indicated in Management Action #5, any allocation of groundwater pumping amounts could be challenged by groundwater pumpers in the SGP Subbasin as not being consistent with their rights under California groundwater law and would not be applicable to the MBMI, unless pursuant to a court decree.

Measurable Objective(s) Addressed - 354.44**(b)(1)**

- ☒ Chronic Lowering of Groundwater Levels
- ☐ Seawater Intrusion – *not applicable*
- ☐ Land Subsidence
- ☒ Reduction of Groundwater Storage
- ☐ Degraded Water Quality
- ☐ Depletion of Interconnected Surface Water

Circumstances and Criteria for Implementation - 354.44**(b)(1)(a)**

Management Action #6 can be explored more if circumstances within the Basin result in adjudication being a necessary measure to ensure Subbasin sustainability.

Process to Provide Notice of Implementation - 354.44**(b)(1)(b)**

The project would be noticed publicly through the implementing agencies Board of Directors meetings as well as any other noticing needed by specific regulatory requirements and the court system.

Estimated Annual Project Benefits (AF/yr) - 354.44**(b)(2)**

Groundwater Basin Adjudication	**Management Action #6**

Quantification of benefits in AF/yr is not available at this time. From a qualitative measure, Management Action #6 would support the GSAs ability to manage the groundwater levels based on the sustainable management criteria defined in the SGP GSP.

Permitting and Regulatory Requirements - 354.44**(b)(3)**

No permitting or regulatory requirements are anticipated to implement Management Action #6, though the California Court system would be asked to define the rights that various entities have to use groundwater resources in subbasin.

Schedule - 354.44**(b)(4)** Anticipated Start & Completion, Timeframe to accrue benefits

With funding, additional project planning could start immediately. However, it is likely to only commence after additional monitoring occurs during the first five years of the implementation period, and only if the data indicates the Subbasin is not operating sustainably. Even with the 2015 Comprehensive Adjudication Reform Act (AB 1390/SB 226), which streamlined California's groundwater adjudication alongside the Sustainable Groundwater Management Act, the adjudication process could take a decade or more.

Evaluation of Benefits - 354.44**(b)(5)**

Clarification of groundwater extraction rights and limitations.

How will this be accomplished, and what is the water source? - 354.44**(b)(6)**

No water source needed to accomplish. To accomplish Management Action #4, GSA coordination and review of data would be required, as is required for the concurrent Annual Report development efforts.

Legal Authority - 354.44**(b)(7)**

GSAs or landowners in the subbasin have the authority to bring a lawsuit to initiate the adjudication process to successfully maintain Subbasin sustainability.

Cost - 354.44**(b)(8)** Estimated Capital Cost

Estimated costs would be associated with the legal, consultant, and coordination costs associated with adjudication. Costs are unknown at this time, though they could be in the millions based on other adjudications that have occurred in California.

Funding Source - 354.44**(b)(8)**

A portion of funding can be secured with technical assistance or implementation funding from grant sources, or future land-based assessments or groundwater extraction charges.

Management of Groundwater Extractions and Recharge - 354.44**(b)(9)**

Not applicable.

Level of Uncertainty - 354.44**(d)**

Not applicable.

Appendix F – San Gorgonio Pass Working Group Meeting Topics

Appendix F

San Gorgonio Pass Groundwater Sustainability Plan Working Group Meeting Agenda Topics

The San Gorgonio Pass (SGP) Groundwater Sustainability Plan (GSP) Working Group meeting dates and associated topics discussed are listed below.

All presentation materials, including PowerPoint presentations, were made available to members of the SGP GSP Working Group. Those members include representative from the following entities: Banning Heights Mutual Water Company, Cabazon Water District, City of Banning, Desert Water Agency, Mission Springs Water District, Morongo Band of Mission Indians, San Gorgonio Pass Water Agency.

Although uncommon, if a member entity was not present at a SGP GSP Working Group Meeting, then a separate call and/or correspondence was had between the consultant (Provost & Pritchard) and the absent member entity representative to ensure a transparent and collaborate process.

In addition to presentation materials, the San Gorgonio Pass working group received draft copies of the GSP and memoranda summarizing changes made based on working group or stakeholder feedback. The dates in which draft chapters were issued to all members of the SGP GSP Working Group are summarized in **Table 1** below.

Table 1. Draft Chapter Releases to the SGP GSP Working Group

Content Released	Release Date	Notes
Executive Summary	October 1, 2021	Available in DRAFT Public Review Draft
Chapter 1	July 12, 2021	
Chapter 2	May 15, 2026	
Chapter 3.1	June 5, 2026	
Chapter 3.2	June 5, 2026	
Chapter 3.3		
Chapter 4	May 29, 2026	
Chapter 5	May 29, 2026	
Chapter 6	July 2, 2026	
Chapter 7	July 2, 2026	
DRAFT Public Review Draft		

Public Review Draft		
DRAFT Final Review Draft		

2025 SGP GSP Working Group Meetings

October 29, 2025

- Introductions
- Five Year Status Review Schedule
- DWR Recommendations from October 2023 GSP Findings
- Model Update
- San Gorgonio River Stream Gage
- Monitoring Well Installation Update
- SGP Annual Report Proposal

December 17, 2025

- Introductions
- GSP Corrective Measures
- Model Update
- San Gorgonio River Stream Gage
- Monitoring Well Installation Update
- SGP Annual Report Proposal

2026 SGP GSP Working Group Meetings

February 25, 2026

- Introductions
- GSP Corrective Measures
- Model Update
- San Gorgonio River Stream Gage
- Monitoring Well Installation Update
- SGP Annual Report Status

April 26, 2026

- Introductions
- Water Year Type
- GSP Corrective Measures

- Model Update
- San Gorgonio River Stream Gage
- Projects and Management Actions

June 25, 2026

- Introductions
- Review Revised Schedule
- Model Update
- Monitoring Network Update
- San Gorgonio River Stream Gage
- Projects and Management Actions
- Amended GSP Review Schedule

August 27, 2026

- Introductions
- San Gorgonio River Stream Gage
- Model Update – Projection Results
- Amended GSP Status/Schedule
- Periodic Evaluation

October 29, 2026

- Introductions
- San Gorgonio River Stream Gage
- Periodic Evaluation
- Amended GSP Status/Schedule

Appendix G – Domestic Well Characteristics

Appendix G: Wells Identified as Domestic from DWR Well Completion Report Map Application

WCR Number	Legacy Log Number	Township	Range	Section	Work Date	Total Completion	Top Of Perforation	Bottom of Perforation	Casing Diameter
Banning Canyon/Banning Bench/Other Canyons									
WCR1984-007171	241734	02S	01E	16	18-Jul-84	240	140	240	4
WCR2003-013431	792616	02S	01E	20	13-Aug-03	340	200	340	5
WCR1977-009188	5987	02S	01E	21	23-Dec-77	239	117	239	7
WCR1988-015702	281721	02S	01E	21		280	None	None	5
WCR1987-012586	269685	02S	01E	21	15-Sep-87	480	260	480	4
WCR1776-010308	108832	02S	01E	21		300	120	300	12
WCR1964-001998	None	02S	01E	24	06-Feb-64	192	43	182	16
WCR1977-009205	107282	02S	01E	25	28-Jun-77	200	80	200	12
WCR1977-010841	107282	02S	01E	25	28-Jun-77	200	80	200	12
WCR1964-001936	100588	02S	01E	25	06-Feb-64	192	44	185	16
WCR2018-008759	e0365995	02S	01E	28	13-Apr-18	160	60	160	4.5
WCR1962-001869	99745	02S	01E	28	21-Jul-62	121	100	120	8
WCR1987-012500	269698	02S	01E	28	21-Aug-87	180	60	180	4
WCR2003-014967	792637	02S	01E	29		460	160	460	5
WCR2020-001527		02S	01E	29	11-Feb-20	350	150	350	4.95
WCR1989-019110	182330	02S	01E	29	21-Apr-89	305	100	305	12
WCR1992-016205	402436	02S	01E	29	09-Apr-92	750	None	None	10
WCR2006-010048	e043409	02S	01E	29	22-Aug-06	420	100	420	5
WCR1962-001870	99743	02S	01E	33	05-Jul-62	96	70	87	8
WCR1776-010303	108830	02S	01E	33		100	60	100	12
WCR1987-012588	269699	02S	01E	33	19-Aug-87	180	40	180	4
WCR1776-011049	44	02S	02E	16		108	None	None	None
WCR1988-015704	253135	02S	02E	16	29-Oct-88	320	280	320	6
WCR1974-003974	78198	02S	02E	16	17-Jan-74	325	103	123	7
WCR2009-009946	e0099730	02S	02E	21	09-Oct-09	270	60	280	4
WCR1953-001355	53430	03S	01E	4		819	350	806	13
Management Area 3 (Banning and Cabazon Storage Units)									
WCR1954-001636	54112	03S	01E	17	25-Feb-54	375	340	375	10
WCR1978-007203	9946	03S	01E	18	13-Jul-78	1020	400	1000	26
WCR2005-011977	904402	03S	01W	24	01-Jun-05	560	400	560	5
WCR1997-010125	461904	03S	01E	17	09-May-97	500	20	500	6
WCR1978-008797	9946	03S	01E	18	13-Jul-78	1020	400	1000	26
WCR1991-018401	350753	03S	01E	12	01-Jun-91	1150	None	None	8
WCR2005-016607	e038042	03S	02E	14	02-Dec-05	800	490	790	18
WCR1987-012616	182145	03S	02E	18	07-Oct-87	1050	None	None	8
WCR1961-002051	98034	03S	02E	22	15-Jul-61	280	70	150	8
WCR1963-001665	98062	03S	02E	23		508	330	508	9
WCR2006-012963	1085324	03S	03E	6	12-Sep-06	500	200	500	5
WCR1998-010304	518558	03S	03E	18		340	None	None	12
Wells Located outside SGP Subbasin or Misidentified as Domestic									
WCR1989-019123	182232	02S	01E	4	24-Mar-89	118	38	118	26
WCR1989-017410	182232	02S	01E	4	24-Mar-89	118	38	118	26
WCR1989-019124	182331	02S	01E	4	06-Feb-89	118	35	118	26
WCR1989-017409	182331	02S	01E	4	06-Feb-89	118	35	118	26
WCR2006-010215	1082042	02S	01E	21	29-Jun-06	300	80	300	9
WCR2010-009662	e0104207	02S	01E	21	08-Jan-10	500	200	500	4
WCR2006-013112	449016	02S	01E	21	22-Sep-06	300	160	300	5
WCR1987-012587	269704	02S	01E	21	31-Aug-87	180	60	180	4
WCR1990-018646	328195	02S	01E	21	15-Aug-90	360	320	360	6
WCR2002-011932	763576	02S	01E	36	05-Feb-02	225	145	225	5
WCR1961-001817	33-1155	02S	01W	26	01-Jan-61	255	207	255	11
WCR1972-003097	79140	02S	01W	26	10-Oct-72	528	200	527	16
WCR2006-012225	1086201	02S	01W	35	01-Jun-06	1470	1280	1450	20
WCR1978-008979	565	03S	01E	6	15-Jul-78	260	80	260	4
WCR1959-001338	54448	03S	01E	6	01-Dec-59	900	360	900	14
WCR1987-012614	151500	03S	01E	6	26-Jan-87	1200	600	1200	26
WCR2008-010102	e0082205	03S	01E	16	23-Oct-08	700	320	700	5
WCR1990-018649	321930	03S	01E	18		1000	300	980	26
WCR1997-010144	539471	03S	01E	19	25-Jul-97	487	0	487	4
WCR1995-011713	456939	03S	02E	7	05-Oct-95	890	510	870	16
WCR1957-001982	30756	03S	02E	23	14-Dec-57	500	414	491	None