

State of California
Department of Water Resources
Sustainable Groundwater Management Program
Alternative Assessment Staff Report

Groundwater Basin Name: Coachella Valley – Mission Creek (Basin No. 7-021.02)
Submitting Agency: Coachella Valley Water District
Recommendation: Approve
Date Issued: July 17, 2019

I. Summary

The Coachella Valley Water District, Desert Water Agency, and Mission Springs Water District (collectively referred to as Agencies) submitted an alternative (Mission Creek Subbasin Alternative *or* Alternative) to the Department of Water Resources (Department) for evaluation and assessment as provided by the Sustainable Groundwater Management Act (SGMA).¹ The Agencies submitted an existing plan² and rely primarily on the 2013 Mission Creek and Garnet Hill Subbasins Water Management Plan (Water Management Plan *or* Plan). After a review of the Plan, other related documents, and consideration of public comments, Department staff find that the Mission Creek Subbasin Alternative satisfies the objectives of SGMA for the Mission Creek Subbasin (*or* Subbasin) and recommends approval of the alternative.

The Water Management Plan was developed in response to litigation involving the Agencies and the need to address deteriorating groundwater conditions brought about by historical overdraft. The Water Management Plan and related documents demonstrate that the Agencies have a detailed understanding of the hydrogeology of the Subbasin and of the direct and indirect adverse effects of past groundwater management practices that led to overdraft conditions. The Agencies have demonstrated a commitment to eliminating overdraft to stop adverse effects and to prevent them from occurring, as the Subbasin's groundwater in storage has increased since 2009 despite most of those years being relatively low in precipitation. The Plan describes the measurable objectives and the adopted projects and strategies that appear capable of achieving sustainable groundwater management for the Mission Creek Subbasin. Department staff believe that the Agencies' approach and focus on eliminating overdraft is reasonable and will, in turn, result in overall positive effects in the Subbasin, sufficient to avoid undesirable results.

¹ Water Code § 10720 *et seq.*

² Water Code § 10733.6(b)(1)

Department staff thus find that the Alternative is likely to achieve the sustainability goal for the Mission Creek Subbasin and satisfies the objectives of SGMA.

As part of a 2004 Settlement Agreement, the Agencies agreed to jointly prepare the Water Management Plan, which was completed in 2013. When submitting the Plan as an alternative, the Agencies stated that they would be partners and committed to jointly managing the Mission Creek Subbasin.³ However, in a letter to the Department, dated November 1, 2018, Mission Springs Water District stated that the Agencies have been unable to agree on terms for governance of the Mission Creek Subbasin Alternative. For that reason, along with a reference to the ongoing litigation involving the Agua Caliente tribal adjudication of federally reserved groundwater rights (Agua Caliente litigation), Mission Springs Water District requested that the Department refrain from approving the Mission Creek Subbasin Alternative.

Department staff considered Mission Springs Water District's request, along with Desert Water Agency's response in a letter dated January 23, 2019, when considering whether to recommend approval of the Alternative or not. Ultimately, Department staff concluded that Mission Springs Water District's request did not undermine the technical sufficiency of the Plan or, at this point, make the Plan invalid or its implementation infeasible. Department staff do recognize, however, that for the Mission Creek Subbasin to be sustainably managed, the Agencies must be able to work together in a coordinated and collaborative manner. The 2004 Settlement Agreement and the adopted Water Management Plan, together, satisfy the need for coordination from the Department staff's perspective, which is focused on whether an existing plan is in place that will lead to sustainable groundwater management for the Subbasin. Should the validity or feasibility of the Water Management Plan be challenged in the future, either for a technical or legal reason, the Department will have to consider, as part of its ongoing review of plan implementation, whether there remains an existing plan in place that is reasonably likely to achieve sustainable groundwater management.

Likewise, if the Agua Caliente litigation results in a decision that fundamentally changes how groundwater can be managed in the Mission Creek Subbasin, the Department will reassess the Water Management Plan's likelihood to achieve sustainable groundwater management for the Subbasin. At this time, however, it is not known with any reasonable degree of certainty when the litigation will be ultimately resolved, what the outcome of the litigation will be, or how that outcome will affect groundwater management in the Subbasin. As such, Department staff find the Alternative's current approach to managing the Subbasin, including its understanding of current and future groundwater usage, to be

³ See file named "20161229 FINAL signed Mission Creek GSP Submittal Letter.pdf" submitted to Question A.3 on the Department's Alternative Portal web site (<https://sgma.water.ca.gov/portal/alternative/print/24>)

reasonable and likely to achieve sustainable groundwater management, while also acknowledging that the current approach may have to change in order to respect federally reserved groundwater rights in full.⁴

Department staff also want to acknowledge the issue of salt management in the Mission Creek Subbasin and the Coachella Valley Groundwater Basin in general. Salt loading that results from groundwater recharge using Colorado River water is an important issue in the Coachella Valley and is discussed, but not directly addressed, in the Alternative. Instead, the Alternative identifies other options that the Agencies are investigating which would reduce water quality impacts of recharging the aquifer using Colorado River water. The Alternative also states that a Salt and Nutrient Management Plan was developed and submitted to the Colorado River Regional Water Quality Control Board (Colorado River RWCWB). In recommending approval of the Alternative, Department staff have concluded that the Agencies have demonstrated a sufficient understanding of the impacts associated with using Colorado River water to recharge groundwater in the Coachella Valley. Department staff also find that continued investigation into ways to reduce water quality impacts associated with importing Colorado River water and implementation of an approved Salt and Nutrient Management Plan appears to represent a reasonable near-term path toward sustainability with regard to salt management. However, Department staff recommend that the Agencies take aggressive steps to quantify the nature and scope of water quality issues associated with importing water into the basin, establish reasonable and achievable standards, and begin to adopt and implement projects and management actions that will achieve sustainability with regard to groundwater quality, and to do so on an accelerated basis (see Recommended Actions, below).

Based on its review of the Plan, other related documents, and consideration of public comments, Department staff believes that the Mission Creek Subbasin Alternative satisfies the objectives of SGMA for the Mission Creek Subbasin and recommends approval of the Alternative. Staff consider the information provided by the Agencies to be sufficient and credible, and that implementation of the Plan is reasonably likely to lead to sustainable groundwater management⁵ of the Subbasin. In addition, staff have identified recommended actions that are designed to facilitate the Department's ongoing evaluation and assessment of the Alternative including implementation and a determination of whether the Alternative continues to satisfy the objectives of SGMA or adversely affects an adjacent basin.

⁴ Water Code § 10720.3(d)

⁵ Water Code § 10721(v). See also discussion in Section II. Review Principles. Sustainable groundwater management is achieved by meeting the basin's sustainability goal.

The remainder of this assessment is organized as follows:

- **Section II. Review Principles** describes legal and other considerations regarding Department staff's assessment and evaluation of alternatives.
- **Section III. Alternative Materials** describes materials (i.e., plans, reports, data, and other information) submitted by the Agencies that, collectively, the Department staff considered as the Alternative.
- **Section IV. Required Conditions** describes whether the Alternative satisfies each of the four conditions required for the Department to review an alternative.
- **Section V. Alternative Contents** describes the information contained in the Alternative submittal.
- **Section VI. Assessment** describes Department staff's evaluation of the Alternative, whether it satisfies the objectives of SGMA, and, if applicable, describes recommended actions proposed for the first five-year update.

II. Review Principles

The Agencies submitted an alternative based on an existing water management plan to the Department for evaluation and assessment to determine whether it satisfies the objectives of SGMA for the Mission Creek Subbasin. To satisfy the objectives of SGMA, an alternative based on a groundwater management plan prepared pursuant to Part 2.75 of Division 6 of the Water Code⁶ or a plan developed pursuant to another law authorizing groundwater management must demonstrate that implementation of the plan has led to or will lead to sustainable groundwater management, which means the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.⁷ Undesirable results are defined quantitatively by the managing agency.⁸

An alternative, to be evaluated by the Department, must be submitted by the statutory deadline and be within a basin that complies with Part 2.11 of Division 6 of the Water Code.⁹ The submitted alternative must also be complete and must cover the entire basin.¹⁰ The Groundwater Sustainability Plan (GSP) Regulations¹¹ require the Department to evaluate an Alternative "in accordance with Sections 355.2, 355.4(b), and Section 355.6, *as applicable*, to determine whether the Alternative complies with the objectives of the Act".¹² The elements of the cited sections are not all applicable to

⁶ Water Code § 10750 *et seq.*

⁷ Water Code 10721(v)

⁸ 23 CCR § 354.26

⁹ Water Code § 10733.6(c)-(d)

¹⁰ 23 CCR § 358.4(a)

¹¹ 23 CCR § 350 *et seq.*

¹² 23 CCR § 358.4(b) (emphasis added)

alternatives. Some provisions apply to GSPs and alternatives alike, to alternatives only prospectively, or do not apply to alternatives at all.¹³ Ultimately, the purpose of the evaluation is to determine whether an alternative satisfies the objectives of SGMA.¹⁴ The agency must explain how the elements of an alternative are “functionally equivalent” to the elements of a GSP required by Articles 5 and 7 of the GSP Regulations and are sufficient to demonstrate the ability of an alternative to achieve the objectives of SGMA.¹⁵ The explanation by the agency that elements of an alternative are functionally equivalent to elements of a GSP furthers the objective of demonstrating that an alternative satisfies the objectives of SGMA. Alternatives based on groundwater management plans or historical basin management practices that predate the passage of SGMA or adoption of GSP Regulations, although required to satisfy the objectives of SGMA, are not necessarily expected to conform to the precise format and content of a GSP. The Department’s assessment is thus focused on the ability of an alternative to satisfy the objectives of SGMA as demonstrated by information provided by the agency; it is not a determination of the degree to which an alternative matched the specific requirements of the GSP Regulations.

When evaluating whether an alternative satisfies the objectives of SGMA and thus is likely to achieve the sustainability goal for the basin, staff review the information provided by and relied upon by the agency for sufficiency, credibility, and consistency with scientific and engineering professional standards of practice.¹⁶ The Department’s review considers whether there is a reasonable relationship between the information provided and the assumptions and conclusions made by the agency, whether sustainable management criteria and projects and management actions described in an alternative are commensurate with the level of understanding of the basin setting, and whether those projects and management actions are feasible and likely to prevent undesirable results.¹⁷ Staff will recommend that an alternative be approved if staff believe, in light of these

¹³ Procedural requirements, including submissions by the agency, posting by the Department, and the public comment period, apply equally to plans and alternatives (23 CCR § 355.2(a)-(c)). The periodic review of Plans (23 CCR § 355.6(a)) applies to alternatives prospectively but does not apply to initial submissions. Other regulatory provisions are inapplicable to alternatives, including the two-year review period (23 CCR § 355.2(e)), which is based on the statutory time-frame that applies to Plans but not alternatives (Water Code § 10733.4(d)); the “incomplete” status that allows the agency to address “one or more deficiencies that preclude approval, but which may be capable of being corrected by the Agency in a timely manner” (23 CCR § 355.2(e)(2)), which applies to plans undergoing development, but not alternatives that purportedly satisfy the objectives of SGMA at the time of their submission (Water Code § 10733.6(a)); and, for the same reason, corrective actions to address deficiencies in plans (23 CCR § 355.4(a)(4)), which applies to plans developed after the adoption of SGMA, but is inapplicable to alternatives that predate SGMA.

¹⁴ 23 CCR § 358.2(d), based on the statutory threshold of “whether the alternative satisfies the objectives of [SGMA] for the basin” (Water Code § 10733.6(a)).

¹⁵ 23 CCR § 358.2(d)

¹⁶ 23 CCR § 351(h)

¹⁷ 23 CCR § 355.4(b)(1), (3), and (5).

factors, that alternative has achieved or is likely to achieve the sustainability goal for the basin.¹⁸

An alternative that relies on an existing plan may be approved based on information that demonstrates the basin is being or will be managed sustainably based on groundwater management pursuant to that plan, including any related projects and management actions, as necessary. Even when staff review indicates that an alternative will satisfy the objective of SGMA, the Department may recommend actions to facilitate future evaluation of that alternative and to allow the Department to better evaluate whether an alternative adversely affects adjacent basins. The Department proposes that recommended actions be addressed by the submission date for the first periodic evaluation.

Staff assessment of an alternative involves the review of information presented by the agency, including models and assumptions, and an evaluation of that information based on scientific reasonableness. The assessment does not require Department staff to recalculate or reevaluate technical information provided in an alternative or to perform its own geologic or engineering analysis of that information. The staff recommendation to approve an alternative does not signify that Department staff, were they to exercise the professional judgment required to develop a plan for the basin, would make the same assumptions and interpretations as those contained in an alternative, but simply that Department staff have determined that the assumptions and interpretations relied upon by the submitting agency are supported by adequate, credible evidence, and are scientifically reasonable.

III. Alternative Materials

The Agencies submitted an alternative based on an existing water management plan pursuant to Water Code Section 10733.6(b)(1). The Alternative thus relies primarily upon the following document:

- Mission Creek and Garnet Hill Subbasins Water Management Plan, 2013 (Water Management Plan or Plan).

The Agencies submitted the following additional plans, reports, and other documents that the Department has determined to be sufficiently related to the Water Management Plan to warrant their consideration as part of the Alternative:

- SGMA Alternative Groundwater Sustainability Plan Bridge Document for the Mission Creek Subbasin, 2016 (Bridge Document). The Bridge Document was prepared to demonstrate that the Water Management Plan and other submitted

¹⁸ 23 CCR § 355.4(b).

documents include information that are functionally equivalent to the required elements of the GSP Regulations.

- Groundwater Flow Model of the Mission Creek and Garnet Hill Subbasins and Palm Springs Subarea, Riverside County, California, 2013 (Groundwater Flow Model). The Groundwater Flow Model report was prepared to summarize the evaluation of the groundwater basin response to various factors using a numerical model.
- Technical Memorandum: Conceptual Groundwater Model of the Mission Creek and Garnet Hill Subbasins, Riverside County, California, 2010 (Conceptual Model). The Conceptual Model report was prepared to provide a foundation for the development of the numerical model summarized in the Groundwater Flow Model report.
- Coachella Valley Water District, Engineer's Report on Water Supply and Replenishment Assessment 2016-2017, 2016 (2016-2017 Engineer's Report). The 2016-2017 Engineer's Report is an annual report that is developed to provide information regarding groundwater supply conditions, groundwater replenishment, and the assessment of fees associated with groundwater replenishment in the areas of benefit within the jurisdiction of the Coachella Valley Water District.
- Desert Water Agency, Engineer's Report – Groundwater Replenishment and Assessment Program for the Whitewater River, Mission Creek, and Garnet Hill Subbasins 2016/17, 2016 (DWA Engineer's Report). The DWA Engineer's Report is an annual report that is developed to provide information regarding groundwater supply conditions, groundwater replenishment, and the assessment of fees associated with groundwater replenishment in the areas of benefit within the jurisdiction of the Desert Water Agency.

The Agencies submitted the Bridge Document in lieu of an Alternative Elements Guide and submitted the most recent annual reports, as of the deadline for submission of the Alternative.¹⁹ Other material submitted by the Agencies, public comments, other documents submitted by third parties, correspondence, and other information provided to or relied upon by the Department have been posted on the Department's web site.²⁰

IV. Required Conditions

An alternative, to be evaluated by the Department, must be submitted by the statutory deadline and be within a basin that complies with Part 2.11 of Division 6 of the Water

¹⁹ The Annual Report is not part of the Alternative and was not reviewed by the Department for the purpose of approving the Alternative.

²⁰ <https://sgma.water.ca.gov/portal/#alt>

Code.²¹ The submitted alternative must also be complete and must cover the entire basin.²²

A. Submission Deadline

SGMA requires that an alternative for a basin categorized as high- or medium-priority as of January 31, 2015, be submitted no later than January 1, 2017.²³

The Coachella Valley Water District submitted the Alternative on behalf of the Agencies on December 29, 2016, before the statutory deadline.

B. Part 2.11 (CASGEM) Compliance

SGMA requires that the Department assess whether an alternative is within a basin that is in compliance with Part 2.11 of Division 6 of the Water Code,²⁴ which requires that groundwater elevations in all groundwater basins be regularly and systematically monitored and that groundwater elevation reports be submitted to the Department.²⁵ To manage its obligations under this law, the Department established the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. The acronym CASGEM is used in this document to denote both the program and the groundwater monitoring law.²⁶

SGMA specifies that an alternative does not satisfy the objectives of SGMA if the basin is not in compliance with the requirements of CASGEM.²⁷ The Department confirmed that the Mission Creek Subbasin was in compliance with the requirements of CASGEM prior to evaluating this Alternative and confirmed that the Subbasin remained in compliance with CASGEM through the last reporting deadline prior to issuing this assessment.

C. Completeness

GSP Regulations specify that the Department shall evaluate an alternative if that alternative is complete and includes the information required by SGMA and the GSP Regulations.²⁸ An alternative submitted pursuant to Water Code Section 10733.6(b)(1) must include a copy of the groundwater management plan and an explanation of how the elements of the Alternative are functionally equivalent to the elements of a GSP required

²¹ Water Code § 10733.6(c)-(d)

²² 23 CCR § 358.4(a)

²³ Water Code § 10733.6(c). Pursuant to Water Code § 10722.4(d), a different deadline applies to a basin that has been elevated from low- or very low-priority to high- or medium-priority after January 31, 2015.

²⁴ Water Code § 10733.6(d)

²⁵ Water Code § 10920 *et seq.*

²⁶ Stats.2009-2010, 7th Ex.Sess., c. 1 (S.B.6), § 1

²⁷ Water Code § 10733.6(d)

²⁸ 23 CCR § 358.4(a)(3)

by Articles 5 and 7 of the GSP Regulations and are sufficient to demonstrate the ability of the Alternative to achieve the objectives of SGMA.²⁹

The Coachella Valley Water District submitted the Water Management Plan for the Mission Creek Subbasin and several complementary documents, as indicated above, along with a Bridge Document that includes the Agencies' explanation of how the elements of its Alternative are functionally equivalent to the elements of a GSP. Department staff found the Alternative to be complete and to contain the required information, sufficient to warrant an evaluation by the Department.

D. Basin Coverage

An alternative must cover the entire basin.³⁰ An alternative that is intended to cover the entire basin may be presumed to do so if the basin is fully contained within the jurisdictional boundaries of the submitting agency. However, an alternative submitted by an agency whose jurisdictional boundaries do not include all areas of the basin may nevertheless be found to effectively cover the entire basin. Because the intent of SGMA is to provide for the sustainable management of groundwater basins,³¹ with sustainability defined as the management and use of groundwater that does not cause undesirable results,³² an alternative effectively covers the entire basin if it results in groundwater management that avoids undesirable results. An alternative that cannot avoid undesirable results is not sustainably managing the basin even if the entire basin is within the jurisdiction of the managing agency, but an alternative that avoids undesirable results throughout the basin is sustainably managing that basin even if some part of the basin lies outside the jurisdiction of that agency.

The Water Management Plan and Bridge Document include maps showing that nearly the entire Mission Creek Subbasin is within the jurisdictional areas of at least one of the Agencies (see Figure 1, below).³³ The Bridge Document indicates that the only portions of the Subbasin outside the jurisdictional area of the Agencies are small areas at the northwest portion of the Mission Creek Subbasin in San Bernardino County. The Bridge Document notes that all of those areas, except for less than one square mile, are federally-owned, and that the entirety of the non-jurisdictional area falls within the recently designated Sand to Snow National Monument, limiting future development in that area.³⁴

²⁹ 23 CCR § 358.2(c)-(d)

³⁰ 23 CCR § 358.4(a)(4)

³¹ Water Code § 10720.1(a)

³² Water Code § 10721(v)

³³ Water Management Plan, Figure 2-1; Bridge Document, Figure 2-2

³⁴ Bridge Document, Section 2.8, p. 2-18 and Figure 2-3

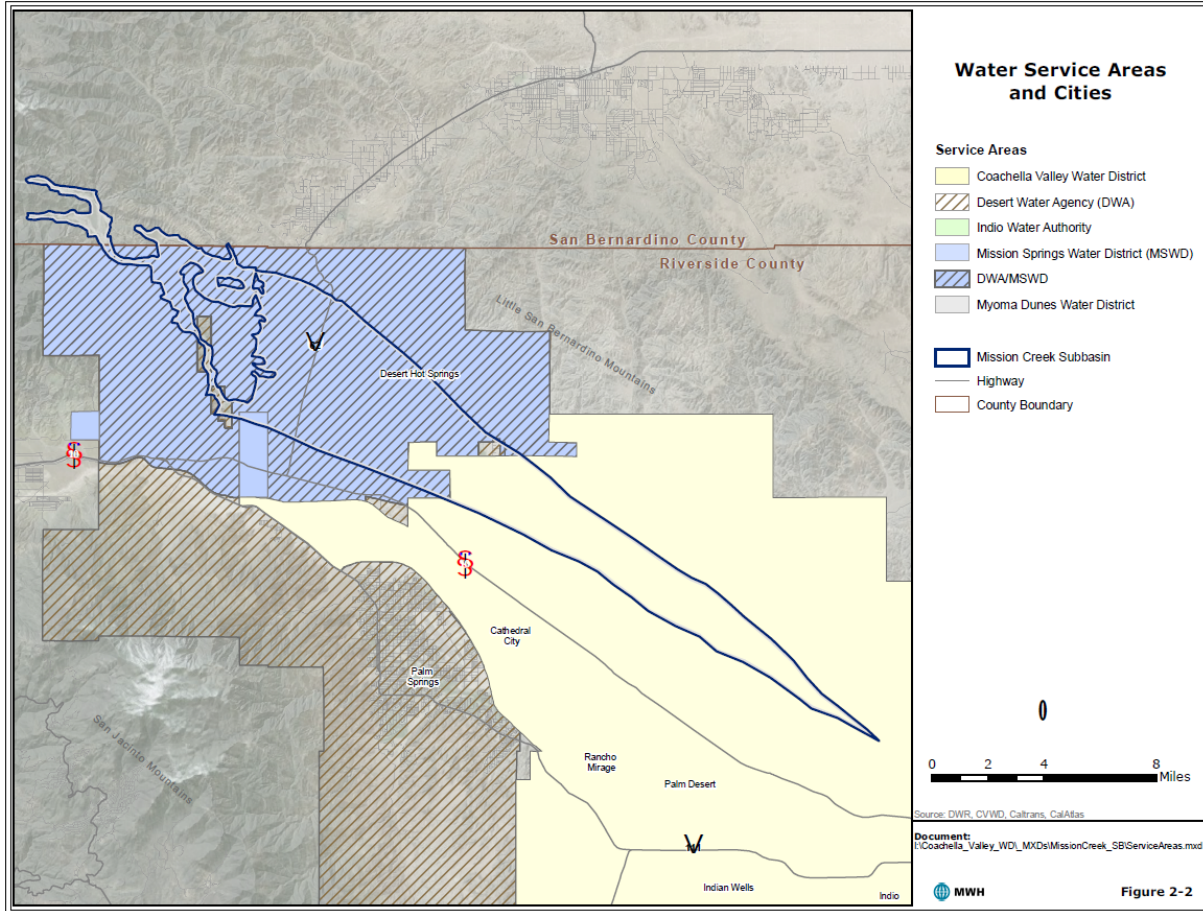


Figure 1. Service Areas of the Local Agencies in the Mission Creek Subbasin (From Bridge Document Figure 2-2)

Based on the facts described and the verification of the approximate land use using aerial imagery, Department staff determined that the Water Management Plan effectively covers the entire basin from a jurisdictional standpoint. Considering the current extent of land use and the associated groundwater use in the areas outside of the Agencies’ jurisdictional boundaries, Department staff do not regard the exclusion of the northwestern portion of the Subbasin to pose a threat to successful implementation of the Water Management Plan and does not believe that implementation of the Plan is likely to adversely impact the ability of adjacent basins to achieve sustainability goals.

Department staff also considered whether the Water Management Plan intends to cover the entire basin from a management perspective. The southeastern portion of the Mission Creek Subbasin, as defined in the Department’s Bulletin 118, consists of the Indio Hills area (see Figure 2, below), which is within the jurisdiction of the Coachella Valley Water District but was not included in the planning area for the Water Management Plan (see

Figure 2, below).³⁵ Although the Indio Hills area accounts for a significant portion of the Mission Creek Subbasin area, the Agencies submitted evidence to show that the Indio Hills area does not need to be managed in order to sustainably manage the entire Subbasin. The Plan provides evidence that the Indio Hills area consists predominantly of low-permeability rocks units, and that the rocks with high aquifer-potential are structurally higher than the water levels in neighboring basins.³⁶ The Agencies' understanding of hydrologic conditions in the Mission Creek Subbasin is demonstrated in the Water Management Plan, Groundwater Flow Model, and the annual Engineer's Reports. The water inflows to and outflows from this area are included in the groundwater model³⁷ and discussed in more detail in the Water Budget section, below.

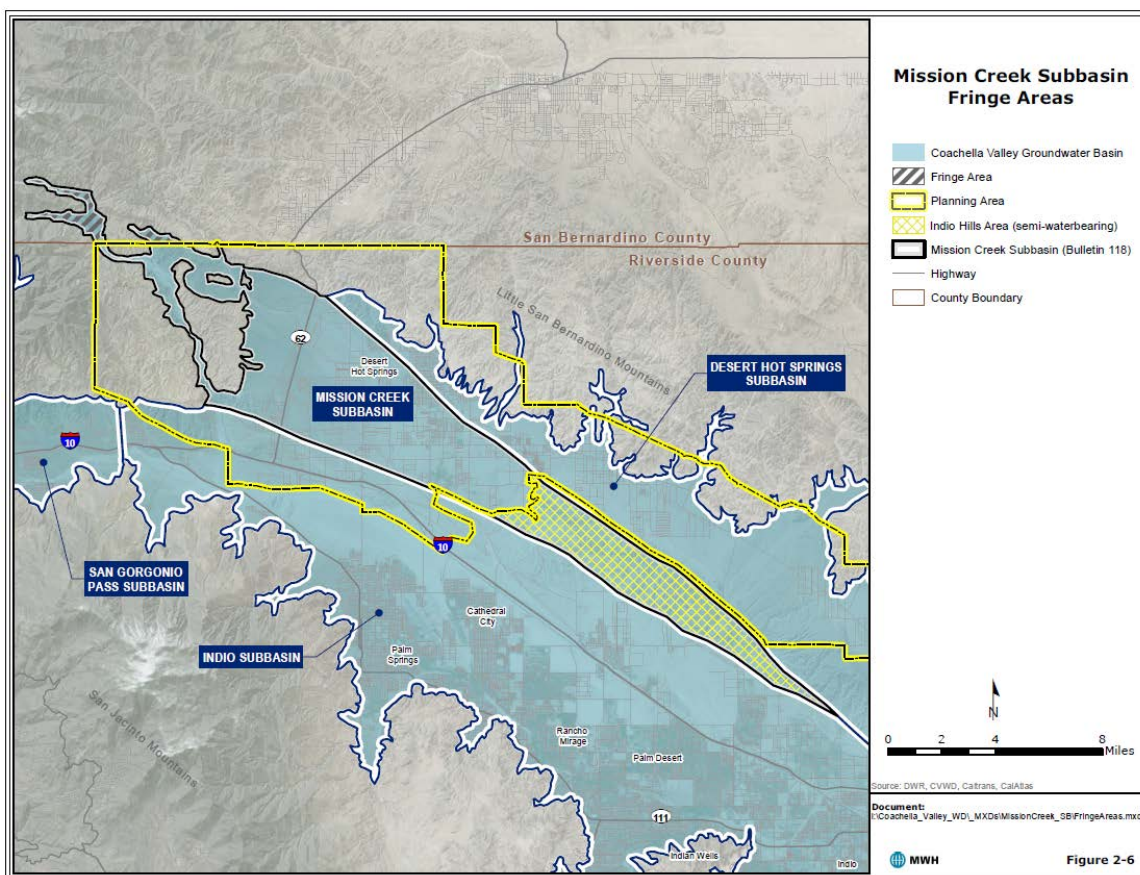


Figure 2. Map of the Mission Creek Subbasin and the Planning Area of the 2013 Water Management Plan (From Bridge Document Figure 2-6)

The Bridge Document includes a 2005 land-use map showing the vast majority of the Indio Hills area to be vacant, with minor industrial, residential, and infrastructure use and

³⁵ Water Management Plan, Figure 2-1; Bridge Document, Figure 2-6

³⁶ Water Management Plan, Section 4, p. 4-4; Bridge Document, Section 2.8, p. 2-20

³⁷ Groundwater Flow Model, Section 1.1.1, p. 2, Section 3.1, p. 13, Section 5.3, pp. 19-25, and Tables 1 and 3

a single agricultural area, resulting in no significant groundwater production in the Indio Hills area.³⁸ The Bridge Document further notes that the Coachella Valley Multi-Species Habitat Conservation Plan has designated most of the Indio Hills area as a conservation area, limiting current private and public land use and the potential for future development.³⁹ The Bridge Document concludes that exclusion of the Indio Hills area will have no effect on the Agencies' ability to manage groundwater sustainability, and because the inflows to and outflows from the Mission Creek Subbasin, including the Indio Hills area, are incorporated into the groundwater model, the potential impacts of water management activities in the planning area on adjacent basins are sufficiently accounted for.⁴⁰

Based on the information provided by the Agencies and the verification of the approximate land use using aerial imagery, Department staff determined that exclusion of the Indio Hills area from the Water Management Plan's planning area is not likely to adversely impact the Agencies' ability to achieve sustainable groundwater management for the entire Mission Creek Subbasin.

In addition, the Water Management Plan includes an area that is outside the boundaries of the Mission Creek Subbasin, as defined by Bulletin 118. Specifically, the Plan includes the locally-defined Garnet Hills Subbasin, which is predominantly part of the Indio Subbasin. The Department staff did not review the information regarding the Garnet Hills Subbasin in evaluating the Plan and assessing whether it satisfies the objectives of SGMA. The information regarding Garnet Hills Subbasin, however, was reviewed by Department staff in its evaluation and assessment of the Alternative submitted for the neighboring Indio Subbasin.

V. Alternative Contents

GSP Regulations require the submitting agency to explain how the elements of an alternative are functionally equivalent to the elements of a GSP as required by Article 5 of the GSP Regulations⁴¹ and are sufficient to demonstrate the ability of the alternative to achieve the objectives of SGMA.⁴²

As noted elsewhere, alternatives based on plans and studies that predate the passage of SGMA or adoption of GSP Regulations are not expected to conform to the precise format

³⁸ Bridge Document, Section 2.8, p. 2-20 and Figure 2-4

³⁹ Bridge Document, Section 2.8, p. 2-20; Coachella Valley Multi-Species Habitat Conservation Plan, Figure 2-4; Water Management Plan, Figure 2-6

⁴⁰ Bridge Document, Section 2.8, p. 2-20

⁴¹ 23 CCR § 354-354.44

⁴² 23 CCR § 358.2(d). The requirements pertaining to Article 7 of the GSP Regulations (23 CCR § 356-356.4) relate to annual reports and periodic evaluation and are not applicable to review of the initial alternative.

and content of a GSP, and the criteria for adequacy of an alternative is whether the Department is able to determine that the alternative satisfies the objectives of SGMA. Department staff relied on the functional equivalence of elements of the alternative with elements of a GSP to facilitate its evaluation and assessment (see Assessment, below). For organizational purposes, the discussion of information contained in the Water Management Plan and related documents provided by the Agencies follows the elements of a GSP provided in Article 5 of the GSP regulations.

A. Administrative Information

GSP Regulations require information identifying the submitting agency, describing the plan area, and demonstrating the legal authority and ability of the submitting agency to develop and implement a plan for that area.⁴³

The Water Management Plan and the Bridge Document each include an executive summary, a description of the Agencies that are implementing the Alternative, an overview of the general funding structure of the Agencies, a description of water management programs, and the statutory authorities and water management responsibilities of the Agencies in their respective areas. The Bridge Document states that the Plan implementation is largely governed by the Mission Creek and Garnet Hill Management Committee formed by the 2004 Settlement Agreement.⁴⁴ The purpose of the Management Committee is to exchange information and discuss issues regarding water management within the Mission Creek Subbasin.⁴⁵ In particular, the Management Committee is involved with the implementation of projects identified in the Management Plan, implementation of the monitoring and reporting program, and financing of the projects and programs.⁴⁶ The Management Committee is also tasked with seeking input from various stakeholders, including disadvantaged communities and Tribal outreach and coordination.⁴⁷

B. Basin Setting

GSP Regulations require information about the physical setting and characteristics of the basin and current conditions of the basin, including a hydrogeologic conceptual model, a description of historical and current groundwater conditions, and an assessment of the water budget.⁴⁸

⁴³ 23 CCR § 354.2-354.10

⁴⁴ Bridge Document, Section 2.7.3, p. 2-17

⁴⁵ Bridge Document, Section 2.7.3, p. 2-17

⁴⁶ Bridge Document, Section 2.7.3, p. 2-18

⁴⁷ Bridge Document, Section 2.7.3, p. 2-18

⁴⁸ 23 CCR § 354.12 et seq.

1. Hydrogeologic Conceptual Model

The GSP Regulations require a descriptive hydrogeologic conceptual model of the basin that includes a written description supported by cross-sections and maps.⁴⁹

The Water Management Plan contains a general description of the hydrogeologic conceptual model for the Mission Creek Subbasin, including descriptions of the basin boundaries and the composition and origin of the alluvial deposits filling the Subbasin. The Plan describes three significant water-bearing sedimentary deposits that are present in the Subbasin: the Pleistocene Cabazon Fonglomerate, the Pleistocene to Holocene Older alluvium, and Recent alluvial deposits. The Conceptual Model report, which was provided as a part of the Alternative submittal and incorporated by reference in the groundwater modeling analysis documented in an appendix to the Plan, provides additional detailed information about the hydrogeologic conceptual model of the Subbasin and was used to develop the groundwater model. The Conceptual Model report includes geologic maps and cross-sections depicting boundaries and geologic composition of the Subbasin, and includes maps depicting hydraulic properties of the Subbasin sediments derived from prior studies. The Conceptual Model report also discusses major faults, including the Banning and Mission Creek Faults, which are located along the southern and northern boundaries of the basin, respectively, and describes that they are partial barriers to groundwater flow. The Conceptual Model report includes quantitative recharge estimates, discharge estimates, average groundwater production, total groundwater storage capacity, and includes a water balance discussion.

The Conceptual Model report provided the information used to develop the groundwater model. The Groundwater Flow Model describes the groundwater model construction process, the calibration of the model using historical data from 1936 through 2009, and includes a water budget, which will be described in the Water Budget section, below.

2. Groundwater Conditions

The GSP Regulations require a description of historical and current groundwater conditions in the basin that includes information related to groundwater elevations, groundwater storage, seawater intrusion, groundwater quality, subsidence, and interconnected surface water, as applicable. The Regulations also require an identification of groundwater dependent ecosystems.⁵⁰

Groundwater elevation is discussed in the Water Management Plan, Groundwater Flow Model report, Conceptual Model report, and the 2016-2017 Engineer's Report. The Alternative describes historical groundwater elevations using a series of groundwater

⁴⁹ 23 CCR § 354.14(a)

⁵⁰ 23 CCR § 354.16

elevation contours maps depicting conditions for 1936, 1951, 1992, 2003, 2009, and 2015.⁵¹ Those maps support a discussion of groundwater conditions in the Plan, which describes that increases in groundwater use since 1936 led to conditions of overdraft. The Plan notes that groundwater levels basin-wide declined at a rate of approximately 0.5 to 1.5 feet per year since 1952, and that data from Mission Springs Water District indicated a decline of about 3 feet per year between 1999 and 2007.⁵² The 2016-2017 Engineer's Report presents groundwater level hydrographs for a set of wells with data from 1996 to 2015 along with the quantity of water recharged at the Mission Creek Groundwater Replenishment Facility, which began operation in 2002.⁵³ The Plan discusses that those recharge activities have improved groundwater levels in the Subbasin. Information on current groundwater elevations, including groundwater level hydrographs and maps of groundwater levels changes, are included in the 2016-2017 Engineer's Report. A map showing changes in groundwater levels between 2005 and 2015 indicates that groundwater levels have increased or remained stable throughout the Subbasin over that time.⁵⁴

Groundwater storage changes are presented in the Water Management Plan for the period of 1936 through 2011 and estimated using the balancing of the estimated inflows and outflows to the groundwater system.⁵⁵ The analysis indicated that storage was relatively stable through approximately 1960 and then declined through 2003, with a total loss in storage of slightly less than approximately 200,000 acre-feet. The 2016-2017 Engineer's Report includes a chart showing recent changes in storage that show the positive effects of groundwater replenishment and also the effects of drought years, such as 2015, when water for replenishment was reduced and groundwater storage decreased by approximately 5,200 acre-feet.⁵⁶ The 2016-2017 Engineer's Report states that "long-term overdraft in the Mission Creek Subbasin has essentially been eliminated as evidenced by a positive ten-year average change in groundwater storage since 2009 due to artificial replenishment and other water management activities."⁵⁷

With regard to seawater intrusion, the Bridge Document states that there is no potential for seawater intrusion in the Mission Creek Subbasin. "Geologic conditions are not suitable for density-driven seawater intrusion in the Mission Creek Subbasin."⁵⁸

⁵¹ Conceptual Model, Section 4.3.1, pp. 14-15, Section 4.6, pp. 31-33, and Figures 12 to 15; Bridge Document, Figure 3-4; Water Management Plan, Figure 4-5

⁵² Water Management Plan, Section 4, p. 4-14

⁵³ 2016-2017 Engineer's Report, Figure V-3

⁵⁴ 2016-2017 Engineer's Report, Figure V-2

⁵⁵ Water Management Plan, Section 4, pp. 4-4 to 4-12 and Figure 4-2

⁵⁶ 2016-2017 Engineer's Report, Figure V-4, Table V-4

⁵⁷ 2016-2017 Engineer's Report, Chapter V, p. V-11

⁵⁸ Bridge Document, Table 3-1

Water quality issues are described in the Water Management Plan, Bridge Document, and 2016-2017 Engineer's Report. The Plan notes that water quality constituents exceeding primary or secondary water quality standards have included total dissolved solids (TDS), nitrate, uranium, and gross alpha; the latter two constituents are noted to be naturally occurring. However, the main issues regarding water quality are related to salinity management and nitrate. The primary sources of salinity are the inflow of water with high TDS from the adjacent Desert Hot Springs Subbasin and salt loading from importation of water from the Colorado River (i.e., the State Water Project Exchange Water). The Plan analyzed salt loading in the Subbasin and noted that the importation of Colorado River water for groundwater replenishment purposes will add approximately 0.9 tons of salt per acre foot of water imported.⁵⁹ The Plan also modeled the long-term trends in TDS using the Water Evaluation and Planning (WEAP) model developed by the Stockholm Environment Institute.⁶⁰ The results from the WEAP model runs show an increase of TDS levels, except for one alternative option that included desalting the SWP Exchange water before recharging.⁶¹

The Coachella Valley Water District has participated in the Coachella Valley-wide Salt and Nutrient Management Plan,⁶² which includes the Mission Creek Subbasin. The Salt and Nutrient Management Plan was completed and submitted to the Colorado River Regional Water Quality Control Board (Colorado River RWQCB) in 2015. The Salt and Nutrient Management Plan discusses the hydrogeology, ambient groundwater quality, projected water quality, objectives, management strategies, and a monitoring plan. The objective for total dissolved solids is to be under 1,000 mg/L and 45 mg/L for nitrate.⁶³ However, at the time of this staff report, the Colorado River RWQCB has not made a determination regarding the adequacy of the Salt and Nutrient Management Plan. The Water Management Plan states that managing groundwater levels in the Mission Creek Subbasin may help to reduce inflow of higher TDS groundwater from the adjacent Desert Hot Springs Subbasin.⁶⁴

In regard to nitrate, there is no specific spatial trend, except that nitrate is only known to impact the shallow portions of the aquifer and is primarily a result of septic systems.⁶⁵ Approximately half of the customers in the Mission Springs Water District service area are connected to wastewater collection and treatment systems, while the other half use septic tanks. All the customers in the Mission Creek Subbasin that are served by the

⁵⁹ Water Management Plan, Section 4, p. 4-26

⁶⁰ Water Management Plan, Section 5, p. 5-41

⁶¹ Water Management Plan, Section 5, p. 5-42

⁶² Accessed from: <https://www.cvwd.org/283/Salt-Nutrient-Management-Planning>

⁶³ Salt and Nutrient Management Plan, Tables ES-1 and ES-2

⁶⁴ Water Management Plan, Section 4, p. 4-37, Section 5, p. 5-13, Section 7, p. 7-8

⁶⁵ Water Management Plan, Section 4, pp. 4-26 to 4-27

Coachella Valley Water District use septic tanks.⁶⁶ The Water Management Plan states that the Mission Springs Water District has an active program to convert septic tanks to sewer collection systems for nitrate management. Since 1995, the Mission Springs Water District spent more than \$70 million to remove more than 5,000 septic tanks in its service area, significantly reducing the source of groundwater quality degradation.⁶⁷

The Water Management Plan and Bridge Document discuss compliance with state and federal laws and regulations pertaining to water quality, including drinking water regulations, waste discharge requirements, and well construction standards and permits.⁶⁸ The Water Management Plan identifies 15 on-going, near-term, and mid-term actions that are being taken to address water quality in the Mission Creek Subbasin.⁶⁹

With regard to land subsidence, the Plan notes that, while overdraft can lead to subsidence in aquifer systems with significant fine-grained sediments, the lack of those fine-grained sediments in the Mission Creek Subbasin indicates a low potential for subsidence.⁷⁰ The Bridge Document notes that inelastic subsidence has not been observed in the Subbasin and that it is unlikely to occur if overdraft is eliminated.⁷¹

The discussion regarding interconnected surface waters in the Bridge Document states that “[t]here are no interconnected surface waters in the Mission Creek Subbasin.”⁷² The Plan states that “[s]urface water flow in the Planning Area consists of ephemeral or intermittent streams originating from the surrounding mountains” and that surface water features contribute to recharge in the Subbasin during periods of high runoff or flash flooding.⁷³

The Water Management Plan identifies the groundwater dependence of mesquite hummocks located near Willow Hole in the southeast portion of the Subbasin.⁷⁴ The Plan cites prior studies that documented the level to which groundwater could decline before adversely impacting the mesquite hummocks. The Plan states that no evidence was found that showed mesquite hummocks could effectively adapt to groundwater conditions more than 49 feet below ground surface. However, during droughts, mesquite hummocks are well-equipped to utilize groundwater with taproots that can exceed 140 feet. Declining

⁶⁶ Water Management Plan, Section 2, p. 2-16

⁶⁷ Water Management Plan, Section 4, p. 4-27; Bridge Document, Section 3.4.4, p. 3-24

⁶⁸ Water Management Plan, Executive Summary, p. ES-13, Table ES-2, p. 1-7; Bridge Document, Section 4.2, p. 4-4, Section 6.2.4, p. 6-7

⁶⁹ Bridge Document, Section 6.2.4, p. 6-7, Table 6-4

⁷⁰ Water Management Plan, Section 5, p. 5-17

⁷¹ Bridge Document, Section 3.4.5, p. 3-24

⁷² Bridge Document, Section 3.4.6, p. 3-24

⁷³ Water Management Plan, Appendix E, p. E-4

⁷⁴ Water Management Plan, Section 5, p. 5-16

groundwater levels are suspected of having an adverse effect on the growth of mesquite hummocks in designated conservation areas within the planning area.⁷⁵

3. Water Budget

GSP Regulations require 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, as applicable.⁷⁶

The Groundwater Flow Model Report documents the development, calibration, and peer review of a numerical groundwater flow model for an area that includes most of the Mission Creek Subbasin.⁷⁷ Development of many of the input datasets used in the numerical model were documented in the Conceptual Model report. Those datasets and simulation results from the numerical model were used as the basis for a discussion of the groundwater budget in the Water Management Plan. Inflows to the Subbasin include mountain-front recharge, subsurface flow from the adjacent Desert Hot Springs Subbasin across the Mission Creek Fault, percolation of applied water (i.e., return flows), and artificial recharge that commenced in 2002.⁷⁸ Outflows from the Subbasin include groundwater extraction (identified as the principal component of the outflow), subsurface outflow to the Indio Subbasin across the Banning Fault, subsurface flow into the Indio Hills area, which was estimated to be approximately 1,100 acre-feet per year by the numerical model, and evapotranspiration by mesquite.⁷⁹ Estimated changes in storage are discussed above (see Groundwater Conditions). The peer review of the groundwater model by an industry expert concluded that the model simulations and water budget inflow and outflow components seem reasonable and are consistent with the available information, but may underestimate the amount of mountain front recharge, making the model useful in establishing the impacts from changes in recharge and discharge.⁸⁰

The Bridge Document explains that the current water budget is described in the 2016-2017 Engineer's Report. An estimate of sustainable yield is not quantified; instead, the Agencies use a proxy of "maintaining a positive water balance and maintaining average

⁷⁵ Water Management Plan, Section 5, p. 5-16

⁷⁶ 23 CCR § 354.18

⁷⁷ The northwest portion of the Subbasin was not explicitly simulated but inflow from that area was accounted for via a specified-flux boundary condition and the Indio Hills area was also not explicitly simulated but a drain boundary condition was used to account for flow into the Indio Hills area, see Figure 7 of the Groundwater Flow Model report

⁷⁸ Groundwater Flow Model, Table 1

⁷⁹ Water Management Plan, Section 4, p. 4-12

⁸⁰ Groundwater Flow Model, Section 1.2.2, p. 6

groundwater levels above those observed in 2009” to eliminate overdraft and the associated undesirable effects (see Sustainable Management Criteria, below).⁸¹

Predictive simulations conducted using the numerical groundwater model are documented in the Groundwater Flow Model Report and discussed in the Water Management Plan. The baseline predictive simulation projects the water budget into the future for a period described as being for 2010 through 2045 under assumed conditions of future growth and without inclusion of “any additional water management activities.” Additional predictive simulations were conducted to consider the amount of imported water required to stabilize groundwater levels (referred to as Model Run No. 2), the impacts of “extreme hydrologies, i.e., prolonged wet and dry cycles” (referred to as Model Run No. 3), and a “no growth” scenario (referred to as Model Run No. 4). Additional discussion of these scenarios is provided below (see Projects and Management Actions).

4. Management Areas

GSP Regulations authorize, but do not require, an agency to define one or more management areas within a basin if the agency has determined that creation of management areas will facilitate implementation of the GSP.⁸²

The Subbasin is divided into management areas, locally referred to by the Agencies as *areas of benefit*. The use of management areas is an important component of the management structure of the Subbasin; the primary objective of defining the *areas of benefit* is related to how groundwater replenishment costs are assessed by the Coachella Valley Water District and the Desert Water Agency to recover costs associated with importing water and other water management activities.⁸³

C. Sustainable Management Criteria

GSP Regulations require a sustainability goal that defines conditions that constitute sustainable groundwater management for the basin, the characterization of undesirable results, and establishment of minimum thresholds and measurable objectives for each applicable sustainability indicator, as appropriate.⁸⁴

1. Sustainability Goal

GSP Regulations require that sustainable management criteria include a sustainability goal that culminates in the absence of undesirable results within the appropriate timeframe, and includes a description of the sustainability goal, describes information used to establish the goal for the basin, describes measures that will be implemented to

⁸¹ Bridge Document, Section 4.4, p. 4-8

⁸² 23 CCR § 354.20

⁸³ Bridge Document, Section 3.6, p. 3-26, Table 3-1, Figure 3-6

⁸⁴ 23 CCR § 354.22

ensure the basin operates within its sustainable yield, and contains an explanation of how the sustainability goal will be met.⁸⁵

The Water Management Plan includes a mission statement to “manage the water resources to meet demands reliably and protect water quality in a sustainable and cost-effective manner.”⁸⁶ The Plan also included the following water management objectives for the Mission Creek Subbasin:⁸⁷

- Meet current and future water demands with a 10 percent supply buffer by 2020;
- Eliminate long-term groundwater overdraft by maintaining 2009 groundwater levels to the extent practicable;
- Manage and protect water quality;
- Minimize adverse environmental impacts;
- Comply with state and federal laws and regulations; and
- Manage future costs.

The Plan includes additional discussion of the intent of those objectives and Section 7 of the Plan describes specific elements and measures identified to achieve the objectives, which are discussed below (see Projects and Management Actions).

2. Sustainability Indicators

GSP Regulations specify that an agency define conditions that constitute sustainable groundwater management for a basin, including the characterization of undesirable results and the establishment of minimum thresholds and measurable objectives for each applicable sustainability indicator.⁸⁸

Sustainability indicators are defined as any of the effects caused by groundwater conditions occurring throughout the basin that, *when significant and unreasonable*, cause undesirable results.⁸⁹ Sustainability indicators thus correspond with the six undesirable results – chronic lowering of groundwater levels indicating a depletion of supply if continued over the planning and implementation horizon, reduction of groundwater storage, seawater intrusion, degraded water quality including the migration of contaminant plumes that impair water supplies, land subsidence that substantially interferes with surface land uses, and depletions of interconnected surface water that have adverse impacts on beneficial uses of the surface water⁹⁰ – but refer to groundwater conditions that are not, in and of themselves, significant and unreasonable. Rather,

⁸⁵ 23 CCR § 354.24

⁸⁶ Water Management Plan, Executive Summary, p. ES-2

⁸⁷ Water Management Plan, Executive Summary, p. ES-10

⁸⁸ 23 CCR § 354.22

⁸⁹ 23 CCR § 351(ah)

⁹⁰ Water Code § 10721(x)

sustainability indicators refer to the effects caused by changing groundwater conditions that are monitored, and for which criteria in the form of minimum thresholds are established by the agency to define when the effect becomes significant and unreasonable, producing an undesirable result.

This section thus consolidates three facets of sustainable management criteria: undesirable results, minimum thresholds, and measurable objectives. Information pertaining to the processes and criteria relied upon to define undesirable results applicable to the basin, as quantified through the establishment of minimum thresholds, are addressed for each sustainability indicator. However, a submitting agency is not required to establish criteria for undesirable results that the agency can demonstrate are not present and are not likely to occur in a basin.⁹¹

The Bridge Document provides an overview of the existing goals for the Mission Creek Subbasin and indicates that the goals and objectives established in the Water Management Plan drive the implementation of the programs and projects specified in the Plan. The progress toward achieving the goals and successful Plan implementation is evaluated using water level monitoring, water quality monitoring, and water budget evaluation.⁹²

The following is a description of how the sustainable management criteria for each sustainability indicator was addressed in the Alternative.

a. Chronic Lowering of Groundwater Levels

GSP Regulations specify that the minimum threshold for chronic lowering of groundwater levels be based on groundwater elevations indicating a depletion of supply that may lead to undesirable results.⁹³

The Agencies agreed during Plan development that overdraft in the Subbasin “should be eliminated with the goal of maintaining long-term average water levels at year 2009 levels to the extent practicable.”⁹⁴ The Bridge Document states that implementation of the adopted Plan will prevent long-term water level declines and that the 2009 levels “represent the threshold below which undesirable groundwater lowering would occur.”⁹⁵ The Plan does not provide specific minimum thresholds for individual monitoring sites based on the 2009 levels.

⁹¹ 23 CCR § 354.26(d)

⁹² Bridge Document, Section 4.1, p. 4-1, Section 4.3, p. 4-5

⁹³ 23 CCR § 354.28(c)(1)

⁹⁴ Water Management Plan, Executive Summary, p. ES-11

⁹⁵ Bridge Document, Section 4.3.1, p. 4-5

b. Reduction of Groundwater Storage

GSP Regulations specify that 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.⁹⁶

The Water Management Plan did not define a specific volume of groundwater storage as an operating standard, but the objectives noted above to meet current and future water demands with a 10 percent supply buffer and to eliminate the long-term groundwater overdraft, are both related to storage. The Plan notes that the supply buffer should include an additional 1,500 acre-feet per year, initially, increasing to 3,700 acre-feet per year by 2045.⁹⁷

c. Seawater Intrusion

GSP Regulations specify that 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.⁹⁸

The Water Management Plan did not discuss seawater intrusion, and the Bridge Document notes that conditions that would lead to seawater intrusion are not present in the Subbasin (see Groundwater Conditions, above). The Plan did not include sustainable management criteria for seawater intrusion.

d. Degraded Water Quality

GSP Regulations specify that 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.⁹⁹

The Bridge Document states that “[t]he [Plan] did not establish specific numerical thresholds or objectives for water quality degradation. Instead, the [Plan] sought to maintain groundwater levels at sufficient levels to avoid potential adverse water quality impacts associated with groundwater overdraft.”¹⁰⁰ As noted above, the Bridge Document states that maintaining water levels above 2009 levels are expected to reduce inflow of water with elevated TDS from the adjacent Desert Hot Springs Subbasin.¹⁰¹ The Bridge Document and Water Management Plan include a primary objective of complying with

⁹⁶ 23 CCR § 354.28(c)(2)

⁹⁷ Water Management Plan, Section 6, p. 6-2

⁹⁸ 23 CCR § 354.28(c)(3)

⁹⁹ 23 CCR § 354.28(c)(4)

¹⁰⁰ Bridge Document, Section 4.3.4, p. 4-7

¹⁰¹ Bridge Document, Section 4.3.4, p. 4-7

federal and state laws and regulations, which include water quality monitoring and operating water treatment plants to improve water quality.

Salinity management is noted in the Plan as a significant future cost, and the Plan states that the Agencies will evaluate management strategies for salinity in conjunction with the Coachella Valley Regional Water Management Group to determine the most appropriate course of action for the Coachella Valley as a whole.¹⁰² The Coachella Valley Water District, Desert Water Agency, and Indio Water Authority submitted a *Salt and Nutrient Management Plan* for the Coachella Valley, which includes the Mission Creek Subbasin, to the Colorado River RWQCB in 2015.

e. Land Subsidence

GSP Regulations specify that 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.¹⁰³

As noted, the Plan did not consider subsidence as likely to occur given the nature of aquifer materials present in the Subbasin and the goal to eliminate overdraft (see Groundwater Conditions, above). The Plan did not include sustainable management criteria for land subsidence.

f. Depletions of Interconnected Surface Water

GSP Regulations specify that the minimum threshold for depletion of interconnected surface water shall be the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results.¹⁰⁴

The Water Management Plan did not discuss depletions of interconnected surface water. The Bridge Document states, “there are no interconnected surface waters in the Mission Creek Subbasin...” (see Groundwater Conditions, above). The Plan did not include sustainable management criteria for depletions of interconnected surface water.

D. Monitoring Networks

GSP Regulations require that each basin be monitored, and that a monitoring network include monitoring objectives, monitoring protocols, and data reporting requirements be developed that shall promote the collection of data of sufficient quality, frequency, and

¹⁰² Water Management Plan, Section 6, p. 6-3

¹⁰³ 23 CCR § 354.28(c)(5)

¹⁰⁴ 23 CCR § 354.28(c)(6)

distribution to characterize groundwater and related surface water conditions in the basin and evaluate changing conditions.¹⁰⁵

The monitoring and reporting program for the Alternative is presented in Appendix E of the Water Management Plan. Appendix E describes the existing monitoring activities regarding: precipitation, surface flow, groundwater replenishment, groundwater production, groundwater levels, water quality, inelastic land surface subsidence, other investigations, and data management and reporting. Appendix E includes a table showing the active precipitation gauges in the Subbasin, a table showing historical and active stream gauges that measure surface water flow, a discussion about metered wells that report groundwater production volumes, a discussion regarding groundwater level monitoring, maps and tables showing the type of monitoring and the spatial distribution of the network and potential improvements to close data gaps,¹⁰⁶ and a discussion regarding water quality and the frequency of monitoring.

The discussion mentions data gaps and references the data gaps in the technical memos regarding the groundwater flow model.¹⁰⁷ Appendix E considers the potential improvements to each component of the monitoring network listed above. A table in the Plan lists specific recommended elements related to the monitoring of basin conditions and identifies which of the Plan's objectives (see Sustainability Goal, above) would be addressed by each recommended element.¹⁰⁸ The table also lists the implementation timeframe (i.e., near-, mid-, or long-term) for each element. A table showing the implementation status of projects is provided in the Bridge Document.¹⁰⁹

E. Projects and Management Actions

GSP Regulations require a description of the projects and management actions the submitting agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin.¹¹⁰

As mentioned above, the Water Management Plan identified several objectives, including the objective to eliminate overdraft and maintain groundwater levels at their 2009 levels for the Subbasin. The Plan notes that achieving that objective will require additional water. To prevent overdraft and to accomplish the objectives for the Mission Creek Subbasin, the Plan discusses six scenarios (referred to as "alternative plans" in the Water Management Plan) developed with a variety of assumed projects to address water

¹⁰⁵ 23 CCR § 354.32

¹⁰⁶ Water Management Plan, Appendix E, Figures E-1 to E-2, Tables E-4 to E-5

¹⁰⁷ Water Management Plan, Appendix E, p. E-1

¹⁰⁸ Water Management Plan, Table 7-1

¹⁰⁹ Bridge Document, Table 5-2

¹¹⁰ 23 CCR § 354.44

conservation measures, imported water supplies, water quality protection measures, and measures addressing the collection, treatment, disposal and reuse of wastewater.¹¹¹ Five of the six scenarios would accomplish the primary goal of eliminating overdraft, but some scenarios included additional water level improvement (i.e., to maintain groundwater levels at 15 feet above 2009 levels) or included maintaining 2009 water levels while simultaneously minimizing importation of water and/or maximizing water quality. The Water Management Plan describes that “Alternative Plan 1”, which maintained 2009 groundwater levels but did not include the minimization of water imports or maximization of water quality, was the lowest cost scenario that achieved the Plan objectives. Alternative Plan 1 requires a 20 percent reduction in urban demand, assumes imported water supplies are available under existing conditions at 50 percent reliability, assumes projected growth (as compared to other scenarios that include a no-growth assumption), and requires additional imported water. Alternative Plan 1 does not include use of recycled water and does not include additional treatment measures to reduce TDS concentration in imported water or to address other water quality parameters.

The Water Management Plan describes that, ultimately, the Agencies selected a variation of Alternative Plan 1, which it refers to as the “Recommended Plan” and describes incorporating elements from each of the scenarios mentioned above. The Recommended Plan includes strategies “for reducing demand, managing water supply sources, managing overdraft by maintaining groundwater levels on a long-term basis, protecting water quality, managing wastewater through septic conversions, and developing a recycled water system for the Planning Area.”¹¹² The strategies are itemized and organized by project and management type and associated with the goals and objectives that each project would help achieve, in addition to the recommended action and implementation horizon.¹¹³ The Water Management Plan also describes the elements of the Recommended Plan and the implementation costs and options for financing implementation.¹¹⁴

VI. Assessment

The following describes the evaluation and assessment of the Alternative for the Mission Creek Subbasin as determined by Department staff. In undertaking this assessment, Department staff did not conduct geologic or engineering studies, although Department staff may have relied on publicly available geologic or engineering or other technical information to verify claims or assumptions presented in the Alternative.¹¹⁵ As discussed

¹¹¹ Water Management Plan, Section 5, p. 5-35

¹¹² Water Management Plan, Section 5, p. 5-55

¹¹³ Water Management Plan, Table 7-1

¹¹⁴ Water Management Plan, Section 7, p. 7-1

¹¹⁵ Instances where the Department review relied upon publicly available data that was not part of the Alternative are specifically noted in the assessment.

above, Department staff have determined that the Mission Creek Subbasin Alternative satisfied the conditions for submission of an alternative.¹¹⁶ The Alternative was submitted within the statutory period, the Subbasin was found to be in compliance with the reporting requirements of CASGEM, and staff find the Alternative to be complete and to cover the entire Subbasin (see Required Conditions, above). Based on its evaluation and assessment of the Mission Creek Subbasin Alternative, as discussed below, Department staff find that the Alternative satisfies the objectives of SGMA.¹¹⁷

A. Evaluation of Alternative Contents

The Agencies submitted their Water Management Plan as the primary document relied upon to demonstrate compliance with the objectives of SGMA. The Plan adequately describes the authorities of the Agencies to implement the Plan and provides sufficiently thorough descriptions of the Plan area, including descriptions of land uses and beneficial uses and users of water, to demonstrate their understanding of the Subbasin.

The Plan explains that it was prepared pursuant to the 2004 Mission Creek Settlement Agreement and Addendum. One of the agencies involved in preparation of the Plans, Mission Springs Water District, notified the Department in November 2018 that they withdrew their support for the Alternative. However, it appears that the Water Management Plan is still in effect and that the two other agencies responsible for Plan development (Coachella Valley Water District and Desert Water Agency) have jurisdictional coverage over the vast majority of the Subbasin. Therefore, the Department did not find that withdrawal of support from Mission Springs Water District precluded its review of whether implementation of the actions described in the Water Management Plan was reasonably likely to achieve sustainable groundwater management in the Subbasin.

As discussed in the *Basin Coverage* section, the Water Management Plan's planning area omits the Indio Hills, an area comprising a significant portion of the Mission Creek Subbasin as defined in Bulletin 118. The Bridge Document states that "no groundwater production takes place" from the Indio Hills.¹¹⁸ However, based on aerial imagery from 2018, various land use developments, which may use water, are present in the Indio Hills area. The following township-range-sections include developments that may use water: 03S05E26, 03S05E27, 04S06E05, 04S06E06, 04S06E08, 04S06E15, 04S07E20, 04S07E29, 04S07E34. These areas are generally represented by the 2005 land-use map in the Bridge Document.¹¹⁹

¹¹⁶ 23 CCR § 358.4(a)

¹¹⁷ Water Code § 10733.6(a); 23 CCR § 358.4(b)

¹¹⁸ Bridge Document, Section 2, p. 2-20

¹¹⁹ Bridge Document, Figure 2-4

It is unclear what the source of the water is for these developments and how much water is being used. While the activities on those parcels may not produce groundwater, or may produce a relatively inconsequential amount of groundwater in the context of the overall water budget of the Subbasin, the presence of the developed parcels and the above-ground water tanks conflict with the statement in the Bridge Document that “no groundwater production takes place.” Staff identified a recommended action to clarify groundwater use in the Indio Hills area and to describe how that area will be assessed for future reporting (see Recommended Action 1).

The Agencies demonstrated a satisfactory understanding of the groundwater conditions in the Subbasin. Department staff considered the evidence presented in the Plan and the supporting Groundwater Flow Model and Conceptual Model reports to be based on the best available information and best available science, and that the conclusions in those documents are scientifically reasonable. The Plan describes the water management practices that led to overdraft and reduction of groundwater levels and storage in the basin. The Plan adequately described groundwater quality issues in the Subbasin and described how the two primary constituents of concern that are not naturally occurring (i.e., TDS and nitrate) have been considered during Plan development. Since the Plan was adopted, a salt and nutrient management plan has been developed and submitted to the Colorado River RWQCB. Department staff recommend incorporating an approved salt and nutrient management plan into the Alternative (see Recommended Action 2). However, Department staff recognize that salt management issues associated with imported water may require that, to ensure that the Subbasin is sustainably managed over the long-term, the Agencies may need to implement plans and management actions beyond those associated with existing regulatory programs. Department staff recommend that the Agencies take immediate steps to define objectives related to water quality and adopt feasible measures to achieve those objectives (see Recommended Action 2a).

The Plan appropriately explained why lack of suitable geologic conditions and the goal to eliminate overdraft are evidence that land subsidence is not likely to occur in the Subbasin. While the Plan did not analyze seawater intrusion, the Bridge Document stated that seawater intrusion is not expected to occur, which is consistent with the fact that the nearest source of salt-water intrusion is the Salton Sea, located about 21 miles southeast and downgradient of the nearest point of the Subbasin. The Plan similarly did not analyze depletions of interconnected surface water, but the Bridge Document explains that there are no known interconnected surface waters in the Subbasin. Department staff determined this appears reasonable, given the considerable depth to groundwater. Based on groundwater levels in CASGEM, the depth to water in the Mission Creek Subbasin ranges from about 100 feet to 500 feet below ground surface.

The Plan identifies the goal of maintaining groundwater levels at or above 2009 conditions as a standard for future management of the Subbasin. As noted above, the Bridge

Document explains that maintaining those levels would reduce the inflow of poor quality water from the adjacent Desert Hot Springs Subbasin, a concern that was identified in the Water Management Plan.¹²⁰ The Groundwater Flow Model report states that about 2,000 acre-feet per year of groundwater flows from the Desert Hot Springs Subbasin into the Mission Creek Subbasin.¹²¹ The Conceptual Model report states that the 1936 groundwater levels, which represents the natural condition prior to abundant groundwater production, were 300-400 feet higher on the east side of the Mission Creek Fault in the Desert Hot Springs Subbasin relative to the levels in the Mission Creek Subbasin on the west side of the Mission Creek Fault. The Bridge Document states that maintaining groundwater levels above 2009 levels is expected to reduce the water quality impacts of inflow from the Desert Hot Springs Subbasin. However, no supporting evidence for this is provided or discussed. Department staff do not consider the lack of evidence regarding this to preclude a determination that the Water Management Plan satisfies the objectives of SGMA. Department staff identified a recommended action to clarify the Agencies' expectation regarding the water quality impacts of inflow from the Desert Hot Springs Subbasin (see Recommended Action 3).

The Department determined that the presence of the operating standard for groundwater levels identified in the Plan, and the salutary effects of achieving that standard would have on groundwater storage and water quality, the only other sustainability indicators applicable to the Subbasin, are reasonable and likely to avoid undesirable results. Based on the cumulative change in groundwater in storage since 1936, the 2009 groundwater levels and associated groundwater in storage are at the historic low.¹²² Maintaining groundwater levels above the historic low and at a level that avoids future undesirable results satisfies the objectives of SGMA. Furthermore, the 2016-2017 Engineer's Report indicates that the groundwater in storage since 2009 has been maintained above the 2009 level, indicating that implementation of the Plan shows a reasonable path towards sustainability within the implementation horizon. However, the Plan did not identify specific groundwater level criteria at monitoring sites that would be used as compliance points for future evaluation of the Plan. Department staff identified a recommended action to address the lack of those specific metrics because of their importance for objective evaluation of the Alternative on an ongoing basis (see Recommended Action 4).

The monitoring network identified in Appendix E of the Plan appears adequate for monitoring initial implementation of the Plan. Appendix E and the main body of the Plan both contain numerous recommendations for future monitoring and have identified data gaps.¹²³ The Bridge Document includes an updated table showing the implementation

¹²⁰ Water Management Plan, Section 5, p. 5-13, p. 5-54, Section 7, p. 7-8

¹²¹ Groundwater Flow Model, Appendix C, p. 3

¹²² Water Management Plan, Section 4, p. 4-13

¹²³ Water Management Plan, Section 4, p. 4-48, Table 7-1

status and recommended action of various projects to improve the monitoring network and close data gaps.¹²⁴ Another table shows the implementation status and recommended actions for projects to enhance conservation, improve the monitoring network, protect water quality and water supply, and to enhance aquifer replenishment projects.¹²⁵ Department staff find the existing monitoring network to be suitable for providing data regarding the applicable sustainability indicators. The Bridge Document provides that additional groundwater monitoring wells are being planned to show the groundwater levels near the mesquite hummocks and that additional monitoring components such as groundwater level dataloggers, well production meters, and monitoring wells will be pursued when a need is demonstrated.¹²⁶ The locations of some of the proposed and potential monitoring locations have already been identified.¹²⁷ If conditions in the Subbasin that require additional monitoring are present or become present, the Alternative should discuss those conditions and the plan for updating the monitoring network to track the conditions and how they changes to the monitoring network relate to the proposed monitoring components described in the Water Management Plan.¹²⁸

The discussion in the Alternative regarding the projects and management actions includes a variety of reasonable and feasible projects and programs applicable to the Coachella Valley, which are designed to eliminate the identified annual overdraft, protect groundwater quality, and improve the monitoring network. The funding structure and legal authorities of the Agencies are well-described and, in part, based on the replenishment assessment fees organized based on the *areas of benefit*, and can reasonably allow for the implementation of the conservation, recycling, and desalination projects discussed in the Alternative. Based on the analysis presented, implementation of those projects appears likely to achieve the objectives identified in the Plan.

B. Recommended Actions

The following recommended actions include information that the Agencies may wish to include in the first five-year update of the Alternative to facilitate the Department's ongoing evaluation and assessment of the Alternative as well as recommendations for improvements to the Alternative.

Recommended Action 1.

Staff recommend that the Agencies define how they will assess, on an ongoing basis, the Indio Hills area of the Subbasin to confirm whether groundwater use is occurring and to

¹²⁴ Bridge Document, Table 5-2

¹²⁵ Bridge Document, Table 6-4

¹²⁶ Bridge Document, Table 6-4

¹²⁷ Water Management Plan, Appendix E, Figure E-2

¹²⁸ Water Management Plan, Appendix E, p. E-1

confirm that undesirable conditions are not present and that activities in that area are not adversely impacting successful implementation of the Plan. That assessment may include, but is not limited to, additional monitoring or descriptions of land uses.

Recommended Action 2.

Staff recommend that the Agencies incorporate an approved Salt and Nutrient Management Plan into future iterations of the Alternative.

Recommended Action 2a.

Staff recommend that the Agencies continue current efforts to study the rate and level of increased salt contents in groundwater due to the importation of Colorado River water, identify limits for the basin, and begin to develop and implement plans and management actions that will achieve and maintain the basin within those limits.

Recommended Action 3.

Staff recommend that the Agencies should provide the reasoning and evidence for the Agencies' expectation that maintaining groundwater levels above 2009 levels is expected to reduce the water quality impacts of higher TDS groundwater flowing into the Mission Creek Subbasin from the Desert Hot Springs Subbasin.

Recommended Action 4.

Staff recommend that the Agencies provide groundwater-level criteria from specific groundwater monitoring wells that will be used to demonstrate compliance with the 2009 groundwater level standard identified in the Plan or describe in detail how 2009 groundwater levels are determined and how the 2009 groundwater levels can be quantitatively compared to on an ongoing basis, in order for the Agencies and the Department to track progress towards sustainability.