



CALIFORNIA DEPARTMENT OF WATER RESOURCES

SUSTAINABLE GROUNDWATER MANAGEMENT OFFICE

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January 28, 2022

Eric Osterling
Kaweah Subbasin Point of Contact
2975 N. Farmersville Rd
Farmersville, CA 93223
eosterling@greaterkaweahgsa.org

RE: Incomplete Determination of the 2020 Groundwater Sustainability Plans Submitted for the San Joaquin Valley – Kaweah Subbasin

Dear Eric Osterling,

The Department of Water Resources (Department) has evaluated the three groundwater sustainability plans (GSPs) submitted for the San Joaquin Valley – Kaweah Subbasin (Subbasin), as well as the materials considered to be part of the required coordination agreement. Collectively, the three GSPs and the coordination agreement are referred to as the Plan for the Subbasin. The Department has determined that the Plan is incomplete pursuant to Section 355.2(e)(2) of the GSP Regulations.

The Department based its incomplete determination on recommendations from the Staff Report, included as an enclosure to the attached Statement of Findings, which describes that the Subbasin's Plan does not satisfy the objectives of the Sustainable Groundwater Management Act (SGMA) nor substantially comply with the GSP Regulations. The Staff Report also provides corrective actions which the Department recommends the Subbasin's three groundwater sustainability agencies (GSAs) review while determining how and whether to address the deficiencies in a coordinated manner.

The Subbasin's GSAs have 180 days, the maximum allowed by the GSP Regulations, to address the identified deficiencies. Where addressing the deficiencies requires modification of the Plan, the GSAs must adopt those modifications into their respective GSPs and all applicable coordination agreement materials, or otherwise demonstrate that those modifications are part of the Plan before resubmitting it to the Department for evaluation no later than July 27, 2022. The Department understands that much work has occurred to advance sustainable groundwater management since the GSAs submitted their GSPs in January 2020. To the extent to which those efforts are related or responsive to the Department's identified deficiencies, we encourage you to document that as part of your Plan resubmittal. The Department prepared a [Frequently Asked Questions](#) document to provide general information and guidance on the process of addressing deficiencies in an incomplete determination.

Department staff will work expeditiously to review the revised components of your Plan resubmittal. If the revisions sufficiently address the identified deficiencies, the Department will determine that the Plan is approved. In that scenario, Department staff

will identify additional recommended corrective actions that the GSAs should address early in implementing their GSPs (i.e., no later than the first required periodic evaluation). Among other items, those corrective actions will recommend the GSAs provide more detail on their plans and schedules to address data gaps. Those recommendations will call for significantly expanded documentation of the plans and schedules to implement specific projects and management actions. Regardless of those recommended corrective actions, the Department expects the first periodic evaluations, required no later than January 2025 – one-quarter of the way through the 20-year implementation period – to document significant progress toward achieving sustainable groundwater management.

If the Subbasin's GSAs cannot address the deficiencies identified in this letter by July 27, 2022, then the Department, after consultation with the State Water Resources Control Board, will determine the GSP to be inadequate. In that scenario, the State Water Resources Control Board may identify additional deficiencies that the GSAs would need to address in the state intervention processes outlined in SGMA.

Please contact Sustainable Groundwater Management Office staff by emailing sgmps@water.ca.gov if you have any questions about the Department's assessment, implementation of your Plan, or to arrange a meeting with the Department.

Thank you,

Paul Gosselin

Paul Gosselin
Deputy Director of Sustainable Groundwater Management

Attachment: Statement of Findings Regarding the Determination of Incomplete Status of the San Joaquin Valley – Kaweah Subbasin Groundwater Sustainability Plans

**STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES**

**STATEMENT OF FINDINGS REGARDING THE
DETERMINATION OF INCOMPLETE STATUS OF THE
SAN JOAQUIN VALLEY – KAWEAH SUBBASIN
GROUNDWATER SUSTAINABILITY PLANS**

The Department of Water Resources (Department) is required to evaluate whether a submitted groundwater sustainability plan (GSP) conforms to specific requirements of the Sustainable Groundwater Management Act (SGMA), is likely to achieve the sustainability goal for the basin covered by the GSP, and whether the GSP adversely affects the ability of an adjacent basin to implement its GSP or impedes achievement of sustainability goals in an adjacent basin. (Water Code § 10733.) The Department is directed to issue an assessment of the GSP within two years of its submission. (Water Code § 10733.4.)

SGMA allows for multiple GSPs implemented by multiple groundwater sustainability agencies (GSAs) and coordinated pursuant to a single coordination agreement that covers the entire basin to be an acceptable planning scenario. (Water Code § 10727.) In the San Joaquin Valley – Kaweah Subbasin (Subbasin), three separate GSPs were prepared by three GSAs pursuant to the required coordination agreement. This Statement of Findings explains the Department's decision regarding the multiple GSPs covering the Subbasin submitted jointly by the multiple GSAs. Collectively, the three GSPs and the coordination agreement are referred to as the Plan for the Subbasin. Individually, the GSPs include the following:

- East Kaweah GSA Groundwater Sustainability Plan (East Kaweah GSP) – the East Kaweah GSP is implemented by a single GSA, the East Kaweah GSA.
- Greater Kaweah Groundwater Sustainability Agency Groundwater Sustainability Plan (Greater Kaweah GSP) – the Greater Kaweah GSP is implemented by a single GSA, the Greater Kaweah GSA.
- Mid-Kaweah GSA Groundwater Sustainability Plan (Mid-Kaweah GSP) – prepared by the Mid-Kaweah GSA.

Department management has reviewed the enclosed Staff Report, which recommends that the deficiencies identified should preclude approval of the Plan. Based on its review of the Staff Report, Department management is satisfied that staff have conducted a thorough evaluation and assessment of the Plan and concurs with, and hereby adopts, staff's recommendation and all the corrective actions provided. The Department thus deems the Plan incomplete based on the Staff Report and the findings contained herein.

Statement of Findings

San Joaquin Valley – Kaweah Subbasin (Basin No. 5-022.11)

- A. The Plan does not define sustainable management criteria for chronic lowering of groundwater levels in the manner required by SGMA and the GSP Regulations.
1. The GSPs do not define metrics for undesirable results and minimum thresholds based on avoiding a significant and unreasonable depletion of groundwater supply, informed by, and considering, the relevant and applicable beneficial uses and users in their Subbasin.
 2. The GSPs do not describe specific potential effects from the chronic lowering of groundwater levels and depletion of supply that would be significant and unreasonable to beneficial uses and users of groundwater, on land uses and property interests, and other potential effects and, therefore, constitute an undesirable result.
 3. The GSPs do not consider how minimum thresholds developed for one sustainability indicator will affect other related sustainability indicators.
- B. The Plan does not define sustainable management criteria, including undesirable results, minimum thresholds, and measurable objectives, for land subsidence in the manner required by SGMA and the GSP Regulations.
1. The Greater Kaweah GSP and Mid-Kaweah GSP do not define metrics for undesirable results and minimum thresholds based on the amount of subsidence that would substantially interfere with land surface uses and users in their Subbasin, as required by SGMA and the GSP Regulations. The Greater Kaweah and Mid-Kaweah GSPs set minimum thresholds that would allow for up to 0.75 feet per year of continued subsidence (up to 15 feet over the next 20 years), but these thresholds are not designed to avoid undesirable results as required by the GSP Regulations.
 2. Discordant sustainable management criteria for land subsidence in the vicinity of the Friant Kern Canal established by the Greater Kaweah and East Kaweah GSPs are not supported by convincing technical information demonstrating that the Greater Kaweah thresholds will not adversely affect conditions in East Kaweah and prevent that part of the Subbasin from achieving its sustainability goal.
- C. The Plan does not sufficiently and consistently characterize interconnected surface water nor define sustainable management criteria for the depletion of those interconnected surface waters in the manner required by SGMA and the GSP Regulations.

Statement of Findings

San Joaquin Valley – Kaweah Subbasin (Basin No. 5-022.11)

1. While the Plan identifies locations where interconnected surface water is likely present in the Subbasin, it is not coordinated in its management efforts for the depletion of interconnected surface water.
2. The Greater Kaweah GSP documents areas with likely interconnected surface water, as does the Coordination Agreement, but the Greater Kaweah GSA has not developed sustainable management criteria for interconnected surface water.
3. The East Kaweah GSP elected to use groundwater level thresholds as a proxy for the depletion of interconnected surface water, but do not demonstrate adequate evidence showing those levels are an appropriate proxy.

Based on the above, the Plan submitted by the GSAs in the San Joaquin Valley – Kaweah Subbasin is determined to be incomplete because the Plan does not satisfy the requirements of SGMA, nor does it substantially comply with the GSP Regulations. The corrective actions provided in the enclosed Staff Report are intended to address the deficiencies that, at this time, preclude the Plan's approval. The GSAs have up to 180 days to address the deficiencies outlined above and detailed in the Staff Report. Once the GSAs resubmit their respective GSPs and the required coordination agreement, the Department will review the revised Plan to evaluate whether the deficiencies were sufficiently addressed. Should the GSAs fail to take sufficient actions to correct the deficiencies identified by the Department, the Department shall disapprove the Plan if, after consultation with the State Water Resources Control Board, the Department determines the Plan to be inadequate pursuant to 23 CCR § 355.2(e)(3)(C).

Signed:



Karla Nemeth, Director
Date: January 28, 2022

Enclosure: Groundwater Sustainability Plan Assessment Staff Report – San Joaquin Valley – Kaweah Subbasin

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

Groundwater Basin Name: San Joaquin Valley – Kaweah Subbasin (No. 5-022.11)
Number of GSPs: 3 (see list below)
Number of GSAs: 3 (see list below)
Point of Contact: Eric Osterling
Recommendation: Incomplete
Date: January 28, 2022

The Sustainable Groundwater Management Act (SGMA)¹ allows for any of the three following planning scenarios: a single groundwater sustainability plan (GSP) developed and implemented by a single groundwater sustainability agency (GSA); a single GSP developed and implemented by multiple GSAs; and multiple GSPs implemented by multiple GSAs and coordinated pursuant to a single coordination agreement.² GSAs developing GSPs are expected to comply with SGMA and substantially comply with the Department of Water Resources’ (Department) GSP Regulations.³ The Department is required to evaluate an adopted GSP within two years of its submittal date and issue a written assessment.⁴

In the Kaweah Subbasin (Subbasin), three separate GSPs were prepared by three GSAs pursuant to a single coordination agreement.⁵ The Kaweah Subbasin Coordination Agreement (Coordination Agreement) includes a legal agreement signed by the three GSAs, as well as seven technical documents incorporated as appendices to the legal agreement that support applicable sections to each of the GSPs – Basin Setting, Monitoring Networks, Water Accounting Framework, Data Management System, Data Gaps, Sustainability Goal and Undesirable Results, and Model Simulation Results. Collectively, the three GSPs and the coordination agreement will, for evaluation and assessment purposes, be treated and referred to as the Plan for the Subbasin. Individually, the GSPs include the following:

- *East Kaweah GSA Groundwater Sustainability Plan* (East Kaweah GSP) – prepared by the East Kaweah GSA (East Kaweah).

¹ Water Code § 10720 *et seq.*

² Water Code § 10727.

³ 23 CCR § 350 *et seq.*

⁴ Water Code § 10733.4(d); 23 CCR § 355.2(e).

⁵ Water Code § 10733.4(b)

- *Greater Kaweah Groundwater Sustainability Agency Groundwater Sustainability Plan* (Greater Kaweah GSP) – prepared by the Greater Kaweah GSA (Greater Kaweah).
- *Mid-Kaweah GSA Groundwater Sustainability Plan, Mid-Kaweah Groundwater Sustainability Agency* (Mid-Kaweah GSP) – prepared by the Mid-Kaweah GSA (Mid-Kaweah).

Department staff have thoroughly evaluated the Plan, the Subbasin’s coordination agreement, and other information provided or available and known to staff and have identified deficiencies in the Plan that staff recommend should preclude its approval.⁶ In addition, consistent with the GSP Regulations, Department staff have provided corrective actions that the GSAs should review while determining how and whether to address the deficiencies in a coordinated manner.⁷ The deficiencies and corrective actions are explained in greater detail in Section 3 of this staff report and are generally related to the need to define sustainable management criteria in the manner required by SGMA and the GSP Regulations.

This assessment includes four sections:

- **Section 1 – Evaluation Criteria:** Describes the legislative requirements and the Department’s evaluation criteria.
- **Section 2 – Required Conditions:** Describes the submission requirements, Plan completeness, and basin coverage required for a Plan to be evaluated by the Department.
- **Section 3 – Plan Evaluation:** Provides a detailed assessment of identified deficiencies in the Plan. Consistent with the GSP Regulations, Department staff have provided corrective actions for the GSAs to address the deficiencies.
- **Section 4 – Staff Recommendation:** Provides staff’s recommendation regarding the Department’s determination.

⁶ 23 CCR §355.2(e)(2).

⁷ 23 CCR §355.2(e)(2)(B).

1 EVALUATION CRITERIA

The Department evaluates whether a Plan conforms to the statutory requirements of SGMA⁸ and is likely to achieve the basin’s sustainability goal.⁹ To achieve the sustainability goal, the Plan must demonstrate that implementation 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.¹⁰ Undesirable results are required to be defined quantitatively by the GSAs overlying a basin and occur when significant and unreasonable effects for any of the applicable sustainability indicators are caused by groundwater conditions occurring throughout the basin.¹¹ The Department is also required to evaluate whether the Plan will adversely affect the ability of an adjacent basin to implement its groundwater sustainability program or achieve its sustainability goal.¹²

For a Plan to be evaluated by the Department, it must first be determined that it was submitted by the statutory deadline¹³ and that it is complete and covers the entire basin.¹⁴ Additionally, for those GSAs choosing to develop multiple GSPs, the Plan submission must include a coordination agreement.¹⁵ The coordination agreement must explain how the multiple GSPs in the basin have been developed and implemented utilizing the same data and methodologies and that the elements of the multiple GSPs are based upon consistent interpretations of the basin’s setting. If these required conditions are satisfied, the Department evaluates the Plan to determine whether it complies with SGMA and substantially complies with the GSP Regulations.¹⁶ As stated in the GSP Regulations, “[s]ubstantial compliance means that the supporting information is sufficiently detailed and the analyses sufficiently thorough and reasonable, in the judgment of the Department, to evaluate the Plan, and the Department determines that any discrepancy would not materially affect the ability of the Agency to achieve the sustainability goal for the basin, or the ability of the Department to evaluate the likelihood of the Plan to attain that goal.”¹⁷

When evaluating whether the Plan is likely to achieve the sustainability goal for the basin, Department staff review the information provided for sufficiency, credibility, and consistency with scientific and engineering professional standards of practice.¹⁸ The Department’s review considers whether there is a reasonable relationship between the

⁸ Water Code §§ 10727.2, 10727.4, 10727.6.

⁹ Water Code § 10733(a).

¹⁰ Water Code § 10721(v).

¹¹ 23 CCR § 354.26.

¹² Water Code § 10733(c).

¹³ 23 CCR § 355.4(a)(1).

¹⁴ 23 CCR §§ 355.4(a)(2), 355.4(a)(3).

¹⁵ 23 CCR § 357.4.

¹⁶ 23 CCR § 350 *et seq.*

¹⁷ 23 CCR § 355.4(b).

¹⁸ 23 CCR § 351(h).

information provided by the GSAs and the assumptions and conclusions presented in the Plan, including whether the interests of the beneficial uses and users of groundwater in the basin have been considered; whether sustainable management criteria and projects and management actions described in the Plan 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.¹⁹ The Department also considers whether the GSAs have the legal authority and financial resources necessary to implement the Plan.²⁰

To the extent overdraft is present in a basin, the Department evaluates whether the Plan provides a reasonable assessment of the overdraft and includes reasonable means to mitigate it.²¹ When applicable, the Department will assess whether coordination agreements have been adopted by all relevant parties and satisfy the requirements of SGMA and the GSP Regulations.²² The Department also considers whether the Plan provides reasonable measures and schedules to eliminate identified data gaps.²³ Lastly, the Department's review considers the comments submitted on the Plan and evaluates whether the GSAs have adequately responded to the comments that raise credible technical or policy issues with the Plan.²⁴

The Department is required to evaluate the Plan within two years of its submittal date and issue a written assessment.²⁵ The assessment is required to include a determination of the Plan's status.²⁶ The GSP Regulations provide three options for determining the status of a Plan: approved,²⁷ incomplete,²⁸ or inadequate.²⁹

After review of the Plan, Department staff may conclude that the information provided is not sufficiently detailed, or the analyses not sufficiently thorough and reasonable, to evaluate whether it is likely to achieve the sustainability goal for the basin. If the Department determines the deficiencies precluding approval may be capable of being corrected by the GSAs in a timely manner,³⁰ the Department will determine the status of the Plan to be incomplete. A formerly deemed incomplete Plan may be resubmitted to the Department for reevaluation after all deficiencies have been addressed and incorporated into the Plan within 180 days after the Department makes its incomplete determination. The Department will review the revised Plan to evaluate whether the identified deficiencies were sufficiently addressed. Depending on the outcome of that evaluation,

¹⁹ 23 CCR §§ 355.4(b)(1), (3), (4) and (5).

²⁰ 23 CCR § 355.4(b)(9).

²¹ 23 CCR § 355.4(b)(6).

²² 23 CCR § 355.4(b)(8).

²³ 23 CCR § 355.4(b)(2).

²⁴ 23 CCR § 355.4(b)(10).

²⁵ Water Code § 10733.4(d); 23 CCR § 355.2(e).

²⁶ Water Code § 10733.4(d); 23 CCR § 355.2(e).

²⁷ 23 CCR § 355.2(e)(1).

²⁸ 23 CCR § 355.2(e)(2).

²⁹ 23 CCR § 355.2(e)(3).

³⁰ 23 CCR § 355.2(e)(2)(B)(i).

the Department may determine the resubmitted Plan is approved. Alternatively, the Department may find a formerly deemed incomplete GSP is inadequate if, after consultation with the State Water Resources Control Board, it determines that the GSAs have not taken sufficient actions to correct any identified deficiencies.³¹

The staff assessment of the Plan involves the review of information presented by the GSAs, including models and assumptions, and an evaluation of that information based on scientific reasonableness. In conducting its assessment, the Department does not recalculate or reevaluate technical information provided in the Plan or perform its own geologic or engineering analysis of that information. The recommendation to approve a Plan 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 the Plan, but simply that Department staff have determined that the assumptions and interpretations relied upon by the submitting GSAs are supported by adequate, credible evidence, and are scientifically reasonable.

Lastly, the Department's review and assessment of an approved Plan is a continual process. Both SGMA and the GSP Regulations provide the Department with the ongoing authority and duty to review the implementation of the Plan.³² Also, GSAs have an ongoing duty to reassess their GSPs, provide annual reports to the Department, and, when necessary, update or amend their GSPs.³³ The passage of time or new information may make what is reasonable and feasible at the time of this review to not be so in the future. The emphasis of the Department's periodic reviews will be to assess the GSA's progress toward achieving the basin's sustainability goal and whether implementation of the Plan adversely affects the ability of GSAs in adjacent basins to achieve their sustainability goals.

³¹ 23 CCR § 355.2(e)(3)(C).

³² Water Code § 10733.8; 23 CCR § 355.6 *et seq.*

³³ Water Code §§ 10728 *et seq.*, 10728.2.

2 REQUIRED CONDITIONS

A GSP, to be evaluated by the Department, must be submitted within the applicable statutory deadline.³⁴ The GSP must also be complete and must, either on its own or in coordination with other GSPs, cover the entire basin.³⁵ Additionally, when multiple GSPs are developed in a basin, the submission of all GSPs must include a coordination agreement.³⁶ The coordination agreement must explain how the multiple GSPs in the basin have been developed and implemented utilizing the same data and methodologies and that the elements of the multiple GSPs are based upon consistent interpretations of the basin's setting. If a Plan is determined to be incomplete, Department staff may require corrective actions that address minor or potentially significant deficiencies identified in the Plan. The GSAs in a basin, whether developing a single GSP covering the basin or multiple GSPs, must sufficiently address those required corrective actions within the time provided, not to exceed 180 days, for the Plan to be reevaluated by the Department and potentially approved.

2.1 SUBMISSION DEADLINE

SGMA required basins categorized as high- or medium-priority as of January 1, 2017 and that were subject to critical conditions of overdraft to submit a GSP no later than January 31, 2020.³⁷

The GSAs submitted their individual GSPs to the Department in January 2020, and the coordination agreement was submitted on January 31, 2020, in compliance with the statutory deadline.

2.2 COMPLETENESS

GSP Regulations specify that the Department shall evaluate a Plan if that Plan is complete and includes the information required by SGMA and the GSP Regulations.³⁸ For those basins choosing to submit multiple GSPs, a coordination agreement is required.

The Subbasin's three GSAs submitted three separate adopted GSPs that together cover the entire Subbasin, and all GSAs signed the coordination agreement. Department staff found the GSPs and coordination agreement to be complete and include the required information, sufficient to warrant an evaluation by the Department. The Department posted the Subbasin's three GSPs and coordination agreement to its website on February 19, 2020.

³⁴ Water Code § 10720.7.

³⁵ 23 CCR § 355.4(a)(3).

³⁶ Water Code § 10733.4(b); 23 CCR § 357.4.

³⁷ Water Code § 10720.7(a)(1).

³⁸ 23 CCR § 355.4(a)(2).

2.3 BASIN COVERAGE

A GSP, either on its own or in coordination with other GSPs, must cover the entire basin.³⁹ A Plan that intends to cover the entire basin may be presumed to do so if the basin is fully contained within the jurisdictional boundaries of the submitting GSA(s).

The Plan intends to manage the entire Kaweah Subbasin, and collectively the jurisdictional boundaries of the submitting GSAs appear to cover the entire Subbasin.⁴⁰

³⁹ Water Code § 10727(b); 23 CCR § 355.4(a)(3).

⁴⁰ 23 CCR § 355.4(a)(3).

3 PLAN EVALUATION

As stated in Section 355.4 of the GSP Regulations, a basin “shall be sustainably managed within 20 years of the applicable statutory deadline consistent with the objectives of the Act.” The Department’s assessment is based on a number of related factors⁴¹ including whether the elements of a GSP were developed in the manner required by the GSP Regulations,⁴² whether the GSP was developed using appropriate data and methodologies and whether its conclusions are scientifically reasonable,⁴³ and whether the GSP, through the implementation of clearly defined and technically feasible projects and management actions, is likely to achieve a tenable sustainability goal for the basin.⁴⁴

Department staff have identified deficiencies in the GSPs, the most serious of which preclude staff from recommending approval of the Plan at this time. Department staff believe the GSAs may be able to correct the identified deficiencies within 180 days. Consistent with the GSP Regulations, Department staff are providing corrective actions related to the deficiencies, detailed below, including the general regulatory background, the specific deficiency identified in the Plan, and the specific actions to address the deficiency.

GENERAL BACKGROUND

SGMA allows for multiple GSPs to be implemented by multiple GSAs and coordinated pursuant to a single coordination agreement that covers an entire basin.⁴⁵ The GSP Regulations and SGMA detail the requirements for a coordination agreement and the elements of the GSPs necessary to be coordinated to achieve the basin’s sustainability goal.⁴⁶ The coordination agreement must provide both administrative and technical coordination and consistency between all the GSPs. The collective submittals for the basin are to be based upon consistent interpretations of the basin setting and utilize the same data and methodologies.⁴⁷ In the context of utilizing the same data and methodologies, the coordination agreement must provide the following:⁴⁸

- a coordinated water budget for the basin, including groundwater extraction data, surface water supply, total water use, and change in groundwater in storage;

⁴¹ 23 CCR § 355.4.

⁴² 23 CCR § 355.4(a)(1).

⁴³ 23 CCR § 355.4(b)(1).

⁴⁴ 23 CCR §§ 355.4(b)(5), 355.4(b)(6).

⁴⁵ Water Code § 10727(b)(3).

⁴⁶ 23 CCR § 357.4; Water Code § 10727.6.

⁴⁷ 23 CCR § 357.4(a).

⁴⁸ Water Code § 10727.6 *et al*; 23 CCR §§ 357.4(b)(3)(B), 357.4(b)(3)(C), 357.4(c).

- a sustainable yield for the basin, supported by a description of the undesirable results for the basin, and an explanation of how the minimum thresholds and measurable objectives defined by each GSP relate to those undesirable results, based on information described in the basin setting; and
- an explanation of how the GSPs implemented together satisfy the requirements of SGMA and are in substantial compliance with the GSP Regulations.

The Department is tasked with evaluating whether the GSPs, in coordination with one another, conform with the required regulatory contents and are likely to achieve the sustainability goal for the basin.⁴⁹

3.1 DEFICIENCY 1. THE PLAN DOES NOT SET SUSTAINABLE MANAGEMENT CRITERIA FOR CHRONIC LOWERING OF GROUNDWATER LEVELS IN THE MANNER REQUIRED BY SGMA AND THE GSP REGULATIONS

3.1.1 Background

SGMA defines an undesirable result for chronic lowering of groundwater levels as lowering that causes “a significant and unreasonable depletion of supply if continued over the planning and implementation horizon.”⁵⁰ The GSP Regulations require minimum thresholds for chronic lowering of groundwater levels to be based on “groundwater elevation indicating a depletion of supply at a given location that may lead to undesirable results.”⁵¹

3.1.2 Deficiency Details

The GSAs, collectively, have not defined undesirable results and minimum thresholds for chronic lowering of groundwater levels in the manner required by SGMA and the GSP Regulations. Specifically, the GSPs did not define metrics for undesirable results and minimum thresholds based on the chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply that the GSAs intend to avoid through the implementation of the Plan, including the potential effects on the beneficial uses and users in the Subbasin. Instead, the GSPs developed sustainable management criteria based on an extrapolation of past groundwater level trends into the future. (See Corrective Action 1a.)

The East Kaweah, Greater Kaweah, and Mid-Kaweah GSPs propose similar sustainable management criteria for chronic lowering of groundwater levels, although with some differences as discussed below. None of the GSPs describe specific effects of chronic lowering of groundwater levels and depletion of supply that would be significant and unreasonable and would therefore constitute an undesirable result. Instead, each GSP states that an undesirable result would occur if groundwater level decline exceeded the

⁴⁹ Water Code § 10733(b); 23 CCR § 355.4(b).

⁵⁰ Water Code § 10721(x)(1).

⁵¹ 23 CCR § 354.28(c)(1).

defined minimum thresholds in more than a third of the Subbasin's representative monitoring sites.⁵² But those minimum thresholds are not based on the site-specific depletion of supply that could lead to undesirable results. Instead, each GSP projects groundwater levels based on an extrapolation of historical trends, predominantly groundwater level declines, as observed at representative monitoring sites over a base period. As described below, the GSPs then set the minimum threshold at groundwater levels projected to occur in 2040.

The Mid-Kaweah GSP begins with a linear interpolation of observed trends at the representative monitoring sites from 2006 to 2016, projects the trend to 2040, and uses the projected 2040 groundwater levels to define minimum thresholds for groundwater levels in the Subbasin.⁵³ Mid-Kaweah does not describe the specific effects caused by groundwater conditions occurring throughout the basin that would cause a significant and unreasonable depletion of supply that would amount to an undesirable result of the chronic lowering of groundwater levels. The Mid-Kaweah GSP allows for continued groundwater decline through 2040 based on the rate of decline from 2006 through 2016, rather than what the GSA determined and documented would be a significant and unreasonable depletion of supply based on their consideration of beneficial uses and users of groundwater.

The Greater Kaweah GSP is generally similar to the Mid-Kaweah GSP, beginning with a linear interpolation of 2006 through 2016 conditions projected forward to 2040 to determine the minimum threshold.⁵⁴ In detail, however, Greater Kaweah appears to have introduced unexplained changes in its approach to defining minimum thresholds relative to the other GSPs. Based on a visual inspection of the individual well hydrographs⁵⁵ and thresholds established for those wells, it appears that most wells do not use the projected 2040 level as the minimum threshold; many use a value higher than the 2040 projection,⁵⁶ some use a value lower than the 2040 projection,⁵⁷ and some use regressions based on a different historical period.⁵⁸ Greater Kaweah does not explain why the graphical representation of sustainable management criteria appear to differ from the written

⁵² East Kaweah GSP, Section 3.4.1.1, p. 166; Greater Kaweah GSP, Section 3.4.2, pp. 72-73; Mid-Kaweah GSP, Section 3.2.2.1, p. 89.

⁵³ Mid-Kaweah GSP, Executive Summary, p. 26, Appendix 5A – 5.1.3, p. 1447.

⁵⁴ See e.g., reference to the “2040 Intercept” in Table 5-1 (Greater Kaweah GSP p. 106) and the statement that “The minimum thresholds were set at the water level projections for 2040 using the same trend in groundwater levels from 2006 to 2016.” (Greater Kaweah GSP, p. 108).

⁵⁵ Greater Kaweah GSP, Appendix 5B, pp. 1597-1633.

⁵⁶ See e.g., Well KSB-1428, where the projected 2040 groundwater level is approximately 25 feet below mean sea level, but the minimum threshold is set to 43 feet above mean sea level (Greater Kaweah GSP, p. 1611).

⁵⁷ See e.g., Well KSB-0903, where the projected 2040 groundwater level is approximately 125 feet above mean sea level, but the minimum threshold is set to 71 feet above mean sea level (Greater Kaweah GSP, p. 1605).

⁵⁸ See e.g., Well KSB-1384, where the GSA appears to have developed a linear regression of data from approximately 2012 through 2016 and used that to develop the minimum threshold of 47 feet below mean sea level (Greater Kaweah GSP, p. 1609). Department staff note that this same well also appears in the Mid-Kaweah GSP with a minimum threshold of 38 feet above mean sea level (Mid-Kaweah GSP, p. 1462).

description, or which should control in the case of a discrepancy. Nor does Greater Kaweah explain why there should be any difference at all, or why their approach differs from that of the other GSAs.

The East Kaweah GSP is also generally similar to the Mid-Kaweah and Greater Kaweah GSPs, although the East Kaweah GSP states that the GSA used a linear interpolation of groundwater levels from 1997 through 2017, projected out to 2040, as the minimum threshold.⁵⁹ The East Kaweah GSP also differs from the other two by adjusting some minimum thresholds upwards in instances where the projected 2040 value would have been below the bottom of the aquifer.⁶⁰ The East Kaweah GSP also states that “each baseline minimum threshold for groundwater levels was also evaluated by the [Technical Advisory Committee] to determine if it was stringent enough by reviewing if the projected level would cause excessive strain to the health of local communities, the agrarian economy, or interconnected surface water areas” and that “more stringent minimum thresholds were, and can continue to be, formed if deemed necessary by the [East Kaweah GSA], its [Technical Advisory Committee], and relevant stakeholders.”⁶¹ The consideration of impacts to beneficial uses and users of groundwater implied by the evaluation of the Technical Advisory Committee represents the sort of analysis a GSA should conduct when defining sustainable management criteria. However, the East Kaweah GSP does not explain what factors were ultimately determined to be significant, how the GSA considered them when defining undesirable results and minimum thresholds, or how the undesirable results and minimum threshold established in the GSP would prevent them from occurring.

All three GSPs base their groundwater level management regime on preventing the rate of decline from becoming worse than the rate that existed in the 11 years immediately preceding SGMA, but none document that the approach to setting undesirable results and minimum thresholds for groundwater levels was related to, or based on, avoidance of significant and unreasonable depletion of supply. Department staff do not consider that this approach reasonably complies with the requirements of SGMA and the GSP Regulations. Although some GSAs claim they do not intend to operate at the minimum thresholds,⁶² those thresholds represent a critical regulatory “floor” for groundwater level decline by defining when undesirable results occur. Defining minimum thresholds in a manner that is not consistent with the requirements of the GSP Regulations is a fundamental defect that will need to be corrected. (See Corrective Action 1a.)

The Kaweah GSAs describe the effects of their management criteria, including a graphical depiction showing that 88 to 94 percent of domestic wells in four of the nine hydrogeologic zones could experience groundwater levels below the top of the well’s screen if groundwater levels approach the minimum thresholds.⁶³ The GSPs state that

⁵⁹ East Kaweah GSP, Section 3.4.1.2.1, p. 168.

⁶⁰ East Kaweah GSP, Section 3.4.1.2.3, p. 170.

⁶¹ East Kaweah GSP, Section 3.4.1.2.3, p. 170.

⁶² Greater Kaweah GSP, Section 5.3.1, pp. 114-115; Mid-Kaweah GSP, Section 5.3.1.3, p. 129.

⁶³ See e.g., Greater Kaweah GSP, Appendix 5C, pp. 1645, 1648, and 1657.

these effects are not significant and unreasonable⁶⁴ and provide “Well Impact Analysis Hydrographs,”⁶⁵ which display a selection of groundwater well depths and the corresponding projected groundwater levels at different plan implementation periods, showing that the GSAs selected these conditions with awareness of the effects on agricultural, domestic, and municipal supply wells. The GSAs conclude that the impacts of continuing the pre-SGMA rate of groundwater level decline (e.g., increased lift costs or total loss of production capacity for users that rely on wells for drinking water) before 2040 is generally an acceptable outcome because dealing with those effects historically has been “standard practice”⁶⁶ for groundwater users, comparable to dealing with economic inflation.⁶⁷ However, as discussed above, these effects were not first determined to be less than significant, with minimum thresholds defined to maintain groundwater at or above levels that would avoid worse conditions. The predicted impacts to wells were determined only after the GSPs had established minimum thresholds at levels that would cause those effects. In reassessing sustainable management criteria related to lowering groundwater levels, the GSAs should first determine effects that would be significant and unreasonable to the uses and users of groundwater in the Subbasin and then set minimum thresholds to avoid those conditions. The GSAs refer to an impact assessment program (Well Observation Program/ Drinking Water Wells Protection Program) for well owners and those who rely on wells for water supply.⁶⁸ If these programs are intended to mitigate for impacts caused by declining groundwater levels, as part of the GSAs’ rationale for finding those impacts not significant and unreasonable, the GSPs will need to provide more details on what the programs will achieve and how they will be managed.⁶⁹ (See Corrective Action 1b.)

Also, because changes in groundwater elevation can affect other sustainability indicators, such as degradation of groundwater quality and subsidence, a GSP must demonstrate that sustainable management criteria established for one sustainability indicator will not produce undesirable results in any others. Department staff do not find evidence in the GSP that indicates the GSAs considered the effects of the groundwater level sustainable management criteria, which allow for continued lowering of levels, on the other sustainable management criteria. In particular, Department staff did not find evidence that the GSAs have considered the effect that continued groundwater level decline and, by extension, reduction of groundwater storage could have on the degradation of groundwater quality. As the GSAs revise their sustainable management criteria, they

⁶⁴ East Kaweah GSP, Section 3.4.1.1, p. 167; Greater Kaweah GSP, Section 5.3.1, pp. 108 and 113-114; Mid-Kaweah GSP, Section 5.3.1.3, p. 125.

⁶⁵ Greater Kaweah GSP, Appendix 5C, pp. 1634-1659; Mid-Kaweah, Appendix 5C, pp. 1486-1511.

⁶⁶ Greater Kaweah GSP, Section 7.3.6.1, p. 209.

⁶⁷ Greater Kaweah GSP, Section 5.3.1, p. 108; Mid-Kaweah GSP, Section 5.3.1.3, pp. 125 and 1447; see also discussions of the acceptability of impacts prior to 2040 in the East Kaweah GSP pp. 167 and 170.

⁶⁸ East Kaweah GSP, Section 3.4.1.1, p. 167 and Section 5.3.2.1, p. 247; Greater Kaweah GSP, Section 7.3.6, pp. 209-212; Mid-Kaweah GSP, Section 7.4.8, pp. 197-199.

⁶⁹ East Kaweah GSP, Section 3.4.1.1, p. 167 and Section 5.3.2.1, p. 247; Greater Kaweah GSP, Section 7.3.6, pp. 209-212; Mid-Kaweah GSP, Section 7.4.8, pp. 197-199.

should thoroughly address the potential effects of their groundwater level criteria on the other sustainability indicators. (See Corrective Action 1a.)

3.1.3 Corrective Action 1

- a) The GSAs must revise the Plan to define sustainable management criteria for the chronic lowering of groundwater levels by utilizing information specific to the Subbasin. The GSAs should first characterize undesirable results by describing the significant and unreasonable effects that could be, or are being caused by, lowering groundwater levels that the GSAs are seeking to avoid. The GSAs will need to define the criteria used to determine when and where the effects of the groundwater conditions will cause undesirable results and describe the potential effects on the beneficial uses and users of groundwater that may occur or are occurring from undesirable results, which analysis could include both physical and economic impacts.

Next, the GSAs should revise minimum thresholds to quantify groundwater conditions which represent a point in the Subbasin that, if exceeded, may cause undesirable results. The Plan's description of minimum thresholds should include (1) information and criteria relied upon to establish and justify the minimum thresholds supported by the basin setting and qualified by uncertainty in the understanding of the basin setting; (2) the relationship between these minimum thresholds and each sustainability indicator to show how these basin conditions would avoid undesirable results for each sustainability indicator; (3) a technical description explaining how operating the Subbasin to the proposed minimum thresholds would not be expected to cause undesirable results in adjacent basins or affect the ability of adjacent basins to achieve their sustainability goals; and (4) how the minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests. The GSAs should define the potential effects of lowered groundwater levels that their GSPs state could become an undesirable result such as: "reduced irrigation water supplies for agriculture and for municipal systems through loss of well capacity, loss or degradations of water supplies for smaller community water systems and domestic wells due to well failures, increased energy consumption due to lowered water levels, and the adverse economic consequences of the aforementioned effects such as increased energy usage to extract groundwater from deeper levels."⁷⁰

- b) If the GSAs intend to rely on mitigation actions to address impacts that would occur as a result of the continued lowering of groundwater levels as a means to support the reasonableness of their sustainable management criteria, then the GSPs should be revised to include specific details of the mitigation measures that will be enacted, including the schedule for implementation and other details that will allow the Department to assess their feasibility and likely effectiveness.

⁷⁰ Greater Kaweah GSP, Section 3.4.2, p. 73

3.2 DEFICIENCY 2. THE PLAN DOES DO NOT SET SUSTAINABLE MANAGEMENT CRITERIA FOR SUBSIDENCE IN THE MANNER REQUIRED BY SGMA AND THE GSP REGULATIONS

3.2.1 Background

SGMA defines an undesirable result for subsidence as that which causes “significant and unreasonable land subsidence that substantially interferes with surface land uses.”⁷¹ The GSP Regulations require minimum thresholds for subsidence to be based on the “rate and extent of subsidence that substantially interferes with surface land uses and may lead to undesirable results.”⁷²

3.2.2 Deficiency Details

Similar to Deficiency 1, above, the GSAs have not defined undesirable results and minimum thresholds for subsidence in a manner consistent with SGMA and the GSP Regulations. Specifically, Greater Kaweah and Mid-Kaweah did not define metrics for undesirable results and minimum thresholds based on the amount of subsidence that would substantially interfere with land surface uses, informed by, and in consideration of, the relevant and applicable land surface uses and users in their part of the Subbasin. Instead, as with groundwater elevation, the Greater Kaweah and Mid-Kaweah GSAs developed subsidence criteria based on a continuation of past groundwater management practices extended into the future. Department staff believe this is a fundamental flaw with the Plan that needs to be corrected immediately because of the potential harm that could occur to the interests of beneficial uses and users of groundwater and land surface users in the near term if not addressed promptly. Additionally, correcting this deficiency may necessitate other changes to the GSPs and coordination agreement, such as the timing and types of projects and management actions.

The Greater Kaweah and Mid-Kaweah GSPs are broadly similar in establishing subsidence sustainable management criteria. Similar to the approach for setting groundwater level thresholds, as described above, those GSPs projected groundwater levels based on an extrapolation of declining groundwater levels observed at representative monitoring sites over several previous years to calculate the projected storage reduction and estimate projected subsidence.⁷³ These projections were applied at the two geographically extreme Subbasin subsidence monitoring stations: the Corcoran (CRCN) station located in the Tulare Lake Subbasin, just outside the southwest

⁷¹ Water Code § 10721(x)(5).

⁷² 23 CCR § 354.28(c)(5).

⁷³ Greater Kaweah GSP, Section 5.5.1, pp. 122-123; Mid-Kaweah GSP, Section 5.3.4.3, pp. 137-138.

portion of the Kaweah Subbasin and the P566 station⁷⁴ located in the northeast portion of the Subbasin. Measurable objectives for the Mid-Kaweah and Greater Kaweah GSPs were defined similarly, and the measurable objective subsidence rates are generally one-half of the minimum threshold rates.⁷⁵

Because Mid-Kaweah and Greater Kaweah did not define subsidence criteria based on conditions that would substantially interfere with land surface uses and users in the Subbasin, Department staff have no basis for evaluating whether continued subsidence predicted by the Plans (potentially 15 feet in the next 20 years in the southwest portion of the Subbasin) would cause significant and unreasonable impacts to land surface uses.⁷⁶ The GSAs should understand, through efforts such as coordination and technical studies, the amount of subsidence that would be significant and unreasonable based on a substantial interference with groundwater and land surface beneficial uses and users. That understanding would inform not only the selection of sustainable management criteria but also the types and timing of projects and management actions that would be needed to avoid the significant and unreasonable effects. Department staff do not find evidence in the Mid-Kaweah and Greater Kaweah GSPs that indicates the GSAs considered the interests of beneficial users and uses of groundwater in defining undesirable results or establishing minimum thresholds. Department staff therefore are unable to assess whether those GSAs have established sustainable management criteria based on a commensurate level of understanding of the basin setting or whether the interests of beneficial uses and users have been considered. (See Corrective Action 2a.)

The East Kaweah GSP better comports with expectations based on the GSP Regulations to develop sustainable management criteria for subsidence. The East Kaweah GSP states that an undesirable result would occur if there were “significant loss of functionality of a structure or a facility to the point that, due to subsidence, the feature cannot be operated as designed requiring either retrofitting or replacement.”⁷⁷ The East Kaweah GSP identified the Friant-Kern Canal as critical infrastructure for users in the GSA area and determined that a loss of more than 10 percent of its capacity would be unacceptable.⁷⁸ The East Kaweah GSP identified that subsidence over 9.5 inches,

⁷⁴ Neither the Greater Kaweah nor Mid-Kaweah GSP is consistent regarding the future subsidence rates in the vicinity of station P566 and in the northeast portion of the Subbasin. Greater Kaweah’s GSP states in a table that the minimum threshold for its northeastern monitoring sites is 1.0 inch per year (Greater Kaweah GSP, Table 5-4, p. 123), implying a maximum of 20 inches over the 20-year implementation period. However, a subsequent figure shows that the minimum threshold is 24 inches of cumulative subsidence over the 20-year period, implying a rate of 1.2 inches per year (Greater Kaweah GSP, Figure 5-5, p. 124). Mid-Kaweah’s GSP incorporates the P566 station directly as a representative monitoring site and sets the minimum threshold at 1.2 inches per year (Mid-Kaweah GSP, Table 5-4, p. 145) although earlier portions of the text indicate that the subsidence rate is 1.0 inches per year (Mid-Kaweah GSP, p. 137).

⁷⁵ Greater Kaweah GSP, Sections 5.5.1 and 5.5.2, Figure 5-5, and Figure 5-6 (also labeled Figure 5-8), pp. 124-125; Mid-Kaweah GSP, Section 5.4.4 and Table 5-4, pp. 144-145 and Figure 5-4, p. 147.

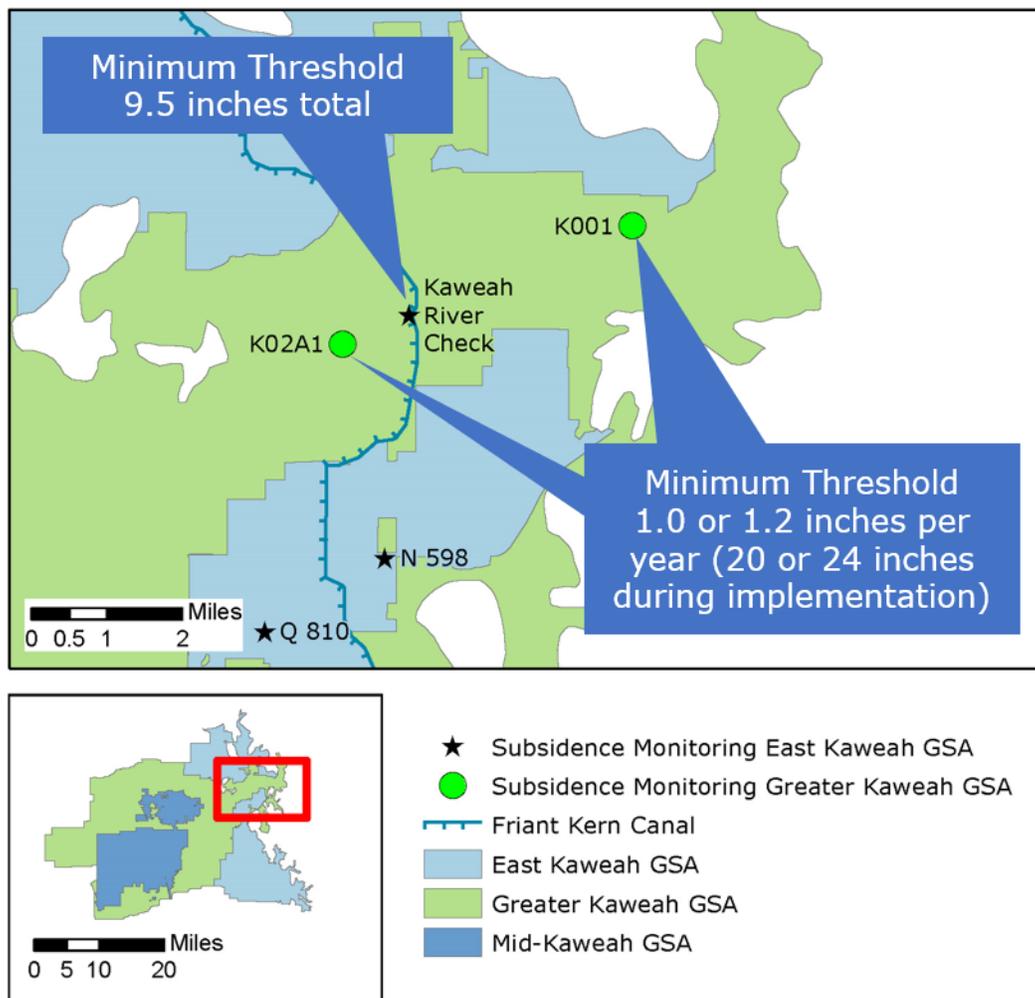
⁷⁶ Mid-Kaweah GSP, Section 5.3.4, pp. 135-138; Greater Kaweah GSP, Section 5.5, pp. 120-125.

⁷⁷ East Kaweah GSP, Section 3.4.3.1.1, p. 182.

⁷⁸ East Kaweah GSP, Section 3.4.3.2.3, p. 184.

cumulatively, would result in the 10 percent loss in capacity and, therefore, used 9.5 inches of cumulative subsidence as the minimum threshold.

The differences between Greater Kaweah and East Kaweah GSPs creates the potential for inconsistency in groundwater management between the Subbasins GSPs. A portion of the Greater Kaweah GSP area bisects the East Kaweah GSP area in the vicinity of the Friant Kern Canal (see Figure 1).



Greater Kaweah’s subsidence minimum thresholds in this area allow for 1.0 to 1.2 inches per year of subsidence, or 20 to 24 inches cumulatively over the 20-year implementation period. Neither the East Kaweah nor the Greater Kaweah GSPs nor the Kaweah Subbasin Coordination Agreement explain how up to 24 inches of subsidence in the Greater Kaweah area can be accommodated without interfering with the 9.5-inch limit set by East Kaweah to protect the conveyance capacity of the Friant-Kern Canal. The GSPs will need to reconcile this apparent discrepancy. (See Corrective Action 2b.)

3.2.3 Corrective Action 2

- a) Mid-Kaweah and Greater Kaweah must define sustainable management criteria for land subsidence in the manner required by SGMA and the GSP Regulations. The GSAs should develop criteria, including minimum thresholds, measurable objectives, interim milestones, and undesirable results based on the amount of subsidence that would substantially interfere with land surface uses. Developed criteria should be supported with information on the effects of subsidence on land surface beneficial uses and users and the amount of subsidence that would substantially interfere with those uses and users.
- b) Following changes to the GSPs described in Corrective Action 2a, Greater Kaweah also must explain how their minimum thresholds in the vicinity of identified critical infrastructure (i.e., the Friant Kern Canal) will not substantially interfere with the Canal's use (identified by East Kaweah GSA as an undesirable result). Address how the amount of potential cumulative subsidence allowed for by Greater Kaweah's subsidence rates, which currently exceeds the amount identified by East Kaweah that would cause an undesirable result, are compatible or provide revised rates for the eastern portion of the Subbasin that are compatible.

3.3 DEFICIENCY 3. THE PLAN DOES NOT CONSISTENTLY IDENTIFY INTERCONNECTED SURFACE WATER SYSTEMS, OR THE QUANTITY AND TIMING OF DEPLETION OF THOSE SYSTEMS DUE TO GROUNDWATER USE. THE PLAN DOES NOT CONSISTENTLY DEFINE SUSTAINABLE MANAGEMENT CRITERIA FOR DEPLETION OF INTERCONNECTED SURFACE WATER IN THE MANNER REQUIRED BY THE GSP REGULATIONS.

3.3.1 Background

The GSP Regulations require a GSP to identify interconnected surface water systems in the basin and evaluate the quantity and timing of depletions of those systems using the best available information.⁷⁹

The GSP Regulations state that a GSA that is able to demonstrate one or more sustainability indicators are not present and are not likely to occur in the basin is not required to develop sustainable management criteria for those indicators.⁸⁰ Absent an explanation of why a sustainability indicator is inapplicable, the Department assumes all sustainability indicators apply.⁸¹ Demonstration of applicability (or non-applicability) of sustainability indicators must be supported by best available information and science and should be provided in descriptions throughout the GSP (e.g., information describing basin setting, discussion of the interests of beneficial users and uses of groundwater).

⁷⁹ 23 CCR §§ 354.28(c)(6)(A), 354.28(c)(6)(B).

⁸⁰ 23 CCR §§ 354.26(d), 354.28(e).

⁸¹ DWR Best Management Practices for the Sustainable Management of Groundwater: Sustainable Management Criteria (DRAFT), November 2017.

The Department’s assessment of a GSP’s likelihood to achieve its sustainability goal for its basin is based, in part, on whether a GSP provides sufficiently detailed and reasonable supporting information and analysis for all applicable indicators. The GSP Regulations require the Department to evaluate whether establishment of sustainable management criteria is commensurate with the level of understanding of the basin setting.⁸²

The GSP Regulations require that the minimum thresholds for depletions of interconnected surface water 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. The minimum threshold established for depletions of interconnected surface water shall be supported by the following:⁸³

- The location, quantity, and timing of depletions of interconnected surface water.⁸⁴
- A description of the groundwater and surface water model used to quantify surface water depletion. If a numerical groundwater and surface water model is not used to quantify surface water depletion, the Plan shall identify and describe an equally effective method, tool, or analytical model to accomplish the requirements of this Paragraph.⁸⁵

3.3.2 Deficiency Details

The Plan for the Subbasin contains conflicting statements about the presence and location of interconnected surface waters. The Plan identifies the presence of interconnected surface water, but has not demonstrated the relationship between groundwater use and stream depletion or developed sustainable management criteria for that depletion, as required by SGMA and the GSP Regulations.

The GSAs rely on the Coordination Agreement and its appendices to, among other things, provide common information on conditions in the Subbasin. Appendix 1 of the Coordination Agreement, entitled “Basin Setting Report,” includes a brief discussion of interconnected surface water but lacks specific identification of interconnected surface water systems or the quantity and timing of the depletion of those systems due to groundwater use.⁸⁶ The Coordination Agreement states that “in general, the vast majority of the natural streams and manmade ditches (channels) throughout the Subbasin are considered losing channels throughout the year with considerable vertical separation between the channels and groundwater” but that “streams located in the eastern portion of the Subbasin, generally between the Friant Kern Canal eastward to McKay Point ... are more likely to be relatively neutral to gaining stream reaches during limited times of year.”⁸⁷ The Coordination Agreement does not provide specific data or analysis with

⁸² 23 CCR § 355.4(b)(3).

⁸³ 23 CCR § 354.28 (c)(6).

⁸⁴ 23 CCR § 354.28 (c)(6)(A).

⁸⁵ 23 CCR § 354.28 (c)(6)(B).

⁸⁶ Kaweah Coordination Agreement, Appendix 1, Section 2.9, p. 165.

⁸⁷ Kaweah Coordination Agreement, Appendix 1, Section 2.9, p. 165; see also Kaweah Coordination Agreement, Appendix 1, Section 2.2.7.3, p. 52.

which to verify those statements, including a comparison of near-stream groundwater conditions that would indicate whether streams were interconnected, and the timing of that interconnection. The Coordination Agreement identifies lack of near-stream information as a data gap for the Greater Kaweah⁸⁸ and East Kaweah⁸⁹ GSA areas, which appear to be the two GSAs covering portions of the Subbasin that could have interconnected surface water bodies.

Despite the acknowledgment that interconnected surface water is present in a portion of the Subbasin, Appendix 6 of the Coordination Agreement, which discusses the Subbasin-wide approach to the sustainability goal and undesirable results, indicates in several locations that the GSAs did not develop sustainable management criteria⁹⁰ and states that “no interconnected surface waters as defined in SGMA have been identified in any Kaweah Subbasin GSAs as described more thoroughly in the basin setting.”⁹¹ Department staff interpret the reference to the “basin setting” to refer the Appendix 1 of the Coordination Agreement, which, as noted above, does indicate that interconnected surface water is present in the eastern portion of the Subbasin.

Department staff note that, for a GSA to determine that undesirable results and other criteria are not required, the GSP Regulations call for the GSA to demonstrate that the undesirable result is both not present and not likely to occur. If the GSA is uncertain about the extent to which interconnected surface water is present, it is not appropriate to dismiss the development of sustainable management criteria (i.e., absence of evidence is not evidence of absence).

Department staff could not find any such demonstration in the Coordination Agreement or the Greater Kaweah GSP, as described below. The Greater Kaweah GSP documents areas with likely interconnected surface water, as does the Coordination Agreement,⁹² but Greater Kaweah has not developed sustainable management criteria for interconnected surface water.⁹³ The Greater Kaweah GSP states that a web-based interactive map provided by the Department showed that as of Fall 2014, groundwater levels were greater than 30 feet below ground surface throughout the Subbasin, and used that as evidence for lack of significant interconnection of surface water and groundwater.⁹⁴ While Department staff acknowledge the available Department-generated contours do show depths greater than 30 feet, those contours do not extend to the complete eastern edge of the Subbasin, likely because there was insufficient data. Areas without coverage by those contours are some of the same areas that the

⁸⁸ Kaweah Coordination Agreement, Appendix 5, pp. 449, 451, and 453.

⁸⁹ Kaweah Coordination Agreement, Appendix 5, pp. 458, 464-465.

⁹⁰ Kaweah Coordination Agreement, Appendix 6, Section 6-8, p. 478.

⁹¹ Kaweah Coordination Agreement, Appendix 6, Section 6.8, p. 478.

⁹² Greater Kaweah GSP, Figure 16, p. 790; Greater Kaweah GSP, Figure 17, p. 791; Greater Kaweah GSP, Figure 19, p. 793; Kaweah Coordination Agreement, Appendix 1, Section 2.9, p. 165; see also Kaweah Coordination Agreement, Appendix 1, Section 2.2.7.3, p. 52.

⁹³ Kaweah Coordination Agreement, Appendix 6, Section 6.8, p. 478; Greater Kaweah GSP, Section 3.8, p. 78.

⁹⁴ Greater Kaweah GSP, Section 2.2, p. 63.

Coordination Agreement indicates would likely have interconnection. Department staff conclude that Greater Kaweah has not demonstrated that interconnected surface water is not present in their GSP area. Therefore, Department staff disagree with their approach to “establish non-applicability” and their conclusion that sustainable management criteria are not applicable and not required. (See Corrective Action 3a.)

East Kaweah also identifies the eastern portion of the Subbasin as most likely to contain surface water bodies that are interconnected with groundwater, including the Kaweah River, Cottonwood Creek, Lewis Creek, and Frazier Creek.⁹⁵ The GSP states that, based on the GSA’s understanding of those surface water bodies and “limited impacts of groundwater pumping on interconnected surface water bodies [sic] streamflow, it was determined that focusing the minimum threshold on groundwater levels would be appropriate for evaluating any undesirable effects on surface water connection.”⁹⁶ Therefore, East Kaweah uses the same minimum thresholds developed for groundwater levels, as described in Deficiency 1 above, as proxies for minimum thresholds for the depletion of interconnected surface water. Department staff note that when GSAs choose to use groundwater elevation thresholds as a proxy for another indicator, the GSP Regulations require a demonstration “that the representative [groundwater elevation] value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence.”⁹⁷ Department staff did not find any such demonstration by East Kaweah to show that the groundwater level thresholds are a reasonable proxy for 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.”⁹⁸

East Kaweah identifies interconnected surface water as a data gap but provides little detail about their proposed approach or schedule to obtain sufficient understanding to address the required elements of the GSP Regulations. Identified actions include streamflow monitoring, “new proposed monitoring”⁹⁹ (which Department staff interpret to refer to additional groundwater monitoring, though it is unclear), and that the GSA is “likely to perform more studies and field verification by qualified professionals.”¹⁰⁰ The GSP states that East Kaweah intends to fill the gaps within five years.¹⁰¹ Department staff note that East Kaweah’s discussion of addressing data gaps does not describe how or when the GSA would use the newly obtained information to demonstrate that groundwater levels are a reasonable proxy for the depletion of interconnected surface water.

Department staff conclude that the East Kaweah GSP does not sufficiently demonstrate that the minimum thresholds for chronic lowering of groundwater levels are a reasonable proxy for the rate and volume of surface water depletion caused by groundwater use that

⁹⁵ East Kaweah GSP, Section 3.4.1.2.2, p. 169.

⁹⁶ East Kaweah GSP, Section 3.4.1.2.2, p. 169.

⁹⁷ 23 CCR § 354.28(d).

⁹⁸ 23 CCR § 354.28(c)(6).

⁹⁹ East Kaweah GSP, Section 4.7.3.3, p. 209.

¹⁰⁰ East Kaweah GSP, Section 2.6, p. 149.

¹⁰¹ East Kaweah GSP, Section 2.6, p. 149.

could lead to undesirable results. While the East Kaweah GSP does identify that additional data may be collected, there is no mention of a study or other efforts specifically for the purpose of demonstrating the reasonableness or appropriateness of using the GSP's groundwater level thresholds as a proxy for the depletion of interconnected surface water. (See Corrective Action 3b.)

While Department staff acknowledge that only a small portion of the Subbasin's land area is likely to contain interconnected surface waters, staff also note that, with the planned decreases in groundwater levels allowed for by the Plan's management regime, it is reasonable to conclude that the extent and temporal duration of interconnected reaches are likely to decrease. The Plan's water year 2020 annual report indicated that groundwater levels on the eastern side of the Subbasin have fallen below the Plan's measurable objectives and interim milestones. Without a thorough and timely plan to understand and manage the Subbasin for the depletion of interconnected surface water, beneficial uses or users could be impacted by the loss of interconnection, perhaps irreparably, or reduction of streamflow caused by groundwater use. Therefore, Department staff recommend this deficiency be addressed promptly through addressing the corrective actions described below.

3.3.3 Corrective Action 3

Greater Kaweah and East Kaweah must define sustainable management criteria for interconnected surface water in the manner required by SGMA and the GSP Regulations.

- a) Having identified that interconnected surface waters are present in their GSP area, and absent a demonstration that undesirable results related to depletion of interconnected surface water due to groundwater use are not present and not likely to occur, Greater Kaweah should develop sustainable management criteria for depletion of interconnected surface water consistent with the requirements of SGMA and the GSP Regulations. If the GSA does not have sufficient information to develop specific sustainable management criteria at this time, then they should properly identify depletion of interconnected surface water as a data gap and should provide a plan to close the data gap as soon as practical, with significant progress by the first required periodic evaluation. The plan to address the data gap should specifically outline how and when the GSA will:
 1. Acquire or develop data and tools to identify interconnected surface water reaches, and the quantity and timing of the depletion of interconnected surface water due to groundwater use for interconnected surface water systems identified in the Plan.
 2. Develop sustainable management criteria based on the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses and users of surface water.

East Kaweah should provide information to demonstrate that their selected groundwater level thresholds are a reasonable proxy for the depletion of

interconnected surface water, as required by the GSP Regulations. If this information is a data gap then it should be properly identified as such, and a plan and schedule to address this data gap should be identified to acquire this information, similar to the data gap discussion in Corrective Action 3a, above.

4 STAFF RECOMMENDATION

Department staff believe that the deficiencies identified in this assessment should preclude approval of the Plan for the Kaweah Subbasin. Department staff recommend that the Plan be determined incomplete.