CALIFORNIA DEPARTMENT OF WATER RESOURCES
SUSTAINABLE GROUNDWATER MANAGEMENT OFFICE
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January 21, 2022

Kiti Campbell, Senior Resources Engineer
Westlands Water District GSA
3130 N. Fresno Street, P.O. Box 6056
Fresno, CA 93703-6056
kcampbell@wwd.ca.gov

RE: “Incomplete” Determination of the 2020 Westside Subbasin Groundwater Sustainability Plan

Dear Kiti Campbell,

The Department of Water Resources (Department) has evaluated the groundwater sustainability plan (GSP) submitted for the Westside Subbasin (Subbasin) and has determined that the GSP is “Incomplete”. The Department based its determination on recommendations from the Staff Report, included as an enclosure to the attached Statement of Findings, which describes that the Westside Subbasin GSP 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 to address the identified deficiencies.

The Subbasin’s Groundwater Sustainability Agencies (GSAs) have 180 days, the maximum allowed by GSP Regulations, to address the identified deficiencies. Where addressing the deficiencies requires modification of the GSP, the GSAs must adopt those modifications into the Subbasin’s GSP or otherwise demonstrate that those modifications are part of the GSP before resubmitting it to the Department for evaluation no later than July 20, 2022. The Department understands that much work has occurred to advance sustainable groundwater management since the GSAs submitted the GSP 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 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 GSP resubmittal. If the revisions address the identified deficiencies, the Department will determine that the GSP is “Approved”. In that scenario, Department staff will identify additional recommended corrective actions that the GSAs should address early in implementing their GSP (i.e., no later than the first required periodic evaluation). Among other items, those recommendations will include for the GSAs to correct identified errors and inconsistencies, and to provide more detail on their plans and schedules to address data gaps. Those recommendations will also 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 GSAs cannot address the deficiencies identified in this letter by July 20, 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 staff by emailing sgmps@water.ca.gov if you have any questions about the Department's assessment, implementation of your GSP, or to arrange a meeting with the Department.

Thank You,

Paul Gosselin

Paul Gosselin
Deputy Director of Sustainable Groundwater Management

Attachment:

1. Statement of Findings Regarding the Determination of Incomplete Status of the San Joaquin Valley – Westside Subbasin Groundwater Sustainability Plan

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

STATEMENT OF FINDINGS REGARDING THE DETERMINATION OF INCOMPLETE STATUS OF THE SAN JOAQUIN VALLEY - WESTSIDE SUBBASIN GROUNDWATER SUSTAINABILITY PLAN

The Department of Water Resources (Department) is required to evaluate whether a submitted groundwater sustainability plan (GSP or Plan) conforms to specific requirements of the Sustainable Groundwater Management Act (SGMA or Act), is likely to achieve the sustainability goal for the basin covered by the Plan, and whether the Plan 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 Plan within two years of its submission. (Water Code § 10733.4.) This Statement of Findings explains the Department's decision regarding the Plan submitted by the Westlands Water District GSA and the County of Fresno – Westside GSA (the GSAs or Agencies) for the San Joaquin Valley - Westside Subbasin (No. 5-022.09).

Department management has reviewed the enclosed Staff Report, which recommends that the identified deficiencies should preclude approval of the GSP. 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.

A. The GSP does not provide sufficient information to support the selection of land subsidence sustainable management criteria.

    1. The GSP only defines sustainable management criteria for areas in the vicinity of the San Luis Canal and does not address the potential effects of subsidence that could result from allowable groundwater level declines (as defined by groundwater level sustainable management criteria) in portions of the Subbasin not in close proximity to the Canal.

    2. For areas near the San Luis Canal, but outside of the defined "areas of concern", the GSP relies on three extensometer sites as the representative monitoring sites for which measurable objectives and minimum thresholds are defined. The GSAs assert that the best achievable outcome is halting active subsidence and that some amount of residual subsidence will continue after active subsidence is halted. The GSAs therefore base the measurable objectives at these sites on an estimate of the rate of residual subsidence expected to occur. However, evidence presented in the Plan does not support the GSAs' estimated rate (0.1 feet per

year) and temporal extent (no change in the rate over time is proposed) of residual subsidence as asserted in the Plan. The GSP also does not support how minimum threshold rates of subsidence (0.3 feet per year) at these extensometer representative monitoring sites were selected or how they are consistent with rates of subsidence that would substantially interfere with groundwater and land surface beneficial uses and users.

3. The GSP, with minimum thresholds that allow for up to 0.3 feet per year of subsidence on an ongoing basis in some areas, does not appear to be consistent with the intent of SGMA to avoid or minimize subsidence, nor does it explain how that continued subsidence is compatible with sustainable management and how it would not substantially interfere with surface land uses.

4. The GSAs' discussions of subsidence sustainable management criteria have several vague, ambiguous, and incorrect statements that limit the Department's ability to assess how the GSAs will avoid undesirable results due to subsidence.

B. The GSP does not provide adequate information to support the selection of chronic lowering of groundwater level sustainable management criteria.

1. The GSAs do not describe minimum thresholds for chronic lowering of groundwater levels in terms of the site-specific depletion of supply at representative monitoring sites that may lead to undesirable results, as required by the GSP Regulations.

2. The GSAs do not explain how the definition of undesirable results for chronic lowering of groundwater levels (i.e., 25 percent of monitored wells below minimum thresholds for two consecutive spring measurements) was determined or how it relates to the specific effects (e.g., lowering of production rates of pre-existing groundwater wells) that the GSAs are trying to avoid.

3. There are several groundwater level monitoring sites which have sustainable management criteria that are substantially different in relation to 2015 groundwater elevations than the pattern established for most sites in the Subbasin. The GSAs do not explain why these locations are different than the majority of the monitoring sites and does not explain how minimum thresholds and measurable objectives were determined for these specific locations.

C. The GSAs do not provide adequate information to support the selection of degraded water quality sustainable management criteria.

1. The GSAs assert that total dissolved solids (TDS) is a proxy for other naturally occurring water quality constituents but does not provide evidence to support this claim.

2. The GSAs define measurable objectives using an equation and an increase in trends that are "generally representative of the [Regional Water Quality Control Board's] Basin Plan Amendment allowances," but do not explain how these trends are related to, or supported by, the Basin Plan Amendment, nor any other regulatory programs, if applicable, or why the GSAs rely on them to define measurable objectives.

3. The GSAs do not provide values for measurable objectives or minimum thresholds, nor the information that would be required to calculate those values at the representative monitoring sites.

4. The GSAs do not adequately explain how minimum thresholds, expressed as deviations from the expected degradation of water quality, were determined.

5. Additionally, the GSAs' discussions of sustainable management criteria include discrepancies that create confusion regarding exactly what the GSAs are proposing.

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

Signed:

Karla Nemeth, Director

Date: January 21, 2022

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

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

Groundwater Basin Name:	San Joaquin Valley - Westside Subbasin (No. 5-022.09)
Submitting Agencies:	Westlands Water District GSA, County of Fresno GSA-Westside
Recommendation:	Incomplete
Date:	January 21, 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] Here, as presented in this staff report, a single GSP covering the entire basin was adopted and submitted to the Department of Water Resources (Department) for review.[3]

The Westlands Water District GSA and the County of Fresno GSA-Westside (collectively, GSAs) submitted the San Joaquin Valley Groundwater Basin Westside Subbasin Groundwater Sustainability Plan (GSP or Plan) to the Department of Water Resources (Department) for evaluation and assessment as required by SGMA and the GSP Regulations.[4] The GSP covers the entire Westside Subbasin (Subbasin) for the implementation of SGMA.

Evaluation and assessment by the Department is based on whether the adopted and submitted GSP, either individually or in coordination with other adopted and submitted GSPs, complies with SGMA and substantially complies with GSP Regulations. Department staff base their assessment on information submitted as part of an adopted GSP, public comments submitted to the Department, and other materials, data, and reports that are relevant to conducting a thorough assessment. Department staff have evaluated the GSP and have identified deficiencies that staff recommend should preclude its approval.[5] In addition, consistent with the GSP Regulations, Department staff have provided corrective actions[6] that the GSAs should review while determining how and whether to address the deficiencies. The deficiencies and corrective actions are explained

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[1] Water Code § 10720 *et seq*.
[2] Water Code § 10727.
[3] Water Code §§ 10727(b)(1), 10733.4; 23 CCR § 355.2.
[4] 23 CCR § 350 *et seq*.
[5] 23 CCR § 355.2(e)(2).
[6] 23 CCR § 355.2(e)(2)(B).

in greater detail in Section 3 of this staff report and are generally related to the need to define sustainable management criteria for subsidence, chronic lowering of groundwater levels, and degradation of water quality 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, GSP completeness, and basin coverage required for a GSP to be evaluated by the Department.
- **Section 3 – Plan Evaluation:** Provides a detailed assessment of deficiencies identified in the GSP which may be capable of being corrected by the GSAs. Consistent with the GSP Regulations, Department staff have provided corrective actions for the GSAs to address the deficiencies.
- **Section 4 – Staff Recommendation:** Provides the recommendation of Department staff regarding the Department's determination.

1 EVALUATION CRITERIA

The Department evaluates whether a GSP conforms to the statutory requirements of SGMA[7] and is likely to achieve the basin's sustainability goal.[8] To achieve the sustainability goal, the GSP must demonstrate that implementation of its groundwater sustainability program 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.[9] 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.[10] The Department is also required to evaluate whether the GSP will adversely affect the ability of an adjacent basin to implement its groundwater sustainability program or achieve its sustainability goal.[11]

To evaluate a GSP, the Department must first determine a GSP was submitted by the statutory deadline,[12] is complete,[13] and covers the entire basin.[14] For those GSAs choosing to develop multiple GSPs, the GSPs must be coordinated pursuant to a single coordination agreement that covers the entire basin.[15] If these conditions are satisfied, the Department evaluates the GSP 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 implementation of the GSP is likely to achieve the sustainability goal for the basin, Department staff review the information provided and relied upon in the GSP 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 information provided by the GSA and the

[7] Water Code §§ 10727.2, 10727.4.
[8] Water Code § 10733(a).
[9] Water Code § 10721(v).
[10] 23 CCR § 354.26 *et seq*.
[11] Water Code § 10733(c).
[12] Water Code § 10720.7; 23 CCR § 355.4(a)(1).
[13] 23 CCR § 355.4(a)(2).
[14] 23 CCR § 355.4(a)(3).
[15] Water Code §§ 10727(b)(3), 10727.6; 23 CCR § 357.4.
[16] 23 CCR § 350 *et seq*.
[17] 23 CCR § 355.4(b).
[18] 23 CCR § 351(h).

assumptions and conclusions presented in the GSP, 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 GSP 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 GSA has the legal authority and financial resources necessary to implement the GSP.[20]

To the extent that overdraft is present in a basin, the Department evaluates whether the GSP 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 GSP provides reasonable measures and schedules to eliminate identified data gaps.[23] Lastly, the Department's review considers the comments submitted on the GSP and evaluates whether the GSA adequately responded to the comments that raise credible technical or policy issues with the GSP.[24]

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

After review of the GSP, Department staff may find that the information provided is not sufficiently detailed, or the analyses not sufficiently thorough and reasonable, to evaluate whether the GSP 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 GSA in a timely manner,[30] the Department will determine the status of the GSP to be incomplete. A formerly deemed incomplete GSP may be resubmitted to the Department for reevaluation after all deficiencies have been addressed by the GSA within 180 days after the Department makes its incomplete determination. The Department will review the revised GSP to evaluate whether the identified deficiencies were sufficiently addressed. Depending on the outcome of that evaluation, the Department may determine the resubmitted GSP is approved. Alternatively, the Department may find a formerly deemed

[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).

incomplete GSP is inadequate if, after consultation with the State Water Resources Control Board, it determines that the GSA has not taken sufficient actions to correct any identified deficiencies.[31]

Even when the Department determines a GSP is approved, indicating that it satisfies the requirements of SGMA and is in substantial compliance with the GSP Regulations, the Department may still recommend corrective actions.[32] Recommended corrective actions are intended to facilitate progress in achieving the sustainability goal within the basin and the Department's future evaluations, and to allow the Department to better evaluate whether implementation of the GSP adversely affects adjacent basins. While the issues addressed by the recommended corrective actions in an approved GSP do not, at the time the determination was made, preclude its approval, the Department recommends that the issues be addressed to ensure the GSP's implementation continues to be consistent with SGMA and the Department is able to assess progress in achieving the basin's sustainability goal.[33] Unless otherwise noted, the Department proposes that recommended corrective actions be addressed by the submission date for the first five-year assessment.[34]

The staff assessment of the GSP involves the review of information presented by the GSA, 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 GSP or perform its own geologic or engineering analysis of that information. The recommendation to approve a GSP does not signify that Department staff, were they to exercise the professional judgment required to develop a GSP for the basin, would make the same assumptions and interpretations as those contained in the GSP, but simply that Department staff have determined that the assumptions and interpretations relied upon by the submitting GSA are supported by adequate, credible evidence, and are scientifically reasonable.

Lastly, the Department's review of an approved GSP 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 GSP.[35] Also, GSAs have an ongoing duty to reassess their GSPs, provide annual reports to the Department and, when necessary, update or amend their GSPs.[36] 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 progress toward achieving the sustainability goal for the basin and whether GSP implementation adversely affects the ability of adjacent basins to achieve its sustainability goals.

[31] 23 CCR § 355.2 (e)(3)(C).
[32] Water Code § 10733.4(d).
[33] Water Code § 10733.8.
[34] 23 CCR § 356.4.
[35] Water Code § 10733.8; 23 CCR § 355.6 *et seq*.
[36] 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.[37] The GSP must also be complete and must, either on its own or in coordination with other GSPs, cover the entire basin. If a GSP is determined to be incomplete, Department staff may require corrective actions that address minor or potentially significant deficiencies identified in the GSP. 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 GSP 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.[38]

The GSAs submitted their GSP on January 23, 2020, in compliance with the statutory deadline.

2.2 COMPLETENESS

GSP Regulations specify that the Department shall evaluate a GSP if that GSP is complete and includes the information required by SGMA and the GSP Regulations.[39]

The GSAs submitted an adopted GSP for the entire Subbasin. Department staff found the GSP to be complete and includes the required information, sufficient to warrant an evaluation by the Department. The Department posted the GSP to its website on January 30, 2020.

2.3 BASIN COVERAGE

A GSP, either on its own or in coordination with other GSPs, must cover the entire basin.[40] A GSP 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 GSAs.

The GSP intends to manage the entire Westside Subbasin and the jurisdictional boundaries of the submitting GSAs cover the majority of the Subbasin, with the exception of lands within Kings County which lie outside the jurisdictional boundaries of the GSAs

[37] Water Code § 10720.7.
[38] Water Code § 10720.7(a)(1).
[39] 23 CCR § 355.4(a)(2).
[40] Water Code § 10727(b); 23 CCR § 355.4(a)(3).

but lie within the Naval Air Station Lemoore, which is owned by the Federal government and therefore exempt from the requirements of SGMA.[41]

[41] Westside GSP, Chapter 2.1.1, p. 62.

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 factors including whether the elements of a GSP were developed in the manner required by the GSP Regulations, whether the GSP was developed using appropriate data and methodologies and whether its conclusions are scientifically reasonable, 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.

Department staff have identified deficiencies in the GSP, the most serious of which preclude staff from recommending approval of the GSP 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 GSP, and the specific actions to address the deficiency.

3.1 DEFICIENCY 1. THE GSP DOES NOT PROVIDE SUFFICIENT INFORMATION TO SUPPORT THE SELECTION OF LAND SUBSIDENCE SUSTAINABLE MANAGEMENT CRITERIA.

3.1.1 Background

In addition to the general background above, the GSP Regulations state that a GSP must "quantify groundwater conditions for each applicable sustainability indicator at each monitoring site or representative monitoring site" and that "the numeric value used to define minimum thresholds shall represent a point in the basin that, if exceeded, may cause undesirable results."[42] For land subsidence, minimum thresholds should identify the rate and extent of subsidence that substantially interferes with surface land uses and may lead to undesirable results. These quantitative values should be supported by:

- The identification of land uses and property interests potentially affected by land subsidence;
- An explanation of how impacts to those land uses and property interests were determined and considered when establishing minimum thresholds; and
- Maps or graphs showing the rates and extents of land subsidence defined by the minimum thresholds.[43]

[42] 23 CCR § 354.28(a).
[43] 23 CCR § 354.28(c)(5).

The GSP Regulations allow the use of groundwater elevations as a proxy for land subsidence, but a GSA must demonstrate a significant correlation between groundwater levels and land subsidence and show that groundwater level minimum thresholds represent a reasonable proxy for land subsidence undesirable results.[44]

3.1.2 Deficiency Details

The GSAs identify that the focus for subsidence sustainable management criteria is the area in the vicinity of the San Luis Canal (SLC).[45] While acknowledging that subsidence has occurred in other portions of the Subbasin, the GSP supports its decision to focus on the SLC by stating that "during the last drought the District did not experience any significant impacts to the District's infrastructure, other than impacts to [the Department's] SLC."[46] However, whether subsidence during the last drought caused significant impacts is not material to the prospective evaluation of sustainability tasked to the GSAs.

While subsequent discussion in this section addresses the Department's review of sustainable management criteria within the vicinity of the SLC, staff also believe the GSAs need to address the potential effects of subsidence that could result from allowable groundwater level decline in areas outside the SLC. Minimum thresholds for chronic lowering of groundwater levels in those areas are typically 40 feet lower than 2015 conditions, but in some cases are more than 100 feet lower than 2015, as noted in Deficiency 2 below. The GSAs should evaluate and document whether there are land surface users outside the vicinity of the SLC susceptible to subsidence, the rates and amounts of subsidence that would substantially interfere with those uses and could lead to undesirable results, and the amount of subsidence the GSAs expect would occur if groundwater levels reach their minimum thresholds. If the amount of subsidence expected to result from groundwater level declines of up to 40 feet in most areas, and more than 100 feet in others, is less than the amount of subsidence that the land surface users could tolerate before undesirable results occur then the GSAs should document that fact and supporting analysis in the GSP. On the other hand, if the expected subsidence amounts exceed those amounts that land surface users can tolerate then the GSAs should set separate subsidence sustainable management criteria to avoid that condition (see Corrective Action 1a).

For areas within the vicinity of the SLC, the GSP identifies measurable objectives and minimum thresholds for subsidence using two approaches, depending on data availability and location.[47] The first approach, used for two defined "areas of concern" along the SLC, defines groundwater levels as a proxy for subsidence.[48] The GSAs set groundwater level minimum thresholds in these areas at 2015 conditions and measurable objectives at conditions higher than those observed in 2015.[49] Department staff have no major concern

[44] 23 CCR § 354.28(d).
[45] Westside GSP, Chapter 3.2.3.1, p. 215.
[46] Westside GSP, Chapter 3.2.3.1, p. 215.
[47] Westside GSP, Chapter 3.3.3.1, p. 229.
[48] The "areas of concern" are shown on Figure 3-4, p. 279 of the Westside GSP.
[49] Westside GSP, Tables 3-7 and 3-8, pp. 224-226.

with this approach, as limiting groundwater level decline to no worse than conditions observed in 2015 is likely to limit, though not eliminate, the future occurrence of subsidence. However, staff note that figures in the GSP appear to indicate some level of subsidence occurred in 2015, even in wells where groundwater levels had historically been below those observed in 2015.[50] Therefore, as the GSAs implement the GSP, they should monitor other sources of subsidence data (e.g., GPS stations or InSAR data), in addition to groundwater level measurements, to verify that significant subsidence is not triggered if groundwater levels approach those observed in 2015.

Department staff are concerned with the second approach, which the GSAs applied to areas outside the "areas of concern" but which the Plan identifies as within the vicinity of the SLC. The GSP identifies three extensometers in those areas and sets, at each location, measurable objectives and minimum thresholds as a rate of subsidence.[51] However, the GSAs do not identify the maximum extent of subsidence that could occur without causing undesirable results, suggesting that subsidence under the GSP might continue indefinitely. The GSAs set the measurable objective to 0.1 feet of subsidence per year for each extensometer site, a rate the GSP describes as accounting "for a small amount of subsidence that will continue to occur as a result of residual subsidence"[52] and as "the best achievable outcome."[53] However, the GSP provides no technical information to support its assertion that 0.1 feet per year is a reasonable expectation of long-term residual subsidence. The GSAs attempt to use a prior study discussing projected residual subsidence on the SLC to support its definitions of management criteria.[54] However, Department staff believe the assumptions made regarding residual subsidence, specifically that residual subsidence would continue at 10 percent of the rate of active subsidence indefinitely,[55] are not supported by the study cited in the GSP. Rather, the cited 2017 report prepared by the Department references a 1963 U.S. Bureau of Reclamation study that estimated residual subsidence along the SLC would result in an additional 10 percent of subsidence in addition to the active subsidence that was estimated to occur before groundwater levels recover enough to halt active subsidence.[56] The cited report does not address at what rate or period this residual subsidence would occur.[57]

[50] See e.g., the plot of groundwater level and subsidence at the Panoche extensometer on Figure 2-53, p. 173 of the GSP.
[51] Westside GSP, Table 3-4, p. 217.
[52] Westside GSP, Chapter 3.2.3.1, p. 215.
[53] Westside GSP, Chapter 3.2.3.1, p. 216.
[54] Westside GSP, Chapter 3.2.3.1, p. 216.
[55] Westside GSP, Chapter 3.2.3.1, p. 216.
[56] U.S. Bureau of Reclamation, Prokopovich, Nikola P., Ultimate Amounts of Deep Subsidence — San Luis Canal, Reaches 3 to 4 – San Luis Unit – Central Valley Project, California, November 1963.
[57] California Department of Water Resources, California Aqueduct Subsidence Study, June 2017, p. 2-5. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Engineering-And-Construction/Files/Subsidence/Aqueduct_Subsidence_Study-Accessibility_Compatibility.pdf

The GSP indicates that it is "expected that residual subsidence will reduce overtime[sic],"[58] and information presented in the GSP supports the interpretation that residual subsidence rates may diminish fairly rapidly once water levels recover. Additionally, hydrographs and ground displacement overlays presented in the GSP show that when water levels recover above a certain elevation, subsidence rates in most monitoring sites appear to decline to close to zero after about 5-10 years.[59]

The GSP acknowledges that "once the Subbasin is no longer experiencing current rates of residual subsidence, the GSA will evaluate whether it is feasible to lower the measurable objectives for subsidence during subsequent updates to the GSP." [60] However, given that inelastic subsidence can cause permanent, unrecoverable losses, and that the assumptions regarding residual subsidence that underly the determinations of sustainable management criteria are not supported by the information provided, Department staff believe that waiting until future revisions of the GSP to reassess measurable objectives and minimum thresholds for subsidence may not be sufficient to avoid undesirable results (see Corrective Action 1b).

The GSAs set minimum thresholds for the three extensometer sites at 0.3 feet per year.[61] The GSP does not explicitly state how that value was determined, but the GSP identifies that "substantial rates of subsidence, if maintained over a long period of time, could lead to significant and unreasonable conditions."[62] Department staff, therefore, infer that the GSAs do not consider 0.3 feet per year of subsidence to be substantial. However, without supporting evidence from the GSAs describing how continued subsidence does not substantially interfere with groundwater and land surface beneficial uses and users, Department staff cannot determine the reasonableness of this approach, which could allow for up to 6 feet of cumulative subsidence over the 20-year implementation period of SGMA (see Corrective Action 1c).

Department staff note that the legislature intended that implementation of SGMA would avoid or minimize subsidence[63] once GSAs achieve the sustainability goal for a basin. To be consistent with that intent, and in the absence of compelling information as to why additional long-term subsidence is acceptable for a basin, Department staff suggest that the GSAs set the measurable objective for inelastic subsidence to zero and that the minimum thresholds be set commensurate with the amount of residual subsidence expected in the Subbasin. It may be that those rates are exceeded during the implementation period (i.e., between 2020 and 2040), as the GSAs work to implement projects and management actions, but that can be acceptable if the GSAs are making adequate progress in implementing the GSP to achieve the sustainability goal. The rates at which GSAs implement projects and management actions should be consistent with

[58] Westside GSP, Chapter 3.2.3.1, p. 215.
[59] Westside GSP, Figures 2-52 and 2-53, pp. 172 and 173.
[60] Westside GSP, Chapter 3.2.3.1, pp. 215-216.
[61] Westside GSP, Table 3-9, pp. 229-230.
[62] Westside GSP, Chapter 3.3.3.1, p. 229.
[63] Water Code § 10720.1(e).

the cumulative subsidence they determine needs to be avoided, as informed by the understanding of potential impacts or interference to beneficial uses and users of groundwater and surface land uses (see Corrective Action 1d).

Department staff also note that the discussion of subsidence sustainable management criteria contains several discrepancies that the GSAs should correct or clarify given the importance of subsidence for the Subbasin. For example, the GSP states, "since recent subsidence has not reportedly resulted in significant damage to infrastructure in other parts of the Subbasin, the extensometer-measured measurable objective in those areas was assigned a value of 0.25 feet per year." [64] However, it is not clear which extensometers the GSP refers to in that statement; the GSP's table of measurable objectives lists three extensometer sites, and all sites have a measurable objective of 0.1 feet per year. Furthermore, the GSP states, "the measurable objectives for subsidence that utilize groundwater levels were set at elevations that are not expected to cause active subsidence to occur in the subsidence prone areas and allow an equivalent amount of subsidence as the 0.25 feet per year described above."[65] It is not clear to Department staff what this sentence is conveying; it appears to reference the measurable objectives that are based on groundwater levels, which are those within the "areas of concern" where groundwater level decline is limited to no worse than 2015 conditions. In that case, it is unclear how those groundwater conditions relate to the referenced 0.25 feet per year of subsidence.

Another discrepancy is that the GSP's discussion of undesirable results references that "individual continuous GPS sites may not exceed minimum thresholds for more than two consecutive years."[66] However, the GSP does not define minimum thresholds at any continuous GPS sites. [67] Overall, the entire discussion of subsidence sustainable management criteria should be critically reviewed for clarity and revised as necessary to correct any misleading or incorrect statements (see Corrective Action 1e).

3.1.3 Corrective Action 1

The GSAs must provide more detailed explanation and justification regarding the selection of the sustainable management criteria for subsidence, particularly the undesirable results and minimum thresholds. Department staff recommend the GSAs consider and address the following:

a) For areas outside the SLC, where allowable groundwater level declines are typically 40 feet, and in some cases more than 100 feet, relative to 2015, the GSAs must revise the GSP to explain the relationship of those declines to subsidence. The GSAs should evaluate or describe how it plans to evaluate, in a timely manner, whether allowable groundwater level declines in areas outside the vicinity of the

[64] Westside GSP, Chapter 3.2.3.1, p. 216.
[65] Westside GSP, Chapter 3.2.3.1, p. 216.
[66] Westside GSP, Chapter 3.4.1.3, p. 241.
[67] See Tables 3-4 and 3-9 (Westside GSP, pp. 217 and 229-230, respectively), which establish the representative monitoring sites as three extensometers and eleven groundwater monitoring wells.

SLC could cause subsidence that substantially interferes with surface land uses. The GSAs should base that evaluation on their understanding of surface land uses and infrastructure in those areas and the amount of subsidence that could substantially interfere with those uses. If this evaluation leads the GSAs to conclude that surface land uses in these areas are susceptible to subsidence, then sustainable management criteria for areas outside the vicinity of the SLC should be developed and clearly described.

b) Where rates of expected residual subsidence inform either the measurable objectives or minimum thresholds, the GSAs should justify those residual subsidence rates with adequate technical information, supported by best available information and best available science. If additional information is required, the GSAs should explain how they would evaluate residual subsidence rates as a data gap.

c) The GSAs must revise the GSP to include an explanation supporting the rates, and cumulative amounts, as applicable, of subsidence allowed for under implementation of the GSP. Support the explanation with information from the basin setting and specific information regarding the GSA's understanding of how subsidence can interfere with land surface uses in the Subbasin.

d) The GSAs should revise their minimum thresholds and measurable objectives for land subsidence to be consistent with the intent of SGMA that subsidence would be avoided or minimized once basins achieve their sustainability goals. If the GSP allows continued subsidence, then explain how that is compatible with sustainable management and how the continued subsidence would not substantially interfere with surface land uses. In areas where the GSAs use subsidence rates for sustainable management criteria, the GSA should also identify a cumulative amount of tolerable subsidence that, if exceeded, would substantially interfere with groundwater and land surface beneficial uses and users. Finally, the GSP should explain how implementing projects and management actions proposed in the GSP is consistent with avoiding that cumulative amount of subsidence, sufficient to avoid substantial interference.

e) The GSAs should review and revise any inconsistencies in the text, figures, and tables of the GSP related to subsidence and sustainable management criteria.

3.2 Deficiency 2. The GSP does not provide adequate information to support the selection of chronic lowering of groundwater level sustainable management criteria

3.2.1 Background

GSAs must develop minimum thresholds for chronic lowering of groundwater levels that are based on a groundwater elevation indicating a depletion of supply at a given location

that may lead to undesirable results.[68] The description of minimum thresholds must include the following, among other items:

- A discussion of the potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring in the Subbasin.[69]
- The information and criteria relied upon to establish minimum thresholds for chronic lowering of groundwater levels, supported by information from the basin setting, and other data or models as appropriate.[70]

Additionally, the Department must consider "whether the assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are reasonable and supported by the best available information and best available science."[71]

3.2.2 Deficiency Details

Generally, the GSP provides little to no Subbasin-specific discussion or information to support the selection of sustainable management criteria for chronic lowering of groundwater levels, particularly the minimum thresholds and undesirable results. Information provided in the GSP appears to be based on an incorrect application or interpretation of requirements in the GSP Regulations.

The GSP qualitatively describes that significant and unreasonable lowering of groundwater levels (i.e., an undesirable result) would occur if the lowering was "sufficient in magnitude to lower the rate of production of pre-existing groundwater wells below that necessary to meet the minimum required to support beneficial use(s) where alternate means of obtaining sufficient water resources are not technically or financially feasible."[72] This description is contingent upon various undefined conditions, such as the minimum rate of production required to support beneficial uses or the technical or financial feasibility of obtaining sufficient water through alternative means. The GSP describes, generally, the effect of exceeding minimum thresholds on beneficial users as a loss of significant well capacity, increased costs due to higher pumping, lack of groundwater extraction capabilities, and subsidence.[73] However, the GSP does not specify groundwater level conditions in the Subbasin at which the GSAs expect the above effects to occur, as informed by their understanding of the beneficial uses and users of groundwater in the Subbasin. That understanding, which should be documented in the GSP, would inform the selection of minimum thresholds at the various representative

[68] 23 CCR § 354.28(c)(1).
[69] 23 CCR §§ 354.26(b)(3), 354.28(b)(4).
[70] 23 CCR § 354.28(b)(1).
[71] 23 CCR § 355.4(b)(1).
[72] Westside GSP, Chapter 3.3.1.1, p. 223.
[73] Westside GSP, Section 3.3.1.5, p. 226.

monitoring sites that indicate a site-specific depletion of supply that may lead to undesirable results.

The GSP states that the GSAs set minimum thresholds after reviewing historical groundwater levels during extended drought periods and model-generated groundwater elevation data.[74] The GSP defines minimum thresholds as "the lowest of a) projected lowest future groundwater level at the end of estimated 10-year drought or b) lowest modeled groundwater level from projected with projects model simulation."[75] Except for Lower Aquifer wells inside the subsidence "areas of concern", where minimum thresholds are at 2015 groundwater levels, the GSP sets groundwater level minimum thresholds at 40 feet below 2015 levels, with a few exceptions noted below.

Department staff believe that the groundwater level minimum thresholds, defined in the GSP based on the amount of groundwater decline that occurred during the last drought, or anticipated declines caused by future droughts, have not been established in a manner required by the GSP Regulations. Instead, the GSP Regulations require those thresholds to be based on "groundwater elevation indicating a depletion of supply at a given location that may lead to undesirable results."[76] Staff recognize that the GSP Regulations require groundwater level minimum thresholds to be *supported by* information including the rate of groundwater level decline based on historical trends, water year type, and projected water use in the basin.[77] This supporting information does not define thresholds, but should provide evidence that justifies thresholds set by the GSAs as a means to avoid the associated undesirable results. Establishing minimum thresholds requires that a GSA first determine what groundwater conditions would lead to (or are causing) undesirable results in the basin, based on an understanding of what conditions would produce the significant and unreasonable effects that define undesirable results.[78] Here, the GSAs appear to have inverted the process by establishing minimum thresholds based on projected future conditions, but not related to conditions the GSAs wish to avoid because they cause a depletion of supply that would lead to undesirable results (see Corrective Action 2a).

Quantitatively, the GSP concludes that an undesirable result related to chronic lowering of groundwater levels occurs when 25 percent of minimum thresholds are exceeded for two consecutive spring measurements.[79] However, the GSP does not explain how the 25 percent condition was selected or describe how it relates to the specific effects (e.g., lowering the production rate of pre-existing groundwater wells) that the GSAs identified as undesirable results. Furthermore, because the minimum thresholds defined in the GSP allow for continued lowering of groundwater levels, it is reasonable to assume that some groundwater well impacts (e.g., loss of production capacity) would occur during the

[74] Westside GSP, Table 3-12, p. 240.
[75] Westside GSP, Table 3-12, p. 240.
[76] 23 CCR § 354.28(c)(1).
[77] 23 CCR § 354.28(c)(1)(A).
[78] Water Code § 10721(x).
[79] Westside GSP, Table 3-12, p. 240.

implementation of the GSP. SGMA requires GSAs to consider the interests of all groundwater uses and users and to implement their GSPs to mitigate overdraft conditions. [80] Implementing specific projects and management actions prevents undesirable results and achieves the sustainable yield of the basin. The GSAs should describe how projects and management actions would address drinking water impacts due to continued overdraft between the start of GSP implementation and achieving the sustainability goal. If the GSP does not include projects or management actions to address drinking water impacts, the GSP should contain a thorough discussion, with supporting facts and rationale, explaining how and why GSAs determined not to include actions to address those impacts from continued groundwater lowering below pre-SGMA levels (see Corrective Action 2b).

Additionally, while most groundwater level minimum threshold values for monitoring sites outside the subsidence areas of concern are set to 40 feet below 2015 conditions, as previously described, several monitoring sites do not follow that approach. The GSP provides no explanation or rationale for the management criteria established for the following monitoring sites:[81]

- Five monitoring wells in an area in the south-central portion of the basin near Huron (Well numbers 19S/17E-20B01, 18S/18E-28N04, 19S/18E-34N04, 21S/18E-05C01, and 21S/19E-20D02) have minimum thresholds 100 feet or more below the 2015 baseline groundwater elevations. Four of those wells also have measurable objectives from 10 to 130 feet below the 2015 baseline elevations; the GSP describes that measurable objectives are typically set above 2015 conditions.
- Monitoring wells 14S/13E-23E02 and 13S/14E-32K01 have minimum thresholds set at 95.6 and 50.5 feet, respectively, below their listed 2015 baseline groundwater elevations. Department staff also note that appendix charts show a different value for the minimum threshold at 14S/13E-23E02; those charts indicate the threshold is at -24 feet relative to mean sea level, which is roughly 158 feet below the listed 2015 elevation of 134.6 feet relative to mean sea level.[82]

The GSP does not explain why the specific representative monitoring sites listed above have sustainable management criteria that appear to differ from most other sites, or how the GSAs determined minimum thresholds and measurable objectives for those sites (see Corrective Action 2c).

3.2.3 Corrective Action 2

The GSAs must provide more detailed explanation and justification regarding the selection of the sustainable management criteria for chronic lowering of groundwater

[80] 23 CCR § 355.4(b).
[81] Westside GSP, Tables 3-7 and 3-8, pp. 224 and 225-226.
[82] Westside GSP, p. 1903.

levels, particularly the undesirable results and minimum thresholds. Department staff recommend the GSAs consider and address the following:

a) The GSAs must revise the GSP to explain how minimum thresholds at the representative monitoring sites are consistent with the requirement to be based on a groundwater elevation indicating a depletion of supply at a given location. If the GSAs did not set minimum thresholds consistent with levels indicating a depletion of supply, they should revise the minimum thresholds accordingly. Department staff understand that the Subbasin contains relatively fewer domestic wells than most San Joaquin Valley subbasins. Groundwater sustainability agencies in some of those other subbasins have used domestic wells as the shallowest beneficial user to constrain their groundwater thresholds. The Westside Subbasin GSAs may need to look to other users, such as municipal or agricultural groundwater users, as applicable for each monitoring site, to determine the levels indicating supply depletion when setting minimum thresholds. Alternatively, the GSAs may determine, as they have done for groundwater levels within the subsidence areas of concern, that other sustainability indicators necessitate setting minimum thresholds at levels higher than those representing a depletion of supply; the GSAs should document those instances in the revised GSP.

b) The GSAs should revise the GSP to describe, with information specific to the Subbasin, how they determined that undesirable results would not occur until more than 25 percent of monitoring wells are below the minimum threshold for two consecutive spring measurements. Describe how that criterion, which allows for potential continued groundwater decline at up to a quarter of the monitoring sites, is consistent with avoiding the effects the GSA has determined are undesirable results. In addition, the GSAs should describe how they would address drinking water impacts, e.g., to domestic wells, public water systems, or state small water systems, that may occur due to continued overdraft and groundwater level decline during the period between the start of GSP implementation and achieving the sustainability goal. If the GSP does not include projects or management actions to address those impacts, the GSP should contain a thorough discussion, with supporting facts and rationale, explaining how and why the GSAs determined not to include specific actions to address drinking water impacts that occur due to continued groundwater lowering below pre-SGMA levels.

c) The GSAs must explain why a small number of monitoring sites mentioned in the GSP have minimum thresholds and measurable objectives that appear significantly different than values at most other sites. As applicable, resolve discrepancies between threshold values reported in the text, tables, figures, and appendices.

3.3 Deficiency 3. The GSP does not provide adequate information to support the selection of degraded water quality sustainable management criteria

3.3.1 Background

SGMA and the GSP Regulations do not require a GSP to address undesirable results associated with degraded water quality that occurred before, and have not been corrected by, January 1, 2015. However, management of a basin under an adopted GSP should not result in further water quality degradation that is significant and unreasonable, either due to routine groundwater use or as a result of implementing projects or management actions called for in the GSP.[83] SGMA provides GSAs with legal authority to regulate and affect pumping and groundwater levels, which can potentially affect the concentration or migration of water quality constituents and result in degradation of water quality. Additionally, the GSP Regulations state that GSAs should consider local, state, and federal water quality standards when establishing sustainable management criteria.[84] SGMA provides a GSA with authority to manage and control polluted water and use authorities under existing laws to implement its GSP.[85] Thus, establishing sustainable management criteria and performing routine monitoring of water quality constituents known to affect beneficial uses and users is within the purview of a GSA.

3.3.2 Deficiency Details

The GSP describes historical groundwater quality conditions, noting that recent (i.e., since the year 2000) data is limited, and that several constituents found in the Subbasin are naturally occurring.[86] The GSP states that "for agricultural beneficial uses, available groundwater quality data indicates that TDS [total dissolved solids] is a proxy for other naturally occurring constituents and is, therefore, considered the primary constituent of concern."[87] However, the GSP does not provide evidence to support this claim. The GSP further states that, "based on the review of groundwater quality in [the basin setting section of the GSP], the constituents evaluated for *all beneficial users* are TDS" (emphasis added).[88] Similarly, the GSP does not provide evidence to support this claim (see Corrective Action 3a).

The GSP Regulations require minimum thresholds and measurable objectives for groundwater quality degradation based on "the number of supply wells, a volume of water, or a location of an isocontour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin."[89] The approach adopted by the GSP involves assigning measurable objectives using an equation to "represent the expected trends in

[83] Water Code § 10721(x)(4); 23 CCR § 354.28(c)(4).
[84] 23 CCR § 354.28(c)(4).
[85] Water Code §§ 10726.2(e), 10726.8(a).
[86] Westside GSP, Chapter 2.2.2.2, p. 98.
[87] Westside GSP, Chapter 2.2.2.2, p. 99.
[88] Westside GSP, Chapter 3.2.4.1, p. 218.
[89] 23 CCR § 354.28(c)(4).

background TDS concentrations along with acceptable annual increases in TDS concentrations from human activities that are generally representative of the [Regional Water Quality Control Board's] Basin Plan Amendment allowances."[90] However, the GSP does not explain how these increases are related to, or supported by, the Basin Plan Amendment or why the GSP relies on them to define measurable objectives. If the intention was to account for TDS increases due to "human activities" outside the control or responsibility of the GSAs, then that rationale should be clearly stated and supported with technical analysis. However, if the intention was that groundwater management activities would cause that level of degradation, then the GSAs should clearly state that fact and explain the anticipated effects of that degradation on beneficial uses and users of groundwater (see Corrective Action 3b).

The GSP does not discuss how its sustainable management criteria relate to existing water quality monitoring regulatory programs, such as the Salinity Alternatives for Long-Term Sustainability Program (CV-SALTS) or the Irrigated Lands Regulatory Program (ILRP). The GSP notes that groundwater quality monitoring would be augmented by "monitoring from the groundwater quality trend monitoring program under the Irrigated Lands program."[91] However, the GSP provides no additional information on monitoring frequency, regulatory limits, or any analysis from these programs completed to date that would support defining undesirable results and sustainable management criteria. The GSAs should describe how the sustainable management criteria relate to standards and management under the applicable regulatory programs and how management under the GSP would differ from the standards of those regulatory programs. Department staff note that continually increasing trends in TDS or other groundwater quality constituents in any basin is not a long-term sustainable condition. Therefore, in addition to the regulatory programs noted above, the GSAs should explain how they are working with any other applicable agencies or programs to address increasing salinity in the Subbasin's groundwater. The GSAs should also explain how increasing salinity in the Subbasin would affect the beneficial uses and users of groundwater.

The GSP also states that "SGMA's water quality objective focuses on a constituent's contribution due to activities at the land surface rather than on the presence of naturally occurring constituents." [92] It is the opinion of Department staff that the GSP mischaracterizes the intent of SGMA in that the focus of the law is not on "activities at the land surface" but on groundwater management. Certain "activities at the land surface" (e.g., fertilizer application) may not be within the scope of a GSA's management responsibility (though GSAs can engage with land use agencies and other regulatory agencies, as applicable). Conversely, naturally occurring constituents could contribute to groundwater degradation more rapidly under specific groundwater management regimes.

[90] Westside GSP, Chapter 3.2.4.1, p. 218.
[91] Westside GSP, Chapter 2.2.2.2, p. 99.
[92] Westside GSP, Chapter 3.3.4.1, p. 231.

It is the responsibility of a GSA to analyze and document the degradation of groundwater quality due to groundwater management in its GSP.

The GSP presents values of the measurable objectives as annual rates of increase in TDS concentration, ranging from 6 milligrams per liter to 31 milligrams per liter.[93] However, the GSP provides an insufficient explanation regarding how these annual rates of TDS increase were determined; visual inspection of time-concentration plots of TDS in the GSP show that trends appear mixed, not increasing uniformly.[94] Presumably, the value of the measurable objective would change each year, and the GSAs would compare that value against measured concentrations on an annual (or other periodic) basis. However, the GSP is not clear regarding the value of the baseline concentration, which is an input in the equation to determine the annual measurable objective value.[95] Therefore, with the information currently in the GSP, Department staff cannot calculate the measurable objective each year to compare with measured data. Lack of information regarding all inputs required to calculate the measurable objective is problematic when, for example, the water year 2020 annual report contains a table with only the measured values for TDS.[96] (See Corrective Action 3c).

The GSP defines the minimum threshold is as a deviation from the expected degradation of water quality. The GSAs state that they would compare the measurable objective, calculated each year as described above, with measured concentrations. If the measured concentrations were greater than the annual measurable objective, the GSAs would check further to see if the increase was higher than the assigned annual deviation amount, indicating an exceedance of the minimum threshold. The GSP tabulates the annual deviation amounts,[97] but it does not explain how the GSAs calculated those amounts, nor can Department staff infer how they were calculated based on the measurable objective rates of increase (see Corrective Action 3d).

The GSP also contains discrepancies that create confusion about the groundwater quality sustainable management criteria. Specifically, a portion of the GSP states “measurable objectives for groundwater quality are *concentrations* of TDS that are generally representative of secondary drinking water standards and tolerable for most crops grown in the Subbasin without blending with surface water supplies” (emphasis added) and that “generally, minimum thresholds were set at 2,000 milligrams per liter (mg/L) TDS in the Upper and Lower Aquifers.”[98] The GSAs should reconcile those statements with the predominant discussion in the GSP that presents the values of the measurable objectives and minimum thresholds as rates of TDS increase, not concentrations (see Corrective Action 3e).

[93] Westside GSP, Tables 3-10 and 3-11, pp. 233 and 234.
[94] Westside GSP, Figures 2-41 and 2-42, pp. 161 and 162.
[95] Department staff note that the GSP states (p. 235) that the baseline values are provided in Tables 3-10 and 3-11(pp. 233-234), but those tables do not contain any baseline values.
[96] Westside GSP Annual Report 2020, p. 107.
[97] Westside GSP, Tables 3-10 and 3-11, final column, pp. 233 and 234.
[98] Westside GSP, Chapter 3.3.4.2, p. 235.

3.3.3 Corrective Action 3

The GSAs must provide more detailed explanation and justification regarding the selection of the sustainable management criteria for degradation of water quality, particularly the undesirable results and minimum thresholds. Department staff recommend the GSAs consider and address the following:

a) The GSAs must revise the GSP to provide the rationale to support their conclusion that TDS is an appropriate proxy for other water quality constituents identified in the GSP.

b) The GSP must be revised to explain the rationale for selecting measurable objectives as rates of water quality degradation. The GSAs should explain their understanding of the effects of those criteria, which allow for the continued degradation of groundwater quality, on beneficial uses and users in the Subbasin. As applicable, explain how the selected degradation rates are supported by or are consistent with other regulatory plans or programs, including the Basin Plan. The GSAs should explain how they are coordinating with other entities, as applicable, to address increasing salinity in the Subbasin.

c) The GSAs must provide sufficient detail for all components of the sustainable management criteria, including inputs for any formulas required to determine the annual value of any measurable objectives or minimum thresholds.

d) The GSAs must revise the GSP to explain how the minimum threshold annual deviation amounts were determined, with references to supporting technical information or other studies or documents, as applicable.

e) The GSAs must revise the GSP to reconcile conflicting information regarding the values of minimum thresholds and measurable objectives, including whether they are based on concentrations or rates of concentration increases.

4 STAFF RECOMMENDATION

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