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Subject: COMMENTS ON THE NORTH AMERICAN SUBBASIN DRAFT GROUNDWATER SUSTAINABILITY PLAN

Dear Mr. Swartz,

The California Department of Fish and Wildlife's (Department) North Central Region is providing comments on the North American Subbasin Draft Groundwater Sustainability Plan (GSP) prepared by Reclamation District 1001 Groundwater Sustainability Agency (GSA), Sacramento Groundwater Authority GSA, South Sutter Water District GSA, Sutter County GSA, and Placer County GSA pursuant to the Sustainable Groundwater Management Act (SGMA).

As trustee agency for the State's fish and wildlife resources, the Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of such species (Fish & Game Code §§ 711.7 and 1802). Development and implementation of GSPs under SGMA represents a new era of California groundwater management. The Department has an interest in the sustainable management of groundwater, as many sensitive ecosystems and species depend on groundwater and interconnected surface waters, including ecosystems on Department-owned and -managed lands within SGMA-regulated basins.

SGMA and its implementing regulations afford ecosystems and species specific statutory and regulatory consideration, including the following as pertinent to Groundwater Sustainability Plans:

- GSPs must **consider impacts to groundwater dependent ecosystems** (GDEs) (Water Code § 10727.4(l); see also 23 CCR § 354.16(g));
- GSPs must consider the interests of all beneficial uses and users of groundwater, including environmental users of groundwater (Water Code § 10723.2) and GSPs must **identify and consider potential effects on all beneficial uses and users of groundwater** (23 CCR §§ 354.10(a), 354.26(b)(3), 354.28(b)(4), 354.34(b)(2), and 354.34(f)(3));
- GSPs must **establish sustainable management criteria that avoid undesirable results** within 20 years of the applicable statutory deadline, including **depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water** (23 CCR § 354.22 *et seq.* and Water Code §§ 10721(x)(6) and 10727.2(b)) and describe monitoring networks that can identify adverse impacts to beneficial uses of interconnected surface waters (23 CCR § 354.34(c)(6)(D)); and

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- GSPs must **account for groundwater extraction for all water use sectors**, including managed wetlands, managed recharge, and native vegetation (23 CCR §§ 351(al) and 354.18(b)(3)).

Furthermore, the Public Trust Doctrine imposes a related but distinct obligation to consider how groundwater management affects public trust resources, including navigable surface waters and fisheries. Groundwater hydrologically connected to navigable surface waters and surface waters tributary to navigable surface waters are also subject to the Public Trust Doctrine to the extent that groundwater extractions or diversions affect or may affect public trust uses (*Environmental Law Foundation v. State Water Resources Control Board* (2018), 26 Cal. App. 5th 844). Accordingly, groundwater plans should consider potential impacts to and appropriate protections for navigable interconnected surface waters and their tributaries, and interconnected surface waters that support fisheries, including the level of groundwater contribution to those waters.

In the context of SGMA statutes and regulations, and Public Trust Doctrine considerations, the Department values SGMA groundwater planning that carefully considers and protects groundwater dependent ecosystems (GDEs) and fish and wildlife beneficial uses and users of groundwater and interconnected surface waters.

COMMENT OVERVIEW

The Department is writing to support ecosystem preservation in compliance with SGMA and its implementing regulations based on Department expertise and best available information and science.

The Department recognizes and appreciates the effort of the GSAs to characterize all beneficial users of groundwater in the subbasin and include detailed modeling based on robust monitoring data. However, the Department believes the GSP could improve its consideration of environmental users of groundwater and establish more protective management criteria. Accordingly, the Department recommends that the North American Subbasin GSAs address the following comments before submitting the GSP to the Department of Water Resources (DWR).

COMMENTS AND RECOMMENDATIONS

The Department's comments are as follows:

- 1. Comment #1 Interconnected Surface Waters** (Groundwater Conditions, 5.11 Interconnected Surface Water; starting page 5-52): The GSP fails to include an estimate of the quantity and timing of depletions of interconnected surface water systems as required by 23 CCR § 354.16(f).
 - a. *Issue:* The GSP identifies the locations of interconnected surface waters within the subbasin (Figure 5-31) and presents hydrographs that demonstrate the relationship between groundwater levels and surface water elevations. However, the GSP does not include information related to the quantity and timing of depletions from these interconnected surface waters as required by 23 CCR § 354.16(f).

- b. *Recommendation*: The Department recommends that the GSP include a table quantifying the volume of surface water depletions, by month, for all interconnected surface waters identified within the subbasin.

2. Comment #2 Groundwater Dependent Ecosystems (Appendix O): GDE identification, required by 23 CCR § 354.16(g), is based on methods that risk exclusion of ecosystems that may depend on groundwater.

a. *Issues*:

- i. Depth to Groundwater: The Department recognizes and appreciates the effort put into identifying GDEs within the subbasin, including the assessment of both vegetation diversity and critical species dependence to inform relative priority. Further refinement and clarification of GDE identification methods used in the GSP will help to create a more robust analysis. Appendix O states that groundwater contours were developed using groundwater level measurements from Spring 2020 (Section 1.3, page 3), but then also states that GDEs were prioritized using 2019 depth to groundwater contours (Section 1.4, page 3). It is unclear which year of groundwater data was used in the analysis. Additionally, while the Department supports the use of seasonal high spring measurements, 2020 was a dry water year type for the Sacramento Valley. Analysis that relies on depth to water thresholds should incorporate data from a representative hydrologic period that includes a variety of water year types, rather than from a single point in time. The analysis also assumes that groundwater must be less than 30 feet below the ground surface (bgs) to support GDEs based on the maximum rooting depth of Valley Oak (*Q. lobata*); however, mature Valley Oak can access groundwater up to 80 feet below the ground surface (Howard 1992, Lewis & Burgy 1964). The use of a 30-foot threshold may incorrectly exclude Valley Oak communities within the subbasin from further consideration as a GDE.
- ii. Perched Groundwater Areas: The GSP discusses locations within the subbasin that have a depth to groundwater of less than 30 feet and may also have areas of perched water, and potential GDEs from these areas were removed. The GSP does not sufficiently characterize the relationship between these perched groundwater areas and the Principal Aquifer, including the impacts of pumping or of seasonally elevated groundwater levels on the groundwater in these perched areas.
- iii. Special Status Species: The GSP methodology includes an evaluation of “non-aquatic critical fauna” that may be present in the subbasin. Interconnected surface waters and their associated aquatic species are also a type of groundwater dependent ecosystem that must be evaluated within the GSP

and considered in the development of sustainability criteria and analysis of undesirable results.

b. *Recommendations:*

- i. Depth to Groundwater: The Department recommends that Appendix O be revised to clarify which year of data was used to create the groundwater elevation contours for the GDE analysis and consider how the methodology could be updated to integrate a range of water years for determining potential GDEs. The Department also recommends the GSP narrowly update the methodology for GDE identification for areas within the subbasin that underlie Valley Oak communities to reflect a potential maximum rooting depth of 80 feet bgs.
- ii. Perched Groundwater Areas: The Department recommends the GSP include additional information characterizing the relationship between areas of perched groundwater and the Principal Aquifer. The GSP should discuss whether seasonal highs within the Principal Aquifer contribute to the perched areas, and whether pumping within the Principal Aquifer has the potential to deplete these perched areas that may support GDE communities. If the relationship cannot be adequately characterized, the GSP should conservatively include GDEs from these areas, particularly as depth to groundwater for the principal aquifer is within the identified potential root zone for GDEs.
- iii. Special Status Species: The critical species analysis included within the GSP should be broadened to include discussion of aquatic species that are supported by interconnected surface waters.

3. Comment #3 Sustainable Management Criteria (Sustainable Management Criteria; 8.4 Chronic Lowering of Groundwater Levels, 8.9 Depletion of Surface Water; starting page 8-9): Sustainable management criteria (SMC) are unlikely to protect against undesirable results for groundwater dependent ecosystems and fish and wildlife beneficial uses and users of groundwater and interconnected surface waters.

a. *Issues:*

- i. Groundwater Levels Minimum Thresholds: The GSP projects that development and land use changes within the subbasin will result in increased groundwater use. Additionally, with climate change, some portions of the subbasin are projected to experience a climate-driven decline in groundwater elevations. The GSP uses the model-projected groundwater level declines at each representative monitoring site (RMS) to establish minimum thresholds (MTs) by subtracting this projected decline from a baseline set at the average of Fall 2014 and 2015 groundwater elevations (page 8-14, line 318). The GSP fails to contextualize that 2014 and

2015 were two consecutive critically dry water years that occurred during an extended dry period in the Sacramento Valley, wherein groundwater extraction increased to replace more than 70% of lost agricultural water supplies (Lund 2018). Though the GSP asserts that “no negative impacts were reported by beneficial users in the subbasin” (line 320), it is probable that environmental users of groundwater were experiencing adverse impacts due to combined groundwater depletion and reduced surface water availability. These adverse impacts include stressed or dying riparian vegetation, poor instream habitat availability, and increased water temperatures (DFW 2019). It is inappropriate to rely on groundwater levels from 2014 and 2015 as a baseline from which groundwater could continue to decline before reaching the established MTs, as undesirable results will likely be experienced before MTs are reached.

- ii. Depletion of Interconnected Surface Waters: As a result of the projected increases in groundwater use within the subbasin, the GSP projects that groundwater level declines along the interconnected Sacramento River will result in approximately 5,800 acre-feet per year (AFY) of surface water depletions. Though the GSP presents information related to the projected change in groundwater pumping, seepage, diversions, and streamflow in Figure 8-7 (page 8-42), a table summarizing this information by month would clarify potential ISW impacts and facilitate comparisons to baseline conditions (See Comment #1). The GSP asserts that though the Sacramento River will experience depletions, municipal development along the Sacramento River that takes agricultural land out of production will result in a net increase in flows of approximately 17,200 AFY (page 8-41, line 907). Additional information is needed in the GSP to support this claim and ensure that environmental users are protected from undesirable results. The GSP does not provide information related to interconnected surface waters within the subbasin other than the Sacramento River, and it is unclear what effect the SMCs will have on depletions. Furthermore, these anticipated land use changes and concurrent reduced surface water demands are not within the control of GSAs. GSAs should anticipate future scenarios wherein they are accountable for mitigating interconnected surface water depletions attributable to groundwater pumping, instead of leaning on proposed land use change to reduce surface water demand, particularly when surface water rights are not under GSA management.
- iii. Environmental Beneficial Users: The GSP does not sufficiently analyze potential impacts of the selected SMCs on environmental beneficial users of groundwater or interconnected surface waters. While the GSP does include sections that discuss the effects of the minimum thresholds for each

sustainability indicator on each beneficial user within the subbasin, for the groundwater level MTs, the GSP states only that the groundwater level MTs “protect most known GDEs” within the subbasin (page 8-20, line 426). It is unclear what the GSP means by “most GDEs,” and no further detail is provided about whether any analyses were completed that involve comparing the MTs at each RMS to nearby GDE communities and their rooting depths. Additionally, in its discussion of interconnected surface waters within the subbasin, the GSP does not analyze potential impacts to environmental users of surface waters, including aquatic habitat or species (See Comment 2(iii)).

b. *Recommendations:*

- i. Groundwater Levels Minimum Thresholds: The Department recommends the GSP reselect its chosen groundwater level baseline to a more representative hydrologic period for the subbasin, rather than relying on groundwater levels experienced during critically dry years. MTs should be updated accordingly.
- ii. Depletion of Interconnected Surface Waters: The GSP should include a discussion of projected depletions of all interconnected surface waters in the basin, not only the Sacramento River, based on the established SMCs. The GSP should include additional detail in a table that summarizes the projected depletions, reduced diversions, and streamflow by month to facilitate comparison to depletions under existing conditions. In order to better support its claim that Sacramento River flow would increase over the SGMA implementation period, the GSP must provide additional details related to the underlying assumptions used in this calculation, including the following:
 1. A characterization of the water rights that the GSP assumes will stop diverting water from the Sacramento River, including a discussion of how the water will be maintained instream to support surface flows.
 2. The anticipated timeline for the conversion of land from agricultural to municipal use.
 3. The anticipated timeline for groundwater pumping increases within the subbasin.
 4. Contingency plans, triggered by specific monitoring metrics, that will initiate projects to avoid surface water depletions should the land use changes fail to offset the increase in groundwater pumping as anticipated.
- iii. Environmental Beneficial Users: The Department recommends the GSP include additional analysis related to the impacts of the established SMCs on environmental users, including GDEs and interconnected surface water. The groundwater level MTs at each representative monitoring well identified for

GDEs in Figure 7-3 (page 7-14) should be compared to the rooting depths of the identified vegetation in each GDE community (See Comment #2(i)). Monitoring of physical indicators of GDE health (i.e., Normalized Difference Vegetation Index (NDVI)) should be completed in addition to the continued monitoring of groundwater levels. The GSP should also include additional analysis to demonstrate that environmental users of interconnected surface waters would not experience undesirable results under the established MTs. The GSP should explicitly discuss the impacts of projected depletions on surface flows, water temperatures, and aquatic species and habitat.

- 4. Comment #4 Projects and Management Actions** (Projects and Management Actions; 9.2 Projects and Management Actions, 9.3 Supplemental Projects; starting page 9-3): Inclusion of additional demand management strategies would strengthen the GSP's list of supplemental projects.
- a. *Issue*: The planned and supplemental project and management activities included in the GSP focus on increased surface water supplies and delivery, conjunctive use, or water banking and recharge. Though the GSP indicates that the planned projects are expected to be sufficient to achieve basin sustainability, should the projects fail to produce the anticipated groundwater benefit or encounter unexpected delays, it may be necessary to implement additional demand management projects that could likely produce groundwater benefits within a shorter timeframe.
 - b. *Recommendation*: The Department recognizes that the GSP discusses existing demand management activities within the subbasin, including temporary conservation measures and urban and agricultural water use efficiency programs (page 9-3, line 38). Additional discussion of potential program expansion or other demand reduction projects that could be implemented within the subbasin would strengthen the GSP's list of supplemental projects.

CONCLUSION

In conclusion, the draft GSP thoughtfully discusses all beneficial uses of groundwater, provides detailed characterization of groundwater conditions in the subbasin, and incorporates robust modeling of future scenarios; however, the GSP can further refine its management criteria to better avoid potential impacts to GDEs and interconnected surface water. The Department recommends that the North American Subbasin GSAs address the above comments before GSP submission to DWR to best prepare for the following regulatory criteria for plan evaluation:


1. The assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are not reasonable and/or not supported by the best available information and best available science. [23 CCR § 355.4(b)(1)] (See Comments #1, 2, 3)

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2. The interests of the beneficial uses and users of groundwater in the basin, and the land uses and property interests potentially affected by the use of groundwater in the basin, have not been considered. [23 CCR § 355.4(b)(4)] (See Comments #1, 2, 3)
3. The projects and management actions are not feasible and/or not likely to prevent undesirable results and ensure that the basin is operated within its sustainable yield. [23 CCR § 355.4(b)(5)] (See Comment #4)

The Department appreciates the opportunity to provide comments on the North American Subbasin Draft GSP. Please contact Bridget Gibbons, Environmental Scientist, by email at Bridget.Gibbons@wildlife.ca.gov with any questions.

Sincerely,

DocuSigned by:

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Enclosures (Literature Cited)

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