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October 20, 2021

Via Electronic Mail and Online Submission

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Subject: Comments on the Piru Basin Groundwater Agency Draft Groundwater Sustainability Plan

Dear Mr. Emmert:

The California Department of Fish and Wildlife (CDFW) appreciates the opportunity to provide comments on the Piru Basin Groundwater Agency's (PBGA) Draft Groundwater Sustainability Plan (Draft GSP) prepared pursuant to the Sustainable Groundwater Management Act (SGMA).

As trustee agency for the State's fish and wildlife resources, CDFW 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 groundwater sustainability plans (GSPs) under SGMA represents a new era of California groundwater management. CDFW has an interest in the sustainable management of groundwater, as many sensitive ecosystems, species, and public trust resources depend on groundwater and interconnected surface waters (ISWs), including ecosystems on CDFW-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 GSPs:

- 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

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adverse impacts to beneficial uses of interconnected surface waters (23 CCR § 354.34(c)(6)(D)); and

- GSPs must **account for groundwater extraction for all water use sectors**, including managed wetlands, managed recharge, and native vegetation (23 CCR §§ 351(a) 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 surface waters is 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; *National Audubon Society v. Superior Court* (1983), 33 Cal. 3d 419.) The groundwater sustainability agency (GSA) has “an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible.” (*National Audubon Society, supra*, 33 Cal. 3d at 446.) Accordingly, groundwater plans should consider potential impacts to and appropriate protections for ISWs and their tributaries, and ISWs that support fisheries, including the level of groundwater contribution to those waters.

Individually and collectively, the SGMA statutes and regulations, and Public Trust Doctrine considerations, necessitate that groundwater planning carefully consider and protect environmental beneficial uses and users of groundwater, including fish and wildlife and their habitats, GDEs, and ISWs.

COMMENT OVERVIEW

CDFW supports ecosystem preservation and enhancement in compliance with SGMA and its implementing regulations based on CDFW expertise and best available information and science. The Piru Basin (Basin) is rated as a high priority basin under SGMA with 24 priority points. The Basin is adjacent and upstream of the Fillmore Basin that is rated as high priority with 26 priority points. The Basin is also located adjacent and downstream of the Santa Clara River Valley East Basin which is rated as high priority with 22 priority points. These three basins are located within the larger Santa Clara River (SCR) watershed. CDFW offers the following comments and recommendations below to assist PBGA in identifying and evaluating impacts on biological resources including GDEs within the adjacent groundwater basins. Additional suggestions are included for PBGA’s consideration during revisions of the Draft GSP.

SPECIFIC COMMENTS AND RECOMMENDATIONS

Comment #1: Data Gaps Exist in the Hydrologic Conceptual Model (HCM) (Section 2.2.1.6 Data Gaps and Uncertainty, Starting on Page 2-35, Lines 15-19 in the Public Review Draft Text with Figures, No Appendices and Appendix K starting on Page 132)

Issue: There is insufficient information in the Draft GSP about the hydrologic interconnection between the shallow aquifer and the Main aquifer. Page 2-35 of the Draft GSP states, “*Data gaps (Figure 2.2-14) in the HCM comprise a lack of groundwater level data in the shallow groundwater of the Main Aquifer along the streams (e.g., Santa Clara River and Piru Creek), and a lack of groundwater level data in the Deep Aquifer. The shallow groundwater data gaps in the stream areas will be addressed with the installation of monitoring wells by the Agency (per DWR Grant Funding) and installation of shallow monitoring wells by UCSB (Stillwater, 2021b)*”.

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CDFW appreciates the efforts the GSA undertook to analyze the Basin in terms of geologic and hydrogeologic characterization. CDFW also appreciates PBGA's proposed plans to utilize the updated HCM to fill in the data gaps and deficiencies identified in the Draft GSP. However, there is a need for a better understanding of the interactions between interconnected surface water and groundwater particularly in the GDE areas mentioned below in Comment #2. Additional clarification is needed in the final GSP along with a description of future assessments on how this data gap will be addressed.

Recommendation #1(a): Accurate hydrogeologic modeling requires an accurate and complete data set. CDFW recommends the installation of shallow groundwater monitoring wells near potential GDEs and interconnected surface waters.

Recommendation #1(b): CDFW also recommends pairing multiple-completion wells with additional streamflow gages to facilitate an improved understanding of surface water-groundwater interconnectivity and subsurface recharge channels. CDFW agrees with the PBGA proposal to install more multiple-well monitoring facilities across the basin. The Draft GSP states that "*Construction of twenty of these facilities equally spaced across the Basins would greatly decrease GSP analysis uncertainty and would be consistent with the DWR's data quality recommendations but would likely be cost prohibitive for FPBGSA rate payers in the Fillmore and Piru Basins.*" (Page 3-33, Lines 20-23, Draft Text). CDFW recommends the PBGA commit to a more modest number of strategically placed well monitoring facilities in the Project and Management Actions.

Comment #2: GDEs Important to Consider When Establishing Sustainable Management Criteria (Section 6.4.3 of Appendix D, Starting on Page 111 in Fillmore and Piru GDE Technical Appendix, Volume 2)

Issue: The Draft GSP presents a thorough analysis of ecosystems potentially reliant on groundwater known as "indicators of groundwater dependent ecosystems" (ridges), however, of the five areas within the Basin that were mapped as containing iGDEs, only one area was considered as certain to be groundwater dependent. (Appendix D, Section 6.4.1, Piru Groundwater Basin, starting on Page 98). They are as follows:

- Area 1 – Cienega Riparian Complex Area: 154 acres with mulefat and giant reed (*Arundo donax*);
- Area 2 – Del Valle: 433 acres with riparian forest and widespread willows and cottonwoods;
- Area 3 – Piru Basin Santa Clara River Riparian Shrubland: 317 acres; giant reed (*Arundo donax*), patches of sandbar willows and large mulefat thickets;
- Area 4 – Piru Creek Riparian: 246 acres; and,
- Area 5 – Piru Basin Tributary Riparian: 5.6 acres.

The PBGA utilized three categories when evaluating groundwater dependence of iGDEs: unlikely, possible, and certain. The Cienega Riparian Complex Area was the only GDE to be categorized as *certain* to be dependent on groundwater. The Del Valle GDE was categorized as likely to be groundwater dependent. The Piru Basin Santa Clara River Riparian GDE was categorized as possible to be groundwater dependent.

The Piru Basin Tributary Riparian GDE Unit and Piru Creek Riparian GDE were categorized as *unlikely* to be groundwater dependent.

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The PBGA indicated that the Del Valle GDE was located where “*Perennial surface water flows are likely connected with groundwater*” (Appendix D, Page 98).

The PBGA indicated that the Piru Basin Santa Clara River Riparian GDE was located where “*Intermittent surface flows are not connected with groundwater*” (Appendix D, Page 100).

The PBGA indicated that the Piru Basin Tributary Riparian GDE was located where “*Intermittent and ephemeral surface water flows are not connected with groundwater. Hopper Canyon Creek within the Piru Basin may be a passage corridor for O. mykiss, but is likely dependent on surface water flows rather than groundwater for passage*” (Appendix D, Page 104).

The PBGA indicated that the Piru Creek Riparian GDE was located where “*Groundwater wells in the rooting zone of plants (<30 ft) are rare in this unit and Releases from Santa Felicia Dam sustain surface flows*” (Appendix D, Page 103).

The Draft GSP uses words such as “likely not connected” and “unknown but unlikely” to rule out GDEs from further monitoring because there are data gaps in the monitoring system. The elevation and movement of subsurface flow is uncertain as is the interconnectivity of surface water relative to shallow aquifers and the main aquifers. CDFW believes the shallow perched groundwater, shallow alluvium, and surface water can still be connected to groundwater and hydrologic connectivity cannot be ruled out. These sources of water could be impacted in the future by new production wells that would adversely affect these GDEs.

Water Code § 10721 (x)(6) requires GSPs avoid significant and unreasonable adverse impacts to beneficial uses of surface water including aquatic ecosystems reliant on interconnected surface water. If hydrologic-connectivity exists between a terrestrial or aquatic ecosystem and groundwater, then that ecosystem is a potential GDE and must be identified in a GSP. [23 CCR§354.16 (g).] Hydrologic-connectivity between surface water and groundwater, as well as groundwater-accessibility to terrestrial vegetation, must, therefore, be evaluated carefully, and conclusions should be well-supported. Hydrologic-connectivity considerations include connected surface waters, disconnected surface waters and transition surface waters. According to The Nature Conservancy (TNC), “if pumping is concentrated in deeper aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, such as perched aquifers, that support springs, surface water, domestic wells, and GDEs (Figure 2). This is because vertical groundwater gradients across aquifers may result in pumping from deeper aquifers to cause adverse impacts onto beneficial users reliant on shallow aquifers or interconnected surface water” (TNC 2019).

CDFW believes shallow perched aquifers, intermittent surface flows and shallow alluvial aquifers, although rarely used for a water supply, are extremely important to the ecological communities or species that depend on groundwater emerging from all aquifers or from groundwater occurring near the surface within the Basin.

Recommendation #2(a): CDFW recommends the five areas within the Basin that were mapped as containing potential GDEs be included in the Final GSP as GDEs because these areas rely on the shallow perched groundwater, bedrock groundwater and/or surface water within the Basin. The PBGA has not provided enough data to make the assertion that the groundwater interaction with these GDEs should remain omitted. Water in the shallow alluvial aquifer can also percolate to the main aquifer below. As groundwater pumping occurs from the principal aquifer, water from the shallow alluvial aquifer can become depleted as it recharges the

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principal aquifer. These are important contributions to sustaining these habitats and Areas 3, 4, and 5 should be reinstated in the Final GSP as GDEs. This shallow alluvial “aquifer” needs to be protected under SGMA. If these GDEs are adversely impacted, groundwater plans should be in place to facilitate appropriate and timely monitoring and management response actions.

Recommendation #2(b): CDFW recommends that the best scientific data on depth to groundwater be included in the analysis of interconnected surface waters before any data is excluded. USGS mapped springs/seeps and comparisons of recent groundwater level contours to vegetation root zones should also be included in the analysis. Mapping GDEs and other beneficial uses is an essential component in the consideration, development, and implementation of GSPs (Water Code §10723.2) and in assessing the potential effects on groundwater beneficial uses. GSAs must also include sustainable management criteria and monitoring to detect adverse impacts on all groundwater beneficial users.

Recommendation #2(c): CDFW recommends using Normalized Difference Vegetation Index (NDVI) and Normalized Difference Moisture Index (NDMI) to assess habitat health for all five areas on an annual basis and should inform the revision of both the planning and minimum thresholds for the representative wells to within or near the historic baseline. CDFW does not recommend relying solely on soils information. For example, the presence of sandy, dry, and friable soils, does not mean that existing plant species do not rely on groundwater for some portion of their life cycle. Capillary fringe associated with root networks from native plants could be accessing groundwater from deeper depths.

Comment #3: CDFW Fish Hatchery pumps the most water from wells in the Basin (Appendix K Section 6.2.1 Locations, Starting on Page 136)

Issue: CDFW is concerned that the Fillmore Fish Hatchery pumping is overquantified. The PBGA states on page 136 that “...*there is potential that Fish Hatchery groundwater pumping which constitutes the largest pumping by a single entity in the basins for some years may complicate interpretation of water level data gathered from a new monitor well facility (i.e., measured water levels may not be representative static water levels if they are significantly influenced by the nearby pumping).*” Although the Draft GSP identifies the Fish Hatchery as the largest pumping entity (pg. 136), impacts to groundwater levels are substantially minimized by returning pumped water to the main aquifer for recharge. Most of the water pumped from CDFW groundwater wells enter the fish hatchery raceway to sustain young fish. Although some water is lost from evaporation after entering the raceway, the majority of pumped well water is returned to the groundwater system via soil saturation and percolation.

CDFW agrees with the PBGA’s concern (pg. 136) that the Fish Hatchery production well has the potential to interfere with the accuracy of data collected from the shallow monitoring wells. The Fish Hatchery well is screened at the 300-foot-level whereas the shallow monitoring wells have been proposed at the 100-foot-level. The cone of depression from the Fish Hatchery production well has the potential to skew data as the surrounding areas of the production well in aquifer are slowly replenished.

Recommendation #3(a): CDFW recommends the final GSP accurately quantify pumping activities at the Fillmore Fish Hatchery using both pumping and return flow quantities that recharge the aquifer when evaluating impacts to the groundwater. The rising groundwater area around the Fish Hatchery should retain sufficient water levels to protect both the pumping of water and key GDEs as suggested on page ES-1 of the Draft GSP.

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Recommendation #3(b): CDFW recommends the PBGA investigate adding additional shallow aquifer monitoring wells away from the vicinity of the Fish Hatchery production well to generate additional monitoring data that will accurately identify groundwater pumping trends, interactions, or interferences.

Comment #4: CDFW and the Mitigation Plan Project to be Developed and Submitted to DWR (Draft Text, Section 4.1, Project #1: Supporting the Cienega Springs Restoration Project as a Drought Refuge, Starting on Page 4-1)

Issue: CDFW has not engaged in meaningful discussions of Basin overdraft mitigation with PBGA regarding SGMA project and management actions at the Cienega Springs Ecological Reserve. Page 4-2 of the Draft GSP states, *“The FPBGSA desires to dampen the impacts of groundwater extraction by supporting the restoration efforts at the Cienega Restoration Project. The primary action being considered by the FPBGSA is to provide supplemental groundwater to the restoration program during multiyear droughts when the shallow groundwater levels decline to below the Critical Water Level”* (Draft Text, Page 4-2, Lines 1-4). Page 4-2 of the Draft GSP also states, *“FPBGSA staff have engaged with CDFW representatives about this project and the conversations are continuing. A detailed Mitigation Plan will be developed after the GSP has been adopted by the FPBGSA and the GSP submitted to DWR for their review (Jan 2022)”* (Draft Text, Page 4-2, Lines 23-26). CDFW had a meeting on July 12, 2021 to talk about the Cienega Riparian Complex Area with members of TNC and PBGA. Beyond any initial discussions, CDFW has not received detailed information on PBGA’s mitigation proposal. CDFW is open to discussing PBGA’s potential mitigation projects or management actions that may include the construction of a production well on CDFW property. CDFW believes the Cienega Riparian Complex is situated in an area of rising groundwater. This Cienega Riparian Complex should retain sufficient water levels to protect key GDEs as suggested on page ES-1 of the Draft GSP except during “below normal years of precipitation”. During instances of “below normal years of precipitation,” the Cienega Riparian Complex has the potential to remain resilient through project and adaptive management actions.

Recommendation #4(a): CDFW recommends the installation of additional shallow monitoring wells to inform specific trigger levels and thresholds requiring adaptive management actions.

Recommendation #4(b): CDFW recommends the PBGA consider alternate project and management actions as opposed to a production well on CDFW property such as: i) reduced groundwater pumping; ii) implement groundwater pumping allocations; iii) implement *Arundo donax* removal; and iv) increase the quantity of imported water. CDFW looks forward to discussing these project and management actions to achieve groundwater sustainability within the Basin.

Recommendation #4(c): CDFW proposes the final GSP incorporate Recommendation #3(b).

Comment #5: Need Temperature Related Minimum Thresholds for the Santa Clara River for the federal Endangered Species Act (FESA) listed southern California steelhead (Draft Text, Section 3.2.5, Undesirable Results Related to Sustainability Indicators that Are Not Likely to Occur, Starting on Page 3-7).

Issue: CDFW is concerned the depletion of interconnected surface waters will have undesirable impacts on the Federal Endangered Species Act (ESA)-listed southern California steelhead (*Oncorhynchus mykiss* or steelhead). The PBGA states on page 3-7, lines 3-13 *“The Agency*

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deliberated extensively to determine if undesirable results related to the depletion of interconnected surface water, namely loss of Steelhead rearing and spawning habitat along the Santa Clara River as a sustainability indicator, is a significant and unreasonable effect of groundwater conditions. Ultimately, the Agency does not consider this a significant and unreasonable effect related to depletions of interconnected surface water because: (1) there is no designated existing or potential beneficial use for spawning and rearing along the Santa Clara River in the Basin per the LARWQCB Basin Plan (LARWQCB, 1994); (2) there is no evidence of these fish using the surface water (except during major flood events when the Santa Clara River is fully connected with runoff); and (3) even severe (i.e., 50%) pumping reductions would not prevent the surface water at Cienega Riparian Complex from going dry during severe droughts". The Santa Clara River is designated as critical habitat for the survival of steelhead and contains important steelhead spawning and rearing habitat in Southern California (NMFS 2021).

The Southern California Steelhead Recovery Plan published in January 2012 by the National Marine Fisheries Service (NMFS) identified the Santa Clara River as one of the highest priority sites for recovery actions, as one of the most likely to sustain independently viable populations, and as critical for ensuring viability of the species as a whole (NMFS, 2012). Threats to steelhead, such as excessively high-water temperatures in the spring, summer, and early fall, reduce available juvenile rearing habitat. Low flows in the fall and winter can delay adult passage to critical spawning areas. CDFW is concerned that groundwater overdraft will lead to losing streams, temperature increases, diminishing refugia pools, and a lack of connectivity flows needed for steelhead migration.

Recommendation #5: CDFW believes the Sustainable Management Criteria (SMC) needs to be revised to implement measures that will protect against significant and unreasonable effects related to depletions of interconnected surface water that have been identified in the Basin. Minimum thresholds and measurable objectives for the SCR are important tools that SGMA has provided to quantify groundwater conditions and ensure groundwater sustainability. Monitoring the temperature of the Santa Clara River, which is critical to steelhead survival, is a much-needed component in the Final GSP.

Comment #6: Draft Text GSP vs. Final GSP

Issue: The GSA may need to revise the GSP before it is finalized and adopted by the GSA.

Recommendation #6: CDFW recommends the GSA provide a red-lined version of the final GSP to understand the changes made between the draft GSP and final GSP. Alternatively, CDFW recommends the GSA provide a summary of changes made and comments addressed by the GSA in preparation of a final GSP.

GENERAL COMMENTS

Comment #7: Sensitive Species and Habitats

Three of the five GDEs identified in the draft GSP as wetland, and riverine features, excluded by the PBGA are utilized by ESA-listed Steelhead; the FESA-and California Endangered Species Act (CESA)-listed least Bell's vireo (*Vireo bellii pusillus*), and the FESA-CESA-listed southwestern willow flycatcher (*Empidonax traillii extimus*).

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Southwestern pond turtle (*Actinemys pallida*) was designated as a California Species of Special Concern (SSC) in 1994 and is known to occur throughout the Santa Clara River watershed in four of the five GDEs specified in the Draft GSP. Southwestern pond turtle preferred habitat is permanent ponds, lakes, streams, or permanent pools along intermittent streams associated with standing and slow-moving water. A potentially important limiting factor for the southwestern pond turtle is the relationship between water level and flow in off-channel water bodies (groundwater dependent), which can both be affected by groundwater pumping.

Other wildlife resources that could be substantially adversely affected based on declining water levels designated as SSC include coast horned lizard (*Phrynosoma blainvillii*); coast patch-nosed snake (*Salvadora hexalepis virgulata*); California legless lizard (*Anniella spp.*); two-striped garter snake (*Thamnophis hammondi*); and burrowing owl (*Athene cunicularia*). If groundwater depletion results in reduced streamflow due to interconnected surface waters, the nesting and foraging success of the SSC yellow warbler (*Dendroica petechia*), the SSC yellow breasted chat (*Icteria virens*), least Bell's vireo, southwestern willow flycatcher and other bird species may be diminished due to the reduced nesting habitat and food availability.

Proper management of both shallow and deep groundwater pumping combined with reduced surface water pumping and diverting such as that from the would ensure that the Basin is not negatively impacted. Unsustainable use of groundwater can impact the shallow aquifers and interconnected surface waters on which these species and GDEs rely on for survival. This may lead to adverse impacts on fish and wildlife and the habitat they need to survive. Determining the effects groundwater levels have on surface water flows in the Basin will inform how the groundwater levels may be associated with the health and abundance of riparian vegetation. Poorly managed groundwater pumping, and surface water flows have the potential to reduce the abundance and quality of riparian vegetation, reducing the amount of shade provided by the vegetation, and ultimately leading to increased water temperatures in the Basin.

Additionally, shallow groundwater levels near ISWs should be monitored to ensure that groundwater use is not depleting surface water and adversely affecting fish and wildlife resources in the Basin.

CONCLUSION

CDFW has significant concerns about data gaps in the Hydrologic Conceptual Model (HCM), Riparian Groundwater Dependent Ecosystems being eliminated, the description of the CDFW Fillmore Fish Hatchery and listing the proposed Mitigation Plan Project as a SGMA project. CDFW urges the GSA to plan for and engage in responsible groundwater management that minimizes or avoids these impacts to the maximum extent feasible as required under applicable provisions of SGMA and the Public Trust Doctrine.

In conclusion, the Draft GSP does not comply with all aspects of SGMA statute and regulations, and CDFW deems the Draft GSP inadequate to protect fish and wildlife beneficial users of groundwater for the following reasons:

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. [CCR § 355.4(b)(1)] (See Comments # 1, 2, and 5);

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2. The Draft GSP does not identify reasonable measures and schedules to eliminate data gaps. [CCR § 355.4(b)(2)] (See Comments # 1, 2, 3, 4 and 5);
3. The sustainable management criteria and projects and management actions are not commensurate with the level of understanding of the basin setting, based on the level of uncertainty, as reflected in the Draft GSP. [CCR § 355.4(b)(3)] (See Comments # 2, 3, 4 and 5); and,
4. The interests of the beneficial uses that are potentially affected by the use of groundwater in the basin, have not been considered. [CCR § 355.4(b)(4)] (See Comments # 1, 2, 3, 4, 5 and see General Comments).

CDFW appreciates the opportunity to provide comments. Additionally, we appreciate PBGA's continued coordination with CDFW while PBGA develops a final GSP. If you have any questions or comments regarding this letter, please contact Steve Slack, Environmental Scientist, at Steven.Slack@wildlife.ca.gov.

Sincerely,

DocuSigned by:

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Enclosures (Literature Cited)

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