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August 17, 2021

*Via Electronic Mail and Online Submission*

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**Subject: Comments on the Mound Basin Draft Groundwater Sustainability Plan**

Dear Mr. Bondy:

The California Department of Fish and Wildlife (CDFW) is providing comments on the Mound Basin Groundwater Sustainability Agency's (MB-GSA) Draft Groundwater Sustainability Plan (Draft GSP). The Draft GSP was 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 and species depend on groundwater and interconnected surface waters, 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 **identify and consider impacts to groundwater dependent ecosystems (GDEs)** [23 CCR § 354.16(g) and Water Code § 10727.4(l)];
- Groundwater Sustainability Agencies must **consider all beneficial uses and users of groundwater**, including environmental users of groundwater [Water Code §10723.2 (e)];
- 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 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; *National Audubon Society v. Superior Court* (1983), 33 Cal. 3d 419). Accordingly, groundwater plans should consider potential impacts to and appropriate protections for 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, groundwater planning should carefully consider and protect environmental beneficial uses and users of groundwater, including fish and wildlife and their habitats, groundwater dependent ecosystems, and interconnected surface waters.

## 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. CDFW understands the Mound basin (Basin) and is adjacent to the Santa Paula basin and the Oxnard basin. These three basins sit within the larger Oxnard Plain area. CDFW offers the following comments and recommendations below to assist MB-GSA in identifying and evaluating impacts on biological resources including GDEs within the adjacent groundwater basins. Additional suggestions are included for MB-GSA's consideration during revisions of the Draft GSP.

## COMMENTS AND RECOMMENDATIONS

### Comment #1: Data Gaps for Interconnected Surface Water (Section 3.2.6 of Mound Basin Draft GSP, Starting on Page 67)

**Issue:** Page 67 of the Draft GSP states, *"Data are not available to characterize the interconnection of Santa Clara River surface water and groundwater. Although the frequent perennial baseflow conditions imply that surface and groundwater is interconnected, it is not known specifically which groundwater in which units are connected and where. Of importance for this GSP, it is unknown whether the water table of the shallow alluvial aquifer in Mound Basin extends beneath the stream terrace deposits and intersects surface water in the Santa Clara River channel within the limits of Mound Basin."*

**Concern:** There are many unknowns as to the interaction of surface water in the Santa Clara River (SCR), Santa Clara River Estuary (SCRE) and the shallow alluvial aquifer of the Basin, and the adjacent Oxnard and Santa Paula basins. Studies have indicated that although the SCRE is within the Mound Basin, it may potentially be hydrologically connected to the upper aquifers of the Oxnard Plain area. This connection may be through semi-perched or shallow groundwater aquifers. The MB-GSA has not provided enough data to conclude that there isn't hydrologic connectivity between these various shallow aquifers.

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While most of the water flowing into the SCRE comes from the Ventura Wastewater Treatment Plant (VWWTP) and SCR discharge there is still a fair amount of groundwater inflow from the semi-perched aquifer. According to a water balance assessment conducted by Stillwater Sciences in their Santa Clara River Estuary Subwatershed Study for the fall/winter water year 2009- 2010, "The combined measured groundwater flow from the southern floodplain area and the unmeasured groundwater flow, which is presumed to be dominated by groundwater flow from upstream of the Harbor Blvd. bridge, had a combined contribution of approximately 15% of the total inflow volume" (Stillwater Sciences 2011b, p.78).

For the summer/spring 2010 period "The remaining 10% of the inflow volume came from an equal contribution of unmeasured groundwater flow from upstream of the Harbor Blvd. bridge and Santa Clara River flow" (Stillwater Sciences 2011b, p.78).

The Department of Water Resources regulations define interconnected surface water as "surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted [23 CCR § 351(o).].” The regulations do not state that the aquifer needs to be a "principal" aquifer as suggested by the Draft GSP.

GDEs can rely on groundwater for some or all of its requirements, relying on multiple water sources simultaneously and at different temporal or spatial scales (e.g., precipitation, river water, reservoir water, soil moisture in the vadose zone, groundwater, applied water, treated wastewater effluent, urban stormwater, irrigated return flow).

**Recommendation:** There are data gaps regarding the shallow aquifer and its hydraulic connectivity to the surface waters of the SCR and the SCRE. CDFW recommends the installation of shallow groundwater monitoring wells near potential GDEs and interconnected surface waters, potentially pairing multiple-completion wells with additional streamflow gages. This will facilitate an improved understanding of surface water-groundwater interconnectivity and subsurface recharge channels. A streamflow gage at the SCRE would provide valuable data on the amount of surface water feeding the estuary. CDFW agrees with the recommendation that the MB-GSA collect and analyze the data obtained from the future monitoring well planned for construction at the proposed VWWTP (as stated in the Draft GSP) to address the data gaps. Additional monitoring wells may be needed in other areas of the Basin before making the assertion that there is no interconnectivity between the shallow aquifer and the SCR. There is not enough information provided in the Draft GSP about the interconnectivity between the shallow aquifer and the principal aquifer. Additional clarification is needed in the final GSP.

**Comment #2: Groundwater Dependent Ecosystems Do Not Exist in Mound Basin under SGMA (Section 3.2.7 of Mound Basin Draft GSP, Starting on Page 68 and Appendix G)**

**Issue:** Page 69 of the Draft GSP states, "*As presented in Appendix G, iGDE areas 1 through 10 have been screened out and are not considered GDEs...Given the lack of potential for significant impacts to GDEs by principal aquifer pumping, Area 11 will not be considered further in the development of sustainable management criteria for the principal aquifers.*"

**Concern:** CDFW is concerned with the Draft GSP's disregard for GDEs in the Basin. Essentially, there are zero GDEs identified for SGMA protection. Eleven areas within the Basin

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were mapped as containing indicators of potential GDEs. GDEs that were selected by the MB-GSA are as follows:

Area 1 – Harmon Canyon coast live oak trees;  
Area 2 – Sexton Canyon coast live oak trees, wetland habitat, and riverine features;  
Area 3 – Barlow Canyon (Arroyo Verde Park) riparian mixed hardwood;  
Area 4 – Sanjon Barranca coast live oak trees;  
Area 5 – Kennebec Linear Park mixed riparian forest and North Bank of Santa Clara River near Saticoy mixed willow forest;  
Area 6 – Harmon Barranca and Park mixed riparian hardwood;  
Area 7 – Arundell Barranca (northern) riverine features;  
Area 8 – Arundell Barranca (central) wetland and riverine features;  
Area 9 – Prince Barranca wetland and marsh features;  
Area 10 – Alessandro Lagoon willow shrub; and,  
Area 11 – Lower Santa Clara River and Estuary estuarine habitat and wetland features.

The MS-GSA determined these 11 areas are not reliant on water from a principal aquifer in the Basin. The MB-GSA is arguing that the primary sources of water for these habitats come from the shallow alluvial aquifer, perched zones, irrigation return flows and tile drain discharges. CDFW believes the shallow aquifer and perched zones rely on surplus water from other external sources to keep them recharged. There is concern that these external sources could diminish or dry up which would adversely affect these GDEs. These are important contributions to sustaining these habitats and should be reinstated in the Draft GSP as GDEs.

The SCR along the Basin is designated critical habitat for the federal Endangered Species Act (FESA) listed southern California steelhead (*Oncorhynchus mykiss* or steelhead). Steelhead and the FESA-listed and California Endangered Species Act (CESA) listed least Bell's vireo (*Vireo bellii pusillus*), the FESA-listed and CESA-listed southwestern willow flycatcher (*Empidonax traillii extimus*) utilize the various habitats identified in the draft GSP as estuarine, wetland, and riverine features, that the MB-GSA has excluded as 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.

**Recommendation:** CDFW believes the shallow alluvial “aquifer” although rarely used for a water supply is 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. The 11 areas within the Basin that were mapped as containing potential GDEs should be included in the Draft GSP as they do rely on the shallow alluvial “aquifer” within the Basin, and the MB-GSA has not provided enough data to disregard interconnected surface waters. 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.

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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. CDFW believes it was premature to eliminate a large portion of the GDEs-related data. We recommend that the best scientific data on depth to groundwater be included in the analysis of interconnected surface waters before any data is excluded. Other scientific data to include (but not be limited to): USGS mapped springs/seep and comparing recent groundwater level contours to vegetation root zones. 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: Impacts of United Water Conservation District's Diversion Operations at the Vern Freeman Diversion on the SCRE (Water Budget Section 3.3 Starting on Page 70)**

**Issue:** The SCRE is located at the western portion of the Basin and is the terminus of the SCR. The protection and preservation of the SCRE for many species is a high priority for CDFW. United Water Conservation District's (UWCD) Vern Freeman Diversion (VFD), which is located in the Santa Paula Subbasin, plays a major role in limiting the amount of surface water that ultimately reaches the SCRE in the Mound Subbasin. As previously mentioned in Comment #2, GDEs do exist in the Basin and the VFD and recharge operations negatively impact these ecosystems. The VFD diverts surface water that would have continued to flow into the Mound Subbasin, but the water is instead diverted to the Oxnard Subbasin for groundwater storage. The water budget does not consider or analyze the VFD amounts in the Draft GSP.

**Concern:** The SCRE provides open water, sand dune, nearshore, riparian, mudflat, and other habitats that support a number of sensitive species throughout their life cycles, including the tidewater goby (*Eucclgobius newberryi*), steelhead, California least tern (*Sterna antillarum browni*), and western snowy plover (*Charadrius nivosus*) (CDFW 2019). SCRE is a core resource area strategically located along the coast that provides food, shelter, stopover, and safety for wildlife. The Ventura Wastewater Reclamation Facility (VWRF) currently discharges recycled water into the SCRE but will be reducing the amount of effluent discharge (from 4.7 MGD to 1.9 MGD) into the SCRE in the near future. Discharge reduction has the potential to significantly improve water quality conditions in the SCRE at the expense of a reduction in open water habitat. The surface water diverted from the VFD reduces flows needed to sustain the open water habitat for the SCRE. The VFD and spreading basin has altered the natural surface flow and groundwater recharge patterns in the SCR watershed (NMFS 2020, p.3).

**Recommendation:** CDFW recommends the amounts and timing of streamflow depletions at the Vern Freeman Diversion should be included in the Draft GSP to complete the water budget. Additionally, CDFW recommends the MB-GSA identify the estimated quantity and timing of streamflow depletions in the subbasin. If this information is not available, CDFW recommends the MB-GSA identify a proposed plan to estimate these values. The final GSP should address the UWCD VFD diversion and recharge operations and their effects on surface flows and groundwater elevations along the SCR and SCRE.

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## ADDITIONAL COMMENTS

**Sensitive Species and Habitats:** The SCRE contains important steelhead spawning and rearing habitat in Southern California. 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.

Steelhead trout depend on the SCRE for vital life-history and ecological function and should be at the forefront of MB GSA's protection plan. This species utilizes all areas of the SCRE including the open water habitat. The SCRE has long been recognized as important steelhead rearing habitat for fingerling and smolt until they reach maturity as adults to survive the tough conditions of the Pacific Ocean.

The SCRE receives groundwater inflow upstream in the SCR. Water quality conditions in the SCRE have the potential to affect juvenile steelhead. The SCRE currently has approximately 108 acres of open water which provides a combination of fairly shallow open water and water that is generally deep enough to provide some protection from terrestrial and larger avian predators.

Southwestern pond turtle (*Actinemys pallida*) was designated as a California Species of Special Concern (SSC) in 1994. Southwestern pond turtle's 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 western pond turtle is the relationship between water level and flow in off-channel water bodies, which can both be affected by groundwater pumping.

CDFW recommends that the MB-GSA commit to Arundo (*Arundo donax*) removal in the SCRE and along the SCR within the Basin to improve groundwater supply and enhance habitat quality for nesting birds. Arundo removal is one example of a project and management action to minimize groundwater overdraft. 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 SCRE and lower SCR are 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 Mound 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 SCR and SCRE. CDFW highly recommends the MB-GSA map out locations where there are interconnected surface waters and document aquatic habitats and other GDEs as required under SGMA.

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The biological resources within the SCRE were completely eliminated from this Draft GSP and the MB-GSA should provide appropriate consideration to the SCRE. Fish and wildlife resources within the Basin should also be considered in the water budget. Additionally, shallow groundwater levels near interconnected surface waters should be monitored to ensure that groundwater use is not depleting surface water and adversely affecting fish and wildlife resources in the Basin.

## CONCLUSION

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 3);
2. The Draft GSP does not identify reasonable measures and schedules to eliminate data gaps. [CCR § 355.4(b)(2)] (See Comments # 1, 2, and 3);
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 # 1, 2, and 3); 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 and see Additional Comments).

CDFW appreciates the opportunity to provide comments. Additionally, we appreciate MB-GSA's continued coordination with CDFW while MB-GSA 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](mailto:Steven.Slack@wildlife.ca.gov).

Sincerely,

DocuSigned by:

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Enclosures (Literature Cited)

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**Literature Cited**

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