



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
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Sacramento, California 95814-4700

September 29, 2021

John Woodling, Executive Director
Sacramento Groundwater Authority GSA
5620 Birdcage Street, Suite 180
Sacramento, California 95610

Electronic transmittal only

Re: NOAA's National Marine Fisheries Service comments on the developing Groundwater Sustainability Plan for the North American subbasin

Dear Mr. Woodling:

NOAA's National Marine Fisheries Service (NMFS) is the federal agency responsible for managing, conserving, and protecting living marine resources in inland, coastal, and offshore waters of the United States. We derive our mandates from numerous statutes, including the Federal Endangered Species Act (ESA) and the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The purpose of the ESA is to conserve threatened and endangered species and their ecosystems.

The North American subbasin Groundwater Sustainability Agency (hereafter, "GSA") recently released their draft North American subbasin Groundwater Sustainability Plan (draft GSP) for public comment. The California Department of Water Resources (DWR) has designated the North American subbasin a "high" priority for groundwater management, necessitating the development of a GSP by January 2022, as required under California's Sustainable Groundwater Management Act of 2014 (SGMA). Several waterways that overlie portions of the North American subbasin support federally threatened California Central Valley (CCV) steelhead (*Oncorhynchus mykiss*), threatened Central Valley (CV) spring-run Chinook salmon (*O. tshawytscha*), the threatened Southern Distinct Population Segment (sDPS) of North American green sturgeon (*Acipenser medirostris*), and federally endangered Sacramento River winter-run Chinook salmon (*O. tshawytscha*). In addition, the North American subbasin is designated as Essential Fish Habitat (EFH) for Pacific Coast Chinook salmon, including CV fall-run Chinook salmon (*O. tshawytscha*) and CV late fall-run Chinook salmon (*O. tshawytscha*), which are managed under the MSA. This letter transmits NMFS' comments on the draft GSP.

Surface water and groundwater are hydrologically linked in the North American subbasin, and this linkage is critically important in creating seasonal habitat for Chinook salmon, steelhead, and green sturgeon. Where the groundwater aquifer supplements streamflow, the influx of cold, clean water is critically important for maintaining temperature and flow volume. Pumping water from these aquifer-stream complexes has the potential to affect Chinook salmon, steelhead, and sturgeon habitat by lowering groundwater levels and interrupting the hyporheic flow between



the aquifer and stream. NMFS is concerned that groundwater extraction in the North American subbasin is currently impacting Chinook salmon, steelhead, and green sturgeon instream habitat, and recommends the draft GSP adequately address and minimize these impacts.

Comments

Avoiding Undesirable Results: The requirement for minimum thresholds as spelled out in the SGMA regulations is as follows:

“The relationship between the minimum thresholds for each sustainability indicator, including an explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.” (CCR 23 §354.28(b)(2))

According to DWR (2021), “it is up to GSAs to define in their GSPs the specific significant and unreasonable effects that would constitute undesirable results and to define the groundwater conditions that would produce those results in their basins.” The GSA should qualitatively describe what conditions within the subbasin would constitute an undesirable result with regard to streamflow depletion, ensuring that the description accounts for impacts to instream habitat that supports ESA-listed salmonids and green sturgeon. If data that would inform potential streamflow depletion impacts is lacking, NMFS recommends the final GSP follow guidance from California Department of Fish and Wildlife (2019) and develop conservative streamflow depletion thresholds as a cautionary principle until the surface flow/groundwater dynamic in the North American subbasin is better studied and understood.

Using Groundwater Elevations as a Proxy for Streamflow Depletion: Groundwater levels are used as a proxy for depletion of surface water because, as the draft GSP states, the “depletion of interconnected surface water is directly related to the gradient between the surface water system at the groundwater interface and the groundwater Subbasin.” However, SGMA regulations require that a GSP demonstrate “that there is a significant correlation between groundwater levels and the other metric” (DWR 2017), with the “other metric” in question appearing to be “the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results” (CCR 23 §354.28(c)(6)). The draft GSP should explain, with supporting evidence, what significant correlation exists between groundwater elevations and streamflow depletion rates or volumes, and how that correlation would allow the GSA to adequately predict and monitor impacts to beneficial uses of surface water.

Undesirable result for depletion of surface water: The draft GSP includes the following definition for the streamflow depletion undesirable result:

20% or more of the NASb interconnected surface water (ISW) representative monitoring sites (RMSs) have minimum threshold exceedances for 2 consecutive fall measurements (5 out of 23). (Page 8-42)

The above definition is not appropriate for avoiding significant and unreasonable impacts to surface water beneficial uses because it is completely disconnected from ecological principles

that govern how those beneficial uses are impacted. Requiring two consecutive years of exceeding the minimum threshold does not account for the fact that organisms live or die depending on the habitat conditions at a moment in time. If streamflow depletion contributes to a creek drying up during a given year, the fish that reside in that creek will perish and an impact to surface water beneficial use will likely have resulted. Requiring two consecutive years of such conditions impacting surface water beneficial uses makes little sense when attempting to avoid impacts to surface water beneficial uses.

Basing Sustainable Management Criteria on Historical Drought Conditions: The minimum threshold for streamflow depletion was established by averaging the lowest groundwater elevations from fall 2014 and fall 2015. However, using recent groundwater elevations to inform or set streamflow depletion minimum thresholds and measurable objectives is likely inappropriate for avoiding significant impacts to ESA-listed salmonids and sturgeon, and their habitat, including EFH. Basic hydraulic principles dictate that groundwater flow is proportional to the difference between groundwater elevations at different locations along a flow path. Using this basic principle, groundwater flow to a stream or, conversely, seepage from a stream to the underlying aquifer is proportional to the difference between water elevation in the stream and groundwater elevations at locations away from the stream. Basing sustainable management criteria upon groundwater elevations that occurred during California's recent historical drought (2011-2016) will likely result in historically high streamflow depletion rates, producing instream conditions that negatively affect ESA-listed Chinook salmon, steelhead, green sturgeon, and their critical habitat.

Any sustainable management criteria that result must avoid significant and unreasonable impacts to identified beneficial uses of surface water, which for surface waters within the North American subbasin include cold freshwater habitat; migration of aquatic organisms; and spawning, reproduction, and/or early development¹.

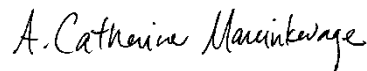
Sustainable Yield estimation: The GSP asserts that the North American subbasin is "currently under its estimated sustainable yield and in position to support additional groundwater development" (Page 8-12). However, a sustainable yield estimation requires the avoidance of all undesirable results and, as noted throughout this letter, we do not believe significant and unreasonable streamflow depletion will be avoided when using the sustainable management criteria proposed within the draft GSP. Similarly, the assertion that "the sustainability goal is currently being met" within the basin also appears to be unfounded, and directly contradicts DWR's evaluation process that assigned a "high" priority to the subbasin. Per the SGMA regulations, if the GSA wishes to assert that the basin is sustainably managed currently, then they must demonstrate and provide evidence that each sustainability indicator "does not exist and cannot occur" (DWR 2017). Suffice to say, the draft GSP fails to accomplish this. If the GSA wishes to keep this assertion within the draft GSP, they should fully explain, in detail, why the historically high streamflow depletion rates that correspond to their proposed sustainable management criteria will avoid significant and unreasonable impacts to surface water beneficial uses.

¹ Water Quality Control Plan for the Sacramento River and San Joaquin River Basins. Copy at https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

NMFS recommendation for future Projects and Management Actions: We suspect that groundwater recharge projects are likely to be an important action implemented as part of the effort to achieve groundwater sustainability in the North American subbasin. NMFS encourages the GSA to consider implementing recharge projects that facilitate floodplain inundation and offer multiple benefits, including downstream flood attenuation, groundwater recharge, and ecosystem restoration. Managed floodplain inundation can recharge floodplain aquifers, which in turn slowly release stored water back to the stream during summer months. These projects also reconnect the stream channel with floodplain habitat, which can benefit juvenile salmon, steelhead, and sturgeon by creating off-channel habitat characterized by slow water velocities, ample cover in the form of submerged vegetation, and high food availability. As an added bonus, these types of multi-benefit projects likely have more diverse grant funding streams that can lower their cost as compared to traditional off-channel recharge projects. NMFS stands ready to work with any GSA interested in designing and implementing floodplain recharge projects.

Please direct questions regarding this letter to Amanda Cranford, of my staff, at Amanda.Cranford@noaa.gov or (916) 930-3706.

Sincerely,



Cathy Marcinkevage
Assistant Regional Administrator
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References:

- California Department of Fish and Wildlife. 2019. Fish & Wildlife Groundwater Planning Considerations. California Department of Fish and Wildlife, Groundwater Program. June 2019. 28 pp. Available at: <https://cawaterlibrary.net/document/fish-wildlife-groundwater-planning-considerations/>
- California Department of Water Resources. 2017. Best Management Practices for the Sustainable Management of Groundwater: Sustainable Management Criteria (Draft). Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT_ay_19.pdf
- California Department of Water Resources. 2021. Letter from Craig Altare (DWR) to Taylor Blakslee (Cuyama Basin GSA), re. Cuyama Valley - 2020 Groundwater Sustainability Plan. Available at <https://sgma.water.ca.gov/portal/gsp/assessments/32>

Cc: To the File ARN 151422-WCR2021-SA00121

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