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## Draft Groundwater Sustainability Plan – Public Comment Responses

ID and Commenter	Comment Type and Date	Notes
1. The Nature Conservancy	Letter dated 9/9/2019	
2. NOAA - National Marine Fisheries Service	Letter dated 9/10/2019	
3. California Department of Fish and Wildlife	Letter dated 9/12/2019	
4. Audubon California; Clean Water Action and Clean Water Fund; Local Government Commission; The Nature Conservancy; Union of Concerned Scientists	Letter dated 9/19/2019	
5. Jerome Paul	Letter dated 9/19/2019 <sup>1</sup>	
6. Soquel Creek Water District	Letter dated 9/19/2019	
7. Becky Steinbruner	Email 8/14/2019	Single Response Letter
8. Becky Steinbruner	Email 8/28/2019	See Response Letter No. 7
9. Becky Steinbruner	Email 8/29/2019	See Response Letter No. 7
10. Ramona Andre	Email 9/14/2019	
11. Richard Andre	Email 9/14/2019	
12. Cliff Bixler	Email 9/16/2019	
13. Larry Freeman	Email 9/16/2019	
14. Becky Steinbruner	Email 9/17/2019	See Response Letter No. 7
15. Scott McGilvray	Email 9/18/2019	
16. Linda Wilshusen	Email 9/18/2019	
17. Debra Wirkman	Email 9/18/2019	
18. Tom Butler	Email 9/19/2019	
19. Douglas Deitch	Email 9/19/2019	Single Response Letter
20. Douglas Deitch	Email 9/19/2019	See Response Letter No. 7
21. Erica Stanojevic	Email 9/19/2019	
22. Becky Steinbruner	Email 9/19/2019	See Response Letter No. 7
23. Becky Steinbruner	Comment Card dated 1/17/2019 <sup>2</sup>	See Response Letter No. 7
24. Becky Steinbruner	Comment Card dated 1/17/2019 <sup>2</sup>	See Response Letter No. 7
25. Becky Steinbruner	Comment Card dated 1/18/2019 <sup>2</sup>	See Response Letter No. 7
26. Craig	Comment Card dated 7/20/2019	
27. Becky Steinbruner	Comment Card dated 7/22/2019	See Response Letter No. 7
28. Becky Steinbruner	Comment Card dated 7/22/2019	See Response Letter No. 7
29. Becky Steinbruner	Comment Card dated 7/22/2019	See Response Letter No. 7
30. Michael M.	Comment Card undated <sup>2</sup>	
31. Becky Steinbruner	Oral Comment 9/19/2019	See Response Letter No. 7

<sup>1</sup> Draft GSP comment letter hand delivered at 9/19/2019 MGA Board Meeting during another agenda item.

<sup>2</sup> Draft GSP comment cards were not produced and available until the July 18, 2019 MGA Board meeting



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January 27, 2020

Sandi Matsumoto  
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The Nature Conservancy  
555 Capitol Mall, Suite 1290  
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**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comments**

Dear Ms. Matsumoto:

Thank you for your comment letter on the Santa Cruz Mid-County Groundwater Basin Draft GSP, dated September 9, 2019 and delivered through the SGMA Portal. We appreciate your comments, your organizational commitment to protecting environmental resources in California.

Under MGA Board direction, MGA staff and technical consultants made detailed revisions to the Basin's GSP to respond to your comments. These revisions improved the GSP by adding requested details where appropriate to the plan, refining the water budget especially in relation to surface water and groundwater dependent ecosystems, and providing further explanation of MGA plans for the Basin's future.

*Comment 1: Please include the following in the list of beneficial uses and users of groundwater in the Basin: Protected Lands, including preserves, refuges, conservation areas, recreational areas and other protected lands; and Public Trust Uses, including wildlife, aquatic habitat, fisheries, recreation and navigation.*

Response: Revisions were made to GSP Section 2.1.5 to include the requested beneficial uses and users that are present within the Basin.

*Comment 2: In order for this section to provide the appropriate context and help assure integration of GSP implementation with other ongoing regulatory programs, this section should describe the following: Monitoring activities and responsibilities by State, Federal and local agencies and jurisdictions related to aquatic resources and GDEs that could be affected by groundwater withdrawals should be discussed. Section 2.1.2.1 states that there is steelhead habitat monitoring by local agencies; however, there is no discussion on how the steelhead monitoring sites overlap with existing hydrologic monitoring (e.g., nested monitoring wells, stream gauges). A discussion on how steelhead and hydrologic monitoring will be combined to characterize and monitor whether groundwater conditions are causing adverse impacts to this priority species (see Table 2-1) should be included in Sections 2.1.2.1 or 2.1.2.2. The Critical*

*Habitat for Threatened and Endangered Species website maintained by the US Fish and Wildlife Service identifies lands with endangered and threatened species in the Basin, including species potentially associated with interconnected surface waters ISWs, including Steelhead (*Onocorhynchus mykiss*) and Tidewater goby (*Eucyclogobius newberryi*). Also please refer to the Critical Species Lookbook4 to review and discuss the potential groundwater reliance of critical species in the basin. Please include a discussion regarding the management of critical habitat for these aquatic species and its relationship to the GSP.*

Response: Revisions were made to GSP Sections 2.1.2.1 to provide further information regarding the existing fish monitoring program within the County. Section 3.3.4.1 has additional information about how the fish monitoring program will inform the GSP updates. That said, many of the requests in the comment are beyond the scope of SGMA. GSP Section 2.2.4.7 was also revised to provide further information on how groundwater dependent ecosystems were identified for the GSP.

*Comment 3: Section 2.1.3 Land Use Elements or Topic Categories of General Plans: This section should include a discussion of General Plan goals and policies related to the protection and management of GDEs and aquatic resources that could be affected by groundwater withdrawals, rather than being limited to goals and policies directly related to groundwater resources alone. Section 2.1.3 does not identify any General Plan policies related to these resources. Please include a discussion of how implementation of the GSP may affect and be coordinated with General Plan policies and procedures regarding the protection of wetlands, aquatic resources and other GDEs and ISWs. The Open Space and Conservation Element of the County's General Plan requires a mapping program to determine the boundaries of sensitive habitats. Please include information from this program as it relates to the identification and management of GDEs under the GSP. This section should identify Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans (NCCPs) within the Basin and if they are associated with critical, GDE or ISW habitats such as the City of Santa Cruz's Anadromous Salmonid HCP. Please identify all relevant HCPs and NCCPs within the Basin, and address how GSP implementation will coordinate with the goals of these HCPs or NCCPs.*

Response: GSP Section 2.1.3 was revised to include information on general plan policies to support wetlands protection. GSP Sections 2.1.4.12, 2.2.4.6 and 2.2.4.7 were also revised to provide additional information on the identification of groundwater dependent ecosystems and interconnected surface water. These GSP Sections also include mapping and analysis of these resources that are responsive to this comment.

*Comment 4: Section 2.1.3.4 Summary of the Process for Permitting New or Replacement Wells in the Basin. This section should include a discussion of the following: Future well permitting must be coordinated with the GSP to assure achievement of the Plan's sustainability goals. The State Third Appellate District recently found that Counties have a responsibility to consider the potential impacts of groundwater withdrawals on public trust resources when permitting new wells near streams with public trust uses (*ELF v. SWRCB and Siskiyou County, No. C083239*). The need for well permitting programs to comply with this requirement should be stated.*

Response: GSP Section 2.1.3.4 was revised to include the following, "The County will update its well ordinance to implement elements of this GSP, including metering requirements for non-de minimis users. The County will also address the need to prevent impact on public trust values in surface water from new wells, depending on how this issue evolves in the State. This could include a

requirement for increased setbacks from streams and/or deeper seals to reduce the potential to draw from alluvium that is in direct hydraulic contact with a stream.”

*Comment 5: Section 2.1.4.12 Impacts on Groundwater Dependent Ecosystems: Please refer to the Critical Species Lookbook to review and discuss the potential groundwater reliance of critical species in the basin. Please include a description of the in-stream flow requirements for identified coho and steelhead salmon habitat and their relationship to the GSP. Please identify groundwater-related knowledge and monitoring gaps for the critical species and GDEs identified in the Basin.*

Response: Revisions were made to GSP Sections 2.1.4.12, 2.2.4.6 and 2.2.4.7 to provide a more detailed description of groundwater surface water interactions and the additional information needed to fill data gaps to better understand these interactions and their impacts on sensitive species. There are no municipal withdrawals from surface waters within the Basin that would trigger in-stream flow requirements, thus none are identified in the GSP. GSP Sections 2.1.3.4 and 3.3.4.3 were revised to describe a new well metering program for all private non-de minimis that meet the following criteria: 1) Pump more than two (2) acre-feet per year within priority management zones to be defined by the County of Santa Cruz. These will be related to seawater intrusion and depletion of interconnected surface water. 2) Wells outside of priority management zones that pump more than 5 acre-feet per year. This program is designed to understand the impacts of private non-de minimis water use in the Basin and encourage conservation.

*Comment 6: Section 2.1.1.1.1 Santa Cruz Mid-County Basin (pp.2-9 to 2-10) The bottom boundary of the basin is imprecisely described as including the “Purisima Formation, Aromas Red Sands and certain other Tertiary-age aquifer units underlying the Purisima Formation.” The bottom boundary of the basin should be more precisely defined in accordance with DWR guidance. As noted on page 9 of DWR's Hydrogeologic Conceptual Model BMP ([https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP\\_HCM\\_Final\\_2016-12-23.pdf](https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_HCM_Final_2016-12-23.pdf)) "the definable bottom of the basin should be at least as deep as the deepest groundwater extractions." Properly defining the bottom of the basin will prevent the possibility of extractors with wells deeper than the basin boundary from claiming exemption of SGMA due to their well residing outside the vertical extent of the basin boundary.*

Response: Revisions were made to GSP Section 2.2.1 Basin Boundaries to better describe the geologic and jurisdictional boundaries of the Basin, including the definable base of the Basin. GSP Section 2.2.3.5 Principal Aquifers and Aquitards was also revised to provide a general description of the Basin basement rock and outcrops.

*Comment 7: Section 2.2.1.2 Geology and Geologic Structures (pp. 2-65 to 2-72) The cross sections provided in Figures 2-15 and 2-16 are regional and highly generalized, and do not include a graphical representation of how shallow groundwater may interact with ISWs or GDEs that would allow the reader to understand this topic. Better conceptualization is provided in Figure 2-40; however, it would be helpful if this figure, or a similar figure reproduced in this section, were to include additional surface-groundwater interaction scenarios and GDEs. Please consider including an example near-surface cross section that depicts the conceptual understanding of shallow groundwater and stream interactions at different locations, including perched and regional aquifers as well as GDEs. If data are not available, please identify this as a knowledge gap and elaborate in the monitoring section how and where additional wells can reconcile this gap.*

Response: Please see GSP Figure 2-47 Conceptual Connections between Soquel Creek, Alluvium, and Underlying Aquifers provides some of the conceptual information requested. GSP Sections 3.3.4.1 and 3.3.4.2 were revised to more clearly identify data gaps and MGA intentions to fill those gaps.

*Comment 8: Section 2.2.2.6 Identification of Interconnected Surface Water Systems (pp. 2-114 to 2-121) On page 2-116 the third bullet states “Groundwater only contributes a small amount of flow (<0.5 cfs) to each of these segments in the months with lowest flows.” While this is technically correct based on modeled results, this baseflow measurement is highly uncertain due to a lack of co-located stream gauges and nested or clustered groundwater wells throughout Soquel Creek. It is also potentially misleading since, for example Figures 2-41 shows that during 22 out of 27 years, the total flow in this reach of Soquel Creek was only 1.5 cfs or less. Please remove the word “only” and provide perspective on the total percentage of baseflow discharge included in dry month discharge, as well as modelling uncertainties. This section should discuss or reference any in-stream flow requirements, especially flow needs for critical species, in each of the interconnected streams including the amount, time of year when the flow minimum is specified, the duration, the species for which it applies, associated permits that set forth the requirements, and the regulating agency setting forth the compliance requirements.*

Response: GSP Section 2.2.4.6 was revised in response to these comments.

*Comment 9: Section 2.2.2.6 Identification of Interconnected Surface Water Systems (pp. 2-114 to 2-121) On page 2-118, it is stated that the MGA intends to improve Basin monitoring to better understand surface-groundwater interactions over time. Nested monitoring wells would be helpful near surface water to show how pumping is impacting surface water flows and GDEs in all of the interconnected surface waterways (not just in Soquel Creek). More specifically, we suggest installing three nested wells perpendicular to Soquel Creek near several pumping wells (perhaps one in each gaining reach and one in the losing reach; Nob Hill, Simons, and Main Street), so that we can assess how well connected the A, AA and Tu formations are with Soquel Creek. This will also help to gauge what distance to the creek is most representative of a shallow groundwater gradient (to validate EDF’s approach), and allow updating of the groundwater model as appropriate.*

Response: Section 3.3.4.2 of both the Draft GSP and GSP recommend improvements to the monitoring network that address streamflow monitoring data gaps. Two (2) wells are recommended at the Balogh site. The Main Street pumping well already includes monitoring wells completed in the A, AA, and Tu aquifers.

*Comment 10: Section 2.2.2.6 Identification of Interconnected Surface Water Systems (pp. 2-114 to 2-121) Figure 2-9 provides good perspective on the potential connection between surface and groundwater for various streams and reaches and Section 2.2.2 provides a discussion regarding some of the reaches that are considered potentially most sensitive to streamflow depletion by groundwater extraction. However, more information is required to understand of how the connection is affected by year type and reach overall, and to substantiate prioritization of these stream reaches. We recommend that a table be included presenting estimates of current and historical surface water depletions for ISWs quantified and described by reach, season, and water year type.*

Response: Thank you for this recommendation. The MGA will consider this suggestion when GSP updates are made in the future.

*Comment 11: Identification of Groundwater-Dependent Ecosystems 2-122 to 2-127). On page 2-116 It is stated that the focus of GDE identification was narrowed to the habitats supported by surface water systems (i.e., those located near streams). Furthermore, it was stated that "... the group determined that any possible ecosystem effects would be challenging to evaluate, are likely quite small if they exist at all, and will benefit from the management policies put in place to protect priority aquatic species." Since, other GDEs may exist in areas of shallow groundwater away from streams, please provide a more substantial justification for focusing GDE identification efforts on riparian zones alone.*

Response: GSP Section 2.1.4.12 was revised to indicate that the only areas in the Basin where interconnected surface water was identified were in riparian areas. GSP Section 2.2.4.7 was revised to address other ecosystems that were assessed for the GSP and did not require additional groundwater management (ponds supported by interflow and the marine environment).

*Comment 12: Identification of Groundwater-Dependent Ecosystems 2-122 to 2-127). Page 2-122 states that "Other ecosystems that were identified were found to be generally supported by interflow in perched groundwater, and surface runoff." The nature and locations of the "other ecosystems" is not discussed. Also, while the interflow hypothesis (redwood sponge effect) is potentially plausible, there is no evidence to support that this water is actually soil water in the unsaturated zone versus groundwater flow in an aquifer that is interacting with other aquifer formations. This "interflow" should not be considered beyond the scope of GSP management, until it has been better characterized and shallow monitoring wells have been installed in the redwood-forested areas. SGMA defines aquifers as "a body of rock or sediment that is sufficiently porous and permeable to store, transmit, and yield significant or economic quantities of groundwater to wells and springs". Given the potential significance of "interflow" to ecosystems and surface water in Soquel Creek, more information is necessary to substantiate these statements. Other GDEs may exist in areas of shallow groundwater away from streams. Please provide additional details regarding the "other ecosystems" discussed on pages 2-116 and 2-122.*

Response: GSP Section 2.1.4.12 was revised to indicate that the only areas in the Basin where interconnected surface water was identified were in riparian areas. GSP Section 2.2.4.7 (Previously Draft GSP Section 2.2.2.7) was revised to address other ecosystems that were assessed for the GSP and did not require additional groundwater management (ponds supported by interflow and the marine environment).

*Comment 13: Identification of Groundwater-Dependent Ecosystems 2-122 to 2-127). Page 2-123 states that the map of GDEs in the Basin included as Figure 2-47 was developed using guidance developed by TNC. Please refer to Attachment C of this letter for best practices in using groundwater data to verify whether NCCAGs are GDEs. Please discuss what temporal and spatial data were used to identify GDE's presented in Figures 2-47 and 2-48 (and remove NCCAG polygons along groundwater-connected stream reaches) and identify any data gaps.*

Response: GSP Section 2.1.4.12 was revised to indicate that the only areas in the Basin where interconnected surface water was identified were in riparian areas. GSP Section 2.2.4.7 was revised to address other ecosystems that were assessed for the GSP and did not require additional groundwater management (ponds supported by interflow and the marine environment). NCCAG polygons were removed as recommended. GSP Sections 3.3.4.1 and 3.3.4.2 identify data gaps for depletion of interconnected surface water and how those data gaps will be filled. GSP Section 5.2 provides scheduling and other details for filling data gaps identified in the monitoring network.

*Comment 14: SGMA defines GDEs as "ecological communities and species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface". We recommend that depth to groundwater contour maps be used to verify whether a connection to groundwater exists for polygons in the NC Dataset, instead of relying on inferences based on the presence of surface water features in the Basin. Please refer to Appendix C of this letter for best practices for using groundwater data to verify a connection to groundwater.*

Response: GSP Sections 2.1.4.12 and 2.2.4.7 were revised to provide more detail on the identification of GDE within the Basin. GSP Section 2.1.4.12 includes Figure 2-10 Percentage of Time Surface Water and Groundwater are Connected (1985-2015).

*Comment 15: While depth to groundwater is generally accepted as being a proxy for confirming that polygons in the NC dataset are connected to groundwater, the variable needs of plant species and their dependence on seasonal and inter-annual groundwater level fluctuations should be considered when applying this criterion. The GSP does not cite what hydraulic criteria were used to establish a GDE. It is highly advised that seasonal and interannual fluctuations in the groundwater regime are taken into consideration.*

Response: GSP Sections 2.1.4.12 and 2.2.4.7 were revised to provide more detail on the identification of GDE within the Basin. GSP Section 2.1.4.12 includes Figure 2-10 Percentage of Time Surface Water and Groundwater are Connected (1985-2015). GSP Section 2.2.4.7 includes additional figures and tables to better describe the criteria and species evaluated by the GSP Advisory Committee and the Surface Water Working Group. These two groups helped to develop the policy recommendations upon which the GSP is based. GSP Section 2.2.5 was also revised to add significantly more surface water detail to the Basin water budget.

*Comment 16: The last bullet on page 2-124 states that modeling and management should focus on areas of highest groundwater extraction where streams are interconnected with groundwater. Please identify specifically where these areas are located.*

Response: The Draft GSP includes Figure 2-43 *Areas of Concentrated Groundwater Pumping along Soquel Creek* found on page 2-119 which provides the requested information. This figure was renumbered to GSP Figure 2-46 and is found on page 2-129. GSP Section 2.2.4.7 was revised to provide additional detail in response to this comment. GSP Section 3.3.4.1 and 3.3.4.2 were revised to provide a better description of the MGA's proposed improvement to the monitoring network to address streamflow monitoring data gaps. The schedule for these improvements is found in Section 5.2 of both the Draft GSP and GSP.

*Comment 17: The first bullet on page 2-123 states that there are many factors beyond groundwater management that affect streamflow, that are beyond the scope of the GSP yet were accounted for in the analysis. How these factors were accounted for in the analysis should be identified.*

Response: GSP Section 2.2.4.7 (previously Draft GSP Section 2.2.2.7) was substantially revised, as was GSP Section 2.2.5 as it relates to the surface water budget, to better describe the MGA's planning process to address groundwater dependent ecosystems within the Basin's GSP.

*Comment 18: Very little description is provided regarding the nature and function of the identified GDEs, their potential sensitivity to groundwater and surface water supply changes, their relative habitat value. We recommend the inclusion of a discussion regarding the nature and characteristics of the identified GDEs.*

Response: GSP Section 2.2.4.7 (previously Draft GSP Section 2.2.2.7) was substantially revised, as was GSP Section 2.2.5 as it relates to the surface water budget, to better describe the MGA's planning process to address groundwater dependent ecosystems within the Basin's GSP.

*Comment 19: Section 2.2.3 Water Budget Estimates (pp. 2-128 to 2-170). Groundwater outflow to ET is not identified as a groundwater budget component (Table 2-9). Since wetlands, GDEs, and riparian vegetation are recognized as beneficial users of groundwater in the Basin, they should be included in the groundwater budget as ET demands. Calculations should be provided to quantify the amount of ET in the GDEs both spatially and temporally, including water year type. Please identify any data gaps.*

Response: GSP Section 2.2.5 (previously Draft GSP Section 2.2.3) was substantially revised to provide more detail to the Basin surface water budget.

*Comment 20: "Evapotranspiration" is identified in Table 2-9 as a stream system water budget outflow component. It is not appropriate to identify the existence of GDEs, and then to assume that they meet all of their water demand through surface water and do not rely on groundwater to meet any demand. Please include an explanation of the approach to determining the amount of riparian ET demand met by streamflow both spatially and temporally, including water year type, and identify any data gaps.*

Response: GSP Section 2.2. 5 (previously Draft GSP Section 2.2.3) was substantially revised to provide more detail to the Basin surface water budget.

*Comment 21: Table 2-9 states that with regard to groundwater discharge to creeks, "... calibration to streamflow indicated groundwater interactions less significant than watershed characteristics." With regards to outflow of surface water to evapotranspiration, the table states that this value was derived "based on calibration of potential evapotranspiration. Both values were derived from the calibrated model, yet the GSP states that the model did not simulate evapotranspiration of groundwater. Please provide additional explanation regarding the approach used to determining the amount of evapotranspiration from riparian areas and other GDEs and what is meant by the statement that groundwater interactions are less important than watershed characteristics. Please also discuss the rationale for the simplifying modeling assumption that GDEs derive all of their water uptake from surface water, and identify any data gaps relative to assessment and management of GDEs. These critical and unverified assumptions could fundamentally alter the definition of GDEs in the basin, and subsequent evaluation in the plan.*

Response: GSP Section 2.2.5 (previously Draft GSP Section 2.2.3) was substantially revised to provide more detail to the Basin surface water budget.

*Comment 22: Shallow monitoring wells are only available for a portion of the Soquel Creek to validate shallow groundwater modeling and identifies this lack as a data gap (Page 2-131). Section 2.2.3.4.1 (p 2-135) identifies that the most important aspect of the surface water budget is its connection to groundwater for GDEs. Please provide additional evaluation and discussion regarding the level of uncertainty and limitations resulting from this data gap. Please evaluate the effect this data gap on the*

*modeling results related to ISWs and surface-groundwater interaction by conducting a sensitivity analysis.*

Response: Section 3.3.4 Assessment and Improvement of Monitoring Network in both the Draft GSP and GSP recommend monitoring improvements to fill data gaps. GSP Sections 3.3.4.1 and 3.3.4.2 were revised to provide a more in-depth discussion of the monitoring improvements needed to provide the necessary data to better understand surface water depletions.

*Comment 23: The sustainability goal includes maintaining groundwater contributions to streamflow; however, the needs of Steelhead and Coho are very specific in terms of seasonal needs for minimum flows and avoidance of sudden, even temporary, declines in interconnected surface water levels prior to the outmigration of fry. Please include streamflow for coho and steelhead habitat as a component of the sustainability goal.*

Response: The MGA's Sustainability Goal specifically commits the MGA to manage the Basin to, among other things, "...Maintain or enhance groundwater levels where groundwater dependent ecosystems exist; [and] Maintain or enhance groundwater contributions to streamflow..." This MGA commitment is made in relation to current and historic surface water flows that are further described in GSP Section 3.9 rather than a commitment to provide for minimum surface water flows for sensitive species. SGMA only requires GSAs to restore groundwater to the levels present when the act took effect on January 1, 2015 during the historic 2012-2016 drought. The sustainable management criteria outlined in the Basin's GSP far exceed the minimum requirements of SGMA. GSP Sections 2.1.4.12 and 2.2.4.7 were revised to provide more detail on the identification of GDEs within the Basin. GSP Section 2.2.5 was revised to add significantly more surface water detail to the Basin water budget. GSP Section 3.9 was revised to include more detail on the uncertain relationship between groundwater levels and streamflow. Finally, GSP Section 3.3.4 was revised to better describe the improvement planned for the Basin's monitoring network. Even though this request for minimum streamflow data is outside the scope of SGMA, the MGA and its member agencies may consider this suggestion during future GSP updates when more data is available to demonstrate the interrelationships between groundwater, surface water flow, and sensitive species within the Basin.

*Comment 24: No reference is made to the review of supporting documents for General Plan Conservation or Land Use Elements, or to the review of environmental management studies and documents such as Biological Assessments, Biological Opinions, HCPs, NCCPs, or other studies regarding the current and historical conditions of the beneficial uses being evaluated. Please provide detail on how sustainable management criteria were developed for GDEs and streamflow habitat, and how the above supporting documents were considered.*

Response: GSP Sections 2.1.4.12 and 2.2.4.7 were revised to provide more detail on the identification of GDE within the Basin. GSP Section 2.2.5 was revised to add significantly more surface water detail to the Basin water budget. GSP Section 3.3.4 was revised to better describe the improvement planned for the Basin's monitoring network. GSP Section 3.9 was revised to include more detail on the uncertain relationship between groundwater levels and streamflow. Finally, GSP Section 5.2 provides the schedule for the MGA's planned upgrades to the Basin's monitoring network.

*Comment 25: The relationship between the minimum threshold for chronic lowering of groundwater levels and potential significant and unreasonable impacts to GDEs and ecological beneficial uses of surface water is described on page 3-47, and is based on groundwater monitoring at a few wells on lower Soquel Creek. Please provide additional analysis to substantiate the potential impacts of applying the proposed minimum thresholds will not cause significant and unreasonable impacts to GDEs and ecological beneficial uses of ISW, or identify this as a data gap.*

Response: Section 3.3.4 of both the Draft GSP and GSP identify gaps in the Basin's monitoring network, many of them related to the interrelationship of groundwater, surface water and groundwater dependent ecosystems. GSP Sections 3.3.4 and 3.9 were both revised to better describe the uncertainties related to these data gaps. GSP Section 5.2 provides the MGA's schedule to fill the identified data gaps.

*Comment 26: In [Draft GSP] Section 3.4.2.5 (pp. 3-49 to 3-50), the potential effects of undesirable results on environmental beneficial users are not adequately described and quantified. Text on p 3-56 states that "increasing groundwater levels above current levels will generally improve already sustainable conditions for GDEs. Please expand the section to describe the potential effects of undesirable results on all beneficial uses and users of including environmental uses and users.*

Response: GSP Section 2.1.4.12 was revised to indicate that the only areas in the Basin where interconnected surface water was identified were in riparian areas. GSP Section 2.2.4.7 was revised to address other ecosystems that were assessed for the GSP and did not require additional groundwater management (ponds supported by interflow and the marine environment). Therefore, it was not appropriate to include discussion of GDEs under Chronic Lowering of Groundwater Levels. Please see GSP Section 3.9 for a detailed discussion of SMCs for GDEs.

*Comment 27: [Draft GSP] Section 3.4.2.6 (p. 3-50) states that there are no relevant local, state or federal standards for the chronic lowering of groundwater levels. Please include a reference to the appropriate section for minimum thresholds related to GDE's, and Coho and Steelhead streamflow habitat, and discuss the potential relationship between the proposed minimum threshold for chronic lowering of groundwater levels and these standards.*

Response: GSP Section 2.1.4.12 was revised to indicate that the only areas in the Basin where interconnected surface water was identified were in riparian areas. GSP Section 2.2.4.7 was revised to address other ecosystems that were assessed for the GSP and did not require additional groundwater management (ponds supported by interflow and the marine environment). Therefore, it was not appropriate to include discussion of GDEs under Chronic Lowering of Groundwater Levels. Please see GSP Section 3.9 for a detailed discussion of SMCs for related to interconnected surface water and groundwater dependent ecosystems (GDEs).

*Comment 28: Section 3.9.1.1 presents the results of an analysis to assess whether groundwater level monitoring can serve as suitable surrogate to assess depletion of interconnected surface water. The section states that the analysis is conducted outside the calibrated use of the model, adding additional uncertainty to the results. An additional consideration is that the only shallow groundwater monitoring data available are in lower Soquel Creek, but GDEs and ISWs are located throughout the Basin. Finally, although the analysis aims to provide a correlation between groundwater levels and streamflow discharge, not attempt to make a correlation between groundwater levels and ecosystem response has been undertaken. The data gaps associated with establishment of minimum thresholds for depletion of*

*ISW should be described and a plan provided to address them. To the extent data are available, please plot hydrologic data for locations with identified GDEs and instream flow requirements for coho and steelhead salmon. This is particularly important in areas identified in Section 3.9.1.3 (p. 3-91) where private domestic wells screened in shallow alluvial sediments are directly connected to surface water.*

Response: GSP Section 3.3.4 was revised to better describe the improvement planned for the Basin's monitoring network, much of it related to interconnected surface water. GSP Section 3.9 was revised to include more detail on the uncertain relationship between groundwater levels and streamflow. Finally, GSP Section 5.2 provides the schedule the MGA plan to fill the data gaps identified in the GSP. The MGA, its technical consultants, and its member agencies will study the data from the existing and expanded monitoring network to better understand and demonstrate the interrelationships between groundwater, surface water flow, and sensitive species within the Basin. The Sustainable Groundwater Management Act (SGMA) requires Groundwater Sustainability Agencies (GSA) to manage groundwater sustainably. Specifically, groundwater levels cannot decline below the levels present in the Basin when SGMA took effect on January 1, 2015 during California's historic 2012-2016 drought. The MGA has set sustainable management criteria for the Basin far above SGMA's minimum standards. However, nothing in SGMA requires GSAs to determine or provide for the instream flow requirements of sensitive species.

Comment 29: *In Section 3.9.2, the minimum threshold is established as the highest seasonal low groundwater level elevation in shallow groundwater monitoring wells during below- average rainfall years from the start of monitoring through 2015. While this threshold may deal with the uncertainty of establishing minimum thresholds where monitoring data are available, other GDEs throughout the basin lack the monitoring data for a reliable linkage between groundwater levels and ecosystem stress response. As such, the proposed minimum threshold is not proven to be correlated, and should not be assumed to be protective of GDE and ISW resources. Consideration should be given to establishing a minimum thresholds based on species or ecosystem responses as measured by biological monitoring or remote sensing, such as through the Steelhead monitoring program, by the GDE Pulse tool (Attachment D), and/or a similar approach. Section 3.9.2.1 should reference rooting depth information for riparian vegetation in GDEs to help support the minimum thresholds for shallow groundwater elevations.*

Response: Section 3.3.4 of the Draft GSP and GSP describe the data gaps identified within the Basin monitoring network and the MGA's plans to fill them. MGA member agencies also collect and evaluate the instream habitat of sensitive species through the Santa Cruz County Juvenile Steelhead and Stream Habitat (JSSH) Monitoring Program discussed in GSP Section 2.1.2.1. While the GSP will be re-evaluated every five years, there is currently no plan to directly link minimum thresholds to species or ecosystem response.

Comment 30: *The areas identified with potential GDEs [Draft GSP] Figure 2-9) are located throughout the Basin; however, the only monitoring wells suitable for assessing impacts to GDEs and ISWs are on the lower reach of Soquel Creek. In [Draft GSP] Section 3.3.4.1, on page 3-41 and [Draft GSP] Figure 3-9, eight locations are proposed for installation of additional shallow monitoring wells to assess groundwater interaction with ISWs and GDEs. Locations should be prioritized near high value or sensitive resources that are vulnerable to significant and unreasonable impacts, such as where GDEs include habitat for protected species and are proximal to areas of groundwater extraction. These determinations should be vetted with agency officials responsible for the protection of the habitat and species involved. Please discuss the results of a resource assessment or consultations with resource managers that demonstrates a sufficient number of wells is proposed to address data gaps near GDEs*

*and ISWs, and that they are being sited where they will provide the most benefit. Alternatively, please outline the process by which this will be accomplished. As discussed in our comments above, please address how the need to link and correlate groundwater level declines to biological responses, and significant and adverse impacts to GDEs and ISWs will be addressed at the locations where additional wells are installed.*

Response: Section 3.3.4 of the Draft GSP and GSP describe the data gaps identified within the Basin monitoring network and the MGA's plans to fill them. MGA member agencies also collect and evaluate the instream habitat of sensitive species through the Santa Cruz County Juvenile Steelhead and Stream Habitat (JSSH) Monitoring Program discussed in GSP Section 2.1.2.1. As discussed in GSP Section 3.3.4, MGA staff intend to co-locate stream monitoring gauges and shallow wells as much as possible given physical and land availability constraints. MGA member agency staff at the County of Santa Cruz have also discussed adding fish monitoring locations to the JSSH Monitoring Program once the details of shallow wells and stream gauges have been resolved. Section 3.3.4.1 highlights the intention of the MGA to use both the GDE Pulse website and the JSSH program to evaluate groundwater levels with respect to streamflow, climate, groundwater usage, and noted biological responses.

*Comment 31: Well sites near ISWs should be selected at varying distances from streams and completed as vertically-nested clusters to capture the lateral and vertical gradients between the pumped depths in the aquifer system and the shallow groundwater aquifers that are in communication with ISWs or GDEs. Ideally, co-locating stream gauges with clustered wells would enhance understanding about where ISWs exist in the basin and whether pumping is causing depletions of surface water or impacts on beneficial users of surface water and groundwater. There is a need to enhance monitoring of stream flow and vertical groundwater gradients by installing more stream gauges and clustered/nested wells near streams, rivers or wetlands. Addressing data gaps is typically iterative and it is not reasonable to expect it will be a one-time process. Please describe the process by which data gaps will be identified and addressed on an ongoing basis.*

Response: Please review GSP Sections 3.3.4 for the discussion of the assessment and improvement of the Basin monitoring network. Please also review the prior response to Comment 30 above.

*Comment 32: Draft GSP Section 5.1.1.4 Data Collection, Analysis, and Reporting indicates that data regarding GDEs is not currently included in the proposed Data Management System. Per the GSP Regulations (23 CCR §354.34 (a) and (b)), monitoring must address trends in groundwater and related surface conditions (emphasis added). You cannot manage what you do not measure. Please add a data collection, analysis and reporting category for GDEs and ISWs, and how it will be incorporated in the data management system to assess potential significant and unreasonable impacts to environmental beneficial uses and users.*

Response: Section 3.3.4 of the Draft GSP and GSP describe the data gaps identified within the Basin monitoring network and the MGA's plans to fill them. MGA member agencies also collect and evaluate the instream habitat of sensitive species through the Santa Cruz County Juvenile Steelhead and Stream Habitat (JSSH) Monitoring Program discussed in GSP Section 2.1.2.1. As discussed in GSP Section 3.3.4, MGA staff intend to co-locate stream monitoring gauges and shallow wells as much as possible given physical and land availability constraints. MGA member agency staff at the County of Santa Cruz have also discussed adding fish monitoring locations to the JSSH Monitoring Program once the details of shallow wells and stream gauges have been resolved. GSP Section 5.1.1.4.7

discusses the MGAs plans to develop its data management system. Generally speaking the MGA plans to leverage the existing data management system used by its member agencies as described.

*Comment 33: [Draft GSP] Section 5.1.1.4.6 Data Collection: Other (p. 5-6) This section states that additional data on fish and stream habitat will be developed; however, GDEs are not listed. Chapter 5 does not discuss using aerial imagery or remote sensing for GDE assessment, which is increasingly recognized as tool for efficient and objective direct monitoring of ecosystem health in GDEs and ISWs. Without establishing the appropriate linkages between groundwater level changes and GDE stress of vigor, groundwater level monitoring alone may be insufficient to assess whether the GSP is effectively preventing undesirable results. Please consider the potential use of remote sensing data and imagery as a monitoring tool, and expand it to monitoring surface indicators of ISW and GDE ecosystem health.*

Response: Thank you for the suggestion. These approaches are already in use or planned as discussed in GSP Sections 2.1.4.12, 2.2.4.6, 2.2.4.7, and 3.3.4.1.

*Comment 34: [Draft GSP] Section 5.3 Annual Reporting (p. 5-13) This section lists the procedural and substantive requirements for annual reporting. Please add reporting metrics and maps that include the status of GDEs, ISW, and fish habitat.*

Response: Thank you for the suggestion. The MGA and its technical consultants will consider this in future GSP updates as more data is developed.

*Comment 35: [Draft GSP] Section 4 Projects and Management Actions - The Basin includes many GDEs and ISWs which represent beneficial uses and users of groundwater, and include potentially sensitive resources and protected lands. Environmental resource protection needs should be considered in establishing project priorities. In addition, consistent with existing grant and funding guidelines for SGMA-related work, priority should be given to multi-benefit projects that can address water quantity as well as providing environmental benefits or benefits to disadvantaged communities. Please include a section on project selection criteria and include environmental benefits and multiple benefits as criteria for assessing project priorities.*

Response: Projects and management actions are measured against the sustainable management criteria identified for the Basin. SMCs have a direct relationship to Basin benefits. Please review GSP Section 3 for more detail on those benefits as discussed for each state identified sustainability indicator.

*Comment 36: Table 4-1 lists potential projects and the Measurable Objective that is expected to benefit. Only water supply benefits are listed, but maintenance or recovery of groundwater levels, or construction of recharge facilities, also will have environmental benefits in many cases. From the table, it is not possible to distinguish the full range of project benefits or how the projects will be prioritized. It would be advantageous to demonstrate multiple benefits from a funding and prioritization perspective.*

Response: Thank you for the suggestion. The MGA and its technical consultants will consider this in future GSP updates.

*Comment 37: [Draft GSP] Section 4 Table 4-2 Identified Potential Future Projects and Management Actions (Group 3) pp.4-3 to 4-4 For the future projects identified, please consider stating how ISWs and GDEs will benefit or be protected, or what other environmental benefits will accrue. If ISWs will not be*

*adequately protected by those listed, please include and describe additional management actions and projects targeted for protecting ISWs. Recharge ponds, reservoirs and facilities for managed storm water recharge can be designed to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. In some cases, such facilities have been incorporated into local HCPs, more fully recognizing the value of the habitat that they provide and the species they support. For projects that will be constructing recharge ponds, please consider identifying if there will be habitat value incorporated into the design and how the recharge ponds will be managed to benefit environmental users.*

Response: Thank you for the suggestion. Group 3 projects and management actions are not currently in development and it would be speculation to include the details requested at this time.

*Comment 38: [Draft GSP] Section 4 Table 4-2 Identified Potential Future Projects and Management Actions (Group 3) pp.4-3 to 4-4 Specific examples of how project descriptions may be refined to incorporate environmental benefits include the following: Group 3 Groundwater Pumping Curtailment and or Restrictions. This project is designed to address seawater intrusion. Please consider expanding the policy to curtail and or restrict groundwater extractions to include areas identified with GDEs, ISW, or fish habitat that might be impacted. For examples of case studies on how to incorporate environmental benefits into groundwater projects, please visit our website: <https://groundwaterresourcehub.org>*

Response: Thank you for the suggestion. Group 3 projects and management actions are not currently in development and it would be speculation to include the details requested at this time.

*Comment 39: [Draft GSP] Section 5.1.1.3 Management Coordination (p. 5-3) This section describes technical work to support the GSP; however, the theme of the description is that the focus is on water supply and seawater issues. Please expand the narrative to include GDEs, ISW, and fish habitat. For example under Section 5.1.1.4.4 Monitoring: Streamflow (p 6-6) there is acknowledgement that MGA member agencies use streamflow monitoring for fish habitat, but with the proposed new gauges there is no mention of using the data to support monitoring of GDEs, ISW, or fish habitat. Please incorporate these monitoring components where appropriate. Also, the (sic) there is no discussion of management actions that will be taken to assure SGMA compliance if monitoring data indicate that measurable objectives or interim milestones for GDEs or ISWs are not being achieved, or if data indicate that minimum thresholds will be violated. An adaptive management approach, where monitoring data are used to assess results and inform refinement of the management approach is typically specified. Please identify what management actions will be taken if monitoring data indicate that Measurable Objectives or Interim Milestones are not being achieved, or undesirable results are imminent.*

Response: Revisions to GSP Sections 2.1.4.12, 2.2.4.6, 2.2.4.7, 3.3.4 and 3.9 provide a detailed description of the MGAs plans to monitor and adaptively manage interconnected surface water and groundwater dependent ecosystems within the Basin. The MGA and its technical consultants will continue to develop its management strategies as more data becomes available.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



*Groundwater is a vital resource, together let's protect it.*

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January 27, 2020

Ms. Amanda Ingham, Central Coast Branch Chief  
North Central Coast Office  
United States Department of Commerce  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
West Coast Region 777 Sonoma Avenue, Room 325  
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**Re: MGA Response to Draft Groundwater Sustainability Plan (GSP) Comment Letter**

Dear Ms. Ingham:

Thank you for your comment letter on the Santa Cruz Mid-County Groundwater Basin Draft GSP, dated September 10, 2019. We appreciate your comments and your commitment to protecting environmental resources in California.

Under Santa Cruz Mid-County Groundwater Agency (MGA) Board direction, MGA staff and technical consultants made detailed revisions to the Basin's GSP to respond to your comments. These revisions improved the GSP by adding requested details where appropriate, refining the water budget especially in relation to surface water and groundwater dependent ecosystems, and providing further explanation of MGA future plans for the Basin's management.

*Comment 1: Insufficient correlation between groundwater levels and rate/volume of streamflow depletion. Further data is required throughout the MCB to establish localized relationships between streamflow depletion and the resulting instream habitat characteristics. NMFS recommends the draft GSP elaborate sufficiently in Section 5 as to when, where, and how this data will be collected during the first few years of GSP implementation, or at the very least, clearly commit to developing a detailed data collection plan with interested stakeholders at a later date.*

Response: GSP Section 3.3.4 discusses the monitoring data gaps and how the MGA plans to address those gaps. GSP Figure 3-10 shows the location of eight proposed shallow monitoring wells and five proposed stream gauges. This information was previously included in the Draft GSP. GSP Figure 3-10 was previously numbered Draft GSP Figure 3-9. GSP Table 3-11 was added to provide a summary of additional monitoring wells to fill groundwater level data gaps. GSP Section 5.2 was revised to provide greater detail on the timing to improve the Basin monitoring network. Many of the

monitoring network improvements the MGA plans for the future are to better understand groundwater surface water interactions.

*Comment 2: Limited Groundwater and Streamflow Gauging Network. No stream gauges currently exist outside of Mainstem Soquel. Draft GSP lacks a plan to expand coverage to important basins such as Branciforte Creek and Aptos Creek. The Draft GSP should better describe in Section 5 where future groundwater and surface water monitoring stations will be located, and ensure that an appropriate number and spatial distribution of gauges are employed to ensure streamflow depletion impacts are avoided.*

Response: GSP Section 3.3.4 discusses the monitoring data gaps and how the MGA plans to fill those gaps. GSP Figure 3-10 shows the location of eight proposed shallow monitoring wells and five proposed stream gauges. GSP Figure 3-10 was included in the Draft GSP but was numbered Draft GSP Figure 3-9. Two of the five stream gauges identified are proposed for the lower reaches of Aptos Creek where it is connected to groundwater. The stream gauge locations identified are both above and below Aptos Creek's confluence with Valencia Creek. No stream gauges are proposed for Branciforte Creek. As discussed in GSP Section 2.1.5.1.1, very little groundwater extraction occurs along Branciforte Creek. As further discussed in GSP Section 2.2.3.6.3 (previously Draft GSP Section 2.2.1.4.3), much of the Branciforte Creek stream channel flows directly over the underlying granitic basement rock, thus, there is little influence between the aquifer and the creek. For these reasons, further data collection for the purpose of groundwater management is unlikely to enhance streamflow on Branciforte Creek. GSP Section 5.2 was revised to provide greater detail on the timing to improve the Basin monitoring network.

*Comment 3: SGMA gives GSAs broad authority to manage groundwater within the entire alluvial aquifer as identified within CASGEM Bulletin 118. This includes both public pumping, such as the Soquel deep aquifer wells, as well as private wells within the Santa Cruz Mid-County Basin, of which there are many. Future groundwater modeling and streamflow depletion analysis should be performed for a range of locations that represent entire Santa Cruz Mid-County Basin.*

Response: GSP Section 2.1.4.12 Impacts of Groundwater Dependent Ecosystems includes GSP Figure 2-10 Percent Time Surface Water and Groundwater are Connected (Water Years 1985-2015). This figure, and the data that it is based on, provide support for the MGA's decision to adopt the policy recommendations from the GSP Advisory Committee and Stream Water Working Group to focus groundwater level monitoring in areas of highest groundwater extraction where streams are interconnected with groundwater. GSP Section 2.1.4.12 was revised to better describe the analysis to identify areas of interconnected groundwater and surface water.

*Comment 4: Assuming current lack of impacts in Mid-County Basin. The draft GSP inappropriately assumes the Mid-County Basin is currently avoiding streamflow depletion impacts on beneficial uses via statement such as these: Page 3-56 – "Increasing groundwater levels above current levels will generally improve already sustainable conditions for groundwater dependent ecosystems." Page 3-93 – "Since significant and unreasonable conditions have not occurred since at least 2001 when shallow groundwater level monitoring began...." Statements such as these are unsupported and inappropriate for multiple reasons. First, the draft GSP relies on a groundwater level proxy for streamflow depletion*

*that has no functional correlation to streamflow depletion rate/volume or impacts to groundwater dependent ecosystems. Second, a linkage between streamflow depletion and resulting instream habitat conditions has not been established. Also, nowhere within the draft GSP is there any mention of the protocol used, or the parties involved, in investigating or monitoring past streamflow depletion impacts throughout the Mid-County Basin. Finally, low streamflow, partially caused by groundwater pumping, has been identified as limiting steelhead rearing in several creeks within the basin, including Soquel Creek, Valencia Creek, Trout Creek and Mangel Gulch (Coastal Watershed Council 2003; County of Santa Cruz 2019). The fact that impact avoidance was not confirmed within Soquel Creek between 2002- 2015 brings into question the appropriateness of using groundwater elevations as a threshold for avoiding streamflow depletion impacts.*

Response: GSP Sections 3.5.2.5 and 3.9.2.1 were revised to respond to these comments. Revision include a better description of the methodology used to establish minimum thresholds and a discussion to indicate that the assessment of stream conditions is based on monitoring observations, not on model results. The GSP does not state that there is currently a lack of all impacts from groundwater pumping, but rather looks to prevent significant and unreasonable impacts from occurring or worsening, as required under SGMA. As discussed in the response to Comment 1, GSP Section 3.3.4 discusses the monitoring data gaps and how the MGA plans to fill those gaps. Many of the monitoring network improvements the MGA plans for the future are to better understand groundwater surface water interactions. These monitoring improvements will focus on areas of the Basin where groundwater and surface water are interconnected and where groundwater use is highest. GSP Section 5.2 was revised to provide greater detail on the timing to improve the Basin monitoring network.

Comment 5: *Issues regarding 1.4 cfs streamflow depletion estimate. The draft GSP estimates a surface water depletion value of 1.4 cfs [cubic feet per second] (Page 3-90) and first states that “the estimate of 1.4 cfs simulated over 2001-2015 is the minimum threshold for streamflow depletion.” Then the Draft GSP (Pages. 3-90 and 3-91) states that, “To reiterate, the uncertainty of this estimate and difficulty measuring streamflow depletion from pumping affirm the appropriateness of using a groundwater level proxy to prevent the undesirable result of increases in streamflow depletion above what occurred from 2001-2015.” This uncertainty issue should not be a reason to affirm that the use of groundwater level as a proxy is appropriate. This rationale does not address whether there may be considerable streamflow depletion caused by groundwater pumping affecting streamflow in the entire Basin. The simulated 1.4 cfs value is not a conservative value to be used as a minimum threshold since it erroneously implies that under this depletion in the past, there were no adverse impacts on beneficial uses of the surface water. Also, it seems that the 1.4 cfs is an average of monthly values between 2001 and 2015. Summer rearing juvenile fish do not experience streamflow depletion as a monthly or annual average value because monthly or yearly averages can mask important ecological processes that might occur at shorter (e.g., daily) time steps. Therefore, using the monthly estimate of 1.4 cfs as a minimum threshold that supports instream beneficial uses (e.g., maintain adequate instream habitat condition) is inappropriate. We suggest that [the MGA] further refine the groundwater/surface water model to estimate daily streamflow depletion values occurring at representative sites throughout the basin, and investigate the impact of that depletion during seasonally low baseflow periods (e.g., during September of a dry year). Finally, during the last technical meeting (on February 12, 2019) regarding the latest groundwater modeling results, the calibration results showed that the model was mostly underestimating*

*groundwater levels at the Main Street shallow monitoring well, and mostly overestimating low streamflow values at Soquel Creek at Soquel. Thus, the estimate of 1.4 cfs might be underestimated. More definitive conclusions should be provided after the model is refined and recalibrated.*

Response: GSP Section 3.9.1.1 was revised to respond to these comments. Please note: the model includes daily time step information that is not discussed in the GSP. Model time step information is found in GSP Appendix 2-F: Santa Cruz Mid-County Basin Model Integration and Calibration in section 7.2.2.1 Streamflow Calibration Results. This memo was available as Draft GSP Appendix A2-B when published in September 2019. We apologize for the delay in publication.

Comment 6: *As mentioned above, the calibration results showed that the model was mostly overestimating low streamflow values at Soquel Creek at Soquel; it was also noted the model is mostly underestimating low streamflow values at Corralitos Creek at Freedom. This might be one of the reasons why the results show more outflow to the ocean (overestimated values at Soquel Creek) and a lesser increase in outflows to the Pajaro Valley Subbasin of the Corralitos Basin (underestimated values at Corralitos Creek). Therefore, the water budget needs to be properly justified after the model is refined and recalibrated.*

Response: GSP Section 3.9.1.1 was revised to address this comment. GSP Section 2.2.5 *Water Budget* was revised to add more surface water detail to the Basin water budget. Please note: low flows are a small contribution to overall surface water budgets so estimates of outflows would be unlikely to substantially change even if low flows were better calibrated.

Comment 7: *The basin management objective for streamflow depletion is noted as, "Prevent depletion of surface water due to groundwater extraction, in interconnected streams supporting priority species, so that there is no more depletion than experienced since the start of shallow groundwater level monitoring through 2015." This objective seems to erroneously imply that managing streamflow depletion lower than the lowest rate occurring between 2002 through 2015 will avoid undesirable results and help achieve groundwater sustainability. As noted elsewhere in this letter, the draft GSP does not offer any evidence that streamflow depletion rates/volumes between 2002 and 2015 avoided causing significant and unreasonable adverse impacts on beneficial uses of the surface water. To the contrary, evidence suggests streamflow depletion caused by groundwater extraction did impact summer baseflow volume during this period (Coastal Watershed Council, 2003; Santa Cruz County Resource Conservation District, 2003; County of Santa Cruz, 2019). NMFS recommends the [MGA] revise their key basin management objectives to more closely align with SGMA directives (i.e., achieving sustainable groundwater management by avoiding the six undesirable results).*

Response: This comment misstates the Basin definition of undesirable results for depletion of interconnected surface water. GSP Section 3.9.1 states, "Significant and unreasonable depletion of surface water due to groundwater extraction, in interconnected streams supporting priority species, would be undesirable if there is more depletion than experienced since the start of shallow groundwater level monitoring through 2015." This statement is unchanged from the Draft GSP. GSP Section 1.2 Sustainability Goal states in pertinent part that the MGA intends to, "Manage the groundwater Basin to ensure beneficial uses and users have access to a safe and reliable groundwater supply that meets current and future Basin demand without causing undesirable

results... [including] Maintain or enhance groundwater levels where groundwater dependent ecosystems exist [and] Maintain or enhance groundwater contributions to streamflow....” The Sustainable Groundwater Management Act only requires GSAs to ensure groundwater conditions within their respective Basins get no worse than the levels present when the act took effect on January 1, 2015 during the 2012-2016 drought when groundwater levels in most of the state were at historic lows.

The MGA has set minimum thresholds to avoid undesirable results for the depletion of interconnected surface water that are significantly more ambitious than SGMA requires in order to protect and enhance habitat for sensitive species. GSP Section 3.9 Depletion of Interconnected Surface Water Sustainable Management Criteria explains in detail the MGA’s data limitations when developing the sustainable management criteria for surface water depletion. GSP Section 3.9 goes on to state, “...that late summer streamflow in the mainstem of Soquel Creek between its forks and the USGS streamflow gage is influenced by many other factors in addition to contributions by groundwater. Annual rainfall, flows from the upper Soquel Creek watershed outside of the Basin, temperature and evapotranspiration individually have a much greater measurable influence on streamflow than groundwater pumping.” GSP Section 3.3.4 Assessment and Improvement of Monitoring Network discusses the improvements the MGA intends to make to the monitoring network to better understand groundwater and surface water interactions. MGA believes that this additional data will improve management of groundwater to attain the Basin sustainability goal that will “Maintain or enhance groundwater levels where groundwater dependent ecosystems exist [and] Maintain or enhance groundwater contributions to streamflow....”

*Comment 8: Page 2-49 The Draft GSP states, “The County of Santa Cruz assessed and identified Groundwater Dependent Ecosystems (GDE) where interconnected surface and groundwater exist within the Basin. As a first step to identify GDEs, the surface water-groundwater model developed for the Basin was used to identify where surface water and groundwater are connected (Figure 2-9).” As mentioned above, the model calibration results showed that the model was mostly underestimating groundwater elevations, and mostly overestimating low streamflow values at Soquel Creek. Therefore, if the current model is applied to the rest of the basin, the model might mistakenly indicate a lack of interconnection in places where interconnection occurs.*

Response: GSP Section 2.1.4.12 Impacts on Groundwater Dependent Ecosystems was revised to better explain how interconnected surface and groundwater was identified within the Basin, which now states, “...where data were available MGA compared surface water and groundwater elevations to determine interconnections between surface water and groundwater. Where groundwater level data were unavailable, the surface water-groundwater model developed for the Basin is used to identify where surface water and groundwater are connected.” GSP Figure 2-10 shows how the data were used to identify the percentage of time surface water and groundwater are connected within the Basin for Water Years 1985-2015.

*Comment 9: Page 2-114 The Draft GSP states, “In gaining and losing streams, the change in gradient between surface water and groundwater is what determines the extent to which water is gained or lost from the streams. In some cases, even relatively small changes in gradient can convert a gaining stream to a losing stream and vice versa. Some losing streams are defined as “disconnected” meaning the*

*groundwater is so far below the surface water that the surface water is essentially in free fall to the aquifer. In these cases, although water is typically percolating out of the stream down to the underlying groundwater, the rate of loss is not affected by the elevation of the groundwater.” Brunner et al. (2009) have shown that this type of criteria neglects many of the important hydrogeological variables and does not clearly define where the depth to groundwater is measured. For example, by using a numerical model, Brunner et al. (2009) showed that for a given aquifer thickness and stream width, the depth to groundwater where the system disconnects is approximately proportional to both the stream depth and the hydraulic conductivity of the streambed sediments and inversely proportional to both the thickness of these sediments and the hydraulic conductivity of the aquifer. Moreover, the GSP also states: “although water is typically percolating out of the stream down to the underlying groundwater, the rate of loss is not affected by the elevation of the groundwater.” This statement only takes into account a particular location along the stream length. Further lowering the groundwater table by groundwater pumping in an already disconnected system will not significantly increase the infiltration rate where the stream is disconnected, but is expected to increase the length of stream over which disconnection occurs (Brunner et al. 2009). Therefore, SCMCGSA should perform a more robust analysis to classify a streamflow reach as connected or disconnected. Increased groundwater pumping can extend the length over which a river is disconnected and therefore changes in the aquifer are likely to affect streamflow.*

Response: Draft GSP Section 2.2.2.6 Identification of Interconnected Surface Water Systems was revised for the GSP to address these comments and renumbered to GSP Section 2.2.4.6, which now reads, “...Interconnected surface water is hydraulically connected to by a continuous saturated zone to the underlying aquifer. Interconnected streams can be both gaining and losing streams where the gradient between surface water and groundwater is what determines the extent to which water is gained or lost from the streams. In some cases, even relatively small changes in gradient can convert a gaining stream to a losing stream and vice versa. Some losing streams are defined as “disconnected” meaning the groundwater is so far below the surface water that recharge occurs through an unsaturated zone to the water table. In these cases, although water is typically percolating out of the stream down to the underlying groundwater, the rate of loss is not affected by the elevation of the groundwater.”

Comment 10: Page 2-115: *The Draft GSP states: “Where streams are disconnected, groundwater levels are well below the bottom of the stream, thus, even substantial groundwater level increases does not impact streamflow.” Just because a stream is disconnected at one location does not mean that groundwater pumping will not affect the surface water body. Increased groundwater pumping can extend the length over which a river is disconnected and therefore changes in the aquifer are likely to affect streamflow. (Brunner et al, 2011; Cook et al., 2010)*

Response: GSP Section 2.2.4.6 Identification of Interconnected Surface Water Systems (previously Draft GSP Section 2.2.2.6) was revised to refer to the model calibration report (GSP Appendix 2-F) and how the model was used to simulate the percent of time surface water was connected to groundwater between Water Year 1985 and 2015. This information is generally supported by observations of groundwater levels where the MGA currently has monitoring wells. As discussed in GSP Section 3.4.4 Assessment and Improvement of Monitoring Network and GSP Section 5.2 Schedule for Implementation, the MGA plans to collect additional data to refine the model to

improve understanding of the location and nature of the groundwater-surface water connections on priority streams.

*Comment 11: Page 2-116 Third and fourth bullet points from the top suggests Soquel Creek surface flow is comprised largely of upstream surface water and little groundwater inflow (<0.5 cfs), and alludes to Figure 2-41 and 2-42 for support. In fact, Figure 2-41 instead shows groundwater accretion as the dominant component of dry season streamflow in Soquel Creek, especially during drought periods. In addition to clarifying this, the Draft GSP should also address the apparent discrepancy between the simulated groundwater inflow of less than 0.5cfs on p 2-116 versus the simulated streamflow depletion rate of 1.4 cfs shown on p. 3-90. Also, as mentioned above, based on model calibration results, both values might be underestimated.*

Response: This comment misinterprets the information provided in Draft GSP Figures 2-41 and 2-42. Draft GSP Section 2.2.2.6 was revised and renumbered to GSP Section 2.2.4.6 and the referenced figures were revised and renumbered Figures 2-44 and 2-45 respectively. The prior figures used a line representing total contributions to streamflow, two labeled bars for “Groundwater Contribution” “Surface/Near-Surface Contribution” and discussion in the text to indicate additional contributions to streamflow from sources outside the Basin. The revised figures removed the line representing total contribution to streamflow. Instead the new figures provide four labeled bars showing streamflow contributions from “Groundwater Contribution” “Surface/Near-Surface Contribution” “Flow from Upstream Segment within the Basin” and “Flow from Other Basins.” Text updates were also made to further clarify the use of the model and existing groundwater and surface water data to analyze streamflow within the Basin. Please note: a sensitivity analysis was conducted as part of the model analysis of streamflow. Simulated groundwater inflow of <.5 cubic feet per second is based on historical Basin conditions. The simulated streamflow depletion rate of 1.4 cfs is an estimate of how much additional simulated groundwater inflow occurs if all groundwater pumping in the Basin is “turned off” for purposes of analysis.

*Comment 12: Page. 2-121 - Figure 1 (left panel) below [from Surface Water Working Group materials] shows Figure 2-45 from the draft GSP. One of the hydrographs from this figure corresponds to monitoring well SC-18A (screened in Purisima AA- unit). During a Surface Water Working Group meeting on January 30, 2019, there was a presentation file...[that] showed a different hydrograph for monitoring well SC-1 8A (Figure 1, right panel). In fact, in a follow-up email after that meeting, a member of the Surface Water Working Group noted that there was a considerable sharp decrease in SC-18A during spring/summer of 2015 (red box in Figure 1, right panel), and asked if it corresponds to a pumping interference or an historic low in groundwater levels for that well. There has been no reply to this question. Figure 1 (left panel) shows the hydrograph for monitoring well SC-1 8A that is presented in the draft GSP, but without the sharp decrease during spring/summer of 2015. We suggest [the MGA] address the discrepancy between the two figures.*

Response: The figures presented to the Surface Water Working Group and as Draft GSP Figure 2-45 were confusing because data was included in the Surface Water Working Group figure that was not labeled in the legend and was not included in the Draft GSP figure. MGA’s technical consultants revised and renumbered this figure to GSP Figure 2-48, included additional available monitoring data, and corrected the legend to more accurately indicate the source of the data provided. The text

of GSP Section 2.2.4.6 that describes Figure 2-48 draws the same conclusions and was not revised in response to this comment.

*Comment 13: Page 2-124 - The Surface Water Working Group agreed to "Linking the basic water needs of the species and habitats of concern, relative to groundwater elevations, is an appropriate way to move forward with the assessment and development of sustainable management criteria to benefit those species." Within Section 5, the draft GSP should expand on how and where the linkages between water needs of species and habitats of concern relative to groundwater elevations will be developed and utilized in achieving sustainability.*

Response: The Surface Water Working Group was a panel of experts assembled to discuss surface water and groundwater interactions and to make recommendations to the GSP Advisory Committee on identification and management of resources related to surface water within the Basin. The Surface Water Working Group was not in a position of authority to make policy for the MGA. The Sustainable Groundwater Management Act only requires GSAs to ensure groundwater conditions within their respective Basins get no worse than the levels present when the act took effect on January 1, 2015 during the 2012-2016 drought when groundwater levels in most of the state were at historic lows. As discussed in GSP Section 2.2.3.1 [Hydrogeologic Conceptual Model] Overview, MGA's member agencies had managed the Basin to prevent further seawater intrusion for decades and groundwater levels have made a substantial recovery since their low point in the mid-1980s to mid-1990s. The MGA has set minimum thresholds that are significantly more ambitious than SGMA requires to protect and enhance habitat for sensitive species. However, there is no SGMA requirement for GSAs to take the steps recommended in this comment.

*Comment 14: Page 2-131 - The draft GSP states that "The model calibration memo (Appendix A2-B) discusses all model assumptions and uncertainty". However, there is not an Appendix A2-B and it is indicated that this appendix will be included in the Final GSP. Our comments regarding the model calibration are based on the last technical meeting on February 12, 2019 where we expressed some concerns regarding optimal grid size (800 feet) for the model that can impact modeling results for low flows. We request the opportunity to participate in future modeling efforts in support of the GSP.*

Response: Draft GSP Appendix A2-B was not complete when the draft GSP was initially released for public review. The memo was completed in September 2019 and was posted to the MGA website and announced via the MGA newsletter before the end of the comment period. We apologize for the delay in its publication. The Santa Cruz Mid-County Basin Model Integration and Calibration Memo was renumbered to GSP Appendix 2-F. The MGA intends to improve the monitoring network as described in GSP Section 3.3.4.1 to collect more data in support of improved understanding of interconnected surface waters. GSP Section 3.3.4.3 also describes the MGA's plans for additional monitoring of groundwater extractions near sensitive areas within the Basin. The MGA will continue to use the model with these and other data improvements throughout the SGMA planning and implementation horizon.

*Comment 15: Page 3-39 - The draft GSP states that "Groundwater elevations as a proxy for surface water depletions are needed as a measure of sustainability because no direct measurable change in*

*stream flow from deep groundwater extraction has been detected in over 18 years of monitoring shallow groundwater levels adjacent to lower Soquel Creek." This statement is very general and thus requires proper explanation and justification. The draft GSP is not taking into consideration shallow aquifer extractions that directly impact interconnected surface water in the lower Soquel Creek. Additionally, the statement is not analyzing extraction from neighboring wells (outside of Soquel municipal well field) that also can interact with the deep and shallow groundwater levels adjacent to lower Soquel Creek and impact surface water depletion. Moreover, the draft GSP states the following on page 3-41: "To more fully characterize interconnections between surface water and groundwater, additional monitoring of shallow groundwater levels is needed in the upper reaches of Soquel Creek and on other creeks that both support priority species and have connection to groundwater." Therefore, the general conclusion regarding an analysis on just one reach of Soquel Creek might not be representative of the entire basin. More definitive conclusions should be provided after an analysis is performed for a range of locations that represent the entire Santa Cruz Mid-County Basin.*

Response: The MGA agrees and is transparent about the need for more data to adequately analyze groundwater pumping impacts within the Basin. GSP Sections 3.3.4.1 and 3.9.1.1 were revised to provide a more detailed description of the data gaps alluded to in the quoted text, how the MGA plans to fill those gaps, and how the MGA will evaluate that data once it becomes available.

*Comment 16: Page 3-42 - The draft GSP states "As part of GSP implementation, the MGA will initiate a new well metering program on new private non-de minimis wells...". SGMA gives GSAs broad power to require data reporting from all "non-de minimis" groundwater extractors. Restricting data collection to only new extractors will hamstring future GSP effectiveness in achieving sustainability. (Emphasis added.)*

Response: The Draft GSP text quoted above includes an MGA error in describing its plans for the new non de-minimis well monitoring program. GSP Section 3.3.4.3 was revised to read, "As part of GSP implementation, the MGA will initiate a new well metering program on all private non-de minimis wells that meet the following criteria: Pump more than two (2) acre-feet per year within priority management zones to be defined by the County of Santa Cruz. These will be related to seawater intrusion and depletion of interconnected surface water. Wells outside of priority management zones that pump more than 5 acre-feet per year. Implementation of a planned metering program is described in more detail in Section 5 on Plan Implementation." (Emphasis added.) Thank you for pointing out the error.

*Comment 17: Page 3-53 - The Draft GSP states low groundwater levels may "...Cause more surface water depletion in interconnected streams that support priority species than has occurred over the past 18 years." This passage again seems to be reasoning that streamflow depletion rates during the past have avoided impacts to beneficial users of surface water, which is not supported by the analysis presented in the draft GSP.*

Response: As discussed in prior responses GSP Sections 3.3.4.1 and 3.9.1.1 were revised to address these and other similar comments regarding streamflow and the need for more data to refine our current understanding of groundwater and surface water interactions within the Basin. Please note: The Draft GSP did not claim that there were no impacts to beneficial users of surface water, but

based on stream condition data that is available, these impacts did not meet the GSP definition of significant and unreasonable. GSP Section 3.9.1 states, "Significant and unreasonable depletion of surface water due to groundwater extraction, in interconnected streams supporting priority species, would be undesirable if there is more depletion than experienced since the start of shallow groundwater level monitoring through 2015."

*Comment 18: Page 3-91 - For the record, although NMFS was part of the Surface Water Working Group, we did not support the "move towards managing shallow groundwater so that interconnected streams have gaining flow from groundwater and are not losing flow to groundwater." Streamflow depletion can result from groundwater pumping that either directly captures streamflow, or captures groundwater that would later augment streamflow (Barlow and Leake 2012). It is inappropriate to assume significant and unreasonable adverse impacts on surface water beneficial uses can be avoided by simply ensuring that groundwater levels remain above the stream elevation (i.e., a gaining reach) because whatever groundwater accretion remains may not necessarily support instream beneficial uses (e.g., maintain adequate instream habitat condition).*

Response: In response to this comment, GSP Section 3.9.1.2 was revised to provide more information about the use of MGA member agencies' stream monitoring data on fish abundance and habitat conditions within the Basin. Where feasible, these observations will be compared to groundwater levels and streamflow to attempt to establish a better understanding of the relationships between this information.

*Comment 19: Page 3-92 - The draft GSP states the following: "From well permit records it is known there are some private domestic wells screened in shallow alluvial sediments which are directly connected to surface water. These wells may have a larger impact on shallow groundwater levels than municipal pumping from the deeper Purisima aquifers." Whether these private domestic wells were factored into the analysis is unclear. If not, why were these excluded?*

Response: GSP Section 3.9.1.3 was revised to include additional information in response to this comment which now states, "A sensitivity run documented in the model calibration report in Appendix 2-F assumes that non-municipal pumping occurs in the stream alluvium as opposed to the underlying aquifer unit and shows there would be impacts on shallow groundwater levels of pumping the shallow aquifer as opposed to the deeper aquifer."

*Comment 20: Page 3-95 - Regarding Section 3.9.2.6, we are unaware of any instance where NMFS called for "restoring unimpaired stream flows during low flow conditions and during other critical life stages."*

Response: GSP Section 3.9.2.6 was revised to strike the quoted text.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



*Groundwater is a vital resource, together let's protect it.*

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January 27, 2020

Mr. Gregg Erickson, Regional Manager Bay Delta Region  
California Department of Fish and Wildlife  
Bay Delta Region 2825 Cordelia Road, Suite 100  
Fairfield, CA 94534

**Re: MGA Response to Comment Letter dated September 12, 2019**

Dear Mr. Erickson:

Thank you for your comment letter on the Santa Cruz Mid-County Groundwater Basin Draft GSP, dated September 12, 2019. We appreciate your comments and your commitment to protecting environmental resources in California.

Under Santa Cruz Mid-County Groundwater Agency (MGA) Board direction, MGA staff and technical consultants made detailed revisions to the Basin's GSP to respond to your comments. These revisions improved the GSP by adding requested details where appropriate to the plan and planning area, refining the water budget especially in relation to surface water and groundwater dependent ecosystems, and providing further explanation of MGA plans for the Basin's future.

*Comment #1 - Section 2.1.1.3.1 Federal or State Lands within the Basin, page 2.14 through 2-15 - In the Jurisdictional Boundaries map (figure 2-3), the [Draft] GSP identifies the Santa Cruz Long-Toed Salamander Ecological Reserve. However, the [Draft] GSP does not include a narrative description of the property under 'State Lands,' nor does it identify CDFW management of the reserve. a. Issue: Description of Santa Cruz Long-Toed Salamander Ecological Reserve is excluded from the [Draft] GSP sub-section 'State Lands'. b. Recommendation: Include a description of the Santa Cruz Long-Toed Salamander Ecological Reserve and note that CDFW manages the property.*

Response: GSP Section 2.1.1.3.1 was revised to include the detailed information provided regarding California Department of Fish and Wildlife's (CDFW) management of the Long-toed Salamander Ecological Reserve in the eastern portion of the Basin.

*Comment #2 - Section 2.1.4.12 Impacts on Groundwater Dependent Ecosystems, page 2-49 through 2-51 - CDFW appreciates that the GSA took the time and effort to develop the Surface Water Working Group and collaborate with federal and state resource agencies to develop a list of groundwater dependent ecosystems and priorities. CDFW values the consideration of priority species' groundwater needs in the development of minimum thresholds and the selection of Representative Monitoring Points.*

Response: The MGA thanks CDFW for participating in the GSP planning process through the GSP Advisory Committee sponsored Surface Water Working Group. We appreciate the input we received. Revisions were made to GSP Sections 2.2.4.6 *Identification of Interconnected Surface Water Systems*, 2.2.4.7 *Identification of Groundwater-Dependent Ecosystems*, and 2.2.5 *Water Budget* to provide more details on the process that the MGA took to identify and develop GSP sustainable management criteria to protect groundwater dependent ecosystems.

Comment #3 - Section 2.1.5.1 Description of Beneficial Uses and Beneficial Users of the Basin, page 2-54 - *The GSP identifies that the Mid-County Groundwater Basin contains creeks, streams, ponds, and marshes which are supplied by groundwater and that there are unique plants and animals that are supported by groundwater. However, the GSP does not provide specific information on whether GDEs are environmental beneficial uses and users of groundwater, nor does the GSP identify specific species that are groundwater dependent, as specified by Title 23 CCR section 354.1 0(a). a. Issue: The GSP does not include a description of GDEs and how they depend on groundwater and constitute as beneficial users. b. Recommendation: GDEs should be listed as beneficial users of groundwater and the GSP should include detailed descriptions on how GDEs depend on groundwater and provide a list of specific species that are groundwater dependent. For example, include a description on how specific riparian plant species rely on groundwater base flows to survive, how GDEs create habitat for species listed under the California Endangered Species (sic) Act or Federal Endangered Species Act, etc.*

Response: GSP Section 2.1.5 was revised to include groundwater dependent ecosystems (GDEs) as beneficial users of groundwater.

Comment #4 - Section 2.2.3.3.4 Surface Water Outflows, page 2-134 - *The water budget does not incorporate surface water diversions into the model due to a lack of records and difficulty of quantification. The exclusion of surface water diversions in the water budget does not provide an accurate estimate of the "total surface water entering and leaving a basin..." as specified by Title 23 CCR section 354.1 8(b)(1 ). This exclusion of surface water diversions may lead to overestimated streamflow. a. Issue: Surface water diversions are not incorporated into the water budget. b. Recommendation: Incorporate surface water diversion estimates into the basin water budget (e.g., derive estimated quantities from annual statements of water use, land-use based estimates including residential uses, etc.).*

Response: GSP Section 2.2.5 *Water Budget* was revised to include more detail on the surface water budget within the Basin.

Comment #5 - Section 3.9. 1.1 Groundwater Elevations as a Proxy for Depletion of Interconnected Surface Water Minimum Thresholds, page 3-90 through 3-91 - *The [Draft] GSP identifies that the GSA will use groundwater elevation as a proxy for the depletion of interconnected surface water. But, in order for the GSA to use groundwater elevations as a proxy for depletion of interconnected surface water, the GSP should identify a significant correlation between groundwater elevations and interconnected surface water depletions as required by Title 23 CCR section 354.36(b)(1 ). The [Draft] GSP currently attempts to correlate groundwater elevations with streamflow by modeling results; however, a specific rate or volume of surface water depletions caused by groundwater should be developed to correlate*

groundwater levels with streamflow depletions. If a significant correlation is not determined, groundwater elevations used as a proxy for surface water depletions may misinform groundwater management activities and poorly predict instream habitat conditions for fish and wildlife species. The current proposed approach to maintain shallow groundwater gradients at current historic levels may serve as an interim management approach, but should be revisited to address the relationship between surface water - groundwater connectivity. a. Issue: The GSP fails to identify a significant correlation between groundwater elevations and interconnected surface water depletions. b. Recommendation: The GSP should either: 1) specify how groundwater elevations are significantly correlated to surface water depletions; or 2) specify monitoring actions that will be taken to identify the location, quantity, and timing of surface water depletions caused by groundwater use, per Title 23 CCR Section 354.28(c)(6)(A), to better inform minimum thresholds for depletions of interconnected surface water'. The monitoring plan should specify dates for completion of each monitoring task and should include a commitment to periodically re-evaluate groundwater usage based on the data collected.

Response: GSP Section 3.9.1.1 *Groundwater Elevations as a Proxy for Depletion of Interconnected Surface Water Minimum Thresholds* was revised to better describe the complexities of showing a correlation between groundwater elevations and streamflow. GSP Section 3.3.4.1 *Groundwater Level Monitoring Data Gaps* addresses this issue by specifying the monitoring actions needed to better correlate groundwater and surface water interactions in the Basin. This correlation will need to be developed over time with the collection and interpretation of more data. GSP Section 5 was revised to specify the schedule planned to implement this additional data collection effort with installation of shallow wells and stream gauges.

Comment #6 - Section 3.9.2.5 Effects of Minimum Thresholds on Beneficial Users and Land Uses, page 3-95 - CDFW greatly appreciates that the Santa Cruz Mid-County GSP seeks to benefit protect (sic) species and GDEs in streams connected to groundwater.

Response: The MGA thanks CDFW for participating in the GSP planning process and for the input provided to set minimum thresholds that may aide in protecting sensitive species within the Basin. GSP Sections 3.3.4.1 and 3.9.1.1 were revised to better describe the uncertainties related to the data supporting the current minimum thresholds, the MGA's plans to collect more data, and that the MGA may choose to revise the minimum threshold in the future, still with the goal of protecting sensitive species within the Basin. If better data in the future lead to recommendations for a change in the minimum threshold in the future, the MGA would follow the SGMA requirements to amend the GSP in an open and transparent public process.

Comment #7 - 5.1.1.4 Data Collection, Analysis, and Reporting, page 5-4 through 5-7 - The GSP has identified the locations of current streamflow gauges (e.g., Soquel Creek) and groundwater monitoring wells within the basin through descriptions and figures. However, it is unclear whether the locations of the new streamflow gauges and groundwater monitoring wells will expand into areas where there is a lack of streamflow gauges and monitoring wells or if they will be located within existing monitored areas. a. Issue: The GSP fails to identify the locations or new streamflow gauges and groundwater monitoring wells. b. Recommendation: The GSP should include a detailed description and a map that identifies where the new stream gauges will be installed. CDFW also recommends installing new

*streamflow gauges and groundwater monitoring wells at other interconnected streams (e.g., Branciforte Creek, Arana Gulch) located throughout the groundwater basin.*

Response: GSP Section 3.3.4 discusses the monitoring data gaps and how the MGA plans to fill those gaps. GSP Figure 3-10 shows the location of eight proposed shallow monitoring wells and five proposed stream gauges. This information was previously included in the Draft GSP [Figure 3-10 was previously Draft GSP Figure 3-9]. GSP Table 3-11 was added to provide a summary of additional monitoring wells to fill groundwater level data gaps. GSP Section 5.2 was revised to provide greater detail on the timing to improve the Basin monitoring network.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



*Groundwater is a vital resource, together let's protect it.*

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January 27, 2020

To: Audubon California;  
Clean Water Action/Clean Water Fund;  
Local Government Commission;  
The Nature Conservancy;  
Union of Concerned Scientists

**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comments**

Dear Ms. Arthur, Ms. Clary, Ms. Dolan, Ms. Matsumoto, and Mr. Ortiz-Partida:

Thank you for your comment letter on the Santa Cruz Mid-County Groundwater Basin Draft GSP, dated September 19, 2019 and delivered through the SGMA Portal. We appreciate your comments, your organizational commitment to protecting environmental resources, and your advocacy for under-represented individuals and communities in California.

Under MGA Board direction, MGA staff and technical consultants made detailed revisions to the Basin's GSP to respond to your comments. These revisions improved the GSP by adding requested details where appropriate to the plan and planning area, refining the water budget especially in relation to surface water and groundwater dependent ecosystems, and providing further explanation of MGA plans for the Basin's future.

*Identification of Beneficial Users - Comment 1: Based on our review of the draft GSP, it is not clear what levels of Census data were used to identify DACs within the Plan area (i.e., Census tracts, block groups, and/or places).*

Response: Revisions were made to GSP Section 2.1.5.1.1 to indicate that the California Department of Water Resources mapping tool was used to identify disadvantaged communities using tracts, blocks and places census data. The GSP also includes new *Figure 2-11 Location of Beneficial Users in the Santa Cruz Mid-County Basin*. This new figure includes the location of disadvantaged communities, small water systems, vegetation commonly associated with groundwater, wetlands commonly associated with groundwater, and special status species as well as other information to orient the viewer.

*Identification of Beneficial Users - Comment 2: It also does not appear that that PHGs or Regional Water Quality Control Plan WQOs, were considered in the assessment of groundwater conditions.*

Response: MGA staff and technical consultants reviewed water quality objectives (WQO) and found none were specific to the Basin. All thresholds set are at the general WQO for Central Coast. Although we did not specify these standards, the Basin GSP is in compliance with them or is more stringent. No revisions were made to the GSP in response to this comment. We will consider including this information in future updates to the plan.

*Identification of Beneficial Users - Comment 3: The following beneficial uses and users of groundwater in the Basin should be included in the GSP: Protected Lands, including preserves, refuges, conservation areas, recreational areas and other protected lands; and Public Trust Uses, including wildlife, aquatic habitat, fisheries, recreation and navigation.*

Response: Revisions were made to GSP Section 2.1.5 as applicable to the resources present within the Basin. Not all resources mentioned in the comment are found within the Basin, and thus were eliminated from consideration if not present.

*Communications Plan – Comment 1: A SCEP [Stakeholder Communication and Engagement Plan] is included in the Appendix of the GSP, but it is not clear when the SCEP was developed and/or whether it was made publicly available at that time.*

Response: GSP Section 2.1.5.3 was revised to include the following language, “MGA’s Communication and Engagement Plan was approved by the MGA Board at its September 21, 2017 meeting and posted to the MGA website shortly thereafter.”

*Communications Plan – Comment 2: Ongoing stakeholder engagement and inclusion throughout the GSP implementation process will be crucial to ensuring that the needs of the most vulnerable beneficial users in the basin are met.*

Response: The MGA agrees that ongoing stakeholder outreach is important. Please refer to GSP Section 2.1.5 and Appendix 2-A for details on the MGA’s past and future plans for public outreach.

*Communications Plan – Comment 3: The GSP notes that the advisory committee included an environmental representative, a private well representative, and small water system management representative, but does not indicate what specific organization or interest these members represented. For better transparency, we recommend that each of the advisory members and their organization/interests be identified in the GSP so that the public may make an assessment as to how well DACs, GDEs, and other BUs were represented in the process.*

Response: GSP Sections 2.1.5.1.2 and 2.1.5.2.2 were revised to include more information on GSP Advisory Committee composition and the Committee’s role in developing GSP policy recommendations. Members were chosen for the qualifications and interest in service rather than the organizations that they may be said to represent. Additional information about the GSP Advisory Nominating Committee recommendations and the public members of the GSP Advisory Committee can be found [here](#).

*Maps Related to Key Beneficial Uses – Comment 1: Providing maps of the monitoring network overlaid with location of DACs, GDEs, and any other sensitive beneficial users will allow the reader to evaluate the adequacy of the network to monitor conditions near these beneficial users.*

Response: The GSP was revised to include new Figure 2-11 *Locations of Beneficial Users in the Santa Cruz Mid-County Basin*. This figure identifies disadvantaged communities, groundwater dependent ecosystems, and other sensitive beneficial users within the Basin. This Figure can be compared to the various monitoring network maps found in GSP Section 3. Compiling all of the monitoring information and sensitive beneficial user information in one map made the information unreadable. The MGA may consider additional approaches to address this comment in future plan updates.

Maps Related to Key Beneficial Uses – Comment 2: *Figure 2-5 combines information for domestic wells and municipal supply wells in one figure; the information are presented in such a way that the reader cannot readily discern the location/density of domestic wells as distinguished from public supply wells. It is recommended that this information be divided into two separate figures, for full transparency of the data.*

Response: Draft GSP Figure 2-5 *Private Well Concentration per Square Mile* was revised to GSP Figure 2-6 *Well Density per Square Mile* to more closely match the intent of DWR requirements for the well density map. This included removing individual well locations to make the map more readable. Many figures in the Draft GSP and GSP include Basin production well data. GSP Figures with private and/or municipal well data are numbered 2-11, 2-39, 2-46, 3-1, 3-2, 3-4, 3-6 and 3-10. GSP Figure 3-6 *Reduction of Groundwater in Storage Representative Monitoring Network* is particularly useful as it includes private well locations, municipal production well locations, and information about aquifer depth where municipal wells are screened.

Maps Related to Key Beneficial Uses – Comment 3: *Provide information regarding the depths of domestic wells so that the public may be able to assess potential impacts of the proposed MOs/MTs on domestic wells.*

Response: There are numerous private production wells in the Santa Cruz Mid-County Basin. Most are relatively shallow and do not obtain water from the deeper aquifer layers used for municipal water production. GSP Section 3.3.3.1 *Chronic Lowering of Groundwater Level Representative Monitoring Points* discusses the rationale for selecting these representative monitoring wells. MGA technical consultants identified private well depths in these areas to provide the information necessary for the GSP Advisory Committee to recommend sustainable management criteria for chronic lowering of groundwater levels discussed in GSP Section 3.4 *Chronic Lowering of Groundwater Levels Sustainable Management Criteria*. See especially GSP Section 3.4.2 and 3.4.3, for the figures, tables, and detailed explanation of the complex analysis used to assess groundwater sustainability for private pumpers in the Basin. While changes were made to the GSP sections referenced above, no additional private well depths were provided in response to this comment.

Maps Related to Key Beneficial Uses – Comment 4: *If applicable, Water Board Regulated monitoring sites and Department of Pesticide Regulation (DPR) monitoring wells should be included and shown as part of the existing monitoring networks.*

Response: Water Board Regulated monitoring sites and Department of Pesticide Regulation (DPR) monitoring wells are not found within the Basin. No changes were made to the plan in response to this comment.

*Maps Related to Key Beneficial Uses – Comment 5: It is highly advised that a more substantial justification for focusing GDE identification efforts on riparian zones alone is included, since other GDEs may exist in areas of shallow groundwater away from streams.*

Response: Revisions were made to GSP Section 2.1.4.12 to provide a more detailed description regarding the MGA process for identifying GDE within the Basin.

*Maps Related to Key Beneficial Uses – Comment 6: We recommend that additional details regarding the “other ecosystems” discussed on pages 2-116 and 2-122 and their dependence on “interflow” should be included.*

Response: Revisions were made to GSP Section 2.2.4.7 to describe the consideration of other ecosystems (salamander ponds and marine ecosystems) within the Basin.

*Maps Related to Key Beneficial Uses – Comment 7: We recommend referring to the TNC guidance document for best practices in using groundwater data to verify whether NCCAGs are GDEs. Temporal and spatial data that were used to identify GDE should be provided and data gaps should be identified. Depth to groundwater contour maps are recommended to be used to verify whether a connection to groundwater exists for polygons in the NC Dataset, instead of relying on inferences based on the presence of surface water features in the Basin. It is also highly advised that seasonal and interannual fluctuations in the groundwater regime are taken into consideration in the identification of GDEs.*

Response: The Nature Conservancy guidance documents and other available resources were used to identify GDE within the Basin. GSP Sections 2.1.4.12 and 2.2.4.7 were revised to provide more detail on the identification of GDE within the Basin. GSP Section 2.1.4.12 includes Figure 2-10 Percentage of Time Surface Water and Groundwater are Connected (1985-2015). GSP Section 2.2.4.7 includes additional figures and tables to better describe the criteria and species evaluated by the GSP Advisory Committee and the Surface Water Working Group. These two groups helped to develop the policy recommendations upon which the GSP is based. GSP Section 2.2.5 was also revised to add significantly more surface water detail to the Basin water budget.

*Maps Related to Key Beneficial Uses – Comment 8: The last bullet on page 2-124 states that modeling and management should focus on areas of highest groundwater extraction where streams are interconnected with groundwater. The location of these areas should be identified.*

Response: The Draft GSP includes Figure 2-43 *Areas of Concentrated Groundwater Pumping along Soquel Creek* found on page 2-119 which provides the requested information. This figure was renumbered to GSP Figure 2-46 and is found on page 2-129. Recommendations for the improvement of the monitoring network to address streamflow monitoring data gaps is found in Section 3.3.4.2 of both the Draft GSP and GSP. The schedule for these improvements is found in Section 5.2 of both the Draft GSP and GSP.

*Maps Related to Key Beneficial Uses – Comment 9: The first bullet on page 2-123 states that there are many factors beyond groundwater management that affect streamflow, that are beyond the scope of the GSP yet were accounted for in the analysis. How these factors were accounted for in the analysis should be identified.*

Response: GSP Section 2.2.4.7 (previously Draft GSP Section 2.2.2.7) was substantially revised, as was GSP Section 2.2.5 as it relates to the surface water budget, to better describe the MGA's planning process to address groundwater dependent ecosystems within the Basin's GSP.

*Maps Related to Key Beneficial Uses – Comment 10: We recommend that a discussion regarding the nature and characteristics of the identified GDEs is included.*

Response: GSP Section 2.2.4.7 (previously numbered Draft GSP Section 2.2.2.7) was substantially revised to describe the nature and characteristics of GDE within the Basin.

*Maps Related to Key Beneficial Uses – Comment 11: The word “only” should be removed in “Groundwater only contributes a small amount of flow” on page 2-116. We recommend providing perspective on the total percentage of baseflow discharge included in dry month discharge, as well as modelling uncertainties.*

Response: GSP Section 2.2.4.6 *Identification of Interconnected Surface Water Systems* (formerly numbered Draft GSP Section 2.2.2.6) was revised to better describe baseline conditions in the Basin. The quoted text was replaced with a more detailed description of groundwater contribution to surface water flows based on available data and modeling. Modeling uncertainties are also discussed.

*Maps Related to Key Beneficial Uses – Comment 12: Section 2.2.2.6 should discuss or reference any in-stream flow requirements, especially flow needs for critical species, in each of the interconnected streams including the amount, time of year when the flow minimum is specified, the duration, the species for which it applies, associated permits that set forth the requirements, and the regulating agency setting forth the compliance requirements.*

Response: There are no municipal withdrawals from surface waters within the Basin that would trigger the definition of in-stream flow requirements for interconnected surface water. While the request made in this comment is beyond the scope of SGMA, the MGA or its partner agencies may consider identification of flows that support GDE within the Basin in future GSP updates.

*Maps Related to Key Beneficial Uses – Comment 13: We suggest installing three nested wells perpendicular to Soquel Creek near several pumping wells to assess surface-groundwater interactions.*

Response: Section 3.3.4.2 of both the Draft GSP and GSP recommend improvements to the monitoring network that address streamflow monitoring data gaps. Two (2) perpendicular wells are recommended at the Balogh site. The Main Street pumping well already includes monitoring wells completed in the A, AA, and Tu aquifers.

*Maps Related to Key Beneficial Uses – Comment 14: We recommend that a table be included presenting estimates of current and historical surface water depletions for ISWs quantified and described by reach, season, and water year type.*

Response: Section 3.3.4 *Assessment and Improvement of Monitoring Network* in both the Draft GSP and GSP recommend monitoring improvements to fill data gaps. GSP Section 3.3.4.1 was revised to provide a more detailed discussion of the monitoring needed to better understand interconnected

surface water depletions. Some of the information requested in the comment may be developed as adequate monitoring data becomes available.

*Water Budgets – Comment 1: The draft GSP is incomplete. Appendix A2-B, Groundwater Model Calibration Memorandum, is not included and therefore cannot be reviewed by the public. The GSP uses an alternative climate change methodology to the guidance provided by DWR. An evaluation and discussion of how the “catalog climate” method differs from the DWR Guidance and why it is considered to be more appropriate than the DWR method should be included in the GSP.*

Response: Revisions were made to GSP Section 2.2.5.6.1 to provide a more detailed description of the rationale for selecting a climate catalog for use in the model and to project the Basin water budgets. Additional information is found in GSP Appendix 2-I (Previously numbered Draft GSP Appendix A2-B, made available on the MGA website when published in September 2019, prior to the close of the MGA’s public comment period).

*Water Budgets – Comment 2: Given the uncertainties of climate change, it is appropriate to analyze the impacts of climate change for a range of scenarios (e.g., a mild effects scenario and a high (worst case) effects scenario). Based on the limited information provided in the [Draft] GSP, it appears that only one climate change scenario was included, which is insufficient for sustainable groundwater planning.*

Response: GSP Section 2.2.5.6.1 includes a description of the rationale for selecting a climate catalog for use in the model and to project the Basin water budgets. Additional information is found in GSP Appendix 2-G. No changes were made to the GSP in response to this comment.

*Water Budgets – Comment 3: Based on the data presented, it is not clear how climate change is expected to affect specific elements of the water budget (i.e., precipitation, evapotranspiration, surface water and groundwater outflows, including exports).*

Response: GSP Section 2.2.5 Water Budget (formerly numbered Draft GSP Section 2.2.3) was revised to include additional detail regarding the Basin water budget. GSP Table 2-9 *Summary of Water Budget Component Data Sources* provides an overview of information included in the revised Basin water budget.

*Water Budgets – Comment 4: The [Draft] GSP describes the way demands for drinking water systems were adjusted for the projected water budget, but does not provide these demands in a tabulated, transparent format. This information should be provided for full transparency of the assumptions, data, and results of the water budgets.*

Response: GSP Section 2.2.5.6.1 *Assumptions Used in Projected Water Budget Development* includes information on the way in which projects and management actions implemented to achieve groundwater sustainability are projected to reduce net pumping. Water demand information, with and without GSP Implementation, is compared in bar chart Figures 2-69 and 2-70 for years 2016-2039 and 2040-2069 respectively. Additional water use assumptions were included in the text to address this comment.

*Water Budgets – Comment 5: Groundwater outflow to ET should be identified as a groundwater budget component. We recommend that additional explanation regarding the approach used to determine the amount of evapotranspiration from riparian areas and other GDEs be provided. Please also discuss the*

*rationale for the simplifying modeling assumption that GDEs derive all of their water uptake from surface water, and identify any data gaps relative to assessment and management of GDEs.*

Response: GSP Section 2.2.5 Water Budget (formerly numbered Draft GSP Section 2.2.3) was revised to include evapotranspiration details in the Basin water budget.

*Water Budgets – Comment 6: Please provide additional evaluation and discussion regarding the level of uncertainty and limitations resulting from the data gap in the limited locations of shallow monitoring wells. Please evaluate the effect of this data gap on the modeling results related to ISWs and surface-groundwater interaction by conducting a sensitivity analysis.*

Response: Section 3.3.4 Assessment and Improvement of Monitoring Network in both the Draft GSP and GSP recommend monitoring improvements to fill data gaps. GSP Sections 3.3.4.1 and 3.3.4.2 were revised to provide a more detailed discussion of monitoring improvements needed to provide the necessary data to better understand surface water depletions.

*Management Areas and Monitoring Networks – Comment 1: If management areas are defined in the future, care should be taken so that they and the associated monitoring network are designed to adequately assess and protect against impacts to all beneficial users, including GDEs and DACs.*

Response: GSP Section 2.2.6 discusses management areas. No management areas are recommended for the Basin and none are planned for the future.

*Measurable Objectives and Undesirable Results – Comment 1: Based on the presented information, DAC members are not explicitly considered in the discussion of URs, MOs, and MTs for groundwater levels and water quality. More detail and specifics regarding DAC members, including those that rely on smaller community drinking water systems and domestic wells, is necessary to demonstrate that these beneficial users were adequately considered.*

Response: GSP Figure 2-11 *Locations of Beneficial Users in the Santa Cruz Mid-County Basin* includes the location of all disadvantaged communities within the Basin. All Basin disadvantaged communities are served by municipal suppliers and receive drinking water that meets or exceeds all state and federal drinking water standards. No disadvantaged communities within the Basin rely on water from small community drinking water systems. GSP Section 2.1.5.1.1 was revised to provide additional detail on disadvantaged communities within the Basin and the water quality supplied to them.

*Measurable Objectives and Undesirable Results – Comment 2: The GSP includes insufficient data on the proximity of DACs to the representative monitoring wells that will be used to measure undesirable results.*

Response: The GSP was revised to include new Figure 2-11 *Locations of Beneficial Users in the Santa Cruz Mid-County Basin*. This figure identifies disadvantaged communities, groundwater dependent ecosystems, and other sensitive beneficial users within the Basin. This Figure can be compared to the various monitoring network maps found in GSP Section 3. Compiling all of the monitoring information and sensitive beneficial user information in one map made the information unreadable. The MGA may consider additional approaches to address this comment in future plan updates.

*Measurable Objectives and Undesirable Results – Comment 3: The GSP should explicitly demonstrate whether and how the stakeholder input from DAC community members was considered in the development of URs, MOs, and MTs.*

Response: Members of the GSP Advisory Committee were selected to be representative of all areas of the Basin, including areas in Live Oak where Basin disadvantaged communities are located. With the exception of a few special events held at the Community Foundation in Aptos and a Basin wide field trip, all MGA meetings are held in Live Oak.

*Measurable Objectives and Undesirable Results – Comment 4: Please provide detail on how sustainable management criteria were developed for GDEs and streamflow habitat, and how supporting documents were considered.*

Response: GSP Sections 2.2.4.6 and 2.2.4.7 provide the information requested. These Sections were revised and renumbered from Draft GSP Sections 2.2.2.6 and 2.2.2.7.

*Measurable Objectives and Undesirable Results – Comment 5: The data gaps associated with establishment of minimum thresholds for depletion of ISW should be described and a plan provided to address them. To the extent data are available, please plot hydrologic data for locations with identified GDEs and instream flow requirements for coho and steelhead salmon.*

Response: Data gaps for the depletion of interconnected surface water are described in GSP Sections 3.3.4.1 and 3.3.4.2 as are the recommended monitoring network improvements to address these gaps. Revisions were made to Section 3.9.1.1 to point to sections 3.3.4.1 and 3.3.4.2 for this description. GSP Figure 2-49 provides hydrologic data. No instream flow requirements for fish have been established in the Basin.

*Management Actions and Costs – Comment 1: The GSP does not appear to identify the impacts or benefits to DACs that may result from the proposed projects and management actions.*

Response: Revisions were made to GSP Section 2.1.5.1.1 and to GSP Section 4 to address this comment. Most GSP impacts and benefits are spread across Basin water users. As all disadvantaged communities receive water from municipal suppliers, the impacts and benefit will be shared with all other municipal customers.

*Management Actions and Costs – Comment 2: It is acknowledged that the water level MTs are set relative the shallowest nearby well screened in the same aquifer as the representative monitoring point, and that the water level is adjusted to account for a pump depth allowance and a minimum saturated thickness to allow for effective usage of the well. While the identified projects are intended to keep water levels above the MTs, no program is provided as a contingency in case 1) groundwater conditions decline before the projects are fully implemented, or 2) implementation of such projects does (sic) not have the desired effects. A plan to mitigate impacts to DAC drinking water users could include a program to replace wells, connect well users to a public water system, establishment of a tanked water program, etc. The GSP should also identify a mechanism to fund such a program.*

Response: Disadvantaged communities within the Basin are not served by private wells or small water systems. They are served by municipal suppliers, thus already connected to a public water system. With regard to sustainability and declining water levels in the future, MGA member

agencies have already implemented Group 1 projects and management actions (conservation, demand management, and pumping redistribution). These Group 1 projects have reversed the extreme groundwater level declines of the 1980s and 1990s but will not achieve sustainability by themselves. For this reason, Group 2 projects and management actions are planned in the near term and Group 3 projects will be implemented as needed if sustainability is not achieved on the timetable laid out in the GSP. No revisions to the GSP were made in response to this comment.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



*Groundwater is a vital resource, together let's protect it.*

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January 27, 2020

Mr. Jerome Paul  
120 South Morrissey Avenue  
Santa Cruz, CA 95062

**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comment**

Dear Mr. Paul:

Thank you for your comment letter on the Santa Cruz Mid-County Basin Draft GSP dated September 19, 2019. Santa Cruz Mid-County Groundwater Agency (MGA) staff considered your comment prior to GSP adoption by the MGA Board of Directors and took the actions described in the response below:

*Comment 1: The Draft fails to fully assess the comparative merits of in-lieu water sharing. A sampling: The Draft derives from some assumptions of partial-year water transfers only, whereas the City's pre-1914 North Coast water rights allow year-around transfer of water from the City to the District. Note that the extra molecules can actually come largely from non-North-Coast places such as the Loch and the San Lorenzo River. This is a serious, fatal oversight in the Draft. The Draft does not adequately cover expanding the potable intertie, a very quick and cheap enhancement. BTW, tests showed that already the intertie could often exceed the production of Pure Water Soquel (PWS). In-lieu uses much less energy, which is better than PWS using a lot of energy and saying it supposedly comes from a nice place. Carbon-heavy sources would get used more under PWS. In-lieu better serves fish habitat at a big range of elevations, whereas expensive PWS water comes from roughly sea level and requires significant energy to be brought to the benefit of fish at high elevations - so it won't be.*

Response: GSP Section 4 Projects and Management Actions was revised to provide a more detailed description of MGA member agency permitting requirements. GSP Section 4.2.3.8 [Water Transfers/In Lieu Groundwater Recharge] Expected Benefits was revised to provide more detail regarding the MGA's plans to evaluate the amount and timing of water transfers to analyze the effect of project implementation on groundwater sustainability over time.

Please Note: Unlike the California Environmental Quality Act (CEQA), the Sustainable Groundwater Management Act does not require the MGA to analyze projects and management actions to select a preferred alternative. Groundwater sustainability planning is supported by inclusion of a diverse set of projects and management actions with varied water supply sources that diversify the regional water portfolio. All projects and management actions included in the GSP will be analyzed through the CEQA process if and when they are implemented by MGA member agencies.

*Comment 2: The draft is based on false and misleading information. E.g., pricing of water to be purchased from Santa Cruz is highly inflated, based upon false assumptions about the City's capital costs. Firstly, the District can presently purchase water for prices which include virtually no capital cost, because the infrastructure is already in place. Secondly, the City has in its 10-year Capital Improvement Plan substantial capital costs due to infrastructure obsolescence—costs which the City shall spend regardless of whether water transfers occur—and thus charging the District to fund many of them entirely is highly improper. Thirdly, any capital costs which might properly be attributed to District in-lieu use should be shared between the City and the District roughly in proportion to their respective use of the new capital infrastructure to be built, and not wholly charged to the District. Fourthly, it is arguable that the District's use of the in-lieu water is substantial predominantly until the aquifer initially becomes fully recharged. The small top-offs of the aquifer after that may not be grounds for being charged a full capital share. The District is a wholesale user (it performs retail distribution) and thus should be charged only wholesale pricing. Pricing should be lower to the District to the degree that the District assumes some obligation to return water to the City during drought recovery.*

Response: This comment misstates the facts. Water pricing in California is governed by Proposition 218, which prohibits any ratepayer revenue from being used to assist another group of ratepayers. Thus, Soquel Creek Water District, as a ratepayer to the Santa Cruz Water Department, is required to pay its fair share of costs for water treatment and delivery. This includes any increased costs for necessary improvements to the City of Santa Cruz Water Department's water infrastructure that are passed on to customers. No changes were made to the GSP in response to this comment.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



*Groundwater is a vital resource, together let's protect it.*

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January 27, 2020

Mr. Ron Duncan  
PO Box 1550  
Capitola CA 95010

**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comments**

Dear Mr. Duncan:

Thank you for providing us with Soquel Creek Water District's comment letter on the Santa Cruz Mid-County Groundwater Basin Draft GSP, dated September 19, 2019. We appreciate the comments and your organizational commitment to protecting groundwater resources in the Santa Cruz Mid-County Basin.

Under MGA Board direction, MGA staff and technical consultants made detailed revisions to the Basin's GSP to respond to the comments provided. These revisions improved the GSP by adding requested details where appropriate to the plan, refining the water budget especially in relation to surface water, and providing further explanation of MGA plans for the Basin's future as described in the responses below.

*Comment 1: The GSA is trying to manage impacts on the Soquel Creek purely via groundwater pumping (Section 3.9.3.1). One of the shortcomings of using shallow well water level as a proxy is that many of these shallow wells are impacted by precipitation and creek flow and not purely groundwater extractions. For example, in a period where Main St. production well was off, Main St. shallow well levels rose about a foot over the course of a few days due to a storm and high flow event in Soquel Creek. Alternatively, there is a recovery of about 0.5 feet in the Main St. shallow well when the Main St. Production well is turned off for two months and no measurable impact on creek stage or flow. Managing groundwater extractions/injections may only have a small impact on shallow well levels and the GSA may be at the mercy of other factors on whether these minimum thresholds are met. There is concern that minimum thresholds may be set arbitrarily high and that these minimum thresholds are not tied to a measurable benefit to the creek flow nor the creek's sensitive species, only to theoretical modeled benefits. The District suggests the approach of setting the minimum thresholds at a level that reflects the shallow well levels not getting any lower than the lowest observed levels during 2001-2015 be evaluated. This is consistent with the draft GSP's finding that no significant and unreasonable depletion of surface water was observed on the creek during this period. It is also consistent with over a decade of studies that haven't been able to measure an impact on creek flows (LKA, L&S 2003 and Hydrometrics 2015, 2016 & 2017). If further data collection provides evidence that the minimum*

*thresholds are set too low, the District would support raising minimum thresholds to prevent undesirable results.*

Response: GSP Section 3.9.1 was revised to provide more detail on the complexities of correlating groundwater levels and streamflow. GSP Section 2.2.4.6 was revised to provide more detail on the uncertainties related to modeling the depletion of interconnected surface water based on the data that is currently available. GSP Sections 3.3.4.1 and 3.3.4.2 discuss data gaps associated with the established minimum threshold for depletion of interconnected surface water and the plan to address these data gaps. GSP Section 5.2 provides information on filling those data gaps during GSP implementation.

Comment 2: *It is well documented that pumping Main St. production well has no measurable, short-term impact on creek levels or flow. Some of the shallow well and precipitation datasets suggest that there are possibly longer term or more diffuse impacts on shallow well levels from pumping at the Main St. production well. However, it is not clear whether these impacts are solely from groundwater extractions in the deep aquifer, or if surface water diversions or shallow pumping or other climate factors were a part of this observed recovery in the Main St. shallow well in 2014-2015. Furthermore, it isn't clear that these long-term impacts on shallow well levels are having a measurable impact on creek flow or the sensitive species that the creek flow supports.*

Response: GSP Section 3.9.1.1 was revised to provide more detail on the specific groundwater monitoring data for the Main Street shallow well that was not included in the Draft GSP.

Comment 3: *The integrated surface water and groundwater model was used to establish correlation between groundwater extractions and groundwater contributions to the Soquel Creek flow. The model integration and calibration document suggests that the collective impact of basin-wide groundwater pumping is about ~1.4 cfs on stream flow. The draft GSP also points out that this particular use of the model is beyond the scope of what the model can be calibrated for as we cannot measure groundwater contributions to the creek. It is important to consider the feasibility of measuring this kind of impact and whether these model results will ever be able to be calibrated to actual measurements. Otherwise these impacts remain theoretical and not observed. It is difficult for the District to support model results that can't be calibrated, especially when potential management actions could result in big impacts to the District's ability to provide drinking water to its customers. It is understood that the current modeling efforts were the best efforts with the best available data, however, the District sees a need to further develop and calibrate the model. Perhaps there is a more refined model with better real-world data calibration that is better suited for this kind of analysis.*

Response: GSP Sections 3.3.4.1 and 3.3.4.2 discuss data gaps associated with the established minimum threshold for depletion of interconnected surface water and the plan to address them. GSP Section 5.2 provides information on filling those data gaps during GSP implementation. GSP Section 3.9.1.1 was revised to address this comment.

Comment 4: *The GSA has completed modeling to estimate water levels in Main St. shallow well with three scenarios: 1) No- project 2) Pure Water Soquel and 3) both PWS and ASR. The District is comfortable with the model results produced for the seawater intrusion management criteria, since the calibration results and datasets used for comparison seem to agree with each other. While the District*

*appreciates the efforts to use the model to estimate impacts on Soquel Creek, the model seems to overestimate water levels when compared to observations during the dry years 2012-2015 in the Main St. shallow well (see figure 34 from calibration document below). It is concerning that the seasonal low levels were not accurately captured during this period as these are the most important levels to capture. This suggests that further refining of the model is needed to accurately model shallow well levels and predicted recovery from PWS and ASR projects. The mismatching of modeled results to real world observations could also be related to issues with the construction or location of the existing shallow wells as detailed in [additional comments] below.*

Response: GSP Sections 3.3.4.1 and 3.3.4.2 discuss data gaps associated with the established minimum threshold for depletion of interconnected surface water and the plan to address them. GSP Section 5.2 provides information on filling those data gaps during GSP implementation.

Comment 5: *For future modeling efforts, there should be careful consideration of what kind of data needs to be collected to better refine this model or whether there is a more appropriate model to use. There may also need to be further discussions around the assumptions of the modeling including changes to streambed elevations over time, decisions on how the stream alluvium interacts with the Purisima formation and how shallow well properties are configured in the model. Perhaps future modeling efforts should also account for a shorter timescale to account for short term impacts that may have a large impact on groundwater contributions and sensitive species. For example, shallow pumping along the creek which may have a smaller average impact over a month period, may have a large short-term impact to sensitive species during the hottest week of the Summer in a drought. The District is concerned the current modeling timescale wouldn't capture these short-term impacts.*

Response: GSP Section 3.9.1.1 was revised to respond to these comments. Please note: the model includes daily time step information that is not discussed in the GSP.

Comment 6: *The District is generally in support of further monitoring efforts to try to better understand this potential long-term and diffuse relationship between Main St. production well, shallow ground water levels and creek flows. The District also supports monitoring the other factors that may have an impact on creek flows, creek levels and shallow well levels including private pumping along the creek. Any monitoring efforts in the future needs to be designed in a way that can truly isolate impacts from pumping groundwater and rule out the other various impacts to creek flows and shallow well levels including: temperature, precipitation, evapotranspiration as well as surface water diversions. One idea to consider is to locate new shallow monitoring wells that are 300 feet or more from the creek and see how that varies over time. Ideally, new shallow wells wouldn't be influenced by short term changes to creek levels and precipitation events and would give a better understanding of what the shallow groundwater levels are doing.*

Response: Revisions were made to GSP Sections 3.3.4.1 and 3.3.4.2 to provide more detail on data gaps associated with interconnected surface waters and MGA plans to address them. GSP Section 5.2 provides schedule information on filling those data gaps during the initial phases of GSP implementation.

*Comment 7: Definition of Undesirable Results in section 3.9.1: Significant and unreasonable depletion of surface water due to groundwater extraction, in interconnected streams supporting priority species, would be undesirable if there is more depletion than experienced since the start of shallow groundwater level monitoring through 2015. The District wants to emphasize that this regulation only relates to significant and unreasonable depletion of surface water due to groundwater extraction. However, monitoring and modeling efforts may need to include other non-groundwater components in order to account for impacts to creek flow that may be incorrectly attributed to groundwater extractions when doing any analysis (i.e. surface water diversions, additional climate parameters and possibly vegetation). GSA's use of shallow groundwater levels as proxy could put sustainability in jeopardy of failure [related] to factors other than groundwater pumping. There are shortcomings to use of shallow groundwater well monitoring as a proxy to measure creek impacts from groundwater pumping. Shallow wells are influenced by other factors than groundwater production, including storm events and high flow events related to storms.*

Response: GSP Sections 3.3.4.1 and 3.3.4.2 discuss data gaps associated with the established minimum threshold for depletion of interconnected surface water and the plan to address them. GSP Section 5.2 provides information on filling those data gaps during GSP implementation. GSP Section 3.9.1 was revised to provide more detail on the uncertainties related to the use of a groundwater proxy and the data needed to begin to resolve these uncertainties.

*Comment 8: The minimum threshold is defined in section 3.9.2: Using shallow groundwater levels adjacent to streams as a proxy for surface water depletion, undesirable results will occur if the average monthly groundwater levels fall below the minimum threshold, which is established as the highest seasonal low elevation during below-average rainfall years from the start of monitoring through 2015. The definition appears to contradict what was stated in the definition of undesirable results. If the shallow ground water is strongly correlated to stream depletion, it seems that the greatest level of surface water depletion would correspond to the lowest water levels observed in the shallow wells not the highest (seasonal low) levels observed. It is not clear why the highest seasonal low water levels were chosen rather than the lowest seasonal low water levels.*

Response: GSP Section 2.2.5 Water Budget was revised to provide more detail on the surface water budget in response to this comment.

*Comment 9: Methodology of developing Minimum Thresholds, Section 3.9.2.1 excerpt: Since significant and unreasonable conditions have not occurred since at least 2001 when shallow groundwater level monitoring began, minimum thresholds for shallow groundwater elevations in the vicinity of interconnected streams are based on the highest seasonal-low elevation during below-average rainfall years, over the period from the start of shallow groundwater level monitoring through 2015. Comment 4.3: The draft GSP states that no undesirable results were observed during 2001-2015 where shallow well level data is available. If this is the case, then the Main St. shallow well level of 19.5 in August of 2013 was acceptable and did not indicate undesirable results in the creek. It seems like 19.5 ft for this site would be a more meaningful minimum threshold that would agree with the definition of undesirable results in the regulations. The shallow well levels in Main St. shallow well from 2001-2015 do not meet the proposed minimum threshold for the majority of those years. This implies that the majority of these years, undesirable results were observed which is contradictory to the findings in the reports and studies referenced in this letter. Perhaps there needs to be more clarity around what is considered to be a significant and unreasonable impact under this regulation. The Draft GSP does not*

*acknowledge why the highest seasonal low level was chosen as the methodology for determining the minimum threshold rather than the clearer option of the lowest seasonal low when there weren't any observed undesirable results. If there is a clear evidence that supports picking the highest seasonal low levels in the shallow wells, the reasoning should be explained in the GSP.*

Response: GSP Section 3.9.2.1 was revised to more clearly outline and address the uncertainties related to developing the minimum threshold and measurable objectives for the depletion of interconnected surface water. GSP Sections 3.3.4.1 and 3.3.4.2 discuss the data needed to begin to resolve these uncertainties. GSP Section 5.2 provides the MGA's proposed schedule to fill the identified data gaps.

Comment 10: *These comments are distilled from the District's surface water hydrologist, Brook Kraeger, regarding specific conditions of the existing shallow wells. Nob Hill Shallow Well: This shallow monitoring well has always been several feet above the creek level, consequently it is not clear just how changing ground water pump (sic) would benefit the creek water levels. This well was drilled in the sandstone of the upper Purisima formation. Wharf Rd. Shallow Well: The well was completed in alluvium and has water levels very close to the stream water level. Depending upon the chosen distance from the stream, upstream or downstream, the water levels (sic) differences between the shallow monitoring well could be a gaining or losing reach. Main St. Shallow Well: This is one shallow monitoring well site that we see the impact of pumping from the Main St. production well, depth of about 900 feet. In the 2003 study, three shallow monitoring wells were constructed between the creek and the production well. Connecting each well clearly showed a cone of depression from the creek to the production well. The well closest to the creek was completed to a depth of about 13 feet. The difference in water levels between the creek and the well was often only 12" over a 3 ft distance, providing a very steep gradient. Yet, this steep gradient does not show a measurable loss in water from the creek to the surrounding sandstone outcropping, indicating that there is actually very little flow of surface water to the surrounding groundwater. It is not clear if the depression cone of shallow ground water is caused by incomplete sealing of the production well or a genuine seepage downward through the layers of the Purisima formation caused by production well pumping. This shallow ground water depression does not appear to be affecting the creek flow to a measurable degree. Balogh Shallow Well: This monitoring well was completed in alluvium and is located just upstream of a commercial nursery. The nursery has several wells that are completed in the alluvium, however their impact has not been evident at the downstream gauging sites. The creek in this location, similar to the Wharf Rd. site, is on a slope and not a pool. This channel has eroded in the past and measurement of the stream water level can be problematic. The water levels of the shallow monitoring well and creek are similar and thus indicate a close relationship between the creek and the surrounding groundwater.*

Response: The MGA appreciates the additional insight into the monitoring program and shallow well interpretation provided by MGA member agency Soquel Creek Water District. MGA staff will use this information as the monitoring program develops over time.

Comment 11: *Future Work on Sustainable Management Criteria. The District staff wants to acknowledge the significant amount of effort put into developing the interconnected surface water management criteria by the [surface water] working group. While the District has had a few board members participating in the [surface water] working group on this sustainable management criteria, District staff has only recently been able to take a deeper look at the available presentations, reports, draft GSP and model calibration documents. The District would like to propose reconvening the [surface water] working group to tackle concerns brought up in this comment letter. The District would also like*

*to include Brook Kraeger, the District's surface water hydrologist, in this working group along with District staff, if deemed necessary. Brook Kraeger has worked with this creek for over 30 years and has valuable input on past modeling efforts of the creek, along with past reports and studies referenced in the GSP. The District would like to be involved in future model refinement efforts and also help generate ideas to improve existing monitoring efforts. The District also would like to request that a private well representative be at the working group if possible. This part of the draft GSP can potentially have big impacts on the private wells along the creek and it is prudent to engage these constituents in development of this sustainable management criteria.*

Response: The MGA appreciates member agency Soquel Creek Water District's suggestion to reconvene the GSP Advisory Committee Surface Water Working Group to address the comments received on the Draft GSP. Unfortunately, the turn-around time to reconvene the group was too short to evaluate the substantial number of surface water comments received, respond to those comments, and complete the GSP prior the planning deadline. MGA staff will use this information as the monitoring program develops over time. For the record, a private well owner representative, Jon Kennedy, was a member of the GSP Advisory Committee and participated in vetting the information and recommendations from the Surface Water Working Group.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



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January 27, 2020

Ms. Becky Steinbruner  
ki6tkb@yahoo.com

**Re:** Draft Groundwater Sustainability Plan (GSP) Public Comments

Dear Ms. Steinbruner:

Thank you for your comments on the Santa Cruz Mid-County Groundwater Basin Draft GSP. The Santa Cruz Mid-County Groundwater Agency (MGA) received 12 individual communications from you for inclusion as public comments: four email communications (dated 8/14, 8/28, 8/29 and 9/19, 2019); Six comment cards, two dated 1/17/2019\*, one each dated 1/18/2019\*, 7/20/2019, three dated 7/22/2019, and one oral comment dated 9/19/2019. MGA staff considered your comments prior to GSP adoption by the MGA Board of Directors and took the actions described in the responses below:

*Email dated 8/14/2019 – Comment: Dear MGA Staff, I attempted to use this link from the MidCounty Groundwater Agency website, but the link did not work. I have copied the address here, and would like to verify that this message has been received and recorded, and that future messages containing comment re: the Draft GSP will likewise be received and recorded using this address.*

Response: This is not a comment on the Draft GSP. No changes were made to the GSP in response. Upon receipt of your email on 8/14/2019, MGA administrative staff confirmed the comment email address was working; it was checked periodically and confirmed to be working throughout the MGA's Draft GSP public comment period. Your inability to open the link to send an email is presumably due to the individual computer settings, likely the email client (e.g., MS Outlook) auto launch feature; this is a user specific issue unrelated to the specific email address. The MGA received numerous comments from various senders submitted via email throughout the comment period, further confirmation the email address worked.

*Email dated 8/28/2019 – Comment 1: I really want to thank the MGA Board for approving the provision that there be hard copies of the Draft GSP placed in public libraries. Many people, myself included, have difficulty reading text from screens for long periods of time, so having the hard copy has really helped people access the information. The only problem I have observed regarding the access to these hard copies is that the public must ASK TO SEE THE DOCUMENT. It is kept behind the circulation desk at both the Aptos*

\* Draft GSP comment cards were not produced and available until the July 18, 2019 MGA Board meeting.

and Live Oak libraries, so unless people know it is there and available, they may not find it or chance to see it when browsing the reference shelves.

Response: This is not a comment on the Draft GSP. No changes were made to the GSP in response. The MGA appreciates that the Santa Cruz Public Library System made the Draft GSP available at Basin area libraries during the public comment period, however, MGA has little influence over the library system's handling of publicly available government documents.

Email dated 8/28/2019 - Comment 2: *In general, I really must say that I have found the Draft GSP a very difficult document to read, mostly because there is no Table of Contents at the beginning to help me find the Chapters for issues I am most interested in reviewing first if I have limited time. Although each Chapter has a Table of Contents for that particular Chapter, there is no way to look up specific issues because I don't know where in the document they are located.*

Response: The information provided in this comment is incorrect. The Draft GSP and the GSP both contain a highly detailed Table of Contents (TOC). The Draft GSP posted as individual sections on the MGA website contained section specific TOCs. The compiled Draft GSP made available online and in Basin libraries contained a compiled TOC at the beginning of the document (after the Acronyms Section) and section specific TOCs at the start of each GSP section. No changes were made to the GSP in response.

Email dated 8/28/2019 - Comment 3: *Also, there are no header or footer descriptions on the pages of the document to help me identify what I am viewing as I search through the document...pages only have "DRAFT REPORT FOR PUBLIC REVIEW" and "For Review Draft Groundwater Sustainability Plan".*

Response: The information provided in this comment is incorrect. The Draft GSP and the GSP both contain section specific page numbers linked to the detailed Table of Contents. The online documents also contain navigation and search features that facilitate document review. No changes were made to the GSP in response.

Email dated 8/28/2019 - Comment 4: *I also feel there is virtually no documentation cited to verify or substantiate any of the statements made in the Plan. An example of this is on page 2-53, Section 2.1.5.1.1 Interest Groups Representation. The document describes how the GSP Working Group (which are never named specifically, only general reference to agencies involved) "considered each of the interest groups named by SGMA to determine if they were present within the Basin and considered their current representation on the MGA Board." The groups listed are Agricultural users, Domestic Well users, Small Water Systems, Large Public and Municipal Well Operators, Local land Use Agencies, Environmental Users of Groundwater, Surface Water Users with a Connection to Groundwater, California Native American tribes, and Entities Monitoring and Reporting Groundwater Levels.*

Response: The information provided in this comment regarding reference availability is incorrect. Generally, the Draft GSP and the GSP are written to build on scientific, demographic, and other pertinent information already explained in the plan. In this respect, the GSP is written to be "self-referencing" based on detailed analysis of the information presented in the plan. Where the plan is not self-referencing, appendices are provided, and reference documents are cited. A complete references

section was provided in the GSP as noted in the Draft GSP. The GSP submitted to the SGMA Portal includes reference links (or PDFs) for documents used to prepare the GSP.

Response: GSP Section 2.1.5.1.2 was revised to include the names of MGA Board Members who participated in the GSP Working Group. This was done to acknowledge the significant contributions that MGA Board Members made to GSP preparation.

Response: Draft GSP Section 2.1.5.1 references Water Code section 10723.2 as the relevant section of the Sustainable Groundwater Management Act requiring the identification of beneficial users and uses of groundwater, including those specifically listed in this comment. No GSP revisions were made to Section 2.1.5.1.1 related to this comment.

*Email dated 8/28/2019 - Comment 5: The descriptions for each group then provides statements of water use: Agricultural users: It makes an unsupported statement that the ag users account for 13% of the water pumped from the Basin, with the majority of the farming done by a few large operators. I find this interesting, given that the bulk of agriculture that I observe is small family farms. The description of the agricultural farms does not include nursery or horticultural crops, which is substantial in the Soquel Valley. However, because there is NO CITATION AND NO INFORMATIONAL SOURCE TO VERIFY, I cannot check the factual content of these statements. Likewise, the Domestic Well Users supposedly account for 10% of the water used from the Basin, and Small Water Systems account for 5% of the water used from the Basin, even though this category includes commercial uses such as camps and schools. None of these users are identified, nor can I verify the information myself because there is no citation to any report or website.*

Response: The Draft GSP provided a significant discussion regarding how Basin water use measurements are made and how estimates for unmetered water uses were made for GSP sustainability planning purposes. This information was found in Draft GSP Sections 2.1.3.1.2 and 2.1.3.1.3 and detailed in Draft GSP Appendix A-2B. GSP Sections 2.1.3.1.3 and 2.1.3.1.4 were revised, as was Figure 2-9 to improve these water use descriptions. Draft GSP Appendix A-2B was unchanged, but renumbered to GSP Appendix 2-B.

*Email dated 8/28/2019 – Comment 6: Page 2-45, Chapter 2.1.4.8 Groundwater Contamination Cleanup, Recharge, Diversions to Storage, Conservation, Water Recycling, Conveyance and extraction Projects: The Contamination Cleanup describes the authority of the Santa Cruz County Environmental Health Services as the Certified Unified Program Agency (CUPA) for the entire County. It provides the geotracker site used to identify contamination sites under regulatory action. With some work, I was able to look at material on this website, and found a few cleanup sites in the Basin. However, these sites are not listed in the Draft GSP, nor is there mention of the number of permitted Underground Storage Tanks (UST) that are within the Basin and are potential causes of groundwater contamination.*

Response: No revisions were made to the GSP in response to this comment. Section 2.1.4.8 of the Draft GSP provides a summary of Groundwater Contamination Cleanup information within the Basin as required by DWR's GSP Annotated Outline. Section 2.2.2.4.2 of the Draft GSP provides Figure 2-35 showing Known Contaminant Locations. Section 2.2.2.4.2 of the Draft GSP also characterize this contaminant information as unlikely to have a significant impact on groundwater produced for consumption within the Basin. The Draft GSP sections and figure discussed in this response were

unchanged, but renumbered for the GSP to Section 2.1.4.8.1, GSP Section 2.2.4.4.2, and Figure 2-38 respectively.

*Email dated 8/28/2019 - Comment 7: Also on Page 2-45, under "Groundwater Recharge" There follows a description of recharge projects by member agencies, but only references the named efforts of Soquel Creek Water District's Pure Water Soquel Project, but does not give the City of Santa Cruz named credit for ASR work, or the County of Santa Cruz named credit for storm water recharge projects. This implies bias favoring Soquel Creek Water District. There are no links provided for me to read about these projects further.*

Response: The information provided in this comment is incorrect and mischaracterized. The Draft GSP at "Groundwater Recharge" reads in pertinent part: "MGA member agencies have developed two storm water recharge projects within the Basin and are in the process of piloting ASR and In-Lieu recharge projects and Soquel Creek Water District is in the process of permitting its Pure Water Soquel project as discussed in Sections 2.1.4.5 and 2.1.4.6 above. MGA member agencies are in the process of evaluating additional storm water recharge projects that could improve groundwater recharge and storage within the Basin and neighboring groundwater basins. County development and storm water management policies protect recharge areas and infiltration capacities as discussed in Section 2.1.4.5." MGA member agencies are partners in the development and implementation of many of the groundwater recharge projects discussed. Member agency staff reviewed the text of this section. No bias was noted and no changes were made to the GSP in response to this comment. Each of the groundwater recharge projects referenced on Page 2-45 of the Draft GSP are discussed in detail in Draft GSP Section 4.2 and GSP Section 4.2.

*Email dated 8/28/2019 – Comment 8: On page 2-108, the discussion about CONTAMINANTS OF EMERGING CONCERN states that "pharmaceuticals and personal care products (PPCP's) are increasingly being detected at low levels in surface water and water infiltrating to groundwater from septic systems." but provides NO citation to information that supports this claim.*

Response: GSP Section 2.2.4.4.2 was revised to provide additional detail about contaminants of emerging concern sampling and the sampling programs in which MGA member agency Soquel Creek Water District participates to understand the impact that septic systems have on contaminants of emerging concern within the Basin.

*Email dated 8/28/2019 - Comment 9: Likewise, on page 2-108, the statement "Groundwater may be impacted by recharge of treated wastewater surface water, and from septic systems. new and emerging contaminants are currently unregulated but may be subject to future regulation. Examples of new and emerging contaminants are N-Nitrosodimethylamine, a semi-volatile organic compound (NDMA and other nitrosamines), and 1,4-dioxane, etc." There are NO citations to verify these statements, nor any documentation added that could allow me to investigate this very interesting statement. The fact that Soquel Creek Water District proposes to inject treated wastewater into the aquifer is of great concern to many Basin users, yet this profound statement made here that actually supports the concerns of many Basin users completely OPPOSED to the PureWater Soquel Project have no way to find the information that is the basis for the statement made in the Draft GSP.*

Response: GSP Section 2.2.4.4.2 was revised to provide a clearer description of the information quoted in this comment.

*Email dated 8/28/2019 – Comment 10: Page 2-108 states there is a good baseline set of data for CEC data collected since 2001 “to compare against when potential projects that recharge treated wastewater into the basin as a supplemental source of water are implemented.” But I cannot verify that or access the information because there is NO CITATION that would provide me with that informational source.*

Response: GSP Section 2.2.4.4.2 was revised to provide a clearer description of the information quoted in this comment.

*Email dated 9/17/2019 – Comment: ...Dear Ms. Pruitt, I have not yet received a response from you or Georgina King regarding the source of information the GSP refers to in a narrative about baseline for contamination in the groundwater relying on a database since 2001. The public comment period on the draft GSP will close this Thursday, and I have yet to receive any information to help me verify this aspect of the draft Plan. In my opinion, this is a critical aspect of the GSP to consider, given that the Plan relies nearly exclusively on the modelled influences of the PureWater Soquel Project and the City's Aquifer Storage Recovery (ASR) Project, both of which have a significant potential of contaminating groundwater via injection wells....*

Response: The SGMA does not require MGA to respond to requests for additional information during the Draft GSP comment period. GSP Section 2.2.4.4.2 was revised to provide additional detail about contaminants of emerging concern sampling and the sampling programs in which MGA member agency Soquel Creek Water District participates to understand the impact that septic systems have on contaminants of emerging concern within the Basin.

*Email dated 8/29/2019 - Comment: Dear Mr. Duncan, Thank you for being present at last night's Santa Cruz MidCounty Groundwater Agency Q & A Public Session (August 28, 2019) at the Simpkins Swim Center. I was happy to see good attendance and felt the unrestricted discussion allowed was very valuable and productive. I do, however, wish to make it clear that your response to a person's question about the status of the Soquel Creek Water District's PureWater Soquel Project environmental review was unacceptable and disingenuous. You publicly stated that "there is only one person who has complained about the Project and the complaint is without merit." That was misinformation to the public. I have made it clear, and the Petition for Writ of Mandate (Case 19CV00181) states, that I am taking Pro Per citizen duty action for the public benefit, not for my own exclusive interest. I have provided the District, as well as the MidCounty Groundwater Agency, with many petitions carrying signatures of about 300 Basin residents who are opposed to PureWater Soquel Project and want the opportunity to vote on the Project going forward. Those petitions are part of the administrative record of proceedings for the Case. Clearly, I am NOT the only person complaining, I am just the person named as Petitioner on the Pro Per legal action. As you know, if a group of citizens were to file a complaint, the action would be defined under an unincorporated association, which cannot represent itself in legal action, and therefore would require hiring an attorney to take the action I am taking. This would cost at least \$100,000, and that is why I am forced to take Pro Per action, representing many people likewise concerned about the Project and it's environmental review process, but without the economic means to hire legal representation. Finally, your judgement that "the complaint has no merit" is unsubstantiated because no judge has made that ruling. You are NOT an administrative law*

*judge. In the future, please preface such bold misinformation with "in the District's opinion" or some such qualifier, so that what you say is honest and has public integrity, while showing respect for the California Environmental Quality Act (CEQA) process. Thank you. Sincerely, Becky Steinbruner*

Response: This is not a comment on the Draft GSP. No changes were made to the GSP in response.

*Email dated 9/19/2019 – Comment 1: Dear MidCounty Groundwater Agency, Thank you for the opportunity to comment on the Draft Groundwater Sustainability Plan (GSP). I am aware that the MidCounty Groundwater Agency (MGA) Board intends to select a committee to review all comments submitted regarding the GSP. I respectfully request that all comments are made public verbatim, and and (sic) any responses to and/or actions taken to address all such comments be likewise made available to the public.*

Response: This is not a comment on the Draft GSP. No changes were made to the GSP in response. Generally, all comments were made available verbatim and can be found [here](#). Responses to comments will also be made available [here](#). MGA also made a comparison document to illustrate the major changes between the Draft GSP and GSP, found [here](#).

*Email dated 9/19/2019 – Comment 2: I also respectfully request that the Committee include one of the Private Well Representatives, and that those representatives select themselves who among them will serve on the Committee. Thank you very much. Sincerely, Becky Steinbruner Customer of PureSource Water*

Response: This is not a comment on the Draft GSP. No revisions were made to the GSP in response. The Comment Committee did include one representative from each member agency and one private well representative. Members included: City of Santa Cruz – David Green Baskin, County of Santa Cruz – Allyson Violante, Central Water District – Marco Romanini, Soquel Creek Water District – Dr. Bruce Daniels, and Private Well Owner – Curt Abramson.

*Email dated 9/19/2019 – Comment 3: Jurisdictional Boundaries within the Basin Figure 2-2 shows Adjudicated Areas, Other Agencies within the Basin, and Areas Covered by an Alternative Plan. The boundaries of the MidCounty Basin (Basin 3-001) in the Seascape and La Selva Beach areas are political, and are not defined by the hydrology of the area. On page 2-12, it states: "The entire Basin is covered by by the MGA and this GSP. No areas within the Basin are covered by an Alternative GSP." Looking closely at the areas of the map, the statement cannot possibly be true because the southern boundaries shown only fit the Soquel Creek Water District service areas 3 and 4, and in fact there appears to be an island of the basin within the Pajaro Valley Sub-basin (3-002.01) that is included in the MidCounty Basin, purely for Soquel Creek Water District definition. Why is this political definition of the Basin allowed, and even is defining and driving the "critical overdraft" urgency? Indeed, in examining the Pajaro Sub-Basin Alternative GSP, the map for that Sub-Basin clearly covers the southern areas within the Soquel Creek Water District political service boundaries. Below is the text of a message I sent to Pajaro Valley Water Management Agency General Manager, Mr. Brian Lockwood, upon the approval of the Alternative GSP for the Pajaro Sub-Basin. I respectfully request that it be included in the record of comment submitted for the MidCounty Draft GSP. This communication is relevant to the Draft GSP because the Pajaro Sub-Basin is the adjoining Basin and all Plans must show consideration of and collaboration with neighboring Basins: Becky Steinbruner <ki6tkb@yahoo.com> To: Brian Lockwood Cc: Bcc... Jul 18 at 7:57 AM Hi, Brian, I just saw the announcement on Maven's Notebook that DWR approved the Pajaro Valley SubBasin GSP Alternative Plan.*

Congratulations! Here is the link I found, and am hoping to read over the assessment reports of the eight others approved, as well as the one not recommended for approval. <https://mavensnotebook.com/2019/07/17/this-just-in-dwr-approves-nine-alternatives-to-groundwater-sustainability-plans/> I am curious about the fact that, in the Staff Assessment Report, it discusses that a portion of the Pajaro Valley SubBasin lies outside of the PVWMA jurisdiction. The discussion of this issue on page 9 seems to refer to the area to the west, and would be the Soquel Creek Water District jurisdiction (which has been somehow included in the Santa Cruz MidCounty Groundwater Basin), but later discussion of the non-jurisdictional area seems to be more related to the Salinas Valley Basin. I am interested in your interpretation of Recommended Action #1: "Although the Plan provides adequate administrative information for the area within the Agency's jurisdictional area, which accounts for the overwhelming majority of both surface area and water use (including groundwater use), a small portion of the Subbasin lies outside that jurisdiction. Because Department staff have determined that the Agency's Alternative is likely to achieve the sustainability goal for the entire Subbasin, and that the area outside the Agency's jurisdiction is not likely to adversely affect groundwater conditions in the jurisdictional area, or be adversely affected by groundwater management in the jurisdictional area, Department staff have determined that the Alternative effectively covers the entire Subbasin and so the lack of jurisdiction over this area does not preclude approval of the Alternative. However, to ensure the Department's ability to evaluate future conditions in this area, Department staff recommend that the Agency make changes to its Alternative to facilitate that evaluation (see Recommended Action 1). " How do you think this comports with the discussion of the non-jurisdictional areas on page 9 of the Staff Assessment? "Although Department staff have determined that the Pajaro Subbasin Alternative satisfies the objectives of SGMA (see Assessment, below), the Pajaro Valley Subbasin is not yet sustainably managed. As a result, the Alternative cannot be said to effectively cover the entire Subbasin based on the current avoidance of undesirable results. Instead, staff considered whether the geology and hydrology of the non-jurisdictional area is adequately understood and whether groundwater usage in that area would or would not adversely affect the jurisdictional portion of the Subbasin, and vice versa. Staff also considered whether the non-jurisdictional area is or is not experiencing undesirable results or that implementation of the Alternative would result in the avoidance of undesirable results in the non-jurisdictional area. The Agency's understanding of hydrologic conditions in the Pajaro Valley Subbasin is demonstrated in the PVHM Report, which presents a hydrogeologic and numerical groundwater model that covers nearly the entire Subbasin and significant areas outside of the SubBasin, as shown on the map above." I am also curious about the DWR Staff research into publicly available information and the associated statement on page 10: "Land use data from 2014 revealed only small amounts of irrigated agriculture (roughly 20 acres of strawberries) within the non-jurisdictional portion of the Subbasin.<sup>37</sup> Well records indicate that only one production well is present in the non-jurisdictional portion of the Subbasin; all remaining wells are designated as being used for domestic supply." This again is the Soquel Creek Water District jurisdictional area where there are production wells. I also believe that Mr. Pete Cartwright has an agricultural well in that area, as he has many times testified publicly at Soquel Creek Water District Board meetings, illustrating high chloride levels in his well used to support the District's concerns about seawater intrusion problems. Are you aware of the production and domestic well locations and information for this area? The District had to discontinue pumping from their Country Club production well in that SubBasin non- jurisdictional area due to high levels of 1,2,3-TCP over one year ago. <https://www.soquelcreekwater.org/water-quality/123-trichloropropane-0> Does that contamination plume affect the PVWMA monitoring and reporting? Regarding the DWR Staff Recommended Action #8 and monitoring actions, I wonder if PVWMA will rely upon groundwater level monitoring information for the non-jurisdictional area SubBasin that is within the jurisdiction of the Soquel

*Creek Water District or if PVWMA will install independent monitoring wells in those (sic) areas if you have not already done so? Regarding the DWR Staff Recommended Action #8 and monitoring actions, I wonder if PVWMA will rely upon groundwater level monitoring information for the non-jurisdictional area SubBasin that is within the jurisdiction of the Soquel Creek Water District or if PVWMA will install independent monitoring wells in those (sic) areas if you have not already done so? Because the Santa Cruz MidCounty Groundwater Agency Board will be publicly unveiling their GSP at tonight's MGA Board meeting, I would be curious to know your initial thoughts on these issues because of their relevancy. The meeting is at Simpkins Swim Center and begins at 7pm. Again, Brian, congratulations on all the hard work that you and PVWMA staff and Board have done to get approval of your GSP Alternative! Sincerely, Becky Steinbruner*

Response: The Basin Boundary discussion provided in this comment is incorrect. The forwarded email originally sent to Brian Lockwood, General Manager of PV Water and the groundwater management agency southeast of the Basin, is inaccurate and cannot be used as evidence to support commentary on the accuracy of the MGA Basin Boundary. The Basin Boundary Modification process was a multi-step collaborative process that was reviewed and approved by the California Department of Water Resources (DWR). One purpose of Basin Boundary Modification is to ensure that legally required groundwater basins are managed by a Groundwater Sustainability Agency and that there are no overlaps or gaps between adjacent basin boundaries. The correct Basin boundary is provided in the Draft GSP, the GSP, and on DWR's SGMA Portal. Further, embedded within the forwarded email to Mr. Lockwood are numerous questions about the basin boundary and DWR's Basin classification decisions based on mischaracterizations, none of which are directed to the MGA and none of which are comments on the Draft GSP. No revisions to the GSP were made in response.

Comment Card dated 1/17/2019\*: *Will all public comments and agency comments be made publicly available verbatim?*

Response: This is not a comment on the Draft GSP. No changes were made to the GSP in response. Generally, all comments were made available verbatim and can be found [here](#).

Comment Card dated 1/17/2019\*: *Why is there no modeling of conjunctive use at all? Best Best & Krieger in 2013 recommended Soquel Creek Water District apply for new water rights to San Lorenzo River, under Water Code 1425 independent of the City. The District has not done so, but could for a regional solution. Why wasn't water transfer modeled when Cameron Tana stated in lieu recharge would lend better flexibility to address groundwater problems in real time?*

Response: The information provided is incorrect and includes misstatements of facts. The GSP includes modeling of Group 2 projects that include in-lieu recharge related to the Pure Water Soquel project. For purpose of modeling sustainability, the timing and amount of water transferred is relevant, not the source. Water transfers between the City of Santa Cruz and Soquel Creek Water District began pilot testing in the winter of 2018/2019. The amount and timing of water available for transfer is speculative without more data. GSP Section 4.2.3.8 *Expected Benefits* was revised to provide more detail by stating, "The MGA will continue to evaluate the amount and timing of water transferred between SCWD and SqCWD as part of the pilot and permanent In Lieu Groundwater Recharge projects. Use of this collected data and any changes to groundwater elevations will be used to better analyze the effect of project implementation on groundwater sustainability over time."

*Comment Card dated 1/18/2019\* - Comment 1: What would trigger a change in policy to charge private pumpers. What would be the process to do that?*

Response: This is not a comment on the Draft GSP, but requests a prediction regarding potential future public policy decisions. No changes were made to the GSP in response.

*Comment Card dated 1/18/2019\* - Comment 2: How will septic recharge be calculated as offset for any possible charges to private pumpers?*

Response: This is not a comment on the Draft GSP, but is a question that assumes policy decisions that could possibly be made in the future by the MGA Board of Directors during its open public meetings. No changes were made to the GSP in response.

*Comment Card dated 1/18/2019\* - Comment 3: How can Moran Lake be benefited by Pure Water Soquel When it is upstream and far away from Pure Water Soquel injection wells?*

Response: This is not a comment on the Draft GSP, but is a question that includes incorrect information about the expected benefits of the Pure Water Soquel (PWS) project discussed in Section 4. Draft GSP Section 4.2.1.8 discusses the Expected Benefits of the PWS project proposed by member agency Soquel Creek Water District. In pertinent part Draft GSP Section 4.2.1.8 reads, “Therefore, project benefits are expected to raise groundwater elevations at all of Soquel Creek Water District’s coastal monitoring wells to prevent seawater intrusion and improve groundwater levels at shallow wells along Soquel Creek to prevent additional surface water depletions. Expected benefits will be evaluated using the existing monitoring well network and data management systems to compare groundwater levels over time.” Moran Lake is not part of the area discussed, no benefits to Moran Lake are discussed in relationship to PWS, nor are benefits to Moran Lake water levels shown in the groundwater model simulations that support this discussion. No revisions were made to the GSP in response.

*Comment Card #1 dated 7/22/2019 – Comment 1: The GSP needs an initial Table of Contents to help readers understand how the contents of the document is organized*

Response: The information provided in this comment is incorrect. The Draft GSP and the GSP both contain a highly detailed Table of Contents (TOC). The Draft GSP posted as individual sections on the MGA website contained section specific TOCs. The compiled Draft GSP made available online and in Basin libraries contained a compiled TOC at the beginning of the document (after the Acronyms Section) and section specific TOCs at the start of each GSP section.

*Comment Card #1 dated 7/22/2019 – Comment 2: Executive Summary promises a list of references and technical studies. Why is it not here now? Many of the critical tables, graphs and maps do not show the source reference to verify the information or conclusions taken in the text associated with them.*

Response: The information provided in this comment is incorrect. The Executive Summary of the Draft GSP states on page ES-18 that, “The final version of the GSP will include a complete list of references and technical studies.” Generally, the Draft GSP and GSP are written to build on scientific, demographic, and other pertinent information already explained in the plan. In this respect, the GSP is written to be “self-referencing” based on detailed analysis of the information presented in the plan.

Where the plan is not self-referencing, appendices are provided, and reference documents are cited. The Draft GSP included references within the document, but the compiled reference list was not complete when the Draft GSP was first published on July 12, 2019 for the MGA Board Packet. The GSP included a references section as noted in the Draft GSP.

*Comment Card #1 dated 7/22/2019 – Comment 3[a]: The Advisory Committee members are listed but not with credentials or which stakeholder group they were selected to represent.*

Response: Draft GSP section 2.1.5.1.2 listed the rationale for identifying the Basin uses and users represented by the members of the GSP Advisory Committee and did not identify the members themselves by name. GSP section 2.1.5.1.2 was revised to provide additional information on GSP Advisory Committee composition, including the names of the individual representatives and the interests they represented. Individual member credentials were not provided as the GSP Advisory Committee selection process included 163 pages of detailed information, including public member application questionnaires, that are available as part of the September 21, 2017 MGA Board packet beginning at page 16 found [here](#).

*Comment Card #1 dated 7/22/2019 – Comment 3[b]: The [GSP] Advisory Committee did not develop the recommendations for the GSP – the executive committee did. The [GSP] Advisory Committee just approved what was handed to them.*

Response: The information provided in this comment is incorrect. The GSP Advisory Committee met from December 2017 to June 2019 to develop policy recommendations for the GSP. Each GSP Advisory Committee meeting lasted for four hours each month and represented a significant time commitment from each GSP Advisory Committee member. Committee members considered Basin specific technical groundwater information, asked MGA staff and technical consultants for pertinent Basin specific data to support its decision making, and deliberated over each of the SGMA required groundwater sustainability criteria. The GSP Advisory Committee developed its GSP recommendations over the course of 21 meetings, shared its draft policy recommendations with the MGA Board of Directors at a joint meeting on May 16, 2019 ([found here](#)), and the GSP Advisory Committee approved its final recommendations by individual committee member voting on June 19, 2019. All GSP Advisory Committee meeting materials are [found here](#).

*Comment Card #2 dated 7/22/2019 – Comment: I find the Raftelis White Paper very concerning Advising the MGA Board about how to craft actions in order to make any protests unsuccessful is deceptive and completely unacceptable. Advising that merely asking de-minimis users for basic information could qualify as “Regulating” them and therefore allowing them to be assessed is really wrong.*

Response: The information provided in this comment is incorrect and mischaracterized. The Raftelis report discussed in the comment was prepared as an overview of California public finance law and is not adopted MGA public policy. Furthermore, the section referred to in the comment discussed uncertainty in the legal interpretation of the Sustainable Groundwater Management Act (SGMA) legislation that reads, “unless the agency has regulated the users pursuant to this part.” The Raftelis report was not making a policy recommendation by quoting Water Code Section 10730(a). It was

merely pointing out uncertainty and providing examples of how courts may interpret the SGMA legislation.

*Comment Card #3 dated 7/22/2019 – Comment 1: [Draft GSP] page 2-163 - Why does the model anticipate a decrease in groundwater storage 2016-2069 when 1985-2015 show (sic) groundwater levels have risen?([see Draft GSP] page 2-138.) Cameron Tana has stated the Basin is basically at sustainable levels now (Feb 2019 modelling enrichment workshop.)*

Response: The information provided is not a comment on the Draft GSP. The questions provide erroneous information that is incorrect and/or mischaracterized. As required by SGMA, the Basin's model includes climate change assumptions that, among other things, are designed to forecast temperature, precipitation, and groundwater recharge changes over time. Changes to any or all of these parameters can result in a forecast of decreased groundwater in storage. The February 11, 2019 Groundwater Model Enrichment Session referenced in the question was recorded and is available [here](#). The recording was reviewed and Mr. Tana, a member of the technical consulting team, does not state that the Basin is in a sustainable condition, nor does he say anything similar that could have been misheard. Mr. Tana has repeatedly written and stated that the Basin will not be considered sustainable until all 13 coastal monitoring well locations are at protective groundwater elevations. Currently, five (5) of 13 coastal groundwater monitoring well locations are below protective elevations and groundwater levels at the coast declined in Water Year 2019. No changes were made to the GSP in response.

*Comment Card #3 dated 7/22/2019 – Comment 2: How did the MGA determine that Soquel Creek [Water District] is responsible for only 57% of the groundwater pumping?*

Response: Figure 2-8 of the Draft GSP found in Section 2.1.3.1.3 used detailed groundwater pumping data from member agencies for water year 2017 and the water use assumptions specified in technical memorandum *Santa Cruz Mid-County Basin Groundwater Flow Model: Water Use Estimates and Return Flow Implementation (Task 2)* to calculate Basin groundwater usage. The technical memorandum was posted to the MGA website as an appendix to the Draft GSP shortly after the Draft GSP was published on July 12, 2019. Water use calculations were revised for the GSP to use groundwater pumping data from water year 2018 and the groundwater use assumptions found in Appendix 2-B. The revised figure indicates that Soquel Creek Water District customers are responsible for 62% of Basin groundwater pumping. The figure is still found in section 2.1.3.1.3, but renumbers to Figure 2-9 for the GSP.

*Oral Comment dated 9/19/2019 – Comment 1:* Ms. Steinbruner requested that all comments be included verbatim in the final report that accompanies the GSP to the state.

Response: This is not a comment on the Draft GSP. No changes were made to the GSP in response. Generally, all comments were made available verbatim and can be found [here](#). Responses to comments will also be made available [here](#). MGA also made a comparison document to illustrate the major changes between the Draft GSP and GSP, found [here](#).

*Oral Comment dated 9/19/2019 – Comment 2:* Ms. Steinbruner expressed concerns with data used in the modeling, which did not include 1987 data developed for Soquel Creek Water District regarding the salt

water wedge. She indicated that the 1987 data and the SkyTEM data were identical and that the salt water wedge had not moved.

Response: This comment is incorrect and a mischaracterization of the facts. The MGA’s technical consultants used available historical groundwater data to develop the Basin model, including the information developed by Luhdorff and Scalmanini, Consulting Engineers (1984) that the comment misidentified as being developed in 1987. This information is included in the Soquel-Aptos Groundwater Flow Model: Subsurface Model (Task 3) Memorandum as GSP Appendix 2-D. Chloride concentrations over time indicate that the “saltwater wedge location” shown in the SkyTEM imaging data, developed in 2017 and published in 2018, indicate that the “saltwater wedge” has moved inland from the location identified in 1984. No changes were made to the GSP in response.

Oral Comment dated 9/19/2019 – Comment 3: Ms. Steinbruner requested future monitoring systems be independent and not reliant on Soquel Creek Water District data.

Response: This is not a comment on the Draft GSP. No changes were made to the GSP in response. The majority of Basin groundwater data is collected by Soquel Creek Water District within its jurisdictional boundaries. Failure to use this data would be a breach of the MGA’s fiduciary duty to manage groundwater resources based on scientific evidence. The cost to independently replicate the data provided by individual MGA member agencies, including Soquel Creek Water District, would be cost prohibitive and a waste of public resources.

Oral Comment dated 9/19/2019 – Comment 4: Ms. Steinbruner thanked the MGA for its work, but expressed disappointment that the public was not allowed to participate in the technical Surface Water Working Group that considered the groundwater-dependent ecosystems.

Response: This is not a comment on the Draft GSP. No changes were made to the GSP in response. The Surface Water Working Group was a panel of issue area experts assembled by the GSP Advisory Committee to aide in its analysis of the complex interaction of groundwater and surface water to identify and develop policy to manage groundwater dependent ecosystems within the Basin. All information developed by the working group was shared in the GSP Advisory Committee’s open public meetings.

On behalf of the Santa Cruz Mid-County Groundwater Agency (MGA), the MGA Comment Committee would like to thank you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



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January 27, 2020

Ms. Ramona Andre  
[randre@cruzio.com](mailto:randre@cruzio.com)

**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comment**

Dear Ms. Andre:

Thank you for your comment email on the Santa Cruz Mid-County Basin Draft GSP dated September 14, 2019. Santa Cruz Mid-County Groundwater Agency (MGA) staff considered your comment prior to GSP adoption by the MGA Board of Directors and took the actions described in the response below:

*Comment: To MGA: Regarding the Groundwater Sustainability Plan, this water experiment is a big sell job without long-time evidence for health and safety. We should not be drinking sewage water--treated or not. Questions were not answered at the meetings. Those on the board will be responsible for future health problems. Otherwise, it appears to be a follow-the-money plan. Where are the honest answers? There won't be any way. (sic)*

Response: GSP Section 4: Projects and Management Actions was revised to provide greater detail regarding water quality oversight in the Basin and the MGA's role in water quality monitoring.

Please note: Water quality is highly regulated by state and federal laws. All water supply projects developed within the Basin must comply with strict, often project specific, regulatory guidelines laid out and overseen by state and federal regulatory agencies. The MGA and its member agencies will use their monitoring and data management programs to support high quality oversight of local groundwater resources.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



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January 27, 2020

Mr. Richard Andre  
[randre@cruzio.com](mailto:randre@cruzio.com)

**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comment**

Dear Mr. Andre:

Thank you for your comment email on the Santa Cruz Mid-County Basin Draft GSP dated September 14, 2019. Santa Cruz Mid-County Groundwater Agency (MGA) staff considered your comments and took the actions described in the response below:

*Comment: MGA board: Along with Soquel Creek Water District, the MGA failed to supply early, complete, convincing answers about a key aspect of the sustainability plan--absolute safety of water from the Pure Water Soquel project. What happens to drugs, antibiotics, viruses, and bacteria, etc., i. e.? Can we now have the science-based assurance that we water consumers need to be comfortable about the safety of the Pure Water Soquel aspect of the plan?*

Response: GSP Section 4: Projects and Management Actions was revised to provide greater detail regarding water quality oversight in the Basin and the MGA's role in water quality monitoring and management.

Please note: Water quality is highly regulated by state and federal laws. All water supply projects developed within the Basin must comply with strict, often project specific, regulatory guidelines laid out and overseen by state and federal regulatory agencies. The MGA and its member agencies will use its monitoring and data management programs to support high quality oversight of local groundwater resources.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



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January 27, 2020

Mr. Cliff Bixler  
[clifford.bixler50@gmail.com](mailto:clifford.bixler50@gmail.com)

**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comment**

Dear Mr. Bixler:

Thank you for your comment email on the Santa Cruz Mid-County Basin Draft GSP dated September 16, 2019. Santa Cruz Mid-County Groundwater Agency (MGA) staff considered your comment prior to plan adoption by the MGA Board and took the actions described in the response below:

*Comment: Dear board members: I encourage support for the recycling and aquifer storage of water from treated sewage effluent. This is a proven and safe path to sustainable ground water supplies that is practiced in other cities with terrific positive outcomes and the addition of millions of gallons a day to the aquifer. We cannot keep over-drafting our ground water basins and wasting the valuable resource of reclaimed water. I have watched for decades as one hand wringing constituency after another deep-sixed every option for increasing our water supply and protecting aquifers. There is not a single solution that will not engender some level of resistance or alarm from some sliver of the population. It is time for our community to embrace a proven conservation oriented solution to sustainable groundwater.*

Response: GSP Section 4 Projects and Management Actions was revised to provide greater detail regarding water quality oversight in the Basin and MGA's role in water quality monitoring.

Please note: Water quality is highly regulated by state and federal laws. All water supply projects developed within the Basin must comply with strict, often project specific, regulatory guidelines laid out and overseen by state and federal regulatory agencies. The MGA and its member agencies will use its monitoring and data management programs to support high quality oversight of local groundwater resources.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



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January 27, 2020

Mr. Larry Freeman  
[larry@freemenhydro.com](mailto:larry@freemenhydro.com)

**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comment**

Dear Mr. Freeman:

Thank you for your comment email dated September 16, 2019, on the Santa Cruz Mid-County Basin Draft GSP. Santa Cruz Mid-County Groundwater Agency (MGA) staff considered your comment prior to plan adoption by the MGA Board of Directors and took the actions described in the response below:

Comment: Page 3-27 (272 of 478) Section 3.3.2.3 [Streamflow Monitoring Protocols] needs to be rewritten [to] *Include most recent USGS reference(s), remove the statement about stilling wells. A true stilling well is the most difficult to install; correctly define the term stream gauge.*

Response: USGS references have been reviewed and added as appropriate to GSP Section 6.0. GSP Section 3.3.2.3 was revised to provide flexibility regarding the monitoring equipment that may be used to collect streamflow data in the future.

Comment: *There are many devices that can be used to measure stream discharge. Why is an ADCP (Acoustic Doppler Current Profiler) specifically mentioned? An ADCP is the most sophisticated and expensive streamflow measuring device available. An ADCP would be appropriate for a full range streamflow record but is not suitable for low and very low flow conditions which is the focus of surface water depletion.*

Response: GSP Section 3.3.2.3 was revised to provide flexibility regarding the monitoring equipment that may be used to collect streamflow data in the future.

Comment: This section also uses the term "ratings curve." The correct terminology is rating curves.

Response: GSP Section 3.3.2.3 text was revised to use the correct terminology.

Comment: Page 3-97 (342 of 478). Table 3-22 title typo: *Deletion, should be Depletion.*

Response: Table 3-22. Interim Milestones for Depletion of Interconnected Surface Water Groundwater Elevation Proxies – Typographical error corrected.

*Comment: Page 3-98 (343 of 478) There are additional and more recent USGS publications that should be cited. The USGS has published references for operating streamgages, making discharge measurements, developing stage/discharge ratings, running gage station level surveys, and computing stream discharge records. All of these protocols need to be implemented in order to meet USGS standards for operating streamgages.*

Response: Section 6.0 References and Technical Studies now includes the additional USGS streamflow references that you recommended. MGA staff reviewed and incorporate additional references as needed to enhance streamflow monitoring techniques within the Basin.

*Comment: Page 4-24 (401 of 478) Clarify in the caption of Figure 4-5 that the graphs do not include projections for surface water transfer/in lieu projects even though this figure is in this section (4.2.3) which is entitled "Water Transfers / In Lieu Groundwater Recharge".*

Response: Figure 4-5. Five Year Averages of Groundwater Elevations at Coastal Monitoring Wells in Tu and Purisima AA and A Units (includes in-lieu recharge from Group 2 projects) – Note added to caption to indicate sustainability graphs include modeling of Group 2 in-lieu recharge projects. The text of Section 4.2.3.8 already discussed these model simulations in greater detail. The MGA added text to indicate its intent to continue to evaluate the amount and timing of water transfers to better analyze the effect of project implementation on groundwater sustainability over time.

*Comment: Page 4-24 (401 of 478). Section 4.2.3.9, line 5 Typo - change from "...volume of water available in the could be limited until..." to read "...volume of water could be limited until..."*

Response: Section 4.2.3.9 was rewritten to provide more detail for the GSP. The typographical error was corrected at that time.

*Comment: Page 4-26 (403 of 478). Section 4.2.4.1 (DSWMAR) This project may not address the problem of seawater intrusion unless the sites selected are in areas where the shallow groundwater aquifer is connected to the deeper aquifers near the coast.*

Response: Section 4.2.4.1 Project Description [Distributed Storm Water Managed Aquifer Recharge (DSWMAR)] – No changes were made in response to this comment regarding DSWMAR and its ability to address the problems of seawater intrusion into the Basin's deeper aquifers. Section 4.2.4.2 discusses Measurable Objectives for DSWMAR projects and focused on increased groundwater recharge into shallow aquifers. MGA staff and technical consultants agree that DSWMAR benefits to deeper aquifers and prevention of seawater intrusion into the Basin's deeper aquifers will be based on site specific geology. DSWMAR project identification is ongoing. Future Basin benefits related to DSWMAR projects will be discussed in GSP annual updates when relevant.

*Comment: Page 4-30 (407 of 478) Last paragraph regarding the treatment process used by SCWWTF to provide water to the Beltz wellfield. Does this treatment process differ from the advance water purification treatment process that is proposed by the Pure Water Soquel project? Please clarify.*

Response: Section 4.3.1 Recycled Water – Groundwater Replenishment and Reuse - No changes were made in response to your comments regarding the Recycled Water Facilities Planning Study (Kennedy/Jenks, 2018) referenced in the GSP. The details of Group 3 projects discussed in the GSP are not in the advanced planning stages. Comments on future Group 3 project details, and whether they will be implemented, is premature.

*Comment: Table 5-1 "Monitoring: Streamflow" What is included in this cost? Does the amount include the cost of installing and maintaining streamgages? Does this amount include the time needed to develop rating curves and compute streamflow records using USGS protocols? Does the cost include salary for a person(s) qualified in data collection and records computation using USGS standards and protocols? There are 7 streamgages proposed for the MGA network. One is the long-term USGS gage currently funded by USGS, SC County Flood Control, and Soquel Creek WD. Funding for this gage has a high probability of continuing indefinitely and should not require MGA funds for the foreseeable future. Four more streamgages on Soquel Creek are funded by the RCD through a grant, and have been operated by Trout Unlimited for three years. That grant is ending, so this GSP is proposing that the MGA fund these 4 sites after 2019. Two more streamgages are proposed for Aptos and Valencia creeks. Yet to be determined is the suitability of any of the 4 existing streamgage sites operated by TU for collocation with new shallow groundwater wells to monitor surface water depletion, and hence may need to be relocated. Relocation would need the same amount of funds as any new gage. This leaves the need to fully fund the installation and operation for two new gages on Aptos and Valencia Creeks. The \$16,000 annualized cost for six gages, provides \$2,667 per gage per year which seems very low, depending on what is funded by this line item.*

Response: Table 5-1 and Section 5.1.1.4.4 Monitoring: Streamflow – A typographical error was corrected. Both Table 5-1 and text in Section 5.1.1.4.4 were updated to reflect revised cost estimates to install, maintain, and monitor streamflow gages to fill data gaps identified in the GSP. Revisions were also made to Section 5.2 to include information on MGA’s plans to release an RFP for work to improve the monitoring network, including surface water monitoring.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



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January 27, 2020

Mr. Scott McGilvray  
[scottm@wateraware.net](mailto:scottm@wateraware.net)

**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comment**

Dear Mr. McGilvray:

Thank you for your comment email on the Santa Cruz Mid-County Basin Draft GSP dated September 18, 2019 and attached letter dated September 17, 2019. Santa Cruz Mid-County Groundwater Agency (MGA) staff considered your comment prior to GSP adoption by the MGA Board of Directors and took the actions described in the response below:

*Comment: The model analysis used water available for water transfer of some 800 Acre feet (AF) to 1200 AF in “normal years” and less than 200 AF in “dry years.” Close observation and study of Santa Cruz Water department annual reports for the past 22 years: Loch Lomond levels, San Lorenzo River (SLR) flows and North Coast streams indicate the amount of water available for water transfer is much more than the amount posited in the model of 2018. For example, the water year 2018 was officially a “critically dry year.” The SLR annual flow was 33,000 afy [acre feet per year] compared to the long term average of 91,000 afy. In that “critically dry year” there was over 1500 AF available in the Santa Cruz system and surplus to the needs of the community. Careful analysis of the flows during 2018 revealed that Santa Cruz could have transferred 1500 AF of water to SqCWD [Soquel Creek Water District] but depleted its own reserves only 790 AF. This volume of water available for water transfer on a regular basins is sufficient to supply both Santa Cruz and the SqCWD (sic) stated need of 1500 AF. Request: It is incumbent that the MGA redo the model analysis using available water flows of 2000 AF in normal years and 1000 AF in dry years.*

Response: This comment misstates the facts. Water Year 2018 was classified as a “dry year” not a “critically dry year” according to the methodology identified by the City of Santa Cruz Water Department. GSP Section 4.2.3.8 [Water Transfers/In Lieu Groundwater Recharge] Expected Benefits was revised to provide more detail regarding MGA plans to evaluate the amount and timing of water transfers to analyze the effect of project implementation on groundwater sustainability over time.

Please Note: Unlike the California Environmental Quality Act (CEQA), the Sustainable Groundwater Management Act does not require the MGA to analyze projects and management actions to identify a preferred alternative. Groundwater sustainability planning is supported by inclusion of a diverse

set of projects and management actions with varied water supply sources that diversify the regional water portfolio. All projects and management actions included in the GSP will be analyzed through the CEQA process if and when they are implemented by MGA member agencies.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



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January 27, 2020

Ms. Linda Wilshusen  
[liveoaklinda@gmail.com](mailto:liveoaklinda@gmail.com)

**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comment**

Dear Ms. Wilshusen:

Thank you for your comment email on the Santa Cruz Mid-County Basin Draft GSP dated September 18, 2019. Santa Cruz Mid-County Groundwater Agency (MGA) staff considered your comment prior to GSP adoption by the MGA Board of Directors and took the actions described in the response below:

Geography. p. 1-9, Section 1.4.4. - Comment: *Can you please clarify the statement that "Santa Cruz County has a total area of 607 square miles, 445 square miles of which is land area (73%) and the remaining 162 square miles is water (27%) (US Census, 2010)." The reference source for this statement does not show any information about water area (that I can find). Santa Cruz County is commonly understood to have 445 square miles of land area. The inclusion of 162 square miles of water is seemingly only possible if significant off-shore waters are included. If this is the case, it would be helpful to clearly state it because intuitively, no one familiar with the geography of our county would agree that over 1/4 of our county's geographical area consists of water.*

Response: GSP Section 1.4.4 has been updated to only present the land area of Santa Cruz County, which is approximately 445 square miles.

ASR. p. 4-16-4.19, Section 4.2.2.7 to 4.2.2.11 - Comment: *This part of the draft Plan discusses the current Santa Cruz City Water Department plan for its aquifer storage and recovery project using the existing Beltz well system in unincorporated Live Oak, noting a current cost estimate of \$21M - far below the Water Supply Advisory Committee cost estimates of \$100M+. I am fully in support of this approach. My question is what assumptions re ASR are included in the modeling results presented in Figure 4.4 (p. 4-18): this current, existing infrastructure plan or a more comprehensive/longer term project?*

Response: GSP Section 4.2.2.7 [ASR] Time-table for Implementation – Now provides details for the modeled project as “The current plan for developing ASR in the Basin would utilize to the greatest extent possible existing infrastructure, meaning that new infrastructure would be greatly limited and allowing for both incremental drought supply and groundwater sustainability benefits to begin accruing as early as 2022.”

Response: GSP Section 4.2.2.11 [ASR] Estimated Costs and Funding Plan – Now specifies that modeled ASR project, “...the current plan for development of ASR in the basin is intended to leverage the use of existing infrastructure to the greatest extent feasible. As proposed, this approach is substantially less expensive than an ASR project that was discussed by the Water Supply Advisory Committee during its work between April of 2014 and October of 2015.”

*de Minimis Users. p. 2-21, Figure 2-5, and p. 3-31 Figure 3-6 - Comment: Based on personal knowledge, I know that there are numerous pre-permit period private wells in the unincorporated urbanized areas of Live Oak and Soquel. Therefore, it seems to me that the figures noted above should include a caveat stating that 'the number of pre-1971 un-permitted wells in the urbanized areas of the county is unknown.'*

Response: Figure 2-6 Well Density per Square Mile (Draft GSP Figure 2-5) and Figure 3-6 Reduction of Groundwater in Storage Representative Monitoring Network. No changes were made in response to comments regarding de minimis users. MGA staff and technical consultants took many steps to address concerns regarding undocumented non-municipal domestic water use within the Basin. There is a note on Figure 2-6 and an extensive discussion of modeling and groundwater estimates used in the plan that provides detail on how the County’s well permit database was used and how deficiencies in this information were addressed in the GSP. This information is discussed in Sections 2.1.1.6 and 2.2.5, and documented in GSP Appendix 2-B.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



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January 27, 2020

Ms. Debra Wirkman  
[debrawirkman@sbcglobal.net](mailto:debrawirkman@sbcglobal.net)

**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comment**

Dear Ms. Wirkman:

Thank you for your comment email on the Santa Cruz Mid-County Basin Draft GSP dated September 19, 2019. Santa Cruz Mid-County Groundwater Agency (MGA) staff considered your comment prior to GSP adoption by the MGA Board of Directors and took the actions described in the response below:

Comment: A brief comment on the draft GSP: Existing groundwater quality data (baseline contaminant monitoring data) mentioned in the GSP draft should be made accessible to the public in the final GSP.

Response: GSP Section 2.2.4.4 Groundwater Quality now includes revised text to provide greater detail on water quality and contaminant monitoring within the Basin.

Response: GSP Section 4 - Projects and Management Actions now includes revised text to address concerns regarding water quality monitoring oversight within the Basin.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



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January 27, 2020

Mr. Tom Butler  
[simibutlers@gmail.com](mailto:simibutlers@gmail.com)

**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comment**

Dear Mr. Butler:

Thank you for your comment email on the Santa Cruz Mid-County Basin Draft GSP dated September 19, 2019. Santa Cruz Mid-County Groundwater Agency (MGA) staff considered your comment prior to plan adoption by the MGA Board and took the actions described in the response below:

*Comment: I strongly support the plan to recycle treated wastewater and add it to the aquifer. We must act now to ensure adequate water supplies and minimize salt water intrusion.*

Response: GSP Section 4 Projects and Management Actions was revised to provide greater detail regarding water quality oversight in the Basin and MGA's role in water quality monitoring.

Please note: Water quality is highly regulated by state and federal laws. All water supply projects developed within the Basin must comply with strict, often project specific, regulatory guidelines laid out and overseen by state and federal regulatory agencies. The MGA and its member agencies will use its monitoring and data management programs to support high quality oversight of local groundwater resources.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



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January 27, 2020

Mr. Douglas Deitch  
540 Hudson Lane  
Aptos, CA 95003

**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comment**

Dear Mr. Deitch:

Thank you for your two comment emails on the Santa Cruz Mid-County Basin Draft GSP dated September 19, 2019 and the 15 attachments that you provided on historical water issues in the region. After reviewing the information provided, MGA staff considered your primary comment and took the actions described in response:

*Comment: "Mid County Ground Water GSA" recommends to us on it's (sic) website, "If we cannot come to a local agreement on how to bring our basin into sustainability, the State will intervene. .... The Act gives the state the authority to manage the basin if we cannot do it ourselves. Local participation within the MGA is the preferred alternative to state level basin command and control regulation. Ground water sustainability in "Mid County", the Monterey Bay, and/or the entire state of California?" I know a little about that for over the last 40+ years and I vehemently DISAGREE! ... We obviously have not, did not, and "cannot do it ourselves". The SWRCB must intervene in the Midcounty, Santa Cruz and Monterey Counties, and the entire Monterey Bay.*

Response: Local groundwater management is required by state law. The Sustainable Groundwater Management Act took effect on January 1, 2015 and requires, among other things, that local water agencies establish a Groundwater Sustainability Agency (GSA), develop a Groundwater Sustainability Plan (GSP), and manage groundwater resources sustainably. The GSP must be based in science, projected to achieve sustainable groundwater management within a 20 year planning horizon, and be submitted to the California Department of Water Resources (DWR) for evaluation and approval. If DWR and/or the State Water Resources Control Board (SWRCB) find the GSP inadequate then the SWRCB has the authority to step in to manage the Basin. The MGA's GSP is grounded in science and, if implemented as planned, is projected to achieve groundwater sustainability sooner than the 20-year planning horizon allowed by state law. The GSP achieves sustainability for the Basin through MGA member agencies continued implementation of Group 1 demand management and conservation projects described in GSP Section 4.1 and MGA member agencies proposed implementation of Group 2 projects and management actions in the near term as described in GSP Section 4.2. GSP Section 5 describes implementation costs and schedule. GSP

Sections 4 and 5 were revised to provide greater detail regarding sustainable groundwater management projects and the implementation schedule and costs to achieve sustainability.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



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January 27, 2020

Ms. Erica Stanojevic  
[ericast@gmail.com](mailto:ericast@gmail.com)

**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comment**

Dear Ms. Stanojevic:

Thank you for your comment email on the Santa Cruz Mid-County Basin Draft GSP dated September 19, 2019. Santa Cruz Mid-County Groundwater Agency (MGA) staff considered your comment prior to GSP adoption by the MGA Board of Directors and took the actions described in the response below:

*Comment 1: The Draft Groundwater Sustainability Plan for the mid county basin is inadequate. The draft fails to fully assess the potential benefits of the in-lieu sharing strategy which is a key part of the Santa Cruz Water District (sic) adopted recommendations from the Santa Cruz Water Supply Advisory Committee. A pilot project on water transfers has indicated that transfers are safe. Infrastructure already is in place for transfers. The cost of in-lieu water sold from the Santa Cruz Water District appears to be inflated in this draft plan. Thus costs for transfers are likely minimal. An in-depth exploration of water transfers is merited. Regional cooperation to capture water by proactively minimally draining (perhaps to 95% capacity or so) Loch Lomond reservoir during the rainy season to prevent spillover is ignored in this draft plan. Instead, spillover water would simply run out to sea. Communication with the Santa Cruz Water District regarding potential to capture this water is a piece of an alternative not explored.*

Response: GSP Section 4 Projects and Management Actions was revised to provide a more detailed description of MGA member agency permitting requirements. GSP Section 4.2.3.8 [Water Transfers/In Lieu Groundwater Recharge] Expected Benefits was revised to provide more detail regarding the MGA's plans to evaluate the amount and timing of water transfers to analyze the effect of project implementation on groundwater sustainability over time.

Please Note: Unlike the California Environmental Quality Act (CEQA), the Sustainable Groundwater Management Act does not require the MGA to analyze projects and management actions to select a preferred alternative. Groundwater sustainability planning is supported by inclusion of a diverse set of projects and management actions with varied water supply sources that diversify the regional water portfolio. All projects and management actions included in the GSP will be analyzed through the CEQA process if and when they are implemented by MGA member agencies.

*Comment 2: Further, key pieces of the Draft GSP were not released for public review until September 10, 2019, only nine days before public comments are due. Specifically, Appendix documents Sections 2 and 3 or the Draft report were not available until September 10. This gives the public inadequate time to review these documents. Therefore, the public comment time frame should be extended to be 60 days from September 10th, or until about November 8th, to allow for adequate public review.*

Response: While many Draft GSP appendices and references were included when the Draft GSP was published in July, several Draft GSP Appendices, including the Santa Cruz Mid-County Basin Model Integration and Calibration Memo (Draft GSP A2-B renumbered to GSP Appendix 2-F) were not complete when the Draft GSP was initially released for public review on July 12, 2019. These appendices were completed in September 2019, posted to the MGA website, and announced via the MGA newsletter before the end of the comment period. We apologize for the delay in their publication.

Please Note: MGA's adopted GSP will be posted to DWR's SGMA Portal on or before January 31, 2020. DWR will then hold a 60 day comment period on the agency adopted GSP. DWR is not required to respond to comments, but shall consider comments as part of its evaluation of a Plan prior to its decision on GSP approval.

*Comment 3: References for the draft report are inadequate. Section 2.2.5 states "Complete list references will be include[d] in the Final GSP" (grammar edited). This is woefully inadequate for a document that the public is supposed to be able to review. The draft document requires a full list of references so that the public can make meaningfully informed comments.*

Response: The information provided in this comment is incorrect. The Draft GSP Executive Summary stated, "The final version of the GSP will include a complete list of references and technical studies." This note was merely to indicate that Section 6.0 References and Technical Studies had not been compiled when the Draft GSP was posted with the MGA Board Packet on July 12, 2019. Generally, the Draft GSP (and GSP) is written to build on scientific, demographic, and other pertinent information already explained in the plan. In this respect, the GSP is written to be "self-referencing" based on detailed analysis of the information presented in the plan. Where the plan is not self-referencing, appendices are provided and reference documents cited. Aside from a limited number of appendices that were not completed until September 2019 (discussed in response to Comment 2 above), the Draft GSP included detailed references and appendices within each section of the plan. A complete references section was provided in the GSP. The GSP submitted to the SGMA Portal includes reference links (or PDFs) for documents used to prepare the GSP.

*Comment 4: Although the state requires "sustainability" be met with the plan, a better goal for our aquifers would be regeneration. Cooperation between local districts and creative use of all water is a necessary component of regeneration. The Mid County Groundwater Agency is uniquely poised to ease this cooperation; evaluate in-lieu water transfers as sharing can help heal our aquifers.*

Response: The Sustainable Groundwater Management Act (SGMA) requires, among other things, that local water agencies establish a Groundwater Sustainability Agency (GSA), develop a Groundwater Sustainability Plan (GSP), and manage groundwater resources sustainably. The GSP

must be based in science, projected to achieve sustainable groundwater management within a 20 year planning horizon, be adopted by the Agency, and submitted to the California Department of Water Resources (DWR) for evaluation on or before January 31, 2020. The MGA adopted the GSP unanimously and, if implemented as planned, will achieve Basin sustainability well in advance of January 2040. The water agencies, private well owners, public participants, staff members, facilitation and technical consultants involved in plan preparation worked together to develop a bold vision for the future of our groundwater Basin. Plan implementation will require more work to ensure that the Basin has a diversified water portfolio that will restore the Basin, support all water uses and users within the Basin, including groundwater dependent ecosystems, and protect against seawater intrusion now and into our uncertain climate future.

On behalf of the Santa Cruz Mid-County Groundwater Agency (MGA), the MGA Comment Committee would like to thank you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



*Groundwater is a vital resource, together let's protect it.*

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January 27, 2020

Craig [no additional contact information was provided by commenter]

Pajaro Valley Basin Private Well Owner

**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comment**

Dear Craig:

Thank you for your comment card dated July 20, 2019 received during the Santa Cruz Mid-County Basin Draft GSP public comment period. Santa Cruz Mid-County Groundwater Agency (MGA) staff considered your comment prior to GSP adoption by the MGA Board of Directors and took the actions described in the response below:

Comment: Presentation was very disappointing. No Discussion of project costs and \$\$ impacts to residents. For example, Pure Water [Soquel Project] will increase costs significantly. Soquel [Creek Water District] will raise rates 50% over 5 yrs. This should be on slides. Also potential concerns about water quality, etc.

Response: GSP Section 5: Plan Implementation was revised to include more detail about MGA costs, member agency costs, and how MGA costs are distributed between member agencies. GSP monitoring, data management, project and management costs, and other member agency GSP related costs are discussed generally in the GSP but are not part of the MGA budget. It would be speculative to include specific information on member agency borne costs and the rate structures they set to cover those costs in the GSP.

GSP Section 4: Projects and Management Actions to Achieve Sustainability was revised to provide greater detail regarding water quality oversight in the Basin and the MGA's role in water quality monitoring.

Please note: Water quality is highly regulated by state and federal laws. All water supply projects developed within the Basin must comply with strict, often project specific, regulatory guidelines laid out and overseen by state and federal regulatory agencies. The MGA and its member agencies will use their monitoring and data management programs to support high quality oversight of local groundwater resources.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



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January 27, 2020

Michael M.  
[energyman09@yahoo.com](mailto:energyman09@yahoo.com)

**Re: Response to Draft Groundwater Sustainability Plan (GSP) Comment**

Dear Michael M.:

Thank you for your undated comment card received during the Santa Cruz Mid-County Basin Draft GSP public comment period. Santa Cruz Mid-County Groundwater Agency (MGA) staff considered your comment prior to GSP adoption by the MGA Board of Directors and took the actions described in the response below:

*Comment: Re: Pure Water Treated Sewage Injection: How good are the water quality sensors and instruments, who does the monitoring of the hardware, who responds to "out of brand" sensor alarms? What. If any, levels of pharmaceuticals be (sic) detected.*

Response: GSP Section 4: *Projects and Management Actions to Achieve Sustainability* was revised to provide greater detail regarding water quality oversight in the Basin and the MGA's role in water quality monitoring. GSP Section 2.2.4.4.2 *Contaminated Groundwater Quality* was revised to provide greater detail regarding water quality. Groundwater quality related to pharmaceutical is provided in the discussion on *Contaminants of Emerging Concern* at the end of GSP Section 2.2.4.4.2.

Please note: Water quality is highly regulated by state and federal laws. All water supply projects developed within the Basin must comply with strict, often project specific, regulatory guidelines laid out and overseen by state and federal regulatory agencies. The MGA and its member agencies will use their monitoring and data management programs to support high quality oversight of local groundwater resources.

On behalf of the MGA, the Comment Committee thanks you for your interest in groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin. We hope you will stay engaged in water resource issues, especially groundwater sustainability in the Santa Cruz Mid-County Groundwater Basin.

Please contact Sierra Ryan at [Sierra.Ryan@santacruzcounty.us](mailto:Sierra.Ryan@santacruzcounty.us) if you have questions.



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## Draft Groundwater Sustainability Plan – Public Comments Received

ID and Commenter	Document Type and Date	Separate Attachments
1. The Nature Conservancy	Letter dated 9/9/2019	Attachments A, B, C, D & E
2. NOAA - National Marine Fisheries Service	Letter dated 9/10/2019	
3. California Department of Fish and Wildlife	Letter dated 9/12/2019	
4. Audubon California; Clean Water Action and Clean Water Fund; Local Government Commission; The Nature Conservancy; Union of Concerned Scientists	Letter dated 9/19/2019	Appendix A
5. Jerome Paul	Letter dated 9/19/2019 <sup>1</sup>	
6. Soquel Creek Water District	Letter dated 9/19/2019	
7. Becky Steinbruner	Email 8/14/2019	
8. Becky Steinbruner	Email 8/28/2019	
9. Becky Steinbruner	Email 8/29/2019	
10. Ramona Andre	Email 9/14/2019	
11. Richard Andre	Email 9/14/2019	
12. Cliff Bixler	Email 9/16/2019	
13. Larry Freeman	Email 9/16/2019	Attachment
14. Becky Steinbruner	Email 9/17/2019	
15. Scott McGilvray	Email 9/18/2019	2 Attachments
16. Linda Wilshusen	Email 9/18/2019	
17. Debra Wirkman	Email 9/18/2019	
18. Tom Butler	Email 9/19/2019	
19. Douglas Deitch	Email 9/19/2019	13 Attachments
20. Douglas Deitch	Email 9/19/2019	2 Attachments
21. Erica Stanojevic	Email 9/19/2019	Attachment
22. Becky Steinbruner	Email 9/19/2019	
23. Becky Steinbruner	Comment Card dated 1/17/2019 <sup>2</sup>	
24. Becky Steinbruner	Comment Card dated 1/17/2019 <sup>2</sup>	
25. Becky Steinbruner	Comment Card dated 1/18/2019 <sup>2</sup>	
26. Craig	Comment Card dated 7/20/2019	
27. Becky Steinbruner	Comment Card dated 7/22/2019	
28. Becky Steinbruner	Comment Card dated 7/22/2019	
29. Becky Steinbruner	Comment Card dated 7/22/2019	
30. Michael M.	Comment Card undated <sup>2</sup>	
31. Becky Steinbruner	Oral Comment 9/19/2019	

<sup>1</sup> Draft GSP comment letter hand delivered at 9/19/2019 MGA Board Meeting during another agenda item.

<sup>2</sup> Draft GSP comment cards were not produced and available until the July 18, 2019 MGA Board meeting

September 09, 2019

Santa Cruz Mid-County Groundwater Agency  
c/o Soquel Creek Water District  
5180 Soquel Drive  
Soquel, CA 95073

*Submitted online via: [GSP2019Comments@midcountygroundwater.org](mailto:GSP2019Comments@midcountygroundwater.org)*

Re: Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability Plan Draft Report  
for Public Review

Dear Board Secretary,

The Nature Conservancy (TNC) appreciates the opportunity to comment on the Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability Plan Draft Report for Public Review prepared by the Santa Cruz Mid-County Groundwater Agency under the Sustainable Groundwater Management Act (SGMA) and dated July 2019. For your convenience, we have included the several attachments (discussed below) to this letter.

### ***TNC as a Stakeholder Representative for the Environment***

TNC is a global, nonprofit organization dedicated to conserving the lands and waters on which all life depends. We seek to achieve our mission through science-based planning and implementation of conservation strategies. For decades, we have dedicated resources to establishing diverse partnerships and developing foundational science products for achieving positive outcomes for people and nature in California. TNC was part of a stakeholder group formed by the Water Foundation in early 2014 to develop recommendations for groundwater reform and actively worked to shape and pass SGMA.

Our reason for engaging is simple: California's freshwater biodiversity is highly imperiled. We have lost more than 90 percent of our native wetland and river habitats, leading to precipitous declines in native plants and the populations of animals that call these places home. These natural resources are intricately connected to California's economy providing direct benefits through industries such as fisheries, timber and hunting, as well as indirect benefits such as clean water supplies. SGMA must be successful for us to achieve a sustainable future, in which people and nature can thrive within Eastern San Joaquin Groundwater Authority region and California.

We believe that the success of SGMA depends on bringing the best available science to the table, engaging all stakeholders in robust dialog, providing strong incentives for beneficial outcomes and rigorous enforcement by the State of California.

Given our mission, we are particularly concerned about the inclusion of nature, as required, in GSPs. The Nature Conservancy has developed a suite of tools based on best available

science to help GSAs, consultants, and stakeholders efficiently incorporate nature into GSPs. These tools and resources are available online at [GroundwaterResourceHub.org](https://groundwaterresourcehub.org). The Nature Conservancy's tools and resources are intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

### **Addressing Nature's Water Needs in GSPs**

SGMA requires that all beneficial uses and users, including environmental users of groundwater, be considered in the development and implementation of GSPs (Water Code § 10723.2).

The GSP Regulations include specific requirements to identify and consider groundwater dependent ecosystems (23 CCR §354.16(g)) when determining whether groundwater conditions are having potential effects on beneficial uses and users. GSAs must also assess whether sustainable management criteria may cause adverse impacts to beneficial uses, which include environmental uses, such as plants and animals. In addition, monitoring networks should be designed to detect potential adverse impacts to beneficial uses due to groundwater. Adaptive management is embedded within SGMA and provides a process to work toward sustainability over time by beginning with the best available information to make initial decisions, monitoring the results of those decision, and using data collected through monitoring to revise decisions in the future. Over time, GSPs should improve as data gaps are reduced and uncertainties addressed.

To help ensure that GSPs adequately address nature as required under SGMA, The Nature Conservancy has prepared a checklist (**Attachment A**) for GSAs and their consultants to use. The attached version of this checklist was revised in July 2019. The Nature Conservancy believes the following elements are foundational for 2020 GSP submittals. For detailed guidance on how to address the checklist items, please also see our publication, *GDEs under SGMA: Guidance for Preparing GSPs*<sup>1</sup>.

#### **1. Environmental Representation**

SGMA requires that groundwater sustainability agencies (GSAs) consider the interests of all beneficial uses and users of groundwater. To meet this requirement, we recommend actively engaging environmental stakeholders by including environmental representation on the GSA board, technical advisory group, and/or working groups. This could include local staff from state and federal resource agencies, nonprofit organizations and other environmental interests. By engaging these stakeholders, GSAs will benefit from access to additional data and resources, as well as a more robust and inclusive GSP.

#### **2. Basin GDE and ISW Maps**

SGMA requires that groundwater dependent ecosystems (GDEs) and interconnected surface waters (ISWs) be identified in the GSP. We recommend using the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) provided online<sup>2</sup> by the Department of Water Resources (DWR) as a starting point for the GDE map. The NC Dataset was developed through a collaboration between DWR, the Department of Fish and Wildlife and TNC.

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<sup>1</sup> GDEs under SGMA: Guidance for Preparing GSPs is available at: [https://groundwaterresourcehub.org/public/uploads/pdfs/GWR\\_Hub\\_GDE\\_Guidance\\_Doc\\_2-1-18.pdf](https://groundwaterresourcehub.org/public/uploads/pdfs/GWR_Hub_GDE_Guidance_Doc_2-1-18.pdf)

<sup>2</sup> The Department of Water Resources' Natural Communities Commonly Associated with Groundwater dataset is available at: <https://gis.water.ca.gov/app/NCDatasetViewer/>

### 3. Potential Effects on Environmental Beneficial Users

SGMA requires that potential effects on GDEs and environmental surface water users be described when defining undesirable results. In addition to identifying GDEs in the basin, The Nature Conservancy recommends identifying beneficial users of surface water, which include environmental users. This is a critical step, as it is impossible to define “significant and unreasonable adverse impacts” without knowing *what* is being impacted. Since the Public Draft GSP includes the Freshwater Species List for the Basin as Appendix 1-F, we did not include it as an attachment to this letter. We recommend that after identifying which freshwater species exist in your basin, especially federal and state-listed species, that you contact staff at the California Department of Fish and Wildlife (CDFW), United States Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Services (NMFS) to obtain their input on the groundwater and surface water needs of the organisms on the GSA’s freshwater species list. We also refer you to the Critical Species Lookbook<sup>3</sup> prepared by The Nature Conservancy and partner organizations for additional background information on the water needs and groundwater reliance of critical species. Because effects to plants and animals are difficult and sometimes impossible to reverse, we recommend erring on the side of caution to preserve sufficient groundwater conditions to sustain GDEs and ISWs.

### 4. Biological and Hydrological Monitoring

If sufficient hydrological and biological data in and around GDEs is not available in time for the 2020/2022 plan, data gaps should be identified along with actions to reconcile the gaps in the monitoring network.

The Nature Conservancy has thoroughly reviewed the Santa Cruz Mid-County Draft GSP. We appreciate the work that has gone into the preparation of this generally thorough plan. However, we consider it to be **incomplete** under SGMA because the basis for identification, monitoring and management of potential significant and unreasonable impacts to GDEs and ISWs are not adequately supported.

Our specific comments related to the Santa Cruz Mid-County Groundwater Sustainability Plan are provided in detail in **Attachment B** and are in reference to the numbered items in the revised checklist in **Attachment A**. **Attachment C** provides a list of the freshwater species located in the Santa Cruz Mid-County Subbasin. **Attachment D** describes six best practices that GSAs and their consultants can apply when using local groundwater data to confirm a connection to groundwater for DWR’s Natural Communities Commonly Associated with Groundwater Dataset<sup>2</sup>. **Attachment E** provides an overview of a new, free online tool that allows GSAs to assess changes in groundwater-dependent ecosystem (GDE) health using satellite, rainfall, and groundwater data.

Thank you for fully considering our comments as you develop your GSP.

Best Regards,



Sandi Matsumoto  
Associate Director, California Water Program  
The Nature Conservancy

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<sup>3</sup> Available online at: <https://groundwaterresourcehub.org/sgma-tools/the-critical-species-lookbook/>

# Attachment A

## Considering Nature under SGMA: A Checklist

The Nature Conservancy is neither dispensing legal advice nor warranting any outcome that could result from the use of this checklist. Following this checklist does not guarantee approval of a GSP or compliance with SGMA, both of which will be determined by DWR and the State Water Resources Control Board.

### Environmental User Checklist

The Nature Conservancy is neither dispensing legal advice nor warranting any outcome that could result from the use of this checklist. Following this checklist does not guarantee approval of a GSP or compliance with SGMA, both of which will be determined by DWR and the State Water Resources Control Board.

GSP Plan Element*		GDE Inclusion in GSPs: Identification and Consideration Elements	Check Box
Admin Info	<b>2.1.5 Notice &amp; Communication</b> <i>23 CCR §354.10</i>	<b>Description of the types of environmental beneficial uses of groundwater that exist within GDEs and a description of how environmental stakeholders were engaged throughout the development of the GSP.</b>	1
Planning Framework	<b>2.1.2 to 2.1.4 Description of Plan Area</b> <i>23 CCR §354.8</i>	<b>Description of jurisdictional boundaries, existing land use designations, water use management and monitoring programs; general plans and other land use plans relevant to GDEs and their relationship to the GSP.</b>	2
		<b>Description of instream flow requirements, threatened and endangered species habitat, critical habitat, and protected areas.</b>	3
		<b>Summary of process for permitting new or replacement wells for the basin, and how the process incorporates any protection of GDEs</b>	4
Basin Setting	<b>2.2.1 Hydrogeologic Conceptual Model</b> <i>23 CCR §354.14</i>	<b>Basin Bottom Boundary:</b> Is the bottom of the basin defined as at least as deep as the deepest groundwater extractions?	5
		<b>Principal aquifers and aquitards:</b> Are shallow aquifers adequately described, so that interconnections with surface water and vertical groundwater gradients with other aquifers can be characterized?	6
		<b>Basin cross sections:</b> Do cross-sections illustrate the relationships between GDEs, surface waters and principal aquifers?	7
	<b>2.2.2</b>	<b>Interconnected surface waters:</b>	8

	<b>Current &amp; Historical Groundwater Conditions</b> 23 CCR §354.16	Interconnected surface water maps for the basin with gaining and losing reaches defined (included as a figure in GSP & submitted as a shapefile on SGMA portal).		9	
		Estimates of current and historical surface water depletions for interconnected surface waters quantified and described by reach, season, and water year type.		10	
		<b>Basin GDE map included</b> (as figure in text & submitted as a shapefile on SGMA Portal).		11	
		If NC Dataset was used:	Basin GDE map denotes which polygons were kept, removed, and added from NC Dataset (Worksheet 1, can be attached in GSP section 6.0).	12	
			The basin's GDE shapefile, which is submitted via the SGMA Portal, includes two new fields in its attribute table denoting: 1) which polygons were kept/removed/added, and 2) the change reason (e.g., why polygons were removed).	13	
			GDEs polygons are consolidated into larger units and named for easier identification throughout GSP.	14	
		If NC Dataset was not used:	Description of why NC dataset was not used, and how an alternative dataset and/or mapping approach used is best available information.	15	
		<b>Description of GDEs included:</b>		16	
		Historical and current groundwater conditions and variability are described in each GDE unit.		17	
		Historical and current ecological conditions and variability are described in each GDE unit.		18	
		Each GDE unit has been characterized as having high, moderate, or low ecological value.		19	
		Inventory of species, habitats, and protected lands for each GDE unit with ecological importance (Worksheet 2, can be attached in GSP section 6.0).		20	
		<b>2.2.3 Water Budget</b> 23 CCR §354.18	Groundwater inputs and outputs (e.g., evapotranspiration) of native vegetation and managed wetlands are included in the basin's historical and current water budget.		21
			Potential impacts to groundwater conditions due to land use changes, climate change, and population growth to GDEs and aquatic ecosystems are considered in the projected water budget.		22
<b>Sustainable Management Criteria</b>	<b>3.1 Sustainability Goal</b> 23 CCR §354.24	<b>Environmental stakeholders/representatives were consulted.</b>		23	
		Sustainability goal mentions GDEs or species and habitats that are of particular concern or interest.		24	
		Sustainability goal mentions whether the intention is to address pre-SGMA impacts, maintain or improve conditions within GDEs or species and habitats that are of particular concern or interest.		25	
	<b>3.2 Measurable Objectives</b> 23 CCR §354.30	<b>Description of how GDEs were considered and whether the measurable objectives and interim milestones will help achieve the sustainability goal as it pertains to the environment.</b>		26	
		<b>3.3 Minimum Thresholds</b> 23 CCR §354.28	<b>Description of how GDEs and environmental uses of surface water were considered when setting minimum thresholds for relevant sustainability indicators:</b>		27
	Will adverse impacts to GDEs and/or aquatic ecosystems dependent on interconnected surface waters (beneficial user of surface water) be avoided with the selected minimum thresholds?		28		

		Are there any differences between the selected minimum threshold and state, federal, or local standards relevant to the species or habitats residing in GDEs or aquatic ecosystems dependent on interconnected surface waters?	29	
	<p><b>3.4 Undesirable Results</b> 23 CCR §354.26</p>	<b>For GDEs, hydrological data are compiled and synthesized for each GDE unit:</b>	30	
		If hydrological data <i>are available</i> within/nearby the GDE	Hydrological datasets are plotted and provided for each GDE unit (Worksheet 3, can be attached in GSP Section 6.0).	31
			Baseline period in the hydrologic data is defined.	32
			GDE unit is classified as having high, moderate, or low susceptibility to changes in groundwater.	33
			Cause-and-effect relationships between groundwater changes and GDEs are explored.	34
		If hydrological data <i>are not available</i> within/nearby the GDE	Data gaps/insufficiencies are described.	35
			Plans to reconcile data gaps in the monitoring network are stated.	36
			<b>For GDEs, biological data are compiled and synthesized for each GDE unit:</b>	37
			Biological datasets are plotted and provided for each GDE unit, and when possible provide baseline conditions for assessment of trends and variability.	38
			Data gaps/insufficiencies are described.	39
			Plans to reconcile data gaps in the monitoring network are stated.	40
			<b>Description of potential effects on GDEs, land uses and property interests:</b>	41
			Cause-and-effect relationships between GDE and groundwater conditions are described.	42
			Impacts to GDEs that are considered to be "significant and unreasonable" are described.	43
			Known hydrological thresholds or triggers (e.g., instream flow criteria, groundwater depths, water quality parameters) for significant impacts to relevant species or ecological communities are reported.	44
		Land uses include and consider recreational uses (e.g., fishing/hunting, hiking, boating).	45	
		Property interests include and consider privately and publicly protected conservation lands and opens spaces, including wildlife refuges, parks, and natural preserves.	46	
Sustainable Management Criteria	<p><b>3.5 Monitoring Network</b> 23 CCR §354.34</p>	Description of whether hydrological data are spatially and temporally sufficient to monitor groundwater conditions for each GDE unit.	47	
		Description of how hydrological data gaps and insufficiencies will be reconciled in the monitoring network.	48	
		Description of how impacts to GDEs and environmental surface water users, as detected by biological responses, will be monitored and which GDE monitoring methods will be used in conjunction with hydrologic data to evaluate cause-and-effect relationships with groundwater conditions.	49	

Projects & Mgmt Actions	<b>4.0. Projects &amp; Mgmt Actions to Achieve Sustainability Goal</b> <i>23 CCR §354.44</i>	Description of how GDEs will benefit from relevant project or management actions.	50
		Description of how projects and management actions will be evaluated to assess whether adverse impacts to the GDE will be mitigated or prevented.	51

\* In reference to DWR's GSP annotated outline guidance document, available at:  
[https://water.ca.gov/LegacyFiles/groundwater/sqm/pdfs/GD\\_GSP\\_Outline\\_Final\\_2016-12-23.pdf](https://water.ca.gov/LegacyFiles/groundwater/sqm/pdfs/GD_GSP_Outline_Final_2016-12-23.pdf)

# Attachment B

## TNC Evaluation of the Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability, Draft Report for Public Review

A complete draft of the Santa Cruz Mid-County Groundwater Basin Groundwater Sustainability Plan (GSP) was provided for public review on July 15, 2019. This attachment summarizes our comments on the complete public draft GSP. Comments are provided following the checklist items included as Attachment A.

Checklist Item 1 – Notice & Communication (23 CCR §354.10).

- [Section 2.1.5.1 Description of Beneficial Uses and Users in the Basin (pp. 2-52)] **Please include the following in the list of beneficial uses and users of groundwater in the Basin: Protected Lands, including preserves, refuges, conservation areas, recreational areas and other protected lands; and Public Trust Uses, including wildlife, aquatic habitat, fisheries, recreation and navigation.**

Checklist Item 2 to 4 - Description of general plans and other land use plans relevant to GDEs and their relationship to the GSP (23 CCR §354.8).

- [Section 2.1.2 Water Resources Monitoring and Management Programs (pp. 2-21 to 2-28)] Per the GSP Regulations (23 CCR §354.34 (a) and (b)), monitoring must address trends in groundwater *and related surface conditions* (emphasis added). In order for this section to provide the appropriate context and help assure integration of GSP implementation with other ongoing regulatory programs, this section should describe the following:
  - Monitoring activities and responsibilities by State, Federal and local agencies and jurisdictions related to aquatic resources and GDEs that could be affected by groundwater withdrawals should be discussed.
  - Section 2.1.2.1 states that there is steelhead habitat monitoring by local agencies; however, there is no discussion on how the steelhead monitoring sites overlap with existing hydrologic monitoring (e.g., nested monitoring wells, stream gauges). A discussion on how steelhead and hydrologic monitoring will be combined to characterize and monitor whether groundwater conditions are causing adverse impacts to this priority species (see Table 2-1) should be included in Sections 2.1.2.1 or 2.1.2.2.
  - The Critical Habitat for Threatened and Endangered Species website maintained by the US Fish and Wildlife Service (<https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77>) identifies lands with endangered and threatened species in the Basin, including species potentially associated with interconnected surface waters ISWs, including Steelhead (*Onocorhynchus mykiss*) and Tidewater goby (*Eucyclogobius newberryi*). Also please refer to

the Critical Species Lookbook<sup>4</sup> to review and discuss the potential groundwater reliance of critical species in the basin. **Please include a discussion regarding the management of critical habitat for these aquatic species and its relationship to the GSP.**

- [Section 2.1.3 Land Use Elements or Topic Categories of General Plans (pp. 2-29 to 2-36)]
  - This section should include a discussion of General Plan goals and policies related to the protection and management of GDEs and aquatic resources that could be affected by groundwater withdrawals, rather than being limited to goals and policies directly related to groundwater resources alone. Section 2.1.3 does not identify any General Plan policies related to these resources. **Please include a discussion of how implementation of the GSP may affect and be coordinated with General Plan policies and procedures regarding the protection of wetlands, aquatic resources and other GDEs and ISWs.**
  - The Open Space and Conservation Element of the County's General Plan ([http://www.sccoplanning.com/Portals/2/County/userfiles/106/GP\\_Chapter%205\\_Open%20Space\\_Conservation.pdf](http://www.sccoplanning.com/Portals/2/County/userfiles/106/GP_Chapter%205_Open%20Space_Conservation.pdf)) requires a mapping program to determine the boundaries of sensitive habitats. **Please include information from this program as it relates to the identification and management of GDEs under the GSP.**
  - This section should identify Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans (NCCPs) within the Basin and if they are associated with critical, GDE or ISW habitats such as the City of Santa Cruz's Anadromous Salmonid HCP [www.cityofsantacruz.com/Home/ShowDocument?id=34225](http://www.cityofsantacruz.com/Home/ShowDocument?id=34225). **Please identify all relevant HCPs and NCCPs within the Basin, and address how GSP implementation will coordinate with the goals of these HCPs or NCCPs.**
- [Section 2.1.3.4 Summary of the Process for Permitting New or Replacement Wells in the Basin] **This section should include a discussion of the following:**
  - Future well permitting must be coordinated with the GSP to assure achievement of the Plan's sustainability goals.
  - The State Third Appellate District recently found that Counties have a responsibility to consider the potential impacts of groundwater withdrawals on public trust resources when permitting new wells near streams with public trust uses (ELF v. SWRCB and Siskiyou County, No. C083239). **The need for well permitting programs to comply with this requirement should be stated.**
- [Section 2.1.4.12 Impacts on Groundwater Dependent Ecosystems]

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<sup>4</sup>Available online at: <https://groundwaterresourcehub.org/sqma-tools/the-critical-species-lookbook/>

- **Please refer to the Critical Species Lookbook<sup>5</sup> to review and discuss the potential groundwater reliance of critical species in the basin.**
- **Please include a description of the in-stream flow requirements for identified coho and steelhead salmon habitat and their relationship to the GSP.**
- **Please identify groundwater-related knowledge and monitoring gaps for the critical species and GDEs identified in the Basin.**

Checklist Items 6 and 7 – Hydrogeologic Conceptual Model (23 CCR §354.14)

- [Section 2.1.1.1.1 Santa Cruz Mid-County Basin (pp. 2-9 to 2-10)] The bottom boundary of the basin is imprecisely described as including the “Purisima Formation, Aromas Red Sands and certain other Tertiary-age aquifer units underlying the Purisima Formation.” **The bottom boundary of the basin should be more precisely defined in accordance with DWR guidance.** As noted on page 9 of DWR's Hydrogeologic Conceptual Model BMP ([https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP\\_HCM\\_Final\\_2016-12-23.pdf](https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_HCM_Final_2016-12-23.pdf)) "the definable bottom of the basin should be at least as deep as the deepest groundwater extractions". Properly defining the bottom of the basin will prevent the possibility of extractors with wells deeper than the basin boundary from claiming exemption of SGMA due to their well residing outside the vertical extent of the basin boundary.
- [Section 2.2.1.2 Geology and Geologic Structures (pp. 2-65 to 2-72)] The cross sections provided in Figures 2-15 and 2-16 are regional and highly generalized, and do not include a graphical representation of how shallow groundwater may interact with ISWs or GDEs that would allow the reader to understand this topic. Better conceptualization is provided in Figure 2-40; however, it would be helpful if this figure, or a similar figure reproduced in this section, were to include additional surface-groundwater interaction scenarios and GDEs. **Please consider including an example near-surface cross section that depicts the conceptual understanding of shallow groundwater and stream interactions at different locations, including perched and regional aquifers as well as GDEs.** If data are not available, please identify this as a knowledge gap and elaborate in the monitoring section how and where additional wells can reconcile this gap.

Checklist Items 8, 9 and 10 – Interconnected Surface Waters (ISW) (23 CCR §354.16)

- [Section 2.2.2.6 Identification of Interconnected Surface Water Systems (pp. 2-114 to 2-121)]
  - On page 2-116 the third bullet states “Groundwater only contributes a small amount of flow (<0.5 cfs) to each of these segments in the months with lowest flows.” While this is technically correct based on modeled results, this baseflow measurement is highly uncertain due to a lack of co-located stream

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<sup>5</sup> Available online at: <https://groundwaterresourcehub.org/sgma-tools/the-critical-species-lookbook/>

gauges and nested or clustered groundwater wells throughout Soquel Creek. It is also potentially misleading since, for example Figures 2-41 shows that during 22 out of 27 years, the total flow in this reach of Soquel Creek was only 1.5 cfs or less. **Please remove the word “only” and provide perspective on the total percentage of baseflow discharge included in dry month discharge, as well as modelling uncertainties.**

- **This section should discuss or reference any in-stream flow requirements, especially flow needs for critical species, in each of the interconnected streams** including the amount, time of year when the flow minimum is specified, the duration, the species for which it applies, associated permits that set forth the requirements, and the regulating agency setting forth the compliance requirements.
- On page 2-118, it is stated that the MGA intends to improve Basin monitoring to better understand surface-groundwater interactions over time. **Nested monitoring wells would be helpful near surface water to show how pumping is impacting surface water flows and GDEs in all of the interconnected surface waterways (not just in Soquel Creek). More specifically, we suggest installing three nested wells perpendicular to Soquel Creek near several pumping wells (perhaps one in each gaining reach and one in the losing reach; Nob Hill, Simons, and Main Street), so that we can assess how well connected the A, AA and Tu formations are with Soquel Creek. This will also help to gauge what distance to the creek is most representative of a shallow groundwater gradient (to validate EDF’s approach), and allow updating of the groundwater model as appropriate.**
- Figure 2-9 provides good perspective on the potential connection between surface and groundwater for various streams and reaches and Section 2.2.2 provides a discussion regarding some of the reaches that are considered potentially most sensitive to streamflow depletion by groundwater extraction. However, more information is required to understand of how the connection is affected by year type and reach overall, and to substantiate prioritization of these stream reaches. **We recommend that a table be included presenting estimates of current and historical surface water depletions for ISWs quantified and described by reach, season, and water year type.**

#### Checklist Items 11 through 20 – Groundwater Dependent Ecosystems (23 CCR §354.16)

- [Section 2.2.2.7 Identification of Groundwater-Dependent Ecosystems (pp. 2-122 to 2-127)]
  - On page 2-116 it is stated that the focus of GDE identification was narrowed to the habitats supported by surface water systems (i.e., those located near streams). Furthermore, it was stated that “... the group determined that any possible ecosystem effects would be challenging to evaluate, are likely quite small if they exist at all, and will benefit from the management policies put in

place to protect priority aquatic species." Since, other GDEs may exist in areas of shallow groundwater away from streams, **please provide a more substantial justification for focusing GDE identification efforts on riparian zones alone.**

- Page 2-122 states that "Other ecosystems that were identified were found to be generally supported by interflow in perched groundwater, and surface runoff." The nature and locations of the "other ecosystems" is not discussed. Also, while the interflow hypothesis (redwood sponge effect) is potentially plausible, there is no evidence to support that this water is actually soil water in the unsaturated zone versus groundwater flow in an aquifer that is interacting with other aquifer formations. This "interflow" should not be considered beyond the scope of GSP management, until it has been better characterized and shallow monitoring wells have been installed in the redwood-forested areas. SGMA defines aquifers as "a body of rock or sediment that is sufficiently porous and permeable to store, transmit, and yield significant or economic quantities of groundwater to wells and springs". Given the potential significance of "interflow" to ecosystems and surface water in Soquel Creek, more information is necessary to substantiate these statements. Other GDEs may exist in areas of shallow groundwater away from streams. **Please provide additional details regarding the "other ecosystems" discussed on pages 2-116 and 2-122**
- Page 2-123 states that the map of GDEs in the Basin included as Figure 2-47 was developed using guidance developed by TNC. Please refer to Attachment C of this letter for best practices in using groundwater data to verify whether NCCAGs are GDEs. **Please discuss what temporal and spatial data were used to identify GDE's presented in Figures 2-47 and 2-48 (and remove NCCAG polygons along groundwater-connected stream reaches) and identify any data gaps.**
- SGMA defines GDEs as "ecological communities and species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface". **We recommend that depth to groundwater contour maps be used to verify whether a connection to groundwater exists for polygons in the NC Dataset, instead of relying on inferences based on the presence of surface water features in the Basin. Please refer to Appendix C of this letter for best practices for using groundwater data to verify a connection to groundwater.**
- While depth to groundwater is generally accepted as being a proxy for confirming that polygons in the NC dataset are connected to groundwater, the variable needs of plant species and their dependence on seasonal and inter-annual groundwater level fluctuations should be considered when applying this criterion. The GSP does not cite what hydraulic criteria were used to establish a GDE. **It is highly advised that seasonal and interannual fluctuations in the groundwater regime are taken into consideration.**
- The last bullet on page 2-124 states that modeling and management should focus on areas of highest groundwater extraction where streams are

interconnected with groundwater. **Please identify specifically where these areas are located.**

- The first bullet on page 2-123, states that there are many factors beyond groundwater management that affect streamflow, that are beyond the scope of the GSP yet were accounted for in the analysis. **Please identify how these factors were accounted for in the analysis.**
- Very little description is provided regarding the nature and function of the identified GDEs, their potential sensitivity to groundwater and surface water supply changes, their relative habitat value. **We recommend the inclusion of a discussion regarding the nature and characteristics of the identified GDEs.**

#### Checklist Items 21 and 22 – Water Budget (23 CCR §354.18)

- [Section 2.2.3 Water Budget Estimates (pp. 2-128 to 2-170)] The following items related to GDEs, wetlands and riparian areas should be clarified or considered:
  - Groundwater outflow to ET is not identified as a groundwater budget component (Table 2-9). **Since wetlands, GDEs, and riparian vegetation are recognized as beneficial users of groundwater in the Basin, they should be included in the groundwater budget as ET demands. Calculations should be provided to quantify the amount of ET in the GDEs both spatially and temporally, including water year type. Please identify any data gaps.**
  - “Evapotranspiration” is identified in Table 2-9 as a stream system water budget outflow component. It is not appropriate to identify the existence of GDEs, and then to assume that they meet all of their water demand through surface water and do not rely on groundwater to meet any demand. **Please include an explanation of the approach to determining the amount of riparian ET demand met by streamflow both spatially and temporally, including water year type, and identify any data gaps.**
  - Table 2-9 states that with regard to groundwater discharge to creeks, “... calibration to streamflow indicated groundwater interactions less significant than watershed characteristics.” With regards to outflow of surface water to evapotranspiration, the table states that this value was derived “based on calibration of potential evapotranspiration. Both values were derived from the calibrated model, yet the GSP states that the model did not simulate evapotranspiration of groundwater. **Please provide additional explanation regarding the approach used to determining the amount of evapotranspiration from riparian areas and other GDEs and what is meant by the statement that groundwater interactions are less important than watershed characteristics. Please also discuss the rationale for the simplifying modeling assumption that GDEs derive all of their water uptake from surface water, and identify any data gaps relative to assessment and management of GDEs. These critical and unverified assumptions could fundamentally alter the definition of GDEs in the basin, and subsequent evaluation in the plan.**

- Shallow monitoring wells are only available for a portion of the Soquel Creek to validate shallow groundwater modeling and identifies this lack as a data gap (Page 2-131). Section 2.2.3.4.1 (p 2-135) identifies that the most important aspect of the surface water budget is its connection to groundwater for GDEs. **Please provide additional evaluation and discussion regarding the level of uncertainty and limitations resulting from this data gap. Please evaluate the effect this data gap on the modeling results related to ISWs and surface-groundwater interaction by conducting a sensitivity analysis.**

Checklist Items 23 to 25 – Sustainability Goal (23 CCR §354.24)

- [Section 3.1 Sustainability Goal (p. 3-1)] The sustainability goal includes maintaining groundwater contributions to streamflow; however, the needs of Steelhead and Coho are very specific in terms of seasonal needs for minimum flows and avoidance of sudden, even temporary, declines in interconnected surface water levels prior to the outmigration of fry. **Please include streamflow for coho and steelhead habitat as a component of the sustainability goal.**

Checklist Item 26 – Measurable Objectives (23 CCR §354.30)

- [Section 3.2.2 Process of Developing Sustainable Management Criteria (p. 3-3 to 3-4)] No reference is made to the review of supporting documents for General Plan Conservation or Land Use Elements, or to the review of environmental management studies and documents such as Biological Assessments, Biological Opinions, HCPs, NCCPs, or other studies regarding the current and historical conditions of the beneficial uses being evaluated. **Please provide detail on how sustainable management criteria were developed for GDEs and streamflow habitat, and how the above supporting documents were considered.**

Checklist Items 27 to 29 – Minimum Thresholds (23 CCR §354.28) and Checklist Items 30 to 46 – Undesirable Results (23 CCR §354.26)

- [Section 3.4.2 Minimum Thresholds – Chronic Lowering of Groundwater Levels (p. 3-44 to 3-50)]
  - The relationship between the minimum threshold for chronic lowering of groundwater levels and potential significant and unreasonable impacts to GDEs and ecological beneficial uses of surface water is described on page 3-47, and is based on groundwater monitoring at a few wells on lower Soquel Creek. **Please provide additional analysis to substantiate the potential impacts of applying the proposed minimum thresholds will not cause significant and unreasonable impacts to GDEs and ecological beneficial uses of ISW, or identify this as a data gap.**
  - In Section 3.4.2.5 (pp. 3-49 to 3-50), the potential effects of undesirable results on environmental beneficial users are not adequately described and quantified. Text on p 3-56 states that “increasing groundwater levels above

current levels will generally improve already sustainable conditions for GDEs. **Please expand the section to describe the potential effects of undesirable results on all beneficial uses and users of including environmental uses and users.**

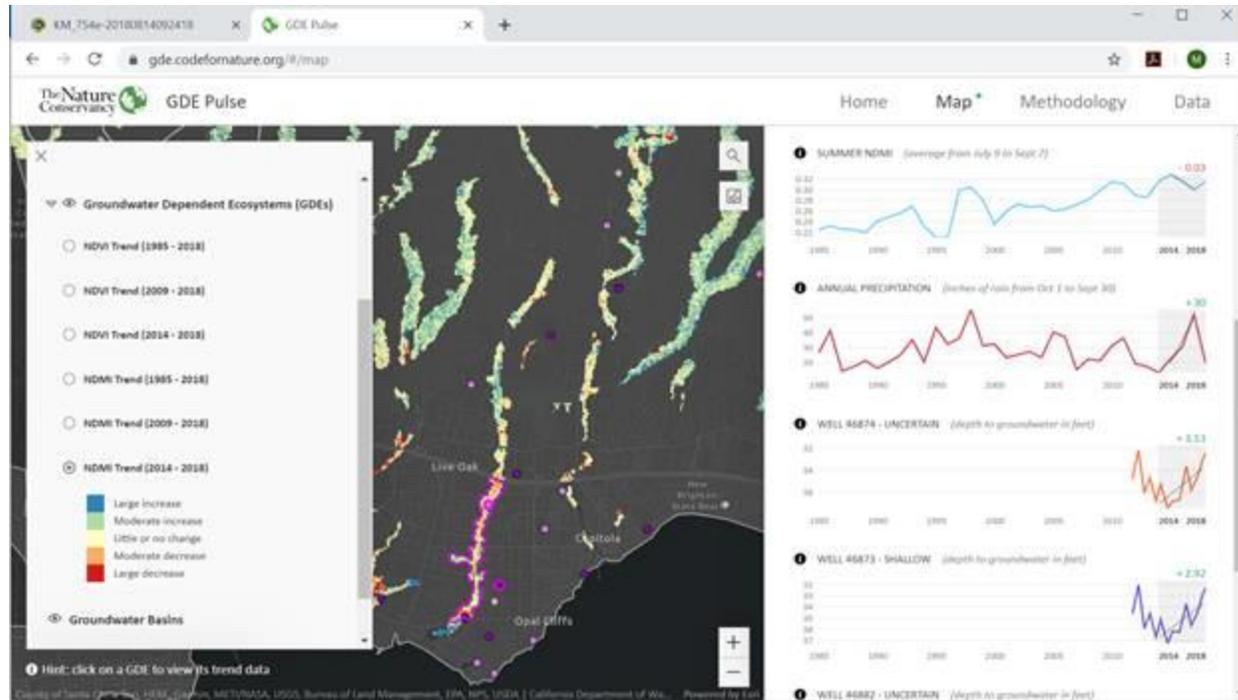
- Section 3.4.2.6 (p. 3-50) states that there are no relevant local, state or federal standards for the chronic lowering of groundwater levels. **Please include a reference to the appropriate section for minimum thresholds related to GDE's, and Coho and Steelhead streamflow habitat, and discuss the potential relationship between the proposed minimum threshold for chronic lowering of groundwater levels and these standards.**
- [Section 3.9.1 Undesirable Results – Depletion of Interconnected Surface Water (pp. 3-90 to 3-92)]
  - Section 3.9.1.1 presents the results of an analysis to assess whether groundwater level monitoring can serve as suitable surrogate to assess depletion of interconnected surface water. The section states that the analysis is conducted outside the calibrated use of the model, adding additional uncertainty to the results. An additional consideration is that the only shallow groundwater monitoring data available are in lower Soquel Creek, but GDEs and ISWs are located throughout the Basin. Finally, although the analysis aims to provide a correlation between groundwater levels and streamflow discharge, not attempt to make a correlation between groundwater levels and ecosystem response has been undertaken. **The data gaps associated with establishment of minimum thresholds for depletion of ISW should be described and a plan provided to address them. To the extent data are available, please plot hydrologic data for locations with identified GDEs and instream flow requirements for coho and steelhead salmon.** This is particularly important in areas identified in Section 3.9.1.3 (p. 3-91) where private domestic wells screened in shallow alluvial sediments are directly connected to surface water.
- [Section 3.9.2 Minimum Thresholds – Depletion of Interconnected Surface Water (pp. 3-92 to 3-96)]
  - In Section 3.9.2, the minimum threshold is established as the highest seasonal low groundwater level elevation in shallow groundwater monitoring wells during below- average rainfall years from the start of monitoring through 2015. While this threshold may deal with the uncertainty of establishing minimum thresholds where monitoring data are available, other GDEs throughout the basin lack the monitoring data for a reliable linkage between groundwater levels and ecosystem stress response. As such, the proposed minimum threshold is not proven to be correlated, and should not be assumed to be protective of GDE and ISW resources. **Consideration should be given to establishing a minimum thresholds based on species or ecosystem responses as measured by biological monitoring or remote sensing, such as through the Steelhead monitoring**

**program, by the GDE Pulse tool (Attachment D), and/or a similar approach.**

- **Section 3.9.2.1 should reference rooting depth information for riparian vegetation in GDEs to help support the minimum thresholds for shallow groundwater elevations.**

Checklist Items 47, 48 and 49 – Monitoring Network (23 CCR §354.34)

- [Section 3.3 Monitoring Network] The GSP proposes to use groundwater level monitoring for chronic groundwater level decline as a surrogate for monitoring the depletion of ISW. We have the following comments.
  - Per the GSP Regulations (23 CCR §354.34 (a) and (b)), monitoring must address trends in groundwater and related surface conditions (emphasis added). Groundwater level monitoring alone may be insufficient to establish a linkage between groundwater extraction and potentially resulting impacts to environmental resources associated with GDEs and ISWs. The cause-effect relationship between groundwater levels and the biological responses that could result in significant and unreasonable impacts to ISWs and GDEs depends on a number of complicated factors, and this relationship is not characterized or discussed. As such, it is not possible to determine whether the proposed monitoring, minimum thresholds and measurable objectives are sufficiently protective to ensure significant and unreasonable impacts to GDEs and ISWs will be prevented. The GDE Pulse interactive mapping application provides an example of a linkage between groundwater level data and GDE health that could be used to incorporate remote sensing into an efficient and incisive monitoring program (see screenshot example below). **Please provide an explanation how groundwater levels will specifically be used to assess adverse impacts to GDEs and ISWs, and identify any data gaps and how they will be addressed.**



- [Section 3.3.4.1 Groundwater Level Monitoring Data Gaps (p. 3-41)] Additional monitoring wells are proposed to measure groundwater levels and quality in critical areas where data are sparse. These include increased coverage are identified in the upper Soquel Creek watershed. We have the following comments.
  - The areas identified with potential GDEs (Figure 2-9) are located throughout the Basin; however, the only monitoring wells suitable for assessing impacts to GDEs and ISWs are on the lower reach of Soquel Creek. In Section 3.3.4.1, on page 3-41 and Figure 3-9, eight locations are proposed for installation of additional shallow monitoring wells to assess groundwater interaction with ISWs and GDEs. Locations should be prioritized near high value or sensitive resources that are vulnerable to significant and unreasonable impacts, such as where GDEs include habitat for protected species and are proximal to areas of groundwater extraction. These determinations should be vetted with agency officials responsible for the protection of the habitat and species involved. **Please discuss the results of a resource assessment or consultations with resource managers that demonstrates a sufficient number of wells is proposed to address data gaps near GDEs and ISWs, and that they are being sited where they will provide the most benefit. Alternatively, please outline the process by which this will be accomplished.**
  - **As discussed in our comments above, please address how the need to link and correlate groundwater level declines to biological responses, and significant and adverse impacts to GDEs and ISWs will be addressed at the locations where additional wells are installed.**
  - Well sites near ISWs should be selected at varying distances from streams and completed as vertically-nested clusters to capture the lateral and vertical gradients between the pumped depths in the aquifer system and the shallow

groundwater aquifers that are in communication with ISWs or GDEs. Ideally, co-locating stream gauges with clustered wells would enhance understanding about where ISWs exist in the basin and whether pumping is causing depletions of surface water or impacts on beneficial users of surface water and groundwater. **There is a need to enhance monitoring of stream flow and vertical groundwater gradients by installing more stream gauges and clustered/nested wells near streams, rivers or wetlands.**

- Addressing data gaps is typically iterative and it is not reasonable to expect it will be a one-time process. **Please describe the process by which data gaps will be identified and addressed on an ongoing basis.**
- [Section 5.1.1.4 Data Collection, Analysis, and Reporting indicates that data regarding GDEs is not currently included in the proposed Data Management System. Per the GSP Regulations (23 CCR §354.34 (a) and (b)), monitoring must address trends in groundwater *and related surface conditions* (emphasis added). You cannot manage what you do not measure. **Please add a data collection, analysis and reporting category for GDEs and ISWs, and how it will be incorporated in the data management system to assess potential significant and unreasonable impacts to environmental beneficial uses and users.**
- [Section 5.1.1.4.6 Data Collection: Other (p. 5-6)] This section states that additional data on fish and stream habitat will be developed; however, GDEs are not listed. Chapter 5 does not discuss using aerial imagery or remote sensing for GDE assessment, which is increasingly recognized as tool for efficient and objective direct monitoring of ecosystem health in GDEs and ISWs. Without establishing the appropriate linkages between groundwater level changes and GDE stress of vigor, groundwater level monitoring alone may be insufficient to assess whether the GSP is effectively preventing undesirable results. **Please consider the potential use of remote sensing data and imagery as a monitoring tool, and expand it to monitoring surface indicators of ISW and GDE ecosystem health.**
- [Section 5.3 Annual Reporting p 5-13]: This section lists the procedural and substantive requirements for annual reporting. **Please add reporting metrics and maps that include the status of GDEs, ISW, and fish habitat.**

Checklist Items 50 and 51 – Project and Management Actions (23 CCR §354.44)

- [Section 4 Projects and Management Actions (p. 4-1)] The Basin includes many GDEs and ISWs which represent beneficial uses and users of groundwater, and include potentially sensitive resources and protected lands. Environmental resource protection needs should be considered in establishing project priorities. In addition, consistent with existing grant and funding guidelines for SGMA-related work, priority should be given to multi-benefit projects that can address water quantity as well as providing environmental benefits or benefits to disadvantaged communities. **Please include a section on project selection criteria and include environmental benefits and multiple benefits as criteria for assessing project priorities.**
- Table 4-1 (pp. 4-2 to 4-7) lists potential projects and the Measurable Objective that is expected to benefit. Only water supply benefits are listed, but maintenance or recovery of groundwater levels, or construction of recharge facilities, also will have environmental benefits in many cases. From the table, it is not possible to distinguish the full range of project benefits or how the projects will be prioritized. **It**

**would be advantageous to demonstrate multiple benefits from a funding and prioritization perspective.**

- [Section 4, Table 4-2 Identified Potential Future Projects and Management Actions (Group 3) pp. 4-3 to 4-4]
  - **For the future projects identified, please consider stating how ISWs and GDEs will benefit or be protected, or what other environmental benefits will accrue.**
  - If ISWs will not be adequately protected by those listed, **please include and describe additional management actions and projects targeted for protecting ISWs.**
  - Recharge ponds, reservoirs and facilities for managed stormwater recharge can be designed to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. In some cases, such facilities have been incorporated into local HCPs, more fully recognizing the value of the habitat that they provide and the species they support. For projects that will be constructing recharge ponds, **please consider identifying if there will be habitat value incorporated into the design and how the recharge ponds will be managed to benefit environmental users.**
  - Specific examples of how project descriptions may be refined to incorporate environmental benefits include the following:
    - Group 3 Groundwater Pumping Curtailment and or Restrictions. This project is designed to address seawater intrusion. **Please consider expanding the policy to curtail and or restrict groundwater extractions to include areas identified with GDEs, ISW, or fish habitat that might be impacted.**
    - For examples of case studies on how to incorporate environmental benefits into groundwater projects, please visit our website: <https://groundwaterresourcehub.org/case-studies/recharge-case-studies/>
- [Section 5.1.1.3 Management and Coordination (p. 5-3)] This section describes technical work to support the GSP; however, the theme of the description is that the focus is on water supply and seawater issues. **Please expand the narrative to include GDEs, ISW, and fish habitat.** For example under Section 5.1.1.4.4 Monitoring: Streamflow (p 6-6) there is acknowledgement that MGA member agencies use streamflow monitoring for fish habitat, but with the proposed new gauges there is no mention of using the data to support monitoring of GDEs, ISW, or fish habitat. Please incorporate these monitoring components where appropriate. Also, there is no discussion of management actions that will be taken to assure SGMA compliance if monitoring data indicate that measurable objectives or interim milestones for GDEs or ISWs are not being achieved, or if data indicate that minimum thresholds will be violated. An adaptive management approach, where monitoring data are used to assess results and inform refinement of the management approach is typically specified. **Please identify what management actions will be taken if monitoring data indicate that Measurable Objectives or Interim Milestones are not being achieved, or undesirable results are imminent.**

## Attachment C

### Freshwater Species Located in the Santa Cruz Mid-County Subbasin

To assist in identifying the beneficial users of surface water necessary to assess the undesirable result “depletion of interconnected surface waters”, Attachment C provides a list of freshwater species located in the Santa Cruz Mid-County Subbasin. To produce the freshwater species list, we used ArcGIS to select features within the California Freshwater Species Database version 2.0.9 within the Santa Cruz Mid-County groundwater basin boundary. This database contains information on ~4,000 vertebrates, macroinvertebrates and vascular plants that depend on fresh water for at least one stage of their life cycle. The methods used to compile the California Freshwater Species Database can be found in Howard et al. 2015<sup>6</sup>. The spatial database contains locality observations and/or distribution information from ~400 data sources. The database is housed in the California Department of Fish and Wildlife’s BIOS<sup>7</sup> as well as on The Nature Conservancy’s science website<sup>8</sup>.

Scientific Name	Common Name	Legally Protected Status		
		Federal	State	Other
<b>BIRD</b>				
<i>Actitis macularius</i>	Spotted Sandpiper			
<i>Aechmophorus clarkii</i>	Clark's Grebe			
<i>Aechmophorus occidentalis</i>	Western Grebe			
<i>Agelaius tricolor</i>	Tricolored Blackbird	Bird of Conservation Concern	Special Concern	BSSC - First priority
<i>Aix sponsa</i>	Wood Duck			
<i>Anas acuta</i>	Northern Pintail			
<i>Anas americana</i>	American Wigeon			
<i>Anas clypeata</i>	Northern Shoveler			
<i>Anas crecca</i>	Green-winged Teal			
<i>Anas cyanoptera</i>	Cinnamon Teal			
<i>Anas discors</i>	Blue-winged Teal			
<i>Anas platyrhynchos</i>	Mallard			
<i>Anas strepera</i>	Gadwall			
<i>Anser albifrons</i>	Greater White-fronted Goose			
<i>Ardea alba</i>	Great Egret			
<i>Ardea herodias</i>	Great Blue Heron			
<i>Aythya affinis</i>	Lesser Scaup			

<sup>6</sup> Howard, J.K. et al. 2015. Patterns of Freshwater Species Richness, Endemism, and Vulnerability in California. PLoS ONE, 11(7). Available at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0130710>

<sup>7</sup> California Department of Fish and Wildlife BIOS: <https://www.wildlife.ca.gov/data/BIOS>

<sup>8</sup> Science for Conservation: <https://www.scienceforconservation.org/products/california-freshwater-species-database>

Aythya americana	Redhead		Special Concern	BSSC - Third priority
Aythya collaris	Ring-necked Duck			
Aythya marila	Greater Scaup			
Aythya valisineria	Canvasback		Special	
Botaurus lentiginosus	American Bittern			
Bucephala albeola	Bufflehead			
Bucephala clangula	Common Goldeneye			
Butorides virescens	Green Heron			
Calidris alpina	Dunlin			
Calidris mauri	Western Sandpiper			
Calidris minutilla	Least Sandpiper			
Chen caerulescens	Snow Goose			
Chen rossii	Ross's Goose			
Chroicocephalus philadelphia	Bonaparte's Gull			
Cistothorus palustris palustris	Marsh Wren			
Cygnus columbianus	Tundra Swan			
Cypseloides niger	Black Swift	Bird of Conservation Concern	Special Concern	BSSC - Third priority
Egretta thula	Snowy Egret			
Empidonax traillii	Willow Flycatcher	Bird of Conservation Concern	Endangered	
Fulica americana	American Coot			
Gallinago delicata	Wilson's Snipe			
Haliaeetus leucocephalus	Bald Eagle	Bird of Conservation Concern	Endangered	
Himantopus mexicanus	Black-necked Stilt			
Icteria virens	Yellow-breasted Chat		Special Concern	BSSC - Third priority
Limnodromus scolopaceus	Long-billed Dowitcher			
Lophodytes cucullatus	Hooded Merganser			
Megaceryle alcyon	Belted Kingfisher			
Mergus merganser	Common Merganser			
Mergus serrator	Red-breasted Merganser			
Numenius americanus	Long-billed Curlew			
Numenius phaeopus	Whimbrel			
Nycticorax nycticorax	Black-crowned Night-Heron			
Oxyura jamaicensis	Ruddy Duck			
Phalacrocorax auritus	Double-crested Cormorant			

Phalaropus tricolor	Wilson's Phalarope			
Piranga rubra	Summer Tanager		Special Concern	BSSC - First priority
Plegadis chihi	White-faced Ibis		Watch list	
Pluvialis squatarola	Black-bellied Plover			
Podiceps nigricollis	Eared Grebe			
Podilymbus podiceps	Pied-billed Grebe			
Porzana carolina	Sora			
Rallus limicola	Virginia Rail			
Recurvirostra americana	American Avocet			
Rynchops niger	Black Skimmer			
Setophaga petechia	Yellow Warbler			BSSC - Second priority
Tachycineta bicolor	Tree Swallow			
Tringa melanoleuca	Greater Yellowlegs			
Tringa semipalmata	Willet			
<b>CRUSTACEAN</b>				
Americorophium spinicorne				Not on any status lists
Americorophium spp.	Americorophium spp.			
Crangonyx spp.	Crangonyx spp.			
Cyprididae fam.	Cyprididae fam.			
Gammarus spp.	Gammarus spp.			
Gnorimosphaeroma spp.	Gnorimosphaeroma spp.			
Linderiella occidentalis	California Fairy Shrimp		Special	IUCN - Near Threatened
Ramellogammarus spp.	Ramellogammarus spp.			
<b>FISH</b>				
Eucyclogobius newberryi	Tidewater goby	Endangered	Special Concern	Vulnerable - Moyle 2013
Oncorhynchus mykiss - CCC winter	Central California coast winter steelhead	Threatened	Special	Vulnerable - Moyle 2013
Oncorhynchus mykiss irideus	Coastal rainbow trout			Least Concern - Moyle 2013
Catostomus occidentalis mnioltiltus	Monterey sucker			Least Concern - Moyle 2013
Cottus aleuticus	Coastrange sculpin			Least Concern - Moyle 2013

Cottus asper ssp. 1	Prickly sculpin			Least Concern - Moyle 2013
Entosphenus tridentata ssp. 1	Pacific lamprey		Special	Near-Threatened - Moyle 2013
Eucyclogobius newberryi	Tidewater goby	Endangered	Special Concern	Vulnerable - Moyle 2013
Gasterosteus aculeatus aculeatus	Coastal threespine stickleback			Least Concern - Moyle 2013
Gasterosteus aculeatus microcephalus	Inland threespine stickleback		Special	Least Concern - Moyle 2013
Lavinia exilicauda harengus	Monterey hitch		Special	Vulnerable - Moyle 2013
Lavinia symmetricus subditus	Monterey roach		Special Concern	Near-Threatened - Moyle 2013
Lavinia symmetricus symmetricus	Central California roach		Special Concern	Near-Threatened - Moyle 2013
Oncorhynchus mykiss - CCC winter	Central California coast winter steelhead	Threatened	Special	Vulnerable - Moyle 2013
Oncorhynchus mykiss - SCCC	South Central California coast steelhead	Threatened	Special Concern	Vulnerable - Moyle 2013
Oncorhynchus mykiss irideus	Coastal rainbow trout			Least Concern - Moyle 2013
Orthodon microlepidotus	Sacramento blackfish			Least Concern - Moyle 2013
Ptychocheilus grandis	Sacramento pikeminnow			Least Concern - Moyle 2013
Rhinichthys osculus ssp. 1	Sacramento speckled dace			Least Concern - Moyle 2013
<b>HERP</b>				
Actinemys marmorata marmorata	Western Pond Turtle		Special Concern	ARSSC
Ambystoma californiense californiense	California Tiger Salamander	Threatened	Threatened	ARSSC

<i>Ambystoma macrodactylum</i>	Long-toed salamander			
<i>Ambystoma macrodactylum croceum</i>	Santa Cruz Long-toed Salamander	Endangered	Endangered	
<i>Anaxyrus boreas boreas</i>	Boreal Toad			
<i>Dicamptodon ensatus</i>	California Giant Salamander			ARSSC
<i>Pseudacris regilla</i>	Northern Pacific Chorus Frog			
<i>Pseudacris sierra</i>	Sierran Treefrog			
<i>Rana boylei</i>	Foothill Yellow-legged Frog	Under Review in the Candidate or Petition Process	Special Concern	ARSSC
<i>Rana draytonii</i>	California Red-legged Frog	Threatened	Special Concern	ARSSC
<i>Taricha granulosa</i>	Rough-skinned Newt			
<i>Taricha torosa</i>	Coast Range Newt		Special Concern	ARSSC
<i>Thamnophis atratus atratus</i>	Santa Cruz Gartersnake			Not on any status lists
<i>Thamnophis elegans elegans</i>	Mountain Gartersnake			Not on any status lists
<i>Thamnophis elegans terrestris</i>	Coast Gartersnake			Not on any status lists
<i>Thamnophis sirtalis sirtalis</i>	Common Gartersnake			
<b>INSECT &amp; OTHER INVERT</b>				
<i>Acentrella</i> spp.	<i>Acentrella</i> spp.			
<i>Aeshna</i> spp.	<i>Aeshna</i> spp.			
<i>Agabus</i> spp.	<i>Agabus</i> spp.			
<i>Agapetus</i> spp.	<i>Agapetus</i> spp.			
<i>Alotanypus</i> spp.	<i>Alotanypus</i> spp.			
<i>Ameletus</i> spp.	<i>Ameletus</i> spp.			
<i>Amiocentrus aspilus</i>	A Caddisfly			
<i>Ampumixis dispar</i>				Not on any status lists
<i>Anagapetus</i> spp.	<i>Anagapetus</i> spp.			
<i>Anax</i> spp.	<i>Anax</i> spp.			
<i>Antocha</i> spp.	<i>Antocha</i> spp.			
<i>Apedilum</i> spp.	<i>Apedilum</i> spp.			
<i>Argia</i> spp.	<i>Argia</i> spp.			
Baetidae fam.	Baetidae fam.			
<i>Baetis</i> spp.	<i>Baetis</i> spp.			
<i>Baetis tricaudatus</i>	A Mayfly			
Brachycentridae fam.	Brachycentridae fam.			

Brillia spp.	Brillia spp.			
Brundiniella spp.	Brundiniella spp.			
Calineuria californica	Western Stone			
Callibaetis spp.	Callibaetis spp.			
Centroptilum spp.	Centroptilum spp.			
Cheumatopsyche spp.	Cheumatopsyche spp.			
Chironomidae fam.	Chironomidae fam.			
Chloroperlidae fam.	Chloroperlidae fam.			
Cinygmula spp.	Cinygmula spp.			
Cladotanytarsus spp.	Cladotanytarsus spp.			
Cordulegaster dorsalis	Pacific Spiketail			
Corixidae fam.	Corixidae fam.			
Cricotopus spp.	Cricotopus spp.			
Cricotopus trifascia				Not on any status lists
Cryptochironomus spp.	Cryptochironomus spp.			
Cultus spp.	Cultus spp.			
Diamesa spp.	Diamesa spp.			
Dipheter hageni	Hagen's Small Minnow Mayfly			
Dixidae fam.	Dixidae fam.			
Drunella coloradensis	A Mayfly			
Drunella flavilinea	A Mayfly			
Drunella spp.	Drunella spp.			
Dytiscidae fam.	Dytiscidae fam.			
Ecdyonurus criddlei	A Mayfly			
Ecdyonurus spp.	Ecdyonurus spp.			
Enallagma carunculatum	Tule Bluet			
Enallagma civile	Familiar Bluet			
Epeorus spp.	Epeorus spp.			
Ephemerella maculata	A Mayfly			
Ephemerella spp.	Ephemerella spp.			
Ephemerellidae fam.	Ephemerellidae fam.			
Ephydriidae fam.	Ephydriidae fam.			
Erythemis collocata	Western Pondhawk			
Eubrianax edwardsii				Not on any status lists
Eukiefferiella claripennis				Not on any status lists
Eukiefferiella devonica				Not on any status lists
Eukiefferiella spp.	Eukiefferiella spp.			
Fallceon quilleri	A Mayfly			
Gerridae fam.	Gerridae fam.			
Glossosoma spp.	Glossosoma spp.			
Glossosomatidae fam.	Glossosomatidae fam.			
Gomphidae fam.	Gomphidae fam.			

Gumaga spp.	Gumaga spp.			
Helichus spp.	Helichus spp.			
Heptageniidae fam.	Heptageniidae fam.			
Hesperoperla pacifica	Golden Stone			
Hesperoperla spp.	Hesperoperla spp.			
Heterotrissocladius spp.	Heterotrissocladius spp.			
Homoplectra oaklandensis	A Caddisfly			
Hydrophilidae fam.	Hydrophilidae fam.			
Hydropsyche spp.	Hydropsyche spp.			
Hydropsychidae fam.	Hydropsychidae fam.			
Hydroptila spp.	Hydroptila spp.			
Hydroptilidae fam.	Hydroptilidae fam.			
Ironodes spp.	Ironodes spp.			
Isoperla spp.	Isoperla spp.			
Lara spp.	Lara spp.			
Lepidostoma spp.	Lepidostoma spp.			
Lestes stultus	Black Spreadwing			
Leucrocuta spp.	Leucrocuta spp.			
Limnephilidae fam.	Limnephilidae fam.			
Limnophyes spp.	Limnophyes spp.			
Malenka spp.	Malenka spp.			
Maruina lanceolata				Not on any status lists
Matriella teresa	A Mayfly			
Meringodixa chalonensis				Not on any status lists
Micrasema spp.	Micrasema spp.			
Micropsectra spp.	Micropsectra spp.			
Microtendipes spp.	Microtendipes spp.			
Mideopsis spp.	Mideopsis spp.			
Mystacides alafimbriatus	A Caddisfly			
Mystacides sepulchralis	A Caddisfly			
Nanocladius spp.	Nanocladius spp.			
Narpus spp.	Narpus spp.			
Nemouridae fam.	Nemouridae fam.			
Neophylax rickeri	A Caddisfly			
Neophylax spp.	Neophylax spp.			
Nixe kennedyi	A Mayfly			
Octogomphus specularis	Grappletail			
Ophiogomphus spp.	Ophiogomphus spp.			
Optioservus quadrimaculatus				Not on any status lists
Optioservus spp.	Optioservus spp.			

Ordobrevia nubifera				Not on any status lists
Oreodytes spp.	Oreodytes spp.			
Osobenus yakimae	Yakima Springfly			
Paracladopelma spp.	Paracladopelma spp.			
Parakiefferiella spp.	Parakiefferiella spp.			
Paraleptophlebia spp.	Paraleptophlebia spp.			
Parametriocnemus spp.	Parametriocnemus spp.			
Parapsyche spp.	Parapsyche spp.			
Paratanytarsus spp.	Paratanytarsus spp.			
Pentaneura spp.	Pentaneura spp.			
Perlidae fam.	Perlidae fam.			
Phaenopsectra spp.	Phaenopsectra spp.			
Plathemis lydia	Common Whitetail			
Plumiperla spp.	Plumiperla spp.			
Polycentropus spp.	Polycentropus spp.			
Polypedilum scalaenum				Not on any status lists
Polypedilum spp.	Polypedilum spp.			
Polypedilum tritum				Not on any status lists
Postelichus spp.	Postelichus spp.			
Pseudochironomus spp.	Pseudochironomus spp.			
Psychodidae fam.	Psychodidae fam.			
Psychoglypha spp.	Psychoglypha spp.			
Psychomyia spp.	Psychomyia spp.			
Ptychoptera spp.	Ptychoptera spp.			
Rheotanytarsus spp.	Rheotanytarsus spp.			
Rhithrogena spp.	Rhithrogena spp.			
Rhyacophila betteni	A Caddisfly			
Rhyacophila spp.	Rhyacophila spp.			
Robackia spp.	Robackia spp.			
Sanfilippodytes spp.	Sanfilippodytes spp.			
Scirtidae fam.	Scirtidae fam.			
Serratella micheneri	A Mayfly			
Serratella spp.	Serratella spp.			
Sialis spp.	Sialis spp.			
Sigara mckinstryi	A Water Boatman			Not on any status lists
Simulium spp.	Simulium spp.			
Siphonurus spp.	Siphonurus spp.			
Skwala spp.	Skwala spp.			
Sperchon spp.	Sperchon spp.			
Stenochironomus spp.	Stenochironomus spp.			
Sublettea spp.	Sublettea spp.			
Suwallia spp.	Suwallia spp.			

Sympetrum corruptum	Variegated Meadowhawk			
Sympetrum pallipes	Striped Meadowhawk			
Tanytarsus spp.	Tanytarsus spp.			
Thienemannimyia spp.	Thienemannimyia spp.			
Tinodes spp.	Tinodes spp.			
Tipulidae fam.	Tipulidae fam.			
Tricorythodes spp.	Tricorythodes spp.			
Tvetenia spp.	Tvetenia spp.			
Wormaldia occidea	A Caddisfly			
Wormaldia spp.	Wormaldia spp.			
Zaitzevia spp.	Zaitzevia spp.			
Zapada spp.	Zapada spp.			
Zavreliomyia spp.	Zavreliomyia spp.			
<b>MOLLUSK</b>				
Anodonta californiensis	California Floater		Special	
Galba spp.	Galba spp.			
Gyraulus spp.	Gyraulus spp.			
Hydrobiidae fam.	Hydrobiidae fam.			
Lymnaea spp.	Lymnaea spp.			
Lymnaeidae fam.	Lymnaeidae fam.			
Physa spp.	Physa spp.			
Pisidium spp.	Pisidium spp.			
Planorbidae fam.	Planorbidae fam.			
Sphaeriidae fam.	Sphaeriidae fam.			
<b>PLANT</b>				
Alnus rhombifolia	White Alder			
Alnus rubra	Red Alder			
Alopecurus carolinianus	Tufted Foxtail			
Alopecurus saccatus	Pacific Foxtail			
Ammannia coccinea	Scarlet Ammannia			
Anemopsis californica	Yerba Mansa			
Aquilegia eximia	Van Houtte's Columbine			
Arundo donax	NA			
Azolla filiculoides	NA			
Azolla microphylla	Mexican mosquito fern		Special	CRPR - 4.3
Baccharis glutinosa	NA			Not on any status lists
Baccharis salicina				Not on any status lists
Berula erecta	Wild Parsnip			
Bidens laevis	Smooth Bur-marigold			
Calamagrostis nutkaensis	Pacific Small-reedgrass			

<i>Callitriche marginata</i>	Winged Water-starwort			
<i>Callitriche palustris</i>	Vernal Water-starwort			
<i>Callitriche trochlearis</i>	Waste-water Water-starwort			
<i>Calochortus uniflorus</i>	Shortstem Mariposa Lily		Special	CRPR - 4.2
<i>Campanula californica</i>	Swamp Harebell		Special	CRPR - 1B.2
<i>Carex amplifolia</i>	Bigleaf Sedge			
<i>Carex comosa</i>	Bristly Sedge		Special	CRPR - 2B.1
<i>Carex densa</i>	Dense Sedge			
<i>Carex harfordii</i>	Harford's Sedge			
<i>Carex hendersonii</i>	Henderson's Sedge			
<i>Carex lasiocarpa</i>	Slender Sedge		Special	CRPR - 2B.3
<i>Carex nudata</i>	Torrent Sedge			
<i>Carex obnupta</i>	Slough Sedge			
<i>Carex scoparia scoparia</i>	Broom Sedge		Special	CRPR - 2B.2
<i>Carex senta</i>	Western Rough Sedge			
<i>Ceratophyllum demersum</i>	Common Hornwort			
<i>Cicendia quadrangularis</i>	Oregon Microcala			
<i>Cicuta douglasii</i>	Western Water-hemlock			
<i>Cirsium douglasii douglasii</i>	Douglas' Thistle			
<i>Cirsium fontinale campylon</i>	Mt. Hamilton Thistle		Special	CRPR - 1B.2
<i>Cotula coronopifolia</i>	NA			
<i>Crassula aquatica</i>	Water Pygmyweed			
<i>Crypsis vaginiflora</i>	NA			
<i>Cyperus erythrorhizos</i>	Red-root Flatsedge			
<i>Cyperus involucratus</i>	NA			
<i>Datisca glomerata</i>	Durango Root			
<i>Downingia pulchella</i>	Flat-face Downingia			
<i>Echinodorus berteroi</i>	Upright Burhead			
<i>Elatine brachysperma</i>	Shortseed Waterwort			
<i>Elatine californica</i>	California Waterwort			
<i>Elatine heterandra</i>	Mosquito Waterwort			
<i>Eleocharis acicularis acicularis</i>	Least Spikerush			
<i>Eleocharis macrostachya</i>	Creeping Spikerush			
<i>Eleocharis montevidensis</i>	Sand Spikerush			

Eleocharis ovata				Not on any status lists
Eleocharis palustris	Creeping Spikerush			
Eleocharis parishii	Parish's Spikerush			
Eleocharis rostellata	Beaked Spikerush			
Epilobium campestre	NA			Not on any status lists
Epilobium hallianum				Not on any status lists
Epipactis gigantea	Giant Helleborine			
Eragrostis hypnoides	Teal Lovegrass			
Eryngium aristulatum aristulatum	California Eryngo			
Eryngium vaseyi vaseyi	Vasey's Coyote-thistle			Not on any status lists
Euthamia occidentalis	Western Fragrant Goldenrod			
Galium trifidum	Small Bedstraw			
Gratiola ebracteata	Bractless Hedge-hyssop			
Helenium bigelovii	Bigelow's Sneezeweed			
Helenium puberulum	Rosilla			
Hydrocotyle ranunculoides	Floating Marsh-pennywort			
Hydrocotyle verticillata verticillata	Whorled Marsh-pennywort			
Isoetes howellii	NA			
Isoetes nuttallii	NA			
Isoetes orcuttii	NA			
Isolepis cernua	Low Bulrush			
Jaumea carnosa	Fleshy Jaumea			
Juncus acuminatus	Sharp-fruit Rush			
Juncus effusus pacificus				
Juncus hesperius				Not on any status lists
Juncus phaeocephalus paniculatus	Brownhead Rush			
Juncus phaeocephalus phaeocephalus	Brown-head Rush			
Juncus xiphioides	Iris-leaf Rush			
Lemna gibba	Inflated Duckweed			
Lemna minor	Lesser Duckweed			
Lemna minuta	Least Duckweed			
Lemna turionifera	Turion Duckweed			
Lemna valdiviana	Pale Duckweed			
Lepidium oxycarpum	Sharp-pod Pepper-grass			
Lilium pardalinum pardalinum	Leopard Lily			

Limnanthes douglasii douglasii	Douglas' Meadowfoam			
Limnanthes douglasii nivea	Douglas' Meadowfoam			
Limnanthes douglasii rosea	Douglas' Meadowfoam			
Limonium californicum	California Sea-lavender			
Limosella acaulis	Southern Mudwort			
Limosella aquatica	Northern Mudwort			
Ludwigia palustris	Marsh Seedbox			
Ludwigia peploides peploides	NA			Not on any status lists
Lupinus polyphyllus polyphyllus	Bigleaf Lupine			
Lysichiton americanus	Yellow Skunk-cabbage			
Marsilea vestita vestita	NA			Not on any status lists
Mimulus cardinalis	Scarlet Monkeyflower			
Mimulus guttatus	Common Large Monkeyflower			
Myosurus minimus	NA			
Myriophyllum aquaticum	NA			
Najas guadalupensis guadalupensis	Southern Naiad			
Navarretia intertexta	Needleleaf Navarretia			
Oenanthe sarmentosa	Water-parsley			
Panicum acuminatum acuminatum				Not on any status lists
Paspalum distichum	Joint Paspalum			
Perideridia californica	California Yampah			
Perideridia gairdneri gairdneri	Gairdner's Yampah		Special	CRPR - 4.2
Perideridia kelloggii	Kellogg's Yampah			
Perideridia oregana	Oregon Yampah			
Persicaria amphibia				Not on any status lists
Persicaria hydropiperoides				Not on any status lists
Persicaria lapathifolia				Not on any status lists
Persicaria maculosa	NA			Not on any status lists
Persicaria punctata	NA			Not on any status lists
Phacelia distans	NA			
Phragmites australis australis	Common Reed			

Plagiobothrys chorisianus	NA		Special	CRPR - 1B.2
Plagiobothrys reticulatus reticulatus				Not on any status lists
Plagiobothrys undulatus	NA			Not on any status lists
Plantago elongata elongata	Slender Plantain			
Platanus racemosa	California Sycamore			
Pleuropogon californicus californicus				Not on any status lists
Populus trichocarpa	NA			Not on any status lists
Potamogeton foliosus foliosus	Leafy Pondweed			
Potamogeton gramineus	Grassy Pondweed			
Potamogeton illinoensis	Illinois Pondweed			
Potamogeton natans	Floating Pondweed			
Potamogeton nodosus	Longleaf Pondweed			
Potamogeton pusillus pusillus	Slender Pondweed			
Potentilla anserina anserina				Not on any status lists
Psilocarphus brevissimus multiflorus	Delta Woolly Marbles		Special	CRPR - 4.2
Psilocarphus tenellus	NA			
Ranunculus lobbii	Lobb's Water Buttercup		Special	CRPR - 4.2
Ranunculus pusillus pusillus	Pursh's Buttercup			
Ranunculus repens	NA			
Rhododendron columbianum				Not on any status lists
Rhododendron occidentale occidentale	Western Azalea			
Rorippa curvisiliqua curvisiliqua	Curve-pod Yellowcress			
Rorippa palustris palustris	Bog Yellowcress			
Rumex conglomeratus	NA			
Rumex occidentalis				Not on any status lists
Rumex salicifolius salicifolius	Willow Dock			
Ruppia cirrhosa	Widgeon-grass			
Sagittaria latifolia latifolia	Broadleaf Arrowhead			
Salix babylonica	NA			
Salix exigua exigua	Narrowleaf Willow			

Salix laevigata	Polished Willow			
Salix lasiandra lasiandra				Not on any status lists
Salix lasiolepis lasiolepis	Arroyo Willow			
Salix melanopsis	Dusky Willow			
Salix sitchensis	Sitka Willow			
Schoenoplectus acutus occidentalis	Hardstem Bulrush			
Schoenoplectus americanus	Three-square Bulrush			
Schoenoplectus californicus	California Bulrush			
Schoenoplectus pungens pungens	NA			
Scirpus microcarpus	Small-fruit Bulrush			
Senecio hydrophilus	Great Swamp Ragwort			
Sequoia sempervirens				
Sisyrinchium californicum	Golden Blue-eyed-grass			
Solidago elongata				Not on any status lists
Sparganium eurycarpum eurycarpum				
Spartina foliosa	California Cordgrass			
Spiranthes romanzoffiana	Hooded Ladies'-tresses			
Stachys ajugoides	Bugle Hedge-nettle			
Stachys albens	White-stem Hedge-nettle			
Stachys chamissonis chamissonis	Coast Hedge-nettle			
Stachys pycnantha	Short-spike Hedge-nettle			
Stachys rigida quercetorum				Not on any status lists
Stuckenia pectinata				Not on any status lists
Suaeda calceoliformis	American Sea-blite			
Symphyotrichum lanceolatum lanceolatum	NA			
Symphyotrichum lentum	Suisun Marsh Aster		Special	CRPR - 1B.2
Toxicoscordion venenosum venenosum				Not on any status lists
Triglochin maritima	Common Bog Arrow-grass			

<i>Typha domingensis</i>	Southern Cattail			
<i>Typha latifolia</i>	Broadleaf Cattail			
<i>Veronica americana</i>	American Speedwell			
<i>Veronica anagallis-aquatica</i>	NA			
<i>Veronica catenata</i>	NA			Not on any status lists
<i>Wolffiella lingulata</i>	Tongue Bogmat			
<i>Zannichellia palustris</i>	Horned Pondweed			



## IDENTIFYING GDEs UNDER SGMA Best Practices for using the NC Dataset

The Sustainable Groundwater Management Act (SGMA) requires that groundwater dependent ecosystems (GDEs) be identified in Groundwater Sustainability Plans (GSPs). As a starting point, the Department of Water Resources (DWR) is providing the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) online<sup>9</sup> to help Groundwater Sustainability Agencies (GSAs), consultants, and stakeholders identify GDEs within individual groundwater basins. To apply information from the NC Dataset to local areas, GSAs should combine it with the best available science on local hydrology, geology, and groundwater levels to verify whether polygons in the NC dataset are likely supported by groundwater in an aquifer (Figure 1)<sup>10</sup>. This document highlights six best practices for using local groundwater data to confirm whether mapped features in the NC dataset are supported by groundwater.

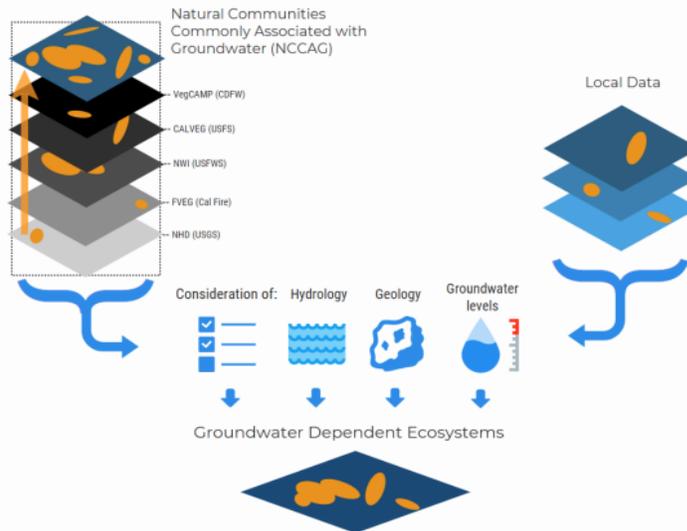


Figure 1. Considerations for GDE identification. Source: DWR<sup>2</sup>

<sup>9</sup> NC Dataset Online Viewer: <https://gis.water.ca.gov/app/NCDataSetViewer/>

<sup>10</sup> California Department of Water Resources (DWR). 2018. Summary of the "Natural Communities Commonly Associated with Groundwater" Dataset and Online Web Viewer. Available at: <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Data-and-Tools/Files/Statewide-Reports/Natural-Communities-Dataset-Summary-Document.pdf>

The NC Dataset identifies vegetation and wetland features that are good indicators of a GDE. The dataset is comprised of 48 publicly available state and federal datasets that map vegetation, wetlands, springs, and seeps commonly associated with groundwater in California<sup>11</sup>. It was developed through a collaboration between DWR, the Department of Fish and Wildlife, and The Nature Conservancy (TNC). TNC has also provided detailed guidance on identifying GDEs from the NC dataset<sup>12</sup> on the Groundwater Resource Hub<sup>13</sup>, a website dedicated to GDEs.

### **BEST PRACTICE #1. Establishing a Connection to Groundwater**

Groundwater basins can be comprised of one continuous aquifer (Figure 2a) or multiple aquifers stacked on top of each other (Figure 2b). In unconfined aquifers (Figure 2a), using the depth-to-groundwater and the rooting depth of the vegetation is a reasonable method to infer groundwater dependence for GDEs. If groundwater is well below the rooting (and capillary) zone of the plants and any wetland features, the ecosystem is considered disconnected and groundwater management is not likely to affect the ecosystem (Figure 2d). However, it is important to consider local conditions (e.g., soil type, groundwater flow gradients, and aquifer parameters) and to review groundwater depth data from multiple seasons and water year types (wet and dry) because intermittent periods of high groundwater levels can replenish perched clay lenses that serve as the water source for GDEs (Figure 2c). Maintaining these natural groundwater fluctuations are important to sustaining GDE health.

Basins with a stacked series of aquifers (Figure 2b) may have varying levels of pumping across aquifers in the basin, depending on the production capacity or water quality associated with each aquifer. 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. The goal of SGMA is to sustainably manage groundwater resources for current and future social, economic, and environmental benefits. While groundwater pumping may not be currently occurring in a shallower aquifer, use of this water may become more appealing and economically viable in future years as pumping restrictions are placed on the deeper production aquifers in the basin to meet the sustainable yield and criteria. Thus, identifying GDEs in the basin should be done irrespective to the amount of current pumping occurring in a particular aquifer, so that future impacts on GDEs due to new production can be avoided. A good rule of thumb to follow is: *if groundwater can be pumped from a well - it's an aquifer.*

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<sup>11</sup> For more details on the mapping methods, refer to: Klausmeyer, K., J. Howard, T. Keeler-Wolf, K. Davis-Fadtke, R. Hull, A. Lyons. 2018. *Mapping Indicators of Groundwater Dependent Ecosystems in California: Methods Report*. San Francisco, California. Available at: [https://groundwaterresourcehub.org/public/uploads/pdfs/iGDE\\_data\\_paper\\_20180423.pdf](https://groundwaterresourcehub.org/public/uploads/pdfs/iGDE_data_paper_20180423.pdf)

<sup>12</sup> "Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans" is available at: <https://groundwaterresourcehub.org/gde-tools/gsp-guidance-document/>

<sup>13</sup> The Groundwater Resource Hub: [www.GroundwaterResourceHub.org](http://www.GroundwaterResourceHub.org)

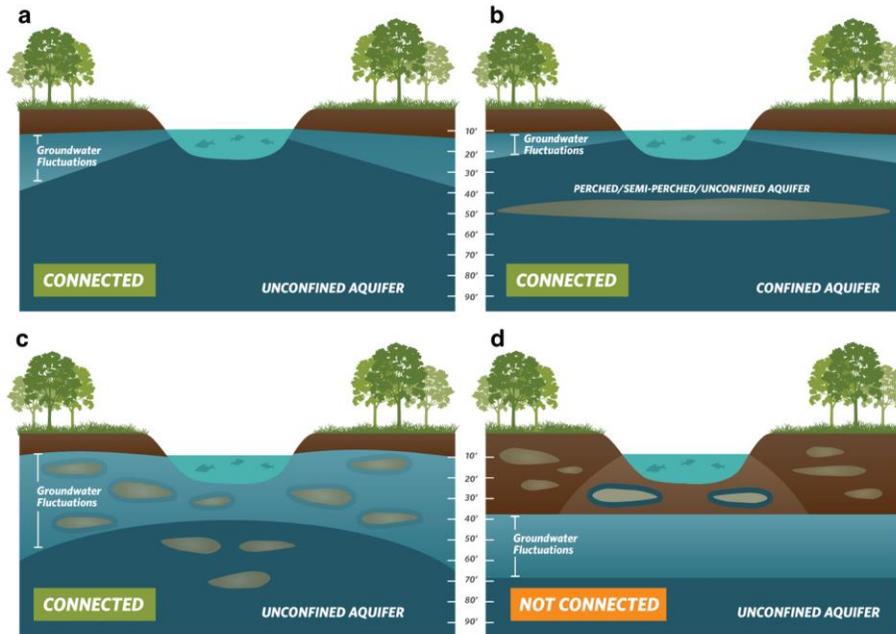


Figure 2. Confirming whether an ecosystem is connected to groundwater. Top: (a) **Under the ecosystem is an unconfined aquifer with depth-to-groundwater fluctuating seasonally and interannually within 30 feet from land surface.** (b) **Depth-to-groundwater in the shallow aquifer is connected to overlying ecosystem. Pumping predominately occurs in the confined aquifer, but pumping is possible in the shallow aquifer.** Bottom: (c) **Depth-to-groundwater fluctuations are seasonally and interannually large, however, clay layers in the near surface prolong the ecosystem's connection to groundwater.** (d) **Groundwater is disconnected from surface water, and any water in the vadose (unsaturated) zone is due to direct recharge from precipitation and indirect recharge under the surface water feature. These areas are not connected to groundwater and typically support species that do not require access to groundwater to survive.**

## BEST PRACTICE #2. Characterize Seasonal and Interannual Groundwater Conditions

SGMA requires GSAs to describe current and historical groundwater conditions when identifying GDEs [23 CCR §354.16(g)]. Relying solely on the SGMA benchmark date (January 1, 2015) or any other single point in time to characterize groundwater conditions (e.g., depth-to-groundwater) is inadequate because managing groundwater conditions with data from one time point fails to capture the seasonal and interannual variability typical of California’s climate. DWR’s Best Management Practices document on water budgets<sup>14</sup> recommends using 10 years of water supply and water budget information to describe how historical conditions have impacted the operation of the basin within sustainable yield, implying that a baseline<sup>15</sup> could be determined based on data between 2005 and 2015. Using this or a similar time period, depending on data availability, is recommended for determining the depth-to-groundwater.

GDEs depend on groundwater levels being close enough to the land surface to interconnect with surface water systems or plant rooting networks. The most practical approach<sup>16</sup> for a GSA to assess whether polygons in the NC dataset are connected to groundwater is to rely on groundwater elevation data. As detailed in TNC’s GDE guidance document<sup>4</sup>, one of the key factors to consider when mapping GDEs is to contour depth-to-groundwater in the aquifer that is supporting the ecosystem (see Best Practice #5).

Groundwater levels fluctuate over time and space due to California’s Mediterranean climate (dry summers and wet winters), climate change (flood and drought years), and subsurface heterogeneity in the subsurface (Figure 3). Many of California’s GDEs have adapted to dealing with intermittent periods of water stress, however if these groundwater conditions are prolonged, adverse impacts to GDEs can result. While depth-to-groundwater levels within 30 feet<sup>4</sup> of the land surface are generally accepted as being a proxy for confirming that polygons in the NC dataset are supported by groundwater, it is highly advised that fluctuations in the groundwater regime be characterized to understand the seasonal and interannual groundwater variability in GDEs. Utilizing groundwater data from one point in time can misrepresent groundwater levels required by GDEs, and inadvertently result in adverse impacts to the GDEs. Time series data on groundwater elevations and depths are available on the SGMA Data Viewer<sup>17</sup>. However, if insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in the GSP until data gaps are reconciled in the monitoring network (see Best Practice #6).



**Figure 3. Example seasonality and interannual variability in depth-to-groundwater over time.** Selecting one point in time, such as Spring 2018, to characterize groundwater conditions in GDEs fails to capture what groundwater conditions are necessary to maintain the ecosystem status into the future so adverse impacts are avoided.

<sup>14</sup> DWR. 2016. Water Budget Best Management Practice. Available at:

[https://water.ca.gov/LegacyFiles/groundwater/sqm/pdfs/BMP\\_Water\\_Budget\\_Final\\_2016-12-23.pdf](https://water.ca.gov/LegacyFiles/groundwater/sqm/pdfs/BMP_Water_Budget_Final_2016-12-23.pdf)

<sup>15</sup> Baseline is defined under the GSP regulations as "historic information used to project future conditions for hydrology, water demand, and availability of surface water and to evaluate potential sustainable management practices of a basin." [23 CCR §351(e)]

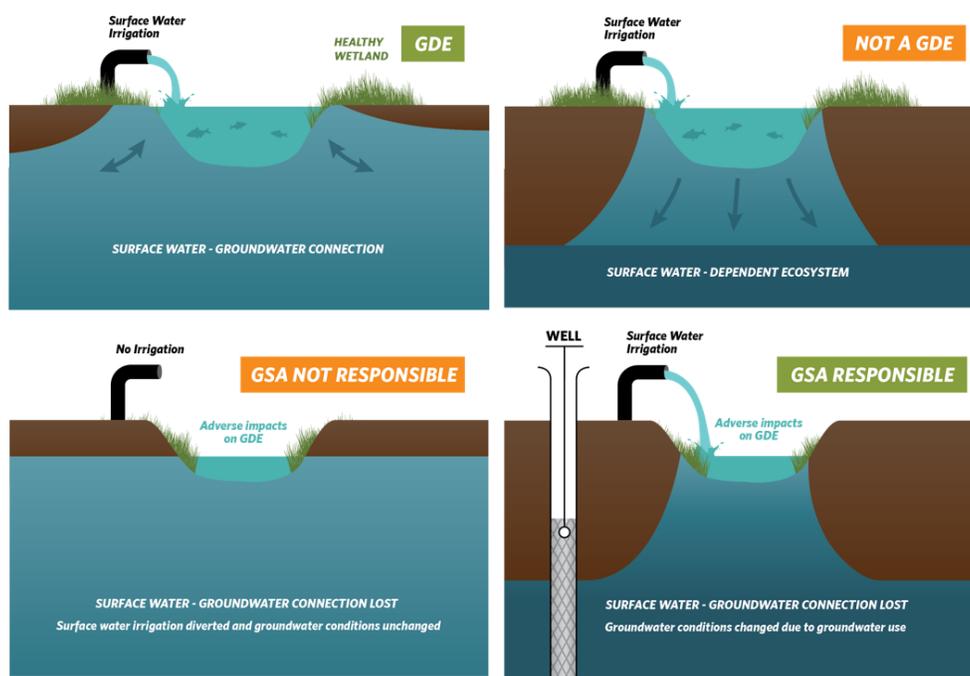
<sup>16</sup> Groundwater reliance can also be confirmed via stable isotope analysis and geophysical surveys. For more information see The GDE Assessment Toolbox (Appendix IV, GDE Guidance Document for GSPs<sup>4</sup>).

<sup>17</sup> SGMA Data Viewer: <https://sgma.water.ca.gov/webqis/?appid=SGMADataViewer>

### BEST PRACTICE #3. Ecosystems Often Rely on Both Groundwater and Surface Water

GDEs are plants and animals that rely on groundwater for all or some of its water needs, and thus can be supported by multiple water sources. The presence of non-groundwater sources (e.g., surface water, soil moisture in the vadose zone, applied water, treated wastewater effluent, urban stormwater, irrigated return flow) within and around a GDE does not preclude the possibility that it is supported by groundwater, too. SGMA defines GDEs as "ecological communities and species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface" [23 CCR §351(m)]. Hence, depth-to-groundwater data should be used to identify whether NC polygons are supported by groundwater and should be considered GDEs. In addition, SGMA requires that significant and undesirable adverse impacts to beneficial users of surface water be avoided. Beneficial users of surface water include environmental users such as plants or animals<sup>18</sup>, which therefore must be considered when developing minimum thresholds for depletions of interconnected surface water.

GSAs are only responsible for impacts to GDEs resulting from groundwater conditions in the basin, so if adverse impacts to GDEs result from the diversion of applied water, treated wastewater, or irrigation return flow away from the GDE, then those impacts will be evaluated by other permitting requirements (e.g., CEQA) and may not be the responsibility of the GSA. However, if adverse impacts occur to the GDE due to changing groundwater conditions resulting from pumping or groundwater management activities, then the GSA would be responsible (Figure 4).



**Figure 4. Ecosystems often depend on multiple sources of water. Top: (Left)** Surface water and groundwater are interconnected, meaning that the GDE is supported by both groundwater and surface water. **(Right)** Ecosystems that are only reliant on non-groundwater sources are not groundwater-dependent. **Bottom: (Left)** An ecosystem that was once dependent on an interconnected surface water, but loses access to groundwater solely due to surface water diversions may not be the GSA's responsibility. **(Right)** Groundwater dependent ecosystems once dependent on an interconnected surface water system, but loses that access due to groundwater pumping is the GSA's responsibility.

<sup>18</sup> For a list of environmental beneficial users of surface water by basin, visit: <https://groundwaterresourcehub.org/gde-tools/environmental-surface-water-beneficiaries/>

#### BEST PRACTICE #4. Select Representative Groundwater Wells

Identifying GDEs in a basin requires that groundwater conditions are characterized to confirm whether polygons in the NC dataset are supported by the underlying aquifer. To do this, proximate groundwater wells should be identified to characterize groundwater conditions (Figure 5). When selecting representative wells, it is particularly important to consider the subsurface heterogeneity around NC polygons, especially near surface water features where groundwater and surface water interactions occur around heterogeneous stratigraphic units or aquitards formed by fluvial deposits. The following selection criteria can help ensure groundwater levels are representative of conditions within the GDE area:

- Choose wells that are within 5 kilometers (3.1 miles) of each NC Dataset polygons because they are more likely to reflect the local conditions relevant to the ecosystem. If there are no wells within 5km of the center of a NC dataset polygon, then there is insufficient information to remove the polygon based on groundwater depth. Instead, it should be retained as a potential GDE until there are sufficient data to determine whether or not the NC Dataset polygon is supported by groundwater.
- Choose wells that are screened within the surficial unconfined aquifer and capable of measuring the true water table.
- Avoid relying on wells that have insufficient information on the screened well depth interval for excluding GDEs because they could be providing data on the wrong aquifer. This type of well data should not be used to remove any NC polygons.

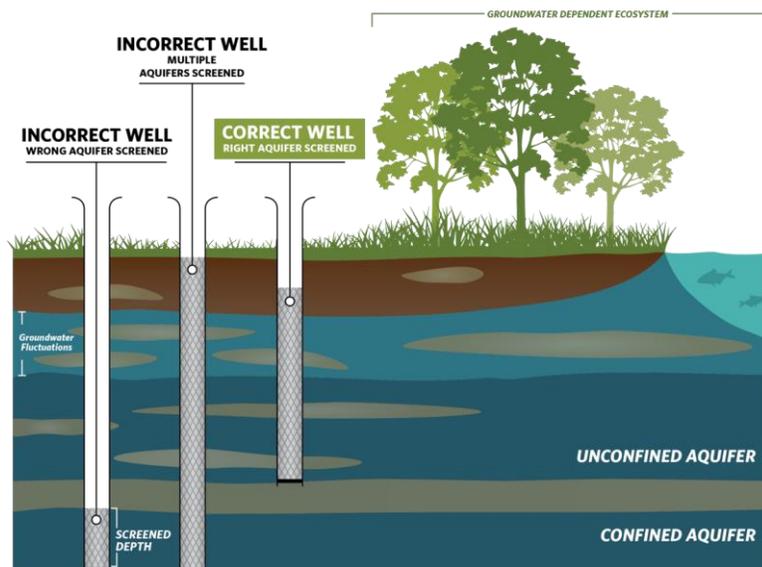
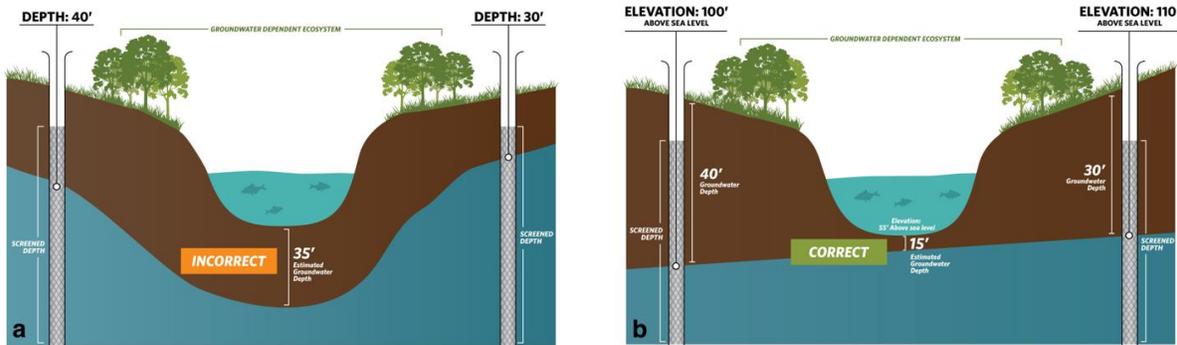


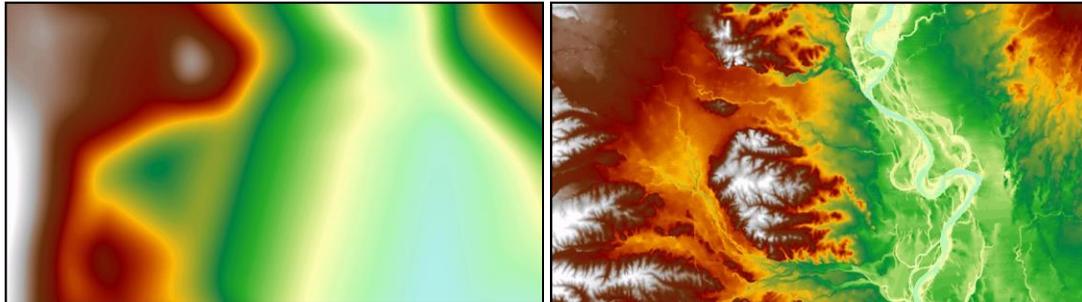
Figure 5. Selecting representative wells to characterize groundwater conditions near GDEs.

## BEST PRACTICE #5. Contouring Groundwater Elevations

The common practice to contour depth-to-groundwater over a large area by interpolating measurements at monitoring wells is unsuitable for assessing whether an ecosystem is supported by groundwater. This practice causes errors when the land surface contains features like stream and wetland depressions because it assumes the land surface is constant across the landscape and depth-to-groundwater is constant below these low-lying areas (Figure 6a). A more accurate approach is to interpolate **groundwater elevations** at monitoring wells to get groundwater elevation contours across the landscape. This layer can then be subtracted from land surface elevations from a Digital Elevation Model (DEM)<sup>19</sup> to estimate depth-to-groundwater contours across the landscape (Figure b; Figure 7). This will provide a much more accurate contours of depth-to-groundwater along streams and other land surface depressions where GDEs are commonly found.



**Figure 6. Contouring depth-to-groundwater around surface water features and GDEs. (a)** Groundwater level interpolation using depth-to-groundwater data from monitoring wells. **(b)** Groundwater level interpolation using groundwater elevation data from monitoring wells and DEM data.



**Figure 7. Depth-to-groundwater contours in Northern California. (Left)** Contours were interpolated using depth-to-groundwater measurements determined at each well. **(Right)** Contours were determined by interpolating groundwater elevation measurements at each well and superimposing ground surface elevation from DEM spatial data to generate depth-to-groundwater contours. The image on the right shows a more accurate depth-to-groundwater estimate because it takes the local topography and elevation changes into account.

<sup>19</sup> USGS Digital Elevation Model data products are described at: <https://www.usgs.gov/core-science-systems/ngp/3dep/about-3dep-products-services> and can be downloaded at: <https://iewer.nationalmap.gov/basic/>

## BEST PRACTICE #6. Best Available Science

Adaptive management is embedded within SGMA and provides a process to work toward sustainability over time by beginning with the best available information to make initial decisions, monitoring the results of those decisions, and using the data collected through monitoring programs to revise decisions in the future. In many situations, the hydrologic connection of NC dataset polygons will not initially be clearly understood if site-specific groundwater monitoring data are not available. If sufficient data are not available in time for the 2020/2022 plan, **The Nature Conservancy strongly advises that questionable polygons from the NC dataset be included in the GSP until data gaps are reconciled in the monitoring network.** Erring on the side of caution will help minimize inadvertent impacts to GDEs as a result of groundwater use and management actions during SGMA implementation.

### KEY DEFINITIONS

**Groundwater basin** is an aquifer or stacked series of aquifers with reasonably well-defined boundaries in a lateral direction, based on features that significantly impede groundwater flow, and a definable bottom. 23 CCR §341(g)(1)

**Groundwater dependent ecosystem (GDE)** are ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface. 23 CCR §351(m)

**Interconnected surface water (ISW)** 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)

**Principal aquifers** are aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems. 23 CCR §351(aa)

### ABOUT US

The Nature Conservancy is a science-based nonprofit organization whose mission is *to conserve the lands and waters on which all life depends*. To support successful SGMA implementation that meets the future needs of people, the economy, and the environment, TNC has developed tools and resources ([www.groundwaterresourcehub.org](http://www.groundwaterresourcehub.org)) intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

# Attachment E

## GDE Pulse

A new, free online tool that allows Groundwater Sustainability Agencies to assess changes in groundwater dependent ecosystem (GDE) health using satellite, rainfall, and groundwater data.



Visit  
<https://gde.codefornature.org/>



Remote sensing data from satellites has been used to monitor the health of vegetation all over the planet. GDE pulse has compiled 35 years of satellite imagery from NASA's Landsat mission for every polygon in the Natural Communities Commonly Associated with Groundwater Dataset<sup>20</sup>. The following datasets are included:

**Normalized Difference Vegetation Index (NDVI)** is a satellite-derived index that represents the greenness of vegetation. Healthy green vegetation tends to have a higher NDVI, while dead leaves have a lower NDVI. We calculated the average NDVI during the driest part of the year (July - Sept) to estimate vegetation health when the plants are most likely dependent on groundwater.

**Normalized Difference Moisture Index (NDMI)** is a satellite-derived index that represents water content in vegetation. NDMI is derived from the Near-Infrared (NIR) and Short-Wave Infrared (SWIR) channels. Vegetation with adequate access to water tends to have higher NDMI, while vegetation that is water stressed tends to have lower NDMI. We calculated the average NDVI during the driest part of the year (July–September) to estimate vegetation health when the plants are most likely dependent on groundwater.

**Annual Precipitation** is the total precipitation for the water year (October 1<sup>st</sup> – September 30<sup>th</sup>) from the PRISM dataset<sup>21</sup>. The amount of local precipitation can affect vegetation with more precipitation generally leading to higher NDVI and NDMI.

**Depth to Groundwater** measurements provide an indication of the groundwater levels and changes over time for the surrounding area. We used groundwater well measurements from nearby (<1km) wells to estimate the depth to groundwater below the GDE based on the average elevation of the GDE (using a digital elevation model) minus the measured groundwater surface elevation.

<sup>20</sup> The Natural Communities Commonly Associated with Groundwater Dataset is hosted on the California Department of Water Resources' website: <https://gis.water.ca.gov/app/NCDatasetViewer/#>

<sup>21</sup> The PRISM dataset is hosted on Oregon State University's website: <http://www.prism.oregonstate.edu/>



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL MARINE FISHERIES SERVICE  
West Coast Region  
777 Sonoma Avenue, Room 325  
Santa Rosa, California 95404-4731

September 10, 2019

Dr. Tom LaHue, Board Chair  
Santa Cruz Mid-County Groundwater Agency  
c/o Soquel Creek Water District, Attention: Emma Olin  
5180 Soquel Drive  
Soquel, California 95073

Re: NOAA's National Marine Fisheries Service's comments on the Santa Cruz Mid-County Groundwater Sustainability Agency's draft Groundwater Sustainability Plan for the Santa Cruz Mid-County Groundwater Basin

Dear Dr. LaHue:

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). The purpose of the ESA is to conserve threatened and endangered species and their ecosystems. On July 18, 2019, the Santa Cruz Mid-County Groundwater Sustainability Agency (SCMCGSA) released their draft Groundwater Sustainability Plan (GSP) for the Santa Cruz Mid-County Groundwater Basin (Mid-County Basin). The California Department of Water Resources has designated the Mid-County Basin a "critical" priority for groundwater management, necessitating the development of a GSP by January 31, 2020, as required under California's Sustainable Groundwater Management Act of 2014 (SGMA). Several creeks that overlie portions of the Mid-County Basin support federally threatened Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*) and endangered CCC coho salmon (*O. kisutch*). This letter transmits NMFS' comments regarding the draft GSP.

Throughout the Mid-County Basin, groundwater and surface water are linked hydraulically. Where the groundwater aquifer supplements streamflow, the influx of cold, clean water is critically important for maintaining temperature and flow volume, and can comprise a significant percentage of surface flow during the summer dry season. Pumping from these aquifer-stream complexes can adversely affect juvenile salmon and steelhead habitat by lowering groundwater levels and interrupting the hyporheic flow between the aquifer and stream, which degrades water quality and diminishes streamflow. Groundwater extraction may be compromising CCC steelhead and CCC coho salmon instream habitat.

## **General Comments**

### Insufficient Correlation between Groundwater Levels and Rate/Volume of Streamflow Depletion

To achieve sustainable groundwater management as SGMA requires, medium or high prioritized groundwater basins must avoid all six undesirable results by 2042 (2020 for "critical" basins such as the Mid-County Basin). Undesirable result #6, "depletions of interconnected surface



water that have significant and unreasonable adverse impacts on beneficial uses of the surface water”, is especially of interest to NMFS, since instream habitat required by salmon and steelhead has been destroyed or diminished throughout much of the state by surface water diversions and pumping of hydraulically connected groundwater.

The draft GSP attempts to use groundwater levels as an indicator threshold for the undesirable result of streamflow depletion, although the required metric is 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” (California water code 23 CCR § 354.28(c)(6)). SGMA requires that if groundwater levels are used as a proxy for streamflow depletion, then significant correlation must be established between the two metrics. SCMCGSA has not established any significant correlation between their proposed proxy of groundwater levels and the rate or volume of streamflow depletion, as required by the SGMA regulations. The only value presented is a simulated estimate of 1.4 cubic feet per second (cfs) depletion in mainstem Soquel Creek, representing the average depletion during minimum flow months between 2001 and 2015 (page 3-90 of draft GSP).

The mechanism by which stream-dwelling organisms are impacted by groundwater pumping is habitat degradation caused by the draw-down of surface flows. The impacts can be both physical (*e.g.*, pool volume shrinks as water surface elevation declines) and chemical (*e.g.*, water quality can suffer as pools and riffles lose connectivity)(see *Section 3.9.1.4 Effects on Beneficial Users and Land Use* for further insight). Thus, the appropriate method to determine whether pumping is having “significant and unreasonable adverse impacts” on beneficial uses of surface water is to understand the level of impact (*i.e.*, volume of streamflow depletion) and how habitat quality and functionality change because of that impact. Further data is required throughout the Mid-County Basin to establish localized relationships between streamflow depletion and the resulting instream habitat characteristics. NMFS recommends the draft GSP elaborate sufficiently in Section 5 as to when, where, and how this data will be collected during the first few years of GSP implementation, or at the very least, clearly commit to developing a detailed data collection plan with interested stakeholders at a later date.

#### Limited Groundwater and Streamflow Gauging Network

The draft GSP often notes that severe data gaps exist in the hydrogeologic model, which increases uncertainty in streamflow depletion estimates. As a result of this “data gap”, all data informing the draft GSP and its streamflow depletion threshold derives from the Soquel Creek watershed, which overlies just a fraction of the Mid-County groundwater aquifer. No streamflow gauges currently exist outside of mainstem Soquel Creek (Figure 3-3). To address this issue, an expanded stream gauging and groundwater monitoring network covering the entire basin is needed, yet the draft GSP lacks a plan to expand coverage to important basins such as Branciforte Creek and Aptos Creek. The draft GSP should better describe in Section 5 where future groundwater and streamflow monitoring stations will be located, and ensure that an appropriate number and spatial distribution of gauges are employed to ensure streamflow depletion impacts are avoided. If time constraints prevent that approach, the draft GSP should at least clearly commit to develop and implement a plan that achieves this goal.

Finally, SGMA gives GSAs broad authority to manage groundwater within the entire alluvial aquifer as identified within CASGEM Bulletin 118. This includes both public pumping, such as the Soquel deep aquifer wells, as well as private wells within the Santa Cruz Mid-County Basin, of which there are many. Future groundwater modeling and streamflow depletion analysis should be performed for a range of locations that represent the entire Santa Cruz Mid-County Basin.

#### Assuming current lack of impacts in Mid-County Basin

The draft GSP inappropriately assumes the Mid-County Basin is currently avoiding streamflow depletion impacts on beneficial uses via statements such as these:

Page. 3-56 – *“Increasing groundwater levels above current levels will generally improve already sustainable conditions for groundwater dependent ecosystems.”*

Page. 3-93 – *“Since significant and unreasonable conditions have not occurred since at least 2001 when shallow groundwater level monitoring began...”*

Statements such as these are unsupported and inappropriate for multiple reasons. First, the draft GSP relies on a groundwater level proxy for streamflow depletion that has no functional correlation to streamflow depletion rate/volume or impacts to groundwater dependent ecosystems. Second, a linkage between streamflow depletion and resulting instream habitat conditions has not been established. Also, nowhere within the draft GSP is there any mention of the protocol used, or the parties involved, in investigating or monitoring past streamflow depletion impacts throughout the Mid-County Basin. Finally, low streamflow, partially caused by groundwater pumping, has been identified as limiting steelhead rearing in several creeks within the basin, including Soquel Creek, Valencia Creek, Trout Creek and Mangel Gulch (Coastal Watershed Council 2003; County of Santa Cruz 2019). The fact that impact avoidance was not confirmed within Soquel Creek between 2002-2015 brings into question the appropriateness of using groundwater elevations as a threshold for avoiding streamflow depletion impacts.

#### Issues regarding 1.4 cfs streamflow depletion estimate

As mentioned in a previous comment, the draft GSP estimates a surface water depletion value of 1.4 cfs (Page. 3-90) and first states that *“the estimate of 1.4 cfs simulated over 2001-2015 is the minimum threshold for streamflow depletion”*. Then, the draft GSP (Pages. 3-90 and 3-91) states that *“To reiterate, the uncertainty of this estimate and difficulty measuring streamflow depletion from pumping affirm the appropriateness of using a groundwater level proxy to prevent the undesirable result of increases in streamflow depletion above what occurred from 2001-2015”*. This uncertainty issue should not be a reason to affirm that the use of groundwater level as a proxy is appropriate. This rationale does not address whether there may be considerable streamflow depletion caused by groundwater pumping affecting streamflow in the entire basin. The simulated 1.4 cfs value is not a conservative value to be used as a minimum threshold since it erroneously implies that under this depletion in the past, there were no adverse impacts on beneficial uses of the surface water. Also, it seems that the 1.4 cfs is an average of monthly values between 2001 and 2015. Summer rearing juvenile fish do not experience streamflow depletion as a monthly or annual average value because monthly or yearly average estimates can mask important ecological processes that might occur at shorter (*e.g.*, daily) time steps. Therefore, using the

monthly estimate of 1.4 cfs as a minimum threshold that supports instream beneficial uses (e.g., maintain adequate instream habitat condition) is inappropriate. We suggest SCMCGSA further refine the groundwater/surface water model to estimate daily streamflow depletion values occurring at representative sites throughout the basin, and investigate the impact of that depletion during seasonally low baseflow periods (e.g., during September of a dry year).

Finally, during the last technical meeting (on February 12, 2019) regarding the latest groundwater modeling results, the calibration results showed that the model was mostly underestimating groundwater levels at the Main Street shallow monitoring well, and mostly overestimating low streamflow values at Soquel Creek at Soquel. Thus, the estimate of 1.4 cfs might be underestimated. More definitive conclusions should be provided after the model is refined and recalibrated.

### **Specific comments**

Page. ES-7: The draft GSP states:

*“The current groundwater budget (Water Years 2010 -2015), also based on output of the Basin model, has similar proportions of inflow and outflows to the historical budget. The main changes in the groundwater budget over this recent period are that reduced municipal pumping (averaging reduction of 1,200 acre-feet per year over historical pumping) has raised groundwater levels in the Basin which causes more outflow to the ocean and a lesser increase in outflows to the Pajaro Valley Subbasin of the Corralitos Basin. Lower precipitation over the recent period, due to the drought, resulted in less groundwater recharge to the Basin. Even though the recent period included a four-year drought, increased water conservation and reduced pumping resulted in there being only a small decrease of groundwater in storage of 162 acre-feet per year or 974 acre-feet, cumulatively over the six-year period.”*

As mentioned above, the calibration results showed that the model was mostly overestimating low streamflow values at Soquel Creek at Soquel; it was also noted the model is mostly underestimating low streamflow values at Corralitos Creek at Freedom. This might be one of the reasons why the results show more outflow to the ocean (overestimated values at Soquel Creek) and a lesser increase in outflows to the Pajaro Valley Subbasin of the Corralitos Basin (underestimated values at Corralitos Creek). Therefore, the water budget needs to be properly justified after the model is refined and recalibrated.

Page. ES-9: The basin management objective for streamflow depletion is noted as *“Prevent depletion of surface water due to groundwater extraction, in interconnected streams supporting priority species, so that there is no more depletion than experienced since the start of shallow groundwater level monitoring through 2015.”* This objective seems to erroneously imply that managing streamflow depletion lower than the lowest rate occurring between 2002 through 2015 will avoid undesirable results and help achieve groundwater sustainability. As noted elsewhere in this letter, the draft GSP does not offer any evidence that streamflow depletion rates/volumes between 2002 and 2015 avoided causing significant and unreasonable adverse impacts on beneficial uses of the surface water. To the contrary, evidence suggests streamflow depletion caused by groundwater extraction did impact summer baseflow volume during this period (Coastal Watershed Council 2003; Santa Cruz County Resource Conservation District 2003; County of Santa Cruz

2019). NMFS recommends the SCMCGSA revise their key basin management objectives to more closely align with SGMA directives (*i.e.*, achieving sustainable groundwater management by avoiding the six undesirable results).

Page. 2-49: The draft GSP states: “*The County of Santa Cruz assessed and identified Groundwater Depended Ecosystems (GDE) where interconnected surface and groundwater exist within the Basin. As a first step to identify GDEs, the surface water-groundwater model developed for the Basin was used to identify where surface water and groundwater are connected (Figure 2.9)*”. As mentioned above, the model calibration results showed that the model was mostly underestimating groundwater elevations, and mostly overestimating low streamflow values at Soquel Creek. Therefore, if the current model is applied to the rest of the basin, the model might mistakenly indicate a lack of interconnection in places where interconnection occurs.

Page. 2-114: The draft GSP states: “*In gaining and losing streams, the change in gradient between surface water and groundwater is what determines the extent to which water is gained or lost from the streams. In some cases, even relatively small changes in gradient can convert a gaining stream to a losing stream and vice versa. Some losing streams are defined as “disconnected” meaning the groundwater is so far below the surface water that the surface water is essentially in free fall to the aquifer. In these cases, although water is typically percolating out of the stream down to the underlying groundwater, the rate of loss is not affected by the elevation of the groundwater.*” Brunner *et al.* (2009) have shown that this type of criteria neglects many of the important hydrogeological variables and does not clearly define where the depth to groundwater is measured. For example, by using a numerical model, Brunner *et al.* (2009) showed that for a given aquifer thickness and stream width, the depth to groundwater where the system disconnects is approximately proportional to both the stream depth and the hydraulic conductivity of the streambed sediments and inversely proportional to both the thickness of these sediments and the hydraulic conductivity of the aquifer. Moreover, the GSP also states: “*although water is typically percolating out of the stream down to the underlying groundwater, the rate of loss is not affected by the elevation of the groundwater*”. This statement only takes into account a particular location along the stream length. Further lowering the groundwater table by groundwater pumping in an already disconnected system will not significantly increase the infiltration rate where the stream is disconnected, but is expected to increase the length of stream over which disconnection occurs (Brunner *et al.* 2009). Therefore, SCMCGSA should perform a more robust analysis to classify a streamflow reach as connected or disconnected.

Page. 2-115: The draft GSP states: “*Where streams are disconnected, groundwater levels are well below the bottom of the stream, thus, even substantial groundwater level increases does not impact streamflow*”. Just because a stream is disconnected at one location does not mean that groundwater pumping will not affect the surface water body. Increased groundwater pumping can extend the length over which a river is disconnected and therefore changes in the aquifer are likely to affect streamflow (Brunner *et al.* 2011, Cook *et al.* 2010).

Page. 2-116: Third and fourth bulletpoint from the top suggests Soquel Creek surface flow is comprised largely of upstream surface water and little groundwater inflow (<0.5 cfs), and alludes to Figure 2-41 and 2-42 for support. In fact, Figure 2-41 instead shows groundwater accretion as the dominant component of dry season streamflow in Soquel Creek, especially during drought periods. In addition to clarifying this, the draft GSP should also address the apparent discrepancy between

the simulated groundwater inflow of less than 0.5 cfs on page 2-16 versus the simulated streamflow depletion rate of 1.4 cfs shown on page 3-90. Also, as mentioned above, based on the model calibration results, both values might be underestimated.

Page 2-121: Figure 1 (left panel) below shows Figure 2-45 from the draft GSP. One of the hydrographs from this figure corresponds to monitoring well SC-18A (screened in Purisima AA-unit). During a Surface Water Working Group meeting on January 30, 2019, there was a presentation file called “SurfaceWorkingGrp\_Jan30\_2019\_Georgina.pdf”. This presentation showed a different hydrograph for monitoring well SC-18A (Figure 1, right panel). In fact, in a follow-up email after that meeting, a member of the Surface Water Working Group noted that there was a considerable sharp decrease in SC-18A during spring/summer of 2015 (red box in Figure 1, right panel), and asked if it corresponds to a pumping interference or an historic low in groundwater levels for that well. There has been no reply to this question. Figure 1 (left panel) shows the hydrograph for monitoring well SC-18A that is presented in the draft GSP, but without the sharp decrease during spring/summer of 2015. We suggest SCMCGSA address the discrepancy between the two figures.

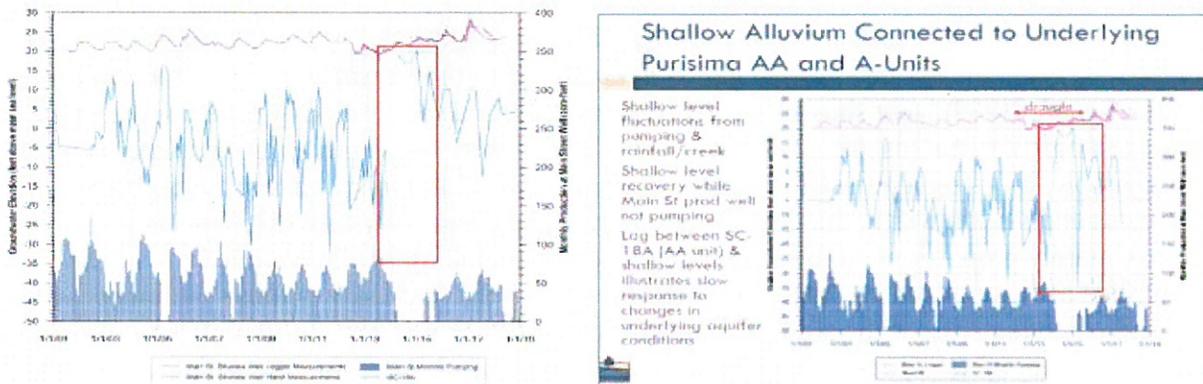


Figure 1: Figure 2-45 from the draft GSP (left panel) and a slide from the Surface Water Working Group meeting on January 30, 2019 (right panel). Red boxes show the period of the SC-18A hydrograph that was altered.

Page 2-124: - The Surface Water Working Group agreed to “*Linking the basic water needs of the species and habitats of concern, relative to groundwater elevations, is an appropriate way to move forward with the assessment and development of sustainable management criteria to benefit those species*”. Within Section 5, the draft GSP should expand on how and where these linkages will be developed and utilized in achieving sustainable groundwater management throughout the Mid-County Basin.

Page 2-131: The draft GSP states that “*The model calibration memo (Appendix A2-B) discusses all model assumptions and uncertainty*”. However, there is not an Appendix A2-B and it is indicated that this appendix will be included in the Final GSP. Our comments regarding the model calibration are based on the last technical meeting on February 12, 2019 where we expressed some concerns regarding optimal grid size (800 feet) for the model that can impact modeling results for low flows. We request the opportunity to participate in future modeling efforts in support of the GSP.

Page 3-39: The draft GSP states that *"Groundwater elevations as a proxy for surface water depletions are needed as a measure of sustainability because no direct measurable change in streamflow from deep groundwater extraction has been detected in over 18 years of monitoring shallow groundwater levels adjacent to lower Soquel Creek"*. This statement is very general and thus requires proper explanation and justification. The draft GSP is not taking into consideration shallow aquifer extractions that directly impact interconnected surface water in the lower Soquel Creek. Additionally, the statement is not analyzing extraction from neighboring wells (outside of Soquel municipal well field) that also can interact with the deep and shallow groundwater levels adjacent to lower Soquel Creek and impact surface water depletion. Moreover, the draft GSP states the following on Pg. 3-41: *"To more fully characterize interconnections between surface water and groundwater, additional monitoring of shallow groundwater levels is needed in the upper reaches of Soquel Creek and on other creeks that both support priority species and have connection to groundwater"*. Therefore, the general conclusion regarding an analysis on just one reach of Soquel Creek might not be representative of the entire basin. More definitive conclusions should be provided after an analysis is performed for a range of locations that represent the entire Santa Cruz Mid-County Basin.

Page. 3-42 – The draft GSP states *"As part of GSP implementation, the MGA will initiate a new well metering program on new private non-de minimis wells..."*. SGMA gives GSAs broad power to require data reporting from all "non-de minimis" groundwater extractors. Restricting data collection to only new extractors will hamstring future GSP effectiveness in achieving sustainability.

Page 3-53: The Draft GSP states low groundwater levels may *"...Cause more surface water depletion in interconnected streams that support priority species than has occurred over the past 18 years."* This passage again seems to be reasoning that streamflow depletion rates during the past have avoided impacts to beneficial users of surface water, which is not supported by the analysis presented in the draft GSP.

Page. 3-91: For the record, although NMFS was part of the Surface Water Working Group, we did not support the *"move towards managing shallow groundwater so that interconnected streams have gaining flow from groundwater and are not losing flow to groundwater."* Streamflow depletion can result from groundwater pumping that either directly captures streamflow, or captures groundwater that would later augment streamflow (Barlow and Leake 2012). It is inappropriate to assume significant and unreasonable adverse impacts on surface water beneficial uses can be avoided by simply ensuring that groundwater levels remain above the stream elevation (*i.e.*, a gaining reach) because whatever groundwater accretion remains may not necessarily support instream beneficial uses (*e.g.*, maintain adequate instream habitat condition).

Page 3-92: The draft GSP states the following: *"From well permit records it is known there are some private domestic wells screened in shallow alluvial sediments which are directly connected to surface water. These wells may have a larger impact on shallow groundwater levels than municipal pumping from the deeper Purisima aquifers."* Whether these private domestic wells were factored into the analysis is unclear. If not, why were these excluded?

Page 3-95: Regarding Section 3.9.2.6, we are unaware of any instance where NMFS called for “restoring unimpaired stream flows during low flow conditions and during other critical life stages.”

NMFS appreciates the opportunity to comment on the Santa Cruz Mid-County GSP. Addressing streamflow depletion through effective groundwater management is essential to recovering listed salmonids within many watersheds overlying the Mid-County Basin. NMFS stands ready to engage with the Santa Cruz Mid-County GSA, DWR, regulatory agencies and interested stakeholders to craft solutions to groundwater and streamflow issues in Santa Cruz County.

If you have any questions or concerns regarding this letter, please contact Mr. Rick Rogers (707-578-8552; rick.rogers@noaa.gov) or Mr. Bill Stevens (707-575-6066; William.Stevens@noaa.gov) of our California Coastal Office.

Sincerely,



Amanda Ingham  
Central Coast Branch Chief  
North Central Coastal Office

## References

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GAVIN NEWSOM, Governor  
CHARLTON H. BONHAM, Director



September 12, 2019

Santa Cruz Mid-County Groundwater Agency Board Members  
c/o Soquel Creek Water District  
Attention: Emma Olin  
5180 Soquel Drive  
Soquel, CA 95073  
[GSP2019Comments@midcountygroundwater.org](mailto:GSP2019Comments@midcountygroundwater.org)

Subject: Santa Cruz Mid-County Groundwater Basin Draft Groundwater Sustainability Plan

Dear Santa Cruz Mid-County Groundwater Agency Board Members:

The California Department of Fish and Wildlife (CDFW) Region 3 is providing comments on the Santa Cruz Mid-County Groundwater Sustainability Agency (GSA) Santa Cruz Mid-County Groundwater Basin Draft Groundwater Sustainability Plan (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 and Game Code §§ 711.7 and 1802).

Development and implementation of 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 Groundwater Sustainability Plans:

- Groundwater Sustainability Plans must **identify and consider impacts to groundwater dependent ecosystems** [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)]; and Groundwater Sustainability Plans 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)];
- Groundwater Sustainability Plans 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

- Groundwater Sustainability Plans 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)].

Accordingly, CDFW supports SGMA groundwater planning that carefully considers and protects groundwater dependent ecosystems and fish and wildlife beneficial uses and users of groundwater and interconnected surface waters.

### **COMMENT OVERVIEW**

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

CDFW appreciates the effort the GSA took to include CDFW, federal and state resources agencies, and non-profits in development of groundwater dependent ecosystems (GDEs) in the GSP. However, CDFW recommends the GSA incorporate additional detail and management metrics into the GSP before submission to the Department of Water Resources, as outlined below.

### **COMMENTS AND RECOMMENDATIONS**

CDFW comments are as follows:

1. Comment #1 – Section 2.1.1.3.1 Federal or State Lands within the Basin, page 2.14 through 2-15.

In the Jurisdictional Boundaries map (figure 2-3), the GSP identifies the Santa Cruz Long-Toed Salamander Ecological Reserve. However, the GSP does not include a narrative description of the property under 'State Lands,' nor does it identify CDFW management of the reserve.

- a. Issue: Description of Santa Cruz Long-Toed Salamander Ecological Reserve is excluded from the GSP sub-section 'State Lands'.
  - b. Recommendation: Include a description of the Santa Cruz Long-Toed Salamander Ecological Reserve and note that CDFW manages the property.
2. Comment #2 – Section 2.1.4.12 Impacts on Groundwater Dependent Ecosystems, page 2-49 through 2-51.

CDFW appreciates that the GSA took the time and effort to develop the Surface Water Working Group and collaborate with federal and state resource agencies to develop a list of groundwater dependent ecosystems and priorities. CDFW values the consideration of priority species' groundwater needs in the development of minimum thresholds and the selection of Representative Monitoring Points.

3. Comment #3 – Section 2.1.5.1 Description of Beneficial Uses and Beneficial Users of the Basin, page 2-54.

The GSP identifies that the Mid-County Groundwater Basin contains creeks, streams, ponds, and marshes which are supplied by groundwater and that there are unique plants and animals that are supported by groundwater. However, the GSP does not provide specific information on whether GDEs are environmental beneficial uses and users of groundwater, nor does the GSP identify specific species that are groundwater dependent, as specified by Title 23 CCR section 354.10(a).

- a. Issue: The GSP does not include a description of GDEs and how they depend on groundwater and constitute as beneficial users.
- b. Recommendation: GDEs should be listed as beneficial users of groundwater and the GSP should include detailed descriptions on how GDEs depend on groundwater and provide a list of specific species that are groundwater dependent. For example, include a description on how specific riparian plant species rely on groundwater base flows to survive, how GDEs create habitat for species listed under the California Endangered Species Act or Federal Endangered Species Act, etc.

4. Comment #4 – Section 2.2.3.3.4 Surface Water Outflows, page 2-134.

The water budget does not incorporate surface water diversions into the model due to a lack of records and difficulty of quantification. The exclusion of surface water diversions in the water budget does not provide an accurate estimate of the “total surface water entering and leaving a basin...” as specified by Title 23 CCR section 354.18(b)(1). This exclusion of surface water diversions may lead to overestimated streamflow.

- a. Issue: Surface water diversions are not incorporated into the water budget.
- b. Recommendation: Incorporate surface water diversion estimates into the basin water budget (e.g., derive estimated quantities from annual statements of water use, land-use based estimates including residential uses, etc.).

5. Comment #5 – Section 3.9.1.1 Groundwater Elevations as a Proxy for Depletion of Interconnected Surface Water Minimum Thresholds, page 3-90 through 3-91.

The GSP identifies that the GSA will use groundwater elevation as a proxy for the depletion of interconnected surface water. But, in order for the GSA to use groundwater elevations as a proxy for depletion of interconnected surface water, the GSP should identify a significant correlation between groundwater elevations and interconnected surface water depletions as required by Title 23 CCR section 354.36(b)(1). The GSP currently attempts to correlate groundwater elevations with streamflow by modeling results; however, a specific rate or volume of surface water depletions caused by groundwater should be developed to correlate groundwater levels with streamflow depletions. If a significant correlation is not determined, groundwater elevations used as a proxy for surface water depletions may misinform groundwater management activities and poorly predict instream habitat conditions for fish and wildlife species. The current proposed approach to maintain shallow groundwater gradients at current/historic levels may serve as an interim management approach, but should be revisited to address the relationship between surface water – groundwater connectivity.

- a. Issue: The GSP fails to identify a significant correlation between ground water elevations and interconnected surface water depletions.
  - b. Recommendation: The GSP should either: 1) specify how groundwater elevations are significantly correlated to surface water depletions; or 2) specify monitoring actions that will be taken to identify the location, quantity, and timing of surface water depletions caused by groundwater use, per Title 23 CCR Section 354.28(c)(6)(A), to better inform minimum thresholds for depletions of interconnected surface water. The monitoring plan should specify dates for completion of each monitoring task and should include a commitment to periodically re-evaluate groundwater usage based on the data collected.
6. Comment #6 – Section 3.9.2.5 Effects of Minimum Thresholds on Beneficial Users and Land Uses, page 3-95.

CDFW greatly appreciates that the Santa Cruz Mid-County GSP seeks to benefit protect species and GDEs in streams connected to groundwater.

7. Comment #7 – 5.1.1.4 Data Collection, Analysis, and Reporting, page 5-4 through 5-7. The GSP has identified the locations of current streamflow gauges (e.g., Soquel Creek) and groundwater monitoring wells within the basin through descriptions and figures. However, it is unclear whether the locations of the new streamflow gages and groundwater monitoring wells will expand into areas where there is a lack of streamflow gages and monitoring wells or if they will be located within existing monitored areas.
- a. Issue: The GSP fails to identify the locations of new streamflow gauges and groundwater monitoring wells.
  - b. Recommendation: The GSP should include a detailed description and a map that identifies where the new stream gauges will be installed. CDFW also recommends installing new streamflow gages and groundwater monitoring wells at other interconnected streams (e.g., Branciforte Creek, Arana Gulch) located throughout the groundwater basin.

## CONCLUSION

In conclusion, though the GAP thoughtfully identifies GDEs and priority species, it could improve compliance with several aspects of SGMA statutes and regulations, including descriptions of fish and wildlife beneficial uses and users of groundwater, and characterization, measurement, and monitoring of interconnected surface water depletions. CDFW recommends that Santa Cruz Mid-County GSA address the above comments for the following reasons derived from 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 #4, 5).

2. 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 GSP. [23 CCR § 355.4(b)(3)] (See Comment #5, 7).
3. 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 fully considered. [23 CCR § 355.4(b)(4)] (See Comments #1, 3).

CDFW appreciates the opportunity to provide comments on the Santa Cruz Mid-County Groundwater Basin GSP. If you have any questions, please contact Ms. Monica Oey, Environmental Scientist, at (707) 428-2088 or [monica.oey@wildlife.ca.gov](mailto:monica.oey@wildlife.ca.gov); or Ms. Randi Adair, Senior Environmental Scientist (Supervisory), at (707) 576-2786.

Sincerely,



Gregg Erickson  
Regional Manager  
Bay Delta Region

ec: California Department of Water Resources

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September 19, 2019

*Sent via email to GSP2019Comments@midcountygroundwater.org*

**Re: Comments on Draft Groundwater Sustainability Plan for Santa Cruz Mid County Groundwater Basin**

To Whom It May Concern,

On behalf of the above-listed organizations, we would like to offer the attached comments on the draft Groundwater Sustainability Plan for the Santa Cruz Mid County Groundwater Basin. Our organizations are deeply engaged in and committed to the successful implementation of the Sustainable Groundwater Management Act (SGMA) because we understand that groundwater is a critical piece of a resilient California water portfolio, particularly in light of our changing climate. Because California's water and economy are interconnected, the sustainable management of each basin is of interest to both local communities and the state as a whole.

Our organizations have significant expertise in the environmental needs of groundwater and the needs of disadvantaged communities.

- The Nature Conservancy, in collaboration with state agencies, has developed several tools<sup>1</sup> for identifying groundwater dependent ecosystems in every SGMA groundwater basin and has made that tool available to each Groundwater Sustainability Agency.
- Local Government Commission supports leadership development, performs community engagement, and provides technical assistance dealing with groundwater management and other resilience-related topics at the local and regional scales; we provide guidance and resources for statewide applicability to the communities and GSAs we are working with directly in multiple groundwater basins.
- Audubon California is an expert in understanding wetlands and their role in groundwater recharge and applying conservation science to develop multiple-benefit solutions for sustainable groundwater management.
- The Union of Concerned Scientists has been working to ensure that future water supply meets demand and withstands climate change impacts by supporting stakeholder education and integration, and the creation and implementation of science-based Groundwater Sustainability Plans.

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<sup>1</sup> <https://groundwaterresourcehub.org/>

- Clean Water Action and Clean Water Fund are sister organizations that have deep expertise in the provision of safe drinking water, particularly in California’s small disadvantaged communities, and co-authored a report on public and stakeholder engagement in SGMA<sup>2</sup>.

Because of the number of draft plans being released and our interest in reviewing every plan, we have identified key plan elements that are necessary to ensure that each plan adequately addresses essential requirements of SGMA. A summary review of your plan using our evaluation framework is attached to this letter as Appendix A. Our hope is that you can use our feedback to improve your plan before it is submitted in January 2020.

This review does not look at data quality but instead looks at how data was presented and used to identify and address the needs of disadvantaged communities (DACs), drinking water and the environment. In addition to informing individual groundwater sustainability agencies of our analysis, we plan to aggregate the results of our reviews to identify trends in GSP development, compare plans and determine which basins may require greater attention from our organizations.

### **Key Indicators**

Appendix A provides a list of the questions we posed, how the draft plan responds to those questions and an evaluation by element of major issues with the plan. Below is a summary by element of the questions used to evaluate the plan.

1. Identification of Beneficial Users. This element is meant to ascertain whether and how DACs and groundwater-dependent ecosystems (GDEs) were identified, what standards and guidance were used to determine groundwater quality conditions and establish minimum thresholds for groundwater quality, and how environmental beneficial users and stakeholders were engaged through the development of the draft plan.
2. Communications plan. This element looks at the sufficiency of the communications plan in identifying ongoing stakeholder engagement during plan implementation, explicit information about how DACs were engaged in the planning process and how stakeholder input was incorporated into the GSP process and decision-making.
3. Maps related to Key Beneficial Uses. This element looks for maps related to drinking water users, including the density, location and depths of public supply and domestic wells; maps of GDE and interconnected surface waters with gaining and losing reaches; and monitoring networks.
4. Water Budgets. This element looks at how climate change is explicitly incorporated into current and future water budgets; how demands from urban and domestic water users were incorporated; and whether the historic, current and future water demands of native vegetation and wetlands are included in the budget.
5. Management areas and Monitoring Network. This element looks at where, why and how management areas are established, as well what data gaps have been identified and how the plan addresses those gaps.
6. Measurable Objectives and Undesirable Results. This element evaluates whether the plan explicitly considers the impacts on DACs, GDEs and environmental beneficial users in the development of Undesirable Results and Measurable Objectives. In addition, it examines

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<https://www.cleanwater.org/publications/collaborating-success-stakeholder-engagement-sustainable-groundwater-management-act>

whether stakeholder input was solicited from these beneficial users during the development of those metrics.

7. Management Actions and Costs. This element looks at how identified management actions impact DACs, GDEs and interconnected surface water bodies; whether mitigation for impacts to DACs is discussed or funded; and what efforts will be made to fill identified data gaps in the first five years of the plan. Additionally, this element asks whether any changes to local ordinances or land use plans are included as management actions.

## Conclusion

We know that SGMA plan development and implementation is a major undertaking, and we want every basin to be successful. We would be happy to meet with you to discuss our evaluation as you finalize your Plan for submittal to DWR. Feel free to contact Suzannah Sosman at [suzannah@aginnovations.org](mailto:suzannah@aginnovations.org) for more information or to schedule a conversation.

Sincerely,



Jennifer Clary  
Water Program Manager  
Clean Water Action/Clean Water Fund



Danielle V. Dolan  
Water Program Director  
Local Government Commission



Samantha Arthur  
Working Lands Program Director  
Audubon California



J. Pablo Ortiz-Partida, Ph.D.  
Western States Climate and Water Scientist  
Union of Concerned Scientists



Sandi Matsumoto  
Associate Director, California Water Program  
The Nature Conservancy

**Appendix A  
Review of Public Draft GSP**

**Groundwater Basin/Subbasin:** Santa Cruz Mid-County Groundwater Basin (DWR #3-001)  
**GSA:** Santa Cruz Mid-County Groundwater Agency (MGA)  
**GSP Date:** July 17, 2019 Public Review Draft

**1. Identification of Beneficial Users**

*Were key beneficial users identified and engaged?*

Selected relevant requirements and guidance:  
 GSP Element 2.1.5, "Notice & Communication" (§354.10):  
*(a) A description of the beneficial uses and users of groundwater in the basin, including the land uses and property interests potentially affected by the use of groundwater in the basin, the types of parties representing those interests, and the nature of consultation with those parties.*  
 GSP Element 2.2.2, "Groundwater Conditions" (§354.16):  
*(d) Groundwater quality issues that may affect the supply and beneficial uses of groundwater, including a description and map of the location of known groundwater contamination sites and plumes.*  
*(f) Identification of interconnected surface water systems within the basin and an estimate of the quantity and timing of depletions of those systems, utilizing data available from the Department, as specified in Section 353.2, or the best available information.*  
*(g) Identification of groundwater dependent ecosystems within the basin, utilizing data available from the Department, as specified in Section 353.2, or the best available information.*  
 GSP Element 3.3, "Minimum Thresholds" (§354.28):  
*(4) How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.*

Review Criteria	Y e s	N o	N / A	Relevant Info per GSP	Location (Section, Page <sup>1</sup> )
1. Do beneficial users (BUs) identified within the GSP area include:	<b>X</b>			"Disadvantaged Communities (DAC) - DWR's DAC mapping tool identifies 7 DACs including one severely disadvantaged community within the Basin; the total population is 8,375. This designation is based upon median household income from the US Census American Community Survey 5-Year Data (2012 – 2016). These communities receive water from the MGA's public water supply agencies. An assessment of the water related needs of DACs is occurring through a Proposition 1 Integrated Regional Water Management (IRWM) Disadvantaged Community Involvement Grant. MGA staff are in coordination with IRWM program to coordinate efforts in these communities."	2.1.5.1.1, page 119
a. Disadvantaged Communities (DACs)					
b. Tribes		<b>X</b>		"California Native American tribes: there are no tribal lands within the Basin (see Section 2.1.1.3.2). The Amah Mutsun Tribal Band were historically present in the region. A representative of the Amah Mutsun will be notified when the draft GSP is available for comment."	2.1.5.1.1, page 119;
				"There are no federally designated tribal lands and no federally recognized tribes in the Basin. The Basin is located within a California Tribal and Cultural Area that historically belonged to a division of the Ohlone people known as the Awaswas. The Awaswas people inhabited the land from present-day Davenport to Aptos. South of the Awaswas, and near the present-day basin	2.1.1.3.2, page 79

<sup>1</sup> Page numbers refer to the page of the PDF.

**Appendix A  
Review of Public Draft GSP**

			boundary with Pajaro, were the Mutsun people, another division of the Ohlone. Decedents of both the Awaswas and Mutsun people are members of the Amah Mutsun Tribal Band. The Tribal Band is petitioning the federal government for tribal recognition and has recently formed the Amah Mutsun Land Trust in an effort to access, protect, and steward lands important to the tribe.”	
	c. Small community public water systems (<3,300 connections)	<b>X</b>	“Small Water Systems: There are two categories for small water systems which are regulated by the County: State Smalls have between 5-14 service connections, and Small Public Water Systems are between 15-199 connections or serve at least 25 people for at least 60 days a year. These systems serve both individual domestic properties, commercial uses such as camps, and institutional uses such as schools. In total, small water systems use approximately 5% of the water pumped every year from the Basin.”	2.1.5.1.1, page 117
2. What data were used to identify presence or absence of DACs?	a. DWR <a href="#">DAC Mapping Tool</a> <sup>2</sup>	<b>X</b>	“DWR’s DAC mapping tool identifies 7 DACs including one severely disadvantaged community within the Basin; the total population is 8,375. This designation is based upon median household income from the US Census American Community Survey 5-Year Data (2012 – 2016).”	2.1.5.1.1, page 119
	i. Census Places	<b>X</b>	Not specified	
	ii. Census Block Groups	<b>X</b>	Not specified	
	iii. Census Tracts	<b>X</b>	Not specified	
	b. Other data source	<b>X</b>		
3. Groundwater Conditions section includes discussion of:	a. Drinking Water Quality	<b>X</b>	<p>“Groundwater produced in the Basin is generally of good quality and does not regularly exceed primary drinking water standards. A few naturally occurring constituents, including iron, manganese, arsenic and hexavalent chromium (also referred to as chromium VI), exceed drinking water standards in parts of the Basin. As previously mentioned, some coastal monitoring wells have elevated chloride and TDS concentrations associated with seawater intrusion.</p> <p>Treated groundwater delivered by MGA member municipal water agencies meets or exceeds all state and federal drinking water parameters. The municipal water agencies routinely analyze their untreated groundwater to determine the groundwater quality of the Basin and to comply with state water quality reporting requirements. Groundwater quality parameters analyzed include general minerals, general physical parameters, and organic/inorganic compounds. Analyses for these constituents are conducted in accordance with requirements of the California Code of Regulations, Title 22.</p> <p>...</p> <p>Private domestic use wells are not subject to DDW drinking water regulations. However, the County of Santa Cruz requires one-time testing of nitrate, total dissolved solids (TDS), chloride, iron and manganese for any new private well. Small water systems that supply groundwater to 15 – 199 service connections also report water quality to the County that includes: inorganics, nitrates, arsenic, perchlorate, chromium, radiation, synthetic organic compounds, and</p>	2.2.2.4, page 166-167

<sup>2</sup> DWR DAC Mapping Tool: <https://gis.water.ca.gov/app/dacs/>

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				volatile organic compounds (including methyl tertiary-butyl ether (MTBE)). The frequency of reporting ranges between one year and nine years depending on the constituents. Smaller water systems of between 5 – 14 service connections have limited one-time testing requirements for inorganics.”	
	b. California Maximum Contaminant Levels (CA MCLs) <sup>3</sup> (or Public Health Goals where MCL does not exist, e.g. Chromium VI)		<b>X</b>	<p>“Groundwater quality results are compared to primary and secondary drinking water standards, established by the US Environmental Protection Agency (USEPA), and water quality standards established by the California State Water Resources Control Board’s Division of Drinking Water (DDW).</p> <p>Primary drinking water standards are concentrations that, in the judgment of the State Water Resources Control Board (SWRCB), may have an adverse effect on human health. Secondary standards are set for constituents that are not health threatening, but public water systems still test and treat their water for these constituents to meet secondary standards, unless they obtain a waiver.”</p> <p>“The secondary maximum contaminant level for TDS is 1,000 mg/L.”</p> <p>“Groundwater in the Purisima Formation regularly has iron and manganese concentrations above secondary drinking water standards of 300 µg/L and 50 µg/L, respectively.”</p> <p>Other constituent concentrations compared to MCLs are: arsenic, chromium VI, nitrates, organic compounds, and contaminants of emerging concern.</p>	2.2.2.4, page 167;  2.2.2.4.1, page 167-169; 2.2.2.4.2, page 169-172
4. What local, state, and federal standards or plans were used to assess drinking water BUs in the development of Minimum Thresholds (MTs)?	a. Office of Environmental Health Hazard Assessment Public Health Goal (OEHHA PHGs) <sup>4</sup>		<b>X</b>		
	b. CA MCLs <sup>3</sup>		<b>X</b>	<p>“Minimum thresholds are state drinking water standards for constituents of concern monitored in RMPs for degraded groundwater quality. Table 3-19 lists the constituents of concern in the Basin together with why it is of concern and their state drinking water standards that represent minimum thresholds.”</p> <p>Table 3-19 shows the constituents of concern with minimum thresholds/drinking water standards, which includes: total dissolved solids, chloride, iron, manganese, arsenic, chromium (total), chromium VI, nitrate as nitrogen, perchlorate, and organic compounds.</p>	3.7.2.2, page 325;  Table 3-19, page 325-326
	c. Water Quality Objectives (WQOs) in Regional Water Quality Control Plans		<b>X</b>		
	d. Sustainable Communities Strategies/ Regional Transportation Plans <sup>5</sup>		<b>X</b>		

<sup>3</sup> CA MCLs: [https://www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/MCLsandPHGs.html](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/MCLsandPHGs.html)

<sup>4</sup> OEHHA PHGs: [https://www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/MCLsandPHGs.html](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/MCLsandPHGs.html)

<sup>5</sup> CARB: <https://ww2.arb.ca.gov/resources/documents/scs-evaluation-resources>

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	e. County and/or City General Plans, Zoning Codes and Ordinances <sup>6</sup>		X		
5.	Does the GSP identify how environmental BUs and environmental stakeholders were engaged throughout the development of the GSP?		X	<p>“The basin includes creeks, streams, ponds and marshes, some of which are partially supplied by groundwater during the dry seasons when surface water from rain is not available. Some of the plants and animals found in basin habitats supported by groundwater are unique to the region and are state and federally listed as sensitive species. Many government agencies, individuals, and private groups are interested in environmental restoration of habitats and species within the Basin. These groups collaborated in the Surface Water Working Group, a subcommittee of the GSP Advisory Committee, to develop recommendations on groundwater dependent ecosystems and sustainability criteria to avoid surface water depletions from groundwater extractions.”</p> <p>“Federal Government: there are no federal lands within the Basin (see Section 2.1.1.3.1). However, there are federally listed species dependent on groundwater in the Basin. Federal resource agencies including the National Oceanic and Atmospheric Administration National Marine Fisheries and US Fish and Wildlife Service are participating in the Surface Water Working Group, a subcommittee of the GSP Advisory Committee. This group developed recommendations that were considered and incorporated into the Basin’s groundwater dependent ecosystems and sustainability criteria to avoid surface water depletions that could impact federally listed species.”</p> <p>Please include the following in the list of beneficial uses and users of groundwater in the Basin: Protected Lands, including preserves, refuges, conservation areas, recreational areas and other protected lands; and Public Trust Uses, including wildlife, aquatic habitat, fisheries, recreation and navigation.</p>	<p>2.1.5.1.1, page 118</p> <p>Section 2.1.5.1</p>

**Summary / Comments**

Based on our review of the draft GSP, it is not clear what levels of Census data were used to identify DACs within the Plan area (i.e., Census tracts, block groups, and/or places). It also does not appear that that PHGs or Regional Water Quality Control Plan WQOs, were considered in the assessment of groundwater conditions.

The following beneficial uses and users of groundwater in the Basin should be included in the GSP: Protected Lands, including preserves, refuges, conservation areas, recreational areas and other protected lands; and Public Trust Uses, including wildlife, aquatic habitat, fisheries, recreation and navigation.

**2. Communications Plan**

*How were key beneficial users engaged and how was their input incorporated into the GSP process and decisions?*

Selected relevant requirements and guidance:  
 GSP Element 2.1.5, “Notice & Communication” (§354.10):  
*Each Plan shall include a summary of information relating to notification and communication by the Agency with other agencies and interested parties including the*

<sup>6</sup> OPR General Plan Guidelines: <http://www.opr.ca.gov/planning/general-plan/>

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following:

(c) Comments regarding the Plan received by the Agency and a summary of any responses by the Agency.

(d) A communication section of the Plan that includes the following:

(1) An explanation of the Agency’s decision-making process.

(2) Identification of opportunities for public engagement and a discussion of how public input and response will be used.

(3) A description of how the Agency encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin.

(4) The method the Agency shall follow to inform the public about progress implementing the Plan, including the status of projects and actions.

**DWR Guidance Document for GSP Stakeholder Communication and Engagement<sup>7</sup>**

Review Criteria	Y e s	N o	N /	A Relevant Info per GSP	Location (Section, Page)
1. Is a Stakeholder Communication and Engagement Plan (SCEP) included?	X			"The MGA uses a variety of ways to actively encourage public participation, as outlined in its Communication and Engagement Plan (Appendix A2-A)." SCEP is very brief (only 8 pages) and is largely provided in an outline format.	2.1.5.3, page 122
2. Does the SCEP or GSP identify that ongoing engagement will be conducted during GSP implementation?	X			<p>"Phase 4: January 1, 2020- ongoing Purpose: Roll out of the final plan, informational meetings, press releases, GSP completion celebration. Work with Student Sustainable Groundwater Liaisons to improve engagement with local high schools and colleges."</p> <p>"Ongoing activities in the GSP Implementation phase starting in 2020 are anticipated to include outreach such as: maintaining the MGA website and related online/social media through the member agencies (e.g., Facebook; Nextdoor); electronic newsletter; promoting and conducting community meetings, workshops, events; coordination with the Water Conservation Coalition of Santa Cruz County; conducting informational surveys; youth engagement efforts; developing brochures and print materials; and similar engagement activities."</p>	MGA Communication and Engagement Plan, page 8;  5.1.1.6, page 421
3. Does the SCEP or GSP specifically identify how DAC beneficial users were engaged in the planning process?	X			<p>"Category of Interest: Human right to water Examples of Stakeholder Groups:</p> <ul style="list-style-type: none"> <li>• Disadvantaged Communities</li> <li>• Environmental Justice Groups</li> <li>• Human Service non-profits (Human Care Alliance etc.)</li> </ul> <p>Engagement purpose: Inform and involve to provide a safe and secure groundwater supplies to DACs"</p> <p>"Audiences/stakeholders contact strategies: ... d. Private well residential users and small water systems (all) How to contact: postcards, presentations to community groups, road signs, small water system quarterly meetings, partnering with RCD, press releases and community</p>	MGA Communication and Engagement Plan, page 3;  MGA Communication and Engagement Plan, page 2

<sup>7</sup> DWR Guidance Document for GSP Stakeholder Communication and Engagement  
<https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Guidance-Documents-for-Groundwater-Sustainability-Plan---Stakeholder-Communication-and-Engagement.pdf>

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			<p>parties. ... 2) Non-profits: Email lists, presentations to Boards/Councils"</p>	
<p>4. Does the SCEP or GSP explicitly describe how stakeholder input was incorporated into the GSP process and decisions?</p>	<p><b>X</b></p>		<p>"In recognition of the fundamental importance of public engagement in the GSP development process, the MGA Board established a GSP Advisory Committee selected from a well-qualified pool of community-member applicants representing groundwater users and stakeholders in the Basin. The 13 members represented: Agricultural, Business, Environmental Uses, Institutional Users, Small Water Systems, and Water Utility Rate Payers. Between October 2017 and June 2019, the GSP Advisory Committee convened in 20 formal meetings, additional orientation sessions, enrichment sessions, and technical working groups. They worked collaboratively in an open and public process to deliberate based on scientific data regarding current and projected basin conditions. The Committee provided the Board with recommendations on how to address key policy issues required by SGMA and their recommendations directly informed Sustainable Management Criteria developed for each sustainability indicator."</p> <p>"As discussed in the GSP (Section 2.1.5), the MGA selected a GSP Advisory Committee consisting of representatives of the Basin's groundwater users, interest groups and stakeholders. The Advisory Committee analyzed and provided recommendations to the MGA Board on key policy issues to inform the development of the GSP. Together with MGA member agency staff, technical consultants, and community input, the Advisory Committee developed a vision for Basin sustainability."</p> <p>"GSP Advisory Committee meetings and MGA Board meetings provide multiple opportunities for public comment at each meeting. ... A partial list of examples when the MGA Board incorporated public input into its decision-making and recommendations include directing staff to:</p> <ul style="list-style-type: none"> <li>• Record MGA Board meetings;</li> <li>• Obtain and use MGA road signs to advertise MGA events;</li> <li>• Record and post GSP Advisory Committee meetings;</li> <li>• Organize and hold a Basin field trip open to public participants;</li> <li>• Consider MGA email policy to establish MGA email addresses to serve private well owner board representative and other non-agency GSP Advisory Committee members;</li> <li>• Develop and publish MGA public participation guidelines;</li> <li>• Hold regular drop-in meetings with staff and board members; and</li> <li>• Hold a joint MGA Board of Director and GSP Advisory Committee meeting for the public to present water augmentation recommendations to the MGA Board." </li></ul>	<p>ES Section 1.0 Introduction, page 7;</p> <p>1.2, page 27;</p> <p>2.1.5.4, page 123-124;</p>

**Summary / Comments**

A SCEP is included in the Appendix of the GSP, but it is not clear when the SCEP was developed and/or whether it was made publicly available at that time.

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Ongoing stakeholder engagement and inclusion throughout the GSP implementation process will be crucial to ensuring that the needs of the most vulnerable beneficial users in the basin are met.

The GSP notes that the advisory committee included an environmental representative, a private well representative, and small water system management representative, but does not indicate what specific organization or interest these members represented. For better transparency, we recommend that each of the advisory members and their organization/interests be identified in the GSP so that the public may make an assessment as to how well DACs, GDEs, and other BUs were represented in the process.

**3. Maps Related to Key Beneficial Uses**

Were best available data sources used for information related to key beneficial users?

<b>Selected relevant requirements and guidance:</b>	
GSP Element 2.1.4 “Additional GSP Elements” (§354.8):	
Each Plan shall include a description of the geographic areas covered, including the following information:	
(a) One or more maps of the basin that depict the following, as applicable:	
(5) The density of wells per square mile, by dasymetric or similar mapping techniques, showing the general distribution of agricultural, industrial, and domestic water supply wells in the basin, including de minimis extractors, and the location and extent of communities dependent upon groundwater, utilizing data provided by the Department, as specified in Section 353.2, or the best available information.	
<b>GSP Element 3.5 Monitoring Network (§354.34)</b>	
(b) Each Plan shall include a description of the monitoring network objectives for the basin, including an explanation of how the network will be developed and implemented to monitor groundwater and related surface conditions, and the interconnection of surface water and groundwater, with sufficient temporal frequency and spatial density to evaluate the affects and effectiveness of Plan implementation. The monitoring network objectives shall be implemented to accomplish the following:	
(c) Each monitoring network shall be designed to accomplish the following for each sustainability indicator:	
(1) Chronic Lowering of Groundwater Levels. Demonstrate groundwater occurrence, flow directions, and hydraulic gradients between principal aquifers and surface water features by the following methods:	
(A) A sufficient density of monitoring wells to collect representative measurements through depth-discrete perforated intervals to characterize the groundwater table or potentiometric surface for each principal aquifer.	
(4) Degraded Water Quality. Collect sufficient spatial and temporal data from each applicable principal aquifer to determine groundwater quality trends for water quality indicators, as determined by the Agency, to address known water quality issues.	
(6) Depletions of Interconnected Surface Water. Monitor surface water and groundwater, where interconnected surface water conditions exist, to characterize the spatial and temporal exchanges between surface water and groundwater, and to calibrate and apply the tools and methods necessary to calculate depletions of surface water caused by groundwater extractions. The monitoring network shall be able to characterize the following:	
(A) Flow conditions including surface water discharge, surface water head, and baseflow contribution.	
(B) Identifying the approximate date and location where ephemeral or intermittent flowing streams and rivers cease to flow, if applicable.	
(C) Temporal change in conditions due to variations in stream discharge and regional groundwater extraction.	
(D) Other factors that may be necessary to identify adverse impacts on beneficial uses of the surface water.	
(f) The Agency shall determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon the following factors:	
(3) Impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal.	

Review Criteria	Y e s	N o	N / A	Relevant Info per GSP	Location (Section, Page)
1. Does the GSP Include Maps Related to Drinking Water Users?	a. Well Density	X		“The Private Well Concentration Map (Figure2-5) shows the location of municipal supply wells, and uses a 1-mile square grid overlay within the Basin to identify regional well concentration.”	2.1.1.6, page 85
	b. Domestic and Public Supply Well Locations & Depths		X	Figure 2-5, Private Well Concentration per Square Mile, shows the locations of wells including municipal supply wells and private domestic wells.  However, the depths of the wells are not specifically identified.	2.1.1.6, page 85
	i. Based on DWR <a href="#">Well Completion Report Map</a>		X		

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	<p style="text-align: center;"><a href="#">Application</a><sup>8</sup>?</p> <p>ii. Based on Other Source(s)?</p>	X	<p>“Because the actual number and location of all private water supply wells is unknown, the MGA developed a private well map that uses the best available data to estimate well density. Well density is estimated using: (1) all available County water well data and (2) supplements County permit data as needed by estimating one private well for each developed parcel that is not served by a municipal water supplier, a small water system, or a permitted private well”</p>	2.1.1.6, page 84
<p>2. Does the GSP include maps related to Groundwater Dependent Ecosystem (GDE) locations?</p>	<p>a. Map of GDE Locations</p>	X	<ul style="list-style-type: none"> <li>● On page 2-116 it is stated that the focus of GDE identification was narrowed to the habitats supported by surface water systems (i.e., those located near streams). Furthermore, it was stated that “... the group determined that any possible ecosystem effects would be challenging to evaluate, are likely quite small if they exist at all, and will benefit from the management policies put in place to protect priority aquatic species.” Since, other GDEs may exist in areas of shallow groundwater away from streams, please provide a more substantial justification for focusing GDE identification efforts on riparian zones alone.</li>   <li>● Page 2-122 states that “Other ecosystems that were identified were found to be generally supported by interflow in perched groundwater, and surface runoff.” The nature and locations of the “other ecosystems” is not discussed. Also, while the interflow hypothesis (redwood sponge effect) is potentially plausible, there is no evidence to support that this water is actually soil water in the unsaturated zone versus groundwater flow in an aquifer that is interacting with other aquifer formations. This “interflow” should not be considered beyond the scope of GSP management, until it has been better characterized and shallow monitoring wells have been installed in the redwood-forested areas. SGMA defines aquifers as “a body of rock or sediment that is sufficiently porous and permeable to store, transmit, and yield significant or economic quantities of groundwater to wells and springs”. Given the potential significance of “interflow” to ecosystems and surface water in Soquel Creek, more information is necessary to substantiate these statements. Other GDEs may exist in areas of shallow groundwater away from streams. Please provide additional details regarding the “other ecosystems” discussed on pages 2-116 and 2-122</li>   <li>● While depth to groundwater is generally accepted as being a proxy for confirming that polygons in the NC dataset are connected to groundwater, the variable needs of plant species and their dependence on seasonal and inter-annual groundwater level fluctuations should be considered when applying this criterion. The GSP does not cite what</li> </ul>	2.2.2.7, Page 189

<sup>8</sup> DWR Well Completion Report Map Application: <https://www.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37>

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			<p>hydraulic criteria were used to establish a GDE. It is highly advised that seasonal and interannual fluctuations in the groundwater regime are taken into consideration.</p> <ul style="list-style-type: none"> <li>• Very little description is provided regarding the nature and function of the identified GDEs, their potential sensitivity to groundwater and surface water supply changes, their relative habitat value. We recommend the inclusion of a discussion regarding the nature and characteristics of the identified GDEs.</li> </ul>	
b. Map of Interconnected Surface Waters (ISWs)	<b>X</b>		<ul style="list-style-type: none"> <li>• On page 2-116 the third bullet states “Groundwater only contributes a small amount of flow (&lt;0.5 cfs) to each of these segments in the months with lowest flows.” While this is technically correct based on modeled results, this baseflow measurement is highly uncertain due to a lack of co-located stream gauges and nested or clustered groundwater wells throughout Soquel Creek. It is also potentially misleading since, for example Figures 2-41 shows that during 22 out of 27 years, the total flow in this reach of Soquel Creek was only 1.5 cfs or less. Please remove the word “only” and provide perspective on the total percentage of baseflow discharge included in dry month discharge, as well as modelling uncertainties.</li> </ul>	2.1.4.12, Page 114
i. Does it identify which reaches are gaining and which are losing?	<b>X</b>			
ii. Depletions to ISWs are quantified by stream segments.	<b>X</b>			
iii. Depletions to ISWs are quantified seasonally.	<b>X</b>		<ul style="list-style-type: none"> <li>• On page 2-118, it is stated that the MGA intends to improve Basin monitoring to better understand surface-groundwater interactions over time. Nested monitoring wells would be helpful near surface water to show how pumping is impacting surface water flows and GDEs in all of the interconnected surface waterways (not just in Soquel Creek). More specifically, we suggest installing three nested wells perpendicular to Soquel Creek near several pumping wells (perhaps one in each gaining reach and one in the losing reach; Nob Hill, Simons, and Main Street), so that we can assess how well connected the A, AA and Tu formations are with Soquel Creek. This will also help to gauge what distance to the creek is most representative of a shallow groundwater gradient (to validate EDF’s approach), and allow updating of the groundwater model as appropriate.</li> <li>• Figure 2-9 provides good perspective on the potential connection between surface and groundwater for various streams and reaches and Section 2.2.2 provides a discussion regarding some of the reaches that are considered potentially most sensitive to streamflow depletion by groundwater extraction. However, more information is required to understand of how the connection is affected by year type and reach overall, and to substantiate prioritization of these stream reaches. We recommend that a table be included presenting estimates of current and historical surface water depletions for ISWs quantified and described by reach, season,</li> </ul>	

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				and water year type.		
3. Does the GSP include maps of monitoring networks?	a. Existing Monitoring Wells		X	Figure 3-1. Location of Existing Basin-Wide Wells Used for Groundwater Level Monitoring	3.3.1.1, page 253	
	b. Existing Monitoring Well Data sources:	i. California Statewide Groundwater Elevation Monitoring (CASGEM)		X	“California Statewide Groundwater Elevation Monitoring (CASGEM) Program – The County administers a countywide collaborative groundwater level monitoring and reporting program to fulfill statewide requirements, with biannual groundwater elevation data provided by local water agencies. CASGEM uses monitoring locations throughout the county, including wells within the Basin, to evaluate regional groundwater levels. Statewide groundwater elevation monitoring through CASGEM has provided DWR with data needed to track seasonal and long-term groundwater elevation trends in groundwater basins throughout the state. CASGEM continues to exist as a tool to help achieve the goals set out in SGMA.”	2.1.2.1, page 88
		ii. Water Board Regulated monitoring sites		X		
		iii. Department of Pesticide Regulation (DPR) monitoring wells		X		
	c. SGMA-Compliance Monitoring Network		X	Figure 3-5. Chronic Lowering of Groundwater Level Representative Monitoring Network  Figure 3-6. Reduction of Groundwater in Storage Representative Monitoring Network  Figure 3-7. Degraded Groundwater Quality Representative Monitoring Network  Figure 3-8. Depletion of Interconnected Surface Water Existing Representative Monitoring Network  Table 3-8. Seawater Intrusion Representative Monitoring Network [Note, this is actually a figure]	3.3.3.1, page 275;  3.3.3.2, page 276;  3.3.3.4, page 281;  3.3.3.5, page 285;  3.3.3.3, page 278	
	i. SGMA Monitoring Network map includes identified DACs?		X			
	ii. SGMA Monitoring Network map includes identified GDEs?		X			

**Summary / Comments**

Providing maps of the monitoring network overlaid with location of DACs, GDEs, and any other sensitive beneficial users will allow the reader to evaluate the adequacy of the network to monitor conditions near these beneficial users.

Figure 2-5 combines information for domestic wells and municipal supply wells in one figure; the information are presented in such a way that the reader cannot readily discern the location/density of domestic wells as distinguished from public supply wells. It is recommended that this information be divided into two separate figures, for full

transparency of the data.

Provide information regarding the depths of domestic wells so that the public may be able to assess potential impacts of the proposed MOs/MTs on domestic wells.

If applicable, Water Board Regulated monitoring sites and Department of Pesticide Regulation (DPR) monitoring wells should be included and shown as part of the existing monitoring networks.

It is highly advised that a more substantial justification for focusing GDE identification efforts on riparian zones alone is included, since other GDEs may exist in areas of shallow groundwater away from streams.

We recommend that additional details regarding the “other ecosystems” discussed on pages 2-116 and 2-122 and their dependence on “interflow” should be included.

We recommend referring to the TNC guidance document for best practices in using groundwater data to verify whether NCCAGs are GDEs. Temporal and spatial data that were used to identify GDE should be provided and data gaps should be identified. Depth to groundwater contour maps are recommended to be used to verify whether a connection to groundwater exists for polygons in the NC Dataset, instead of relying on inferences based on the presence of surface water features in the Basin. It is also highly advised that seasonal and interannual fluctuations in the groundwater regime are taken into consideration in the identification of GDEs.

The last bullet on page 2-124 states that modeling and management should focus on areas of highest groundwater extraction where streams are interconnected with groundwater. The location of these areas should be identified.

The first bullet on page 2-123 states that there are many factors beyond groundwater management that affect streamflow, that are beyond the scope of the GSP yet were accounted for in the analysis. How these factors were accounted for in the analysis should be identified.

We recommend that a discussion regarding the nature and characteristics of the identified GDEs is included.

The word “only” should be removed in “Groundwater only contributes a small amount of flow” on page 2-116. We recommend providing perspective on the total percentage of baseflow discharge included in dry month discharge, as well as modelling uncertainties.

Section 2.2.2.6 should discuss or reference any in-stream flow requirements, especially flow needs for critical species, in each of the interconnected streams including the amount, time of year when the flow minimum is specified, the duration, the species for which it applies, associated permits that set forth the requirements, and the regulating agency setting forth the compliance requirements.

We suggest installing three nested wells perpendicular to Soquel Creek near several pumping wells to assess surface-groundwater interactions.

We recommend that a table be included presenting estimates of current and historical surface water depletions for ISWs quantified and described by reach, season, and water year type.

#### **4. Water Budgets**

*How were climate change projections incorporated into projected/future water budget and how were key beneficial users addressed?*

Selected relevant requirements and guidance:

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GSP Element 2.2.3 “Water Budget Information” (Reg. § 354.18)  
*Each Plan shall include a water budget for the basin that provides an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin, including historical, current and projected water budget conditions, and the change in the volume of water stored. Water budget information shall be reported in tabular and graphical form.*

*Projected water budgets shall be used to estimate future baseline conditions of supply, **demand**, and aquifer response to Plan implementation, and to identify the uncertainties of these projected water budget components. The projected water budget shall utilize the following methodologies and assumptions to estimate future baseline conditions concerning hydrology, water demand and surface water supply availability or reliability over the planning and implementation horizon:*

*(b) The water budget shall quantify the following, either through direct measurements or estimates based on data:*

*(5) If overdraft conditions occur, as defined in Bulletin 118, the water budget shall include a quantification of overdraft over a period of years during which water year and water supply conditions approximate average conditions.*

*(6) The water year type associated with the annual supply, demand, and change in groundwater stored.*

*(c) Each Plan shall quantify the current, historical, and projected water budget for the basin as follows:*

*(1) Current water budget information shall quantify current inflows and outflows for the basin using the most recent hydrology, water supply, **water demand**, and land use information.*

**DWR Water Budget BMP<sup>9</sup>**  
**DWR Guidance for Climate Change Data Use During GSP Development and Resource Guide<sup>10</sup>**

Review Criteria	Y e s	N o	N / A	Relevant Info per GSP	Location (Section, Page)
1. Are climate change projections explicitly incorporated in future/ projected water budget scenario(s)?	X			“The projected water budgets account for future climate generated from a catalog of historical climate data from warm years in the Basin’s past to simulate the warmer temperatures predicted by global climate change.”	2.2.3.6.1, page 218
2. Is there a description of the methodology used to include climate change?			X	“The Catalog Climate has an increase of 2.4 °F in temperature and decrease of 1.3 - 3.1 inches per year in precipitation over the long-term record at climate stations in Santa Cruz and Watsonville. There is a corresponding increase in evapotranspiration of about 6%. ... A panel of local experts recommended the Catalog Climate approach as appropriate for Basin planning. More technical information on a comparison of climate change scenarios is contained in Appendix A2-B.”  Appendix A2-B, Groundwater Model Calibration Memorandum, is not included in the public review draft, but is noted that it will be included in the Final GSP. The draft GSP is therefore incomplete.	2.2.3.6.1, page 218

<sup>9</sup> DWR BMP for the Sustainable <management of Groundwater Water Budget:

<https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-4-Water-Budget.pdf>

<sup>10</sup>DWR Guidance Document for the Sustainable Management of Groundwater Guidance for Climate Change Data Use During GSP Development:

[https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Climate-Change-Guidance\\_Final.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Climate-Change-Guidance_Final.pdf)

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3. What is used as the basis for climate change assumptions?	a. <a href="#">DWR-Provided Climate Change Data and Guidance</a> <sup>11</sup>	X			
	b. Other	X		<p>“Specifically, the Catalog Climate utilizes historical data from the Santa Cruz Co-op and Watsonville Waterworks climate stations.”</p> <p>“A panel of local experts recommended the Catalog Climate approach as appropriate for Basin planning. More technical information on a comparison of climate change scenarios is contained in Appendix A2-B.”</p> <p><b>Appendix A2-B is not provided for public review.</b></p>	2.2.3.6.1, page 218
4. Does the GSP use multiple climate scenarios?		X		<p>“This approach preserves the integrity of the climate data and ensures temperature and precipitation values are associated with real data. The Catalog Climate has an increase of 2.4 °F in temperature and decrease of 1.3 - 3.1 inches per year in precipitation over the long-term record at climate stations in Santa Cruz and Watsonville. There is a corresponding increase in evapotranspiration of about 6%.”</p> <p>The GSP describes one climate scenario as above, it is not clear of any other climate scenario was considered.</p>	2.2.3.6.1, page 218
5. Does the GSP quantitatively incorporate climate change projections?		X		<p>“This approach preserves the integrity of the climate data and ensures temperature and precipitation values are associated with real data. The Catalog Climate has an increase of 2.4 °F in temperature and decrease of 1.3 - 3.1 inches per year in precipitation over the long-term record at climate stations in Santa Cruz and Watsonville. There is a corresponding increase in evapotranspiration of about 6%.”</p> <p>“Climate change results in an average decrease in projected Basin inflows of around 700 acre-feet per year.”</p>	2.2.3.6.1, page 218;  2.2.3.6.2, page 222
6. Does the GSP explicitly account for climate change in the following elements of the future/projected water budget?	a. Inflows: i. Precipitation	X		GSP identifies “UZF Recharge” in the projected water budget, described as: “In the model, areal recharge from direct percolation of precipitation is calculated using PRMS code for watershed processes while return flows from irrigation and septic systems are input using the MODFLOW Unsaturated Zone Flow (UZF) modeling package. The recharge from direct percolation of precipitation and return flows are then grouped together by MODFLOW using the UZF package. Therefore, the water budget groups these groundwater budget components together and refers to it as UZF recharge.” Therefore change in precipitation is not explicitly identified.	2.2.3.3.1, page 198
	ii. Surface Water	X		<p>“Climate change results in an average decrease in projected Basin inflows of around 700 acre-feet per year from current inflows.”</p> <p>The inflow reduction by climate change projection is understood to consist of surface recharge and subsurface inflows, but the effects of these two</p>	ES Section 2.0, page 12

<sup>11</sup>DWR Guidance Document for the Sustainable Management of Groundwater Guidance for Climate Change Data Use During GSP Development: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Climate-Change-Guidance\\_Final.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Climate-Change-Guidance_Final.pdf)  
DWR Resource Guide DWR-Provided Climate Change Data and Guidance for Use During GSP Development: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Resource-Guide-Climate-Change-Guidance\\_v8.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Resource-Guide-Climate-Change-Guidance_v8.pdf)

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			elements are not discussed separately.	
	iii. Imported Water		X No imported water form outside the County.	
	iv. Subsurface Inflow		X The inflow reduction by climate change projection is understood to consist of surface recharge and subsurface inflows, but the effects of these two elements are not discussed separately.	ES Section 2.0, page 12
	b. Outflows:			
	i. Evapotranspiration		X	
	ii. Surface Water Outflows (incl. Exports)		X	
	iii. Groundwater Outflows (incl. Exports)		X	
7. Are demands by these sectors (drinking water users) explicitly included in the future/projected water budget?	a. Domestic Well users (<5 connections)	X		2.2.3.6.1, page 219
	b. State Small Water systems (5-14 connections)		X	
	c. Small community water systems (<3,300 connections)		X	2.2.3.6.1, page 219
	d. Medium and Large community water systems (> 3,300 connections)		X	<p>“Projected baseline municipal groundwater demand (without projects and management actions) is based on several different assumptions:</p> <ul style="list-style-type: none"> <li>• Central Water District - pre-drought average groundwater production from Water Year 2008 through 2011.</li> <li>• Soquel Creek Water District - 2015 Urban Water Management Plan (UWMP) projects demand to increase to 3,900 acre-feet per year after historically low pumping achieved from 2010-2015. The 2015 UWMP projects subsequent long-term decline of demand to 3,300 acre-feet per year, but these demands may have been underestimated; for example, new laws facilitating Accessory Dwelling Units have passed since 2015. For projected water budget, the GSP projects that Soquel Creek Water District groundwater demand will be stable.</li> <li>• City of Santa Cruz – projections of groundwater pumping based on City of Santa Cruz Confluence modeling to meet demand during 2016-2018. The City considers this demand appropriate for current planning because unlike most other communities in the Bay Area and California, City water demand has not increased much from restricted consumption during the 2012-2015 drought (SCWD, 2019, and M.Cubed, 2019).”</li> </ul> <p>These demands are not tabulated and presented in the GSP.</p>
	e. Non-community water systems		X	2.2.3.6.1, page 219
8. Are water uses for native vegetation and/or wetlands explicitly included in the current and historical water budgets?			X	2.2.3, Page 192 - 234
9. Are water uses for native vegetation and/or wetlands explicitly included			X	<p>The following items related to GDEs, wetlands and riparian areas should be clarified or considered:</p> <ul style="list-style-type: none"> <li>• Groundwater outflow to ET is not identified as a groundwater budget component (Table 2-9). Since wetlands, GDEs, and riparian</li> </ul>

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<p>in the projected/future water budget?</p>		<p>vegetation are recognized as beneficial users of groundwater in the Basin, they should be included in the groundwater budget as ET demands. Calculations should be provided to quantify the amount of ET in the GDEs both spatially and temporally, including water year type. Please identify any data gaps.</p> <ul style="list-style-type: none"> <li>● “Evapotranspiration” is identified in Table 2-9 as a stream system water budget outflow component. It is not appropriate to identify the existence of GDEs, and then to assume that they meet all of their water demand through surface water and do not rely on groundwater to meet any demand. Please include an explanation of the approach to determining the amount of riparian ET demand met by streamflow both spatially and temporally, including water year type, and identify any data gaps.</li> <li>● Table 2-9 states that with regard to groundwater discharge to creeks, “... calibration to streamflow indicated groundwater interactions less significant than watershed characteristics.” With regards to outflow of surface water to evapotranspiration, the table states that this value was derived “based on calibration of potential evapotranspiration. Both values were derived from the calibrated model, yet the GSP states that the model did not simulate evapotranspiration of groundwater. Please provide additional explanation regarding the approach used to determine the amount of evapotranspiration from riparian areas and other GDEs and what is meant by the statement that groundwater interactions are less important than watershed characteristics. Please also discuss the rationale for the simplifying modeling assumption that GDEs derive all of their water uptake from surface water, and identify any data gaps relative to assessment and management of GDEs. These critical and unverified assumptions could fundamentally alter the definition of GDEs in the basin, and subsequent evaluation in the plan.</li> <li>● Shallow monitoring wells are only available for a portion of the Soquel Creek to validate shallow groundwater modeling and identifies this lack as a data gap (Page 2-131). Section 2.2.3.4.1 (p 2-135) identifies that the most important aspect of the surface water budget is its connection to groundwater for GDEs. Please provide additional evaluation and discussion regarding the level of uncertainty and limitations resulting from this data gap. Please evaluate the effect this data gap on the modeling results related to ISWs and surface-groundwater interaction by conducting a sensitivity analysis.</li> </ul>	
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**Summary / Comments**

The draft GSP is incomplete. Appendix A2-B, Groundwater Model Calibration Memorandum, is not included and therefore cannot be reviewed by the public.

The GSP uses an alternative climate change methodology to the guidance provided by DWR. An evaluation and discussion of how the “catalog climate” method differs from the DWR Guidance and why it is considered to be more appropriate than the DWR method should be included in the GSP.

Given the uncertainties of climate change, it is appropriate to analyze the impacts of climate change for a range of scenarios (e.g., a mild effects scenario and a high (worst case) effects scenario). Based on the limited information provided in the GSP, it appears that only one climate change scenario was included, which is insufficient for sustainable groundwater planning.

Based on the data presented, it is not clear how climate change is expected to affect specific elements of the water budget (i.e., precipitation, evapotranspiration, surface water and groundwater outflows, including exports).

The GSP describes the way demands for drinking water systems were adjusted for the projected water budget, but does not provide these demands in a tabulated, transparent format. This information should be provided for full transparency of the assumptions, data, and results of the water budgets.

Groundwater outflow to ET should be identified as a groundwater budget component. We recommend that additional explanation regarding the approach used to determine the amount of evapotranspiration from riparian areas and other GDEs be provided. Please also discuss the rationale for the simplifying modeling assumption that GDEs derive all of their water uptake from surface water, and identify any data gaps relative to assessment and management of GDEs.

Please provide additional evaluation and discussion regarding the level of uncertainty and limitations resulting from the data gap in the limited locations of shallow monitoring wells. Please evaluate the effect of this data gap on the modeling results related to ISWs and surface-groundwater interaction by conducting a sensitivity analysis.

**5. Management Areas and Monitoring Network**

How were key beneficial users considered in the selection and monitoring of Management Areas and was the monitoring network designed appropriately to identify impacts on DACs and GDEs?

Selected relevant requirements and guidance:  
 GSP Element 3.3, "Management Areas" (§354.20):

(b) A basin that includes one or more management areas shall describe the following in the Plan:  
 (2) The minimum thresholds and measurable objectives established for each management area, and an explanation of the rationale for selecting those values, if different from the basin at large.  
 (3) The level of monitoring and analysis appropriate for each management area.  
 (4) An explanation of how the management area can operate under different minimum thresholds and measurable objectives without causing undesirable results outside the management area, if applicable.  
 (c) If a Plan includes one or more management areas, the Plan shall include descriptions, maps, and other information required by this Subarticle sufficient to describe conditions in those areas.

CWC Guide to Protecting Drinking Water Quality under the SGMA<sup>12</sup>  
 TNC's Groundwater Dependent Ecosystems under the SGMA, Guidance for Preparing GSPs<sup>13</sup>

Review Criteria	Y e s	N o	N / A	Relevant Info per GSP	Location (Section, Page)
1. Does the GSP define one or more Management Area?		X		<p>"The GSP Advisory Committee and MGA technical staff considered whether to recommend the creation of management areas within the Basin during its meeting #12 on December 12, 2018. MGA technical staff outlined four potential management areas for the committee to consider within the Basin and the reasoning associated with each potential management area.</p> <p>The GSP Advisory Committee considered the following management areas, and chose to recommend against management areas at this time.</p> <p>...</p> <p>Management areas were not recommended because the overall sustainability goals (minimum thresholds and measurable objectives) apply to the entire MGA Basin. These goals are specifically defined for each sustainability indicator and each representative monitoring location. Because representative monitoring locations and monitoring requirements are set specifically for each sustainability indicator, the technical staff and the GSP Advisory Committee found no additional benefit to establishing separate management areas within the Basin."</p>	2.2.4, page 235-236
2. Were the management areas defined specifically to manage GDEs?			X		
3. Were the management areas defined specifically to manage DACs?			X		
iv. a. If yes, are the Measurable Objectives (MOs) and MTs for			X		

<sup>12</sup> CWC Guide to Protecting Drinking Water Quality under the SGMA: [https://d3n8a8pro7vhm.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide\\_to\\_Protecting\\_Drinking\\_Water\\_Quality\\_Under\\_the\\_Sustainable\\_Groundwater\\_Management\\_Act.pdf?1559328858](https://d3n8a8pro7vhm.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858)

<sup>13</sup> TNC's Groundwater Dependent Ecosystems under the SGMA, Guidance for Preparing GSPs: <https://www.scienceforconservation.org/assets/downloads/GDEsUnderSGMA.pdf>

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	GDE/DAC management areas more restrictive than for the basin as a whole?				
v.	b. If yes, are the proposed management actions for GDE/DAC management areas more restrictive/ aggressive than for the basin as a whole?			<b>X</b>	
4.	Does the GSP include maps or descriptions indicating what DACs are located in each Management Area(s)?			<b>X</b>	
5.	Does the GSP include maps or descriptions indicating what GDEs are located in each Management Area(s)?			<b>X</b>	
6.	Does the plan identify gaps in the monitoring network for DACs and/or GDEs?	<b>X</b>		<p><b>“Depletion of interconnected surface water monitoring:</b> To more fully characterize interconnections between surface water and groundwater, additional monitoring of shallow groundwater levels is needed in the upper reaches of Soquel Creek and on other creeks that both support priority species and have a connection to groundwater. The locations for additional shallow wells are selected based on whether groundwater is connected to surface water, it is in an area of concentrated groundwater extraction, has a suitable nearby location for a streamflow gauge, and has potential site access. ... Figure 3-9 shows the locations of eight proposed shallow monitoring wells that fill monitoring gaps in the Basin. To indicate areas of concentrated groundwater extraction, Figure 3-9 shows the area of municipal pumping and the small dots are approximate locations of private domestic wells. ... Section 5 on Plan Implementation outlines how the MGA plans to finance and construct the eight shallow monitoring wells.”</p> <p>“Associated with the shallow groundwater level monitoring wells identified above, streamflow gauges to monitor changes in streamflow are needed to correlate changes in streamflow from groundwater extraction. The shallow monitoring wells and streamflow gauges need to be located adjacent to each other for the data to be meaningful. Figure 3-9 shows the locations of five proposed streamflow gauges that would be associated with shallow monitoring wells. Section 5 on Plan Implementation outlines how the MGA plans to finance and construct the streamflow gauges.”</p>	<p>3.3.4.1, page 286;</p> <p>3.3.4.2, page 286</p>
	a. If yes, are plans included to address the identified deficiencies?	<b>X</b>		<p>“Shallow Wells: As discussed in Section 3.4.4.1, the addition of up to eight new shallow monitoring wells is proposed to improve the ability to monitor surface water/groundwater interactions. These wells will serve to inform the performance assessment of the sustainable management criteria for depletion of interconnected surface waters, as required under SGMA.</p> <p>The proposed eight shallow monitoring wells are anticipated to be installed in a phased approach at prioritized locations within the next 5 years. The MGA will continue to assess the prioritization and schedule for new shallow well locations as the network expands. Because this is monitoring that would not otherwise be conducted by the individual member agencies, the MGA will assume the costs associated with this monitoring. The MGA’s cost to improve the monitoring network with the addition of new shallow monitoring wells is estimated to be approximately \$20,000 per site. These are approximate cost estimates as there are uncertainties such as site-specific considerations,</p>	5.1.1.4.1, page 418;

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			<p>construction bid environment as well as a variety of other factors that will ultimately determine the cost to install and operate each well.”</p> <p>“The MGA estimated cost to construct the streamflow gauges are presented in Table 5-1. It is anticipated the new monitoring locations will be installed over in a phased approach over the next five years. The MGA’s Proposition 1 GSP Planning grant is providing \$125,000 towards funding at least one streamflow and/or shallow groundwater elevation monitoring installation. The MGA will seek additional grant funding available from the Department of Water Resources (DWR) and consider other state and federal programs to partially fund the installation of new streamflow gauges.”</p>	5.1.1.4.4, page 420
<p><b>Summary / Comments</b></p> <p>If management areas are defined in the future, care should be taken so that they and the associated monitoring network are designed to adequately assess and protect against impacts to all beneficial users, including GDEs and DACs.</p>				



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<p>3. Does the GSP explicitly consider impacts to GDEs and environmental BUs of surface water in the development of MOs and MTs for groundwater levels and depletions of ISWs?</p>	<p>X</p>	<p>members were included in the GSP Advisory Committee.</p> <p>“Ecological land uses and users. As described in Section 3.2.3.2, chronic lowering of groundwater level minimum thresholds are not set to protect the groundwater resource including those existing ecological habitats that rely upon it. In the unlikely event that groundwater levels drop to minimum thresholds for chronic lowering of groundwater levels, it could lead to a significant and unreasonable reduction of flow of groundwater toward streams, which could adversely affect ecological habitats.”</p> <p>“Ecological land uses and users. The main benefit of these minimum thresholds is to protected species and GDEs in streams connected to groundwater. Meeting minimum thresholds effectively increases overall hydraulic gradients from the shallow groundwater to the streams allowing for more groundwater to flow into the stream.”</p> <p>No reference is made to the review of supporting documents for General Plan Conservation or Land Use Elements, or to the review of environmental management studies and documents such as Biological Assessments, Biological Opinions, HCPs, NCCPs, or other studies regarding the current and historical conditions of the beneficial uses being evaluated. Please provide detail on how sustainable management criteria were developed for GDEs and streamflow habitat, and how the above supporting documents were considered.</p>	<p>3.4.2.5, Page 295 3.9.2.5, Page 340</p>
<p>4. Does the GSP explicitly consider impacts GDEs and environmental BUs of surface water and recreational lands in the discussion and development of Undesirable Results?</p>	<p>X</p>	<p>“Undesirable depletion of interconnected surface water from groundwater extraction will primarily effect aquatic systems mainly during the late summer. Under low flow conditions, there is a direct linear relationship between streamflow and the amount of suitable habitat. Reduction of flow directly reduces the amount of suitable rearing habitat for steelhead, by reducing the amount of wetted area, stream depth, flow velocity, cover, and dissolved oxygen. Reduced flow can also result in increased temperature. In extreme conditions, dewatering of channel segments eliminates the ability of the fish to move to more suitable areas and can cause outright mortality. In even more extreme conditions lowering of groundwater levels below the root zone of riparian vegetation can result in the loss of that vegetation.”</p> <p>Section 3.9.1.1 presents the results of an analysis to assess whether groundwater level monitoring can serve as suitable surrogate to assess depletion of interconnected surface water. The section states that the analysis is conducted outside the calibrated use of the model, adding additional uncertainty to the results. An additional consideration is that the only shallow groundwater monitoring data available are in lower Soquel Creek, but GDEs and ISWs are located throughout the Basin. Finally, although the analysis aims to provide a correlation between groundwater levels and streamflow discharge, not attempt to make a correlation between groundwater levels and ecosystem response has been undertaken. The data gaps associated with establishment of minimum thresholds for depletion of ISW should be described and a plan provided to address them. To the extent data are available, please plot hydrologic data for locations with identified GDEs and</p>	<p>3.9.1.4, Page 337</p>

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				<p>instream flow requirements for coho and steelhead salmon. This is particularly important in areas identified in Section 3.9.1.3 (p. 3-91) where private domestic wells screened in shallow alluvial sediments are directly connected to surface water.</p>
<p><b>Summary / Comments</b></p> <p>Based on the presented information, DAC members are not explicitly considered in the discussion of URs, MOs, and MTs for groundwater levels and water quality. More detail and specifics regarding DAC members, including those that rely on smaller community drinking water systems and domestic wells, is necessary to demonstrate that these beneficial users were adequately considered.<sup>14</sup></p> <p>The GSP includes insufficient data on the proximity of DACs to the representative monitoring wells that will be used to measure undesirable results.</p> <p>The GSP should explicitly demonstrate whether and how the stakeholder input from DAC community members was considered in the development of URs, MOs, and MTs.</p> <p>Please provide detail on how sustainable management criteria were developed for GDEs and streamflow habitat, and how supporting documents were considered.</p> <p>The data gaps associated with establishment of minimum thresholds for depletion of ISW should be described and a plan provided to address them. To the extent data are available, please plot hydrologic data for locations with identified GDEs and instream flow requirements for coho and steelhead salmon.</p>				

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<sup>14</sup> Community Water Center and Stanford School of Earth, Energy, and the Environmental Sciences, *Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium*, [https://d3n8a8pro7vhm.cloudfront.net/communitywatercenter/pages/293/attachments/original/1560371896/CWC\\_FS\\_GrndwtrQual\\_06.03.19a.pdf?1560371896](https://d3n8a8pro7vhm.cloudfront.net/communitywatercenter/pages/293/attachments/original/1560371896/CWC_FS_GrndwtrQual_06.03.19a.pdf?1560371896); Community Water Center, *Guide to Protecting Drinking Water Quality Under the Sustainable Groundwater Management Act*, [https://d3n8a8pro7vhm.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide\\_to\\_Protecting\\_Drinking\\_Water\\_Quality\\_Under\\_the\\_Sustainable\\_Groundwater\\_Management\\_Act.pdf?1559328858](https://d3n8a8pro7vhm.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858).

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**7. Management Actions and Costs**

*What does the GSP identify as specific actions to achieve the MOs, particularly those that affect the key BUs, including actions triggered by failure to meet MOs? What funding mechanisms and processes are identified that will ensure that the proposed projects and management actions are achievable and implementable?*

Selected relevant requirements and guidance  
 GSP Element 4.0 Projects and Management Actions to Achieve Sustainability Goal (§ 354.44)  
*(a) Each Plan shall include a description of the projects and management actions the Agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin.*  
*(b) Each Plan shall include a description of the projects and management actions that include the following:*  
*(1) A list of projects and management actions proposed in the Plan with a description of the measurable objective that is expected to benefit from the project or management action.*

Review Criteria	Y e s	N o	N / A	Relevant Info per GSP	Location (Section, Page)
1. Does the GSP identify benefits or impacts to DACs as a result of identified management actions?		<b>X</b>		Benefits or impacts to DACs as a result of the management actions are not explicitly identified in the GSP.	
2. If yes: <ul style="list-style-type: none"> <li>b. Is a plan to mitigate impacts on DAC drinking water users included in the proposed Projects and Management Actions?</li> </ul>		<b>X</b>		The GSP describes a mitigation program in effect for private wells impacted by SqCWD municipal pumping.  “Monitoring and Mitigation Program for Private Wells (MMP) – SqCWD has agreements with private well owners within a 1,000 meter radius of three new municipal wells to monitor their wells for impacts potentially caused by operation of new municipal wells. As part of the program and at SqCWD’s expense, private well owner’s wells are installed with meters to monitor production and data loggers to record groundwater levels. Well owner participation is voluntary. The ten-year monitoring period is based upon the date each new municipal production well is put into service. Monitoring data from the municipal production well and nearby private wells are analyzed annually. Under these agreements, corrective action is taken to change municipal production operations if municipal pumping causes restrictive effects on private wells.”	2.1.2.1, page 87
<ul style="list-style-type: none"> <li>c. Does the GSP identify costs to fund a mitigation program?</li> </ul>			<b>X</b>		
<ul style="list-style-type: none"> <li>d. Does the GSP include a funding mechanism to support the mitigation program?</li> </ul>			<b>X</b>		
2. Does the GSP identify specific management actions and funding mechanisms to meet the identified MOs/MTs for groundwater quality and groundwater levels?	<b>X</b>			“A well designed and operated ASR project has the potential to raise groundwater levels, thus reducing the threat of seawater intrusion, and store available surface water in regional aquifers for use as drought supply. Any ASR project would need to manage groundwater extraction to prevent adverse impacts.”  “SCWD staff have estimated that the more limited ASR project described throughout this discussion would cost \$21,000,000 in 2019 dollars. These	4.2.2.2, page 391;  4.2.2.11, page 396;

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			<p>funds would be used to support ongoing pilot testing of ASR at Beltz system wells, necessary design for permanent retrofitting of existing wells, any needed improvements or modifications to SCWD’s groundwater treatment facilities, and planning for additional ASR facilities in the western portion of the Basin if and as needed. The SCWD will continue to develop and fund the ASR project planning and implementation through its individual agency budget at no cost to the MGA. Project funding is expected to come from the SCWD water rate payers generated funds and from grant programs if such funds are available and can be successfully obtained.”</p> <p>“DSWMAR is a groundwater recharge project to increase groundwater storage in the shallow aquifer layers in the Basin for increased groundwater storage and added protection against seawater intrusion and improved surface water quality.”</p> <p>“Existing DSWMAR projects were developed with local and grant funding sources. Future DSWMAR projects sites are under investigation. Two of the three potential storm water recharge sites evaluated in a report prepared for the County (MME, June 2019) were found suitable for project development. Both suitable sites are at different locations on Seascapes Golf Course. The MME report estimates costs per unit of water infiltrated over a 20 year project lifespan. These costs were developed per acre-foot of stormwater recharge and varied between \$1,649 and \$2,786 per acre-foot. Project development costs for initial project installation were estimated at \$450,000 at the Los Altos site and \$650,000 at the 14th Fairway site. MGA policy developed to date indicate project funding would come from member agencies and grants.”</p>	<p>4.2.4.2, page 403;</p> <p>4.2.4.11, page 405</p>
<p>3. Does the GSP include plans to fill identified data gaps by the first five-year report?</p>		<p><b>X</b></p>	<p>Section 5.1.1.4 identifies plans and costs for additional monitoring wells and stream gauges to fill data gaps. It is not clear if these new wells and gauges will have collected sufficient data by the first five-year report.</p>	
<p>4. Do proposed management actions include any changes to local ordinances or land use planning?</p>		<p><b>X</b></p>	<p>The projects and management activities planned for the near-term implementation include: advanced water purification to existing secondary treated wastewater, aquifer storage and recovery, and surface water transfer.</p> <p>The Water Conservation and Demand Management and the Planning and Redistribution of Municipal groundwater Pumping are the baseline projects and management actions described in the GSP. Both projects are considered existing commitments by the MGS member agencies.</p> <p>“The MGA believes that the current level of Basin pumping can be continued with the effective implementation of the Group 1 and Group 2 Projects and Management Actions. However, the MGA also acknowledges that pumping restrictions are an effective tool to achieve groundwater sustainability that may need to be used in the future.</p> <p>For the purpose of the GSP, pumping restrictions are defined as reductions or limitations in the amount of water a current or future groundwater user can pump from the Basin. This would be applied in the case of a situation where</p>	<p>4.3.4, page 410-411;</p>

**Appendix A  
Review of Public Draft GSP**

			<p>the planned Projects and Management Actions are insufficient to reach and/or maintain sustainability and one or more sustainability indicator is likely to dip below the minimum threshold by 2040. Under such a curtailment scenario, the MGA would determine the amount of water that affected pumpers could take sustainably, and the pumpers would be required to reduce their groundwater extraction to that allocation. All pumpers subject to allocations and restriction would be required to be metered.</p> <p>...</p> <p>The MGA will consider the adoption of fees and/or other penalties for violations of pumping allowance and/or reporting in the event that restrictions are implemented.</p> <p>...</p> <p>Considerably more work and discussion would need to be done to define the policies and procedures for pumping restrictions in the event that is determined to be needed to attain and maintain sustainability.”</p>	
<p>5. Does the GSP identify additional/contingent actions and funding mechanisms in the event that MOs are not met by the identified actions?</p>	<p align="center">X</p>		<p>Additional actions are identified for any proposed near-term management action fails; however, it is not specifically related to the failure of meeting MOs.</p> <p>“The MGA’s analysis indicates that the ongoing implementation of Group 1 and the added implementation of Group 2 projects and management actions will bring the Basin into sustainability. However, if one of the projects and management actions required for sustainability in Group 2 either fails to take places or does not have the expected results, further actions will be required to achieve sustainability. In that case, appropriate projects and/or management actions will be chosen from those listed under Group 3. As work on supplemental water supply and resource management efforts is ongoing, it may be the case that additional projects will be identified and added to the list in future GSP updates (Table 4-2).</p> <p>The specific activity selected will be based on factors such as size of the water shortage, speed of implementation, scale of regulatory and political hurdles, and the metrics of success achieved in basin sustainability.”</p>	<p>4, page 379</p>
<p>6. Does the GSP provide a plan to study the interconnectedness of surface water bodies?</p>	<p align="center">X</p>		<p>“Depletion of interconnected surface water monitoring: To more fully characterize interconnections between surface water and groundwater, additional monitoring of shallow groundwater levels is needed in the upper reaches of Soquel Creek and on other creeks that both support priority species and have a connection to groundwater. The locations for additional shallow wells are selected based on whether groundwater is connected to surface water, it is in an area of concentrated groundwater extraction, has a suitable nearby location for a streamflow gauge, and has potential site access. There is a fair degree of uncertainty regarding access at some of the proposed locations. The actual locations of future shallow wells will be determined based on a site suitability study that will include the ability to obtain easements. Figure 3-9 shows the locations of eight proposed shallow monitoring wells that fill monitoring gaps in the Basin. ... Section 5 on Plan Implementation outlines how the MGA plans to finance and construct the eight shallow monitoring wells.”</p>	<p>3.3.4.1, page 286;</p>

**Appendix A  
Review of Public Draft GSP**

			“Shallow Wells: As discussed in Section 3.4.4.1, the addition of up to eight new shallow monitoring wells is proposed to improve the ability to monitor surface water/groundwater interactions. These wells will serve to inform the performance assessment of the sustainable management criteria for depletion of interconnected surface waters, as required under SGMA.”	5.1.1.4.1, page 418
7. If yes:	a. Does the GSP identify costs to study the interconnectedness of surface water bodies?	<b>X</b>	“The proposed eight shallow monitoring wells are anticipated to be installed in a phased approach at prioritized locations within the next 5 years. ...The MGA’s cost to improve the monitoring network with the addition of new shallow monitoring wells is estimated to be approximately \$20,000 per site. These are approximate cost estimates as there are uncertainties such as site-specific considerations, construction bid environment as well as a variety of other factors that will ultimately determine the cost to install and operate each well.”	5.1.1.4.1, page 418
	b. Does the GSP include a funding mechanism to support the study of interconnectedness surface water bodies?	<b>X</b>	“It is anticipated that costs resulting from improvements to or expansion of existing monitoring networks necessary to evaluate the Sustainable Management Criteria (SMC), or otherwise added at the request of the MGA, will be funded by the MGA. Individual member agencies conduct streamflow monitoring. It is anticipated the MGA will assume responsibility to coordinate and fund streamflow monitoring within the Basin and this is to be a phased transition over the next five years.	5.1.1.4, page 418
8.	Does the GSP explicitly evaluate potential impacts of projects and management actions on groundwater levels near surface water bodies?	<b>X</b>	“Therefore, project (Pure Water Soquel) benefits are expected to raise groundwater elevations at all of Soquel Creek Water District’s coastal monitoring wells to prevent seawater intrusion and improve groundwater levels at shallow wells along Soquel Creek to prevent additional surface water depletions.”	4.2.1.8, Page 386

**Summary / Comments**

The GSP does not appear to identify the impacts or benefits to DACs that may result from the proposed projects and management actions.

It is acknowledged that the water level MTs are set relative the shallowest nearby well screened in the same aquifer as the representative monitoring point, and that the water level is adjusted to account for a pump depth allowance and a minimum saturated thickness to allow for effective usage of the well. While the identified projects are intended to keep water levels above the MTs, no program is provided as a contingency in case 1) groundwater conditions decline before the projects are fully implemented, or 2) implementation of such projects does not have the desired effects. A plan to mitigate impacts to DAC drinking water users could include a program to replace wells, connect well users to a public water system, establishment of a tanked water program, etc. The GSP should also identify a mechanism to fund such a program.

September 19, 2019

To: Mid County Groundwater Agency  
c/o Darcy Pruitt

From: Jerome Paul

Re: Comments on the Santa Cruz Mid County Basin Draft Groundwater Sustainability Plan

I hereby concur with every word of the September 19 comment letter to you from Erica Stanojevic, the Sierra Club Representative of the Santa Cruz Water Supply Advisory Committee. A copy of said comment letter is attached hereto and is a part hereof.

The Draft Groundwater Sustainability Plan for the mid county basin is woefully inadequate.

The Draft fails to fully assess the comparative merits of in-lieu water sharing. A sampling:

- The Draft derives from some assumptions of *partial-year* water transfers only, whereas the City's pre-1914 North Coast water rights allow *year-around transfer* of water from the City to the District. Note that the extra molecules can actually come largely from non-North-Coast places such as the Loch and the San Lorenzo River. This is a serious, fatal oversight in the Draft.
- The Draft does not adequately cover *expanding the potable intertie*, a very quick and cheap enhancement. BTW, tests showed that already the intertie could often exceed the production of Pure Water Soquel (PWS).
- *In-lieu uses much less energy*, which is better than PWS using a lot of energy and saying it supposedly comes from a nice place. Carbon-heavy sources would get used more under PWS.
- In-lieu better serves *fish habitat* at a big range of elevations, whereas expensive PWS water comes from roughly sea level and requires significant energy to be brought to the benefit of fish at high elevations—so it won't be.

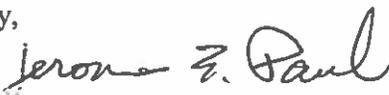
The draft is based on false and misleading information. E.g., pricing of water to be purchased from Santa Cruz is highly inflated, based upon false assumptions about the City's capital costs.

- Firstly, the District can presently purchase water for prices which include virtually no capital cost, because *the infrastructure is already in place*.
- Secondly, the City has in its 10-year Capital Improvement Plan substantial capital costs due to infrastructure obsolescence—costs which the City shall spend *regardless of whether water transfers occur*—and thus charging the District to fund many of them entirely is highly improper.
- Thirdly, any capital costs which might properly be attributed to District in-lieu use should be *shared* between the City and the District roughly *in proportion to their respective use* of the new capital infrastructure to be built, and not wholly charge to the District.
- Fourthly, it is arguable that the District's use of the in-lieu water is *substantial predominantly until the aquifer initially becomes fully recharged*. The small top-offs of the aquifer *after that may not be grounds for being charged a full capital share*.
- the District is a *wholesale* user (it performs retail distribution) and thus should be charged only wholesale pricing.
- Pricing should be lower to the District to the degree that the District assumes some obligation to return water to the City during drought recovery.

The MGA hydrogeologist Cameron Tana, in an official public session said that *in-lieu was superior to injection wells* for the purpose of aquifer recharge. This is partly because there are many more production wells than injection wells, and largely they are placed exactly where the water is being overdrawn. Also, the choice of how much to limit the use of each production well could be optimized to a large extent.

Sincerely,

(signed)



Jerome E. Paul  
120 South Morrissey Avenue  
Santa Cruz, CA 95062

September 19, 2019

**SUBJECT:** Santa Cruz Mid-County Groundwater Basin Draft Groundwater Sustainability Plan Comments –  
Section 3.9 Depletion of Interconnected Surface Water Sustainable Management Criteria

## 1 - Soquel Creek Water District's Commitment to Stewardship of Soquel Creek

The Soquel Creek Water District (SqCWD or District) continues to be an advocate for the health of the local creeks and is dedicated to its role as a steward of our local environment. The District demonstrates this commitment partially by voluntarily participating in and contributing to a County-wide program to monitor stream habitat and fish populations in the Soquel and Aptos Creeks. The District has monitored the Soquel Creek and shallow well water levels since 2001 to proactively look for impacts from municipal pumping on the creek. With the development of the Well Master Plan EIR, a mitigation and monitoring plan was created and accepted after a public review process for the O'Neill Ranch well that expanded monitoring efforts for the Soquel Creek. These various reports haven't been able to measure an impact on the creek levels or flow from pumping at the District's Main St. well or O'Neill Ranch well. We appreciate this opportunity to continue to make a positive environmental impact with our comments and suggestions.

## 2 - Summary

The GSA is trying to manage impacts on the Soquel Creek purely via groundwater pumping (Section 3.9.3.1). One of the shortcomings of using shallow well water level as a proxy is that many of these shallow wells are impacted by precipitation and creek flow and not purely groundwater extractions. For example, in a period where Main St. production well was off, Main St. shallow well levels rose about a foot over the course of a few days due to a storm and high flow event in Soquel Creek. Alternatively, there is a recovery of about 0.5 feet in the Main St. shallow well when the Main St. Production well is turned off for two months and no measurable impact on creek stage or flow. Managing groundwater extractions/injections may only have a small impact on shallow well levels and the GSA may be at the mercy of other factors on whether these minimum thresholds are met.

There is concern that minimum thresholds may be set arbitrarily high and that these minimum thresholds are not tied to a measurable benefit to the creek flow nor the creek's sensitive species, only to theoretical modeled benefits. The District suggests the approach of setting the minimum thresholds at a level that reflects the shallow well levels not getting any lower than the lowest observed levels during 2001-2015 be evaluated. This is consistent with the draft GSP's finding that no significant and unreasonable depletion of surface water was observed on the creek during this period. It is also consistent with over a decade of studies that haven't been able to measure an impact on creek flows (LKA, L&S 2003 and Hydrometrics 2015, 2016 & 2017). If further data collection provides evidence that the minimum thresholds are set too low, the District would support raising minimum thresholds to prevent undesirable results.

In summary, we feel some of the specific data and details may not have been considered (or known about) when the draft thresholds were developed. The District realized this as its engineering staff recently did a deep dive into this subject. Thus, we hope to spark additional evaluation and curiosity to ensure the proper thresholds are set.

## 3 – General Comments on Modeling and Monitoring Efforts

### 3.1 - Observations to date

It is well documented that pumping Main St. production well has no measurable, short-term impact on creek levels or flow. Some of the shallow well and precipitation datasets suggest that there are possibly longer term or more diffuse impacts on shallow well levels from pumping at the Main St. production well. However, it is not clear whether these impacts are solely from groundwater extractions in the deep aquifer, or if surface water diversions or shallow pumping or other climate factors were a part of this observed recovery in the Main St. shallow well in 2014-2015. Furthermore, it isn't clear that these long-term impacts on shallow well levels are having a measurable impact on creek flow or the sensitive species that the creek flow supports.

### 3.2 – Modeled Groundwater contributions to stream flows - Uncertainty

The integrated surface water and groundwater model was used to establish correlation between groundwater extractions and groundwater contributions to the Soquel Creek flow. The model integration and calibration document suggests that the collective impact of basin-wide groundwater pumping is about ~1.4 cfs on stream flow. The draft GSP also points out that this particular use of the model is beyond the scope of what the model can be calibrated for as we cannot measure groundwater contributions to the creek.

It is important to consider the feasibility of measuring this kind of impact and whether these model results will ever be able to be calibrated to actual measurements. Otherwise these impacts remain theoretical and not observed. It is difficult for the District to support model results that can't be calibrated, especially when potential management actions could result in big impacts to the District's ability to provide drinking water to its customers. It is understood that the current modeling efforts were the best efforts with the best available data, however, the District sees a need to further develop and calibrate the model. Perhaps there is a more refined model with better real-world data calibration that is better suited for this kind of analysis.

### 3.3 - Modeled Shallow Well levels - Uncertainty

The GSA has completed modeling to estimate water levels in Main St. shallow well with three scenarios: 1) No-project 2) Pure Water Soquel and 3) both PWS and ASR. The District is comfortable with the model results produced for the sea water intrusion management criteria, since the calibration results and datasets used for comparison seem to agree with each other. While the District appreciates the efforts to use the model to estimate impacts on Soquel Creek, the model seems to overestimate water levels when compared to observations during the dry years 2012-2015 in the Main St. shallow well (see figure 34 from calibration document below). It is concerning that the seasonal low levels were not accurately captured during this period as these are the most important levels to capture. This suggests that further refining of the model is needed to accurately model shallow well levels and predicted recovery from PWS and ASR projects. The mismatching of modeled results to real world observations could also be related to issues with the construction or location of the existing shallow wells as detailed in section 5 below.

### 3.4 - Future Modeling Efforts

For future modeling efforts, there should be careful consideration of what kind of data needs to be collected to better refine this model or whether there is a more appropriate model to use. There may also need to be further discussions around the assumptions of the modeling including changes to streambed elevations over time, decisions on how the stream alluvium interacts with the Purisima formation and how shallow well properties are configured in the model.

Perhaps future modeling efforts should also account for a shorter timescale to account for short term impacts that may have a large impact on groundwater contributions and sensitive species. For example, shallow pumping along the creek which may have a smaller average impact over a month period, may have a large short-term impact to sensitive species during the hottest week of the Summer in a drought. The District is concerned the current modeling timescale wouldn't capture these short-term impacts.

### 3.5 - Future Monitoring Efforts

The District is generally in support of further monitoring efforts to try to better understand this potential long-term and diffuse relationship between Main St. production well, shallow ground water levels and creek flows. The District also supports monitoring the other factors that may have an impact on creek flows, creek levels and shallow well levels including private pumping along the creek. Any monitoring efforts in the future needs to be designed in a way that can truly isolate impacts from pumping groundwater and rule out the other various impacts to creek flows and shallow well levels including: temperature, precipitation, evapotranspiration as well as surface water diversions. One idea to consider is to locate new shallow monitoring wells that are 300 feet or more from the creek and see how that varies over time. Ideally, new shallow wells wouldn't be influenced by short term changes to creek levels and precipitation events and would give a better understanding of what the shallow groundwater levels are doing.

## 4 - Comments on specific subsections

*Definition of Undesirable Results in section 3.9.1:*

*Significant and unreasonable depletion of surface water due to groundwater extraction, in interconnected streams supporting priority species, would be undesirable if there is more depletion than experienced since the start of shallow groundwater level monitoring through 2015.*

**Comment 4.1:** The District wants to emphasize that this regulation only relates to significant and unreasonable depletion of surface water **due to groundwater extraction**. However, monitoring and modeling efforts may need to include other non-groundwater components in order to account for impacts to creek flow that may be incorrectly attributed to groundwater extractions when doing any analysis (i.e. surface water diversions, additional climate parameters and possibly vegetation).

*The minimum threshold is defined in section 3.9.2:*

*Using shallow groundwater levels adjacent to streams as a proxy for surface water depletion, undesirable results will occur if the average monthly groundwater levels fall below the minimum threshold, which is established as the highest seasonal low elevation during below-average rainfall years from the start of monitoring through 2015.*

**Comment 4.2:** The definition appears to contradict what was stated in the definition of undesirable results. If the shallow ground water is strongly correlated to stream depletion, it seems that the greatest level of surface water depletion would correspond to the lowest water levels observed in the shallow wells not the highest (seasonal low) levels observed. It is not clear why the highest seasonal low water levels were chosen rather than the lowest seasonal low water levels.

*Methodology of developing Minimum Thresholds, Section 3.9.2.1 excerpt:*

*Since significant and unreasonable conditions have not occurred since at least 2001 when shallow groundwater level monitoring began, minimum thresholds for shallow groundwater elevations in the vicinity of interconnected streams are based on the highest seasonal-low elevation during below-average rainfall years, over the period from the start of shallow groundwater level monitoring through 2015.*

**Comment 4.3:** The draft GSP states that no undesirable results were observed during 2001-2015 where shallow well level data is available. If this is the case, then the Main St. shallow well level of 19.5 in August of 2013 was acceptable and did not indicate undesirable results in the creek. It seems like 19.5 ft for this site would be a more meaningful minimum threshold that would agree with the definition of undesirable results in the regulations.

**Comment 4.4:** The shallow well levels in Main St. shallow well from 2001-2015 do not meet the proposed minimum threshold for the majority of those years. This implies that the majority of these years, undesirable results were observed which is contradictory to the findings in the reports and studies referenced in this letter. Perhaps there needs to be more clarity around what is considered to be a significant and unreasonable impact under this regulation.

**Comment 4.5:** The Draft GSP does not acknowledge why the highest seasonal low level was chosen as the methodology for determining the minimum threshold rather than the clearer option of the lowest seasonal low when there weren't any observed undesirable results. If there is a clear evidence that supports picking the highest seasonal low levels in the shallow wells, the reasoning should be explained in the GSP.

## 5 - Comments on Specific Shallow Wells

These comments are distilled from the District's surface water hydrologist, Brook Kraeger, regarding specific conditions of the existing shallow wells.

**Comment 5.1 - Nob Hill Shallow Well:** This shallow monitoring well has always been several feet above the creek level, consequently it is not clear just how changing ground water pump would benefit the creek water levels. This well was drilled in the sandstone of the upper Purisima formation.

**Comment 5.2 - Wharf Rd. Shallow Well:** The well was completed in alluvium and has water levels very close to the stream water level. Depending upon the chosen distance from the stream, upstream or downstream, the water levels differences between the shallow monitoring well could be a gaining or losing reach.

**Comment 5.3 - Main St. Shallow Well:** This is one shallow monitoring well site that we see the impact of pumping from the Main St. production well, depth of about 900 feet. In the 2003 study, three shallow monitoring wells were constructed between the creek and the production well. Connecting each well clearly showed a cone of depression from the creek to the production well. The well closest to the creek was completed to a depth of about 13 feet. The difference in water levels between the creek and the well was often only 12" over a 3 ft distance, providing a very steep gradient. Yet, this steep gradient does not show a measurable loss in water from the creek to the surrounding sandstone outcropping, indicating that there is actually very little flow of surface water to the surrounding groundwater. It is not clear if the depression cone of shallow ground water is caused by incomplete sealing of the production well or a genuine seepage downward through the layers of the Purisima formation caused by production

well pumping. This shallow ground water depression does not appear to be affecting the creek flow to a measurable degree.

**Comment 5.4 Balogh Shallow Well:** This monitoring well was completed in alluvium and is located just upstream of a commercial nursery. The nursery has several wells that are completed in the alluvium, however their impact has not been evident at the downstream gauging sites. The creek in this location, similar to the Wharf Rd. site, is on a slope and not a pool. This channel has eroded in the past and measurement of the stream water level can be problematic. The water levels of the shallow monitoring well and creek are similar and thus indicate a close relationship between the creek and the surrounding groundwater.

## 6 - Future Work on Sustainable Management Criteria

**Comment 6.1** - The District staff wants to acknowledge the significant amount of effort put into developing the interconnected surface water management criteria by the working group. While the District has had a few board members participating in the working group on this sustainable management criteria, District staff has only recently been able to take a deeper look at the available presentations, reports, draft GSP and model calibration documents. The District would like to propose reconvening the working group to tackle concerns brought up in this comment letter.

**Comment 6.2** - The District would also like to include Brook Kraeger, the District's surface water hydrologist, in this working group along with District staff, if deemed necessary. Brook Kraeger has worked with this creek for over 30 years and has valuable input on past modeling efforts of the creek, along with past reports and studies referenced in the GSP. The District would like to be involved in future model refinement efforts and also help generate ideas to improve existing monitoring efforts.

**Comment 6.3** - The District also would like to request that a private well representative be at the working group if possible. This part of the draft GSP can potentially have big impacts on the private wells along the creek and it is prudent to engage these constituents in development of this sustainable management criteria.

Sincerely,  
SOQUEL CREEK WATER DISTRICT



Ron Duncan  
General Manager

ATTACHMENTS:  
References

**(continued next page)**

## References

Linsley, Kraeger Associates, LTD (LKA), and Luhdorff and Scalmanini (L&S) May 2003. Investigation of Soquel Creek Stream-Aquifer Interaction. Status Report and Initial Findings on Installation of Shallow Ground-Water Monitoring Surface-Water Stage Recordings.

Hydrometrics WRI, 2015 August. Soquel Creek Monitoring and Adaptive management Plan (MAMP) Baseline Report.

Hydrometrics WRI, 2016 December. Soquel Creek Monitoring and Adaptive management Plan - 2<sup>nd</sup> Report.

Hydrometrics WRI, 2017 October. Soquel Creek Monitoring and Adaptive management Plan - 3<sup>rd</sup> Report.

**(Figure on next page)**

Model Integration and Calibration Appendix to Draft GSP – Figure 34 Calibration Hydrographs at Main St. Shallow Well and Underlying Purisima A and AA units.

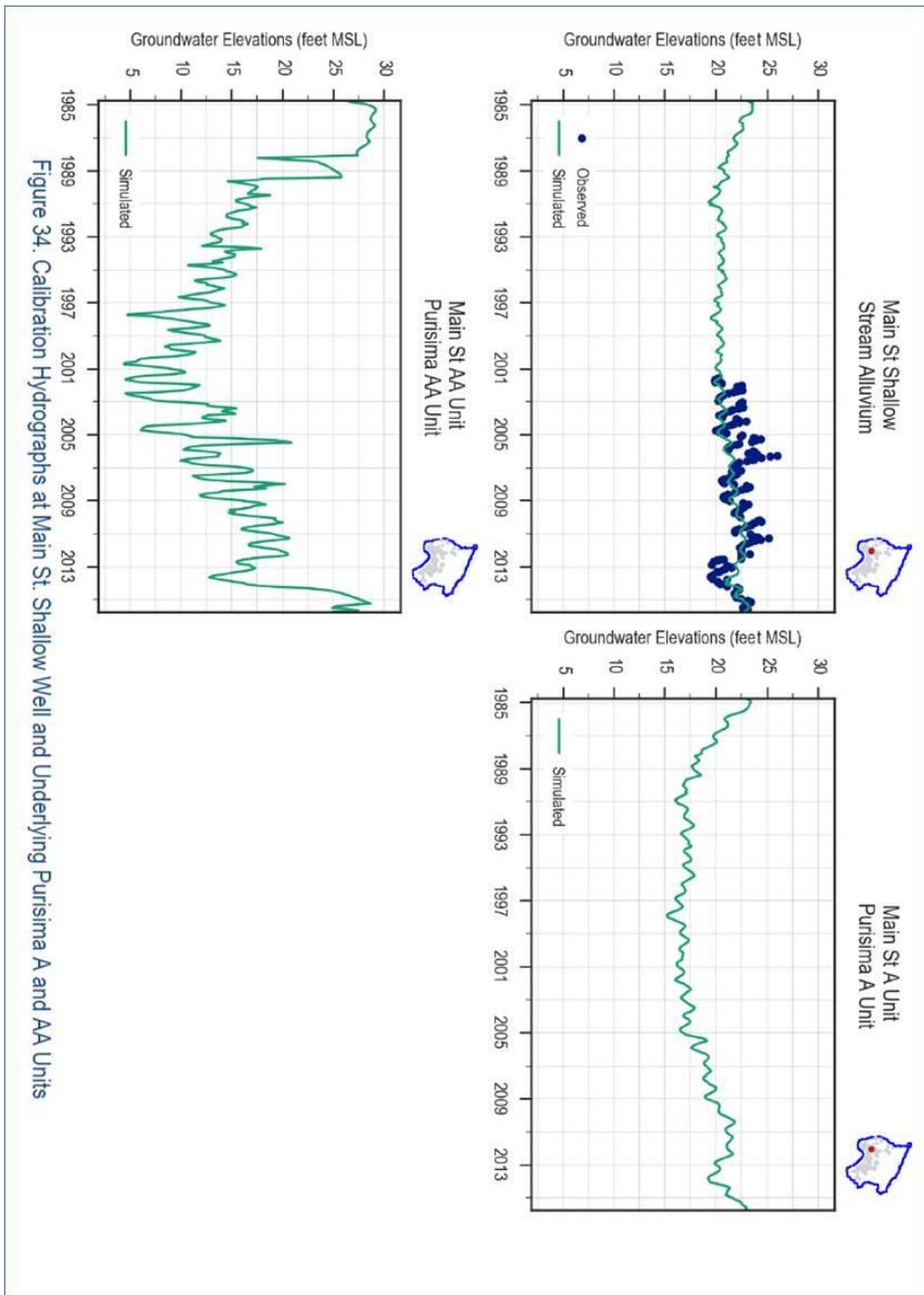


Figure 34. Calibration Hydrographs at Main St. Shallow Well and Underlying Purisima A and AA Units



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**PLEASE CONFIRM RECEIPT OF THIS TEST MESSAGE RE: MIDCOUNTY  
GROUNDWATER AGENCY DRAFT GSP COMMENT**

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**Becky Steinbruner** <ki6tkb@yahoo.com>

Wed, Aug 14, 2019 at 11:35 PM

To: "GSP2019Comments@midcountygroundwater.org" &lt;GSP2019Comments@midcountygroundwater.org&gt;

Cc: Amanda Peisch-Derby &lt;amanda.peisch@water.ca.gov&gt;, Trent Sherman &lt;trent.sherman@water.ca.gov&gt;, Becky Steinbruner &lt;ki6tkb@yahoo.com&gt;

Dear MGA Staff,

I attempted to use this link from the MidCounty Groundwater Agency website, but the link did not work. I have copied the address here, and would like to verify that this message has been received and recorded, and that future messages containing comment re: the Draft GSP will likewise be received and recorded using this address.

Thank you.

Sincerely,

Becky Steinbruner

831-685-2915

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**Tim Carson** <admin@midcountygroundwater.org>

Thu, Aug 15, 2019 at 11:20 AM

To: Becky Steinbruner &lt;ki6tkb@yahoo.com&gt;

Cc: "GSP2019Comments@midcountygroundwater.org" &lt;GSP2019Comments@midcountygroundwater.org&gt;, Amanda Peisch-Derby &lt;amanda.peisch@water.ca.gov&gt;, Trent Sherman &lt;trent.sherman@water.ca.gov&gt;, Becky Steinbruner &lt;ki6tkb@yahoo.com&gt;

Dear Ms. Steinbruner:

Thank you for your note. We appreciate your ongoing interest in the Santa Cruz Mid-County Groundwater Basin.

Yes, your comment concerning the email link was received. We have checked the link and it has worked for us in all of our repeated tests. We are sorry that you have had trouble. Please let us know if this continues to be a problem for you.

Thank you again,

Santa Cruz Mid-County Groundwater Agency

---

**Becky Steinbruner** <ki6tkb@yahoo.com>

Sat, Aug 17, 2019 at 2:46 PM

To: Tim Carson &lt;admin@midcountygroundwater.org&gt;

Cc: "GSP2019Comments@midcountygroundwater.org" &lt;GSP2019Comments@midcountygroundwater.org&gt;, Amanda Peisch-Derby &lt;amanda.peisch@water.ca.gov&gt;, Trent Sherman &lt;trent.sherman@water.ca.gov&gt;, Becky Steinbruner &lt;ki6tkb@yahoo.com&gt;

Dear Mr. Carson,

Thank you for your response. I have just now tried the link on the website for submitting comment, but it still does not work from the County public library computer system. Now that I know this address is indeed valid and functional, I will send comment later today.

Will all public comments submitted be made available, verbatim, to the public?

Sincerely,

Becky Steinbruner



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## Comment RE: MidCounty Groundwater Agency Draft Groundwater Sustainability Plan

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Becky Steinbruner <ki6tkb@yahoo.com>

Wed, Aug 28, 2019 at 5:46 PM

To: "GSP2019Comments@midcountygroundwater.org" <GSP2019Comments@midcountygroundwater.org>

Cc: Amanda Peisch-Derby <amanda.peisch@water.ca.gov>, Trent Sherman <trent.sherman@water.ca.gov>, Becky Steinbruner <ki6tkb@yahoo.com>

Dear GSP Review Staff,

I am submitting my first comment on the MidCounty Groundwater Agency (MGA) Draft Groundwater Sustainability Plan (GSP) now, having been somewhat delayed by a link on the MGA website that did not function, and I was unsure whether the address was valid. A test message confirmed it is, but the website link is still not functioning.

1) I really want to thank the MGA Board for approving the provision that there be hard copies of the Draft GSP placed in public libraries. Many people, myself included, have difficulty reading text from screens for long periods of time, so having the hard copy has really helped people access the information. The only problem I have observed regarding the access to these hard copies is that the public must ASK TO SEE THE DOCUMENT. It is kept behind the circulation desk at both the Aptos and Live Oak libraries, so unless people know it is there and available, they may not find it or chance to see it when browsing the reference shelves.

2) In general, I really must say that I have found the Draft GSP a very difficult document to read, mostly because there is no Table of Contents at the beginning to help me find the Chapters for issues I am most interested in reviewing first if I have limited time. Although each Chapter has a Table of Contents for that particular Chapter, there is no way to look up specific issues because I don't know where in the document they are located.

3) Also, there are no header or footer descriptions on the pages of the document to help me identify what I am viewing as I search through the document...pages only have "DRAFT REPORT FOR PUBLIC REVIEW" and "For Review Draft Groundwater Sustainability Plan".

4) I also feel there is virtually no documentation cited to verify or substantiate any of the statements made in the Plan. An example of this is on page 2-53, Section 2.1.5.1.1 Interest Groups Representation. The document describes how the GSP Working Group (which are never named specifically, only general reference to agencies involved) "considered each of the interest groups named by SGMA to determine if they were present within the Basin and considered their current representation on the MGA Board." The groups listed are Agricultural users, Domestic Well users, Small Water Systems, Large Public and Municipal Well Operators, Local Land Use Agencies, Environmental Users of Groundwater, Surface Water Users with a Connection to Groundwater, California Native American tribes, and Entities Monitoring and Reporting Groundwater Levels.

5) The descriptions for each group then provides statements of water use:

Agricultural users: It makes an unsupported statement that the ag users account for 13% of the water pumped from the Basin, with the majority of the farming done by a few large operators. I find this interesting, given that the bulk of agriculture that I observe is small family farms. The description of the agricultural farms does not include nursery or horticultural crops, which is substantial in the Soquel Valley. However, because there is NO CITATION AND NO INFORMATIONAL SOURCE TO VERIFY, I cannot check the factual content of these statements.

Likewise, the Domestic Well Users supposedly account for 10% of the water used from the Basin, and Small Water Systems account for 5% of the water used from the Basin, even though this category includes commercial uses such as camps and schools. None of these users are identified, nor can I verify the information myself because there is no citation to any report or website.

6) Page 2-45, Chapter 2.1.4.8 Groundwater Contamination Cleanup, Recharge, Diversions to Storage, Conservation, Water Recycling, Conveyance and extraction Projects:

The Contamination Cleanup describes the authority of the Santa Cruz County Environmental Health Services as the Certified Unified Program Agency (CUPA) for the entire County. It provides the geotracker site used to identify contamination sites under regulatory action. With some work, I was able to look at material on this website, and found a few cleanup sites in the Basin. However, these sites are not listed in the Draft GSP, nor is there mention of the number of

permitted Underground Storage Tanks (UST) that are within the Basin and are potential causes of groundwater contamination.

7) Also on Page 2-45, under "Groundwater Recharge" There follows a description of recharge projects by member agencies, but only references the named efforts of Soquel Creek Water District's Pure Water Soquel Project, but does not give the City of Santa Cruz named credit for ASR work, or the County of Santa Cruz named credit for storm water recharge projects. This implies bias favoring Soquel Creek Water District. There are no links provided for me to read about these projects further.

8) On page 2-108, the discussion about CONTAMINANTS OF EMERGING CONCERN states that "pharmaceuticals and personal care products (PPCP's) are increasingly being detected at low levels in surface water and water infiltrating to groundwater from septic systems." but provides NO citation to information that supports this claim.

9) Likewise, on page 2-108, the statement "Groundwater may be impacted by recharge of treated wastewater surface water, and from septic systems. new and emerging contaminants are currently unregulated but may be subject to future regulation. Examples of new and emerging contaminants are N-Nitrosodimethylamine, a semi-volatile organic compound (NDMA and other nitrosamines), and 1,4-dioxane, etc." There are NO citations to verify these statements, nor any documentation added that could allow me to investigate this very interesting statement. The fact that Soquel Creek Water District proposes to inject treated wastewater into the aquifer is of great concern to many Basin users, yet this profound statement made here that actually supports the concerns of many Basin users completely OPPOSED to the PureWater Soquel Project have no way to find the information that is the basis for the statement made in the Draft GSP.

10) Page 2-108 states there is a good baseline set of data for CEC data collected since 2001 "to compare against when potential projects that recharge treated wastewater into the basin as a supplemental source of water are implemented." but I cannot verify that or access the information because there is NO CITATION that would provide me with that informational source.

I shall submit further comment in the future as time and internet access allow. Thank you for considering my comments.

Please acknowledge receipt of this message.

Sincerely,  
Becky Steinbruner



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## Unacceptable Public Misinformation in Response at MidCounty Groundwater Agency Q & A Session

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**Becky Steinbruner** <ki6tkb@yahoo.com>

Thu, Aug 29, 2019 at 9:15 AM

To: Ron Duncan <rond@soquelcreekwater.org>, Soquel Creek Water District Board of Directors <bod@soquelcreekwater.org>, Emma Olin <emmao@soquelcreekwater.org>  
Cc: Darcy Pruitt <dpruitt@cfsc.org>, Tim Carson <admin@midcountygroundwater.org>, John Ricker <john.ricker@santacruzcounty.us>, Rosemary Menard <rmenard@cityofsantacruz.com>, Becky Steinbruner <ki6tkb@yahoo.com>

Dear Mr. Duncan,

Thank you for being present at last night's Santa Cruz MidCounty Groundwater Agency Q & A Public Session (August 28, 2019) at the Simpkins Swim Center. I was happy to see good attendance and felt the unrestricted discussion allowed was very valuable and productive.

I do, however, wish to make it clear that your response to a person's question about the status of the Soquel Creek Water District's PureWater Soquel Project environmental review was unacceptable and disingenuous. You publicly stated that "there is only one person who has complained about the Project and the complaint is without merit." That was misinformation to the public.

I have made it clear, and the Petition for Writ of Mandate (Case 19CV00181) states, that I am taking Pro Per citizen duty action for the public benefit, not for my own exclusive interest. I have provided the District, as well as the MidCounty Groundwater Agency, with many petitions carrying signatures of about 300 Basin residents who are opposed to PureWater Soquel Project and want the opportunity to vote on the Project going forward. Those petitions are part of the administrative record of proceedings for the Case.

Clearly, I am NOT the only person complaining, I am just the person named as Petitioner on the Pro Per legal action. As you know, if a group of citizens were to file a complaint, the action would be defined under an unincorporated association, which cannot represent itself in legal action, and therefore would require hiring an attorney to take the action I am taking. This would cost at least \$100,000, and that is why I am forced to take Pro Per action, representing many people likewise concerned about the Project and it's environmental review process, but without the economic means to hire legal representation.

Finally, your judgement that "the complaint has no merit" is unsubstantiated because no judge has made that ruling. You are NOT an administrative law judge. In the future, please preface such bold misinformation with "in the District's opinion" or some such qualifier, so that what you say is honest and has public integrity, while showing respect for the California Environmental Quality Act (CEQA) process.

Thank you.

Sincerely,

Becky Steinbruner



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## Comment on Draft Groundwater Sustainability Plan

5 messages

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**randre@cruzio.com** <randre@cruzio.com>  
To: GSP2019Comments@midcountygroundwater.org

Sat, Sep 14, 2019 at 6:51 PM

To MGA:

Regarding the Groundwater Sustainability Plan, this water experiment is a big sell job without long-time evidence for health and safety. We should not be drinking sewage water--treated or not.

Questions were not answered at the meetings. Those on the board will be responsible for future health problems. Otherwise, it appears to be a follow-the-money plan.

Where are the honest answers? There won't be any way.

Ramona E Andre

Aptos

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## Comment on Draft Groundwater Sustainability Plan

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**randre@cruzio.com** <randre@cruzio.com>

Sat, Sep 14, 2019 at 6:58 PM

To: GSP2019Comments@midcountygroundwater.org

MGA board:

Along with Soquel Creek Water District, the MGA failed to supply early, complete, convincing answers about a key aspect of the sustainability plan--absolute safety of water from the Pure Water Soquel project. What happens to drugs, antibiotics, viruses, and bacteria, etc., i. e.?

Can we now have the science-based assurance that we water consumers need to be comfortable about the safety of the Pure Water Soquel aspect of the plan?

Richard Andre

Aptos



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## Draft Groundwater Sustainability Plan

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**Cliff Bixler** <clifford.bixler50@gmail.com>  
To: GSP2019Comments@midcountygroundwater.org

Mon, Sep 16, 2019 at 10:49 AM

Dear board members:

I encourage support for the recycling and aquifer storage of water from treated sewage effluent. This is a proven and safe path to sustainable ground water supplies that is practiced in other cities with terrific positive outcomes and the addition of millions of gallons a day to the aquifer. We can not keep over-drafting our ground water basins and wasting the valuable resource of reclaimed water.

I have watched for decades as one hand wringing constituency after an other deep-sixed every option for increasing our water supply and protecting aquifers. There is not a single solution that will not engender some level of resistance or alarm from some sliver of the population.

It is time for our community to embrace a proven conservation oriented solution to sustainable groundwater.

Cliff Bixler

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## Draft GSP Public Comments

3 messages

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**Larry Freeman** <larry@freemanhydro.com>  
To: GSP2019Comments@midcountygroundwater.org  
Cc: larry@freemanhydro.com

Mon, Sep 16, 2019 at 3:14 PM

Dear MGA. Thank you for the opportunity to provide input.

Please accept the attached file into the record of public comments on the DRAFT GSP.

Sincerely,

Larry Freeman



**Lfreeman.SantaCruz\_MGA.DraftGSP\_PublicComments.pdf**  
119K

Santa Cruz MGA

Draft Groundwater Sustainability Plan.

Public comment

Provided by Larry Freeman

September 16, 2019

To whom it may Concern

Thank you for the opportunity to provide comment regarding the Draft Groundwater Sustainability Plan. Please enter the following items into the record of public comments. Some of the comments are simply editorial, and some comments recommend re-writing subsections.

**Page 3-27 (272 of 478). Section 3.3.2.3 needs to be re-written:**

Include most recent USGS reference(s), remove the statement about stilling wells. A true stilling well is the most difficult to install; correctly define the term stream gauge.

There are many devices that can be used to measure stream discharge. Why is an ADCP (Acoustic Doppler Current Profiler) specifically mentioned? An ADCP is the most sophisticated and expensive streamflow measuring device available. An ADCP would be appropriate for a full range streamflow record but is not suitable for low and very low flow conditions which is the focus of surface water depletion.

This section also uses the term "**ratings curve**". The correct terminology is **rating curves**.

**Page 3-97 (342 of 478).** Table 3-22 title typo: Deletion, should be **Depletion**.

**Page 3-98 (343 of 478).** There are additional and more recent USGS publications that should be cited. The USGS has published references for operating streamgages, making discharge measurements, developing stage/discharge ratings, running gage station level surveys, and computing stream discharge records. All of these protocols need to be implemented in order to meet USGS standards for operating streamgages.

**Page 4-24 (401 of 478).**

Clarify in the caption of Figure 4-5 that the graphs do not include projections for surface water transfer/in lieu projects even though this figure is in this section (4.2.3) which is entitled "Water Transfers / In Lieu Groundwater Recharge".

**Page 4-24 (401 of 478). Section 4.2.3.9, line 5.**

Typo - change from "...volume of water available ~~in the~~ could be limited until..." to read "...volume of water could be limited until..."

**Page 4-26 (403 of 478). Section 4.2.4.1 (DSWMAR).** This project may not address the problem of seawater intrusion unless the sites selected are in areas where the shallow groundwater aquifer is connected to the deeper aquifers near the coast.

**Page 4-30 (407 of 478).** Last paragraph regarding the treatment process used by SCWWTF to provide water to the Beltz wellfield. Does this treatment process differ from the advance water purification treatment process that is proposed by the Pure Water Soquel project? Please clarify.

**Page 5-2 (416 of 478). Table 5-1.** I realize that these are only initial cost estimates, but I believe more detailed explanation on the cost estimates for the streamgages should be presented to the MGA in the final GSP.

Table 5-1 "Monitoring: Streamflow":

What is included in this cost? Does the amount include the cost of installing and maintaining streamgages? Does this amount include the time needed to develop rating curves and compute streamflow records using USGS protocols? Does the cost include salary for a person(s) qualified in data collection and records computation using USGS standards and protocols?

There are 7 streamgages proposed for the MGA network. One is the long-term USGS gage currently funded by USGS, SC County Flood Control, and Soquel Creek WD. Funding for this gage has a high probability of continuing indefinitely and should not require MGA funds for the foreseeable future. Four more streamgages on Soquel Creek are funded by the RCD through a grant, and have been operated by Trout Unlimited for three years. That grant is ending, so this GSP is proposing that the MGA fund these 4 sites after 2019. Two more streamgages are proposed for Aptos and Valencia creeks. Yet to be determined is the suitability of any of the 4 existing streamgage sites operated by TU for collocation with new shallow groundwater wells to monitor surface water depletion, and hence may need to be relocated. Relocation would need the same amount of funds as any new gage. This leaves the need to fully fund the installation and operation for two new gages on Aptos and Valencia Creeks.

The \$16,000 annualized cost for six gages, provides \$2,667 per gage per year which seems very low, depending on what is funded by this line item.

**Page 5-6 (420 of 478). Section 5.1.1.4.4.** Third paragraph, second line.

Change "...will be installed ~~over~~ in a phase approach" to "....will be installed in a phased approach"....

I also believe the streamgages should be installed, and operation begun as soon as possible, far sooner than over the next five years.

**Page 5-6 (421 of 478). Section 5.1.1.4.7.** Data Management. I believe that the MGA will need to provide funding for an expert intimately familiar with USGS protocols, especially where streamflow data collection, rating curve development, and records computations are concerned. Using the WISKI surface water module will require expertise in applying USGS techniques. Additionally, due to the large amount and variety of data that will be collected and managed to USGS standards, I believe that someone with an intimate knowledge of, and practical experience with implementing USGS protocols is necessary. Expertise in QA/QC and the oversight of all field data collection and office processing would continue indefinitely, not just for the time needed to develop the initial data management plan.




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## Comment re: Draft GSP for MidCounty Groundwater Agency

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**Becky Steinbruner** <ki6tkb@yahoo.com>

Tue, Sep 17, 2019 at 10:23 PM

To: "gsp2019comments@midcountygroundwater.org" <gsp2019comments@midcountygroundwater.org>

Cc: Becky Steinbruner <ki6tkb@yahoo.com>

Dear MidCounty Groundwater Agency GSP Comment Review Committee

I am copying the communication below to Ms. Darcy Pruitt, asking for clarification and verification of claims made in the Draft GSP regarding baseline contaminant monitoring. I have not received any response, and therefore am pre-empted from providing meaningful and informed comment on water quality issues associated with the Draft Plan.

This is especially important because the Plan relies heavily on the Pure Water Soquel Project for Basin groundwater level improvement. This issue requires the Plan to better document and verify the claims made in the draft Plan.

Please consider this as a comment submitted on the Draft GSP. Documentation and verification is inadequate. Thank you.

Sincerely,  
Becky Steinbruner

\*\*\*\*\*

- Becky Steinbruner <ki6tkb@yahoo.com>

To:Darcy Pruitt

Cc:Amanda Peisch-Derby,Trent Sherman,Becky Steinbruner

Sep 14 at 8:17 PM

Dear Ms. Pruitt,

I have not yet received a response from you or Georgina King regarding the source of information the GSP refers to in a narrative about baseline for contamination in the groundwater relying on a database since 2001.

The public comment period on the draft GSP will close this Thursday, and I have yet to receive any information to help me verify this aspect of the draft Plan. In my opinion, this is a critical aspect of the GSP to consider, given that the Plan relies nearly exclusively on the modelled influences of the PureWater Soquel Project and the City's Aquifer Storage Recovery (ASR) Project, both of which have a significant potential of contaminating groundwater via injection wells.

Soquel Creek Water District has NO Final Anti-Degradation Evaluation analysis to date that would fulfill State Resolution 68-18 requirements, yet the GSP relies heavily on the influence of the Project in the Basin. I am very concerned that the GSP has made unrealistic evaluations that are biased, and have not thoroughly addressed the risks of groundwater contamination with either of the proposed projects modelled in the Draft Plan.

However, I have no information available to me from actual citations in the draft GSP to help me research the matter on my own and thereby to provide meaningful and informed comment before September 19, 2019. I am concerned about this problem.

Please respond. Thank you.

Sincerely,  
Becky Steinbruner

On Thursday, August 29, 2019, 06:16:04 AM UTC, Becky Steinbruner <[ki6tkb@yahoo.com](mailto:ki6tkb@yahoo.com)> wrote:

Dear Ms. Pruitt,

Thank you for your good presentation at tonight's MidCounty Groundwater Basin Public Q & A Session for the Draft GSP. Afterward, I asked you about the information stated on page 2-108 of the GSP that discusses there being a good baseline for contaminants in the groundwater with a database since 2001.

Can you please find out from Georgina where I can review this information?

Thank you very much.

Sincerely,

Becky Steinbruner



Tim Carson <admin@midcountygroundwater.org>

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## Comment on draft MGA plan

2 messages

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**Scott McGilvray** <scottm@wateraware.net>  
To: GSP2019Comments@midcountygroundwater.org  
Cc: Darcy Pruitt <dpruitt@cfsc.org>

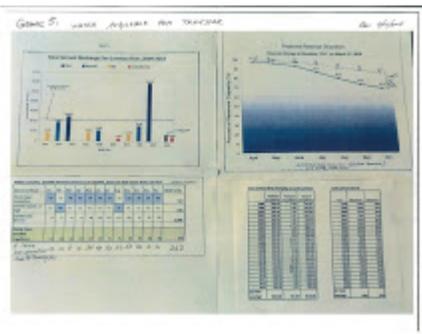
Wed, Sep 18, 2019 at 9:49 AM

Attached is the Water for Santa Cruz county comment. Please acknowledge receipt.

Scott McGilvray

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### 2 attachments



**Graphic 5.jpeg**  
314K

 **Comment on MGA draft 9 17 2019.pdf**  
69K



Mid County Groundwater Agency  
c/o Darcy Pruitt

September 17, 2019

Re: Comments on Santa Cruz Mid-County Groundwater Basin GROUNDWATER  
SUSTAINABILITY PLAN Drafted July, 2019

To the Agency,

Water for Santa Cruz County wishes to comment on the study done in 2018 and presented to the MGA on October 24, 2018 in which presentation was displayed a scenario of basin recharge by in lieu water transfers. This presentation is contained on pages 39-61 of the agenda packet for the October 24, 2018 meeting.

**Comment:** The model analysis used water available for water transfer of some 800 Acre feet (AF) to 1200 AF in “normal years” and less than 200 AF in “dry years.” Close observation and study of Santa Cruz Water department annual reports for the last 22 years: Loch Lomond levels, San Lorenzo River (SLR) flows and North Coast streams indicates the amount of water available for water transfers is much more than the amount posited in the model of 2018. For example, the water year 2018 was officially a “critically dry year”. The SLR annual flow was 33,000 afy compared to the long term average of 91,000 afy. In that “critically dry year” there was over 1500 AF available in the Santa Cruz system and surplus to the needs of the community. Careful analysis of the flows during 2018 revealed that Santa Cruz could have transferred 1500 AF of water to SqCWD but depleted its own reserves only 790 AF. This volume of water available for water transfer on a regular basis is sufficient to supply both Santa Cruz and the SqCWD stated need of 1500 AF.

**Request:** It is incumbent that the MGA redo the model analysis using available water flows of 2000 AF in normal years and 1000 AF in dry years.

Sincerely yours,

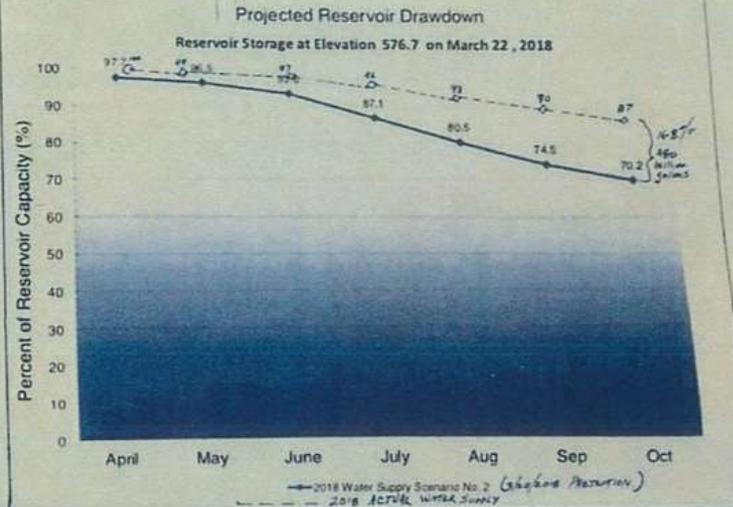
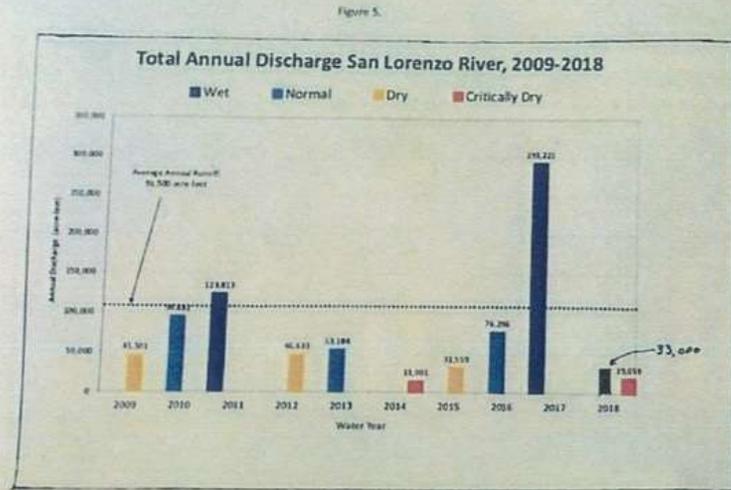
Scott McGilvray  
Water for Santa Cruz County

Enclosure:

- **Graphic 5:** showing 22years of history of San Lorenzo pumping, Loch Lomond levels, 2018 Santa Cruz water plan vs. actual, and table showing available water for transfer to SqCWD from Santa Cruz using N. Coast water rights.

GRAPHIC 5: WATER AVAILABLE FOR TRANSFER.

Rev. 9/15/2018



Water Transfers possible between Santa Cruz to SqCWD, based on 2018 water flows and dem (millions of gallons)

Sources of Water	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2018 totals
North Coast production	42	55	48	43	39	40	52	53	50	30	30	30	512
Intertie capacity 1.7 mgd	52	48	52	51	52	51	52	52	51	52	51	52	616
SqCWD water demand	73	72	74	77	98	107	117	112	101	97	87	82	1,096
Water Flow possible (mgallons)	42	48	48	43	39	40	52	52	50	30	30	30	504

S. CRUZ loss of water due to transfers: 0 0 0 0 39 40 52 52 50 30 0 0 263

San Lorenzo River Pumping to Loch Lomond

Year	Available (m gallons)	Pumped (m gallons)	Unused (M gallons)
1998	900.00	0.00	900.00
1999	900.00	0.00	900.00
2000	900.00	0.40	899.60
2001	900.00	0.25	899.75
2002	900.00	0.00	900.00
2003	900.00	0.00	900.00
2004	900.00	11.66	888.34
2005	900.00	0.00	900.00
2006	900.00	0.00	900.00
2007	900.00	63.33	836.67
2008	900.00	71.50	827.50
2009	900.00	71.12	828.88
2010	900.00	0.00	900.00
2011	900.00	8.13	891.87
2012	900.00	61.85	838.15
2013	400.00	75.00	325.00
2014	400.00	300.00	100.00
2015	900.00	200.00	700.00
2016	900.00	0.00	900.00
2017	900.00	0.00	900.00
2018	900.00	0.00	900.00
2019	900.00	0.00	900.00
22 Year average	900.00	39.28	815.26

Loch Lomond levels

Year	Maximum	Minimum
1998	100%	80%
1999	100%	84%
2000	101%	80%
2001	99%	75%
2002	101%	84%
2003	100%	78%
2004	100%	80%
2005	100%	90%
2006	101%	90%
2007	99%	78%
2008	100%	79%
2009	100%	79%
2010	101%	89%
2011	101%	94%
2012	100%	90%
2013	100%	66%
2014	86%	59%
2015	83%	65%
2016	100%	75%
2017	101%	92%
2018	100%	94%
2019	101%	90%
22 Year average	98%	81%



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## Draft GSP comments - Wilshusen

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Linda Wilshusen <liveoaklinda@gmail.com>

Wed, Sep 18, 2019 at 8:43 AM

To: GSP2019Comments@midcountygroundwater.org

Cc: John Leopold <John.Leopold@santacruzcounty.us>, Rosemary Menard <rmenard@cityofsantacruz.com>, David Baskin <dgaskin49@gmail.com>

September 18, 2019

Dear Members of the Mid-County Groundwater Agency Board and Staff:

Thank you for the opportunity to comment on the draft *2019 Santa Cruz Mid-County Groundwater Sustainability Plan*. I appreciated being able to review a hard copy of the draft plan at the Live Oak Library.

This detailed, herculean and highly technical plan represents a significant collaborative effort on behalf on long-term groundwater sustainability in our mid-county region. Thank you, and all the best of luck with its full implementation.

Here are a few questions/comments:

*Geography*. p. 1-9, Section 1.4.4. Can you please clarify the statement that "Santa Cruz County has a total area of 607 square miles, 445 square miles of which is land area (73%) and the remaining 162 square miles is water (27%) (US Census, 2010)." The reference source for this statement does not show any information about water area (that I can find). Santa Cruz County is commonly understood to have 445 square miles of land area. The inclusion of 162 square miles of water is seemingly only possible if significant off-shore waters are included. If this is the case, it would be helpful to clearly state it because intuitively, no one familiar with the geography of our county would agree that over 1/4 of our county's geographical area consists of water.

*ASR*. p. 4-16-4.19, Section 4.2.2.7 to 4.2.2.11. This part of the draft Plan discusses the current Santa Cruz City Water Department plan for its aquifer storage and recovery project using the existing Beltz well system in unincorporated Live Oak, noting a current cost estimate of \$21M - far below the Water Supply Advisory Committee cost estimates of \$100M+. I am fully in support of this approach. My question is what assumptions re ASR are included in the modeling results presented in Figure 4.4 (p. 4-18): this current, existing infrastructure plan or a more comprehensive/longer term project?

*de Minimus Users*. p. 2.21, 3-31, Figure 2-5, 3-6. Based on personal knowledge, I know that there are numerous pre-permit period private wells in the unincorporated urbanized areas of Live Oak and Soquel. Therefore, it seems to me that the figures noted above should include a caveat stating that 'the number of pre-1971 un-permitted wells in the urbanized areas of the county is unknown.'

Thank you very much for your consideration of these comments.

Sincerely,

Linda Wilshusen

Santa Cruz City Water Commissioner representing non-City customers served by the SCWD



Tim Carson &lt;admin@midcountygroundwater.org&gt;

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**Draft GSP**

2 messages

**d wirkman** <debrawirkman@sbcglobal.net>

Thu, Sep 19, 2019 at 11:09 AM

To: "GSP2019Comments@midcountygroundwater.org" &lt;GSP2019Comments@midcountygroundwater.org&gt;

Hello MGA-

A brief comment on the draft GSP: Existing groundwater quality data ( baseline contaminant monitoring data) mentioned in the GSP draft should be made accessible to the public in the final GSP.

Thanks,

Deb Wirkman  
Santa Cruz

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**Santa Cruz Mid-County Groundwater Agency** <admin@midcountygroundwater.org>

Thu, Sep 19, 2019 at 12:28 PM

To: d wirkman &lt;debrawirkman@sbcglobal.net&gt;

This email confirms receipt of your comment submitted via email on the Santa Cruz Mid-County Groundwater Agency's Draft Groundwater Sustainability Plan. All comments received on the Draft Plan will be considered in developing the Final Plan. Thank you for your interest in groundwater management in the Santa Cruz Mid-County Groundwater Basin.

Santa Cruz Mid-County Groundwater Agency  
[www.midcountygroundwater.org](http://www.midcountygroundwater.org)

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Groundwater is a vital resource, together let's protect it.

midcountygroundwater.org • 5180 Soquel Drive • Soquel, CA 95073

[Quoted text hidden]

**From:** [Tom Butler](#)  
**To:** [Darcy Pruitt](#)  
**Subject:** Fwd: Aquifer Storage  
**Date:** Thursday, September 19, 2019 10:39:39 AM

---

Tom

Begin forwarded message:

**From:** Tom Butler <[simibutlers@gmail.com](mailto:simibutlers@gmail.com)>  
**Date:** September 19, 2019 at 9:34:48 AM PDT  
**To:** [gps2019comments@midcountygroundwater.org](mailto:gps2019comments@midcountygroundwater.org)  
**Subject:** Aquifer Storage

I strongly support the plan to recycle treated wastewater and add it to the aquifer. We must act now to ensure adequate water supplies and minimize salt water intrusion.

Tom Butler  
Live Oak

Tom



Tim Carson <admin@midcountygroundwater.org>

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## My Comment on Mid County Ground Water "Sustainability Plan" from Douglas Deitch 540 Hudson Lane, Aptos, Ca., 95003, ph. 831.476.7662

2 messages

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ddeitch@pogonip.org <ddeitch@pogonip.org>

Thu, Sep 19, 2019 at 10:32 AM

To: GSP2019Comments@midcountygroundwater.org, citycouncil@cityofsantacruz.com, citycouncil@ci.capitola.ca.us, jgoldstein@ci.capitola.ca.us, Mark Primack <mark@markprimack.com>, district1@co.monterey.ca.us, district2@co.monterey.ca.us, district3@co.monterey.ca.us, district4@co.monterey.ca.us, district5@co.monterey.ca.us, zach.friend@co.santa-cruz.ca.us, ryan.coonerty@co.santa-cruz.ca.us, greg.caput@co.santa-cruz.ca.us, John Leopold <John.Leopold@santacruzcounty.us>, Bruce McPherson <Bruce.McPherson@santacruzcounty.us>, gapatton@stanfordalumni.org, bod@soquelcreekwater.org, johnlaird9@aol.com, john ricker <john.ricker@co.santa-cruz.ca.us>, Ddeitch <ddeitch@pogonip.org>, daveterra@comcast.net, Rick Longinotti <longinotti@baymoon.com>, Becky Steinbruner <ki6tkb@yahoo.com>, Bruce Laclergue <dpw165@co.santa-cruz.ca.us>, AWRANCH@aol.com, Bill Monning <billmonning@gmail.com>, cityonahillpress@gmail.com, "Robert R. Curry" <curry@ucsc.edu>, carlos.palacios@co.santa-cruz.ca.us, Don Lane <dlane@cruzio.com>, editors@cityonahillpress.com, Wallace 'J' Nichols <wallacejnichols@me.com>, oscar rios <navasrios@yahoo.com>, "wade.crowfoot@resources.ca.gov" <wade.crowfoot@resources.ca.gov>, Yang Xiang <yaxiang@ucsc.edu>, Zach Friend <zach.friend@gmail.com>

----- Forwarded Message -----

**Subject:** My Comment on Mid County Ground Water "Sustainability Plan" from Douglas Deitch 540 Hudson Lane, Aptos, Ca., 95003, ph. 831.476.7662

**Date:** Thu, 19 Sep 2019 11:10:02 -0700

**From:** ddeitch@pogonip.org

**To:** Ddeitch <ddeitch@pogonip.org>

(Please reproduce and include all my attached docs, images, etc. to my comment and please make sure my links are operative and work, as well, Thank you, Douglas Deitch)

My Comment on Mid County Ground Water "Sustainability Plan":

Douglas Deitch 540 Hudson Lane, Aptos, Ca., 95003, ph. 831.476.7662

INTRODUCTION: [www.lawandorderliberal.org](http://www.lawandorderliberal.org) [www.lawandorderliberal.net](http://www.lawandorderliberal.net)  
[www.begentlewiththeearth.com](http://www.begentlewiththeearth.com) [www.lomejorqueeldineronopuedecomprar.com](http://www.lomejorqueeldineronopuedecomprar.com)  
[www.ourinconvenienttruth.net](http://www.ourinconvenienttruth.net) [www.ourinconvenienttruth.com](http://www.ourinconvenienttruth.com)  
[www.ourinconvenienttruth.org](http://www.ourinconvenienttruth.org) [www.douglasdeitch.com](http://www.douglasdeitch.com) [www.douglasdeitch.net](http://www.douglasdeitch.net)  
[www.thinklocalactlcal.com](http://www.thinklocalactlcal.com) , [www.dougdeitch.info](http://www.dougdeitch.info) , [www.samfarr.info](http://www.samfarr.info) , etc...

"Mid County Ground Water GSA" recommends to us on it's website, "If we cannot come to a local agreement on how to bring our basin into sustainability, the State will intervene. .... The Act gives the state the authority to manage the basin if we cannot do it ourselves. Local participation within the MGA is the preferred alternative to state level basin command and control regulation.

*Ground water sustainability in "Mid County", the Monterey Bay , and/or the entire state of California?"*

*I know a little about that for over the last 40+ years and I vehemently DISAGREE! ...[www.begentlewiththeearth.com](http://www.begentlewiththeearth.com) , [www.lomejorqueeldineronopuedecomprar.com](http://www.lomejorqueeldineronopuedecomprar.com) , [www.lawandorderliberal.org](http://www.lawandorderliberal.org) , and @ my solution instead @ [www.thebestthatmoneycantbuy.com](http://www.thebestthatmoneycantbuy.com) .*

*We obviously have not, did not, and "cannot do it ourselves".*

*The SWRCB must intervene in the Midcounty, Santa Cruz and Monterey Counties, and the entire Monterey Bay, as I recommended they do 4/19/2016 @ CCC meeting video @ [www.thebestthatmoneycantbuy.org](http://www.thebestthatmoneycantbuy.org) @ min/sec 11:25*

*SGMA did not, has not, and does not take priority or in any way change our extant water rights, water laws, or Local Coastal Plans, such as Gary Patton's 1987 Well Ordinance @ [www.pogonip.org/ord.htm](http://www.pogonip.org/ord.htm) & [www.pogonip.org/alm.htm](http://www.pogonip.org/alm.htm)*

*As a matter of fact, to the contrary, DWR Czar Mark Cowin told us in 2016 (@ <https://www.santacruzsentinel.com/2015/08/19/central-valley-locales-sinking-2-inches-a-month-as-groundwater-is-drained/>):*

*"The most important thing that can happen is for counties to pass or strengthen ordinances that limit over-pumping," California Department of Water Resources director Mark Cowin, said at a Wednesday morning press conference releasing the new data, collected by the National Aeronautics and Space Administration. "It will take that kind of action to have any real effect. Last year, the state created a framework to regulate groundwater — the first time in state history — but it won't be fully implemented until 2020. And then it will take a decade or two for water levels to rebound," Cowin said.*

*"Those who cannot remember the past are condemned to repeat it" ... and this is exactly what we (our BOS, Mid County GSA, and all other local oath sworn electeds, California Coastal Commission, SWRCB, DWR, all our too numerous "water agencies", et al) have continuously done and are continuing to do for well over the last 20+ years since at least 1998:*

*Intentionally and recklessly ignoring our sworn oaths to follow our local laws (ie [www.pogonip.org/ord.htm](http://www.pogonip.org/ord.htm) , [www.pogonip.org/alm.htm](http://www.pogonip.org/alm.htm) ), our Local Coastal Plan, and just plain common sense. (please see: [http://www.pogonip.org/WaterDocs/RegisterPajaronian\\_99.pdf](http://www.pogonip.org/WaterDocs/RegisterPajaronian_99.pdf) or [www.ourinconvenienttruth.org](http://www.ourinconvenienttruth.org) and attachments)*

*Far, far less, not more water agencies, "sustainability" or otherwise, is what we exactly need in Santa Cruz County and the entire Monterey Bay Region, and here's exactly why and how we can do it, what we can do, and how we can get it paid for..., below*

*Executive Summary:*

*1. Here's my Ground Water Sustainability Plan (GWSP) recommendation executive summary for our so called "Mid County Groundwater" GSA and "sustainability plan" AND SqCWD, especially:*

*Voluntarily terminate this useless and continuously 40+ year failed, illegally operating, and proven again and again incompetent and wasteful agency SqCWD and instead foster, advocate for, help create, and join instead one regional Monterey Bay wide "Monterey Bay Regional Water Authority" instead*

*of these too many local "GSA"s, water agencies etc/et al, to actually have a chance at achieving real Monterey Bay regional water commons sustainability, ground waters and all others, in our Monterey Bay Region.*

*This is our only realistic path to avert any more irremediable tragedy and waste to our ground water commons from continuous and permanently ruinous 40-50 plus constant and illegal mining/overdraft of our ground waters and VERY EXPENSIVE, incompetent, un/under qualified and unprofessional/amateur effective non management and water resource waste... (one eg: Hasn't retired SqCWD GM Robert Johnson @ \$10,000 per month already received close to or over \$3 million in pension payments already? ... and who else?)*

Instead, the entire California Coastal Commission (CCC) and Boards of Supervisors (BOS) of Santa Cruz and Monterey Counties, City Councils, local water districts, Department of Water Resources (DWR), and State Water Resources Control Board (SWRCB), et al, have been "complicit in the greatest environmental catastrophe (ie the tragic and permanent illegal permanent decimation/resource loss and waste of our local coastal Monterey Bay ground water commons) in the history of the Monterey Bay"... ( @ 3:25 <https://www.youtube.com/watch?v=ccfaXnOF8ss> , <https://www.facebook.com/dougieforcongress/photos/pb.1591961497709889.-2207520000.1450709303./1640504249522280/?type=3&theater> )... ending up officially, Folks, as the most tragically overdrafted and mismanaged ground water commons in the once Golden State or perhaps entire country.

*2. Here's my Ground Water Sustainability Plan (GWSP) executive summary for our entire Monterey Bay water "sustainability plan"-WHAT WE NEED TO DO:*

*The SWRCB needs to immediately intervene and take over water management and planning in the entire Monterey Bay, as I have recommended they do 4/19/2016 @ 11:25 @ [www.thebestthatmoneycantbuy.org](http://www.thebestthatmoneycantbuy.org) and create the one very powerful Monterey Bay Regional Water Agency/Authority necessary to implement my one Monterey Bay "GSA" and "sustainability plan", run down below and @ [www.dougdeitch.info](http://www.dougdeitch.info) or [www.thebestthatmoneycantbuy.com](http://www.thebestthatmoneycantbuy.com) :*

The Castroville reclamation plant/project, run down @ [http://montereyonewater.org/facilities\\_tertiary\\_treatment.html](http://montereyonewater.org/facilities_tertiary_treatment.html) , has the ability to produce over 31,000 acre feet per year of recycled tertiary treated water per year at it's plant, built in 1998 for around \$75 million in Castroville. At present, this water is dedicated to exclusively ag use on 12,000 coast side ag acres at the mouth of the Salinas Valley to use instead of well water pumped at this location to protect the Salinas Valley from further salt water intrusion. As farmland, this land is FMV worth around \$50,000 per acre as farmland ( <https://www.santacruzsentinel.com/2014/02/27/retired-federal-judge-buys-borina-farmland-in-major-pajaro-valley-deal/> ). However, this 12,000 acres highest and best use is not as farmland but instead as a ground water conservation/aquifer recharge/ and estuarine habitat conservation/rehabilitation project, which actually doubles the FMV of this land to \$100,000 per acre or \$1.2 billion. This land comprises roughly something around 5% (?) of irrigated farmland in the "Salinas Valley"

If this 12000 acres was publicly acquired and fallowed/or all well pumping ceased, along with another tract of 9000 acres of irrigated farmland at the mouth of the Pajaro Valley running from approximately Elkhorn Slough to Manresa Beach on the ocean side of Highway One in Santa Cruz County (for

21000 acres in total) to protect the Pajaro Valley from salt water intrusion in the same way,

... ag well pumping would stop on this 21000 acres and, @ 3 a/f/yr per acre for ag water, 63,000 a/f/yr of ground water, would be CONSERVED annually per year in perpetuity. Additionally, wouldn't this 63,000 a/f/yr be also de facto RECHARGED at these two most hydrologically critically important locations with the highest quality recharge water possibly available with the lowest cost and best "GREEN tech" water and recharge process available possible anywhere, in perpetuity as well, ... the recharge water produced and recharged naturally by our best water purveyor named Ms. Mother Nature?

This 31000 acre feet per year of water from the Castroville plant will be repurposed from ag to urban use, further processed and purified, and will be shared regionally between Santa Cruz and Monterey Counties, and would and will satisfy all our regional Monterey Bay urban water needs w/o any supplemental/additional very costly hundreds of millions of desal, recycling, or ground water injection facilities

... AND this 21000 acres of coast side retired/non ag pumped lands will be our best defense, if there will/may be any even possible, to the massive but still as of yet unknown sea level rise (SLR) we must over time reasonably and inevitably expect and experience? (As a side note/question, is "SLR" even mentioned anywhere in the Mid County GSA "sustainability plan" and how this "sustainability plan" will successfully deal with it?)

This is what I call the "Monterey Bay Estuarine National Monument", and it is truly a national monument with the highest concentration of critically threatened critical estuarine resources and habitat of ANY LOCATION ANYWHERE IN THIS COUNTRY !!!

Here's my already successful 25 year old "Pilot Project" @ "Willoughby Ranch" @ Zmudowski Beach to prove it works to check out @ <https://www.facebook.com/dougieforcongress/photos/a.1591989751040397/1953766944862674/?type=3&theater> ... "Farmlands back to wetlands"

Query: Where's the \$2.1 billion?

Response: Proposition One and reallocated rail bond money billions to "water/habitat/environmental projects" aka "OPM" (...other people's money)

3. (and btw/fyi) Here's my Ground Water Sustainability Plan (GWSP) executive summary for our entire Golden State: Golden Gate Dams @ <https://www.linkedin.com/pulse/damming-golden-gate-douglas-deitch/> and <https://www.facebook.com/MontereyBayConservancy/photos/p.1335863846435709/1335863846435709/?type=3&theater>

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*I am writing this comment on the Draft Mid County Ground Water "Sustainability Plan" .... in the capacity of a private owner of 2 wells on properties contiguous to Soquel Creek Water District (SqCWD) on Hudson Lane, Aptos for the last 46 years and also as the executive director of the Monterey Bay Conservancy ( [www.facebook.com/MontereyBayConservancy](http://www.facebook.com/MontereyBayConservancy)) a 25 old year Monterey Bay and California 501c3 water policy think-tank, that has since 2001 twice sued the County of Santa Cruz (BOS) and issued 2 Grand Jury Complaints, sued twice for a Writ of Mandate to require the BOS to declare the ground water emergency under the our local since 1987 "Ground*

Water Sustainability Act" aka our "Well Ordinance" (@ [www.pogonip.org/ord.htm](http://www.pogonip.org/ord.htm) & [www.pogonip.org/ord.htm](http://www.pogonip.org/ord.htm) ) the BOS was legally obligated to declare since 1998 (please see: [www.begentlewiththeearth.com](http://www.begentlewiththeearth.com) ) and immediately stop all county ground water overdrafting/mining. (Please produce and include copies of the images, docs, etc in the attachments. Thank you, DD)

*In 2014 the state of California also passed an additional state act which was/is called the "Ground Water Sustainability Act" which sets certain long term time requirements for "sustainability" by 2040 on a statewide level. However, by the stated provisions of this ground water sustainability Act of 2014, no water rights or other laws were or are changed and the emphasis and recommendation by the Department of Water Resources Czar Cowin (see article above was given to localities to enact and/or enforce their own local groundwater pumping laws, if they had any chance of actually achieving "sustainability". This is specifically what we have intentionally and grossly recklessly failed to do here.*

*Although the County of Santa Cruz BOS has had its own "sustainability law" and local Coastal plan since 1987, unfortunately the county and all the water districts, cities, and other jurisdictions including the Coastal Commission, DWR, and SWRCB, in particular, have chosen just to ignore the mandates of this law and not protect our most critical and important coastal resource.*

***If this law had been properly followed in 1998 and since by the Board of Supervisors and Coastal Commission, the BOS or Coastal Commission would have declared a ground water emergency county-wide and required that all ground water basins' overdrafting be stopped immediately by remedial measures that were specifically and still are spelled out in the well ordinance and we would not have any ground water tragedy NOW!***

*Soquel Creek Water District specifically instead of advocating following the law and our local Coastal plan has been complicit in the intentional negligence of not following or requiring the Board of Supervisors by lawsuit or otherwise to follow the law to protect our commonly shared groundwater resources. It is directly because of this negligence and purposeful mismanagement that all the groundwater basins from Soquel through PVWMA through the Salinas Valley have now been officially designated as the most mismanaged and critically overdrafted in the state of California if not in the entire country.*

I specifically made these points to the SWRCB, April 19, 2016, in my testimony to them at [www.thebestthatmoneycantbuy.org](http://www.thebestthatmoneycantbuy.org) @ minute/second 11:26, when I recommended to them that they intervene and take over ground water management in the Monterey Bay and Santa Cruz County, in particular. The SWRCB was confused in not understanding that I was not referring to their authority under the 2014 state "GSA", but instead to their authority under Gary Patton's still extant but unfollowed and ignored by all 1987 "Well Ordinance" and LCP ([www.pogonip.org/ord.htm](http://www.pogonip.org/ord.htm)),

The illegal SqCWD "demand/offset program" to justify their continued and illegal "junior/surplus water only" overdrafting is no more than a not even so clever, but nonetheless successful for SqCWD "water ponzi scheme", like the neighboring "water berry ponzi scheme" in PVWMA and SqCWD's shared ground water commons which has permanently and tragically decimated ([www.ourinconvenienttruth.com](http://www.ourinconvenienttruth.com) , [www.thinklocalactlocal.com](http://www.thinklocalactlocal.com) ...) our Monterey Bay water commons.

*At this moment or any other, the first priority and sworn duty of all sworn officials is to follow the law ...*

*All elected and otherwise sworn officials of Soquel Creek Water District, Pajaro Valley Water Management Agency, Santa Cruz and Monterey BOSs and the City council's of Watsonville, Capitola, and Santa Cruz, etc, the DWR, CCC, SWRCB must IMMEDIATELY make all efforts to first comply with our current local and first in time 1987 law which is, minimally, that the Board of Supervisors hold a public hearing to consider declaration of a ground water emergency and immediate implementation of the remedial measures laid out under this ordinance to cure any overdraft immediately or ASAP..*

*This should be the Mid County GSA's first order of business to start the on the road to "sustainability" but they have and are ignoring it, as well.*

*Injection of "cleaned" sewage water is not one of the measures specifically mentioned and is a measure far beyond the either legal or equitable rights of junior water rights holder SqCWD which has been for over 40 years illegally overusing it's junior legal "surplus water only" right massively and continuously for profit, causing whatever but yet to be specifically defined "impure water problem" SqCWD's "Pure Water Soquel" is meant to cure.*

*Also, it appears very likely from a very recently released report ([http://www.waterboards.ca.gov/publications\\_forms/publications/legislative/docs/2016/dpr\\_report.pdf](http://www.waterboards.ca.gov/publications_forms/publications/legislative/docs/2016/dpr_report.pdf)) and other sources on the feasibility of using recycled water for direct potable reuse that DPR is not that far off.*

*Where is the logic and mitigated risk in precipitously rushing ahead spending hundreds of millions (???) on hardware to import and inject cleaned waste water which will soon be fit for direct human consumption immediately, w/o injection or anything else, AND JUST REST OUR WELLS AND LET MOTHER NATURE DO HER WORK HERSELF, as she can best do with our cooperation, WITH THE BEST AND LOWEST COST, RISK, AND TECH (AND LEGAL!!!) SOLUTION POSSIBLE?*

*In respect to PVWMA/Watsonville: PVWMA and "Mid County Groundwater" share groundwater. An attached January/1996 Aptos Times article describes how the fired former hydrologist Joe Scalmanini characterized the loss of groundwater resource caused by PVWMA ag overdrafting. That's why he was fired. Additionally, Watsonville has plans to drill deep wells into the Purisima Formation running beneath the Aromas and threaten Mid County Groundwater's water and sustainability plan. From the attached PVWMA water charts, one can see the consumption. What's the "SLR" sustainability plan in PVWMA or Mid County?*

*However, what is PVWMA's sustainable yield? It doesn't appear to be in their plan ... because PVWMA doesn't use one to compute their sustainability!?!?!?! Check it out for yourself w/ PVWMA to confirm this. If one is curious, the last sustainable yield analysis done by Lyndel Melton for PVWMA of 24k/a/f/yr can be found and viewed @ [www.begentlewiththeearth.org](http://www.begentlewiththeearth.org) @ p. 44 from the year 2000, which I refer to @*

CCC meeting in 2011 @ [www.thinklocalactlocal.com](http://www.thinklocalactlocal.com) running down the Water Berry Ponzi Scheme for the CCC ...!!!

*Analysis and Conclusion: PVWMA is at or close to a 100% almost entirely caused "ag" overdraft for decades (or worse) and has no other way to reduce it now other than to retire or fallow existing production as I propose, which PVWMA HAS NEVER DONE! This does not bode well for "sustainability" anyplace, only more water Ponzi Schemes, like SqCWD and PVWMA are running for decades, as well. The only solution is one regional and interbasin coordinated and real approach which lives within our means and gets us out of denial of our substance abuse problems run down @ [www.douglasdeitch.com](http://www.douglasdeitch.com)*

Douglas Deitch

Monterey Bay Conservancy  
Private County Well owner 540 and [545 Hudson Lane](#)  
Aptos, California, 95003

831.476.7662

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### 13 attachments



**Screen Shot 2019-09-14 at 8.26.52 AM.png**  
276K



**PattonArticle.png**  
140K

**WormhoudtEmergency.jpg**  
350K



AptosTimes.png  
226K



Screen Shot 2019-09-19 at 9.30.29 AM.png  
481K



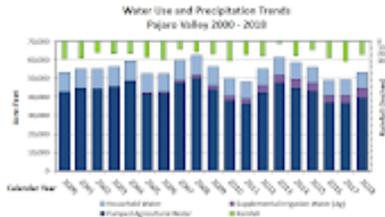
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Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Household Water	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Industrial/Agricultural Water	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Public Works/Engineering Water (P&E)	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Precipitation	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000



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**SWRCB 4:19:2016 handout-1.PDF**  
7362K

**sgma letter godwin.pdf**  
57K

**SqCWDOpenLetter-1.pdf**  
221K

**MEMpiriepvwma.pdf**  
86K

**Santa Cruz Mid-County Groundwater Agency**

<admin@midcountygroundwater.org>

To: ddeitch@pogonip.org

Thu, Sep 19, 2019 at 10:40

AM

This email confirms receipt of your comment submitted via email on the Santa Cruz Mid-County Groundwater Agency's Draft Groundwater Sustainability Plan. All comments received on the Draft Plan will be considered in developing the Final Plan. Thank you for your interest in groundwater management in the Santa Cruz Mid-County Groundwater Basin.

Santa Cruz Mid-County Groundwater Agency

[www.midcountygroundwater.org](http://www.midcountygroundwater.org)



Groundwater is a vital resource, together let's protect it.

midcountygroundwater.org • 5180 Soquel Drive • Soquel, CA 95073

[Quoted text hidden]

# W District Update on a t e r

by Dick Little

The Soquel Creek Water District stated that their well supplies are still in excellent shape in spite of an increase of Salt Water found in monitoring wells along Aptos, Seascapes and La Selva Beach coastlines.

The test results from the planning staff said an increase in salt water has been found in a monitoring well near the seashore in the Seascapes area. The increase was first noticed by the Soquel Water District in August and described as "modest."

Soquel Creek Executive Director, Laura Brown, said the district has spent a million dollars monitoring the coastal aquifer, and has given the results to the county on a regular basis.

"We have had a model monitoring program since 1981," Brown said, "and we intend to continue the program." She said the well closest to the sea near La Selva Beach has shown an increasing amount of salty water in recent years.

"It's like a river changing course," Brown explained. "Because of falling water levels in the Pajaro Valley, the water stream in the Aromas Red Sands Aquifer (which feeds into the area) is now flowing in that direction (toward the Pajaro Valley), and away from the coast."

Water District consultant,

Joe Scalminini, claimed the problem is due to overdraft in the Pajaro Valley where supplies of water are being used up faster than they can be replaced.

"Brown went on to explain that the Pajaro Valley is the low part of the aquifer... (and, because of the overdraft) a salt water 'wedge' has developed... It poses no threat to (Soquel Creek) production wells," she said.

Supervisor Walt Symons added that, "I'm very concerned about the water problems in the Pajaro Valley. People along the coast have to be seriously concerned."

Watsonville city water is pumped to Pajaro Dunes, while Soquel Creek is supplying water to several other small coastal developments along San Andreas Road.

Brown said inferences that the Soquel Purisma Aquifer is in danger of salt water intrusion is overstated.

One third of the district's water supply comes from Aromas Red Sands Aquifer, while two thirds comes from the Purisma Aquifer that reportedly is a series of very large underground lakes that do not connect to the Aromas Red sands Aquifer.

Brown called the County's findings, "...Nothing new. We are currently in the pro-

cess of putting a plan together.

"We don't have a crisis," assured Brown. "Behavior in one aquifer is not a precursor to the other."

She emphasized that the two aquifers are not attached to each other. "They're not even in the same geological formation... The ground water is not the same," she added.

Symons said there is a possibility some or all of the problem has been caused by the shifting Eastern Pacific Plate. "We need to check out geodetic movement... Nobody has taken a look at these problems."

The Pajaro Valley Water Management Agency is considering a pipeline that would bring in water from an outside source to shore up the ground water supplies in their area. The Agency claimed that getting federal water from the San Felipe Project is at least ten years away.

The biggest drain on water that the county has to be more concerned about are the large housing projects that are proposed by the Redevelopment Agency, Symons pointed out. "All of the low income housing we are proposing will gobble up the water... How can you say there's no water and then say more affordable housing must be built!"

August 17, 2015

Douglas Deitch  
540 Hudson Lane  
Aptos, CA 95003

Dear Douglas,

Thank you for your interest and desire to be part of the solution for groundwater sustainability. Without involvement from the community of groundwater users it will be difficult, if not impossible, to reach the goal of sustainability of our groundwater basins by 2040.

We received 25 applications to represent private well pumpers in our groundwater basins. The Soquel-Aptos Groundwater Management Committee (SAGMC), which is currently comprised of two representatives each from the Soquel Creek Water District, Central Water District, Santa Cruz City, and Santa Cruz County; is adding three representatives from the private well community. The applicants' qualifications were very strong, which reflects the awareness and commitment of private well pumpers.

A subcommittee of the SAGMC is making recommendations for the three private well representatives to the entire SAGMC, which will vote on the representatives at the Thursday August 20, 2015 SAGMC meeting. The meeting is at 7:00 pm in the Capitola Community Room. Although you are not among the three the subcommittee is recommending for appointment, we encourage you to continue to be involved in the effort. There will be many opportunities for you to participate in the dynamic process of forming a Groundwater Sustainability Agency and to develop a plan for groundwater sustainability for generations to come.

Sincerely,

*Thank you*

The SAGMC Private Well Representative Selection Subcommittee:

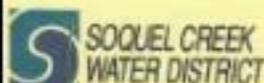
Bruce Jaffe, Soquel Creek Water District

John Benich, Central Water District

Micah Posner, City of Santa Cruz

John Ricker, County of Santa Cruz

X



5180 Soquel Drive  
P.O. Box 1550  
Capitola, CA 95010

CA 950  
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08/18/2015

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\$00.48



ZIP 95010  
0471 11338222

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540 Hudson Lane  
Aptos, CA, 95003



Douglas Deitch, 20th Dist Cong 23 days ago · edited

www.lomejorqueeldineronopue... www.samfarr.info ... Here's my Monterey Bay regional urban water solution instead, Mis Amigos y Mis Vecinos?:

The Castroville reclamation plant/project, run down @ http://montereyonewater.org... has the ability to produce over 31,000 acre feet per year of recycled tertiary treated water per year at it's plant, built in 1998 for around \$75 million in Castroville. At present, this water is dedicated to exclusively ag use on 12,000 coastal ag acres at the mouth of the Salinas Valley (

) to use instead of well water pumped at this location to protect the Salinas Valley from further salt water intrusion. As farmland, this land is FMV worth around \$50,000 per acre as farmland ( https://www.santacruzsentin... ). However, this 12,000 acres highest and best use is not as farmland but instead as a ground water conservation/aquifer recharge/ and estuarine habitat conservation/rehabilitation project, which actually doubles the FMV of this land to \$100,000 per acre or \$1.2 billion. This land comprises roughly something under 5% (?) of irrigated farmland in the "Salinas Valley"

If this 12000 acres was publicly acquired and fallowed/or all well pumping ceased, along with another tract of 9000 acres of irrigated farmland at the mouth of the Pajaro Valley running from approximately Elkhorn Slough to Manresa Beach on the ocean side of Highway One in Santa Cruz County for 21000 acres in total to protect the Pajaro Valley from salt water intrusion in the same way, ag well pumping would stop on this 21000 acres and, @ 3 a/f/yr per acre for ag water, 63,000 a/f/yr of ground water, would be CONSERVED annually per year in perpetuity. Additionally, wouldn't this 63,000 a/f/yr be also de facto RECHARGED at these two most hydrologically critically important locations with the highest quality recharge water possibly available with the lowest cost and best "GREEN tech" water available possibly anywhere, in perpetuity as well, ... the recharge water produced and recharged naturally by our best water purveyor named Ms. Mother Nature?

Yup. This is what I call the "Monterey Bay Estuarine National Monument", and it is truly a national monument with the highest concentration of critically threatened critical estuarine resources and habitat of ANY LOCATION ANYWHERE IN THIS COUNTRY !!! Here's my already successful 25 year old "Pilot Project" @ "Willoughby Ranch" @ Zmudowski Beach @ to check out @ https://www.facebook.com/do... .. "Farmlands back to wetlands"

Query: Where's the \$2.1 billion? Response: Reallocated rail bond money billions to "water/habitat/environmental projects" aka "OPM" (...other people's money)

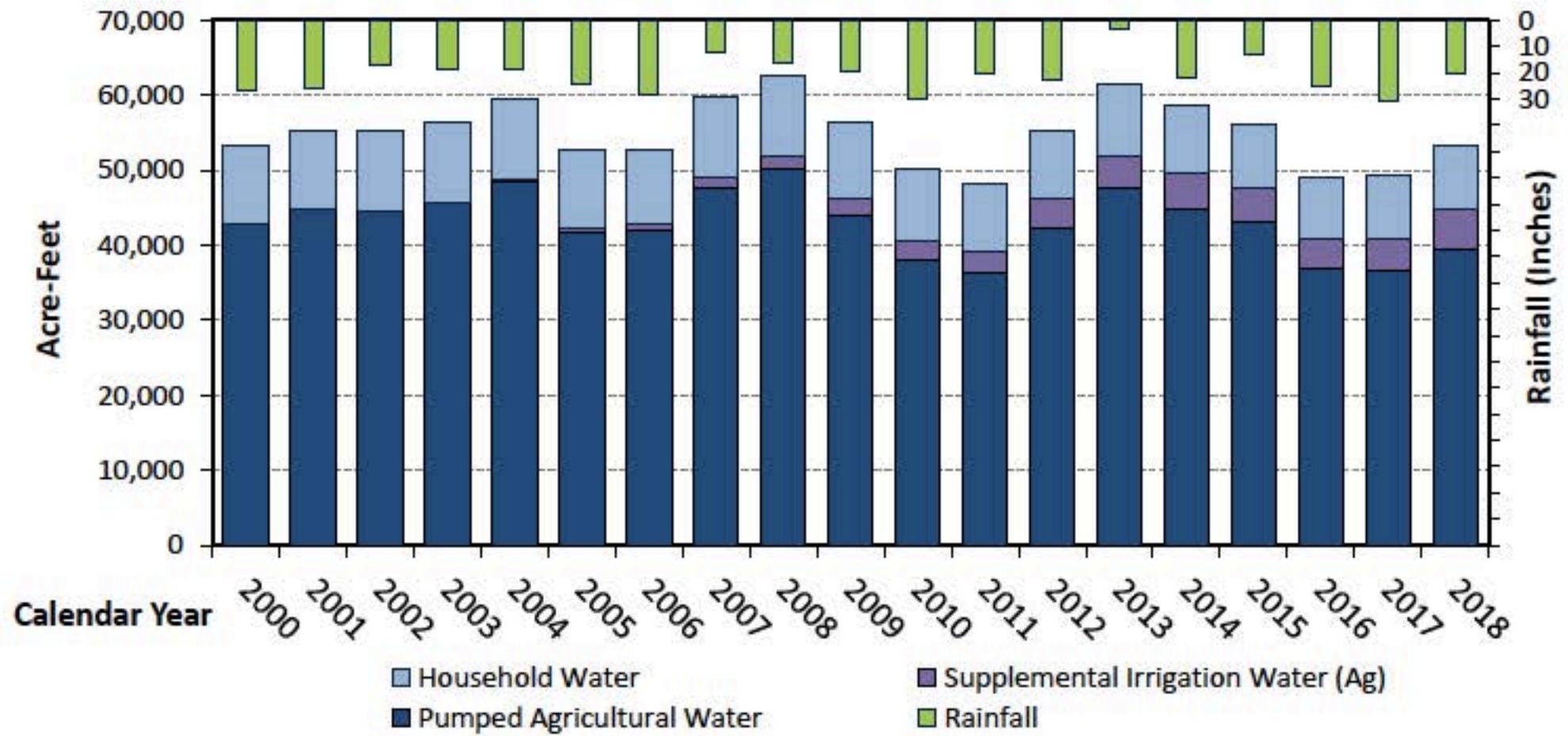
www.lomejorqueeldineronopue... www.sipodemos.democrat

Reply · Share

## Pajaro Valley Water Usage & Precipitation Table

Calendar Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	5-yr Avg
Precipitation (inches) - Watsonville Water Works	20.38	26.55	25.72	17.20	18.48	18.98	24.45	28.24	12.52	16.29	19.82	30.04	19.97	22.25	3.51	22.03	12.76	29.88	30.79	19.49	21.38
<b>Water Source Category</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2006-10 5-yr Avg</b>
Metered Wells	43,084	42,368	44,189	43,896	45,010	48,024	41,177	41,482	47,275	50,015	43,620	37,642	36,129	42,026	47,360	44,642	42,708	36,406	36,280	39,092	44,007
Non-Metered Ag Wells (Estimated)	551	530	568	595	600	574	606	490	331	309	344	302	290	331	251	289	338	440	386	446	315
Delivered Water	0	0	0	158	139	207	603	990	1,337	1,665	2,406	2,681	2,630	3,788	4,275	4,685	4,638	4,139	4,203	5,213	1,816
City of Watsonville (groundwater)	6,404	6,330	6,527	6,617	6,794	7,055	6,575	6,215	7,014	7,559	7,009	6,182	6,054	6,383	7,033	6,557	6,042	5,828	5,598	5,840	6,796
City of Watsonville (surface water)	1,169	1,306	1,093	1,066	843	752	1,002	913	991	340	372	733	905	633	368	62	4	186	684	397	670
Other Municipal (excluding City of Watsonville)	1,061	1,135	1,245	1,256	1,261	1,289	1,226	1,128	1,285	1,223	1,200	1,034	1,058	1,104	1,171	1,058	908	955	957	977	1,174
Rural Residential (Estimated)	1,883	1,777	1,691	1,695	1,695	1,577	1,492	1,466	1,494	1,495	1,486	1,474	1,127	1,133	1,144	1,348	1,432	1,199	1,296	1,234	1,483
<b>Sum of Groundwater Usage (AF)</b>	<b>52,983</b>	<b>52,140</b>	<b>54,220</b>	<b>54,059</b>	<b>55,361</b>	<b>58,639</b>	<b>51,555</b>	<b>51,594</b>	<b>58,545</b>	<b>62,054</b>	<b>54,608</b>	<b>47,525</b>	<b>45,098</b>	<b>52,009</b>	<b>58,063</b>	<b>55,522</b>	<b>52,728</b>	<b>45,740</b>	<b>45,644</b>	<b>49,091</b>	<b>54,865</b>
<b>Sum of Water Usage (AF)</b>	<b>54,152</b>	<b>53,446</b>	<b>55,313</b>	<b>55,283</b>	<b>56,343</b>	<b>59,478</b>	<b>52,682</b>	<b>52,684</b>	<b>59,726</b>	<b>62,606</b>	<b>56,438</b>	<b>50,048</b>	<b>48,192</b>	<b>55,397</b>	<b>61,601</b>	<b>58,640</b>	<b>56,070</b>	<b>49,152</b>	<b>49,404</b>	<b>53,198</b>	<b>56,301</b>
<b>Summary of Delivered Water</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
Harkins Slough Project Recovery Wells	158	138	87	124	177	191	212	159	160	232	239	222	196	188	258	325	205				
Recycled Water				0	0	0	0	1,298	1,630	1,958	2,516	2,950	2,861	3,150	2,969	2,752	3,505				
City of Watsonville Potable Blend Supply				243	570	440	640	431	374	92	240	318	525	457	287	398	643				
PVWMA Blend Wells				120	479	570	640	431	374	92	240	318	525	457	287	398	643				
<b>Total</b>	<b>158</b>	<b>138</b>	<b>207</b>	<b>603</b>	<b>990</b>	<b>1,337</b>	<b>1,665</b>	<b>2,406</b>	<b>2,681</b>	<b>2,630</b>	<b>3,788</b>	<b>4,275</b>	<b>4,685</b>	<b>4,638</b>	<b>4,139</b>	<b>4,203</b>	<b>5,213</b>				
<b>Notes:</b>																					
<i>All values in Acre-Feet unless otherwise stated</i>																					

## Water Use and Precipitation Trends Pajaro Valley 2000 - 2018



**COUNTY OF SANTA CRUZ  
HEALTH SERVICES AGENCY  
Environmental Health Service**

**I N T E R - O F F I C E M E M O**

DATE: October 10, 2007

TO: Supervisor Pirie

FROM: John Ricker, Water Resources Division Director

**SUBJECT: Pajaro Valley Water Management Agency**

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On October 2, 2007, the Board requested that the General Manager of the Pajaro Valley Water Management Agency (PVWMA) attend the October 16 Board meeting to discuss options that the Agency is pursuing to secure adequate financing to address the groundwater overdraft in the Pajaro Basin. The Board also directed Environmental Health staff to provide a report on November 20 regarding actions the County could take to help address the situation.. The purpose of this memo is to provide some initial background prior to the October 16 discussion with the Agency's General Manager.

**Basin Management**

The Pajaro groundwater basin is experiencing significant overdraft, with annual pumping of almost 70,000 acre-feet per year (afy). This has resulted in lowering of water levels and significant seawater intrusion along the coast. The Pajaro Valley Water Management Agency was created in 1984 to take necessary steps to secure additional supplies and manage water use in the basin in order to bring use into balance and stop the overdraft. PVWMA adopted an updated Basin Management Plan in 2002, and is engaged in a number of activities to address the situation:

1. Water conservation programs for municipal and agricultural use.
2. Development of the Coastal Distribution System to supply water to coastal areas and eliminate pumping in those areas subject to seawater intrusion.
3. Construction of a wastewater recycling facility at the City of Watsonville Wastewater Treatment plant
4. Development of a local water supply to capture and use runoff from Harkins Slough.
5. Shifting pumping away from the coast by using water from inland wells to put into the coastal distribution system and blend with recycled water.
6. Construction of an import pipeline and acquisition of additional supplies from the Central Valley Project.
7. Update of the groundwater model to better assess the sustainable yield from the basin.
8. Development of watershed management programs that would include water resources monitoring, water metering, nitrate management, wells management, and recharge area protection.
9. Coordination with surrounding agencies to develop and implement an Integrated Regional Water Management Plan for the Pajaro River Watershed.

Full implementation of these projects should bring the basin into balance and stop the seawater intrusion. Much progress has been made, but considerably more effort and funding will be needed to reach full implementation.

**Financing Issues**

The cost of the basin management efforts is estimated to be \$131 million, at an annualized cost of \$14 million (2001 dollars). PVWMA is seeking to finance these efforts through a combination of state and federal grants and local funding. Local funding is provided through a water augmentation charge paid by all users of water in the basin, and a delivery charge paid by those users who receive delivered water through the coastal distribution system. In 2003 and 2004, the augmentation charge was increased from \$80/afy to \$160/afy, which was deemed to be the

amount needed to implement the basin management efforts. However, recent court decisions have determined that these increases were invalid because they were not conducted pursuant to procedures required by Proposition 218. The California Supreme Court recently upheld this determination. On October 3, 2007, the PVWMA Board acted to rescind the increases, leaving the augmentation charges at \$80/afy, half of the amount necessary to implement the Basin Management Plan.

PVWMA is currently considering various options to increase the augmentation fee or to limit groundwater pumping to the amount that could be safely sustained if the Basin Management Plan cannot be fully implemented. The Agency is engaged in a public outreach effort to better inform the public and generate support for necessary efforts and the financing needed to support those efforts. It is anticipated that the Agency General Manager will provide your Board with an updated report on those possibilities at the October 16 Board meeting.

### **Potential County Involvement**

The County has authority over well construction in unincorporated areas of the Pajaro Valley and the well ordinance includes provisions for declaration of a groundwater emergency in areas subject to groundwater overdraft. The County also has potential powers to manage groundwater under its general police powers and the powers of the Flood Control and Water Conservation District. The County has supported and encouraged PVWMA efforts to better manage the basin and control the overdraft. In the late 1990's, the County questioned whether the agency was doing enough to address the situation and held public hearings to consider whether or not the Board of Supervisors should declare a groundwater emergency. At that time, it was determined that PVWMA's efforts to update and implement the Basin Management Plan would be adequate to address the problem and that a declaration of emergency was not needed. However, the Agency's recent loss of financing now raises the possibility that the Agency could not fully implement the Plan and adequately protect the basin.

Although staff fully expects that the Agency will continue to pursue appropriate measures needed to address the situation, the County could consider getting more involved. Following are some actions that the County could take:

1. Declare a groundwater emergency, pursuant to County Code Section 7.70. Such a declaration requires that the Board adopt both short term measures and long term measures to alleviate the emergency. These could include:
  - a. Moratorium on construction of new or replacement wells until a long term solution is able to be implemented.
  - b. Moratorium on new development within the unincorporated areas of the Pajaro Valley.
  - c. Restriction of water use through mandatory water conservation measures and limits on water use.
  - d. Work with PVWMA, City of Watsonville and Monterey County to secure supplemental supplies.
2. Initiate an adjudication of groundwater rights whereby the courts either impose reduced water use by all users to stay within the basin's sustainable yield or impose a physical and financial solution to provide supplemental water.
3. Promote efforts to purchase and fallow agricultural land, particularly in the coastal areas to reduce overall water use.

Environmental Health Water Resources Division staff will continue to consult with PVWMA staff, County Counsel, and the Water Advisory Commission to evaluate potential alternatives for possible County action and provide a more detailed report to the Board of Supervisors for consideration on the November 20, 2007 agenda.

cc: Each Board Member  
CAO  
County Counsel  
Planning Director  
HSA Director  
PVWMA

# City to weigh desalination plunge

By **BRIAN SEALS**  
SENTINEL STAFF WRITER

## SANTA CRUZ Human genome reference sequence now online

In what sounds a bit like science fiction, UC Santa Cruz researchers announced Monday the complete reference sequence of the human genome is available online via the UCSC Genome Browser, at [genome.ucsc.edu](http://genome.ucsc.edu).

The completion coincided with a Monday press conference in Bethesda, Md., announcing the successful completion of the Human Genome Project.

UCSC officials said the browser is "rich in information," likening it to a Web-based microscope for exploring the sequence. It is used by researchers worldwide, they said.

Researchers in the university's Genome Bioinformatics Group worked long hours to get the browser ready for Monday's announcement. The group is part of the Center for Biomolecular Science and Engineering.

Members weren't exactly jumping with joy, but the Santa Cruz City Council on Tuesday took its first step toward a possible desalination plunge.

**SANTA CRUZ** The council agreed to start environmental studies on a desalination plant that would bolster water supplies during drought years.

The council voted unanimously, save for absent members Scott Kennedy and Mike Rotkin, to start a study that is expected to take about 10 months and cost an estimated \$200,000.

While council members and many of the roughly 25 members of the public in attendance had qualms about the potential cost and environmental impacts, the council concluded desalination would be an immediate, emergency solution to an existing problem.

Water commissioners who recommended the plan to the council were even ambivalent.

"This is a lousy solution," said Bill Malone, a water commissioner. "However, it's also the best."

Santa Cruz joins a long list of agencies up and down the California coast looking at ways to convert seawater into drinking water.

While critics contend a desalination plant would spur growth, the plan's backers say it would produce the bare-bones amount needed to shepherd the city through drought years such as 1977, when residents had to curtail water use. Even supporters said other longer term solutions should be pursued as the city eyes desalination.

"This is not a panacea," Councilman Mark Primack said. "I support this because it is an emergency solution, a stop-gap solution."

Even with the plant, he said, a 1977-type drought would force water users to cut back demand by about 15 percent.

In 1977, customers were forced to cut use by 38 percent, which meant fewer showers, toilets left occasionally unflushed and many brown lawns.

Critics said there are too many variables, like future energy costs, which can account for about 50 percent of the desalination process, and the potential environmental impacts of discharging brine — the excessively salty byproduct of desalination — into the sea.

Critics also said a future council could expand the plant to accommodate growth. "How do you know the next council people will not change this?" questioned Susan Kipping. "Once you make this water available, you're going to be inviting developers to come here."

One speaker, Doug Deitch, suggested a novel, if not politically unrealistic, solution that would involve the Santa Cruz, Soquel Creek and Pajaro Valley water districts.

If 8,000 acres of Pajaro Valley farmland were taken out of production, that would free up water now used for irrigation that could be sold to the two water agencies to the north, Deitch said, citing a 1993 Pajaro Valley water report. As the aquifer is replenished, he said, that land could eventually be brought back into produc-

tion. Santa Cruz is looking to team up with the Soquel district on the desalination plant project. The district board is set to discuss its needs at an April 29 meeting, said general manager Laura Brown.

The city water department envisions a desalination plant capable of producing 2.5 million gallons per day. Currently, the city consumes an average of 10 million gallons per day. About half the city's water comes from the San Lorenzo River.

It would use an abandoned sewerfall line to bring water in, and discharge it through a currently used sewerage line that stretches two miles out to sea.

Most years, the Soquel district uses the plant to ease demand on the aquifer. In dry years, Santa Cruz would take over operation.

Estimates for the cost of the plant, plus operation and debt, are \$50 million to \$70 million.

Contact Brian Seals at [bseals@santa-cruz.com](mailto:bseals@santa-cruz.com).

Douglas Deitch  
Monterey Bay Conservancy  
501 Mission Street, #1,  
Santa Cruz, California, 95060  
831.476-7662  
May 5, 2016

Mr. Timothy Godwin  
Basin Boundary Modification Administrator  
Via Internet

Subject: Comment in Opposition of Proposed Boundary Submitted by The Pajaro Valley Water Management Agency.

Dear Mr. Godwin,

This submitted application(s) for proposed basin boundary modification(s) by the Pajaro Valley Water Management Agency, as well as the related application by the “Mid County Ground Water Basin” on which I have also commented on and incorporate by this reference to this comment , by Douglas Deitch, emailed December 19, 2015 which can be viewed/located @ page 4 @ <http://sgma.water.ca.gov/basinmod/docs/download/450> , cannot be approved at this time due to inadequate, unsatisfactory, incomplete, or untrue responses provided in both applications to required questions in the applications.

Specifically, under “G. General Existing Groundwater Management”, since PVWMA or SqCWD in it’s/their entire 32+ year existence HAS NEVER NOT MASSIVELY OVERDRAFTED IT’S/THEIR BASIN(S) and not totally failed in their respective “missions” (to wit, for PVWMA: “Section 102 of the Agency’s Charter states: "Water resource management activities carried out under this act in the public interest shall recognize the following objectives:

(a) Local groundwater resources should be managed toward the avoidance and eventual prevention of conditions of long-term overdraft, land subsidence, and water quality degradation.(b) Local economies should be built and sustained on reliable, long-term supplies and not long-term overdraft as a source of water supply.(c) Water management programs should include reasonable measures to prevent further increases in the amount of long-term overdraft and to accomplish continuing reduction in long-term overdraft, ...

the four required responses to the questions: “1. Explain how sustainable groundwater management exists or could likely be achieved in the basin:” , “2. Explain how the proposed boundary modification would affect the ability of adjacent groundwater basins to sustainably manage groundwater in those groundwater basins.” , “3. Provide a historical summary of the sustainable management of groundwater levels in the proposed basin(s) or subbasin(s)”, and “4. Discuss potential impacts to state programs resulting from the proposed boundary modification, including, but not limited to, the California Statewide Groundwater Elevation Monitoring (CASGEM), Groundwater Management Plans developed pursuant to AB 3030, Groundwater Sustainability Plans developed

pursuant to the Sustainable Groundwater Management Act, any applicable state or regional board plans, and other water management and land use programs.” cannot be answered with any credibility or ANY successful record of management or any performance other than results after 30 years which have produced the most severe and catastrophic ground water commons tragedy in the history of the Monterey Bay Region.

“Those who cannot remember the past are condemned to repeat it”, said George Santayana and DWR’s Mark Cowin just said “The most important thing that can happen is for counties to pass or strengthen ordinances that limit over-pumping,” California Department of Water Resources director Mark Cowin, said at a Wednesday morning press conference releasing the new data, collected by the National Aeronautics and Space Administration. “It will take that kind of action to have any real effect.”

Last year, the state created a framework to regulate groundwater — the first time in state history — but it won’t be fully implemented until 2020. And then it will take a decade or two for water levels to rebound, Cowin said.”

(<https://www.facebook.com/MontereyBayConservancy/photos/a.392629640759139.87659.177055962316509/1028178490537581/?type=3&theater>)

In this regard, absolutely no mention is made or any attention given by PVWMA to our Local Coastal Plan under the local and unique in the State ground water sustainability law, our “Santa Cruz Well Ordinance”, and laws contained therein which has outlawed any ground water overdraft since in 1987, but has been continuously and intentionally ignored and unenforced by the California Coastal Commission, Santa Cruz County supervisors, PVWMA, and apparently everybody else? (please see @ [www.pogonip.org/ord.htm](http://www.pogonip.org/ord.htm) , [www.pogonip.org/alm.htm](http://www.pogonip.org/alm.htm) , <http://www.metro-santa-cruz.com/metro-santa-cruz/09.23.09/news4-0938.html> , [www.ourinconvenienttruth.net](http://www.ourinconvenienttruth.net) , <https://www.linkedin.com/pulse/todays-santa-cruz-sentinel-douglas-deitch?trk=mp-reader-card> , <https://www.linkedin.com/pulse/pajaro-water-berry-ponzi-scheme-we-cant-print-up-any-douglas-deitch?trk=mp-reader-card> )

Finally, the most recent map of below sea level ground water levels progression from the years 2011-2013 in PVWMA, a full year before the 2014 PVWMA BMP was approved, indicate clearly that the situation has gotten far worse over this period and pumping during this period through 2014 at least has increased significantly 27% to require new studies to update this very questionable 2014. Does this 2014 BMP even state anywhere what the “sustainable yield” of PVWMA is in the first place anywhere? Does a ground water basin like PVWMA on the coast which is completely below sea level actually have any sustainable yield, at all.

Also, in the “Mid County Basin” application and formation process “private well owners’, such as myself ARE NOT BEING GIVEN ADEQUATE OR IN SOME INSTANCES ANY NOTICE OF THE VAROIUS PROCEEDINGS AND I BELIEVE THAT THIS IS INTENTION BY MR. RICKER TO MAINTAIN COUNTY CONTROL.

RESPECTFULLY SUBMITTED,

Douglas Deitch/ED  
Monterey Bay Conservancy  
(Also private well owner/resident @ 540 HudsonLane, Aptos, Ca., 95003

**Douglas Deitch**  
**3540 Porter Gulch Rd.**  
**Aptos, CA 95003**

## AN OPEN LETTER TO SOQUEL CREEK WATER DISTRICT VOTERS

Dear Soquel Creek Water District Voters and Customers,

I strongly urge you to replace the currently seated Soquel Water District Board to protect our ground water. No other measure is more critical to addressing our regional water crisis and to craft regional solutions. The following information is supplied to you to aid you in making the most informed decision in selecting the next Board of the Soquel Creek Water District in the upcoming election. After reading this, please feel free to contact me directly by phone at 476-7662 or email at [ddeitch@pogonip.org](mailto:ddeitch@pogonip.org) with any questions or discussion involving the material below. To review the lawsuit mentioned below, supporting materials, or the Grand Jury Complaint filed on this matter, please visit [www.montereybayconservancy.org](http://www.montereybayconservancy.org).

Soquel Creek Water District (SCWD) pumps its water (approximately 6,000 acre feet per year-AFY) from two different ground water basins. Two thirds of its water comes from the "Purissima" basin roughly underlying Soquel, Soquel Hills, and Capitola. One third of its water comes from the "Aromas Red Sands" basin (shared with the Pajaro Valley water district-PVWMA), which begins in Aptos/Rio del Mar and extends through Seascap, La Selva Beach, and the Pajaro Valley.

The present board and management of SCWD have always consistently stated that there is no "overdraft" in SCWD. However, this statement is disingenuous and as well as being grossly untrue. In fact, the overdraft in the "Purissima" alone is now acknowledged to be around 600 AFY by SCWD. However, SCWD has never acknowledged or quantified its share of the Aromas basin overdraft, shared with PVWMA.

The total Aromas Red Sands basin overdraft is 47,000 AFY or 200% of the safe sustainable 24,000 AFY basin yield. 85% of this use and overdraft is agribusiness. This Aromas basin 47,000 AFY overdraft causes a yearly permanent loss of ground water storage capacity in this shared basin of 15,000 AFY!

One acre foot per year serves two four-person families. Consequently, SCWD's and PVWMA's Aromas overdraft causes a yearly and permanent basin water storage loss (year in, year out) of enough water storage to serve 120,000 people. Every year, this is the amount of our groundwater that is permanently thrown away. Incidentally, the total population of Santa Cruz County is around 260,000.

What is this worth, in economic terms? Santa Cruz (SCMU) anticipates spending around \$70 million to address its long term need of around 6,000 AFY and SCWD anticipates spending around \$30 million to address its 2,000 AFY long term need. This adds up to \$100 million for 8,000 AFY of new supply from somewhere.

At this rate, the 15,000 AFY water storage capacity overused and thrown away yearly by SCWD and PVWMA has a value of approximately \$200 million. Every year!

For over the last two years, I have been involved in a lawsuit with the Santa Cruz County Board of Supervisors to protect our groundwater resources to require the Board to enforce their "Well Ordinance" and declare a "ground water emergency" in this situation (which the "Well Ordinance" requires that they do).

I have requested on numerous occasions to the presently seated SCWD board that SCWD join me in this lawsuit to have the "Well Ordinance" enforced by the Supervisors to protect our regional groundwater resources. I have gone so far as to offer to pay for the cost of having SCWD's legal counsel review my suit and advise the present SCWD board on its merits and the advisability of joining my action.

The current board of SCWD has consistently ignored me (and many others), my offer, and my lawsuit. Most significantly, the current SCWD board has never voiced any objection or in any way attempted to address or curtail PVWMA's unconscionable, yearly, primarily agribusiness' waste of our irreplaceable mutually shared Aromas ground water resource. Sadly, I have concluded that the presently seated, long term board has no understanding of this, or apparently any other contemporary regional water issues such as MTBE, Chromium 6, or arsenic contamination. Please replace them. This waste and mismanagement must be stopped.

Respectfully submitted,

**Doug Deitch**

Douglas Deitch  
 3540 Porter Gulch Road  
 Aptos, California, 95003  
 831-476-7662  
 September 6, 2003

## Statement & Announcement of Candidacy For Second District Supervisor

Dear Friends and Community Members

Be gentle with the Earth.

Since April of 1998, when the first comprehensive county wide Water Resources Management Report was completed, reviewed, and filed by the County Board of Supervisors, the Board has been under a continuous duty (which they have ignored) to declare a groundwater emergency in the unincorporated county areas of Soquel Creek Water District and Pajaro Valley Water Management Agency. This duty is created by the provisions on Declaration of a Groundwater Emergency contained in the County Well Ordinance (Section 7.70.130.A, County Codes), enacted and signed by Gary Patton in 1987, specifically to prevent *the possibility* of future saltwater intrusion into our vital regional groundwater supplies.

As indicated in the Water Resources Management Report, since 1998 PVWMA and SCWD have already been continuously evidencing a combined yearly permanent groundwater resource loss exceeding 15,000 a/ft/year *attributable specifically to saltwater intrusion*. Since 1998, these egregious and permanent environmental and economic losses aggregate and amount to a water supply for about one million people with an apparent market value of well over one billion dollars. No place in the world can sustain these types and volume of resource loss and abuse.

Prior to assuming their elected office, all supervisors must and do take an oath to follow the law. In spite of continuous notice to her over the last four years, Ms. Pirie and the entire board have willfully and wantonly (though not maliciously) ignored their sworn oath of office and duty to follow the law and declare this groundwater emergency to protect our groundwater resources. As Ms. Pirie is an attorney (as are Supervisors Almquist and Beautz), ignorance of the clear written meaning and mandate of the Well Ordinance can't be claimed as an excuse for her/their intentional non-compliance with this law.

As a consequence of this intentional breach of duty and oath of office to follow the law, Ms. Pirie should immediately resign her office or otherwise be removed from her elected position. My candidacy for the office of Second District Supervisor for the third time will be focused on disclosing to the electorate and public our ongoing water crisis/emergency, publicizing the ongoing permanent consequential economic and environmental damage being caused by this problem, and placing someone in the office of Second District Supervisor who will respect and follow the law, their oath of office, and protect our groundwater and other resources. As I supported Ms. Pirie in the last election (and personally like her), I regret the necessity of making these statements about only her deficiencies in her performance as Supervisor, withdrawing my support, and opposing her. However, replacing her with someone who will protect our groundwater is imperative.

Over the last two elections, approximately 10% of the voters in my district have honored me with their support and vote. I ask for your support again and assure you that your 10% of votes can and hopefully will make the difference in putting somebody new in the Second District Office who will respect and follow our laws, rather than, apparently, place themselves above them. I invite all other qualified candidates who will follow the law to please put their names up for election, as well.

It is of paramount importance to our community that we remain a system with a rule of law where oath of office and respect and observance of duty under the law be always observed. Unfortunately, this is not occurring now and the costs of this noncompliance (economically, socially, and environmentally) are ruinous to the way and quality of life we so fortunately enjoy here...

For more information or comment, please visit my website and email me at [dougforsupervisor.com](http://dougforsupervisor.com)

Respectfully,

*Doug Deitch*  
 Douglas Deitch

*ps. first in a series...*

www. theBestThatMoneyCantBuy.org @ minute 11:26

SWRCB Board Meeting - April 19, 2016



4/19/16

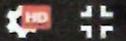
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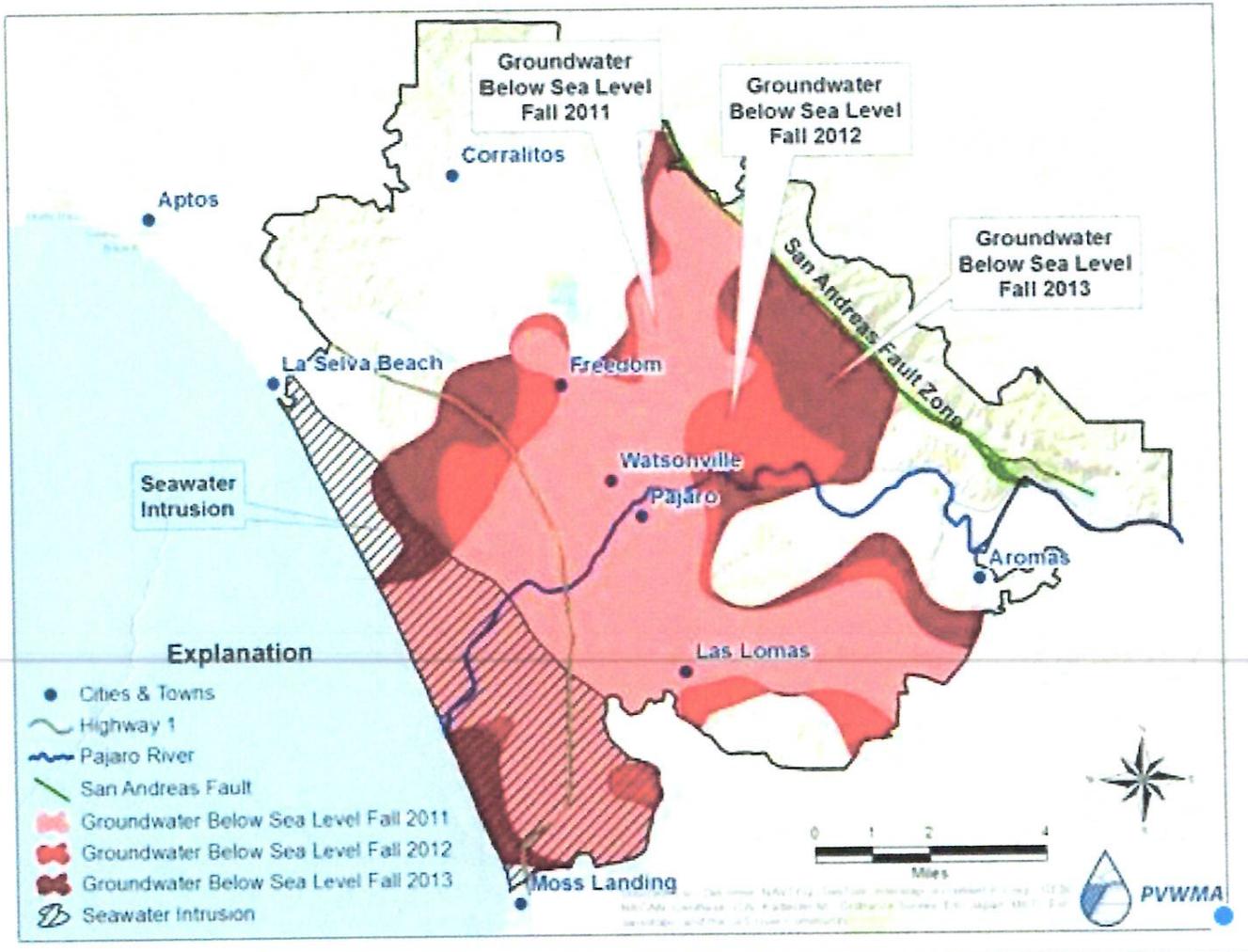
**SWRCB Board Meeting**

10:43



▶ | 🔊 14:18 / 9:34:33





BOARD OF SUPERVISORS  
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# COUNTY OF SANTA CRUZ

GOVERNMENTAL CENTER

701 OCEAN STREET SANTA CRUZ, CALIFORNIA 95060

DAN FORBES  
(FIRST DISTRICT)

ROBLEY LEVY  
(SECOND DISTRICT)

GARY A. PATTON  
(THIRD DISTRICT)

E. WAYNE MOORE, JR.  
(FOURTH DISTRICT)

JOE CUCCHIARA  
(FIFTH DISTRICT)

April 24, 1981

Douglas Deitch  
3540 Porter Gulch Road  
Aptos, CA 95003

Dear Mr. Deitch:

I appreciate very much your application to serve on the Water Advisory Commission. I have recently made an appointment to the Commission, but hope that you will retain your interest in the needs and problems concerning water. I would like to be able to call upon your help in the future. Your willingness to serve our community is greatly valued.

Sincerely yours,

ROBLEY LEVY, Supervisor  
Second District

RL:sf



U.S. Geological Survey hydrologist Michelle Sneed is photographed at a groundwater monitoring well along the Delta-Mendota Canal Tuesday, Feb. 11, 2014 near Los Banos, Calif. Damage to the canal from possible groundwater subsidence is being studied by the agency. (Aric Crabb/Bay Area News Group)

By Lisa M. Krieger, [lkrieger@mercurynews.com](mailto:lkrieger@mercurynews.com)

Posted: 08/19/15, 6:37 PM PDT | Updated: on 08/19/2015

[5 Comments](#)

Satellites measuring the great Central Valley reveal that the land is dropping faster than ever before, as the state's devastating drought causes thirsty Californians to drain a subterranean reservoir.

Some places are sinking almost 2 inches a month, a trend that so alarms officials that they are urging regulation of new wells.

"The most important thing that can happen is for counties to pass or strengthen ordinances that limit over-pumping," California Department of Water Resources director Mark Cowin, said at a Wednesday morning press conference releasing the new data, collected by the National Aeronautics and Space Administration. "It will take that kind of action to have any real effect."

Last year, the state created a framework to regulate groundwater — the first time in state history — but it won't be fully implemented until 2020. And then it will take a decade or two for water levels to rebound, Cowin said.

NASA found two "hotspots" of greatest subsidence. One was near the town of Corcoran, between Fresno and Bakersfield. Another was near the town of El Nio, near Chowchilla.

The scientists also found areas near the California Aqueduct sank up to 12.5 inches, with eight inches of that occurring in just four months of 2014.

Subsidence has already damaged wells, roads, bridges and aqueducts — and further sinking has the potential to damage them still more, according to authorities. Already, changes in elevation mean that state irrigation water must be moved into the Delta-Mendota Canal from behind the Mendota Dam, located at the confluence of the San Joaquin River and Fresno Slough, said Jeanine Jones, DWR's deputy drought manager and interstate resources manager.

"Because of increased pumping, groundwater levels are reaching record lows — up to 100 feet lower than previous records," Cowin said in a prepared statement. "As extensive groundwater pumping continues, the land is sinking more rapidly and this puts nearby infrastructure at greater risk of costly damage."

The floor of the fertile Central Valley is filled with deep layers of clay, sand and gravel, left by ancient lakes and streams. Between these layers is fresh water, called aquifers.

As water is extracted, the layers' loose clay particles compress, stacking like pancakes. Then the heavy ground above them collapses. Even when the aquifer recovers, the ground may stay damaged, capable of holding less water.

NASA obtained the subsidence data by comparing satellite images of the Earth's surface over time.

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### Bullhorn:

Weighing in on the desal debate, Doug Deitch of the Monterey Bay Conservancy and multiple runs for supervisor wonders why nobody mentions a 1987 well ordinance that could have been invoked to stop aquifer overdraft.

By Douglas Deitch

ON JAN. 6, 1987, then--Supervisor chairman Gary Patton signed into law the "County Well Ordinance." This law, one of many conceived and designed by Mr. Patton, was intended to protect our groundwater from contamination from a number of possible causes. In this ordinance, saltwater intrusion from basin overdraft was and still today is specifically noted and covered by this law.

Mr. Patton's law was carefully crafted by him as a part of our local coastal plan so, notwithstanding the promise of desalination or anything else, the natural limit of local water supplies could not legally be ignored by our supervisors. This was achieved by requiring that the Board of Supervisors immediately declare a groundwater emergency and take specific remedial measures in any county groundwater basin which is in overdraft and drawing water beyond that basin's sustainable yield.

Although quite possibly all county basins were actually in overdraft in 1987, the first comprehensive County Water Resources Report in 1998 officially established these overdraft conditions in all our local aquifers. In this report, saltwater intrusion resource loss in Soquel Creek's and PVWMA's shared basin, the Aromas Red Sands, was estimated to be 15,000 acre feet of loss per year. Water use was quantified at a massive yearly 200 percent or three times overdraft, around 90 percent used and exported in 25 percent of this country's berries. No remedial or any actions have ever been taken by our supervisors, as required by Mr. Patton's law.

To replace this amount of water loss would require construction and full time operation of around seven new \$40 million to \$100 million Santa Cruz desal plants. Put another way, Soquel Creek Water District is draining the equivalent of seven desal plants a year to saltwater intrusion, year in and year out for 20--30 years, at one end of their district, and they want to partner with SCMU to build one plant by 2015 at the other end to address this problem?

Does this seem like a "sustainable" solution? We will have lost the equivalent of another 42 Santa Cruz desal plants' water by then--and that's added on to the 84 plants's worth of water officially lost since 1998! We're talking billions of dollars of our irreplaceable water supply permanently gone, expropriated from our water commons in berry product by primarily transnational tenant agribusinesses like Driscolls, Dole, CalGiant and TriCal--the Bromide Barons--and yes, UC, too. That's why the late Marc Reisner, author of *Cadillac Desert*, speaking here in 1998, described this same loss as "the worst in the world."

I have heard and read with much interest a number of Mr. Patton's recent letters and statements on the radio and in news articles in this paper last week and elsewhere relating to our water, the new desal plant, UCSC expansion, Atkinson Lane development in Watsonville and other local land use matters in the Greater Monterey Bay Region. Yet, since 1998, I have never one time heard one word from Mr. Patton mentioning his well rdinance and its requirement, crafted by him, that our Board of Supervisors declare a "groundwater emergency" and implement the reasonable and required remedial measures he designed into the law to protect our water supply for us, our children and our grandchildren. I wish he would please explain to us all why he hasn't and why he remains silent while his well ordinance and the water supplies it is designed to protect and conserve is ignored and disregarded continuously since 1998 by his successors, supervisors Wormhoudt and Coonerty, and, apparently, by himself as well.

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*Aptos resident Doug Deitch is executive director of the Monterey Bay Conservancy.*

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**Gary A. Patton** Doug, I appreciate your consistent efforts to draw attention to the importance of the Santa Cruz County ordinance you are citing to in this comment. If you will notice, the action taken on January 6, 1987 would have been a consent agenda final adoption of an ordinance debated and adopted preliminarily at an earlier meeting. I don't, in fact, remember the genesis of this item, which you have always attributed to me. Maybe that isn't correct. On January 6, 1987, I signed the ordinance on behalf of the Board, since I was the Chairperson. That doesn't mean that I actually did anything special, and the "Patton Record" was my (not infallible) effort to document those items for which I could claim some personal responsibility, and that I thought important when I did the recording. Probably, I just omitted a reference that in retrospect I should have placed within the listing; or possibly I had nothing at all to do with the ordinance, in terms of personal leadership, and so omitted it from the list on that basis. At any rate, I am glad that this ordinance exists, and I tend to agree with you that those in charge of Santa Cruz County government at the current moment would do well to think about utilizing its provisions.

March 27 at 9:26am · Unlike ·  5

ORDINANCE NO. 3806

AN ORDINANCE REPEALING EXISTING CHAPTER 7.70 RELATING TO WATER WELLS AND ADDING NEW CHAPTER 7.70 RELATING TO WATER WELLS

SECTION I

Chapter 7.70 of the Santa Cruz County Code is hereby repealed.

SECTION II

Title 7 of the Santa Cruz County Code is hereby amended by adding Chapter 7.70 thereto, said new Chapter to read:

CHAPTER 7.70

Sections:

- 7.70.010 Purpose of Provisions.
- 7.70.020 Definitions.
- 7.70.030 Permit—Required—Issuance.
- 7.70.040 Permit—Expiration
- 7.70.050 Permit—Suspension or Revocation.
- 7.70.060 Licensed Contractor Required.
- 7.70.070 State Reporting.
- 7.70.080 Inspections.
- 7.70.090 Technical Standards.
- 7.70.100 Special Groundwater Protection.
- 7.70.110 Pajaro Groundwater Protection Zone.
- 7.70.120 Soquel Creek Service Area Restrictions.
- 7.70.130 Groundwater Emergencies
- 7.70.140 Abatement—Investigation.
- 7.70.150 Abatement Generally.
- 7.70.160 Nuisance—Abatement of Safety Hazard.
- 7.70.170 Variances.
- 7.70.180 Amendments.

7.70.010 Purpose of Provisions.

It is the purpose of this chapter to provide for the construction, repair, and reconstruction of all wells, including cathodic protection wells, test wells and monitoring wells, to the end that the groundwater of this county will not be polluted or contaminated and that water obtained from such wells will be suitable for the purpose for which used and will not jeopardize the health, safety or welfare of the people of this county. It is also the purpose of this chapter to provide for the destruction of abandoned wells, monitoring wells, test wells, and cathodic protection wells found to be public nuisances, or when otherwise appropriate, to the end that all such wells will not cause pollution or contamination of groundwater or otherwise jeopardize the health, safety or welfare of the people of this county. It is also the purpose of this chapter to implement policies of the County General Plan and the Local Coastal Program Land Use Plan.

## 7.70.130 Groundwater Emergencies

A groundwater emergency shall be declared in areas demonstrated to be experiencing a groundwater overdraft exceeding the safe yield in order to prevent further depletion and degradation of water resources where such degradation threatens the public health, safety and welfare of the community. The emergency shall have no effect on drilling of monitoring or cathodic protection wells.

-8-

V a. Declaration. A declaration of a groundwater emergency shall be made by the Board of Supervisors only after a public hearing. Such an emergency shall be declared by resolution of the Board after the public hearing to consider all relevant information such as, but not limited to, the most current groundwater study, recommendations of water purveyors and the Water Advisory Commission and only after the following findings can be made:

- V 1. The designated area is experiencing a groundwater overdraft exceeding the long-term average annual recharge of groundwater resource;
- V 2. The creation of new wells or the expansion of existing wells will significantly increase the demand on the affected aquifer and thereby increase the overdraft; and
- V 3. The continuation of the overdraft will result in further depletion and degradation of the water resource that can lead to, but is not limited to, impairment of the aquifer or allowing the ingress of low-quality or saline waters.

V b. Immediate Measure to Alleviate. In areas where a groundwater emergency is declared, the Board of Supervisors shall take action to establish water conservation measures (1) to limit construction of new wells (2) to regulate pumping from or expansion of existing wells, and in order to prevent further depletion and degradation of the affected aquifer. In taking these actions, the Board shall give consideration to the seasonal needs of agriculture including, but not limited to, the following factors.

1. Agriculture's need to repair, maintain and replace existing wells serving existing agricultural use acreage;
2. Well construction for agricultural use to serve existing agricultural acreage when new parcels are created due to change in legal ownership, split parcels or parcels created by change in zoning laws or other governmental regulations; and
3. The different water requirements of agricultural crops.

V c. Long-term Measures to Alleviate. The Board shall initiate actions such as, but not limited to, joint power agreements with other agencies with the goal of finding permanent solutions to the groundwater problem.

d. Duration. A groundwater emergency and the measures enacted to alleviate the emergency shall remain in effect until rescinded as established in Subsection F of this Section.

e. Annual Review. The establishment of a groundwater emergency and all actions to alleviate the emergency shall be reviewed by the Board of Supervisors within one year of the date of enactment of the measures at a public hearing to decide whether the declaration of emergency shall remain in effect.

-9-

7.70.180 Amendments

Any revision to this chapter which applies to the coastal zone shall be reviewed by the Executive Director of the California Coastal Commission to determine whether it constitutes an amendment to the Local Coastal Program. When an ordinance revision constitutes an amendment to the Local Coastal Program, such revision shall be processed pursuant to the hearing and notification provisions of Chapter 13.03 of the Santa Cruz County Code, and shall be subject to approval by the California Coastal Commission.

SECTION III

This ordinance shall take effect upon certification by the State Coastal Commission, or after 30 days, whichever is greater.

PASSED AND ADOPTED this 6th day of January, 1987, by the Board of Supervisors of the County of Santa Cruz by the following vote:

AYES: SUPERVISORS Forbus, Levy, Mehl, Cucchiara, Patton  
NOES: SUPERVISORS None  
ABSENT: SUPERVISORS None

[Signature]  
Chairperson of said Board

ATTEST: [Signature]  
Clerk of said Board

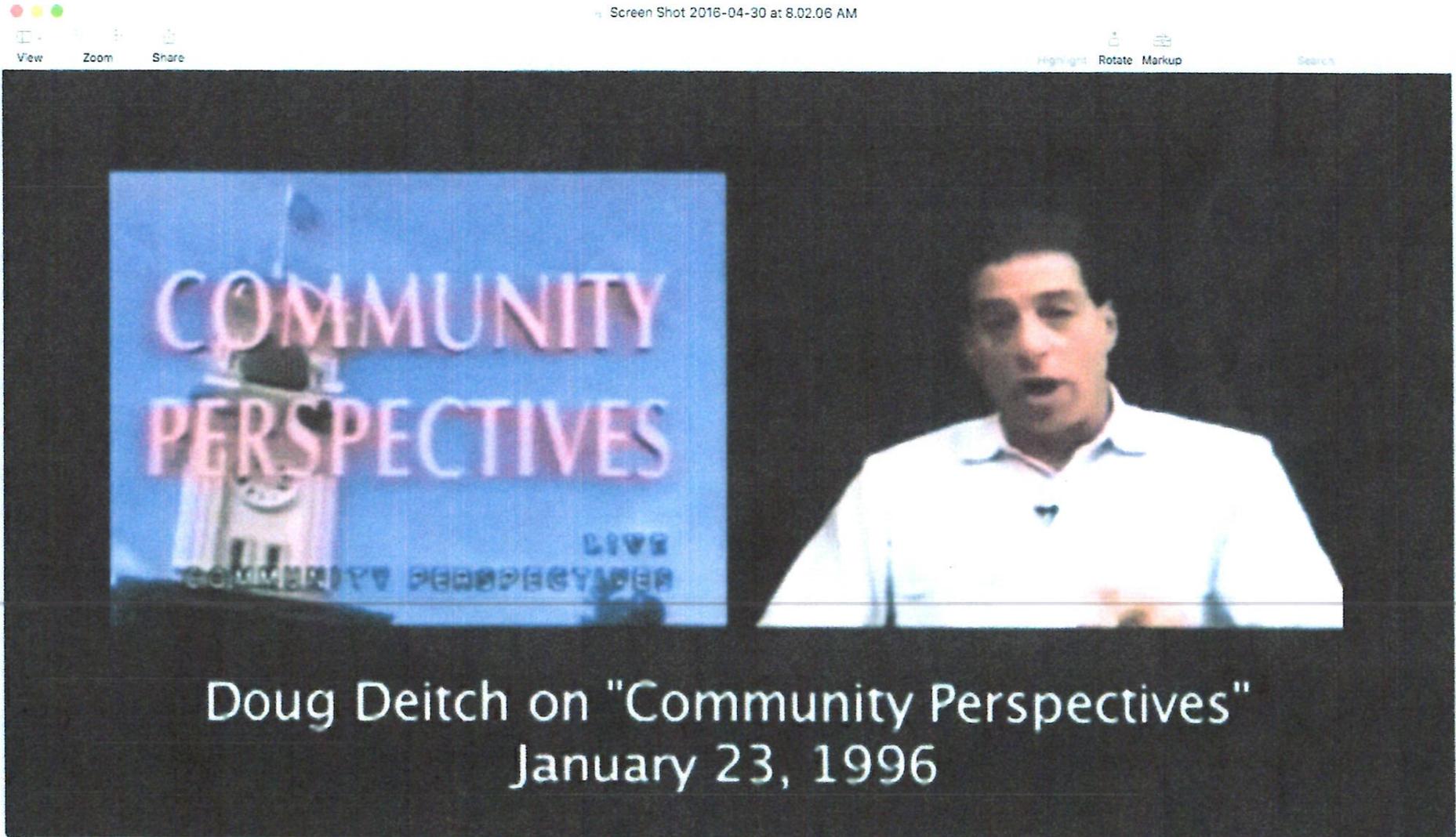
APPROVED AS TO FORM:

[Signature]  
County Counsel

CC:

County Counsel  
Planning  
Environmental Health  
Health Services Agency

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AND JURY



# COUNTY OF SANTA CRUZ

GOVERNMENTAL CENTER

P.O. BOX 542 701 OCEAN STREET  
SANTA CRUZ, CALIFORNIA 95061  
(408) 454-2099

September 20, 1999

Douglas Deitch  
3540 Porter Gulch Road  
Aptos CA 95003

Dear Mr. Deitch:

The Santa Cruz Civil Grand Jury is in receipt of your complaint dated September 3, 1999, and assigned case #SD99-104.

We will advise you of the disposition of this complaint.

Thank you for bringing this matter to our attention.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Al Richard".

Al Richard, Foreperson

## Opinion

VIEW @ www.thebestthatmoneycantbuy.net

Friday, May 14, 1999 - Page 4

### It's all about 'our' water, right?

I'm very concerned about our water. After reading this, I hope you will be, too. Did you notice how I said "our" water? Although I, like around maybe 2,000 of my neighbors in Soquel Creek Water District, have my own private well, it's still all "our" water. Make no mistake about it.

In case you didn't know, excluding the relatively small amount provided to the City of Santa Cruz from the San Lorenzo River, by far the largest proportion of "our" water supply in Santa Cruz County and the entire Monterey Bay Region is water stored in the ground and is supplied to us via someone's well. We don't import water. We are entirely dependent on our finite and irreplaceable underground storage in a number of different basins or aquifers. And, by the way, don't expect that the boundaries of these basins correspond in any consistent or logical way to the boundaries of the above ground agencies that oversee "our" water. They don't.

All my neighbors (including my water district, Soquel Creek Water District) and I have our straws in the same two underground reservoirs, the Purisima and the Aromas Red Sands to the south. Purisima supplies about two-thirds of SCWD's water, with Aromas Red Sands making up the rest. We all just can't see it.

SCWD customers pay for the district's services and overhead in their bills. Whether we receive service or not though, none of us pay anything currently for "our" water, like they now must in Pajaro (PVWMA). It's "free" here. History has shown us again and again how the greatest of civilizations and societies have been toppled from their heights through their foolish inattention to or their arrogant or greed driven miscalculations about their water. I would hope that we could somehow be different here. However, apparently, it looks like we must have a low historian count here in the Monterey Bay Area.

I had been basically a city dweller for all my 21 years when I married and moved to the Santa Cruz Mountains 30 years ago, and I acquired my first well. Iron water. Try it sometime and you'll start getting the idea about what's



Doug Deitch

Guest columnist

When I considered moving to my present home in Aptos five years later, the first thing I did was walk into the kitchen, turn on the faucet, and draw and drink a glass of the finest I never left.

My family and I have been fortunate enough to enjoy this miraculous blessing that has been freely provided to us except for small electric and equipment costs. We all in this region have been blessed by this wonderful, hidden resource which has been created over eons in geologic time by the filtering flows and storage of this most essential fluid. This abundant natural system could have operated continuously at its original productivity and would have provided our children and us with a sustainable supply for all of our reasonable needs. However, our needs were and are not reasonable. As a result of this, our underground resource, which we all must necessarily and reasonably attempt to share to sustain ourselves, cannot and will not itself be sustained.

The reason for this failure is that our needs now require that agribusiness and farming (which use 80 percent or more of our supply without any control) chronically overdraft our underground storage. The massive overdraft causes approximately an annual and permanent loss of irreplaceable underground storage capacity equal to two Loch Lomonds worth (15,000 acre feet) of water storage. Our needs further require that thousands of acres of orchard be ripped up to be replaced by water intensive fields and crops using 3 to 4 or more times as much water. These new crops drink hard and deep into coastal aquifers until chloride (salt) levels escalate beyond the crop's tolerance. Once polluted with saltwater, wells are moved inland until they too are also claimed by chloride and made

laminated. Then other more inland parcels are purchased, new high production wells are punched beckoning the sea further inland yet, and pipeline is placed back to the coastal fields. That's all "our" free water being mined there.

"Free" water must, by definition, cost nothing. However, there are enormous costs. We just haven't started paying them yet. The costs are permanent, irreplaceable, massive, and annually recurring loss to the principal balance of our groundwater bank account. The district has measured salt water in coastal wells. The La Selva Beach test well chloride results exponentially degraded from 80-130 ppm (parts per million) chloride in 1993 to over 2,700 ppm in just four years in 1997. The drinking water limit for chloride is 250 ppm. Chloride in seawater is measured 19,000 ppm. So the decline of the Aromas Red Sands quickens as "our" storage is claimed by the sea.

During the past 20 years, the same Board of Directors of Soquel Creek Water District has silently stood by and passively allowed one-third of its supply in "our" southerly aquifer, shared with Pajaro (PVWMA), to be drained away. This supply has supported unconscionably abusive agricultural overdrafting there. To find solutions, district directors in desperation must now seek new and tenuous measures such as a new well which very possibly threatens the viability of Soquel Creek as a living waterway.

Cabrillo College is also impacted. The college is the largest and, after fire suppression, the most vital and essential user in SCWD's service area. The campus is a few blocks down Soquel Drive from the district's office. However, the college must, apparently, consider drilling a new well on site, due to SCWD's lack of foresight and

"Free" water must, by definition, cost nothing. However, there are enormous costs. We just haven't started paying them yet."

vice need projected to be flat for 20 years of only 1 percent of SCWD's annual production. Is there any other 14,000-plus student college, located in an urban corridor and undergoing an \$85 million expansion, located anywhere in this country being provided water service by a well? Certainly not UCSC.

I don't pay anything for my "free" water now. However, I'm ready to start because the solutions will be expensive. As a matter of fact, I even want to start paying at a rate at least twice as much as they are paying in PVWMA, and I'd suggest to all of you that you might want to consider this as well. I guess I knew nothing so good could really be free. The costs are very expensive now but will get only more expensive as we continue on allowing our water to be used in the way we are allowing it to be used. Yes, the costs are large, but they are only being deferred to the future. The piper will be paid and the buck must stop for now at the Boards of SCWD, PVWMA, and our county supervisors.

I just hope we don't have to pay the biggest cost. Because, in the end, I believe the greatest cost for our decades of neglect of our water will be the irreplaceable loss of the unique quality of life we enjoy here, which is so much enhanced by the aesthetic and cultural landscape created by our diverse community. This community has been and is substantially grounded in a rural/agricultural base and tradition, which necessarily must be changed and lost once the brutally managed, once abundant ground water resource which once so well sustained it and us is gone forever. I'll miss it.

Douglas Deitch is the executive director of the Monterey Bay Conservancy in Santa Cruz. These views are solely those of Mr. Deitch and not necessarily those of the Register Pa

*View at*

<http://pogonip.org/alm.htm>



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WALTER J. SYMONS  
SECOND DISTRICT

MARDI WORMHOUDT  
THIRD DISTRICT

RAY BELGARD  
FOURTH DISTRICT

JEFF ALMQUIST  
FIFTH DISTRICT

AGENDA: 6/16/98

June 12, 1998

BOARD OF SUPERVISORS  
County of Santa Cruz  
701 Ocean Street  
Santa Cruz, CA 95060

RE: SETTING PUBLIC HEARING TO CONSIDER DECLARATION  
OF GROUNDWATER EMERGENCY IN THE PAJARO VALLEY

Dear Members of the Board:

There has been considerable public discussion about the status of the groundwater resources in the Pajaro Valley. On June 2, 1998, the voters in the Pajaro Valley Water Management Agency's (PVWMA) jurisdiction adopted Measure E which mandates, for a period of 10 years, that the PVWMA shall postpone design or construction of a pipeline to import water into the Pajaro Valley, imposed a 10 year moratorium on the purchase by the PVWMA of water from any source outside of its boundaries, and also mandated a reduction in the augmentation fees charged to water users in the Pajaro Valley, fees which are used as a means of supporting projects to improve or develop water resources.

There seems to be little doubt that the water resources available to the PVWMA and its users are in a state of overdraft. Last week, in considering Item 53 on our Board agenda related to creation of positions in the County government to help focus the development of County water policies, we also accepted a document entitled "An Evaluation of Water Resources Monitoring and Management Efforts in Santa Cruz County." The summary of that document, made a part of the agenda item as Attachment 6, in the section entitled "Issues Specific to South County/Pajaro," made the following factual findings:

- \*2. Annual pumpage in the Pajaro Basin is 60,000 acre-feet/year. The safe yield of the basin is cited in the Basin Management Plan as 31,000 acre-feet/year. Overdraft is approximately half of demand. The PVWMA is planning to develop an additional 28,000 acre-feet/year to meet demands through the year 2040.

*61.1*

Monterey Bay Conservancy  
501 Mission Street  
Santa Cruz, CA 95060  
(831) 429-4009  
www.mbcnp.org  
Fed. ID# 778442973

# County of Santa Cruz

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TONY CAMPOS  
FOURTH DISTRICT

JEFF ALMQUIST  
FIFTH DISTRICT

April 11, 2000

Douglas Deitch  
3540 Porter Gulch Road  
Aptos, CA 95003

Dear Mr. ~~Deitch~~:

*Doug*

Thank you for your letter dated April 6, 2000, requesting that the Board reconsider the action taken at our February 15, 2000, meeting with regard to Item 61, a progress report on ongoing activities to mitigate overdraft in the Pajaro Valley. It is my personal belief that the action taken by the Board at that time was appropriate and, accordingly, I am respectfully declining your request to bring the matter back before the Board. However, I have circulated a copy of your letter to each Supervisor for their individual consideration.

Sincerely,

*Mardi*

MARDI WORMHOUDT, Chair  
Board of Supervisors

MW:ted

cc: Clerk of the Board  
Planning Department

1977A6

BOARD OF SUPERVISORS



# COUNTY OF SANTA CRUZ

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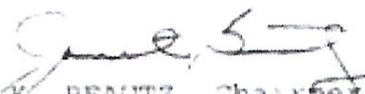
June 19, 1998

Douglas Deitch  
Pogonip Foundation  
501 Mission Street  
Santa Cruz, CA 95060

Dear Mr. Deitch:

Thank you for your letter dated June 17, 1998, requesting that the Board set a public hearing to consider a declaration of the existence of a countywide groundwater emergency. I believe that Board members clearly understood that you felt that this matter should be considered on a countywide basis--not just with regard to the Pajaro Valley Water Management Agency. Despite this fact, there were not three votes for the recommendation of Supervisor Almquist to hold a public hearing related to the PVWMA, nor was any motion made to hold a hearing to discuss this matter on a countywide basis. However, I have provided a copy of your letter to each member of the Board for their individual consideration.

Sincerely,

  
JANET K. BEAUTZ, Chairperson  
Board of Supervisors

JKB:ted

cc: Clerk of the Board  
Members, Board of Supervisors  
Planning Department

1024A6



August 28, 2003

# County of Santa Cruz

---

## GRAND JURY

701 Ocean Street, Room 318-1  
Santa Cruz, California 95060  
(831) 454-2099

Mr. Douglas Deitch  
3540 Porter Gulch  
Aptos, CA 95003

Reference: Request for Grand Jury Action  
Complaint cc- 03-001  
RE: County Board of Supervisors

Dear Mr. Deitch,

This is to acknowledge receipt of your complaint referenced above. Your request will be considered by the Santa Cruz County Grand Jury. Should you have additional information, please forward it for inclusion with the complaint file.

Law and policy prohibit the Grand Jury from disclosing any aspect of an inquiry. Recommendations, if any, may be contained in the Grand Jury Final Report.

Be assured that your identity will be known only to the Grand Jury. We are sworn to secrecy to ensure confidentiality of your identity and any information you may supply to us.

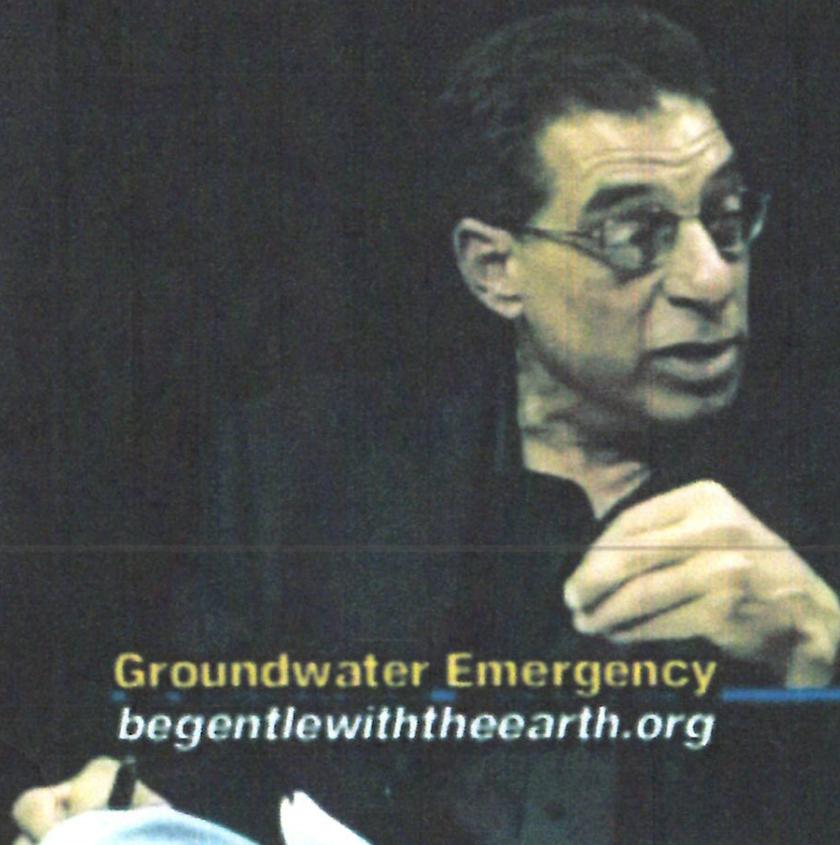
Sincerely,

Otis Johnson, Foreperson  
2003-04 Santa Cruz County Grand Jury

cc: Grand Jury File  
CC Committee

www.ourinconvenienttruth.com

Jan 7, 2007



Groundwater Emergency  
begentlewiththeearth.org

voices

 Douglas Deitch Write in For State Assembly-29th District/VOTE NO on STONE  
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"Our Inconvenient Truth",  
[www.ourinconvenienttruth.com](http://www.ourinconvenienttruth.com) . January 4, 2007.  
Santa Cruz Community Television

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00 of 14

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EIP Newsletter

October, 1993

# Final Program, Environmental Impact Report

Basin Management Plan

State Clearing House No.: 9302-3035

**VOLUME 1: Revised Draft EIR**



**Pajaro Valley Water Management Agency**



executing the BMP. The No Project Alternative is defined as no remedial action. That is to say, no plans, policies, programs, or projects would be undertaken by the PVWMA or any other body or individual in the Basin. Ground water would continue to be the source of water for agricultural irrigation, industrial and commercial use, and domestic residential use. Ground water use would increase to meet higher future water demand. The Basin's overdraft condition would worsen. Seawater intrusion would continue to advance underneath the coastal lands at the current rate of 10,000 acre feet per year or higher. Irrigation with ground water would continue along the coast area until the salt content in the soils built up to the point where agricultural crops could not grow. Domestic wells along the coast would also become unusable as the sodium content increased. No substitute water supplies would become available other than purchasing bottled water.



1.2.4 Demand Management Only Alternative = following

Section 10.2.4, Demand Management Only Alternative, of the BMP contains a more detailed discussion. This alternative would use only demand management measures to achieve the Agency's water management objectives: to balance water use and supply in the Basin and progressively decrease seawater intrusion. The Basin would be brought into balance through mandatory basin-wide pumping controls only, for residential, agricultural, and industrial users. Ground water modelling has indicated that it would be necessary to reduce ground water use by 60 percent from current levels. All users in the Basin would receive only 40 percent of their current needs by the year 2040. Since municipal and industrial uses comprise 23 percent of current use, the major reduction would fall on agricultural users. In effect, this would reduce agricultural operations by 40 to 60 percent and halt or reduce current levels of municipal and industrial development (refer to the following socioeconomic discussion). This Alternative represents the most probable scenario if the State Water Resources Control Board were to intervene. State intervention would occur as a result of the PVWMA's failure to implement a BMP, which is in essence what would occur under this Alternative. The State by statutory adjudication would institute someone to regulate and oversee the appropriation of water in the Basin, resulting in stringent pumping controls.



There are however, other ways the Demand Management Alternative could be formulated which would involve the acquisition of land or water rights to meet overdraft reduction goals. The BMP considered a demand management element which involved the acquisition of land to meet overdraft reduction goals. The retirement of 6,500 acres of coastal area land from irrigated agriculture could allow long-term sustainable pumping of 50,000 AF/yr. This water could be shared by the remaining

So ... to get to the point... @ [www.thebestthatmoneycantbuy.com](http://www.thebestthatmoneycantbuy.com)

I have an 8000 acre real estate acquisition/project/deal here in the Monterey Bay which doubles as a shovel ready but no shovel even required 24,000 acre feet per year \$400,000,000 Prop 1 funded ground water and habitat/wetlands/coastal access "Coast Dairies II" type conservation project.

May I describe it to you as I did recently in a comment to "Shaping Ground Water Storage" in the California Water Blog @

<http://californiawaterblog.com/.../shaping-water-storage-in-.../> ?

"Douglas Deitch says:

November 20, 2014 at 11:39 am

As we all know, our natural systems such as particularly our ground water aquifers, provide the best opportunities for California water storage. Just eliminating chronic overdraft and water mining of critically important food production related water commons to stop the bleeding and commence living within the sustainable agricultural carrying capacity would be a major victory and is a more than obvious place to start.

Monterey Bay Conservancy has been continuously proposing such a water project in the Monterey Bay/Pajaro Valley-PVWMA Region since 1998 ( <http://www.pogonip.org/solution.html> , <http://www.pogonip.org/WaterD.../98USGSTechnicalMemorandum.pdf> , <http://www.begentlewiththeearth.net/> , <http://www.begentlewiththeearth.org/> ) to correct the decades long massive ag overdrafting and water mining in this area which has actually increased by over 27% over the last few growing seasons in response to this record drought, with no production reductions at all.

With the passage of the \$7.5 billion water bond, around \$400,000,000 is now available to implement a shovel ready (but no shovel even required) immediate and 100% sure fire in perpetuity 24,000 acre foot per year water conservation project which will terminate all future salt water intrusion in this area, provide sustainable local ground water for all users, protect in perpetuity some of this country's most rare and critical habitats, wetlands, and farmlands, improve coastal access, improve and diversify the local economy and protect food production, and publicly acquire and fallow/dry farm, for around \$50,000 per acre ... <http://www.santacruzsentinel.com/.../retired-federal-judge-bu...> ... the around 8000 plus acres of irrigated farmlands, 25% of Pajaro Valley's total, on the ocean side of Highway One from La Selva Beach, in Santa Cruz County, to Elkhorn Slough in Monterey County.

I submit there is no better utilization of around 5% of this bond's funding in the State of California ... and commencing living within our water means here in the Monterey Bay.

If you think this approach might be a good one, as well, please repost this and pay a few bucks to "boost" it to others here in the Monterey Bay and California on Facebook who might feel the same.

Many thanks,  
Douglas Deitch



**Douglas Deitch** says:

May 11, 2015 at 8:14 am

... please specifically note re: "New Ground Water Sustainability" legislation,

**"10720.5. NO MODIFICATION OF WATER RIGHTS OR PRIORITIES, AND NO DETERMINATION OF WATER RIGHTS PURSUANT TO THIS PART**

**(a) Groundwater management pursuant to this part shall be consistent with Section 2 of Article X of the California Constitution. Nothing in this part modifies rights or priorities to use or store groundwater consistent with Section 2 of Article X of the California Constitution, except that in basins designated medium- or high-priority basins by the department, no extraction of groundwater between January 1, 2015, and the date of adoption of a groundwater sustainability plan pursuant to this part, whichever is sooner, may be used as evidence of, or to establish or defend against, any claim of prescription.**

**(b) Nothing in this part, or in any groundwater management plan adopted pursuant to this part, determines or alters surface water rights or groundwater rights under common law or any provision of law that determines or grants surface water rights."**

# Water activist sues county board

By DAN WHITE  
Sentinel staff writer

SANTA CRUZ — Doug Deitch, an unsuccessful candidate in this year's Board of Supervisors race, is suing the board, saying it has been negligent in its handling of the Pajaro Valley's water troubles.

Deitch, a property manager, made water issues the center of his supervisory campaigns in 1996 and again this year, losing both times by a wide margin.

Deitch's lawyer, Alexander Henson of Carmel, said the suit is an attempt to force the supervisors to declare a ground-water emergency in the Pajaro Valley, which has long wrestled with problems like water overdraft and sea water creeping into the

underground supply of fresh water.

Supervisors considered declaring a ground-water emergency last year, which would have enabled the county to take over water-management duties from the Pajaro Valley Water Management Agency. Ultimately, the supervisors opted against the idea in part because of concerns over their legal jurisdiction.

Supervisor Mardi Wormhoudt said Friday that the lawsuit, filed in Santa Cruz County Superior Court, strikes her as a publicity stunt.

"I appreciate Mr. Deitch's concern about water overdraft in South County," she said. "But if he thinks that it is going to be solved by his filing a lawsuit against the Board of

**"If he thinks that (the water problem) is going to be solved by his filing a lawsuit against the Board of Supervisors, I wouldn't want to rely on him to water my garden."**

— Mardi Wormhoudt, county supervisor

Supervisors, I wouldn't want to rely on him to water my garden."

"What he thinks will be accomplished by this, other than publicity for himself, I really don't know," she said.

The Pajaro Valley Water Management Agency has argued that the supervisors

doesn't have authority over it because the agency was created by the state Legislature in 1984.

Deitch's suit was filed May 12. Henson said the county board has until early June



to respond.

In recent years, the board has been divided on the idea of a ground-water emergency.

Wormhoudt said the county does need to keep working on the issue, "but that doesn't mean I think we need to step in and take over the job of elected members of water districts."

The Pajaro Valley water agency estimates that Pajaro Valley farmers and residents pump out approximately 69,000 acre feet of water per year. An acre foot equals 326,000 gallons of water, enough water for about four households in a year.

In comparison, rainfall and other sources

Please see LAWSUIT—PAGE A12

## Lawsuit

Continued from Page A9

recharge the water tables only 31,000 acre feet per year, according to the agency. But these figures are the subject of some debate in the valley and vary considerably from year to year.

Henson said the board has resisted the idea of declaring an area-wide emergency in spite of the serious and escalating problem.

Deitch contends he, and others in the county, have suffered "irreparable injury" from the overdraft and

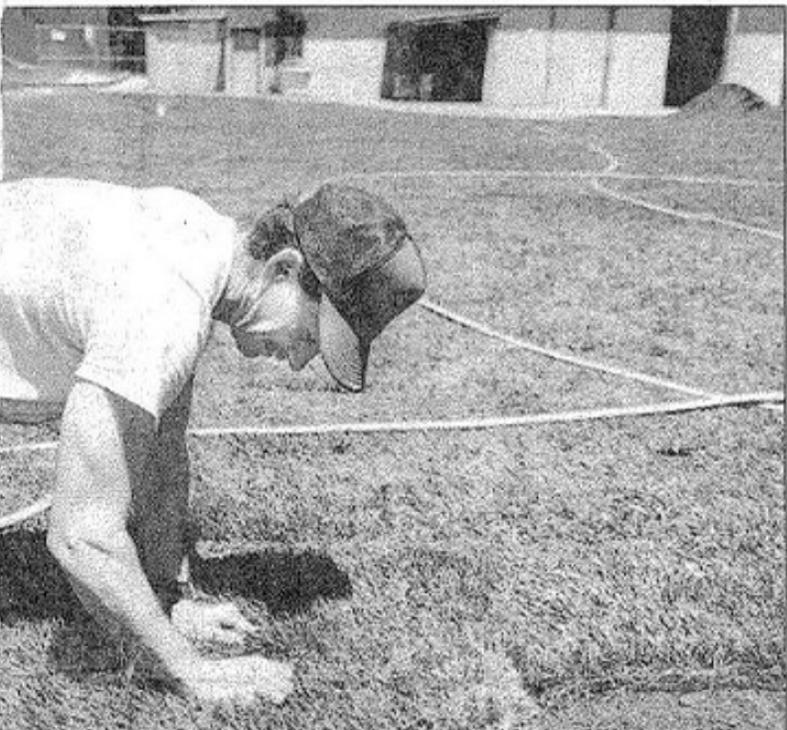
supply troubles. He is seeking no monetary recourse, except for court costs.

Henson said the court system is not an unusual forum to settle this kind of concern.

"This is what I do all the time," said Henson, noting that he has filed suits against several counties, including Sonoma and Mendocino, to force them to upgrade "deficient" general plans.

Sentinel staff writer Trina Kleist contributed to this article.

## Helping hand ... of them, actually



John Winkler lays sod on the centerpiece of Saturday's volunteer

# Panel seeks school site

## Soquel bond defeat forces a team effort

By JONDI GUMZ  
Sentinel staff writer

CAPITOLA — Last year, they were fighting like cats and dogs. But now opponents of Measure Q, the bond measure defeated by voters in the Soquel Union Elementary School District in November, have joined bond advocates to try to find a suitable middle school site.

"It's going to take 18 months," predicted Lisa Fluit, a Measure Q supporter who is on a task force that will recommend sites to the school board.

"We want to be very thorough and careful about choosing the right site



---

**PLEASE ADD THESE 2 ATTACHED IMAGES/DOCUMENTS FROM 1998 AND THESE LINKS TO MY PREVIOUS COMMENT, THANK YOU, DDR: My Comment on Mid County Ground Water "Sustainability Plan" from Douglas Deitch 540 Hudson Lane, Aptos, Ca., 95003, ph. 831.476.7662**

2 messages

---

**ddeitch@pogonip.org** <ddeitch@pogonip.org>

Thu, Sep 19, 2019 at 12:45 PM

To: GSP2019Comments@midcountygroundwater.org, citycouncil@cityofsantacruz.com, citycouncil@ci.capitola.ca.us, jgoldstein@ci.capitola.ca.us, Mark Primack <mark@markprimack.com>, district1@co.monterey.ca.us, district2@co.monterey.ca.us, district3@co.monterey.ca.us, district4@co.monterey.ca.us, district5@co.monterey.ca.us, zach.friend@co.santa-cruz.ca.us, ryan.coonerty@co.santa-cruz.ca.us, greg.caput@co.santa-cruz.ca.us, John Leopold <John.Leopold@santacruzcounty.us>, Bruce McPherson <Bruce.McPherson@santacruzcounty.us>, gapatton@stanfordalumni.org, bod@soquelcreekwater.org, johnlaird9@aol.com, john ricker <john.ricker@co.santa-cruz.ca.us>, daveterra@comcast.net, Rick Longinotti <longinotti@baymoon.com>, Becky Steinbruner <ki6tkb@yahoo.com>, Bruce Laclergue <dpw165@co.santa-cruz.ca.us>, AWRANCH@aol.com, Bill Monning <billmonning@gmail.com>, cityonahillpress@gmail.com, "Robert R. Curry" <curry@ucsc.edu>, carlos.palacios@co.santa-cruz.ca.us, Don Lane <dlane@cruzio.com>, editors@cityonahillpress.com, Wallace 'J' Nichols <wallacejnichols@me.com>, oscar rios <navasrios@yahoo.com>, "wade.crowfoot@resources.ca.gov" <wade.crowfoot@resources.ca.gov>, Yang Xiang <yaxiang@ucsc.edu>, "\"George Riley" <georgeriley@hotmail.com>, "\"Gowin" <\"mailto:georgeriley\"@hotmail.com>, Public Water Now <mwchrislock@publicwaternow.emailnb.com>, "nancy.vogel@resources.ca.gov" <nancy.vogel@resources.ca.gov>, Ddeitch <ddeitch@pogonip.org>

On 9/19/19 11:32 AM, [ddeitch@pogonip.org](mailto:ddeitch@pogonip.org) wrote:

"There it is. Take it...

PLEASE ADD THESE 2 ATTACHED IMAGES/DOCUMENTS FROM 1998 AND THESE LINKS TO MY PREVIOUS COMMENT, THANK YOU, DD

- 1.USGS TECHNICAL MEMORANDUM/1998: <http://pogonip.org/WaterDocs/98USGSTechnicalMemorandum.pdf>
2. The Best Environmental Regional Water Solution: <http://pogonip.org/solution.html>

----- Forwarded Message -----

**Subject:** My Comment on Mid County Ground Water "Sustainability Plan" from Douglas Deitch 540 Hudson Lane, Aptos, Ca., 95003, ph. 831.476.7662  
**Date:** Thu, 19 Sep 2019 11:10:02 -0700  
**From:** [ddeitch@pogonip.org](mailto:ddeitch@pogonip.org)

**To:** Ddeitch <ddeitch@pogonip.org>

(Please reproduce and include all my attached docs, images, etc. to my comment and please make sure my links are operative and work, as well, Thank you, Douglas Deitch)

My Comment on Mid County Ground Water "Sustainability Plan":

Douglas Deitch 540 Hudson Lane, Aptos, Ca., 95003, ph. 831.476.7662

**See Douglas Deitch, Email 1, 9/19/2019, above.**

S

A

# TECHNICAL MEMORANDUM

May 1, 1998

From: R. T. Hanson

U.S. Geological Survey, Water Resources Division, California District

Sep 3 '98 14:52 P.02

VALLEY WTR MGMT Fax: 408-722-5139

... springs along the bluffs back in the 1920's may also sug-  
 the base of the bluff may suggest that the water is seeping northward to the Aromas Sand or we  
 ward to the ocean (Koenig, 1996). Isotopic and chemical analysis of the seeps, irrigation runn  
 and nearby production wells (to the north and west) and monitoring wells may be needed to ide  
 tify the source and movement of rainfall and irrigation runoff in the perched system beneath t  
 1,000 acres of the San Andreas dunes. Both chloride and nitrate concentrations appear to va  
 increasing together in the shallow well (70-98 ft. depth) at PV-1 (fig. 24) at the north end of Sun  
 set Beach. Depth-dependent samples from production wells or a monitoring well completed in th  
 upper parts of the Aromas Sand and the perched aquifer may also be required to get reliable  
 geochemical samples from this area, to help determine the potential flow paths and hydraulic con  
 nection with the dunes perched system, and to provide a regional baseline for monitoring the  
 future performance of the proposed ASR.

### Reclaimed Water

The source of reclaimed water would represent municipal sources, largely from the City of  
 Watsonville. The reported cost of reclaimed water from the City of Watsonville was on the order  
 of \$470 per ac-ft. (table 3). The reported yield for reclaimed water from the Watsonville Treat-  
 ment Plant was 3,000 ac-ft./yr. and could be increased to an estimated 7,000 ac-ft./yr. (PVWMA,  
 1996). The estimated yield represents from 28 to 65 percent of the average projected pumpage for  
 the Beach Road and Pajaro River Mouth subareas. The cost of reclaimed water from other areas  
 ranges from \$15 per ac-ft. for tertiary treated waste water to \$480 for drinkable treated wastewa-  
 ter (table 4).

Tertiary treated wastewater could be available for direct use or streamflow conveyance to  
 downstream diversion for agricultural use, surface storage, or aquifer recharge. Higher levels of  
 treatment, such as reverse osmosis could make additional water available for industrial and  
 domestic reuse such as the current project with San Diego County Wastewater Treatment Plant.

### Conservation

Conservation can take the form of reduced municipal and agricultural use, in-lieu use with  
 storage recovery from recharge, drought-year storage from natural or artificial recharge, or retire-  
 ment of coastal agricultural land to eliminate use. The initial estimate of conservation yielded a  
 total of 1,550 ac-ft. that consisting of 1,200 ac-ft. from agriculture and 350 ac-ft. from the City of  
 Watsonville (AMBAG, 1984). The more recent estimate of conservation ranges from 4,000 to  
 9,000 ac-ft./yr. (PVWMA, 1996). This represents from 6 to 13 percent of projected average  
 pumpage and from 5 to 12 percent of the projected pumpage by the year 2040. About 90 percent  
 (7,013 ac-ft.) of the Watsonville supply was derived from ground-water pumpage and about 10  
 percent (819 ac-ft.) from streamflow diversions from Corralitos Creek were reported for the City  
 of municipal use in 1988 (JMM, 1990a). On the basis of the 1980 census, rural pumpage for  
 domestic water supply was estimated to be an additional 4,400 ac-ft./yr. (JMM, 1990a). This col-  
 lectively represents on the order of 12,200 ac-ft./yr. The AMBAG conservation estimate repre-  
 sents about 5 percent conservation of Watsonville pumpage and about 43 percent of the reported  
 streamflow diversions from Corralitos Creek.

The retirement of coastal agricultural land was also an alternative that was suggested (Deitch,  
 1998). This strategy that has been used in many other areas throughout the Southwestern United  
 States as a means to acquire water rights or transfer pumpage to adjacent basins. The proposed

retirement of 3,500 acres in the Springfield Terrace area and 3,500 acres in the Buena Vista area was reported (Dietch, 1998). The reduction in pumpage from 8,200 acres was 24,500 ac-ft/yr. by Dietch (1998) and the total simulated projected pumpage for the Springfield area was about 5,900 ac-ft/yr. The retirement of the Springfield area could represent about 8 percent of the projected pumpage and the cessation of pumpage through land retirement or in-lieu replacement for the Springfield and Pajaro River Mouth subareas (10,796 ac-ft/yr.) would represent about 15 percent of projected average pumpage and about 14 percent of the projected pumpage by the year 2040.

The reported potential storage through conservation needed for drought protection was 3,000 to 9,300 ac-ft. (table 3), which is about 4 to 13 percent of projected average pumpage and about 4 to 12 percent of the projected pumpage by the year 2040. The reported cost of drought-year storage is on the order of \$200 to \$250 per ac-ft. (table 3). This volume represents the potential increase in pumpage for about two consecutive dry years and would require contributions other supply options to sustain additional use for severe or sustained dry-year periods such as 1976-77 or 1989-92.

A minimum conservation of 4,000 ac-ft/yr. was estimated for the PVWMA summary of proposed plans to meet water needs (PVWMA, 1996). The reduction in pumpage to 50,000 ac-ft/yr. represents a 28-percent reduction from 1992 average pumpage. This reduced rate of pumpage is comparable to the 30-percent conservation estimated to prevent seawater intrusion in the Santa Clara-Calleguas basin, Ventura County, on the basis of ground-water/surface-water simulation-optimization studies (Reichard, 1995). The conservation is more difficult to estimate for Pajaro Valley. Some estimates for selected options were previously reported (JMM, 1990a) but an update of costs and estimation of costs through simulation-optimization modeling could improve the understanding of the spatial distribution and cost of conservation. For example, the amount and spatial distribution of conservation costs can be estimated as trade-off or shadow costs within a simulation-optimization analysis (Reichard, 1995).

#### Imported Water

Imported water could be available from the entitlement granted to PVWMA from the San Felipe part of the Central Valley Project (CVP) and from water purveyors in adjacent basins in Santa Clara and San Benito Counties. The reported cost for CVP water is on the order of \$90 per ac-ft. and the cost of water from other nearby water districts is unknown (table 3). The cost of imported water from other coastal basins is on the order of \$240 to \$300 per ac-ft. (table 4).

#### San Felipe (CVP) Water

The reported allotment was about 19,900 ac-ft/yr. (USBR, 1993) but the current agricultural delivery is estimated to be about 13,500 ac-ft/yr. (18.6 ft.<sup>3</sup>/s.), which is 68 percent of the original allotment (PVWMA, 1996). Three different methods of delivery have been studied (USBR, 1993; figs. 1-3) that include a pipeline from San Felipe Reservoir to the Watsonville area, a pipeline to Pajaro Valley and canal conveyance to Watsonville area, and a combination of pipeline to Bolan Road and river conveyance the remainder of the way to a diversion structure downstream from Watsonville (USBR, 1993). The initial design proposed by the USBR (1993) was for an average delivery flow of 36 ft.<sup>3</sup>/s. (26,100 ac-ft/yr.) and a peak-flow capacity of 75 ft.<sup>3</sup>/s. (54,300 ac-ft/yr.) (USBR, 1993). The potential forms of conveyance and delivery were by pipeline, pipeline-canal, and pipeline-river conveyance (USBR, 1993). The river conveyance alternatives proposed the use of a downstream diversion or radial wells to divert the water from the river to the local, coastal distribution system (USBR, 1993).



Or.....

## The Best Environmental Regional Water Solution

● PROPOSAL SUBMITTED TO PAJARO VALLEY WATER MANAGEMENT AGENCY (PVWMA) OF FEBRUARY 26, 1998

**Informational Update Note on Proposal, below:**

**All of our water in the Monterey Bay Area is derived from local ground and surface water resources. No water is imported. Agribusiness and farming (there's a difference) use 80%+ of our water. PVWMA uses 70,000 a/f/yr and has a current sustainable yield of only 24,000a/f/yr. Using the most recent demand and sustainable yield figures from PVWMA's Basin Management Plan 2000, the proposal below **increases sustainable yield by 26,000 (a/f/yr)** through "optimized pumping" and **decreases demand by****

**about 21,000 (a/f/yr)** through creation of ag preserve/land bank and/or dry farming, for an **aggregate hydrological benefit of 47,000 (a/f/yr)**. **The current overdraft in PVWMA is 46,000 (a/f/yr)**.

PVWMA conservation and "local projects" are expected to yield savings/new supply under 10,000 (a/f/yr), best case, when finally implemented. As for future importation by pipeline, PVWMA expects to be able to actually import only 55%, or around 11,000 (a/f/yr), of its original BLM entitlement. More contracts can be (and already have been) acquired by PVWMA.

By comparison, Soquel Creek Water District (SCWD) produces annually around 6,000 a/f (with private wells using another 6,000 a/f/yr-12,000 a/f/yr total) and has a long term need of 2,000 a/f/yr new supply. Santa Cruz Municipal Utilities (SCMU) produces around 13,000 a/f/yr, with a current "worse case drought scenario" shortage of around 4,300 a/f/yr and long term need of around 6.500 a/f/yr new supply.

These three districts (PVWMA, SCMU, and SCWD) account for around 95% of county's water use. The potential for regional solutions and cooperation between these three districts has never been even contemplated, let alone assessed.

As an example, all of these three districts are considering using desalinization potentially as part of their individual districts' solution. The optimum location for a regional facility serving all these three districts would logically be located at Moss Landing (due to power, geographic, and environmental considerations). Yet there has never been regional consideration of this or any other cooperative plan. And there are other cooperative solutions that might be considered.

In essence, the proposal below can be viewed as creating a **"hydrological agricultural and environmental buffer zone and reserve/land bank"** of 7,000 acres (at the two most hydrologically critical locations), being either dry farmed (seasoning for eventual organic production when and if an additional, sustainable water supply is obtained) or held in open space, park use, or ecological preserve. Coincidentally, this solution is equal in scale to the 7,500 acre Coast Dairies Ranch acquisition as well as being almost equal to the gross acreage of orchard lands that have been converted to water intensive production (using around four times as much water, as well as chemicals and labor-a big part of the cause of many local problems in the first place).

It should be viewed that what we are experiencing is a tragedy of our commons (social and economic, as well as environmental) caused by

our exceeding, catastrophically, any reasonable agricultural carrying capacity of our region. Unfortunately, "carrying capacity" is a concept which has never even been considered in the first instance, let alone determined here. The argument that retirement of ag land will lead to eventual development is specious-how many of Coast Dairies 7,500 will be developed?

**Current possible sources of funding-New 2 billion federal funding** just announced by Interior Secretary Babbitt, **\*\*\*\*\*FRED KEELEY'S\*\*\*\*\*! \$2.1 BILLION (and another \$1.8 billion) state park and water bond initiatives,** (We hope you're in our audience, Fred!) PVWMA SCWD, and SCMU (yes, I said SCMU) funding, and foundation matching grants.

**Additionally, land acquisition cost figure should be revised to \$35,000 per acre.**

While at first blush, this may seem somewhat expensive, what must be appreciated is that these lands are more than arguably the best farmlands in the world. Additionally, these lands will afford enhanced public coastal access and **state park expansion opportunities (in the Zmudowski Beach/Moss Landing/Elkhorn-Watsonville Slough Areas) as well as protection of essentially priceless strategically located critical environmental resources and habitat, including the Monterey Bay Sanctuary waters.** However, most importantly, phased retirement of these lands constitute our most efficient local water project and assures us regional water balance and control of our own water destiny. Every acre retired at the coast (saving on average 2.1 a/f/yr) will provide double its former use (or 4.2 a/f/yr) of sustainable supply.

[There's still time.....](#)

● You can e-mail us, call/fax us at (831) 479-4009, and mail us @501 Mission Street, Santa Cruz, California, 95060. [Send your e-mail now!](#)

\*\*\*\*\*

Douglas Deitch  
Monterey Bay Conservancy  
(Pogonip Foundation, Inc.)  
501 Mission Street  
Santa Cruz, California, 95060  
(408) 476-7662  
[www.pogonip.org](http://www.pogonip.org)  
FEBRUARY 26, 1998

Mr. Jim Dutra  
Board of Directors  
Pajaro Valley Water Management Agency  
Fax 722-3139

Re: February 27, 1998 Meeting, Agenda Item 5., Water Supply and Basin Management Options if June 2nd Initiative is Approved by Voters

Dear Chairman Dutra and Board of Directors,

I submit the following proposal for your consideration at your meeting on February 27, 1998 on Agenda Item 5., Water Supply and Basin Management Options if June 2nd Initiative is Approved by Voters. As an individual concerned with the wise, responsible, and self sustainable use of all of our community's resources, attention, as a first priority, is not being given to, in at least some small manner, reversing the trend of increasing yearly overdraft volumes. Exemplar communities must be based on sound long term and implemented water strategies. This is not occurring now.

While the Pajaro Valley Water Management Act is predicated upon meeting the needs of all basin users, it is not clear whether it is the 1984 users' needs or the 1998 users' needs which must be satisfied. There's quite a difference. In any event, below I propose a viable, sure fire, and self sustainable "local" solution to our water problem requiring no importation of water or pipeline. Whether the initiative passes or not, this approach is available. It eliminates the present hydrological mining and deficit spending of our water resource. It lives within our means.

Actually, a variant of this approach is identified in the Basin Management Plan EIR as the environmentally preferred alternative (and would have, in fact, been the recommended alternative but for the legal mandate of the act) in lieu of an across the board 60% mandatory use reduction in the event of a basin adjudication. The project will bring the water basin into balance on a phased project basis as adverse economic effects of the project may be satisfactorily mitigated. Furthermore, the project does not preclude the future possibilities or potentials of imported, desalinated, reclaimed, conserved, or any other possible supplemental supplies which prove to be economically feasible.

\* Water intensive agricultural production and pumping will be discontinued on the 4,700 acre Springfield Terrace Area and the 3,500 acre Buena Vista Area, with non water intensive ag uses

substituted instead. These properties are either purchased outright or the owners are otherwise compensated for the diminution in value of their lands or for fallowing. By comparison, the recent north county Coast Dairies Ranch acquisition consists of 7,500 acres.

\* With a purchase price of \$20,000 per acre for 8,200 acres, the initial cost would be \$164 million. However, these lands would have a residual value (let's assume, for example, of \$10,000/acre) of \$82 million. Net project cost would then be \$82 million, compared to the \$134 million slated for the pipeline project.

\* With a water use reduction of 2.5 a/f per year per acre, a 20,500 a/f per year reduction in use is accomplished. Another 4,000 a/f per year water use reduction is accomplished through present PVWMA conservation projections of BMP, for a total water use reduction of 24,500 a/f per year.

\* With the "new pumping practices", the 24,500 a/f annual savings to PVWMA from the current 68,000 a/f use brings its annual water use to 43,500 a/f, 6,500 a/f under the safe sustainable yield of the aquifer of 50,000 a/f annually.

\* 4,000 agricultural jobs are eliminated and around \$300 million of associated annual revenue production is also lost. Under, for example, LAFCO's methodology, to compensate for this employment/revenue loss, up to an additional 200 acres of new commercial/industrial development opportunities will have to be created to replace the jobs (@20 jobs/acre).

\* Employment "retooling" and revenue loss will easily be compensated by new additional commercial and industrial development through either Watsonville's unique enterprise zone's economic advantages, and/or additionally through new intellectual property development opportunities afforded by CSU, UCSC, Fort Ord reuse, and related research and development facilities.

This local project provides for a reasonable and self sustaining use of our local available water resource, no significant loss of agricultural lands, and no future dependence on costly and perhaps unavailable imported water. Under this plan, coastal wetlands environments and general environmental self sustainability in these two areas totaling 8,200 acres will be expanded, protected, and enhanced. Finally, the project will provide for a needed and prudent diversification away from the two industries of agriculture and tourism which now imprudently over dominate our economy while further providing for a virtually unlimited and "green" increased revenue production potential in the intellectual property development area.

Respectfully submitted for your consideration,

Douglas Deitch.

\*\*\*\*\*

Douglas Deitch  
Monterey Bay Conservancy  
(Pogonip Foundation, Inc.)  
501 Mission Street  
Santa Cruz, California, 95060  
(408) 476-7662  
www.pogonip.org  
MARCH 26, 1998

Mr. Jim Van Houten, Chairman  
Steering Committee  
Mark Salmon and Tim Durban  
Bookman-Edmondston  
Randall Hanson  
USGS  
c/o Mr. Charles McNiesh, Acting Director  
Pajaro Valley Water Management Agency  
Fax 722-3139

Re: Clarifications of proposal presented Monday evening, March 23, 1998

Dear Sirs,

In addition to the project described in my February 26th, 1998 letter to the agency, as I mentioned Monday evening, the following additional measures should be considered, perhaps even as necessary and integral to the proposal.

### **1. Amendment of the PVWMA Act**

The Act presently mandates that the present and future needs of all users in the district be met, with a priority given to agricultural users. This should be reconsidered. In approximate figures, about 6,000 of the district's 25,000 ag acres have been converted from orchard and other ag use to water intensive crops since the agency was created. This ag use change on these properties so converted constitutes a large portion (if not all) of the problem. Importation of supplemental water is specifically contemplated by the act to meet these increased needs.

The wisdom and practicality of this mandate of the act should be revisited given the current water situation and supply availability on a statewide and national basis. Instead, consideration should be given to limiting the agency's responsibility to provide water to all basin users on an equitable basis up to the safe sustainable annual yield of the basin, with proper management and conservation measures in place, which is presently estimated at 50,000 a/f/yr. The act should logically not require measures that, due to either their environmental and/or economic requirements, are unfeasible or impossible.

## **2. Establish Area Wide Water Use Authority**

The Monterey Bay Area as a region has serious and chronic water overdraft problems. Monterey County's \$1.9 billion annual ag production compared to Santa Cruz County's \$255 million correlates to a water use (and abuse) in Monterey County roughly 6 times Santa Cruz'. A water crisis has already been formally declared and adjudication activities commenced in Monterey County.

Given the non-alignment and overlapping of the jurisdictional boundaries of the various water use authorities in our region with the underlying ground water basins, coordinated and effective management of the resource is presently not possible. Due to the significance of the massive agricultural production of the Monterey Bay Area, the environmental sensitivity and bent of the population generally, and the nexus with the Monterey Bay National Sanctuary, a "Monterey Bay Area Water Use Authority" should be considered and established to plan water uses issues (including importation) on a regional basis, taking all users needs into consideration. By this measure, the whole Monterey Bay region can be planned and managed as the interactive area wide drainage and storage basin it actually is. As the largest user in Santa Cruz County by far (consuming over 4 times as much as the next largest user), PVWMA can and should take a leading role in this matter.

## **3. Consider "Privatizing" Pipeline/Importation and Possibly Other Supplemental Supply Projects**

The feasibility of the private sector should be considered as a possible developer and operator of supplemental supply projects, such as the pipeline project, which will provide water over the self sustainable yield of local supply for PVWMA's as well as any other regional suppliers' demands by intertie.

## **4. Review Underlying Economic Assumptions of Importance and Necessity of Present Level of Agricultural Activity Revenue Generation in Our Economy vs. More Diversified Economy**

The submitted proposal assumes that alternate and compensatory revenue generation sources are available (as noted in the proposal) to replace lost ag activity revenues. Due to the beneficial diversifying possibility for our economy that this presents, a review of the economic assumptions used to justify the Basin Management Plan (BMP) in light of current development activities and potentials in the areas noted in the proposal should be conducted and evaluated.

### **5. Achievement of BMP's Most Critical Objectives**

The proposal submitted is the only plan which can and will with certainty achieve the two critical BMP goals of providing a local water supply on a consistent and self sustaining basis and eliminating harmful excessive pumping from the 8,200 acre critical coastal areas identified, therefore providing the most efficacious treatment for the saltwater intrusion problem.

### **6. Identified Funding Sources For Proposal**

Five different potential funding sources were identified:

1. AB 1000/Keeley- \$ 800 million
2. SB312/Costa-Machado- \$1.2 billion
3. Packard Foundation- \$ 175 million
4. Augmentation Fees/Bank Acct.- \$ 2.5-5 million/yr./\$10 million
5. 8,200 Acre Residual Value- \$ 82 million+

Respectfully submitted,  
Douglas Deitch



**PAST    PRESENT    FUTURE?**





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## Comments on the Draft GSP

---

**Erica Stanojevic** <ericast@gmail.com>  
To: GSP2019Comments@midcountygroundwater.org  
Cc: Darcy Pruitt <dpruitt@cfsc.org>

Thu, Sep 19, 2019 at 10:13 AM

Hello,

Attached are my comments regarding the draft GSP. Please acknowledge receipt.

Thank you,  
Erica Stanojevic

---

 **Mid County Groundwater Sustainability Plan Comments.pdf**  
32K

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September 19, 2019

To: Mid County Groundwater Agency

c/o Darcy Pruitt

Re: Comments on the Santa Cruz Mid County Basin Draft Groundwater Sustainability Plan

The Draft Groundwater Sustainability Plan for the mid county basin is inadequate.

The draft fails to fully assess the potential benefits of the in-lieu sharing strategy which is a key part of the Santa Cruz Water District adopted recommendations from the Santa Cruz Water Supply Advisory Committee.

A pilot project on water transfers has indicated that transfers are safe. Infrastructure already is in place for transfers. The cost of in-lieu water sold from the Santa Cruz Water District appears to be inflated in this draft plan. Thus costs for transfers are likely minimal. An in-depth exploration of water transfers is merited.

Regional cooperation to capture water by proactively minimally draining (perhaps to 95% capacity or so) Loch Lomond reservoir during the rainy season to prevent spillover is ignored in this draft plan. Instead, spillover water would simply run out to sea. Communication with the Santa Cruz Water District regarding potential to capture this water is a piece of an alternative not explored.

Further, key pieces of the Draft GSP were not released for public review until September 10, 2019, only nine days before public comments are due. Specifically, Appendix documents Sections 2 and 3 of the Draft report were not available until September 10. This gives the public inadequate time to review these documents. Therefore, the public comment time frame should be extended to be 60 days from September 10th, or until about November 8th, to allow for adequate public review.

References for the draft report are inadequate. Section 2.2.5 states "Complete list references will be include[d] in the Final GSP" (grammar edited). This is woefully inadequate for a document that the public is supposed to be able to review. The draft document requires a full list of references so that the public can make meaningfully informed comments.

Although the state requires "sustainability" be met with the plan, a better goal for our aquifers would be regeneration. Cooperation between local districts and creative use of all water is a necessary component of regeneration. The Mid County Groundwater Agency is uniquely poised to ease this cooperation; evaluate in-lieu water transfers as sharing can help heal our aquifers.

Blessings,

Erica Stanojevic

Sierra Club Representative of the Santa Cruz Water Supply Advisory Committee

On Thu, Sep 19, 2019 at 4:48 PM Becky Steinbruner <[ki6tkb@yahoo.com](mailto:ki6tkb@yahoo.com)> wrote:

Dear MidCounty Groundwater Agency,

Thank you for the opportunity to comment on the Draft Groundwater Sustainability Plan (GSP). I am aware that the MidCounty Groundwater Agency (MGA) Board intends to select a committee to review all comments submitted regarding the GSP. I respectfully request that all comments are made public verbatim, and any responses to and/or actions taken to address all such comments be likewise made available to the public.

I also respectfully request that the Committee include one of the Private Well Representatives, and that those representatives select themselves who among them will serve on the Committee.

Thank you very much.

Sincerely,

Becky Steinbruner

Customer of PureSource Water

\*\*\*\*\*

Page 2-12 and 2-13

#### Jurisdictional Boundaries within the Basin

Figure 2-2 shows Adjudicated Areas, Other Agencies within the Basin, and Areas Covered by an Alternative Plan. The boundaries of the MidCounty Basin (Basin 3-001) in the Seascape and La Selva Beach areas are political, and are not defined by the hydrology of the area. On page 2-12, it states: "The entire Basin is covered by by the MGA and this GSP. No areas within the Basin are covered by an Alternative GSP."

Looking closely at the areas of the map, the statement cannot possibly be true because the southern boundaries shown only fit the Soquel Creek Water District service areas 3 and 4, and in fact there appears to be an island of the basin within the Pajaro Valley Sub-basin (3-002.01) that is included in the MidCounty Basin, purely for Soquel Creek Water District definition. Why is this political definition of the Basin allowed, and even is defining and driving the "critical overdraft" urgency?

Indeed, in examining the Pajaro Sub-Basin Alternative GSP, the map for that Sub-Basin clearly covers the southern areas within the Soquel Creek Water District political service boundaries. Below is the text of a message I sent to Pajaro Valley Water Management Agency General Manager, Mr. Brian Lockwood, upon the approval of the Alternative GSP for the Pajaro Sub-Basin. I respectfully request that it be included in the record of comment submitted for the MidCounty Draft GSP. This communication is relevant to the Draft GSP because the Pajaro Sub-Basin is the adjoining Basin and all Plans must show consideration of and collaboration with neighboring Basins:

- Becky Steinbruner <[ki6tkb@yahoo.com](mailto:ki6tkb@yahoo.com)>

To: Brian Lockwood

Cc:

Bcc...

Jul 18 at 7:57 AM

Hi, Brian,

I just saw the announcement on Maven's Notebook that DWR approved the Pajaro Valley SubBasin GSP Alternative Plan.

Congratulations!

Here is the link I found, and am hoping to read over the assessment reports of the eight others approved, as well as the one not recommended for approval.

<https://mavensnotebook.com/2019/07/17/this-just-in-dwr-approves-nine-alternatives-to-groundwater-sustainability-plans/>

I am curious about the fact that , in the Staff Assessment Report, it discusses that a portion of the Pajaro Valley SubBasin lies outside of the PVWMA jurisdiction. The discussion of this issue on page 9 seems to refer to the area to the west, and would be the Soquel Creek Water District jurisdiction (which has been somehow included in the Santa Cruz MidCounty Groundwater Basin), but later discussion of the non-jurisdictional area seems to be more related to the Salinas Valley Basin.

I am interested in your interpretation of Recommended Action #1:

"Although the Plan provides adequate administrative information for the area within the Agency's jurisdictional area, which accounts for the overwhelming majority of both surface area and water use (including groundwater use), a small portion of the Subbasin lies outside that jurisdiction. Because Department staff have determined that the Agency's Alternative is likely to achieve the sustainability goal for the entire Subbasin, and that the area outside the Agency's jurisdiction is not likely to adversely affect groundwater conditions in the jurisdictional area, or be adversely affected by groundwater management in the jurisdictional area, Department staff have determined that the Alternative effectively covers the entire Subbasin and so the lack of jurisdiction over this area does not preclude approval of the Alternative. However, to ensure the Department's ability to evaluate future conditions in this area, Department staff recommend that the Agency make changes to its Alternative to facilitate that evaluation (see Recommended Action 1). "

How do you think this comports with the discussion of the non-jurisdictional areas on page 9 of the Staff Assessment?

"Although Department staff have determined that the Pajaro Subbasin Alternative satisfies the objectives of SGMA (see Assessment, below), the Pajaro Valley Subbasin is not yet sustainably managed. As a result, the Alternative cannot be said to effectively cover the entire Subbasin based on the current avoidance of undesirable results. Instead, staff considered whether the geology and hydrology of the non-jurisdictional area is adequately understood and whether groundwater usage in that area would or would not adversely affect the jurisdictional portion of the Subbasin, and vice versa. Staff also considered whether the non-jurisdictional area is or is not experiencing undesirable results or that implementation of the Alternative would result in the avoidance of undesirable results in the non-jurisdictional area. The Agency's understanding of hydrologic conditions in the Pajaro Valley Subbasin is demonstrated in the PVHM Report, which presents a hydrogeologic and numerical groundwater model that covers nearly the entire Subbasin and significant areas outside of the SubBasin, as shown on the map above."

I am also curious about the DWR Staff research into publicly available information and the associated statement on page 10:

"Land use data from 2014 revealed only small amounts of irrigated agriculture (roughly 20 acres of strawberries) within the non-jurisdictional portion of the Subbasin.37 Well records indicate that only one production well is present in the non-jurisdictional portion of the Subbasin; all remaining wells are designated as being used for domestic supply."

This again is the Soquel Creek Water District jurisdictional area where there are production wells. I also believe that Mr. Pete Cartwright has an agricultural well in that area, as he has many times testified publicly at Soquel Creek Water District Board meetings, illustrating high chloride levels in his well used to support the District's concerns about seawater intrusion problems. Are you aware of the production and domestic well locations and information for this area?

The District had to discontinue pumping from their Country Club production well in that SubBasin non-jurisdictional area due to high levels of 1,2,3-TCP over one year ago. <https://www.soquelcreekwater.org/water-quality/123-trichloropropane-0>

Does that contamination plume affect the PVWMA monitoring and reporting?

Regarding the DWR Staff Recommended Action #8 and monitoring actions, I wonder if PVWMA will rely upon groundwater level monitoring information for the non-jurisdictional area SubBasin that is within the jurisdiction of the Soquel Creek Water District or if PVWMA will install independent monitoring wells in those areas if you have not already done so?

Regarding the DWR Staff Recommended Action #8 and monitoring actions, I wonder if PVWMA will rely upon groundwater level monitoring information for the non-jurisdictional area SubBasin that is within the jurisdiction of the Soquel Creek Water District or if PVWMA will install independent monitoring wells in those areas if you have not already done so?

Because the Santa Cruz MidCounty Groundwater Agency Board will be publicly unveiling their GSP at tonight's MGA Board meeting, I would be curious to know your initial thoughts on these issues because of their relevancy. The meeting is at Simpkins Swim Center and begins at 7pm.

Again, Brian, congratulations on all the hard work that you and PVWMA staff and Board have done to get approval of your GSP Alternative!

Sincerely,

Becky Steinbruner

-



Santa Cruz Mid-County Groundwater Agency  
Draft Groundwater Sustainability Plan (GSP)

Comment Card

*please respond*

Date:

11/17/19

Name (Optional):

Bucky Steinbruner

Live and/or Work in the Basin:

yes

Email Address (Optional):

KITK@yaho.com

Stakeholder affiliation: (ag, rate payer, private well, etc.)

Draft GSP Comments:

Will all public comments and agency comments be made publicly available verbatim?

1 of 2

The MGA is currently soliciting comments on the Draft Groundwater Sustainability Plan (Plan). While the development of the Plan is exempt from CEQA (Section 10728.6 Water Code), the MGA is providing a 60-day comment period to allow interested parties to raise credible technical and policy issues with the Plan. Comments received will be read and considered in the development of the final Plan. Comments will not necessarily receive an individual response, though a summary document of responses to general comments received will be produced.

Comments (continued):

2 of 2



Santa Cruz Mid-County Groundwater Agency  
Draft Groundwater Sustainability Plan (GSP)

Comment Card

Please respond.

Date:

1/17/19

Name (Optional):

Betsy Steinbruner

Live and/or Work in the Basin:

Yes

Email Address (Optional):

KJLTKB@yahoo.com

Stakeholder affiliation: (ag, rate payer, private well, etc.)

Draft GSP Comments:

① WHY IS THERE NO MODELLING OF CONJUNCTIVE USE AT ALL? Best, Best & Krieger in 2013 recommended Soquel Creek Water District apply for new water rights to San Lorenzo River, under Water Code 1425, independent of the City - the District has not done so, but could for a regional solution. Why wasn't Water Transfer modelled when Cameron Tama stated in lieu recharge would lend better flexibility to address groundwater problems in real time?

1 of 2

The MGA is currently soliciting comments on the Draft Groundwater Sustainability Plan (Plan). While the development of the Plan is exempt from CEQA (Section 10728.6 Water Code), the MGA is providing a 60-day comment period to allow interested parties to raise credible technical and policy issues with the Plan. Comments received will be read and considered in the development of the final Plan. Comments will not necessarily receive an individual response, though a summary document of responses to general comments received will be produced.

Comments (continued):

[Empty comment box]

2 of 2



Santa Cruz Mid-County Groundwater Agency  
Draft Groundwater Sustainability Plan (GSP)

Comment Card

*please respond*

Date:

1/18/19

Name (Optional):

Becky Sternbruner

Live and/or Work in the Basin:

Yes

Email Address (Optional):

KI6TKB@yahoo.com

Stakeholder affiliation (ag, rate payer, private well, etc.)

Draft GSP Comments:

- ① WHAT WOULD TRIGGER A CHANGE IN POLICY TO CHARGE PRIVATE PUMPERS? WHAT WOULD BE THE PROCESS TO DO THAT?
- ② HOW WILL SEPTIC RECHARGE BE CALCULATED AS OFFSET FOR ANY POSSIBLE CHARGES TO PRIVATE PUMPERS?
- ③ HOW CAN MORAN LAKE BE BENEFITED BY PURE WATER SOONER WHEN IT IS UPSTREAM AND FAR AWAY FROM DOWNSTREAM?

HOW CAN WE PROTECT WELLS?

The MGA is currently soliciting comments on the Draft Groundwater Sustainability Plan (Plan). While the development of the Plan is exempt from CEQA (Section 10728.6 Water Code), the MGA is providing a 60-day comment period to allow interested parties to raise credible technical and policy issues with the Plan. Comments received will be read and considered in the development of the final Plan. Comments will not necessarily receive an individual response, though a summary document of responses to general comments received will be produced.

Comments (continued):

[Empty rounded rectangular box for additional comments]



**Santa Cruz Mid-County Groundwater Agency**  
**Draft Groundwater Sustainability Plan (GSP)**  
**Comment Card**

Date:

7/20/19

Name (Optional):

Cang

Live and/or Work in the Basin:

Pajaro

Email Address (Optional):

Stakeholder affiliation (ag, rate payer, private well, etc.)

private well

Draft GSP Comments:

presentation was very disappointing. No discussion of project costs and \$\$ impact to residents. For example, Pure Water will increase costs significantly - Squal will raise rates 50% over 53rs. This should be on slides. Also potential concerns about water quality, etc.

1 of 2

The MGA is currently soliciting comments on the Draft Groundwater Sustainability Plan (Plan). While the development of the Plan is exempt from CEQA (Section 10728.6 Water Code), the MGA is providing a 60-day comment period to allow interested parties to raise credible technical and policy issues with the Plan. Comments received will be read and considered in the development of the final Plan. Comments will not necessarily receive an individual response, though a summary document of responses to general comments received will be produced.

Comments (continued):

[Empty comment box]

2 of 2



Santa Cruz Mid-County Groundwater Agency  
 Draft Groundwater Sustainability Plan (GSP)  
 Comment Card

Date:

7/22/19

Name (Optional):

Becky Stembruner

Live and/or Work in the Basin:

Yes

Email Address (Optional):

kiletkb@yahoo.com

Stakeholder affiliation: (ag, rate payer, private well, etc.)

Small water company customer

Draft GSP Comments:

- 1) The GSP needs an initial Table of Contents to help readers understand how the contents of the document is organized.
- 2) Many of the <sup>Executive Summary promises a list of references and technical studies? Why is it not here?</sup> critical tables, graphs and maps <sup>do not</sup> show the source references to verify the information or conclusions taken in the text associated with them.
- 3) The Advisory Committee members are listed but not with credentials or which stakeholder group they were <sup>selected to represent.</sup>

The MGA is currently soliciting comments on the Draft Groundwater Sustainability Plan (Plan). While the development of the Plan is exempt from CEQA (Section 10728.6 Water Code), the MGA is providing a 60-day comment period to allow interested parties to raise credible technical and policy issues with the Plan. Comments received will be read and considered in the development of the final Plan. Comments will not necessarily receive an individual response, though a summary document of responses to general comments received will be produced.

Comments (continued):

The Advisory Committee did not develop the recommendations for the GSP - the Executive Committee did. The Advisory Committee just approved what was handed to them.



Santa Cruz Mid-County Groundwater Agency  
Draft Groundwater Sustainability Plan (GSP)  
Comment Card

Date:

7/22/19

Name (Optional):

Becky Steinbruner

Live and/or Work in the Basin:

Yes

Email Address (Optional):

KibTKB@yahoo.com

Stakeholder affiliation: (ag, rate payer, private well, etc.)

Small water Company customer

Draft GSP Comments:

I find the Raffel's White Paper very concerning. Advising the MGA Board about how to craft actions in order to make any protests unsuccessful is deceptive and completely unacceptable. Advising that merely asking de minimus users for basic information could qualify as "regulating" them and therefore allowing them to be assessed is really WRONG!

Lot 2

The MGA is currently soliciting comments on the Draft Groundwater Sustainability Plan (Plan). While the development of the Plan is exempt from CEQA (Section 10728.6 Water Code), the MGA is providing a 60-day comment period to allow interested parties to raise credible technical and policy issues with the Plan. Comments received will be read and considered in the development of the final Plan. Comments will not necessarily receive an individual response, though a summary document of responses to general comments received will be produced.

Comments (continued):

2 of



Santa Cruz Mid-County Groundwater Agency  
 Draft Groundwater Sustainability Plan (GSP)  
 Comment Card

Date: 7/22/19

Name (Optional):

Becky Steinhilber

Live and/or Work in the Basin:

yes

Email Address (Optional):

kibtkb@yahoo.com

Stakeholder affiliation (ag, rate payer, private well, etc.)

Draft GSP Comments:

(pg 2-163)  
 Why does the model anticipate a decrease in groundwater storage 2016-2069 when 1985-2015 show groundwater levels have risen? (pg 2-138)  
 Cameron Tana has stated the Basin is basically at sustainable levels now (Feb., 2019 Modelling enrichment workshop) →

1 of 2

The MGA is currently soliciting comments on the Draft Groundwater Sustainability Plan (Plan). While the development of the Plan is exempt from CEQA (Section 10728.6 Water Code), the MGA is providing a 60-day comment period to allow interested parties to raise credible technical and policy issues with the Plan. Comments received will be read and considered in the development of the final Plan. Comments will not necessarily receive an individual response, though a summary document of responses to general comments received will be produced.

Comments (continued):

~~The comments were not~~  
 How did the MGA determine that Soguel Creek is responsible for only 57% of the groundwater pumping



Santa Cruz Mid-County Groundwater Agency  
Draft Groundwater Sustainability Plan (GSP)  
Comment Card

Date:

Name (Optional):

Michael M.

Live and/or Work in the Basin:

Yes

Email Address (Optional):

ENERGYMAN29@YAHOO.COM

Stakeholder affiliation: (ag, rate payer, private well, etc.)

Draft GSP Comments:

Re: Pure WATER TREATED SEWAGE INJECTION;  
HOW GOOD ARE THE WATER QUALITY SENSORS +  
INSTRUMENTS - WHO DOES THE MONITORING OF THE  
HARDWARE, WHO RESPONDS TO "OUT OF BAND" SENSOR  
ALARMS?  
~~WHAT~~ WHAT, IF ANY, LEVELS OF PHARMACEUTICALS BE  
DETECTED

The MGA is currently soliciting comments on the Draft Groundwater Sustainability Plan (Plan). While the development of the Plan is exempt from CEQA (Section 10728.6 Water Code), the MGA is providing a 60-day comment period to allow interested parties to raise credible technical and policy issues with the Plan. Comments received will be read and considered in the development of the final Plan. Comments will not necessarily receive an individual response, though a summary document of responses to general comments received will be produced.

Comments (continued):

Empty rounded rectangular box for additional comments.



**SANTA CRUZ MID-COUNTY GROUNDWATER AGENCY (MGA)**

Thursday, September 19, 2019 – 7:00 p.m.

Simpkins Family Swim Center

979 17th Avenue, Santa Cruz, California

**DRAFT GSP ORAL PUBLIC COMMENTS  
RECEIVED DURING MGA BOARD MEETING**

**5.1 Receive Public Comments on the Draft Groundwater Sustainability Plan  
(GSP or Plan)**

Vice Chair Mathews opened the public comment period on the Draft GSP. One member of the public indicated a desire to comment:

Member of the public Becky Steinbruner appreciated the August 28<sup>th</sup> draft GSP Q&A session and hard copies of the Draft GSP being made available in local public libraries.

Ms. Steinbruner requested that all comments be included verbatim in the final report that accompanies the GSP to the state.

She expressed concerns with data used in the modeling, which did not include 1987 data developed for Soquel Creek Water District regarding the salt water wedge. She indicated that the 1987 data and the SkyTEM data were identical and that the salt water wedge had not moved.

She requested future monitoring systems be independent and not reliant on Soquel Creek Water District data.

She thanked the MGA for its work, but expressed disappointment that the public was not allowed to participate in the technical Surface Water Working Group that considered the groundwater-dependent ecosystems.

**MOTION: Director Daniels; Second: Director Baskin. To close the public comment period. Motion passed unanimously.**