

**Groundwater Sustainability Plan
Public Review Draft- September 10 to October 19, 2021
Comment Tracking Table**

	Committer Name	Committer Organization	Chapter #	Section	Line #(s) or Figure #	Comment
1	Eric Lundberg	Public Comments	GSP 3.2.2		3370	Managers should not have the flexibility to implement actions at "any time". Actions should have deadlines associated with seasons and agricultural activities. Actions should be taken before crops are planted, or at the beginning of an irrigation season.
2	Eric Lundberg	Public Comments	GSP 3.3.1		3392 - 3393	Change "environmental uses of groundwater occur" to "the environment and ecosystems within the GSA". Pumped groundwater has many benefits to the environment and ecosystems. For many crops, pumped groundwater offers as many benefits to the environment as GDEs. MTs and MOs should not be managed exclusively for the benefit of GDEs, but should also take into consideration the improvements and benefits that pumped groundwater offers to the ecosystem. "... environmental uses of groundwater" should not only consider the GDE but also the impacts pumped groundwater has on the ecosystem. An orchard has as much benefit to the environment as the urban forest.
3	Eric Lundberg	Public Comments	GSP 3.3.2		3412 - 3414	It is unreasonable for the VINA GSA to guarantee a well owner that his/her well will not go dry. By setting an MT and MO, well owners can know that a source of water will be protected, but that some additional well development to the MT or MO levels might be needed. Managers should encourage well owners to develop wells with the MT and MO levels in mind for a protected water source. "Sustainably constructed domestic wells" should take into consideration the MT and MO levels. It is the responsibility of the well owner for the maintenance of its well, not the GSA.
4	Eric Lundberg	Public Comments	GSP 5.2.3.4		4508 - 4515	I support storing flood water into storage locations. I would encourage the development of more ponds and lakes to capture flood water coming off the many creeks and rivers in the Vina GSA. However, I do not support the complexities associated with "recharge", so I would encourage the flood water storage to be utilized as a surface water supply for the Vina GSA.
5	Eric Lundberg	Public Comments	GSP 5.2.4.1		4544 - 4551	When PID has extra surface water, it seems only prudent for Vina GSA to utilize that excess.
6	Eric Lundberg	Public Comments	GSP 5.2.4.2		4573 - 4580	I support Vina GSA trying to utilize extra surface water from water right holders from outside of our GSA.
7	Eric Lundberg	Public Comments	GSP 5.2.4.4		4635 - 4639	Utilizing the Miocene Canal as a way of capturing surface water is both practical and sensible.
8	Eric Lundberg	Public Comments	GSP 5.2.4.6		4692 - 4697	I support utilizing all available water coming out of the wastewater treatment plant.
9	Eric Lundberg	Public Comments	GSP 5.2.4.11		4871 - 4876	I support trying to increase the surface water supply to the Vina Subbasin.
10	Eric Lundberg	Public Comments	GSP 5.3		4939	The timing of the "schedule to implement the management actions" must be appropriate for the pumpers affected by these actions. I would like to have the Vina GSA board be directed by a written policy as to when these actions can be taken.

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11	Eric Lundberg	Public Comments	GSP 5.3.2		4949 - 4962	It is valuable to gather more information to understand the domestic well situation. However, I do not support the Vina GSA becoming involved by funding the improvement and deepening of domestic wells. It is the responsibility of the well owner for the maintenance of its well, not the GSA. The GSA should not be responsible for providing bottled water and potable water for sanitation. The responsibility of the GSA is to protect the water under our land and not the means to acquire it. I recommend omitting # 3 and # 4 from the PMA and the last sentence of the PMA.
12	Eric Lundberg	Public Comments	GSP 5.3.3		4970 - 4972	I do not support the amendment "requirements for well screens to account for MT" to the BC code. Well drillers need to understand the risks and consequences, but as long as they understand these risks, allow them to drill the well to the depth they think is best.
13	Eric Lundberg	Public Comments	GSP 5.3.5		4981 - 4983	Ponds and lakes are good for the environment, GDEs, and other shallow water systems. Ideally, they should be filled with surface water, but even if they are not, the water still stays inside the Vina GSA in some form. I do not support the Vina GSA encouraging Butte County to amend the zoning ordinance to prohibit the use of groundwater for ski lakes or any recreation that land owners desire on their property, such as swimming, fishing, water habitat, water plants, beauty, wading, floating, sailing, rowing, etc. I recommend omitting GSP 5.3.5.
14	Eric Lundberg	Public Comments	GSP 5.3.7		4991 - 5004	I recommend omitting GSP 5.3.7 and that the VINA GSA board support the development of groundwater irrigation districts like Tuscan Irrigation District that could deal more effectively with ground water level issues.
15	Eric Lundberg	Public Comments	GSP 5.5		5061	There does not seem to be any specific schedule requirements to "begin implementation of management actions". For some actions a schedule isn't important, but other actions may have serious negative effects on those who rely upon pumping. It should be clear when certain actions can be taken and when they cannot.
16	Eric Lundberg	Public Comments	GSP 6.1		5096 - 5131	These costs seem to be a duplication of the work that Butte County Water Resources already does. I would reduce these costs and work with BCWR department.
17	Eric Lundberg	Public Comments	GSP 6.5		5210	I would recommend annual reports to be submitted by February 1 instead of April 1. April 1 reporting does not allow adequate time for management actions to be taken before seasonal irrigation begins.
18	Ernest & Sharon Robinson	Public Comments				Thank you for giving us an opportunity to support the sustainable groundwater management act up for the required adoption by January 30, 2022. We are residents of Durham since 2007 and have our own well. We hope our support will help but our senior years hopefully will continue here in Durham.
19	Scott Brady	Public Comments			ES 8	Figure ES 8 suggests that management of the aquifer will deplete the aquifer more rather than restore it to a higher level. The draft plan's measurable 20objective is too low. Our objective should be to restore the aquifer to a level close to its historical average, ideally 120 feet above mean sea level, not further deplete it.

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20	Scott Brady	Public Comments			Executive Summary	The attachment from page 10 of the Executive summary identifies the sustainable yield of pumping for agricultural use at 233,000 AF/year. This is not sustainable. While less than the current rate of pumping, 244,000 AF/year, there is a strong possibility/ probability that pumping at this level will further deplete the aquifer. This is especially true if the so-called "drought" really reflects the "new abnormal" of climate in the North Valley. Restoring and carefully stewarding this irreplaceable resource should lead to a more conservative estimate of sustained yield. Perhaps an 18% reduction in the existing pumping rate to around 200,000 AF/year would be a reasonable starting point. After all, Californians have been asked by Gov Newsom to reduce water use by 18% due to the drought. Let's start there as a sustainable yield.
21	Cliff Jacobson	Public Comments				Please review your use of the proposed PID intertie language in your plan. At this point, there is no planned PID Intertie. By your organization and everyone else, including the proposed Tuscan water district, constantly referring to available surface water from the Campfire, you are doing a big disservice to the residents of Paradise. Please stop
22	Grace Marvin	Public Comments				Do not see view any failure of wells as acceptable, i.e., 10 % of wells going dry is unacceptable. We should have minimum groundwater levels that <u>improve</u> over the years to protect humans and nature.
23	Grace Marvin	Public Comments				We need to protect the ownership of water by the county. Therefore, we cannot accept artificial recharge, since those doing the recharging come to own the groundwater. We do not want the profit motive, e.g., through private or corporate ownership, since that would mean that there would be an incentive to transfer water out of our county and the north state.
24	Susan Schrader	Public Comments			3306, Figure 3-2	First of all, I appreciate how thorough this document is. It is evidence of hard work and effort. However, i do have concern about the Minimum Threshold. When I look at Figure 3-2, Line 3306, our "current conditions" seem safely above the Measurable Objective (MO) and significantly above the Minimum Threshold (MT) where undesirable results may begin to occur. I think that by the time we get to the MT two years in a row in non-dry years, it will be too late. I notice adverse effects already as domestic wells dry up and trees die around town.
25	Susan Schrader	Public Comments				I've heard that the reason to set the MT so low is so that it will never be reached and, therefore DWR won't come in and take over. I think that is dangerous reasoning if true. We need to have a contingency plan as to what steps will be taken to mitigate undesirable results long before we get to the MT. This prediction for rain this year is tenuous for our area. La Nina will bring drier, warmer temperatures to the southwest and colder, wetter weather to the north. 26We are in the middle and given an even chance for either to occur in our area. I think the MT needs to be set higher to avert water shortage disaster.

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26	Julian Zener	Public Comments				<p>At the October 4th workshop on the Vina public draft GSP, Dr. Christina Buck indicated that approximately 40 residential wells had already gone dry in the Vina sub basin. I fail to understand the rational or humanity of intentionally letting this number increase, probably exponentially, in the next year or two before any of the proposed GSP mitigation actions are taken. Yes, I understand that it takes time to implement structural portions of the GSP but conservations measures can be enacted almost immediately. Agricultural irrigation efficiency and if needed fallowing would achieve more than half of the needed 10,000 acre feet projected to reach sustainability. Please increase the measurable objective ground water level to avoid major hardship for residential well users and potential harm to our urban forest. Most likely, the drought will continue.</p>
27	Kathy Watje (1)	Public Comments				<p>I attended the Public Review Groundwater mtg. on Oct. 4, 2021 last Monday at the Masonic Lodge. The audience was invited to submit comments. I learned if "we" don't come up with anything doable the State will come in and dictate to Northern Californians what to do. We certainly don't need any more government overreach than we already have. Since this is supposed to be a 20-year sustainability plan and regardless of weather conditions, droughts, etc. we are supposed to figure out how to keep our groundwater levels at a level so all people have water who need it; whether it's the farmers or homeowners. I don't see how that can be done if the State of California, as a whole, keeps importing hundreds of thousands of people into our state and building more and more housing for them. This is a statewide issue and it becomes Northern California's issue because it is my understanding that we either sell or give water to the southern part of the state. As far as Northern California, Chico in particular, the city planning department or city council (I don't know which entity makes these decisions) has allowed hundreds if not close to a thousand new homes to be built in Butte County. There has to be a limit as to how many more homes can be built in these Northern Californian counties over the next 20 years if we are to maintain the water levels we say will be sustainable in our reports. My guess is it is all political and people trying to capitalize on making millions of dollars, particularly developers, by purchasing vacant land that is either not farmable for one reason or another or that the green belt lines are being ignored by the politicians. These developers need water for the homes they are building and I assume they dig massively deep wells in order to provide that water. There seems to be Zero regulation regarding this and that has to stop or we will never have enough water in Butte County or Northern California to be 28sustainable. Thank you and I hope your committee receives a good number of comments that help in this very important decision ahead for Northern California.</p>

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28	Pam Stoesser (1)	Public Comments	3			<p>I would like to speak to the subject of Minimum Threshold (MT) and what is shown in Chapter three of your Draft Plan. During the Public Workshop held in Chico on Monday Oct 4, the audience was told that the current groundwater sustainability MT for the Vina Subbasin is to be set at 50 feet below our historical lows. The chart doesn't show that number but it was told to us verbally by the staff. We were also told those historical lows are now, during this current severe drought. Many people spoke out in opposition to this setting. Here is how you bullet point the MT in your Plan: <i>MT– Quantitative threshold for each SI used to define the point at which undesirable results may begin to occur.</i> This is not accurate. We are already seeing undesirable results at our current groundwater levels. So I take great issue with the idea that what is happening now, at our current groundwater levels (not the MT set at 50 feet lower), i.e. domestic wells going dry, streams and rivers extremely low, and our struggling and dying trees, would not be considered undesirable results under this setting. That before the alarm goes off, things would have to get a lot worse.</p> <p>If the MT setting remains at 50 ft below current levels, I believe the wording of that definition needs to change to something like: <i>MT– Quantitative threshold for each SI used to define the point at which the level of undesirable results already occurring is unacceptable</i> (and then expressly state that actions are to be taken to insure we do not reach that point). I would rather see the MT set higher. I understand the argument against moving this number up, something to do with alarming the state to step in too soon. But if the number isn't moved up, there needs to be additional clarification added about what happens within the Margin of Operational Flexibility. Specifically what actions start happening when, as soon as we get below the green line into the Margin of Operational Flexibility. We cannot allow ourselves the chance of taking our groundwater levels down another 50 feet! A statement providing the intention of not reaching the MT is nowhere to be found. Please add.</p>
29	Pam Stoesser	Public Comments				See Vina DRAFT GSP Comment P2
29	Pam Stoesser	Public Comments				See Vina DRAFT GSP Comment P3
30	J. Pablo Ortiz-Partida, Ph.D.	NGO Consortium				See Vina DRAFT GSP Comment A1
31	April Dorman	CDFW				See Vina DRAFT GSP Comment A2
32	Vita Segalla	Public Comments				See Vina DRAFT GSP Comment P1

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33	Darren Rice	RCRD		5.2.3.4		PMA regarding Flood MAR. RCRD requests that methods of MAR considered under this PMA include direct injection via wells as a method of MAR. We recognize that this form of MAR may include additional characterization and impacts analysis as part of scoping. Flood MAR/Surface Water Supply and Recharge Scoping Under this project, Vina GSA and RCRD GSA will expand on the Flood MAR initiative, which was originally developed by the DWR to promote recharge programs that use fields, recharge basins, new or existing well structures and/or recharge ponds to divert high flows in creeks and streams. Individual recharge projects will eventually occur, but this particular project will focus on the initial scoping and identify specific recharge opportunities in the Vina Subbasin. At first, Vina GSA and RCRD GSA will focus their efforts on areas with the greatest need for recharge and seek grants and other funding sources to implement the projects. Interested landowners would be identified and participation in the program would be voluntary. Estimated Groundwater Offset and/or Recharge: Not applicable. Future recharge projects are possible based on results of scoping. Measurable Objective Expected to Benefit: Future increase of groundwater levels Project Status: This project is in the planning stages. Required Permitting and Regulatory Process: N/A Timetable for Initiation and Completion: 2022-2032 Expected Benefits and Evaluation: This project would develop the first steps of the Flood MAR initiative and recharge efforts for the Vina Subbasin region and identify specific groundwater recharge and management projects based on feasibility, need, and available funding. The initiation of this project would then lead to future recharge projects. How Project Will Be Accomplished/Evaluation of Water Source: This project will help to identify and develop specific recharge projects in the region, which will then individually determine recharge sources. Legal Authority: The project would be under the authority of the Vina GSA and RCRD GSA. Estimated Costs and Plans to Meet Costs: TBD, funding via Proposition 1 and Proposition 68 Circumstances for Implementation: This project is a Planned Project that is anticipated to move forward. Trigger for Implementation and Termination: None Process for Determining Conditions Requiring the Project to Occur: This is a Planned Project that is anticipated to move forward.
34	Rich McGowan	AGUBC				See Vina DRAFT GSP Comment A3
35	Rich McGowan	AGUBC	ES		Lines 223 - 225	The draft GSP states that undesirable results occur if Minimum Thresholds (MTs) are exceeded in "... an established percentage of sites in the Subbasin's representative monitoring network." Have the GSAs established that percentage? If so, we request that the GSP include that percentage. If not, the GSAs should determine a percentage. Upon review of other draft GSPs in the Northern Sacramento Valley, we have found GSAs that suggest 25% for this purpose.
36	Rich McGowan	AGUBC	ES		Table ES-1	We are generally supportive of the methodology used to determine the Measurable Objectives (MO) and MTs for groundwater levels in the Vina North and Vina South

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						management areas, as stated. However, there is only 20 feet of operational flexibility for Representative Monitoring Sites (RMS) 21C001M for the Vina South management area. We recommend that this area be re-visited to consider lowering the MT to allow for more operational flexibility, recognizing that the goal is the MO.
37	Rich McGowan	AGUBC	ES		Figure ES-10	This figure appears to depict 16 RMS wells instead of 17 RMS wells, as noted preceding page. We request that the GSAs verify the correct number of RMS wells and correct, if needed.
38	Rich McGowan	AGUBC	Ch. 2		Lines 2902 - 2903	This section considers 243,000 AFY of groundwater pumping as “outflows” but the figure on this page seems to categorize this amount as “inflows.” We request that the GSAs verify this amount and correct the information, if needed.
39	Rich McGowan	AGUBC	Ch. 2		Lines 3212 - 3225	We do not disagree with the draft GSP’s conclusion that the sustainable yield is 233,000 AFY and the decrease of storage is 10,000 AFY. However, the explanation of the average specific storage value and range of storativity values is unclear, especially because Table 2-11 does not have a value of 233,000 AFY to point to as the estimated sustainable yield. We request that the GSAs revise this language to clarify the explanation regarding average specific storage value.
40	Rich McGowan	AGUBC	Ch. 5		Lines 4388 - 4398	The following bullet points should be inserted in this section: (1) “Project Status” should be added after “The Measurable Objective benefitted by the project.” (2) “Process to Determine conditions requiring project to occur” should be added after “Implementation circumstances.” Finally, the “Public noticing” bullet point at Line 4398 is not included in the project descriptions, so it should either be added to each description or removed as a bullet point in this section.
41	Rich McGowan	AGUBC	Ch. 5		Lines 4399 – 4400	Figures 5-1 and 5-2 show locations of planned and potential projects, but the figures do not seem very useful for that purpose as many projects seem to apply throughout the Subbasin. If the figures are left in, then the concept that no specific location applies at this time needs to be better described and presented in Figures 5-1 and 5-2.
42	Rich McGowan	AGUBC	Ch. 5		Figure 5-1	The project number in the table on the bottom left-hand side of this figure should reflect the same order as they are listed in Chapter 5. We request that the GSAs revise this figure to reflect this ordering. Further, we recommend that the GSAs revise “Flood-MAR” to “Flood-MAR Scoping” and “Additional Water to Creeks and Streams” to “Streamflow Augmentation.” The names of the projects should be the same as listed in Chapter 5. Finally, two of the five projects identified in this figure (Agricultural Irrigation Efficiency and Flood-MAR Scoping) seem to apply throughout the Subbasin as opposed to specific locations, but the representation in this figure does not make that clear. We request that the GSAs revise this figure, accordingly.

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43	Rich McGowan	AGUBC	Ch. 5		Figure 5-2	We recommend that the GSAs add the following projects to the table on the bottom left-hand side of this figure: (1) "Community Monitoring Program" should be added after "Recharge from the Miocene Canal;" and (2) "Surface Water Supply and Recharge" should be added after "Removal of Invasive Species". Further, it is unclear whether the position of Numbers 10, 11, 12 and 13 at the northwest part of the Subbasin indicate that these projects would occur throughout the Subbasin. If so, then we recommend that the GSAs clarify that information. If not, then we do not believe that those will necessarily occur in that location or that their implementation will be limited to that location. If the position of these numbers is to identify projects that may occur throughout the Subbasin and/or do not have specific locations at this time, that should be applied to "Extend Orchard Redevelopment" and "Surface Water Supply and Recharge" as well, if not others. In addition, the location identified in the figure for "Agricultural Surface Water Supplies" is misleading because it would only be a <i>possible</i> location while there is a very real possibility that it could occur in other locations.
44	Rich McGowan	AGUBC	Ch. 5		Line 4418	The results of the survey mentioned in this section were not made available in September 2021. The GSAs should revise this language to reflect the month when the GSAs reasonably expect the results of this survey to be available.
45	Rich McGowan	AGUBC	Ch. 5		Lines 4477 – 4506	The "Streamflow Augmentation" project should be categorized as a "potential project" instead of a "planned project." The draft GSP expressly provides that this project is "in the planning stages." (Pg. 144, Line 4488.) Further, the draft GSP provides that before the project is started, a feasibility study must first be performed to "ensure that enough surface water would be available." Therefore, until this feasibility study is performed and its results are evaluated, it is premature to include this project as a "planned project."
46	Rich McGowan	AGUBC	Ch. 5		Line 4479	The project references transportation of excess untreated surface water from PID. Is this the same as what is contemplated by the PID Intertie project described later as a Potential Project? If so, it should either be removed here or the PID Intertie project should be removed since the references are duplicative.
47	Rich McGowan	AGUBC	Ch. 5		Line 4498	Regarding the "Streamflow Augmentation" project, it is unclear how the GSA determined an estimated fee of \$50 to \$100 per acre-foot for surface water supplies when a feasibility study has yet to be performed. If the GSA has not determined whether surface water is even available, how can it determine the fees associated with its purchase? Until this feasibility study is performed, we request that this estimated fee be removed.
48	Rich McGowan	AGUBC	Ch. 5		Lines 4639 - 4640	This section is not clear as to the sources of the 20% efficiency number. We request that the GSAs provide additional clarity regarding its establishment of this number.
49	Rich McGowan	AGUBC	Ch. 5		Lines 4695 – 4697	Why does this section limit the use of recycled wastewater to "non-crop vegetation in Chico?" Is there an established rule against this by the Regional Water Quality Control Board?

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50	Rich McGowan	AGUBC	Ch. 6		Figure 6-1	We request that the GSAs change "Floor MAR," at ID 42, to "'Flood MAR Scoping." Further, we request that the GSAs amend the timeline associated with this project. Because this project is only a study, we do not believe that it should take eight to nine years to complete.
51	Monroe Sprague	Public Comments	Chap 5	5.1	pg. 374	Public Vina GSP Comments This citizen of Butte County, Vina GSA, requests a paragraph be added to our GSP for an Interim Milestone Action Plan (IMAC) with more specific and earlier triggers for adjustment actions as recommended by Kamie Loeser, Director, Butte County Department of Water and Resource Conservation. The purpose would be to define smaller segments in Operating Range on the hydrologic graph, example page 374, and raise our effective or functioning Minimum Threshold level. Our Real Objective should be to continue in the water level range we have had since 1975, which is above the Measurable Objective. Why would we want to use up or kill part of the goose that is giving us our golden aquifer? If we want to grow, increase productivity, etc., we need to use our eggs better. Thank you for working to maintain our public natural resource.
52	Samantha Arthur	Audubon California				See Vina DRAFT GSP Comment A4
53	Annette Faurote	Public Comments				See Vina DRAFT GSP Comment P4
54	Holly Dawley	GCID				See Vina DRAFT GSP Comment A7
55	Margaret Scarpa	Butte Environmental Council				See Vina DRAFT GSP Comment A5
56	Michael Bolzowski	Cal Water	1	1.3.5.2	941	The GSP references that Cal Water published our UWMP in 2007 as written in the Chico 2030 General Plan, which was published in 2010. We may want to have a line added that the latest UWMP was just published in 2020.
57	Michael Bolzowski	Cal Water	1	1.3.5.2	944	The Master Plan will be updated in the near future along with a Reliability Study being planned for 2023 for the Cal Water Districts in the region.
58	Michael Bolzowski	Cal Water	2	2.3.8	3226	The GSP does not specify a sustainable pumping yield. Line 82, the estimated sustainable yield for the Subbasin is 233,000 acre-feet per year and from Line 1392, Vina Subbasin Sum of Acres is 184,918 acres, This will give a pumping yield of 1.26 AF/acre. It may be good to have this shown in the report, though this maybe an oversimplification of the current conditions.. This can be added to eh recommendation of next steps as a future refinement.

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59	Anne Dawson	Vina SHAC	Exec Summ.		254	The Vina Chico area MTs are established in accordance with the statement on Line 223. But the methodology used to establish the MTs for Vina North and Vina South are not discussed. What led to choosing a level of, say, 70ft bgs instead of 60ft? Was a percentage of domestic wells included in this? The word “majority” is included but not defined.
60	Anne Dawson	Vina SHAC	Exec Summ.		Table ES-1	Vina North has 2 RMS wells demonstrating Operating Margins of 80+ ft. This is excessive and unnecessary.
61	Anne Dawson	Vina SHAC	Exec Summ.			The first well in Vina South has the wrong number attached to the MT.
62	Anne Dawson	Vina SHAC	Exec Summ.			Again the Operating margins in Vina South are mostly over 60 ft.
63	Anne Dawson	Vina SHAC	Exec Summ.			I believe these massive operating ranges will come back to haunt us. We may be inviting the state to encourage surrounding basins to surrender their surface water and use GW. That depletes our aquifer, but it would have little effect on our GSP which will likely remain in compliance because the MO and MT are separated by such a large margin. Bottom line, I think we are risking a state takeover of our GW.
64	Anne Dawson	Vina SHAC	Chap 5	5.3.2	4948	I suspect the info described will be difficult to obtain. I believe we need to define a “sustainable” well. Perhaps current Butte County rules and well standards might be used to establish what is sustainable. Pre-1980 wells may have been deepened and are functioning just fine. They should be included. I would like to see a plan to financially help ALL domestic well owners impacted by SGMA. We use 4% of the GW but are being landed with almost 100% of the costs.
65	Anne Dawson	Vina SHAC	Chap 3	3.1	3341-44	Demand reduction is absent.
66	Anne Dawson	Vina SHAC	Chap 3	3.3.2	3414	Please consider changing this line to read “going dry or remaining dry during non-dry year conditions”
67	Anne Dawson	Vina SHAC	Chap 5	5.5		This plan has very generous operating margins. We are putting all our faith in a plan that will undoubtedly have shortcomings, and drought remains unpredictable. I am concerned that we have no backstop. If the plan is failing our remedies will have to employ demand reduction. This would be a contentious topic. It already takes a long time to get updated GW levels, it will take months to establish what to do if we are at risk of failing, and probably years to agree on the details. None of us wants to have to resort to demand reduction. But we don’t want to have a delay of years in implementing a remedy. So let’s put in place some guidelines to trigger a response. Then, if we have to act on it, we’ll be able to proceed faster and those demand reductions would be lifted sooner.
68	Jim Graydon	Private Well Owner	3. Sustainable Management Criteria	3.3 Groundwater Levels Sustainable Management Criteria	Table 3-1	Proposed MT and MO for Lowering Groundwater Levels in the Chico Management Area are too low to protect against undesirable results. Consider revising definition of MT and MO to derive more protective trigger values. I am aware of four domestic supply wells within 1 mile of CWSCH02 which were constructed in 1986 to County standards and are less than 100-ft

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						total depth bgs (approx. 88-ft amsl). The current water level in the localized area as of October 2021 is at the MO of 105-ft elevation amsl. The operational flexibility range gives approximately 1 more drought year before these wells go dry at an elevation above the MT.
69	Jim Graydon	Private Well Owner	3. Sustainable Management Criteria	3.5 Water Quality Sustainable Management Criteria	Table 3-2	The water quality in the Chico Management Area has been documented to be high quality as it relates to dissolved solids. With specific conductance typically below 300 uS/cm, the proposed MO of 900 uS/cm allows an unacceptable level of degradation before action is initiated. Recommend setting MO to at a level such that action is taken before water quality approaches the secondary MCL. Setting the MO somewhere between 500-600 uS/cm with an MT between 900-1,000 uS/cm is warranted to protect agricultural water quality.
70	Jim Graydon	Private Well Owner	3. Sustainable Management Criteria	3.8 Interconnected Surface Water Sustainable Management Criteria		I encourage completion of the necessary studies to determine the principal factors impacting groundwater dependent ecosystems in the Chico Management Area. With additional local documentation, more specific and protective MT and MO can be set. Without riparian woodland and adjacent seasonal wetlands, Chico is a very different place.
71	Jim Graydon	Private Well Owner	Chapter 4: Monitoring Network	4.9: Representative Monitoring Sites for Sustainability Indicator	Table 4-5.	The RMS Well Construction Details for the 5 wells chosen for monitoring in the Chico Management Area are lacking total depth and screened interval information. 4 of the 5 wells are CWS production wells that are no doubt screened across multiple aquifer zones. There are numerous wells in the total depth range of 100 to 400 feet within the Chico Management Area that have known depths and screened intervals that would better represent the conditions in the basin (See DTSC's EnviroStor database at https://www.envirostor.dtsc.ca.gov/public/). Consider adding 2-3 additional RMS wells with known construction to the monitoring program in the Chico Management Area.
72	Jim Graydon	Private Well Owner	Chapter 5: PMAs	5.2.3.3: Streamflow Augmentation	Line 4484-4485	Add Lindo Channel to the list of surface water drainages that would receive augmented flow to disperse the groundwater benefits throughout the basin
73	Jim Brobeck (1)	Aqualliance	02 Executive summary	Section	49-51	"The interests and vulnerability of stakeholders and groundwater uses in these Management Areas vary based on the nature of the water demand (agricultural, domestic, municipal)" Water demand for the environment must be included. GDEs include upland and riparian valley oak groves, small stream flow, GD urban forests.
74	Jim Brobeck (2)	Aqualliance	2		143-144	"groundwater use has increased and as forces ranging from population growth to climate change play out," This sentence ignores the fact that increased cross-boundary flows that may result from expanded demand west of the river (primarily agriculture and water-market-driven aquifer exercise) is at play. This threat to meeting our management goals must be acknowledged and addressed in interbasin coordination/communication process yet to be developed.

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75	Jim Brobeck (3)	Aqualliance			153-154	"Groundwater storage in Subbasin is relatively stable except in the areas noted above with depressions." The identification of localized hydrograph trends is relevant, but it is important to recognize long-term basin declines that occur due to cross-boundary flows influence the baseline water levels. In general (depending on soil conditions and strata) the greater the distance or depth of groundwater pumping and water levels in the VGSA, the lower the magnitude but the longer the timescale of depletions. As a consequence, the ultimate effects in the Vina of pumping in nearby sigma subbasins can occur significantly after pumping starts, or even after pumping has ceased. The timescales involved in aquifer responses to pumping and other stresses can be on the order of decades, making it difficult to associate cause with effect. As such, monitoring must account for this lag in impacts. In general, the longer the timeframe for effects to be observed at a given monitoring point once they become evident, the longer those effects will persist.
76	Jim Brobeck (4)	Aqualliance			166-167	165 "If the water table beneath the stream lowers as a result of groundwater pumping, the stream may disconnect entirely from the underlying aquifer." A stream that ceases to flow once it enters the alluvial basin is entering the aquifer at that point. The deeper the aquifer level the more of the streambed is dewatered and the earlier. So while a stretch of the creek may be "disconnected" the creek itself is still connected. Mr. Toccoy Dudley, a Department hydrogeologist with the Northern District in Red Bluff, wrote in 2000: At any location in the basin, the gradient between the surface water and groundwater system is directly proportional to the head differences (water surface elevation difference) between the two hydrologic systems. The larger the head differences the higher the gradient and the higher the recharge rate....The shorter the horizontal distance over which the head change occurs increases the recharge rate dramatically. An example of this would be pumping next to a river would induce a much higher recharge rate from the surface water system than the same pumping many miles away.....increased extraction causes the groundwater levels to decline, which increases the head difference between the groundwater and surface water systems, and consequently increases the gradient and recharge rate. In short, the more you pump, the more you can pump, to a point. Anecdotal and archeological evidence indicates the small streams of the Vina SB were perennial during pre-pumping eras.

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77	Jim Brobeck (5)	Aqualliance			249 figure ES-7	249 The sample hydrograph is one of several that I have reviewed in other parts of the GSP that have disturbing MO and MT levels. The MO is below the historic low, not the appropriate level to designate the top of the operational range. The MT as defined in other parts of the GSP, is purported to designate "the point at which Undesirable Results may BEGIN to occur." But undesirable results will begin much earlier in the operational range. The historic low of this hydrograph is above the 80' max rooting depth of native phreatophytes. The MT is significantly lower than 80' bgs. Furthermore, the lower water table will dewater longer reaches of streams earlier in the season and persist later in the year. The operational range proposed is pessimistic in meeting goals that would avoid triggering Undesirable Results. Wise resource management strives to improve conditions that have been degraded by human development. Accepting degraded status quo or planning for increased degradation may be realistic given the human inclination to ambitiously convert resources into useful products. But the term "sustainable" implies we have the capacity to identify and honor carrying capacity while devising demand flexibility strategies to meet evolving climate conditions. Robust Management Objectives reduce the probability of careening toward Management Thresholds. Our MO levels can strive to improve conditions without risk of State management takeover. § 354.30. Measurable Objectives (g) An Agency may establish measurable objectives that exceed the reasonable margin of operational flexibility for the purpose of improving overall conditions in the basin, but failure to achieve those objectives shall not be grounds for a finding of inadequacy of the Plan.
78	Jim Brobeck (6)	Aqualliance	Chapter 2	Basin setting		Chapter 2 Basin setting
79	Jim Brobeck (7)	Aqualliance				3251 The failure of the GSP to attempt an estimate of interbasin subsurface flow along the Western Boundaries invalidates the Water Budget on which much of the GSP uses as a foundation. It is inappropriate to explain that "Characterization of Interbasin Flows and Net Outflows along Western Boundary" is placed in the "Next Steps" category. Water Code § 354.16 explains "Groundwater Conditions Each Plan shall provide a description of current and historical groundwater conditions in the basin, including data from January 1, 2015, to current conditions, based on the best available information that includes the following: (a) Groundwater elevation data demonstrating flow directions, lateral and vertical gradients, and regional pumping patterns, including: (1) Groundwater elevation contour maps depicting the groundwater table or potentiometric surface associated with the current seasonal high and seasonal low for each principal aquifer within the basin." Code § 354.18. "Water Budget (a) 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...

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80						(3) Outflows from the groundwater system by water use sector, including ... subsurface groundwater outflow." Early basin-setting drafts of the Vina, Butte and Colusa sub-basins showed large discrepancies in the modeled subsurface aquifer outflow patterns. The Butte Basin Groundwater Model has no capacity to quantify subsurface GW flow out of the western boundary of the sub-basin. The present draft recognizes the data gap and inadequacy of regional modeling that characterizes the water budget of inflow and outflow. The Butte County Drought Task Force recognizes that Groundwater extractions outside the Vina boundaries such as the past and present Water Transfer Programs and Supplemental Groundwater Pumping Operations in the Northern Sacramento Valley may have enduring cumulative impacts on Vina's water budget. SGMA regulations require Each Plan to contain a water budget for the basin that identifies discharges including subsurface groundwater outflow.
81	Jim Brobeck (8)	Aqualliance				<p>"2.1.2.4 Groundwater Recharge Areas 1415 "Groundwater recharge is the downward movement of water from the surface to the groundwater system." Some recharge occurs from upward movement. Piezometric pressure from the semi-confined portions of the Tuscan System allows water to move upward recharging into or supporting alluvial unconfined aquifers if sufficient pressure exists. Line 1940 explains; "In locations where groundwater levels in the shallower wells are lower than in the deeper wells, the gradient indicates upward movement of groundwater, with a similar relationship defining the volume of upward flow." Conversely the alluvial shallow aquifer can leak downwards if the piezometric elevation is reduced. Line 1937: "When groundwater levels in the shallower wells are higher than in the deeper completions, the gradient indicates downward movement of groundwater. The volume of downward flow is proportional to the gradient and the hydraulic conductivity between the shallow and deep measurement points." The USDA groundwater atlas [https://pubs.usgs.gov/ha/ha730/ch_b/B-text3.html] explains this well-known water fact: "By the early 1960's, intensive ground-water development had significantly lowered water levels and altered ground-water flow patterns in the Central Valley aquifer system. By far the most dramatic impact of development was in the San Joaquin Valley, where water-level declines in the confined part of the aquifer system were locally more than 400 feet (fig. 82). Although predevelopment flow was toward the San Joaquin River throughout most of the basin, large withdrawals from deep wells in the western and southern parts of the aquifer system changed the direction of horizontal flow in the confined part of the system until the water moved toward the withdrawal centers (fig. 83). Also, because the magnitude of the withdrawals caused hydraulic heads in the confined parts of the aquifer system to fall far below the altitude of the water table (fig. 84), the vertical hydraulic gradient was reversed over much of the San Joaquin Valley. Where these wells are</p>

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						<p>open to the unconfined and confined aquifers, they allow virtually unrestricted vertical flow through the well bore (fig. 87). The amount of water that flows downward through one large-diameter well has been estimated to be equivalent to the natural leakage through the "E-clay" over an area of approximately 7 square miles. During the peak of the withdrawal season, the net downward flow may be, on average, as much as 0.3 cubic foot per second per well." Significant Depressurization of the regional confined aquifer can take place within and outside of the Vina sub basin. Well-casings that have perforations at shallow and deep levels increase the vertical flow. Lines 1456-1460 indicate there is this type of potentially interbasin leakage in the Vina SB "Aquifer testing conducted as part of the Lower Tuscan Aquifer study (Brown and Caldwell, 2013) indicated there is also the potential for Upper Watershed recharge in the shallow aquifer interval to move down to greater depths due to irrigation pumping, causing a mixing of recharge sources in the intermediate and possibly deeper aquifer zones in the Vina South Management Area."</p> <p>Line 1469 discusses "Additional recharge through management activities of flood flows or irrigation practices has potential in the Vina Subbasin..." but does not discuss how the recharged water can migrate through the deep aquifer into adjacent sub-basins that are being pumped. As a result, much of the water in the upper unconfined zone of the aquifer system that flowed laterally toward the river under predevelopment conditions leaked downward through the confining beds into the lower confined aquifer after development...Ground-water development in the San Joaquin Valley has reduced the effectiveness of the confining beds within the aquifer. Thousands of wells with casings perforated for much of their length have been drilled through the clay confining units.</p>
83	Jim Brobeck (9)	Aqualliance				<p>1522 2.1.5 Groundwater Producing Formations presents an incomplete overview of the producing geology and fails to quantify the robust yields of the Tuscan even while quantifying the production amounts available in less important aquifer units, line 1614: "Wells penetrating the sand and gravel units of the Riverbank and Modesto Formations produce up to about 1,000 gallons per minute (gpm)" The Update on the Stony Creek Fan aquifer Performance Testing [http://cete.hama.ucdavis.edu/files/135217.pdf] indicated that that Lower Tuscan can produce 2,500-3,000 gpm. The GCID and others are exploiting/depressurizing this extremely productive aquifer. The cumulative yield of the wells exercising the lower Tuscan is undoubtedly impacting water levels in all aquifer layers in the 4-county basin.</p>

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84	Jim Brobeck (10)	Aqualliance				Line 1736 2.1.8.2 Beneficial Uses "Water produced from the principal aquifer is primarily used to meet irrigation, domestic, and municipal water demand." This sentence should include "environmental demand". Groundwater and surface water are historically and, in many cases, currently connected. Beneficial uses must include the benefits to ecosystems including Groundwater Dependent upland vegetation. According to the State Water Board delineation of beneficial uses [https://www.waterboards.ca.gov/rwqcb2/water_issues/programs/planningtmdls/basinplan/wb/bp_ch2.html] 2.1.3 COLD FRESHWATER HABITAT (COLD) Uses of water that support cold water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates. 2.1.14 PRESERVATION OF RARE AND ENDANGERED SPECIES (RARE) Uses of waters that support habitats necessary for the survival and successful maintenance of plant or animal species established under state and/or federal law as rare, threatened, or endangered. 2.1.18 FISH SPAWNING (SPWN) Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish. 2.1.19 WARM FRESHWATER HABITAT (WARM) Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates. 2.1.20 WILDLIFE HABITAT (WILD) Uses of waters that support wildlife habitats, including, but not limited to, the preservation and enhancement of vegetation and prey species used by wildlife, such as waterfowl. Beneficial uses of streams that have intermittent flows, as is typical of many streams in the region, must be protected throughout the year and are designated as "existing."
	Jim Brobeck (10-continued)	Aqualliance				
85	Jim Brobeck (11)	Aqualliance				1866 2.2 Groundwater Conditions; • "Wells showing depths to first encountered groundwater deeper than 500 feet were eliminated from the data set." The rationale behind this limitation is unclear. If there is significant piezometric pressure identified in the water encountered below 500' it should be included in the analysis. The hydrographs in this section measure a shallow portion of the system. It is likely that groundwater flow volumes would be stimulated when the pressurized portion of the aquifer is depressurized by major production operations. The cumulative effect of these extractions may be the cause of the decline in the seasonally fluctuating regional aquifer levels. The failure to evaluate the effect of confined/semi-confined piezometric pressure dynamics on groundwater conditions must be remedied. Line 2143 identifies the existence and importance of this pressure in relation to subsidence but there is no other mention of piezometric pressure. "As the pressure created by the height of water (i.e., head) declines in response to groundwater withdrawals, aquitards between production zones are exposed to increased vertical loads." The measurement of piezometric pressure is

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						important for groundwater monitoring. It allows us to determine the level and flow patterns of the groundwater. Omitting a discussion of piezometric pressure when discussing groundwater conditions in our region is like ignoring blood pressure during a human physical exam.
86	Jim Brobeck (12)	Aqualliance				1996 "Since the year 2000, there has been a cumulative decline in March 1 groundwater storage of about 400,000 acre-feet (AF). This indicates the cycles of groundwater pumping are not in balance with the cycles of recharge that replenish the aquifer, and that groundwater depletion has occurred consistent with long-term decline in groundwater levels." Without a regional GW model and a record of pumping throughout the Tuscan basin it is impossible to identify pumping in the VGSB as the sole demand resulting in the decline in GW storage.
87	Jim Brobeck (13)	Aqualliance				2017 "Development of groundwater quality-related Sustainable Management Criteria for the Vina Subbasin is not intended to duplicate or supplant the goals and objectives of ongoing programs including those by Butte County, the SVWQC and the State Drinking Water Information System (SDWIS) [SWRCB Geotracker/GAMA website, the California Department of Toxic Substances Control (DTSC) EnviroStor website, and the Environmental Protection Agency's (EPA) National Priorities List (NPL)]." GW pumping stimulates the movement of toxic plumes through the aquifer system. Advection is the movement of dissolved solute with flowing groundwater. The amount of contaminant being transported is a function of its concentration in the groundwater and the quantity of groundwater flowing, and advection will transport contaminants at different rates in each stratum. Who are the personnel in the VGSA that will be tracking these data and correlating it to various GW pumping regimes and flow patterns?
88	Jim Brobeck (14)	Aqualliance				2268 Figure 2-23: "Hydrographs for Nested Well Located Near Feather River" is the description of the figure but the text explains "As seen in this figure, the hydrograph for the nested well located adjacent to the Sacramento River..." Typographical error?

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89	Jim Brobeck (15)	Aqualliance				<p>2298 "There is no indication in the streamflow data to suggest groundwater interactions that contribute to the streamflow behavior. Similar conditions would be expected for other creeks that traverse the Vina Subbasin (Little Chico, Sycamore, Rock, and Butte Creek) since they flow across a similar fan topography and similar shallow subsurface geology. The overall conclusion from this study in relation to interconnected surface water is that, for significant portions of the year, the upland creeks in the Vina Subbasin would be classified as disconnected streams and the surface water would be considered "completely depleted" as defined under SGMA." Water code chapter 23 explains "(o) "Interconnected surface water" refers to surface water that is hydraulically connected <u>at any point by</u> a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted." As I read Water Code it is clear that streams flowing out of the foothills are hydraulically connected until they reach a point where the aquifer has been depleted below stream level at which point the stream loses as it recharges the evacuated aquifer. As the GW level declines the stretch of dewatered stream expands. Spatial and temporal dewatering monitoring is a critical GDE function of a GSA. The California Department of Fish and Wildlife has specific GDE recommendations that must be implemented in the VGSA</p> <p>[https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=170185&inline] "GROUNDWATER DEPENDENT ECOSYSTEMS (GDES) 1. How will groundwater plans identify GDEs and address GDE protection? 2. How will GSAs determine if GDEs are being adversely impacted by groundwater management? 3. If GDEs are adversely impacted, how will groundwater plans facilitate appropriate and timely monitoring and management response actions?"</p> <p>INTERCONNECTED SURFACE WATERS (ISW) 1. How will groundwater plans document the timing, quantity, and location of ISW depletions attributable to groundwater extraction and determine whether these depletions will impact fish and wildlife? 2. How will GSAs determine if fish and wildlife are being adversely impacted by groundwater management impacts on ISW? 3. If adverse impacts to ISW-dependent fish and wildlife are observed, how will GSAs facilitate appropriate and timely monitoring and management response actions." According to a study on small streams flowing through the Vina SB: "Nonnatal rearing of juvenile Chinook salmon was documented in several intermittent tributaries to the Sacramento River. Condition factors and length measurements of juvenile chinook captured in the intermittent tributaries were compared with those captured in the mainstem Sacramento River. The data suggests that juvenile chinook rearing in the tributaries grew faster and were heavier for their length than those rearing in the mainstem. Faster growing fish smolt earlier, and may enter the delta earlier in the year before low water and pumping degrade rearing habitat." Intermittent Streams as Rearing Habitat for Sacramento River Chinook Salmon.</p> <p>https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs</p>

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						/exhibits/swrcb/swrcb_maslin1997.pdfThe unregulated streams that flow into the Sacramento River are leaking into drained aquifers. Dan Wendell of The Nature Conservancy, a panelist at a workshop held by the California Natural Resources Agency, explained “since the 1940s, groundwater discharge to streams in the Sacramento Valley has decreased by about 600,000 acre-feet per year due to groundwater pumping, and it’s going to decrease an additional 600,000 acre-feet in coming years under status quo conditions due to the time it takes effects of groundwater pumping to reach streams.” https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/part2/aqua_282.pdf
90	Jim Brobeck (16)	Aqualliance				2.2.7 Groundwater Dependent Ecosystems 2488 Not Likely a GDE Due to Adjacency to Irrigated Agricultural Fields 2504 Not Likely a GDE Due to Dependence on Agricultural-dependent Surface Water GDEs were incorrectly removed in areas adjacent to irrigated fields due to the presence of surface water. However, GDEs can rely on multiple water sources – including shallow groundwater receiving inputs from irrigation return flow from nearby irrigated fields - simultaneously and at different temporal/spatial scales. Basins with a stacked series of aquifers 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 principal aquifers, that support springs, surface water, and groundwater dependent ecosystems. Areas in proximity to irrigated land can still potentially be reliant on shallow groundwater aquifers, and therefore should not be removed solely based on their proximity to irrigated fields.
91	Jim Brobeck (17)	Aqualliance				2.3.4 Water Budget Estimates2831 “Other components are more difficult to measure or do not have measured values readily available (e.g., deep percolation, subsurface flows, groundwater pumping, surface water-groundwater interaction, etc.) and are estimated using the BBGM.” It is unclear how the BBGM estimates Western Boundary Net Outflows 56,100-65,000 AFY. This map from the first draft of the Vina Water Budget presentation last year estimated a total of 200k AFY flowing from the east out of Butte into Colusa. The first draft of the Butte Subbasin Preliminary Basin Setting Results indicated 261k AFY of water flow from the west into the Butte basin from Colusa. These large discrepancies in outflow estimates do not inspire confidence in the Water Budget, the identification of who is responsible for GW declines or the efficacy of proposed recharge efforts. “The ultimate effects of pumping can occur significantly after pumping starts, or even after

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						<p>pumping has ceased. The timescales involved in aquifer responses to pumping and other stresses can be on the order of decades, making it difficult to associate cause with effect. As such, monitoring must account for this lag in impacts. In general, the longer the timeframe for effects to be observed at a given monitoring point once they become evident, the longer those effects will persist, even if the pumping causing the effects is halted immediately.” Davids Engineering 2014. Prepared for NCWA, Sacramento Valley Groundwater Assessment Active Management – Call to Action, pp. 14-15.</p> <p>We know that interbasin flows are dependent on conditions in adjacent basins. "3014 Western boundary net outflows represent Sacramento River gains from groundwater and subsurface outflows to the Corning Subbasin. The split between these outflows is uncertain at this time and identified as a data gap." This significant data gap will present challenges as the impacts of GW pumping are not immediate and can take months or years to occur. The emerging California Water Market is a factor that is going to complicate regional water budget estimates.</p> <p>BCWRC's Drought Task Force intention to evaluate the cumulative impacts of Water Transfer Programs (including GW Substitution water market transactions) and Supplemental Groundwater Pumping Operations in the Northern Sacramento Valley is essential to understand sub basin water budgets.</p>

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92	Jim Brobeck (18)	Aqualliance				3014 "Western boundary net outflows represent Sacramento River gains from groundwater and subsurface outflows to the Corning Subbasin. The split between these outflows is uncertain at this time and identified as a data gap." The subsurface outflow analysis must be expanded to include outflows into other nearby sub basins including Butte and Colusa. Increased GW extractions due to crop changes, "emergency" supplemental GW pumping and GW substitution transfers is likely to increase subsurface flows over time. Butte Counties nascent Drought Impacts Analysis Study plans to compile the 2021 water transfer programs (April 2021-December 2021) from Butte, Tehama, Glenn, Colusa, Yuba and Sutter counties. The report will include a brief description of the programs, amount of water transferred, recipient of water, whether surface water or groundwater substitution is utilized, destination of transferred water, etc. including maps. Analysis of the transfer programs will evaluate the cumulative impacts of the programs' impacts on water supplies and demands. This type of annual evaluation must be ongoing as demand/supply conditions evolve and consider "timescales involved in aquifer responses to pumping and other stresses can be on the order of decades, making it difficult to associate cause with effect. As such, monitoring must account for this lag in impacts. In general, the longer the timeframe for effects to be observed at a given monitoring point once they become evident, the longer those effects will persist, even if the pumping causing the effects is halted immediately." [1] [1] Davids Engineering 2014. Prepared for NCWA, Sacramento Valley Groundwater Assessment Active Management – Call to Action.
93	Jim Brobeck (19)	Aqualliance				Line 3016 Water Banking Stimulation of sub surface flows "It is anticipated that this data gap [sub surface flows] will be addressed through future refinements to the BBGM and through coordination and collaboration with neighboring subbasins as part of GSP implementation." The coordination and collaboration with neighboring subbasins is, at best, a forthright sharing of information and unbiased evaluation of model results. However, the VGSA would be naive to ignore the special interests of key players in the Northstate Water World that may inspire some purveyors to profitably engage in the emerging California Water Market with less regard to the interests of GDEs and water users that are not participating in Transfer/sales that "exercise" the shared regional aquifer while promising to use PMAs to refill drained aquifer water banks.

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94	Jim Brobeck (20)	Aqualliance				<p>3181 “It is anticipated that these uncertainties will be reduced over time through monitoring and additional data collection, refinements to the BBGM and other tools, and coordination with neighboring basins.” The DGSP is deficient because significant monitoring infrastructure has yet to be funded and built in the shallowest portion of the aquifer system that GDEs rely upon. According to the 2007 DWR/NCWA Sacramento Valley Water Resource Monitoring, Data Collection and Evaluation Framework; “The long-term health of riparian vegetation, wetland species, and number of other native habitat are commonly associated with maintaining a minimum range of groundwater levels and an appropriate level of interaction between surface water and groundwater resources. The lowering of groundwater levels due to natural climatic changes or the interception of groundwater underflow to surface water systems due to the increased groundwater extraction associated with water management programs, have the potential to impact the native habitat areas. Baseline habitat monitoring is an important data collection objective because it allows for a better understanding of the existing water resource requirements of the native habitat and the evaluation of potential impacts associated with potential changes in water resource management practices. In order to identify potential habitat impacts associated with potential changes in water management practices, a program-specific network of shallow monitor monitoring wells should be developed to detect changes in water levels over the shallowest portion of the aquifer. In evaluating impacts to certain wetlands species, it is important to discern both the rate of groundwater level change, as well as the cumulative change over the entire year. Data collection and monitoring frequency should be appropriately selected to support the temporal and long-term evaluations.”</p> <p>https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/part2/aqua_280.pdf</p>
95	Jim Brobeck (21)	Aqualliance				3266 3. SUSTAINABLE MANAGEMENT CRITERIA

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96	Jim Brobeck (22)	Aqualliance				<p>3298 • "MT– Quantitative threshold for each Sustainability Indicator used to define the point at which undesirable results may begin to occur." The stated definition is the most egregious violation of common sense in the DGSP. Undesirable results BEGIN to occur even before historic low levels (the approximate upper reach of the operational range) are occur. Domestic well failures, destruction of GDEs and chronic lowering of groundwater levels occur at historic GW levels and would be exacerbated if the aquifer is managed within the Operational Ranges being proposed. I find the Plan to be deficient in protecting beneficial uses. Historic low GW levels shown in most of the Appendix 3-B hydrographs are still above the 80' max rooting depth of native and urban forest trees. The Minimum Threshold as defined in the GSP, is purported to designate "the point at which Undesirable Results may BEGIN to occur." But undesirable results will begin much earlier in the proposed operational range shown in most of the hydrographs. These MTs are significantly deeper than 80' bgs. Furthermore, the lower water table will dewater longer reaches of streams earlier in the season and persist later in the year. Dan Wendell of The Nature Conservancy, a panelist at a workshop held by the California Natural Resources Agency, explained "since the 1940s, groundwater discharge to streams in the Sacramento Valley has decreased by about 600,000 acre-feet per year due to groundwater pumping, and it's going to decrease an additional 600,000 acre-feet in coming years under status quo conditions due to the time it takes effects of groundwater pumping to reach streams." The operational range proposed will not avoid triggering this and other significant irreversible Undesirable Results. SGMA Regulations define "Measurable objectives" as "specific, quantifiable goals for the maintenance or improvement of specified groundwater conditions..." Setting GW level MOs below historic low levels does not meet this requirement. Most of the proposed MOs are below historic low levels. This is not the appropriate level to designate the top of the operational range. SGMA Water Code § 354.30 explains "An Agency may establish measurable objectives that exceed the reasonable margin of operational flexibility for the purpose of improving overall conditions in the basin, but failure to achieve those objectives shall not be grounds for a finding of inadequacy of the Plan." The managers assure the public that the goal of the VGSP is to maintain GW levels above or near the MOs or that if the MT is approached/transgressed PMAs would be employed to bring water levels back to the MO or higher. The definition of the MT shows the "Operational Range" as the defined goal. The proposed broad operational ranges fit the prescription for market driven groundwater banking but would result in many undesirable impacts to water users not participating in the rapidly emerging California Water Market.</p>

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97	Jim Brobeck (23)	Aqualliance				3415 "The quantitative Vina Subbasin Undesirable Result for the Chronic Lowering of Groundwater Levels occurs when: Two RMS wells within a management area reach their MT for two consecutive years of non-dry year-types." Two years of operating at the MT level would destroy GDEs including the urban forest of Chico. The insulting caveat that it would be acceptable to forgive the extreme MT levels if they occur during 2 consecutive dry years would allow GW levels to decline below the MT and implies that artificial recharge during "wet" years is a mitigating option. This is another example of an operation prescription for conjunctive use water bank marketing.
98	Jim Brobeck (24)	Aqualliance				3477 "Groundwater levels are typically lower during dry years and higher during wet years. Superimposed on this four- to seven-year short-term cycle is a long-term decline in groundwater levels. In other words, groundwater levels during more recent dry-year cycles are lower than groundwater levels in earlier dry-year cycles." The DGSP fails here to identify the cumulative impacts of increased pumping in the regional shared Tuscan aquifer system that is driving the long-term trend in driving down the fluctuating hydrograph record. Management of connected groundwater systems is challenging for several reasons. First, the cumulative GW depletions caused by pumping depends on the spatial scale: in general (depending on soil conditions and strata) the greater the distance or depth between groundwater pumping and a monitoring well, the lower the magnitude but the longer the timescale of depletions. Consequently, the ultimate effects of pumping can occur significantly after pumping starts, or even after pumping has ceased. The timescales involved in aquifer responses to pumping and other stresses can be on the order of decades.
99	Jim Brobeck (25)	Aqualliance				3703 Outside Hydrologic Influence "hydrologic impacts outside of the Vina Subbasin, such as upper watershed development or fire-related changes in run-off, could result in impacts to streamflow, riparian areas, or GDEs that are completely independent of any connection to groundwater use or conditions within the Vina Subbasin." Since the deep Tuscan Aquifer System is recharged from the eastern basin foothills it is certainly appropriate to recognize impacts to groundwater use and conditions within the Vina SB resulting from fire related soil conditions and streamflow in the recharge area. [https://www.buttecounty.net/waterresourceconservation/SpecialProjects/StableIsotopeRechargeProject.aspx] Additionally, conditions in the down-gradient portion of the Tuscan System are worthy of evaluation as the VGSP evolves. The lower Tuscan Aquifer system is being developed as a water source west of the Sacramento River and is being evacuated with vigor especially during dry years. This may accelerate the rate of subsurface flow out of the Vina SB. The Glenn Colusa Irrigation District board pumped over 25K af of Tuscan groundwater for 2-3 months this summer to supplement their river allocation. This is on top of 10k af of

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						groundwater substitution water transfers and even more surface water sales from “willing sellers” to “willing buyers” South Of Delta. The 35k/a/f is more water in 3 months than the Chico Urban Area pumps in a year. The State emergency declaration allows water purveyors like GCID to sidestep laws that require environmental review. GCID used district wells located 5-10 miles west of Chico that can pump 3KAF/minute. The Butte County Drought Task Force recognizes the importance of evaluating cumulative impacts of programs on water supplies and demands on the Vina SB may be significant and is initiating a “Drought Impacts Analysis Study” that will compile and analyze the 2021 Water Transfer Programs and the Supplemental Groundwater Pumping Operations in the Northern Sacramento Valley. https://buttecounty.granicus.com/MetaViewer.php?view_id=2&clip_id=1006&meta_id=157029
100	Jim Brobeck (26)	Aqualliance				3776 Upland GDE Designation “The Vina Subbasin specifically recognizes deep-rooted tree species, such as Valley Oak, that are common along riparian corridors in both upland streams and the Sacramento River. This connectivity is not well measured or understood in the Vina Subbasin at this time.” The failure of the DGSP to accept the well-documented fact that deep rooted trees are not exclusively located along riparian corridors but are nonetheless dependent on the shallow aquifer. US Forest Service Index of Species Information for Valley Oak explains the wide distribution of the Valley Oak ecosystem: https://www.fs.fed.us/database/feis/plants/tree/quelob/all.html “Valley oak typically has several vertical roots that tap groundwater and extensive horizontal root branches. Vertical root depth has been measured as deep as 80 feet (262m) in some individuals. Best growth is attained when water tables are about 33 feet (10 m) below the surface. Historically, these forests extended 0.6 to 5.0 miles (1-8 km) on each side of major rivers. Valley oak cover was once extensive, extending through lowlands and into foothills.” Limiting GDE evaluation to measurable impacts to interconnected streamflow is insufficient. California Code of Regulations, Title 23 § 351. Definitions. “(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. (m) “Groundwater dependent ecosystem” refers to ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface.” The DGSP, like other planning documents, promises on line 3785 “to fill these data gaps and the GSAs are committed to addressing these issues and develop appropriate SMCs for the Vina Subbasin.” But like other co-equal goals that assure balancing water supply with

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						ecosystem health it is meeting the demand that takes precedence. In 2007 the DWR, NCWA and the State Water Board recognized the importance of habitat monitoring in their Sacramento Valley Water Resource Monitoring, Data Collection and Evaluation Framework https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/part2/aqua_280.pdf “The lowering of groundwater levels due to natural climatic changes or the interception of groundwater underflow to surface water systems due to the increased groundwater extraction associated with water management programs, have the potential to impact the native habitat areas....In order to identify potential habitat impacts associated with potential changes in water management practices, a program-specific network of shallow monitor monitoring wells should be developed to detect changes in water levels over the shallowest portion of the aquifer.” But there has been no investment in creating the network needed to collect baseline conditions or to monitor declines in this critical GDE preservation goal.
101	Jim Brobeck (27)	Aqualliance				5. PROJECT AND MANAGEMENT ACTIONS4412 5.2.3.1 Agricultural Irrigation Efficiency4414 Butte County agriculture is a keystone feature of culture in the Vina SB. The importance of maintaining the viability of irrigated agriculture is of paramount importance. The results of the Vina GSA, Agricultural Groundwater Users of Butte County, and Butte County Farm Bureau survey to evaluate current irrigation methods and practices, identify opportunities and methods to improve irrigation efficiency, determine potential issues preventing the adoption of efficiency practices, and provide recommendations for increasing participation in these practices were expected to be available in September 2021. A summary of the results would be helpful in evaluating opportunities to stabilize or reduce demand. Incentives to invest in efficient GW irrigation through grant funding and tax rebates are needed to maximize benefits. According to Valerie Kincaid “A project proponent maintains the right to water that is recharged whether it results from recharge projects or groundwater demand reduction projects (e.g., conservation, recycling).” Why is this not listed as a recharge project?
102	Jim Brobeck (28)	Aqualliance				4449 5.2.3.2 Project: Residential Conservation The Estimated Groundwater Offset and/or Recharge: 100 acre-feet/year is certainly below the potential for urban efficiency. The voluntary expansion of xeriscape replacement of turf is evident and the adoption of efficient water using appliances is inevitable. The managers should review the successful urban conservation data from last decade to evaluate more realistic estimates of potential offset amounts.

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103	Jim Brobeck (29)	Aqualliance				<p>4079 " As discussed in Section 4.1, the GSAs in the Vina Subbasin intend to further evaluate the SMC for interconnected surface waters to avoid undesirable results to aquatic ecosystems and GDEs. As additional data are collected and evaluated, the Vina Subbasin commits to developing additional SMC and installation of monitoring points, as appropriate, for specific stream reaches and associated habitat where there is a clear connection to groundwater pumping in the principal aquifer." Restricting monitoring points and GDE considerations to riparian proximities is insufficient for the protection of deep-rooted vegetation, both native trees and the Chico urban forest. According to the USDA Forest Service "Urban forests help to filter air and water, control storm water, conserve energy, and provide animal habitat and shade. They add beauty, form, and structure to urban design. By reducing noise and providing places to recreate, urban forests strengthen social cohesion, spur community revitalization, and add economic value to our communities." [https://www.fs.usda.gov/managing-land/urban-forests]</p> <p>The shallowest portion of the aquifer system that sustains this vegetation extends beyond riparian corridors. The Sacramento Valley Water Resource Monitoring, Data Collection and Evaluation Framework [2007 DWR NCWA https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/part2/aqua_280.pdf] recognizes the importance of establishing a monitoring network in the shallowest portion of the aquifer for this purpose: "The long-term health of riparian vegetation, wetland species, and number of other native habitat are commonly associated with maintaining a minimum range of groundwater levels and an appropriate level of interaction between surface water and groundwater resources. The lowering of groundwater levels due to natural climatic changes or the interception of groundwater underflow to surface water systems due to the increased groundwater extraction associated with water management programs, have the potential to impact the native habitat areas. Baseline habitat monitoring is an important data collection objective because it allows for a better understanding of the existing water resource requirements of the native habitat and the evaluation of potential impacts associated with potential changes in water resource management practices. In order to identify potential habitat impacts associated with potential changes in water management practices, a program-specific network of shallow monitor monitoring wells should be developed to detect changes in water levels over the shallowest portion of the aquifer. In evaluating impacts to certain wetlands species, it is important to discern both the rate of groundwater level change, as well as the cumulative change over the</p>

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						entire year. Data collection and monitoring frequency should be appropriately selected to support the temporal and long-term evaluations.”
104	Jim Brobeck (30)	Aqualliance				Chapter 4: MONITORING NETWORKS 4218 Well “Construction Data – Well data such as perforation depths, construction date, and well depth was considered for selection.” Many of the selected wells do not meet the above criteria for selection: 4262 Table 4-5. Groundwater Levels RMS Well Construction Details North MA: 3/6 of the wells do not have listed screen intervals. This makes it difficult to know what layer of aquifer is being monitored. Scientifically constructed multi-completion wells with defined screen depths/elevations is needed. The other 3 have screen intervals ranging from about 70’ to almost 500’. While this type of well construction is suitable for production it is unsuitable for transparent depth/elevation monitoring of the aquifer system. Chico MA The well depths are undefined as are the screen depths. There is a notable lack in monitoring the shallow aquifer that supports the unirrigated Chico Urban forest. South MA: The screen intervals on two of the MC wells have appropriate 10’ spacing allowing for better scientific analysis of monitoring data.
105	Jim Brobeck (31)	Aqualliance				5. PROJECT AND MANAGEMENT ACTIONS [cont.] 4477 5.2.3.3 Project: Streamflow Augmentation “The project would primarily take place at Comanche Creek, Butte Creek, Little Chico Creek, and Big Chico Creek.” It is unclear how Little Chico Creek and Big Chico Creek would be integrated into this program since they are, apart from flood control infrastructure, unregulated by dams. If a project includes the application for a new right to recharge water, it will need to obtain a water right permit from the State Water Resources Control Board (SWRCB) through a surface water right application and a supplemental groundwater recharge form. The water right permit application would need to identify the “beneficial use” that the project intends to meet. Recharging groundwater is not considered a beneficial use, however, meeting the sustainable management criteria in a GSP may be determined to be a beneficial use. Since this project is in the “Planned” category and is expected to move forward and be completed there must be more detailed information available to the public. The project description should be clear on permits that would be required to be negotiated with regulatory agencies such as CFW and the State Water Board.

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106	Jim Brobeck (32)	Aqualliance				<p>4507 5.2.3.4 Flood MAR/Surface Water Supply and Recharge Scoping</p> <p>This planned scoping project must include a detailed evaluation of the efficacy of up-gradient recharge efforts that may enhance extraction opportunities in down-gradient sub-basins that are developing new groundwater exploitation infrastructure to supply expanding permanent crop acres and engaging in water transfers that integrate the shared aquifer system into their transfer portfolio and have a history of using the same aquifer as an “emergency” supplemental water supply. The legal consequences of attempting MAR have been summarized by Ms. Kincaid and issues of aquifer privatization and potential water bank extirpation of Butte Chapter 33 protection remain unresolved and exacerbated by the expert analysis presented by the Public Policy Institute of California. “County export ordinances prevent beneficial trades. In the absence of state regulation of groundwater, county ordinances have protected local parties against injury from groundwater-related exports. But their export permitting hurdles are so high that they impede any transfers, including those that present no significant risk to local groundwater sustainability. In Butte County, for instance, it would take 18 months to go through all the steps to obtain a permit for a same-year groundwater substitution transfer. Once GSAs establish sustainability plans that address undesirable impacts of pumping, it should be possible to ease the coarser restrictions on this practice found in most county ordinances—which effectively preclude trades if they entail water leaving the county. If counties with restrictive groundwater export ordinances fail to amend their laws to conform to SGMA, the legislature should consider preempting local laws that discriminate against out-of-county uses or place undue burdens on groundwater and groundwater-substitution transfers that would not jeopardize sustainable groundwater management of the source aquifer.” https://www.ppic.org/publication/improving-californias-water-market/</p>

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107	Jim Brobeck (33)	Aqualliance				<p>All the projects outlined in lines 4408-4663, as well as 4870 5.2.4.11 Project: Surface Water Supply and Recharge, whether they are conservation (demand reduction) or recharge (supply augmentation) projects have the potential to carry the legal consequences of artificial recharge efforts. According to Kincaid [https://www.vinagsa.org/files/4441577c7/PMA+Legal+Implications+Discussion+Paper.pdf]</p> <p>“A project proponent maintains the right to water that is recharged whether it results from recharge projects or groundwater demand reduction projects (e.g., conservation, recycling). If a project uses or obtains a surface water supply and recharges into the aquifer, the project proponent would have a legal right to the recharged water. Water does not legally become “common” or “native” supply available to overlying groundwater right holders unless it is abandoned by the project proponent.” The contentious issue of privatization of the aquifer that is used as a water bank must be resolved at the State level because local ordinances may be overridden by SGMA jurisdiction. The strategy of integrating the Tuscan Aquifer System into the State Water Supply is a long-standing threat to the balance of uses required to maintain the quality of life in the Vina SB. According to the Public Policy Institute of California [https://www.ppic.org/publication/improving-californias-water-market/] County export ordinances prevent beneficial trades. In the absence of state regulation of groundwater, county ordinances have protected local parties against injury from groundwater-related exports. But their export permitting hurdles are so high that they impede any transfers, including those that present no significant risk to local groundwater sustainability. In Butte County, for instance, it would take 18 months to go through all the steps to obtain a permit for a same-year groundwater substitution transfer.</p> <p>"Streamline transfer reviews while maintaining protections. Approval delays by federal, state, and local authorities often reflect uncertainties about the physical impact of a surface or groundwater transfer on other water users or the environment. Yet there are various ways to streamline the process while maintaining protections, for instance by conducting more up-front analysis of impacts through programmatic reviews, developing a “fast lane” for transfers below a certain size, developing a structured evaluative process for reviews, and establishing an after-the-fact process for balancing accounts to enable quicker approvals of time-sensitive activities.</p> <p>"Develop more equitable local rules for groundwater substitution transfers. Well-run groundwater substitution programs can expand long-term water availability by more actively using local groundwater storage. Once GSAs establish sustainability plans that address undesirable impacts of pumping, it should be possible to ease the coarser restrictions on this practice found in most county ordinances—which effectively preclude trades if they entail water leaving the county. If counties with restrictive groundwater export ordinances fail to</p>

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108	Jim Brobeck (34)	Aqualliance				<p>amend their laws to conform to SGMA, the legislature should consider preempting local laws that discriminate against out-of-county uses or place undue burdens on groundwater and groundwater-substitution transfers that would not jeopardize sustainable groundwater management of the source aquifer." The State may use emergency proclamation or legislative action to neutralize local control of water policy such as the Chapter 33 ordinance in Butte County. The broad operating range and historic low-level starting point (MO) that the VGSA consultants and staff have inserted into the VGSP will create the storage space needed to bank/sell water stored in the Butte Basin.</p> <p>The Kincaid white paper explains that Potential Management Actions "would allow the Vina GSA to protect the Vina subbasin and the implementation of the GSP from negative implications from artificial recharge projects through enactment of rules, ordinances and/or policies." But her estimation that ordinances or policies that the GSA may adopt to ensure recharge projects are operating without adverse impact to the basin offer no assurance that the VGSA would have the capacity to successfully navigate the State prerogative to manipulate the emerging water market that intends to "Streamline groundwater substitution and water transfer permitting and approval processes by allowing consolidated basin-level environmental reviews to facilitate water market transactions," [https://water.ca.gov/Programs/Groundwater-Management/Bulletin-118]</p> <p>4664 5.2.4.5 Community Monitoring Program "This project would create routine water table monitoring programs for approximately 8,000 acres of Ecological Reserves in the region between lower Forest Ranch and Cohasset Road near Chico Airport, including the Big Chico Creek, Sheep Hollow, and Cabin Hollow tributaries." This project should be required to be implemented yesterday! Baseline habitat monitoring is an important data collection objective because it allows for a better understanding of the existing water resource requirements of the native habitat and the evaluation of potential impacts associated with potential changes in water resource management practices. To identify potential habitat impacts associated with potential changes in water management practices, a program-specific network of shallow monitor monitoring wells should be developed to detect changes in water levels over the shallowest portion of the aquifer. In evaluating impacts to certain GDE species, it is important to discern both the rate of groundwater level change, as well as the cumulative change over the entire year. Data collection and monitoring frequency should be appropriately selected to support the temporal and long-term evaluations.</p>

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109	Jim Brobeck (35)	Aqualliance				4691 5.2.4.6 Project: Wastewater Recycling While this project requires time consuming permitting and coordination with regulatory agencies as well as significant infrastructure installations it will be helpful in keeping Chico's GW demand from expanding along with the urban development that is anticipated. Focusing purple pipe infrastructure on athletic field irrigation is a good target during dry seasons.
110	Jim Brobeck (36)	Aqualliance				4722 5.2.4.7 Project: Community Water Education Initiative A population that is well informed on watershed health, water use conservation and water policy is an excellent education goal. This project should identify regional responsible water use and climate responsive flexibility. The political science portion should dive into the history of California water policy; how it has shaped regional water infrastructure and the need for local vigilance in defending the hydrologic balance from insatiable demand from unfettered urban and agricultural expansion south of the Delta.
111	Jim Brobeck (37)	Aqualliance				4768 5.2.4.8 Project: Rangeland Management and Water Retention 4802 5.2.4.9 Project: Fuel Management for Watershed Health 4833 5.2.4.10 Project: Removal of Invasive Species Investments in the health of ecosystems that provide the water recharge for the Tuscan Aquifer System have been, like in the rest of the Sierra Cascade watershed, unwisely underfunded. An excerpt from the Sierra Nevada Ecosystem Project lays out the imbalance of resource extraction vs reinvestment. These projects would begin to address that imbalance. "Based on estimates of direct resource values as one input (not the total revenue produced by resource dependent activities), the Sierra Nevada ecosystem produces approximately \$2.2 billion worth of commodities and services annually. Water accounts for more than 60% of that total value. Other commodities [timber and grazing] account for 20% as do services. "Public timber and private recreation are the largest net contributors of funds to county governments both in total dollars and as a percentage of their total value. Around 2% of all resource values are presently captured and reinvested into the ecosystem or local communities through taxation or revenue sharing arrangements. The declining status of some aspects of the Sierra Nevada ecosystem suggests that this level of reinvestment is insufficient to ensure sustainable utilization of the ecosystem." https://pubs.usgs.gov/dds/dds-43/VOL_III/VIII_C23.PDF

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112	Jim Brobeck (38)	Aqualliance				4870 5.2.4.11 Project: Surface Water Supply and Recharge While it is suggested that these projects will require a SWRCB permit; CEQA and others the State is on a path of “streamlining and acceleration of managed aquifer recharge and groundwater banking permitting processes” and to “Streamline groundwater substitution and water transfer permitting and approval processes to optimize the economic value of groundwater”. [https://data.ca.gov/dataset/californias-groundwater-update-2020-bulletin-118/resource/94f3a5f6-23f3-4aec-ab84-b546bf211bab] It is unclear if the legal and environmental consequences of this project will be adequately considered. The preservation of undisturbed critical vernal pool habitat is an ecological priority in some of the presumed areas of inundation.
113	Jim Brobeck (39)	Aqualliance				4973 5.3.4 Landscape Ordinance 4980 5.3.5 Prohibition of Groundwater Use for Ski (Recreational) Lakes These two common sense regulations would help meet our goals.
114	Jim Brobeck (40)	Aqualliance				4984 5.3.6 Expansion of Water Purveyors’ Service Area Assuming that this is exclusively for residential development it is critical that service area expansion does not stimulate urban sprawl that intrudes on either green-line or gold-line open space.
115	Jim Brobeck (41)	Aqualliance				4990 5.3.7 Groundwater Allocation The consideration of groundwater allocation must be scientifically connected to the actual cause of failure to achieve sustainability goals by 2042. If cross-boundary water flows are causing declining levels in up-gradient portions by extractions in the down-gradient portion of the shared regional aquifer system there must be well designed/implemented monitoring/modeling systems in place that have the confidence of all involved.
116	Jim Brobeck (42)	Aqualliance				5005 5.4 Data Collection 5006 5.4.1 County Contour Mapping “As part of the efforts to collect the information necessary to fill the data gaps identified in Section 3, this project proposes to expand the existing monitoring program to include Butte, Glen, Colusa, and Tehama counties and conduct these groundwater elevation surveys in the spring, summer, and fall. The monitoring program would gather data used to produce groundwater contours and estimates of lateral and vertical flow direction and volume. Producing this data for the four counties will help to identify interbasin flow patterns and influences on surface water flows and replenishment locations, thereby improving coordination between counties and water management decision-making.” This inter-basin effort must be implemented ASAP! A reliable inter-basin GW modeling is also at the top of the management list.

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117	Jim Brobeck (43)	Aqualliance				<p>6. PLAN IMPLEMENTATION</p> <p>5135 Table 6-5: Estimated Costs for Implementing Data Gaps “Interconnected Stream Monitoring \$100,000 – \$250,000” As mentioned in previous comments the immediate implementation of a network of shallow monitor monitoring wells should be developed to detect changes in water levels over the shallowest portion of the aquifer. Baseline habitat monitoring is an important data collection objective because it allows for a better understanding of the existing water resource requirements of the native habitat and the evaluation of potential impacts associated with potential changes in water resource management practices. The long-term health of riparian vegetation, wetland species, and number of other native habitat are commonly associated with maintaining a minimum range of groundwater levels. Limiting the data gap to Interconnected Stream Monitoring would leave out GDEs that are outside of designated riparian zones. The shallow aquifer has an important role to play in keeping deep rooted trees, including the large trees in the Chico Urban Forest, that survive the regional dry months without supplemental irrigation. The USDA also recognizes that Urban Forests such as exists in Chico and other Butte County towns provide a range of valuable ecosystem services. I posit that the groundwater dependent trees of our towns ARE ecosystems. Many environmental challenges are exacerbated within the urban landscape, such as stormwater runoff and flood risk, chemical and particulate pollution of urban air, soil and water, the urban heat island, and summer heat waves. Chico’s urban forest canopy mitigates these challenges. Research shows that urban trees are integral to the environmental quality of cities and towns.</p> <p>In April of 2007 Butte County resolved to adopt an oak woodlands management plan. http://www.buttecounty.net/Portals/10/Docs/Planning/Projects/OakWoodland/Chapter53_ButteCounty_OakWoodlandMitigationOrd_2018-10-29.pdf?ver=2018-10-29-165211-350 “Butte County supports significant acreage of oak woodland habitat. The historical importance of oaks is apparent in the names of towns, cities, streets and residential complexes throughout California. Butte County’s oak woodlands enhance the natural and scenic beauty of the area, provide forage and shelter for more than 300 species of wildlife, facilitate nutrient cycling, moderate temperature extremes, reduce soil erosion, sustain water quality and increase the monetary and ecological value of property.” Water Code § 113It is the policy of the state that groundwater resources be managed sustainably for long-term reliability and multiple economic, social, and environmental benefits for current and future beneficial uses.</p>
118	Jim Brobeck (44)	Aqualliance				<p>5253 6.7 Interbasin Coordination 5271 1. Information Sharing “This will continue throughout GSP implementation and may include: 1. Inform each other on changing conditions (i.e., surface water cutbacks, land use changes,</p>

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						<p>policy changes that inform groundwater management) 2. Share annual reports and interim progress reports 3. Share data and technical information and work towards building shared data across and/or along basin boundaries (e.g., monitoring data, water budgets, modeling inputs and outputs, and Groundwater Dependent Ecosystems)" Information Sharing must include the water-market/emergency GW pumping volumes/locations/timing that members of the North Sac River Corridor group intend to implement and a report on the final v/l/t of these extra demands on the shared aquifer system. These extra pumping demands are not unprecedented and have become a routine component of California's plan to use the Northern Sacramento Valley as a "reliable" source of supply. Butte County is on the verge of conducting a Drought Impacts Analysis Study that will evaluate the numerous 2021 Water Transfer Programs in Northern Sacramento Valley including the Supplemental Groundwater Pumping Operations. The study portends to accomplish an evaluation of cumulative impacts of programs on water supplies and demands in the inter-basin, but focus on the Vina Subbasin" https://buttecounty.granicus.com/MetaViewer.php?view_id=2&clip_id=1006&meta_id=157029 pdf Pg. 42-43 The report will include a brief description of the programs, amount of water transferred, recipient of water, whether surface water or groundwater substitution is utilized, destination of transferred water, etc. including maps. This report should be conducted every year, funded by SGMA interbasin coordination parties and be included in the VGSA Annual report submitted by April 1 for the prior year's activities.</p>
119	Jim Brobeck (45)	Aqulliance				<p>5295 3. Coordinate on mutually beneficial activities GSAs that overlie the Tuscan Aquifer Formation should provide cooperative funding for mutually beneficial watershed management in the recharge areas located in the foothills east of the valley floor.</p>

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120	Jim Brobeck (46)	Aqualliance				5314 5. Issue Resolution Process“Vina Subbasin will pursue development of an issue-resolution process with neighboring subbasins in the North Sac River Corridor group.”This single sentence belies the potential for regional conflict over water management issues. The drama surrounding the nascent Tuscan Water District and the unpopular “Operational Range[s]” proposed in the DVGSP are examples of “issues” that have already emerged in this process. Conflict arising from expanded GW demand in the North Sac River Corridor group are being litigated between stakeholders and agencies. Achieving sustainability requires local agencies, stakeholders, and water users to make many difficult and potentially contentious decisions. These decisions are prone to conflict, particularly when pumping restrictions are viewed as infringing on property rights, or when fees are charged to support local management. Newly formed GSAs have additional layers of potential conflict. Questions regarding authority, streamlined legal and regulatory timelines, a lack of existing precedents and the need to represent agency and constituent interests have the potential to exacerbate conflicts under SGMA. In some cases, where authoritative interpretations of legal authority and limits have not been established yet, litigation may be necessary and warranted. The State prefers the Northern Sacramento Valley to quietly comply with the myth that this region is a source of “surplus” water that can peacefully serve the accelerating water market through conjunctive-use water banking. However, it is likely that conjunctive-use water banking would degrade the groundwater basin and groundwater users who are not involved in conjunctive use but are reliant on the same groundwater basin.
121	Jim Brobeck (47)	Aqualliance				See Vina Draft GSP Comment A6
122	Bruce Smith	Public Comments	BaS	1.1.6.1	553, 554 Fig. 1-9A	Important to note electric logs us1 To define formation boundaries in AEM cross section
123	Bruce Smith	Public Comments	BaS	1.1.8, 1.1.8.1	599-605	There are four principal aquifers i The Vina Subbasin. The shallow Aquifer, the intermediate aquifer And the upper and lower deep Aquifers. This data gap needs to Be better defined using well logs and cross sections and conceptual models that show flow paths. This section from 599-605 implies one principal aquifer. Gives the false impression that surface recharge then recharges other/lower aquifers. They may not be connected.
124	David Eaton	Public Comments				See Vina Draft GSP Comment P5
125	Debra Lucero	Public Comments				See Vina Draft GSP Comment P6
126	Lisa Creamer O'Donnell	Public Comments				See Vina Draft GSP Comment P7
127	Nancy Gillard-Bartels	Public Comments				See Vina Draft GSP Comment P8

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128	Jim Grayden	Self	3-SMC			Why are Cal Water wells in Chico the only ones chosen in the monitoring network as there are others available, particularly shallower monitoring wells. Also, Management objectives are probably not protective enough. Total Dissolved Solids and Electrical conductivity (TDS/EC) levels aren't protective as should be, need more that secondary MCLs
129	Commenter 5	Self	3-SMC			Already at a record low. MO is too low! We need to be better than where we are now
130	Todd Green	SHAC/Self	3-SMC			If Measurable Objectives level is the desirable level seem you are more talking it being a more strategic objective vs measurable. Why not use the average of historical lows the way the Butte Subbasin did where they take an average of levels?
131	Anne Dawson	SHAC/Self	3-SMC			Basing SMCs on the Minimum Thresholds (MT) vs desirable levels. How were they developed? . How was it decided? Need to stop using the word sustainable. More detail is needed on how the line was determined. Where wells are in relation to measuring use/topography etc. Need more data to show how you got there.
132	Jim Brobeck	SHAC/Self	3-SMC			In the draft GSP, the MT is the point where undesirable levels begin but undesirable results will occur earlier. Will the operational levels in the hydrographs in Appendix result in domestic wells going dry? Concerned about data gaps. I do not think that the hydrographs were shared with the Stakeholder Advisory Committee.
133	Bruce Smith	SHAC/Self	3-SMC			They say our aquifer is healthy but wells are going dry. There is massive groundwater pumping occurring on the other side of the Sacramento River. Well data needs to be posted on the DWR and County websites. On the verge of a crisis and need to take it seriously.
134	Commenter	Self	5-PMAs			Why not use the average of 5 years for the MO used by the Butte Subbasin?
135	Jim Brobeck	SHAC/Self	5-PMAs			Please summarize the legal ramifications of In-lieu and direct recharge scoping project. What incentives are available to encourage conservation on family farms? Residential conservation estimate of 100 AF is too low.
136	Gary Cole	SHAC/Self	5-PMAs			My experience is instream augmentation and recharge projects to address the 10,000 Acre Feet deficit will be hindered by the DWR permit process. Also concerned about ownership of recharge water.
137	Bill Loker	Self	Monitoring and Evaluation			Speakers have frequently mentioned that the measurable objective and sustained yield are "best Guesses" and subject to revisions with more data and experience. In my experience, initial numbers become benchmarks that are difficulty to change. At the least, a very contentious process. I think a more conservation approach with more robust measurable objective and higher levers are needed.

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	Commenter Name	Commenter Organization	Chapter #	Section	Line #(s) or Figure #	Comment
138	Jim McCabe	Self	PMA's	pg. 5 line 557/5-PMA's		Statement the "Vina GSA does not and will not have employees" the words "will not" \needs to be removed. For PMA's, Paradise intertie should be removed as there are cheaper solutions available, such as the diversion of PID water to Butte Creek, Butte County Chapter 33 has never been audited or enforced to determine noncompliance with the groundwater transfers laws. Enforcement of Chapter 33 could be a PMA that may fix the 10,000 AF deficiency
139	Norah Todenhagen	Self	3-SMC/MO	3-SMC/Exec Summary ES-7 on pg. 13		Unacceptable to set a MO below what we know are dangerous levels. Move the line to a more acceptable and representative level so that it is truly a measurable objective. Why aren't there identified alert levels in the GSP such as those found in the Best Management Objectives in the County's Chapter 1? Also trees won't survive at levels suggested
140	Joseph Connell	Self	PMA'S			Legal issues related to who owns water when it is recharged must be dealt with by the State Water Board and the legislature. Without clarity on this topic, recharge projects could be non-starters by the GSA's. This is a statewide issue.
141	J.W. Cook	Senate				Great work. Use science. Thanks.
142	Marty Dunlap	public interest attorney	MO			The MO needs to be higher to reflect desired goals for a healthy aquifer (not based on historical lows and disregarding drought effects)
143	Marty Dunlap	public interest attorney	MT's			The MT's need to be raised to avoid long-term and irreversible impacts to the basin/aquifer.
144	Marty Dunlap	public interest attorney	MO/MT			The Chapter 33 of Butte County code delineates the Basin Management Objectives (BMO's) with alert levels and these protections need to be incorporated into the MO & MT.
145	Bill Loker	self	MA			Meter all wells that use groundwater, especially the largest groundwater users
146	Bill Loker	self	MO			MO needs to be set higher to protect our groundwater. Drought is not a transient feature of our area. Drought is potentially the "new abnormal." We need to be CAREFUL STEWARDS of our groundwater for TRUE SUSTAINABILITY.
147	Bill Loker	Self	MO/MT			The MO and sustainable yield allow too much exploitation of groundwater. Presenters say these "best guesses" can be modified with "more data." What is the process for changing these? In my experience, changing these benchmarks will be a very contentious process. Ag users are often more well represented and have more political access than domestic users. I have little confidence that change will be easy or more protective of the aquifer. Change the MO- raise it! Change the sustainable yield- lower it!
148	Pam Stoesser	Self	MO			Please explain the logic behind setting minimum groundwater levels below historic lows. This makes no sense!! Does this have to do with recharge?

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149	Pam Stoesser	Self	MTs			Minimum groundwater level thresholds must be above historic lows. This plan must protect domestic wells, streams, our urban forest, trees and wildlife. Conservation, conservation, conservation. Domestic well failure must not be acceptable. Implement groundwater pumping reductions up front, not last. No to "recharge" and ownership of our public water.
150	Richard Harriman	NCEDC	Funding			SGMA is a state-mandated program that should be paid for by the state with regular funding.
151	Richard Harriman	NCEDC	Mas			The GSP should adopt Management Actions that implement a Project that provides for measurement via electronic system to record pumping for all major groundwater pumpers for agriculture and commercial business.
152	Pam Stoesser	Self	3-SMC			1) How are we regulating people digging deeper wells? Is there a safety net in this plan to make it harder for people to do that? 2) She expressed that she was most bothered by the minimum threshold, exclaiming, "this bothers me the most," particularly the way this topic was presented. She related that when she attended the in-person workshop, it was confirmed that right now our groundwater is at historic lows. We learned and that the MT is set 50 feet below the historic low. This graph doesn't show that. 3) She addressed interconnectedness with aquifers and surface water. She stated, "it bothers me that there isn't more understanding about this before we move forward with the plan...I would like our urban forest to be prioritized as much or even more than agriculture moving forward."
153	Kathy Faith	Self	PMA's			I appreciate all of the brains and perspectives involved, but this effort seems too late. For those whose wells go dry, that will be a huge deal. The MT line is too low. Would be possible for that line to be raised at some point in the process?
154	Anne Dawson	Self	PMA's			Although this subbasin isn't critical, it is high priority, and despite that, the board decided that they were not going to develop groundwater allocations. They have also said they will not implement triggers to institute groundwater allocation discussion. I am worried that with the drought and continued pumping, lots of domestic wells will go dry and there is no plan to stop it.
155	Anne Dawson	Self	PMA's			My primary concern is that there are no triggers in place to make allocation happen. it seems we are being left with the bill. We are the ones who will be spending thousands of dollars digging new and deeper wells, whereas agriculture will continue as before, unimpacted. There should be a better effort to spread the pain among all groups, rather than having domestic well owners shoulder the cost.
156	Jim Brobeck (A)	Self	MTs			I am reviewing the Vina GSP and I appreciate the work that has gone into its preparation. However, I find the Plan to be deficient in protecting beneficial uses. Historic low GW levels shown in most of the Appendix 3-B hydrographs are above the 80' max rooting depth of native and urban forest trees. The Minimum Threshold as defined in the GSP, is purported to designate "the point at which Undesirable Results may BEGIN to occur." But undesirable

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						results will begin much earlier in the proposed operational range shown in most of the hydrographs. These MTs are significantly deeper than 80' bgs. Furthermore, the lower water table will dewater longer reaches of streams earlier in the season and persist later in the year. Dan Wendell of The Nature Conservancy, a panelist at a workshop held by the California Natural Resources Agency, explained "since the 1940s, groundwater discharge to streams in the Sacramento Valley has decreased by about 600,000 acre-feet per year due to groundwater pumping, and it's going to decrease an additional 600,000 acre-feet in coming years under status quo conditions due to the time it takes effects of groundwater pumping to reach streams." The operational range proposed will not avoid triggering this and other significant irreversible Undesirable Results. SGMA Regulations define "Measurable objectives" as "specific, quantifiable goals for the maintenance or improvement of specified groundwater conditions.." Setting GW level MOs below historic low levels does not meet this requirement. Most of the proposed MOs are below historic low levels, not the appropriate level to designate the top of the operational range. SGMA Water Code § 354.30 explains "An Agency may establish measurable objectives that exceed the reasonable margin of operational flexibility for the purpose of improving overall conditions in the basin, but failure to achieve those objectives shall not be grounds for a finding of inadequacy of the Plan." The managers assure the public that the goal of the VGSP is to maintain GW levels above or near the MOs. But I have not seen this intention in writing. Instead, I see the term "Operational Range" as the defined goal. The proposed broad operational ranges fit the prescription for market driven groundwater banking but would result in many undesirable impacts to water users not participating in the rapidly emerging California Water Market.
157	Debra Lucero	Self				I am concerned that there may be a false sense of protection and local control, but that the reality may be quite different when SGMA takes full affect. I am worried that people will be able to pump groundwater simply by claiming it is from initial rainfall that fell on their property.
158	Eric Wright	Self				I request that the climatic patterns and trends are incorporated by looking at the original areas around the subbasin.
159	Richard Harriman	Self	MTs			I agree with the comments of Jim Brobeck and Debra Lucero. If one looks at the MT's and then looks at the analysis in regard to trees in Chico area, this is the canary in the coal mine. The MT's have been set so low as to allow the canary in the mine to die before we even act. Sustainability, by definition, means that one learns to use what one has before one tries to bring in more to replace what has been overused. An analytical inconsistency exists in the model, in that there is a default towards supply before even exhausting conservation remedies. Conservation should be prioritized before seeking to bring in water from outside the aquifer. It is very challenging to make changes once bureaucratic action has been put in

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						motion; “works like the titanic. It has a lot of momentum going in one way. Once you want to slow it down, it takes a long time before you can get it to reverse.”
October 19, 2021 SHAC Meeting Public Comments						
161	Vina GSA SHAC					See Vina GSA SHAC October 19, 2021 Meeting Summary

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GSP Workshops October 4 and October 13, 2021 - Clarifying Questions – Responses provided during Workshops						
162	Jim Brobeck	SHAC/Self	Introduction/S GMA Overview			How are comments to be incorporated into the Final Groundwater Sustainability Plan (GSP).
163	Commenter 1	Self	Introduction/S GMA Overview			When and how was authority to enforce GSPs given to DWR? Relationship of the Vina GSA JPA between Chico, Durham Irrigation District and the County? Is Rock Creek Reclamation District (RCRD) its own Management Area or part of the Vina GSA?
164	Commenter 2	Self	Introduction/S GMA Overview			No trust in the public process and not confident comments will be heard.
165	Jim Brobeck	SHAC/Self	2-Basin Setting			Given the data gaps, are you confident that the Butte Basin Groundwater Model (BBGWM) is adequate to set the water budget?
166	Commenter 3		2-Basin Setting			Who will fund and monitor all the data so that we get better information?
167	Commenter 1		2-Basin Setting			Is the Primary Aquifer the Lower Tuscan Aquifer? What is the definition of sustainable yield? Does what comes in equal what goes out?
168	Bruce Smith	SHAC/Self	2-Basin Setting			Is the Butte Basin Groundwater Model (BBGWM) based on DWR's cross sections? Will the AEM information be used and incorporated in the BBGWM?
169	Bill Loker	Self	3-SMC			How was the Measurable Objective (MO) set? Why is it so low? Concerned about how Management objectives in different Management Areas will be reconciled since we share one aquifer?
170	Commenter 4		3-SMC			Isn't salinity considered the same as seawater under SMC? Does the plan to gain more data mean drilling more wells?
171	Commenter 1	Self	3-SMC			What is the definition of shallow wells? You say that we have no projects going on right now. Who is "we"? Isn't groundwater being pumped now, aren't they projects?
172	Commenter 2	Self	3-SMC			Aren't our groundwater levels at historical levels? 60 wells have gone dry, correct? Are we at Minimum Threshold now? How Close? What about conservation?
173	Commenter 6		3-SMC			Heard there might be moratorium on wells? How many new wells are being drilled?
174	Commenter 2	Self	3-SMC			How long will projects take to raise the groundwater levels and fix the problem? Will we not do anything for 20 years?
175	Commenter 3	Self	3-SMC			Why are there no Chico residential wells in the monitoring network? Should we drill shallower wells for monitoring?
176	Richard Harriman	Self	3-SMC			Concerned with the definition of irreversible results such as subsidence? How do you determine the probability of overshooting the operational flexibility? If allow water levels to go too low you may overshoot the "operational flexibility" based on assumptions of duration of droughts. How would you prevent overshooting to avoid irreversible results to groundwater dependent ecosystems?

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177	Richard Coon		5-PMAs			In regards to the Flood-Mar project, if Rock Creek Reclamation District implement recharge projects who owns the water? What percentage of the water is considered native? Does the GSA set the percentages?
178	Commenter		5-PMAs			Does residential conservation include metering domestic wells?
179	Commenter 3		6-Implementation			Ag conservation is considered voluntary, what if they don't care? Does the plan have a big stick to enforce conservation?
180	Public Comment Period (see speaker cards)					
181	Lynn Haskell	self				Why are comments regarding the formation of the Tuscan Water District not being considered by the Vina GSA, the Board of Supervisors and LAFCo?
182	Richard Coon		Butte Co Chapter 33 & water transfers under SGMA			See Comment in Q&A Session - Mr. Coon left the meeting before the public comment session.
183	Bruce Smith	SHAC/Self	3-SMC	3.8	Slide page 11	Statement on the interconnected streams slide states that "groundwater does not appear to be connected to upland streams" is incorrect and flawed.
184	Comment Cards					
185	Jeanne Christopherson	Self				All this work assumes we have time to react and that the future will continue to reflect patterns of water supply from the past. It is apparent that this is not so-- from unprecedented momentum of global warming. We have no choice. To wait for "voluntary" conservation, to wait for more data...Are we going to wait for a water crisis as large as the fires to descend upon us? We need to look at worst cast scenarios... water retention-universal cisterns at every house, mandatory conservation...swimming pools in every backyard and gardens, credits for these measures. And social urgency. Let's mobilize and stop tiptoeing.
186	Marty Dunlap	public interest attorney				Q: How do we ensure that the Vina GSA sustainability efforts to keep our region's groundwater robust are not integrated into statewide efforts to increase supply to areas that are depleted of adequate water?
187	Marty Dunlap	public interest attorney	PMAs			Q: What are the skills that qualify the Vina GSA Board to evaluate the data that impacts the project being considered under the GSP?
188	Bill Loker	self	Administration/Plan Area			Agricultural pumping affects City of Chico water. The citizens of Chico are not well represented in this process. City of Chico is 21,000 acres/100K people and should have

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						proportional say in water use decisions! How will the City and their domestic water users be represented in these discussions?
189	Debra Lucero	Self	Introduction/S GMA Overview			Will public comments go to GSA staff first and which body, according to the statute, is required to provide answers to comments?
190	Grace Marvin	Self	Introduction/S GMA Overview			Will SHAC members know what the public is asking and will there will be a summary sheet provided before the plan is adopted?
191	Richard Harriman	Self	Introduction/S GMA Overview			Is the GSA's duty to the local area or is it to implement what DWR wants?
192	Debra Lucero	Self	2-Basin Setting			The draft states that there are 16 million acre feet of storage in the aquifer and asked, 'How can we know what is currently in the aquifer?'
193	Commenter		2-Basin Setting			How many acre feet are used for a 4-person household?
194	Pam Stoesser	Self	2-Basin Setting			The presentation touched on salinity and claimed that we don't have that issue here, but we would if wells were dug deep enough. How deep would that need to be? 1500-2000 ft.? Is that what farmers are doing?
195	Todd Greene	Self	2-Basin Setting			DWR bases their estimates on gas and oil electric wells, which is a concern is when you get to the east, where the marine units get closer.
196	Pam Stoesser	Self	2-Basin Setting			If there anything in place to ensure that people aren't drilling down far enough to compromise water quality?
197	Eric Wright	Self	2-Basin Setting			If the subbasin study accounts for what watersheds are percolating and recharging the subbasin, as well as what impacts property development at upper elevation is having on the water?
198	Eric Wright	Self	2-Basin Setting			How does different vegetation and different land use affects the subbasin storage capacity and sustainability?
199	Amy Raymond	Self	2-Basin Setting			There are 16 million acre feet in the 'bathtub,' and it may have taken 10,000 years to fill the bathtub.
200	Amy Raymond	Self	2-Basin Setting			A more interesting number might be the answer to how much water comes in and out of the bathtub over a year or multi-year period? What is the volume relative to what's recharging on an annual basis against what we're using?
201	Debra Lucero	Self	3-SMC			How deep are the wells are that are being monitored for water quality? Is it known how many wells in Butte County are more than 800 feet deep?
202	Nancy	Self	PMA's			Is the concept of equity being used in water reduction targeting?
203	Commenter	Self	PMA's			Who owns our groundwater now and how might that be altered? What dangers are in store for controlling the groundwater that we have?"
204	Grace Marvin	Self	PMA's			Will we no longer have the same rights to the water once somebody else owns it?

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205	Debra Lucero	Self	PMA's			How is this playing out elsewhere in the state with domestic well owners whose wells have gone dry, with GSA's in charge of setting MT's, are they bringing those cases into the courts?
206	Pam Stoesser	Self	PMA's			What would trigger that last resort, groundwater allotment?
207	Commenter	Self				There was an article on the front page of the (didn't get the name of the publication) talking about the exceptional drought occurring in Butte County, where fields are left fallow, vegetable yields are low, fire season is costly, food aid is needed, etc. I am not surprised that the GSP is not spreading the pain more between big agriculture and residential. The reason for this is that the people writing these plans are the same people approving these plans. It seems like a real conflict of interest. How are we supposed to have confidence in our plan?"