Commenting Organization	Comment By	Date of Comment	Section/ Appendix #	PDF Page Number	PDF Line Number or Figure Number	Comment
SCGA	Ted Rauh	7/8/2021	document		general	The document contains conservative assumptions regarding the pending impacts to the region's water supplies due to climate change. The climate change assessment is based on a synthesized set of values that do not reflect the most recent climate change research and our own experience. The document should clearly describe the climate change study it relies upon, including the assumptions that underpin it, and the arguments for and against using the central tendency forecast verses an 8.5 forecast that is more reflective of recent conditions and pervailing climate science thinking. It is understandable, given time and resources and the availability of the study, that it was used as the basis for the initial GSP. However, the GSP should clearly state that this is just an initial step and that further anysis will be needed in future annual updates and the next five-year update of the plan..
SCGA	Ted Rauh	7/8/2021	executive summary		line 6	The text needs to include the assurance that basin management will take into account and plan for the impacts of climate change.
SCGA	Ted Rauh	7/8/2021	executive summary		line 16	After line 16 insert a new line 17 "The Impacts of Climate Change" Climate change needs to be referenced here. The document goes on to find that climate change does have an impact on groundwater supplies and management, and our management actions are necessary to manage for those impacts.
SCGA	Ted Rauh	7/8/2021	executive summary		Line 43	After Line 43 insert a new line 44 "Review and Consider the impacts of climate change" This is a requirement of SGMA.
SCGA	Ted Rauh	7/8/2021	executive summary		Line 49	The paragraph starting with Line 49 does not provide a complete description of the purpose of the plan. The environment, including rivers and streams, groundwater/surface water interfaces and GDEs are beneficial users and uses of groundwater and should be listed. As written, this sentence implies that the GSP is only concerned about, and plans for human uses and users of groundwater and that is not the lull charge of SGMA.
SCGA	Ted Rauh	7/8/2021	executive summary		Line 124	Insert after - to protect human health - the words "and the environment" ...
SCGA	Ted Rauh	7/8/2021	executive summary		79-129	The document has too much detail for an executive summary. For example, eliminate lines 79-129 and replace with summary paragraph as needed. Eliminate tables ES- 1 and ES-2. Our purpose here is not to validate past actions but to present a path forward that builds on them and considers future demands and climate change for the benefit of the region.
SCGA	Ted Rauh	7/8/2021	executive summary		general	The document is more of a regurgitation of what is in the main document rather than its highlights focusing on its key findings, actions and future activities.
SCGA	Ted Rauh	7/8/2021	executive summary		general	Make use of simple, brief, lay definitions of key terms. E. g. line 55 expand the paragraph to explain for the general reader what goundwater conditions are, what a conceptual model tells us, and what are water budgets and why are they important.
SCGA	Ted Rauh	7/8/2021	executive summary		230	Needs a discussion of climate change - include a description of the basic study, what impacts it projects, and how they affect water budgets/supplies.
SCGA	Ted Rauh	7/8/2021	executive summary		241	Eliminate this paragraph as it does not contribute. The last figure shows an annual decline in storage due to climate change and then this material talks about past storage increases. It confuses and I am not sure what it is trying to communicate.
SCGA	Ted Rauh	7/8/2021	executive summary		214	The GDE discussion does not address the connection between monitoring for surface/gourndwater conectivity and GDE health. While a three year interval for groundwater levels may be appropriate for surface water/groundwater interactive changes, this time period is too long for GDE health and sustainability. Vegitation and the species that rely upon it cannot suffer three years without water. The plan needs to have a different trigger for GDE evaluation and action if it is to be credible in this area of environmental protection.
SCGA	Ted Rauh	7/8/2021	executive summary		Table ES-7	Add the following "a regional project with RWA, Water Forum, and the neighboring subbasin GSAs to refine climate change modeling and analysis in preparation for the next five year update to the GSP"
SCGA	Ted Rauh	7/8/2021	executive summary		415	Add a #8 " tracking climate change research and formulating a regional model and analysis in support of the five year GSP updates." Add a #9 "Coordinateion with Subbasin water purveyors and groundwater pumpers to monitor water conservation and efficiency results of regional water conservation programs that impact the subbasin."
SCGA	Ted Rauh	7/10/2021	Section 1			Well written and complete
SCGA	Ted Rauh	7/10/2021	Section 2		148	Doesn't one or both of these state plans reference the environement as being a beneficial user or use of groundwater.
SCGA	Ted Rauh	7/10/2021	Section 2		196	The monitoring program description identifies some weaknesses. Include here and in the Management Actions discussions a Management Action to expand the monitoring well coverage, including O&M costs, for the uncovered portions of the shallow and deep aquifer. This Management Action should also study the effectivness of existing ISW monitoring. Finally, as part of the water banking Project, the GSAs should ensure an assessment is made of the monitoring and modeling needs to assure the subbasin can be effectively managed and water deposits and withdrawals do not have negative, localized impacts.
SCGA	Ted Rauh	7/10/2021	Section 2		289	The replacement section should include a map of of interconnected study and monitoring areas. Since DWR found the Alternative Plan deficient in part because of its treatement of GDEs and interconnected ground and surface water, it may not make much sense to highlight prior plans and instead focus on what we know now and need to learn going forward because of the GSP work.
SCGA	Ted Rauh	7/10/2021	Section 2		360	Some of the significant activities at these sites include soil and vados Zone remediation. Insert a sentence that indicates the importance of remediation to protect the environment, including the American River, creeks, the flora and fauna, as well as, individuals who live in communities located near them.
SCGA	Ted Rauh	7/10/2021	Section 2		569	Wouldn't the accuracy of this narative be improved by stating that the very slight decline in water levels is partially attributed to the use of treated remediation water by purveyors as part of their drinking water supplies in lieu of having to pump additional ground water for their customers?
SCGA	Ted Rauh	7/10/2021	Section 2		677	Consider adding after sustainably managing the basin; the recapture of treated remediated groundwater for beneficial uses within the basin when feasible.

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SCGA	Ted Rauh	7/10/2021	Section 2		1105	Given all listed water purveyors have completed their 2020 UWMPs it makes sense to include their data and findings in this document, including the 2020 numbers in table 2.1-23. This table should include target and actual 2020 and target 2025 GPCD. These 2020 numbers will not change in any subsequent review by DWR as they are actual numbers the water purveyors record. This factual data is important to the GSP because we intend to rely on water conservation efforts put forward by the perveyors. The 2020 numbers provide a valid benchmark to make future assessments against. In fact, this portion of the document should make reference to any other conservation programs with measureable goals/outcomes that can be used to assess the progress the water perveyors are making toward the 5% and 10% conservation goals we should be considering as managmanet actions.
SCGA	Ted Rauh	7/10/2021	Section 2		2618	An additional section is needed to introduce the climate change model and modifications made to the projected condition water budget. Otherwise the reader has no idea what impacts climate change has and no understanding of why Table 2.4-2 includes a projected conditions water budget with climate change that is lower than the other budgets presented in the table.
SCGA	Ted Rauh	7/10/2021	Section 2		General	The water budget section seems to be tilted with to much discussion of the historic data and its projection into the future. The GSP is a planning document for the coming 20-50 years. While this data sets a context, it is generally understood that our climate is changing rapidly. The water budget section of the document needs to be focused on future growth, landuse, and water supplies/uses, and the impacts climate change will have on them. The public understands climate change is happening and everytime the report emphasizes analysis based on 50 year old data, it is likely to loose credibility and relevance in the public's mind.
SCGA	Ted Rauh	7/10/2021	Section 2		2935	Earlier sections of the report reference a sustainable yield of 273,000 AF resulting from studies brokered by the Water Forum and SCGA. In fact this number seems to be overly touted in the report's naratve. The table showing the water budget with climate change indicates a draw against the basin of 285,900 AF but only a loss of annual average storage of slightly over 6,000 AF. In addition, during the recent sustainable yield presentation a value was presented of 241,000 acre feet. These numbers need to be reconciled clearly for the reader and when the sustainable yeild section is presented it should include a discussion of why the previous sustainable yield has either increased or decreased and what those implications are for basin managment.
SCGA	Ted Rauh	5/6/2021	Section 3		109	At what point in the document are inspirational goals included? For example is this the point in the document where an inspirational goal could be established to work toward improving the basin's storage capacity in a fashion to restore groundwater dependent ecosystems and the interaction between the basin and the Cosumnes River.
SCGA	Ted Rauh	5/6/2021	Section 3		170	The potential listing of reasons the for excessive pumping seems limited. For example, excessive pumping for future groundwater substitution transfers or for water banking activities should be included. Also the addition of major new groundwater pumping due to industrial or commercial activities should also be mentioned. The GSP should call out the need to establish policy for how each of these possible sources of extensive new basin pumping should be considered, accounted for, and monitored.
SCGA	Ted Rauh	5/6/2021	Section 3		371	See above comment on line 170
SCGA	Ted Rauh	5/6/2021	Section 3		195	An additional undersirable result should be added to address Isolated areas that may be affected by persistant groundwater decline or decline in storage which is dedected in the monitoring program in only a few monitoring wells. A standard for concern and action should be set to assure management action is taken if three or more adjacent monitoring wells are found to be consistently below the action level for the same time frame.
SCGA	Ted Rauh	5/6/2021	Section 3		281	See above comment on line 195
SCGA	Ted Rauh	5/6/2021	Section 3		481	Requiring that three wells exceed the action level before a corrective action is taken does not seem protective of the specific points identified in figure 3-6 where probable disconnected streams transition to probable connected streams. The ISW connection could be substantially damaged for a significant run of the water course before action is taken. The action level should be expanded to include both the situation where 3 wells exdeed the action level and/or when one of the 4 monitoring wells located in proximaty to the points where probable disconnected streams transition to probable conned streams as depicted in figure 3-7 exceed the action level.
SCGA	Ted Rauh	5/6/2021	Section 3		679	Consider adding a paragraph that discusses the need to take affirmative action as part of the Plan's implementation to widely communicate the need to develope future wells at depths to assure sustainalbe groundwater. Adequate depths to ensure future sustainable groundwater supplies should also be made available to those conduction any well refurbishment. This information can be posted on the GSA's web site, should be provided to the region's well drilling/maintenance companies, and the County of Sacramento. In addition a recommendation should be made to the County to establish an ordinance or other requirtment to prevent future well permits from being issued for new or refurbished wells that are not of sufficient depth to assure a sustainable supply of groundwater.
SCGA	Ted Rauh	5/6/2021	Section 3		1299	Add a paragraph that states that the monitoring network, including placement, depth and frequency of monitoring will be evaluated as part of each Management Action and Project to ensure that basin integrity and sustainability is maintained.
SCGA	Ted Rauh	5/6/2021	Section 3		Figure 3-18	The figure indicates areas of the subbasin that are not covered by the monitoring network. Should the Plan include a Management Action or Project to locate and/or install additional monitoring wells to cover these areas? If not, should the text explain why additional wells are not needed or reference a technical papter that does so?
SCGA	Ted Rauh	5/6/2021	Section 3		Figure 3-19	Same comment made for figure 3-18

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SCGA	Ted Rauh	5/6/2021	Section 3		Figure 3-19	Has consideration been given to add a shallow well and stream guage that can be monitored at 15 minute intervals for the area on Deer Creek were the forks converge or other appropriate location for ISW monitoring? Should this additional well be included as a future addition to the monitoring network?
SCGA	Ted Rauh	5/6/2021	Section 3		1343	Regarding additional Harvest Water monitoring for water quality, this water is not being treated to drinking water standards and over time there is a possiblility that untreated constituence can become concentrated in the groundwater. For example endocren blockers, fine plastics and other chemicals of concern to drinking water purveyors could be released. Either in this section or by reference as a requirement in the section discussing this project, the issue of monitoring for these unwanted constituents should be addressed including what monitoring will be conducted, its frequency, and who will pay for any additional monitoring and analysis that may be required.
SCGA	Ted Rauh	5/6/2021	Section 3		1410	I may have missed the conclusive discussion regarding why the current coverage of shallow and deep monitoring wells is sufficient for our purposes when the coverages do not provide for approximate 100% coverage in each zone. Should we either include an agrument that the coverage is sufficient to start the process. also, we indicate that the network will be evaluated going forward. Shouldn't the plan include the criteria and a program to carry out this evaluation as part of the implementation? It is not enough to say we will look at it going forward. How are we going to assess its adequacy?
SCGA	Ted Rauh	5/6/2021	Section 3		1490	See earlier comments regarding possible additions to the monitoring system
SCGA	Ted Rauh	7/11/2021	Section 3		1728	An additional paragraph should be added that calls for the GSAs to work together to develop and implement a comprehensive monitoring program that transitions all well and stream gauge monitoring into real time/ periodic, electronic telemetry that is accessible to the public.
SCGA	Ted Rauh	7/11/2021	Section 3		1750	Add an additonal section calling for a climate change update assessment. Beacuase the GSP has identified the importance of accurate climate change information in order to plan and carry out basin management responsibilities, the plan needs to call for a climate change asseement and modeling update to be carried out in a coordinated fashion by the GSAs over the comming five years so that the study and anylsis is availavle for the next five year GSP update. This work and coordination effort should also be identified in other sections of the plan dealing with GSA projects and management actions, coordination, responsibilities and budgets. The plan should recommend that this climate study and modeling effort be carried out in coordination with (and with financial support from) the other two GSA groups responsible for the additional subbasins that make up the American River groundwater basin.
SCGA	Ted Rauh	7/11/2021	Section 3		2409	Late in the GSP development phase studies were presented that indicate a species of native Oak may have a rooting depth of 80 feet (Lewis and Burgy 1964). The Nature Conservency has also indicated a study is about to be published that finds similar root depths of 25 meters and the organization published a study that indicates shallower groundwater levels are required for native oaks to reproduce. Given there isn't time to examine this issue in the GSP the potential should be called out in the document and one of the Managment Actions to be addressed over the next few years should be the resolution of this concern given its potential impact on the amount and location of GDEs within the basin. Finally, GDEs may not be protected by the ISW trigger measure. This is because if groundwater levels fall below root levels for three years the plant life depending on the groundwater will be dead. Further study is needed and should be part of a Management Action addressing GDE protection.
SCGA	Ted Rauh	7/19/2021	Section 3		General	Now that the entire draft is available, it makes sense to review the selection of the triggers for the sustainamble management criteria. As currently established, the critieria for water levels and storage seem to allow conditions in the basin to deteriorate below 2015 levels for more than three years before any action is taken. Allowing this situation to occur seems at odds with the intent of SGMA and may put the GSP in jeopardy. The techinical Analysis presented by the consultant team within the plan can clearly be used to establish levels above the 2015 levels that start the three-year clock ticking so that if levels continue in a downward trend the GSAs are prepared to act before a significant number of monitoring wells drop below the 2015 levels. This also introduces another area the plan seems to be missing. The missing area is: what actions and by whom will be taken if conditions reach the 2015 level(s)? The GSP is not an effective document if discussions on protective actions only begin three years after the first exceedence. The GSP should either describe actions to be taken, or outline a process and timing for their development in advance of their being needed. Given the time left to complete the GSP it may be prudent to call this work out as a high prioity Management Action.
SCGA	Ted Rauh	2/11/2021	Section 4		68	Add sentence(s) to the effect that as a result of the comprehensive assessment and modeling performed as part of the development of the GSP, a basin sustainable yeild has been established as _____ . It is understandable to reference the 270,000 number but we have now spent over $2,000,000 to understand this basin with today's technology. If it is still 270,000 fine but in either case let's make it clear here and elswhere in the GSP what this analysis has found the sustainable yeild to be.
SCGA	Ted Rauh	2/11/2021	Section 4		95	Add a description of OHWD's project's multibenefits. They are cited earlier generically but this is the place to highlight them and the project. DWR has been critical of our past planning efforts in part due to how GDEs and ISW has been handled in the basin. This is a demonstrable effort to address those environmental issues while improving the basin's sustainability.

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SCGA	Ted Rauh	2/11/2021	Section 4		General	Water purveyors are currently shifting to groundwater where possible to make up for surface water supply shortages. The GSAs should assess the importance of purveyor projects that both enable the individual purveyor's internal and the MI system wide flexibility of switching from surface water to groundwater and vice versa (replenishing groundwater). It is in the basin GSA's best interest to be encouraging those projects that best contribute to the sustainable management of the basin. Therefore, while the basin GSAs do not have a direct management role in the selection and implementation of said projects it is in their best interest to utilize the GSP to call out a priroitized list of projects that contribute to basin sustainability.
SCGA	Ted Rauh	2/11/2021	Section 4		375	Given the uncertainty associated with climate change and its impact upon the basin, it seems short cited not to include demand reduction as a Project that is part of the explicit strategy to assure basin sustainability. There is a small tag line in the Plan draft that indicates the shortage of basin supply can be made up from conservation so why not include it in the mix of actions. Its inclusion is made more appropriate by the fact that it is referenced in the Plan as being part of the 2020 UWMPs, and is therefore a planned activity by each purveyor. Additionally, there is no direct cost for the GSAs other than monitoring the success of the water purveyors, and adjusting basin managment planning in accordance with their success.
SCGA	Ted Rauh	2/11/2021	Section 4		683	Several earlier comments have called out for coordination and should be referenced here. However, it is critical to basin management that the effects of climate change be effectively intigrated into basin management. Please intigrate the comment made on Section 3 line 1750 both there and into this section as a specific action by the GSAs and as a coordination action amoung the ajoining subbasin GSAs.
SCGA	Ted Rauh	7/12/2021	Section 5		696	Monitoring data needs to be collected for the basin per each sampling event, compliled into easily understood tables that allow basin residents to correlate individual samples with sampling points near their area of concern/residence, and displayed on a GSP web site that is supported by the GSAs. Over time, as resources alow, monitoring should be converted to real time telemetric monitoring with results automatically posted to the web site (see earlier recommendations).
SCGA	Ted Rauh	7/12/2021	Section 5		83	Improvements to the model should be made in coordination with the other basin GSAs that are also using it.
SCGA	Ted Rauh	7/12/2021	Section 5		108	Throughout the plan there are references to additional work, studies, and physical installations (e. g. monitoring well information on figure 3-27) that are needed to improve our understanding of the basin and to effectively carry out basin management activities. These studies and actions should be listed in a table here, and those that are a high priority to accomplish within the next five years should be designated as such. Without this listing and priority we will likely see little accomplished and will be doing it all over again in five years.
SCGA	Ted Rauh	7/12/2021	Section 5		113	In addition to water demand reduction and efficiency, information is needed on surface and groundwater supply needs and actual uses, groundwater transfers and exchanges, conjunctive use operations, as well as, other information needed by the GSAs to complete SGMA annual and five year reporting requirements.
SCGA	Ted Rauh	7/12/2021	Section 5		127	Additional management actions are needed. 1) An Action to address the call for an updated climate change impacts assessment as outlined above. This effort should build on the work already done in the American River basin Study underpining the draft GSP. As suggeste the work should address all three subbasins and focus on the relevant climate forecasts in the study as well as basin modeling so as to forecast the three subbasin conditions in 2025 and beyond. This study has general implications for the entire region. The RWA, Water Forum, local and County governments, and water purveyors have an interest in participating in the assessment and could be asked to help fund the effort. 2) An Action by the GSAs to develop a policy and procedure regarding the operation and managment of groundwater transfers, water banking activities (including governance and acounting) and conjuctive use operations. The P&P should include SAS premiums of water left in the subbasin over and above deposits to adjust for natural storage loss, environmental premiums, and basin supply enhancement. The P&P should also address the needs and concerns of the Harvest Water project and other GSA initiated recharge activity.
SCGA	Ted Rauh	7/19/2021	Section 5		General	The following concepts should be considered in the development of the shallow well protection program: Coverage - all shallow wells that become dry as a result of MT exceedence and should not apply to localized dry well conditions. The program's initial focus should be on private well owner voluntary date gathering coupled with technical support/coordination. The GSP should include a Management Action (with annual updates) with enought program detail so that any subsequent funding opportuinities can be taken advantage of. The potential interaction between shallow wells and conjunctive use/banking and recharge should be assessed as part of the Managment Action's development and implementation.