Meeting Brief

- The Vina Stakeholder Advisory Committee (SHAC) met virtually on September 15, 2020, due to the ongoing Covid-19 pandemic.
- The SHAC received an update from the Vina GSA Management Committee, reviewed and approved the previous meeting notes and came to agreement on recommended modifications to the Vina SHAC Charter.
- The SHAC received an overview of the Draft GSP Basin Setting Chapter and a summary of the public comments received, and discussed potential Basin Setting recommendations for consideration in future discussions.
- The SHAC briefly discussed desired next steps in the Projects and Management Actions (PMA) process to inform a more in-depth PMA discussion at the October SHAC meeting.
- The SHAC will meet again via video conference on October 20, 2020 from 9:00-12:00.

Action Items

Item	Lead	Completion
• **Meeting Materials**: Share PDF version of documents with track-changes for participants without access to Microsoft Word.	CBI	Ongoing
• **Meeting Notes (8/18/20)**: Post finalized document on the website.	CBI/ Vina GSA Management Committee	Upon completion
• **Meeting Notes**: Add line numbers to the document and letter bullet points to allow SHAC members the ease of referencing when providing feedback.	CBI	Ongoing
• **Vina Charter**: Management Committee will transmit to the Vina GSA board the SHAC's suggested modifications to the Charter.	Vina GSA Management Committee	Upon completion
• **Draft Basin Setting:** ○ Share model assumptions used in the Butte Basin Groundwater Model (BBGM) for calculating agricultural water demand in future scenarios. ○ Share with the SHAC legend for the figures showing groundwater and surface water interactions. ○ Follow up with an explanation for difference in current vs. historic western boundary water outflow estimates.	Vina GSA Management Committee	Upon completion
• **Meeting Recording:** Post meeting recording on the Vina GSA website.	Vina GSA Management Committee	Upon completion

Summary

The Vina SHAC met on September 15, 2020 via video conference, as a result of COVID-19. In total, 26 participants attended, including Vina SHAC members, GSA member agency staff, a technical consultant, state agency representatives, and members of the public. Below is a summary of key themes and next steps discussed at the meeting. This document is not intended to be a meeting transcript. Rather, it focuses on the main points covered during the group's discussions.

1. Introductions & Agenda Review

The SHAC members, facilitator, and staff introduced themselves. The facilitator gave a brief overview of the agenda.

2. Public Comment for Items Not on the Agenda

No items

3. Vina GSA Management Committee Reports

Vina GSA board met on September 9, 2020. The board is now meeting via Zoom rather than Webex, following previous recommendations. The Vina Management Committee provided an update of Groundwater Sustainability Plan (GSP) development for the Vina Subbasin, including a written report on the Vina SHAC meetings. The Vina GSA board considered and approved the SHAC's recommendation to submit a letter to the governor requesting a two-year extension for GSP completion. In addition, the Vina GSA board discussed the Memorandum of Understanding (MOU) between Butte County and Rock Creek Reclamation District (not signed yet), and received an update on the Tuscan Water District application. The Vina GSA board will meet again on November 18, 2020.

4. Meeting Notes Review & Consideration

The SHAC reviewed and unanimously approved the meeting notes from the 8/18/20 SHAC Meeting [access here]. SHAC members requested adding line numbers and lettering the bullets to allow greater ease of referencing when providing feedback on meeting notes.

Voting Results

Yes	A. Dawson, C. Chastain, C. Madden, G. Cole, G. Barber, G. Sohnrey, and S. Lewis.
No	NA

<u>Outcomes & Next Steps |Meeting Notes Review & Consideration</u>

a) The SHAC approved meeting notes.
b) The facilitation team will finalize and post meeting notes (8/18/20) on the website.
c) The facilitation team will add line numbers and lettered bullet points in future summaries.

5. Vina SHAC Charter

SHAC members reviewed changes to the SHAC Charter and sought agreement on recommended revisions to the Vina GSA Board. The suggested modifications to the charter include clarification of the process for SHAC members to include items on their meeting agendas and the requirement of a quorum of SHAC members when making internal decisions and recommendations to the Vina Groundwater Sustainability Agency (GSA) Board.

Discussion:

a) A SHAC member had difficulty viewing track changes in the modified charter in the Microsoft Word version. The facilitation team will also include a PDF version in the future.
b) A SHAC member asked if the Amendments clause in the charter has an expiration date. The facilitator clarified the amendment does not expire, allowing the SHAC and the Vina GSA Board to revise and adapt the charter as needed.

Voting Results: Approving Recommended Changes to the Vina Charter for the GSA Board

Yes	A. Dawson, B. Smith, C. Chastain, C. Madden, G. Cole, G. Barber, G. Sohnrey, and S. Lewis.
No	NA

Outcomes & Next Steps |Charter Review

a) The modifications will be sent to the Vina GSA Board for consideration.
b) The facilitation team will share a PDF version of future documents with track changes.

6. Draft GSP Basin Setting Public Review– *Highlights and Discussion*

Christina Buck (Butte County) provided a quick overview of the Draft GSP Basin Setting Chapter documents, highlighted key differences from previous material presented, summarized public comments received, and opened up the conversation for questions and comments [Access full presentation here, and public comment staff report here].

6.1 Groundwater Dependent Ecosystems (GDEs)–

Kelly Peterson (Butte County) is leading effort regarding GDEs in the Vina Subbasin. GDEs are ecosystems dependent on groundwater, including rivers, streams, riparian vegetation, seeps, wetlands, etc. GDEs are considered environmental beneficial water users. Although GDEs have not been included in the Draft Basin Setting Chapters so far, they will be incorporated in the future.

Work is underway regarding GDEs. The first step was to identify GDE locations. GSA Managers from all three subbasins used an online database and web mapping application developed by The Nature Conservancy (TNC), the Department of Water Resources (DWR), and the CA Department of Fish and Wildlife (CDFW) to identify potential GDEs. Managers from the Butte, Vina, and Wyandotte Creek subbasins have been participating in a series of workshops and independent work efforts since Fall 2019 to study those areas and applying a set of criteria to determine which are actually dependent on groundwater. Further, the GSAs formed a GDE working group, with a

few members from the SHAC, Vina Management Committee members, professors from Chico State University, DWR staff, and representatives from the Butte Environmental Council to get feedback on the approach. The Management Committee will then provide the results of the analysis to the consulting team (Geosyntec) for their consideration when developing the Sustainable Management Criteria (SMC).

Discussion:

a) A Vina SHAC member asked which Chico State faculty has been involved in the GDE working group. K. Peterson clarified it is Dr. Colleen Hatfield (Biological Sciences) and Dr. Jeff Davids (Water Resources and Agricultural Engineering). Note: Kamie Loeser is also faculty at CSU Chico (Geography and Planning).

6.2. Airborne Electromagnetic (AEM) Survey–

C. Buck highlighted the AEM Survey, which is included in the Hydrogeologic Conceptual Model (HCM) portion of the Basin Setting Chapters. AEM data helps understand the large-scale structure of the aquifer system by measuring variation in the electrical resistivity of materials underground to depths of more than 1000 feet to understand what zones are "course dominated" (sand and gravel) vs. "fine dominated" (silts and clays). This AEM Survey aimed to improve the hydrogeologic conceptual model by refining the understanding of the aquifer system (delineations of major aquifers and aquitards, spatial distribution of clay-rich layers, connectivity between upper and lower portions of the system, etc.) and improve groundwater modeling tools in the long-run [Access more information here]. The findings were largely consistent with previous understanding but provided a better picture of areas where shallow and deep aquifer systems are separated by lower conductivity zones (dominated by fine grained materials such as silt and clay). However, the vertical connectivity between these zones remains a question. C. Buck suggested having a presentation by the two professors involved in the study, CSU Chico Professor Dr. Todd Greene and Dr. Rosemary Knight of Stanford University to answer questions in greater detail.

Discussion

a) Overall, Vina SHAC members were very interested in the AEM Survey results.
b) A SHAC member asked whether the black lines in the cross-section correlated with fresh and saline water. Buck clarified that the black lines represent the different aquifer layers, but she is not sure if there is a relationship with fresh and saline water. There are portions of the aquifer that can be saline, but it is not consistent across the basin. One would need samples to figure out the water quality; so far samples have not found saline water.
c) Joe Turner (Geosyntec) highlighted the figure showing that the cross-section also identifies an old paleo channel, corresponding to the area where Butte Creek enters the valley and used to be, which now corresponds to an area of course dominated material.

6.3 Water Budget–

Change in Groundwater Storage: The graph showing groundwater change in storage shows significant changes in groundwater pumping from wet years to dry years, as well as a cumulative decrease in water storage. Although shifts in crop types impact demand, wet-year and dry-year cycles have the greatest impact on water pumping and cumulative groundwater storage. Vina is highly dependent on groundwater, but there is some surface water used in the subbasin, mainly from Butte Creek, which is also impacted by wet-dry year cycles.

Water Budget Summary Table: Corrections were made to the water budget totals.

System Response to Climate Change (as simulated): The model calculates a slight increase in subsurface inflows, more deep percolation coming from additional groundwater pumping, stable seepage from streams, decreased outflows to surrounding basins, increased groundwater pumping (driven mainly by increased irrigation), and decreased net outflow at the western boundary which includes interactions with the Sacramento River. Further, under climate change conditions, the model estimates a slightly greater decline in cumulative groundwater storage.

Surface-Groundwater Interactions warrant greater discussion and evaluation: Streams gain or lose water to the groundwater system (gaining and losing) depending on water levels. The Butte Basin Groundwater Model (BBGM) simulates each individual stream. Most or all of the time the streams modeled are not connected with the groundwater system meaning groundwater does not move from the groundwater system to the streams (gaining conditions). The exception to this is for reaches of streams near the western boundary where groundwater levels are shallow, and most significantly for the Sacramento River which is gaining most of the time. Uncertainty remains and the connection between streams and groundwater in the subbasin warrants further evaluation.

6.1 Summary of Public Comments Received

Public Comments received largely relate to the HCM and have implications for expansion of monitoring to address identified data gaps. Other themes include a better understanding of inter-basin flows and greater consideration of climate extremes (e.g. multidecadal drought) in the water budgets. For more information on public comments received, access the staff report here and the compiled table of public comments here.

Discussion/Questions

a) *Groundwater-Surface Water*: a SHAC member would like to have more information on the timing of gaining and losing streams during different seasons and the implications for habitat, particularly to rearing habitat. Further, this SHAC member requested including the legend for the figures shown.

b) *Current vs. Historical Water Budgets*: A SHAC member asked for an explanation for why the water budget shows the current total western boundary net outflows as 20,000 acre-feet per year more than the historic western boundary net outflows. C. Buck will follow up with this information. Further, a couple SHAC members asked for clarification regarding the time period used for the historic and current scenarios. C. Buck clarified that the current time period uses land use data from 2015 and 2016 for land use footprint and 2015-2018 for urban demands. However, the numbers derived for the water budget represent an average annual estimate over a 50-year period. For the most recent available water budget, see the column for water year 2018 in Table A-2 in Appendix A.

c) *Climate change scenarios*:

1) A SHAC member suggested expanding the range of climate conditions to include wetter scenarios, in addition to drier scenarios. Buck clarified staff would like direction from the SHAC and GSA Board regarding what type of climate scenarios and conditions the SHAC would like to explore during the planning process.
2) Another SHAC member highlighted paleoclimatology records of megadrought in the past millennia of up to 100-200 years of drought. These situations may be exacerbated by climate change, due to increases in average temperatures.
3) Another SHAC member asked whether climate scenarios considered changing crop patterns and more efficient irrigation technologies when projecting future water demands. The BBGM does not attempt to guess the impact of changing technologies, rather it illustrates how changing climate conditions may affect agricultural water demand for a set ag footprint.
4) One SHAC member currently serves as the Chair of the City of Chico's Climate Action Commission [access here]. In 2018 the City conducted a climate vulnerability assessment [access here], using a tool called Cal-Adapt to predict future climate scenarios [access Cal-Adapt tool here]. The vulnerability assessment predicted Chico would be impacted by increased frequency, intensity, and duration of extreme heat days and waves, increased flooding, decreased snowpack and water supply, and increased wildfire events.
5) Another SHAC member expressed concern with the current sustainable yield estimate. She asked if it is possible to update the time period with newer information, since she believes Vina would be better to prepare in the future by considering a less optimistic scenario. Buck specified that staff will be continually updating the timeframe as well to maintain the 50-year period. Following up, the SHAC members asked if the model could also run the model on a shorter timeline (20- or 30-year timeline), so that the most recent information has a bigger effect on the cumulative groundwater storage deficit. Buck clarified that the beauty of modeling is that once it is run and calibrated, staff can take an average of the 20 years or 30 years if desired. However, one of the advantages of using a 50-year period is capturing the hydrological variability of those years, while mapping on top of that the current demand.

6) A SHAC member asked whether the scenarios are adjusted to correlate with earlier runoff and decreased snowpack. Buck explained that the model accounts for those changes, adjusting the inputs for streamflow based on climate model data.

d) *Domestic Wells*: A SHAC member expressed concern regarding lack of consideration of domestic wells so far: where they are and how they are impacted. She suggested making a commitment to increase domestic well monitoring data, as this information will come into play when setting minimum thresholds. Butte County has not laid out the landscape of domestic or agricultural well locations yet, but this information is forthcoming.

e) *Agricultural Demand Projections*: A SHAC member expressed concern with the assumptions used to project agricultural demand and land use in climate scenarios. Further, she would like to see more information on the impact of population growth in urban water demand (e.g. City of Chico). She requested a consistent approach for the assumptions used for calculating agricultural and urban use. Another SHAC member clarified that estimates for urban use are derived from urban water management plans, which utilize local government land use plans to assess projections for future demands. Assumptions for agricultural demand are well documented in the BBGM, which will be posted on the website. Further, Butte County updated the model in 2016, including estimates for land, soil, and irrigation thresholds. Butte County ran many of those numbers by grower groups.

f) *Recharge programs in pressurized zones:* A SHAC member highlighted the importance of exploring the different efficacy of recharge programs in different zones (confined vs. unconfined aquifers) and addressing this issue in inter-basin coordination efforts.

g) *Subsidence:* a SHAC member stated that existing land subsidence monitoring may not be capturing land subsidence in Vina, due to the size of monitoring grids. His main concern relates to the frequency and nimbleness of satellite monitoring to capture initial stages of land subsidence. DWR is expanding its subsidence monitoring; however, the geology in the basin (mostly Tuscan formation full of sandstone) is not very conducive to subsidence. Long-term, the GSA could set criteria based on the best available knowledge and reevaluate criteria during the 20-year implementation period. Land subsidence could be identified as a data gap, but that would require setting up a schedule and implementation plan to collect the data. Since there is not a lot of subsidence, it may not be warranted.

<u>Outcomes & Next Steps |Draft Basin Setting Chapters</u>

- Butte County staff will share the legend for the figures showing groundwater and surface water interactions.
- Butte County staff will follow up with an explanation for difference in current vs. historic western boundary water outflow estimates.
- Vina GSA Management Committee will post on the website the model assumptions used in the BBGM to estimate agricultural demand in future scenarios.

7. Basin Setting Recommendations Options

During this section, the SHAC discussed potential Basin Setting suggested revisions or other recommendations to consider in the 5-year mandatory update or to support the upcoming Sustainable Management Criteria (SMC) conversations. The following section summarizes the main topics discussed.

Shallow Monitoring Networks

a) G. Barber and G. Cole support developing a shallow monitoring network (as a potential data gap) to understand the impacts on domestic agricultural users. He would recommend focusing that network around the clusters of houses dependent on domestic wells, putting monitoring wells in critical locations to make sure the GSA is supporting as many domestic wells as possible. It would be extremely important to communicate with owners to increase awareness and understanding.

b) J. Brobeck proposed implementing a survey or census of existing large diameter wells that would be pumping out of the Tuscan Aquifer, in coordination with other subbasins to go beyond the Sacramento River to the West. This effort would aim to understand what infrastructure is out there tapping the foundation of the aquifer system, which should be taken into account meaningfully for management actions. Key questions: how many wells are out there, how much and when are they pumping, how were they constructed and screened (to show leakages between multiple screens, which impacted shallow aquifers). In Butte County, domestic wells have a 50-foot seal before the screen. However, there is an increasing number of large gravel wells connecting different aquifer zones, which may produce connectivity among them. This information may inform a future decision to change existing rules requiring sealing large wells. While B. Smith suggested including some monitoring wells in the middle layers as well, A. Dawson would like to prioritize shallow wells.

c) C. Buck (Butte County) clarified that DWR well categories are shallow (less than 200 ft), intermediate (100-600 ft), and deep (+600 ft). However, the cross-sectional data in the Basin Setting questions previous classification and suggests refining these categories per area (e.g. defining the shallow zone in a particular area, based on how it related to the hydrogeologic characteristics of a particular area). Dr. Todd Greene is working to categorize the current monitoring well network this way.

d) J. Turner (Geosyntec) stated that during the next process, the Vina GSA can characterize undesirable results (e.g. x% of wells going dry), and then set up monitoring networks at certain depths. The SHAC can advise the GSA board on what levels are important, based on local conditions. If data is lacking, this could be identified as a data gap.

e) G. Sohnrey stated that setting up a big network, might be cost prohibitive. He cautioned against setting expectations that every domestic well can be protected. Some wells may be too shallow, and the GSA may not be able to protect them. J. Turner stated there is some data already available through DWR showing average minimum and maximum well depths per agricultural production and section of the area. This data does not include screening

depths. T. Carlone (CBI) also clarified that if the GSA specifies this as a data gap, the DWR provides technical support services and could be addressed in 5-year GSP updates. A. Dawson would like to have a better idea of how domestic users will be impacted by the GSA decisions. That information will be important when setting minimum thresholds and choosing Project and Management Actions (PMAs) to perhaps remediate the impacts.

f) S. Lewis stated that Groundwater Dependent Ecosystems (GDEs) such as streams and oak tree health can be good indicators for shallow aquifer conditions. If understanding the shallow zone is important, there may be different ways to monitor. C. Buck stated the next step would be to define monitoring approaches (e.g., vegetation monitoring, surface water monitoring, etc.) beyond the use of monitoring wells.

g) S. Lewis and B. Smith suggested using active monitoring data from contaminated site wells to understand shallow monitoring data. Further, they expressed concern with the emphasis on monitoring for agricultural nutrients and toxins and not mentioning other urban contaminants. They suggest potentially adding other contaminants into the Basin Setting.

h) J. Turner clarified that wells are regulated by other state programs in terms of water quality. Under SGMA, the GSA has to develop a plan to avoid making conditions worse.

Climate Change

a) G. Barber and C. Chastain would like to align the approach used for climate change with other local initiatives, such as the City of Chico's Climate Action Plan, and making sure PMAs and models are in alignment with projections of climate futures. C. Chastain stated Chico is updating the Climate Action Plan, conducting public outreach in Oct-Nov 2020, and finalizing the plan for presentation to City Council by March 2021.

b) A. Dawson asked clarifying questions about the approach used for the climate change scenarios. C. Buck clarified the model analyzed two scenarios (2030 and 2070), but they reviewed five different climate data sets and selected the models that showed central tendency.

Outcomes| Potential Recommendations to the Vina GSA Board

1. Understanding the shallow zone is important. The SHAC is interested in establishing monitoring networks (well, vegetation, stream monitoring, etc.) as a data gap. The SHAC discussed making sure that shallow domestic wells are protected, as a potential priority, while maintaining clear expectations with the public.
2. It is important to consider the climate change analysis being done by other local efforts (e.g. City and County Climate Action Plans) to ensure consistency and alignment between and among those efforts, when possible. Note: the SHAC would like to review those plans (assumptions and information) before recommending incorporating set analysis into the GSP. However, the SHAC reached high level agreement that it is important to align with and reference other relevant planning efforts taking place.

3. It is important to have a survey, collecting well construction data of large wells and potentially incorporating inter-basin coordination discussions to include wells outside the Vina subbasin boundary to the West (Sac River).
4. Make sure that potential undesirable results associated with water quality incorporate all information (beyond only toxins and nitrates related to agriculture).

8. Planned Projects and Management Actions (PMA)

The SHAC briefly discussed desired next steps in the PMA process, using a virtual black board tool (access here). The SHAC's feedback will define the approach taken during the October meeting. The following list describes approaches discussed:

a) **General brainstorming discussion** – The SHAC could discuss some PMA concepts that they would prefer and types that they do not. Based on the brainstorming ideas, focused discussions would occur at the next meeting. J. Brobeck and S. Lewis would like to start with this approach and include expected budget per concept.
b) **List of PMAs from other GSPs** - A general list of the types of PMAs from other GSPs would be presented for discussion. The SHAC would discuss which ones would warrant more in-depth discussion at the next SHAC meeting and which ones should be put in the "parking lot". G. Sohnrey and C. Chastain liked this idea and suggest providing the SHAC the list in advance.
c) **Prioritization/Acceptance Considerations** - A discussion of the types of considerations that the Vina GSA should take into consideration for prioritization or acceptability of PMAs (e.g., cost/benefit, multi-benefit, level of complexity, potential unintended consequences, etc.)
d) **Vina GSA Rules** – The SHAC could discuss and create a list of potential unintended consequences of certain PMAs (e.g., control over recharge water, transfers, loss of groundwater rights, etc). The Management Committee would work with Legal Counsel to develop rules and ordinances to prevent the unintended consequences. Subsequent discussions would occur on the types of PMAs with greater assurance that the Vina subbasin would not be harmed.
e) **Other Topics:** G. Cole would like the SHAC to clearly establish goals. G. Sohnrey would like the SHAC to stay within well-defined boundaries and scope. Other SHAC members requested more information about Management Areas (who administers them, how should they be considered during PMA discussions, etc.).

Next Steps

a) The SHAC will continue PMA discussions on October 20, 2020. The Vina GSA Management Committee will take their feedback in consideration when designing the agenda.

Participants

Participant	Representation/Affiliation	Present
Vina Stakeholder Advisory Committee (SHAC) Members		
Anne Dawson	Domestic well user	Y
Bruce Smith	Business representative	Y
Cheri Chastain	CSU Chico	Y
Christopher Madden	Butte College	Y
Gary Cole	Agricultural well user	Y
George Barber	California Water Service	Y
Greg Sohnrey	Agricultural well user	Y
James Brobeck	Environmental representative	Y
Joshua Pierce	Domestic well user	N
Samantha Lewis	Agricultural well user	Y
Groundwater Sustainability Agency (GSA) Member Agency Staff		
Christina Buck	Butte County	Y
Paul Gosselin	Butte County	N
Kelly Peterson	Butte County	Y
Linda Herman	City of Chico	Y
Jeff Carter	Durham Irrigation District	Y
Kamie Loeser	Durham Irrigation District	Y
Colin Klinesteker	Mechoopda Indian Tribe	Y
Technical Consultants		
Joe Turner	Geosyntec	Y
Facilitator		
Tania Carlone	Consensus Building Institute	Y
Mariana Rivera-Torres	Consensus Building Institute	Y

Approximately eight members of the public attended the meeting.