Corning Sub-basin GSA Committee Meeting Materials

May 11, 2022 | 9:30 a.m.

Glenn-Colusa Irrigation District Main Pump Station
7854 County Road 203, Orland, CA 95963
And
Teleconference

Microsoft Teams meeting

Join on your computer or mobile app

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Or call in (audio only)

+1 323-676-6164,,349754778# United States, Los Angeles

Phone Conference ID: 349 754 778#

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1. Call to Order

The Chair will call the meeting to order.

2. Roll Call

Staff will conduct roll call.

3. Meeting Minutes

a. *Approval of April 13, 2022 meeting minutes

Draft meeting minutes are attached.

Attachments:

- April 13, 2022 draft meeting minutes

Corning Sub-basin GSA Committee
Meeting Minutes

April 13, 2022 | 9:30 am
Glenn-Colusa Irrigation District Pump Station
7854 County Rd 203, Orland, CA 95963
and
Teleconference

1. Call to Order

   John Amaro called the meeting to order at 9:33 a.m.

2. Roll Call

	Party Representative	Member Agency
X	Tom Arnold	County of Glenn
X	Grant Carmon	County of Glenn
X	John Amaro	Glenn-Colusa Irrigation District
X	Pete Knight	Glenn-Colusa Irrigation District
X	Julia Violich (9:52)	Monroeville Water District
	Seth Fiack	Monroeville Water District

   Lisa Hunter conducted roll call as noted above.

3. AB 361 Open Meetings: State and Local Agencies: Teleconferences

   a. *Discuss and consider approval of Resolution 2022-04 Resolution to Implement Teleconferencing Requirements During a Proclaimed State of Emergency

   - Mr. Amaro introduced the item. No further discussion was heard.

   On a motion by Mr. Arnold, seconded by Mr. Carmon, it was unanimously approved by members present to adopt Resolution 2022-04 "*Resolution to Implement Teleconferencing Requirements During a Proclaimed State of Emergency*".

4. Meeting Minutes

   a. *Approval of March 9, 2022 meeting minutes

   - No corrections or comments were made on the draft minutes.

   On a motion by Mr. Carmon, seconded by Mr. Knight, the meeting minutes of March 9, 2022 were unanimously approved as presented.

5. Period of Public Comment

    - Mr. Arnold reported that the Rangeland Association conveyed to him concerns regarding the funding source for the Corning Subbasin.

6. Staff Reports

    - Holly Dawley reported that Land IQ is available to provide a presentation at the May 11, 2022 Corning Sub-basin GSA (CSGSA) meeting. Ms. Dawley asked if the CSGSA or the Corning Subbasin Advisory Board (CSAB) is the most appropriate venue for the presentation. Discussion ensued. It was decided the presentation would be given to the CSGSA and staff could reach out to the Tehama GSA to determine interest in a presentation at the CSAB.

7. *Approve 2022 Corning Sub-basin GSA Committee meeting schedule

    - Mr. Amaro introduced the item. Staff recommended Option 2, setting a monthly meeting schedule and cancel specific meetings if there are no business items to discuss.

    On a motion by Mr. Carmon, seconded by Mr. Arnold, Option 2 of the 2022 Corning Sub-basin GSA Committee meeting schedule was approved unanimously by members present.

8. Discussion on Legal Counsel to represent the CSGSA as needed

    - Ms. Hunter reported that Glenn County, County Counsel has suggested the CSGSA seek the services of an experiences water attorney rather than rely on County Counsel, who currently contracts with outside counsel on water-related matters due to the complexity of the topic. She also noted, it will be important to consider how these services will be paid for.

    - Mr. Knight asked if there might be an opportunity to share counsel with Tehama County. Ms. Hunter shared that generally, each GSA retains separate counsel, but that option could be explored. Mr. Carmon stated he is pleased with the services Valerie Kincaid provides for the Glenn Groundwater Authority and Glenn County and recommended asking if she would be interested in representing the CSGSA. Mr. Arnold asked if there would be a conflict; whereby discussion ensued.

    - Staff was directed to reach out to Ms. Kincaid to determine interest in representing the CSGSA. It was clarified that grant funding is not expected to be available for these services.

9. Corning Subbasin Groundwater Sustainability Plan

    a. Discussion on Corning Subbasin Groundwater Sustainability Plan implementation and next steps

- Mr. Amaro introduced the item and indicated no comments have been received on the GSP. Ms. Hunter noted the comment period is open until April 23, and she expects at least one comment letter will be submitted. For GSPs that have been through this process already, comments tended to be submitted at the end of the comment period. She further clarified, these comments are intended to provide DWR guidance while reviewing the GSP, and it is helpful for the GSA to be aware of such comments and consider them during project planning, annual reports, and the five-year updates.
- Ms. Hunter encouraged members and the public to utilize the Annual Report on the SGMA Portal as a resource. The portal contains the complete Annual Report, summary information, and monitoring network information, including hydrographs with the groundwater levels, minimum thresholds, and measurable objectives.

10. Corning Subbasin Advisory Board Report

- Mr. Amaro stated the discussion at the April 6, 2022 meeting revolved around the Annual Report. Mr. Carmon noted the consultant presented the summarized Annual Report and answered questions. There were some concerns with some of the estimates for groundwater use, which will be explored in the future.
- Mr. Carmon shared the Tehama County portion of the basin reported they will have a 29 cent per acre fee to get the GSA running, and a consultant will be hired to put together well information to support a well head fee. He encouraged the CSGSA to take action to have funding available for immediate tasks. Discussion ensued on fee development, funding needs, and project and management action development.

11. Discussion on Executive Order N-7-22

- Mr. Amaro introduced the item and Ms. Hunter reviewed that some other GSAs plan to use an Acknowledgment Form which is a checklist that the permittees reviews and signs. Mr. Arnold stated that under the moratorium, the County is currently allowing replacement wells, which would need GSA approval. Mr. Carmon suggested using the Acknowledgment Form, consistent with the direction of the Glenn Groundwater Authority. Ms. Hunter reviewed potential options for the procedure and communication between the GSA and the Environmental Health Department (the local permitting agency).
- Mr. Carmon suggested a joint GSA/County policy to approve wells based on location and well depth. It was clarified this may be a longer-term goal.
- Mr. Carmon stated it seems reasonable to follow the current county policy for replacement wells while the moratorium is in place.
- The item will be brought back for further discussion.

12. Discussion on Funding Mechanisms for GSP Implementation and Short-Term Funding Options

- Mr. Amaro noted this topic was discussed during Item 10. He summarized direction to staff to invite Land IQ to make a presentation and funding mechanisms will be explored. The Proposition 26 mechanism may provide for more immediate funding for GSA administration and Proposition 218 will also be explored further.

- Mr. Knight asked if a consultant and attorney will be needed to move forward. Ms. Hunter encouraged discussion on how to fund the short-term needs. Mr. Knight inquired about a cost estimate; whereby discussion ensued on short-term funding needs and priorities, including funding mechanisms and legal expenses. Ms. Hunter emphasized the agency should plan to self-fund, possibly with member agencies contributions for approximately one year before fees would be received through any type of assessment.

- A Technical Memorandum written by West Water will be available by the end of April to facilitate additional discussion on funding mechanisms.

- The CSGSA requested figures for immediate short term funding needs and longer-term needs for the next meeting.

13. Corning Sub-basin GSA Committee Member Reports and Comments

- Ian Turnbull encouraged the members to review the Glenn County General Plan Update that is nearly complete and emphasized the connection between land use planning and water management. Mr. Carmon stated he has had conversation with the Planning team and consultant and some wording may be added that permanent crops are discouraged on the westside and if permanent crops are planted, they must prove water sustainability. Mr. Turnbull expressed his concerns and recent developments with lands generally west of the traditional State Responsibility Area (SRA) boundary.

- Jaime Lely expressed concern that if a per acre fee is placed on lands, particularly dry lands, it forces landowner to consider other options in order to afford paying those fees. The other options include higher profitability crops which also use more groundwater. She reiterated that many landowners have limited groundwater availability. She further inquired if an ad hoc committee was going to work on aspects to fund this. Ms. Hunter responded that it had been decided to have the discussions at Board meetings because this group is small, so full Board discussion would be more efficient. Ms. Lely spoke to the large amount or dry land farming in the basin and a lack of representation for those landowners during the fee discussions. Mr. Carmon encouraged the landowners to attend the Board meetings and Ms. Dawley clarified that the Glenn County and Tehama County portions of the basin are pursuing separate funding mechanisms.

14. Next Meeting

The next CSGSA is scheduled for May 11, 2022 at 9:30 a.m.

15. Adjourn

The meeting was adjourned at 10:51 a.m.

4. Period of Public Comment

Members of the public are encouraged to address the Corning Sub-basin GSA Committee. Public comment will be limited to three minutes. No action will be taken on items under public comment.

5. Staff Reports

Staff from members of the Corning Sub-basin GSA will provide relevant updates, such as a brief status update of GSP implementation, grant agreement, and project agreement. Reminders and clarifications may be made, and direction may be provided to staff.

6. Presentation: Land IQ

Over the past several months, discussion has taken place on options and available tools to better understand land and water use within the subbasin to support GSA discussions on potential fee options and project and management action planning. Land IQ is a tool that has been used state-wide and locally for various projects. Joel Kimmelshue will provide a presentation to share more information about Land IQ.

7. Discussion on Legal Counsel to represent CSGSA as needed

As the GSA moves forward, it is important to consider formalizing an arrangement for Legal Counsel to represent the CSGSA on an as-needed basis. At the March 9, 2022 meeting, there was general consensus to request Glenn County, County Counsel to provide these services and consult with outside counsel as needed.

At the April 13, 2022 meeting, staff reported that Glenn County, County Counsel suggested seeking the services of an experienced water attorney. At that meeting, staff was directed to reach out to Valerie Kincaid, with Paris Kincaid Wasiewski, LLP to determine if she would be interested in providing services to the CSGSA.

Staff has reached out to Ms. Kincaid, who indicated the firm would be interested in serving as counsel to the CSGSA. Anticipated expenses would be dependent on the level of support the GSA requires, but could include meetings, research, memos, litigation, and other deliverables directed by the Committee. Priorities that will likely need counsel review and input will be discussed in further detail during Item 11. The 2022 Rate Sheet is attached.

Staff requests direction on the following options:

- Request a more formal proposal from Paris Kincaid Wasiewski

  OR

- Work with Ms. Kincaid to outline next steps to enter into an agreement Paris Kincaid Wasiewski

  OR

- Reach out to additional firms to gauge interest in providing services to the CSGSA

Additional updates may be provided, potential options will be explored, and direction may be provided to staff.

Attachments:

- Paris Kincaid Wasiewski 2022 Rate Sheet

Paris Kincaid Wasiewski LLP

RATE SHEET 2022

The Firm is compensated for its legal services on an hourly basis, billed on prorated increments of 1/10 an hour. Invoices are broken down and organized by client and specific assignment to assist in the tracking of costs incurred and services performed related to specific matters. The Firm sets its hourly rates based on experience of each attorney and market rates. The Firm's 2022 rates are as follows:

A. Partner Rate: $400/hour
B. Senior Counsel Rate: $350/hour
C. Associate Rate: $300/hour

The Firm does not charge a separate hourly rate for paralegal or secretary time; although this resource has tremendous value, our Firm includes these costs in overhead. Any outside counsel costs will be billed directly to the client, upon prior notification and approval. The Firm does not charge for any expense that is considered overhead, including telephone calls, cellular service, postage, fax or document reproduction services unless outsourced due to a need for an unusual size, shape or volume. The Firm charges hourly rates above for travel time, but no other mileage charges are accrued.

8. Corning Subbasin Groundwater Sustainability Plan

a. Discussion on Corning Subbasin Groundwater Sustainability Plan implementation and next steps

The Corning Subbasin GSP was submitted to DWR on January 28, 2022 and posted by DWR on February 7, 2022 initiating a 75-day public comment period. The comment period ended April 23, 2022. Seven comments were received during the public comment period, and one comment was received after the comment period ended. The GSP can be accessed on the SGMA Portal at: https://sgma.water.ca.gov/portal/gsp/preview/94

The Corning Subbasin GSP Annual Report, developed by Montgomery & Associates on behalf of the GSAs in the Corning Subbasin, was completed and submitted to DWR on April 1, 2022, meeting the statutory deadline. No comments have been received. The Annual Report can be found on the SGMA Portal at: https://sgma.water.ca.gov/portal/gspar/preview/90

Discussion may be held on the shift from GSP planning to GSP implementation. The CSGSA may consider concepts, goals, and priorities for initial GSP implementation and may provide direction to staff.

Attachments:

- Comments submitted to the SGMA Protal on the Corning Subbasin GSP

Public Comments Received During the Public Comment Period

GO BACK TO
GSP
All GSPs
Add Comment

GSP Submittal Comments

5-021.51 CORNING

Submitted **During** Public Comment Period | Submitted **After** Public Comment Period

Search:

Comments

Tamara L. Williams says (04/23/2022 08:57PM) :
While many of the comments that I provided on the Draft GSP (Appendix 2G, Comments 26 - 127) were resolved to my satisfaction prior to submittal of the GSP to DWR, I remain concerned about the following key issues regarding the planning process, the final plan, and the GSP implementation going forward.

1. Ineffective public outreach and involvement. Domestic well owners, and small farmers (with less than, say, 20 acres, and not belonging the Farm Bureau), while owning the vast majority of individual wells in the Corning Subbasin, and including a large low-income population, were not well represented in the GSP development process. The plan suggests that there will be ongoing outreach; this is imperative, and cannot wait until DWR evaluates the first 5 year plan update.

2. Increased irrigation demands due to recent conversion of land use. The GSAs have not been willing to fully support metering under the GSP, nor are local authorities willing to place a moratorium on installation of large production wells during the current drought and overdraft condition. Further conversion of land to higher water-demand crops is in direct conflict with sustainable groundwater management in this subbasin.

3. Inability of the subbasin models to simulate observed dewatering of the upper aquifer, particularly in the western portion of the subbasin. The use of models is an important tool in managing groundwater sustainability. However, until model input and output represent sufficiently detailed observed conditions, the model results can drive poorly-informed decision making.

4. The Minimum Thresholds and Measurable Objectives are not protective of domestic and small ag well owners, particularly in some portions of the Subbasin. If implemented as written, some areas will require continued deepening of shallow wells due to local overpumping of larger, deeper wells. Continued decline in shallow groundwater levels will also likely result in further loss of small areas of groundwater dependent ecosystems that aren't well-documented in the GSP.

I encourage DWR to review the public comments provided on the Draft GSP (Appendix 2G), and ensure that the GSAs (comprised predominantly of affluent landowners and/or large water users) provide balanced representation of the wide range of groundwater users in the Corning Subbasin as the GSP is implemented going forward.

In addition, I urge DWR to carefully evaluate the current GSAs' ability to meet the intent of SGMA, based on apparent overdraft conditions, particularly in the western part of the subbasin, and the large number of wells that have gone dry in recent years.

Please don't hesitate to contact me if you have any questions about my comments.
Thank you for your consideration,
Tamara L. Williams
Corning Subbasin property owner, daughter and granddaughter of 20th century Corning Subbasin water well drillers, and retired Geologist and Engineering Geologist
tamara_53@att.net
510.323.6191

Attachment:
(0B)

Michael Ward says (04/23/2022 06:47PM) :
Comments on Corning Subbasin GSP
Attachment:
Corning GSP Comments 4_23_22.pdf (1.4MB)

Michael Ward says (04/23/2022 06:44PM) :
Comments on the Final Corning Subbasin GSP
Attachment:
Corning GSP Comments 4_23_22.pdf (406.3kB)

Barbara from AquAlliance says (04/23/2022 12:04PM) :
AquAlliance, the California Sportfishing Protection Alliance, and the California Water Impact Network submit comments and questions in the attached file on the Corning Subbasin Groundwater Sustainability Plan .
Attachment:
AquAllianceEtAlCommentsCorningGSPPackgae042322.pdf (3MB)

Joseph D. Hughes from On behalf of Farmland Reserve, Inc. says (04/22/2022 04:13PM) :
Please see the attached comment letter submitted on behalf of Farmland Reserve, Inc.
Attachment:
DWR Comment Letter RE_ Corning Subbasin.pdf (391.3kB)

Samantha Arthur says (04/22/2022 02:27PM) :
I am writing on behalf of the signatories in the attached comment letter on the final Groundwater Sustainability Plan for this basin.
Attachment:
36_FinalGSP_Corning_PublicCommentLetter.pdf (1.8MB)

Wendy Wang from CVFPB says (04/22/2022 11:08AM) :
Comment letter from the CVFPB attached. Thank you.
Attachment:
Corning Basin GSP Comment Letter 2022.pdf (237.8kB)

Showing 1 to 7 of 7 entries (filtered from 8 total entries)

Lisa Hunter

From: SGMA Portal <no-reply@water.ca.gov>
Sent: Sunday, April 24, 2022 9:53 PM
To: Lisa Hunter
Cc: keith.wallace@water.ca.gov; Steven.Springhorn@water.ca.gov; Michelle.Dooley@water.ca.gov; benjamin.gooding@water.ca.gov; David.Palais@water.ca.gov; Patricia.Vellines@water.ca.gov; craig.altare@water.ca.gov; steven.springhorn@water.ca.gov; tamara_53@att.net
Subject: A public comment has been submitted for the 5-021.51 CORNING Subbasin

A public comment was submitted to the Department of Water Resources on the 5-021.51 CORNING Subbasin GSP.

Summary of the comment:
Commenter Name: Tamara L. Williams
Comments: While many of the comments that I provided on the Draft GSP (Appendix 2G, Comments 26 - 127) were resolved to my satisfaction prior to submittal of the GSP to DWR, I remain concerned about the following key issues regarding the planning process, the final plan, and the GSP implementation going forward. 1. Ineffective public outreach and involvement. Domestic well owners, and small farmers (with less than, say, 20 acres, and not belonging the Farm Bureau), while owning the vast majority of individual wells in the Corning Subbasin, and including a large low-income population, were not well represented in the GSP development process. The plan suggests that there will be ongoing outreach; this is imperative, and cannot wait until DWR evaluates the first 5 year plan update. 2. Increased irrigation demands due to recent conversion of land use. The GSAs have not been willing to fully support metering under the GSP, nor are local authorities willing to place a moratorium on installation of large production wells during the current drought and overdraft condition. Further conversion of land to higher water-demand crops is in direct conflict with sustainable groundwater management in this subbasin. 3. Inability of the subbasin models to simulate observed dewatering of the upper aquifer, particularly in the western portion of the subbasin. The use of models is an important tool in managing groundwater sustainability. However, until model input and output represent sufficiently detailed observed conditions, the model results can drive poorly-informed decision making. 4. The Minimum Thresholds and Measurable Objectives are not protective of domestic and small ag well owners, particularly in some portions of the Subbasin. If implemented as written, some areas will require continued deepening of shallow wells due to local overpumping of larger, deeper wells. Continued decline in shallow groundwater levels will also likely result in further loss of small areas of groundwater dependent ecosystems that aren't well-documented in the GSP. I encourage DWR to review the public comments provided on the Draft GSP (Appendix 2G), and ensure that the GSAs (comprised predominantly of affluent landowners and/or large water users) provide balanced representation of the wide range of groundwater users in the Corning Subbasin as the GSP is implemented going forward. In addition, I urge DWR to carefully evaluate the current GSAs' ability to meet the intent of SGMA, based on apparent overdraft conditions, particularly in the western part of the subbasin, and the large number of wells that have gone dry in recent years. Please don't hesitate to contact me if you have any questions about my comments. Thank you for your consideration, Tamara L. Williams Corning Subbasin property owner, daughter and granddaughter of 20th century Corning Subbasin water well drillers, and retired Geologist and Engineering Geologist tamara_53@att.net 510.323.6191

Please visit https://sgma.water.ca.gov/portal/gsp/comments/94 to view details on this comment.
Please visit https://sgma.water.ca.gov/portal/gsp/preview/94 for more information on the GSP.

Sustainable Groundwater Management Office,
California Department of Water Resources

April 23, 2022

Mr. Paul Gosselin
Deputy Director, Sustainable Groundwater Management Office
California Department of Water Resources
Sacramento, California
Submitted via SGMA GSP Portal

Re: Comments on the Corning Groundwater Sustainability Plan

Dear Mr. Gosselin,

An important issue that needs to be addressed in the Corning Groundwater Sustainability Plan (GSP) is the groundwater overdraft condition of the subbasin. Groundwater level trends are illustrated in Figures 1 and 2. The general trend for spring groundwater levels shows that groundwater has declined between 8 and 34 feet for different parts of the subbasin since 2004. For the one-year period of 2019 through 2020, groundwater levels declined between 1 and 17 feet. This data was developed by California Department of Water Resources (DWR) based on spring and fall measurements taken from wells with depths ranging from 200 to 600 feet.

GSP Project and Management Actions

Addressing the cause of overdraft needs to be the first step in mitigating overdraft. Groundwater development is the primary cause of overdraft conditions - largely due to land use conversion to water-intensive crops. This trend continues with new development on the west side of the subbasin.

The GSP Management Action (MA) "Polices and Ordinances" has the greatest potential to address the cause of overdraft conditions basin wide. The plan "suggests" the use of water and land use management restrictions on future well pumping and new agricultural growth. "GSAs will actively work with land use planners and well permitting entities in their respective counties to develop and/or suggest policies and ordinances that would help manage groundwater sustainably."

The MA includes a description of the current Tehama County effort to require new wells to meet certain construction criteria; however, this effort, though commendable, is designed to lessen the impact to domestic wells and does not address groundwater demands or overdraft.

The plan makes no commitment for the development of land use policy or ordinance changes. The plan uses implementation language such as: "share information and discuss potential policy and ordinance changes early in the GSP implementation process" and "continue to be pursued throughout the GSP implementation."

April 23, 2022

Mr. Paul Gosselin
Deputy Director, Sustainable Groundwater Management Office
California Department of Water Resources
Sacramento, California
Submitted via SGMA GSP Portal

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The MA includes a description of the current Tehama County effort to require new wells to meet certain construction criteria; however, this effort, though commendable, is designed to lessen the impact to domestic wells and does not address groundwater demands or overdraft.

The plan makes no commitment for the development of land use policy or ordinance changes. The plan uses implementation language such as: “share information and discuss potential policy and ordinance changes early in the GSP implementation process” and “continue to be pursued throughout the GSP implementation.”

Water and land use management restrictions on future well pumping and new agricultural growth won't mitigate current groundwater overdraft but can reduce the problem to something more manageable.

The projects that are proposed have the potential to provide localized mitigation of overdraft but doesn't address the subbasin as a whole. The priority projects are conceptual in nature. The feasibility and potential benefits are not well understood and can't be considered as overdraft mitigations at this stage of the planning process. Examples of feasibility issues (identified in the plan) for proposed recharge and in-lieu recharge projects include the following:

- Unreliability of surface water supplies
- Limitations on the timing and delivery of surface water
- Difficulty in incentivizing the use of surface water given its lack of reliability
- Competitive CVP markets
- Groundwater development is cheaper
- Implementation of projects would take place over the next 20 years.

If shown to be feasible, the projects could provide a localized benefit.

In summary, the GSP is non-compliant with 23 CCR §354.44 (b)(2) which requires the plan to identify projects or management actions, including a quantification of demand reduction, or other methods, for the mitigation of overdraft.

Groundwater-Dependent Ecosystems

The GSP approach to assessing Interconnected Surface Water (ISW) doesn't consider the geology of the Thomes Creek watershed. The plan attempts to identify potential GDEs using the following criteria:

1) Indicator of Groundwater Dependent Ecosystems (iGDEs) exist as defined by The Nature Conservancy (TNC) and DWR.
2) The area is near a riverine environment and existing data demonstrate surface water and groundwater are interconnected.
3) Water levels in this area are consistently less than 30 feet below ground surface.

It's important to note that iGDEs were identified along the entire reach of Thomes Creek using TNC data. However, the GSP assessment also depends on whether there is sufficient data to demonstrate a surface water and groundwater interconnection. Groundwater levels also need to be less than 30 feet deep. Based on a lack of data supporting a groundwater connection, the GSP, for the most part, ignores Thomes Creek GDEs.

Groundwater monitoring data developed by local members of the community show no groundwater connection to shallow Thomes Creek channel deposits. This monitoring network includes up to 40 domestic wells for the river segment extending approximately 2 miles east from the town of Flournoy. The network includes wells that are constructed within the Riverbank Formation, Modesto Formation, and the Tehama Formation. Based on the data collected so far, it’s clear that groundwater in the region is directly connected to Thomes Creek channel deposits but not at shallow depths.

Groundwater elevation data from the monitoring network cannot be used to characterize surface water and groundwater interaction. The reason for this can best be explained by reviewing the geologic log of Well Completion Report WCR2020-015885. This well is constructed within Thomes Creek channel deposits. The log shows intervals of clay and gravel deposits over the entire well depth of 980 feet. Considering the multiple clay zones, the potential for a direct connection to shallow channel deposits by existing wells is remote. Surface water and groundwater interaction can only be assessed by a monitoring network designed for that purpose. Monitoring existing groundwater wells is not a proxy for assessing or identifying iGDEs – at least for this part of the Thomes Creek watershed.

The fact that most groundwater wells within this reach of Thomes Creek do not appear to have the potential to impact GDEs does not alleviate the concern for depletion of the shallow channel deposits that support GDEs. Large production wells have recently been developed within these deposits that have the potential put GDEs at risk.

In summary, the desktop approach to identifying iGDEs doesn’t meet the intent of 23 CCR §354.16(g) for the Thomes Creek watershed.

GW Monitoring Network

The GSP identified localized spatial data gaps near Thomes Creek extending to northeast of the City of Corning. The plan states that “over a period of the first few years of GSP implementation, the GSAs will identify existing wells for groundwater monitoring in the data gap areas for chronic lowering of groundwater levels and depletion of interconnected surface water sustainability indicators.”

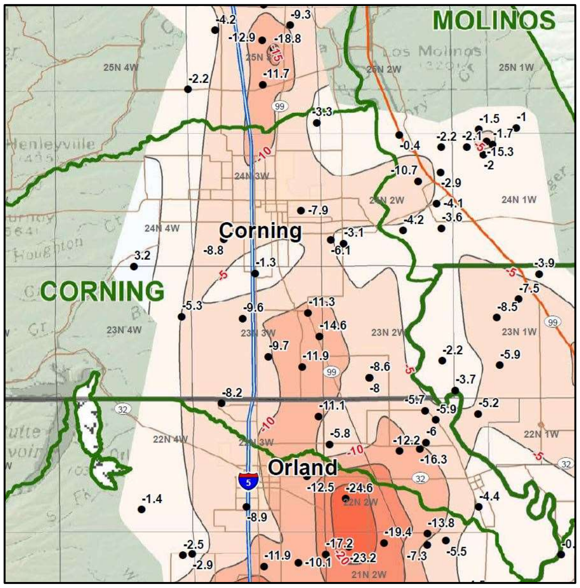
The importance of addressing data gaps to monitor groundwater levels and the potential depletion of ISW cannot be overstated. Given that the subbasin is in overdraft and many domestic wells are being impacted, there should be some level of urgency to address this problem. Minimum Thresholds also need to be established for these areas.

23 CCR §354.34(b) also requires that the plan include an explanation of how a network will be developed and implemented to monitor ISW. It’s clear that for parts of the subbasin, existing wells are not a proxy for monitoring the depletion of ISW. This effort should be elevated to Projects and Management Actions with a clearly defined scope and implementation schedule.

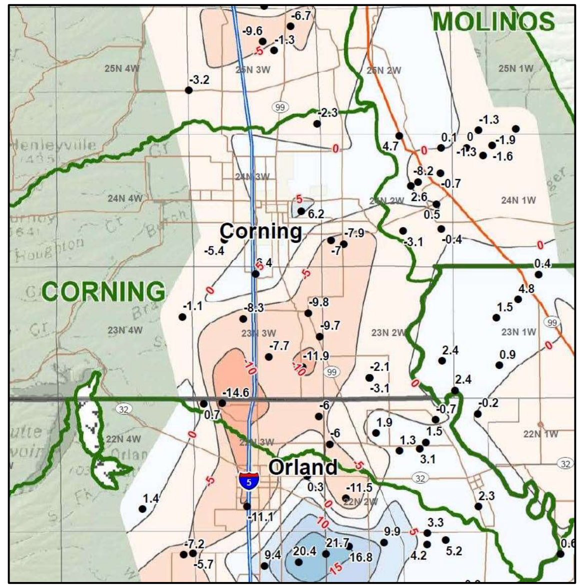
Thank you for the opportunity to comment.

Michael Ward

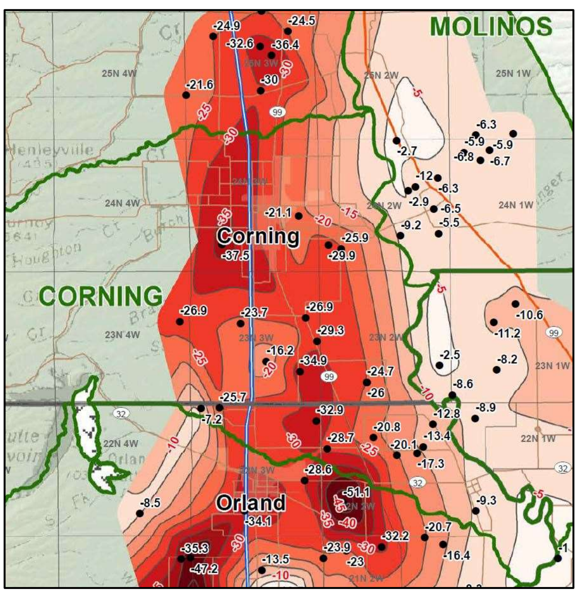
Attachment – Groundwater Level Change Maps



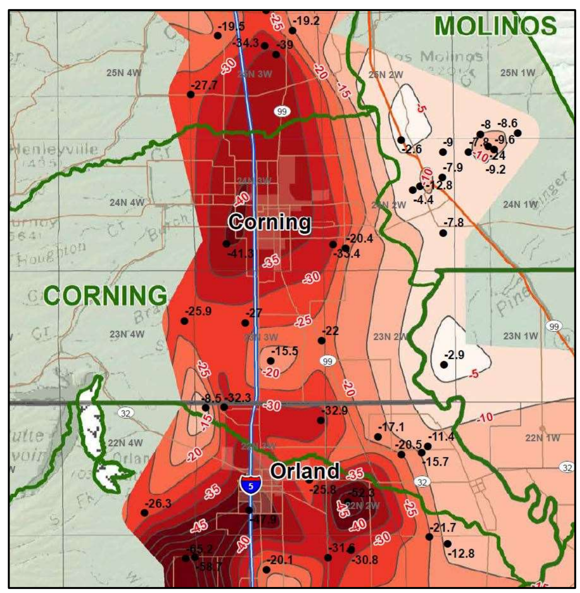
Corning Subbasin Fall 2019-2020 (well depths 200-600 ft)



Corning Subbasin Fall 2015-2020 (well depths 200-600 ft)

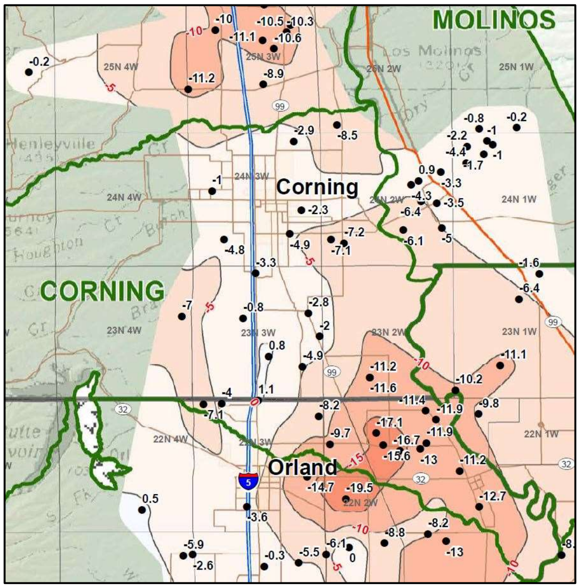


Corning Subbasin Fall 2011-2020 (well depths 200-600 ft)

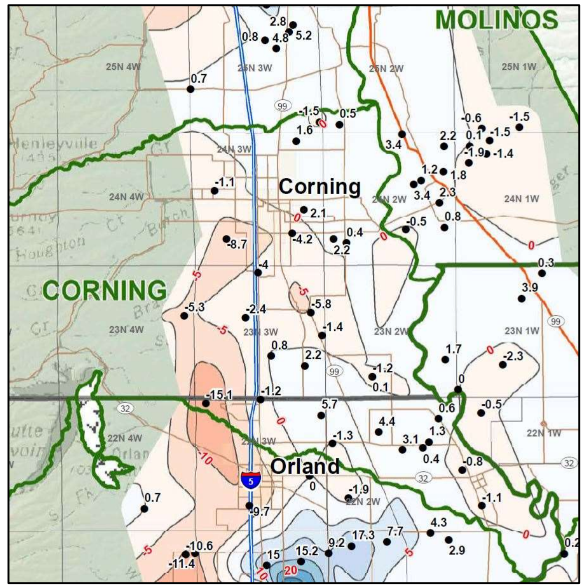


Corning Subbasin Fall 2004-2020 (well depths 200-600 ft)

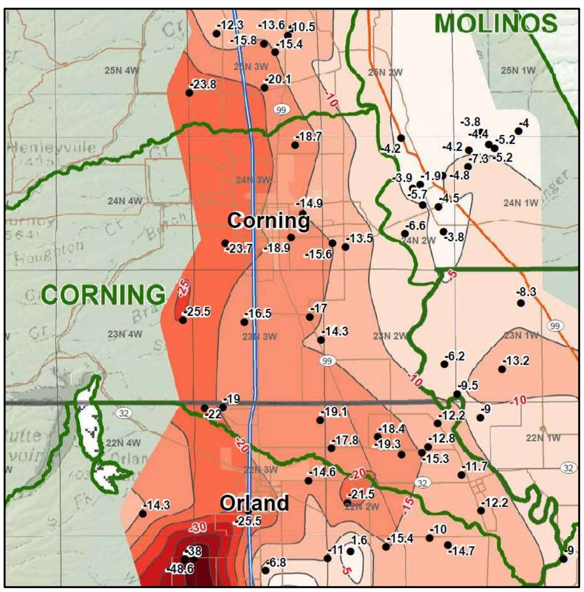
Figure 1. Corning Subbasin Fall Change Maps (Fall groundwater levels for selected years as compared to Fall 2020 groundwater levels for wells ranging between 200 to 600 feet deep)



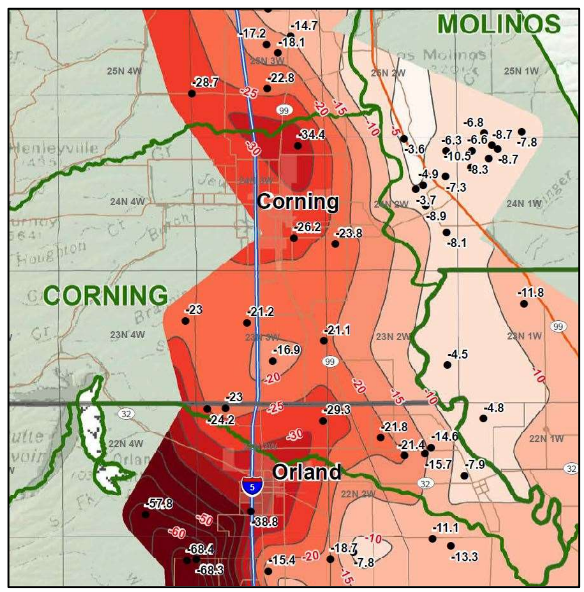
Corning Subbasin Spring 2019-2020 (well depths 200-600 ft)



Corning Subbasin Spring 2015-2020 (well depths 200-600 ft)



Corning Subbasin Spring 2011-2020 (well depths 200-600 ft)



Corning Subbasin Spring 2004-2020 (well depths 200-600 ft)

Figure 2. Corning Subbasin Spring Change Maps (Spring groundwater levels for selected years as compared to Spring 2020 groundwater levels for wells ranging between 200 to 600 feet deep)

April 23, 2022

California Department of Water Resources
1416 9th Street
Sacramento, CA 95814

Re: Corning Subbasin Groundwater Sustainability Plan

To whom it may concern:

AquAlliance, the California Sportfishing Protection Alliance, and the California Water Impact Network (hereinafter AquAlliance) submit the following comments and questions on the Corning Subbasin Groundwater Sustainability Plan ("Corning GSP" or "Plan"). There are serious flaws in the Plan that require significant changes to the document, without which the public and policymakers are truly left in the dark and dangerous consequences are obfuscated.

Introduction

The goal of the Sustainable Groundwater Management Act (SGMA) is to sustainably manage groundwater resources for long-term reliably and multiple economic, social, and environmental benefits for current and future beneficial uses based on the best available science (Water Code 113). The people of California have a primary interest in the protection, management, and reasonable beneficial use of the water resources of the state, both surface and underground, and in the integrated management of the state's water resources to meet the state's water management goals. Proper management of groundwater resources will help protect communities, farms, and the environment against prolonged dry periods and climate change, while preserving water supplies for existing and potential beneficial use. Failure to manage groundwater to prevent long-term overdraft infringes on overlying and other proprietary rights to groundwater.

California's Water Code specifically established as state policy that *every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes* (WC 106.3(a)). State agencies, including the California Department of Water Resources (CDWR), the State Water Resources Control Board (SWRCB), and the State Department of Public Health, are required to *consider this state policy when revising, adopting,* *or establishing policies, regulations, and grant criteria when those policies, regulations, and criteria are pertinent to the uses of* water (WC 106.3(b)). The Water Code also creates a state policy *that the use of water for domestic purposes is the highest use of water and that the next highest use is for irrigation* (WC 106). The Groundwater Sustainability Agencies (GSAs) were created by SGMA and are delegated by the state the authority to create and implement a Groundwater Sustainability Plan (GSP), which makes the GSA(s) a political subdivision of the state. Therefore, approval of any SGMA GSP created by a GSA(s) or county agency, which is then approved by the CDWR and the SWRCB, must be consistent with the state policies that protect and prioritize the public's right to safe and available supply of groundwater for all beneficial uses.

Implementation of the SGMA requires the creation of a GSP that provides for the development and reporting of those data necessary to support sustainable groundwater management, including those data that help describe the basin's geology, the short- and long-term trends of the basin's water balance, and other measures of sustainability, and those data necessary to resolve disputes regarding sustainable yield, beneficial uses, and water rights. A presumption inherent in SGMA is that sustainable management of a groundwater basin won't repeat or perpetuate the management errors of the past. That the design of the Corning Subbasin GSP sustainability monitoring program requires years of declining groundwater levels before an undesirable result can occur suggests that the past mismanagement practices will persist. The November 2021 Corning Subbasin[1] Final GSP fails to meet the SGMA goal of water resource sustainability and protection of the water rights of all beneficial users and uses.

The proposed sustainable management criteria presented in the Corning GSP fail to demonstrate as required by SGMA that the goal of groundwater sustainability is achievable and will occur within 20 years of GSP adoption for: (1) chronic lowering of groundwater levels, (2) reduction of groundwater storage, (3) degraded water quality, (4) depletions of interconnected surface waters, and (5) inelastic land subsidence. The Final Corning GSP fails to protect the beneficial uses for all users of groundwater in the subbasin because of the following:

- The final plan sets the minimum thresholds (MTs) for unreasonable results in the management the groundwater levels at depths that can result in 16% or more of the domestic wells going dry for sustained periods, if not permanently.
- The final plan requires without analysis or justification that before an unreasonable result can occur, the MTs for a sustainability indicator must be continuously and simultaneously exceeded for 24 months (2 years) at a minimum of 20% at representative groundwater monitoring wells.
- The final plan estimates that sustainable management of the groundwater levels and groundwater storage with the projected 2070 scenario will allow for a cumulative change in storage of -19,700 acre-feet (af) in the next 50 years, which is contrary to the estimated Historical baseline cumulative surplus from 1974 to 2015 of 290,300 af.
- The estimated difference between the Historical average annual and the projected 2070 average annual change in storage is -7,200 acre-feet per year (afy), or 360,000 af by 2070.

[1] California Groundwater Basin number 5-021.51, part of the Sacramento Valley Groundwater Basin.

- The 2070 scenario estimated maximum annual change in storage during critically dry and dry water years is -41,800 afy, approximately 50% greater than the Historical baseline change of -27,450 afy, and over 100 times the 2070 annual average loss in groundwater storage.
- The final plan *operational flexibility* (OF) for sustainable management, the difference between the depths of the management objectives (MOs) and the MTs, is sufficient to allow for an average decline in groundwater levels that's approximately 3 times greater than the difference between the MOs and lowest groundwater levels since 2012 before an undesirable result can be declared.
- The final plan OF volume is large enough to allow for groundwater level decline for 5 continuous critically dry and dry water years before the minimum threshold depth is reached, which must then be followed by two more consecutive years with levels continuously below the MTs before an undesirable result needs to be declared.
- The final plan assumes that sustainable management of the subbasin will allow groundwater pumping to increase by 36,300 afy above the Historical baseline, a 27% increase, with 96% of the increase going to agricultural uses.
- The final plan assumes that sustainable management of the subbasin with the 2070 scenario will result in annual average net stream gains (groundwater discharge minus stream seepage) of -4,600 afy, which is -37,700 afy below the Historical baseline of a +33,100 afy. This is a loss of approximately -114% in annual average net stream gains over the Historical baseline.
- The final plan assumes that sustainable management of the subbasin with the 2070 scenario will result in annual average net stream gains of -37,700 afy below the Historical baseline while groundwater pumping increases 36,300 afy above the Historical baseline, a change ratio of -104%. In other words, the proposed 2070 scenario increase in groundwater pumping will cause a decline in interconnected surface waters that exceeds the pumping increase.
- The final plan requirement for simultaneous, continuous exceedance of the MT at multiple representative monitoring wells can result in significant magnitudes and expansive areas of decline in groundwater levels, groundwater storage, water quality, interconnected surface waters, and possibly surface elevations (inelastic subsidence) as long as one of the monitored stations in the group doesn't continuously exceed the MT. In other words, there is no limit to decline in the beneficial uses of groundwater if measurements in *one* of the monitoring stations within a group is above the MT at least once every 24 months.
- The final plan fails to analyze, monitor, or consider the potential impacts to water quality from the proposed allowable changes in groundwater levels and storage, except for one constituent, salinity. Although the final plan calls for coordination in management of water quality with other governmental agencies, the plan doesn't indicate what the MTs are for all the potential contaminants of concern in the Corning subbasin, or what and how GSP management actions will be taken whenever a water quality impact is identified.

- The final plan requires that at least 25% of the 15 RMP water quality network monitoring wells, i.e., 3 wells, must exceed the MT for 2 consecutive years *where it is established that the GSP implementation is the cause of the exceedance to trigger an undesirable resul*t. The justification for requiring water quality exceedance in multiple wells for multiple years isn't clear and seems to be allowing for the expansion of water quality degradation before the Corning GSAs will act to prevent an undesirable result. The requirement that someone must prove that the GSP implementation caused the water quality exceedance isn't consistent with the SGMA requirement to protect water quality.
- The final plan sets the MT rate of inelastic subsidence that appears to exceed the current conditions while providing no current assessment of the sensitivity of local infrastructure to subsidence.
- The final plan doesn't provide a requirement for frequent monitoring of subsidence benchmarks or monitoring of critical infrastructure, but instead leaves the responsibility of subsidence monitoring and analysis to others with the frequency of reporting dependent on the work schedules and funding of DWR and others.

The Final Corning GSP Fails to Comply with SGMA and the Water Code.

The following sections provide expanded discussions of the deficiencies listed above regarding how the Corning GSP fails to protect the beneficial uses for all users of groundwater in the subbasin.

1. The Corning GSP sets the MTs for unreasonable results in the management of groundwater levels at depths that can result in 16% or more of the domestic wells going dry for sustained periods, if not permanently, Section 6.6.2.2 (pages 6-21 to 6-26, pdf 430 to 435). This could possibly result in 315 of the 1,970 domestic wells in the subbasin going dry, see well count in Table 2-5 (page 2-34, pdf 100).

   The representative monitoring point (RMP) network of wells for measuring groundwater levels includes 37 shallow wells and 21 deep wells, Section 5.2.4 (pages 5-7 to 5-11, pdf 369 to 374). The RMP wells are subdivided into three regions: stable, slight decline, and declining, based on the historical stability of groundwater levels, Figures 6-1 and 6-2 (pages 6-12 and 6-13, pdf 421 and 422, and AquAlliance Exhibit 1. The MTs for the RMP groundwater level wells are set based on whether the recent historical (2010 to 2019) groundwater levels are stable or declining. Minimum thresholds were set using one of the two criteria (page 6-8, pdf 417):

   - *For wells that had recent historical (between 2010 and 2019) stable groundwater elevations (stable wells): Minimum fall groundwater elevation since 2012 minus 20-foot buffer.*

   - *For wells that had recent historical (between 2010 and 2019) declining groundwater elevations (declining wells): Minimum fall groundwater elevation since 2012 minus 20% of minimum groundwater level depth.*

Both criteria appear to be arbitrary and designed to allow for the groundwater level to decline below the recent lowest elevation measured during a drought. This will likely subject many domestic well owners to experience their lowest groundwater levels with all the accompanying negative impacts: dry wells, poor water quality, higher pumping cost, etc. AquAlliance Exhibit 1-2 has a summary at the bottom of the table of the average MOs and MTs depths and depth differences for each class of RMP monitoring well taken from Tables 5-2, 5-7 and 6-2 (pages 5-8 and 5-9, 5-37, and 6-15 and 6-16, pdf 370-371, 399, 424-425). The average difference in depth in the shallow wells between the MO and the lowest groundwater elevation since 2012) (MO – 2012) ranges from 4.1 feet to 15.9 feet, with the basin-wide average at 6.9 feet. The difference in the shallow well elevation from the lowest groundwater levels since 2012 to the MTs (2012 – MT) ranges from 16.5 feet to 23.12 feet, with a basin-wide average of 17.8 feet. The shallow well MTs allow for a decline in depth ranging from 2.6 to 5.9 times greater than the historical decline from the MOs to the 2012 low [(MO-MT)/(MO-2012)], with a basin-wide average of 3.7 times, or 370% greater. In other words, domestic wells that on average experience a historical decline of 6.9 feet will now be allowed to experience an average maximum decline of 25.6 feet. This increase appears to be significant and unreasonable, and it apparently allows for the **dewatering of 16% of the known domestic wells, or possibly more,** because of the requirement for 2 consecutive years below the MT depth before an undesirable result occurs, Table 6-1 and Section 6.6.4.1 (pages 6-1, 6-34 and 6-35, pdf 416, 443 and 444).

The Corning GSP apparently considers a 370% increase from the average MO-to-MT depths to be a beneficially <u>practical</u> sustainable management criterion, stating that *[t]he proposed minimum thresholds for groundwater elevation will not necessarily protect all domestic wells because it is impractical to manage a groundwater basin in a manner that fully protects the shallowest wells* (page 6-26, pdf 436). By “shallowest wells” the plan seems to consider the shallowest 16%, or 315 wells, unworthy of protection regardless of which wells that have already gone dry since 2012 (i.e., past droughts) as well as those that will go dry in the future under Corning GSP sustainability criteria.

2. The Corning GSP does propose to establish a Well Mitigation Program, Section 7.3.2.1 to 7.3.2.7 (pages 7-12 to 7-15, pf 490 to 493) with various objectives and costs estimated at $100,000 to $500,00 per year, but the funding source(s) isn’t clearly specified. The plan states that this well mitigation program would help identify and avoid impacts to well owners with a more complete inventory of wells and by … *the GSAs providing education and outreach to well owners to deepen or replace wells*, Section 7.3.2.1.7 (page 7-15, pdf 493). The outline for the Well Mitigation Program generally describes determination of which well owners might benefit from the program:

    Eligibility and access documentation to determine which Subbasin residents are eligible to participate in the mitigation program, well eligibility based on well construction *parameters, and protocols to determine potential mitigation actions such as well deepening, repair, or replacement.*

The description of the Well Mitigation Program only commits to taking potential mitigation actions without giving any specifics on how the $500,000 per year cost was determined or the amount of funds committed to each potential mitigation action, or any matching fund requirements for eligible well owners.

The Well Mitigation Program in its current form is just a concept, not an actual commitment to mitigate the impacts from the proposed increased groundwater pumping. The Corning GSP doesn't link the increase in groundwater production to the implementation of this mitigation program. In other words, increased pumping can apparently go forward, without a program to deepen, repair, or replace impacted domestic wells.

To be a functional mitigation program, the Corning GSAs need to make a firm commitment to implement the program within the next 3 years as shown in Table 7-3 (page 7-15, pdf 493) and expand the description of the program to include specific information on the funding source(s), the availability of these funds (local, state, or federal), the legal requirements for acquiring the funds, the criteria for prioritizing expenditures, the requirements for eligibility to receive funds, the funding match requirements for eligible well owners, the criteria for deciding to deepen, repair a well, add a water quality treatment system, or replace it with new well construction, the administrative procedures for the program, and the steps a resident must take to obtain well repair or replacement funds. In addition, the GSP should address criteria that will be used to evaluate a well that needs to be the deepened, repaired, or replaced to comply with the recent Governor's Executive Order N-7-22,[2] and any additional local agency permitting requirements.

3. The Corning GSP requires that groundwater levels fall below their minimum groundwater elevation thresholds for 24 consecutive months (2 years) in 20% of the wells before an undesirable result can be declared, Table 6-1 and Section 6.6.4.1 (pages 6-1, 6-34 and 6-35, pdf 416, 443 and 444). The plan apparently assumes that harm to the "long-term" beneficial uses and users only occurs when there are 24 continuous months of harm across a broad area of the subbasin, which then triggers an undesirable result and the need for the GSAs to take action.

   The Corning GSP provides additional language to the definition of a SGMA undesirable result, noting that this language isn't part of the definition given in the SGMA regulations. The GSP lists the six groundwater conditions from Water Code Section 10721 that can trigger an undesirable result, Section 6.1, (pages 6-2 to 6-4, pdf 411 to 413). The plan then adds the following explanatory text to the definition of undesirable result:

[2] https://www.gov.ca.gov/wp-content/uploads/2022/03/March-2022-Drought-EO.pdf

> *Undesirable Result is not defined in the GSP Regulations. However, the description of undesirable result states that it should be a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the subbasin. An example undesirable result is more than 20% of the measured groundwater levels being lower than the minimum thresholds.* <u>*Undesirable results should not be confused with significant and unreasonable conditions. Significant and unreasonable conditions are physical conditions to be avoided; an undesirable result is a quantitative assessment based on minimum thresholds.*</u> (underline added)

Apparently, the Corning GSP is making a distinction between a groundwater condition that's undesirable to only a few from a condition that affects many. This seems to be making an arbitrary threshold on the *practical* number of residents that can be inconvenienced by a dry or impaired well. For example, the assumption that it is *practical* to allow 16% of domestic wells can go dry in the Corning Subbasin, which is a significant and unreasonable condition for those residents, but apparently not sufficiently "significant and unreasonable" to the residents of the subbasin as a whole so as to trigger an undesirable result and the need for sustainable management action(s). The GSAs' authority to set the *practical* threshold of how many residences can be made to have a significant and unreasonable condition is unclear. When combined with the 20% requirement for collective MT exceedance for 24 consecutive months, the GSP sustainability management criterion for chronic lowering of groundwater levels may violate Water Codes 106, 106.3(a) and 106.3(b) because it fails to prioritize groundwater for domestic purposes and protect the groundwater in the subbasin to provide for an adequate supply of safe, clean and affordable water for human consumption, cooking and sanitary purposes.

4. The Corning GSP doesn't specify how the 20% of the RMP wells will be selected, or whether they can be adjacent, discontinuous, or spread across the subbasin. Can there be more than one 20% group? The monitoring plan does split the groundwater level monitoring network into 37 shallow and 21 deep wells (greater than 450 feet below the ground surface,(bgs)) so that suggests that at least two 20% groups are allowed. The reasoning for selecting the 20% well groups raises several questions:

    - What are the selection criteria for 20% groups of groundwater level monitoring wells? Are they based on the portion of the subbasin being monitored by these wells, how groundwater production in the subbasin is being managed, where sustainability projects are being implemented, when the groundwater levels wells drop below their MT elevations, or some combination of these and other criteria?
    - How many wells are required to make a 20% group? Can it be 8 wells out of the 37 shallow wells, 5 wells from the 21 deep wells, or does it need to be 12 wells from a total of 58 wells?
    - How many 20% MT exceedance groups are possible in each aquifer zone, only one, up to 5, or more?

- Can the areas of the subbasin monitored by multiple 20% groups overlap?
- Can a well be in multiple 20% groups at the same time?
- Can an undesirable result be declared after 24 months of MT exceedance in the deep aquifer, but not be declared for the overlying shallow aquifer, or vice versa?
- What is the start date of the 24-consecutive-month clock? Does it start on the earliest day that any one of the 20% wells exceeds its MT, on the day the last of the 20% well exceeds its MT, or some other intermediate date?
- What happens to the start date of the 24-consecutive-month clock if additional RMP wells exceed their MTs after the day that there's a minimum number of wells needed for a 20% group? In other words, does the start date begin anew when a well is added to an existing group?
- Are these additional wells made part of the existing group or does a new group have to be formed once there are enough additional wells to make another 20% group?
- If there are multiple 20% MT exceedance groups, how is the determination of an undesirable result made if the exceedance in any one group is less than 24 months, but the combined duration of the exceedance for all groups is greater than 24 months?
- It is unclear if the wells assigned to a group stay in the same group forever, change when there are fewer than 20% of the wells in the group, or change when the 24-month clock stops.
- What happens when the locations of the first 20% group of wells cover a large portion of the subbasin, and then additional MT exceedance wells are clustered with in the first group's area around a local pumping depression in numbers sufficient to form another 20% group?
- Why does the MT exceedance need to be continuous in 20% of the monitoring wells for 24 months when dewatering of a single domestic or small agricultural well can cause significant harm to the user(s) if it occurs repeatedly for only a few months?
- Why is the dewatering of a domestic and/or small agricultural well for less than 24 months considered a beneficially sustainable practice that's in compliance with Water Code Sections 106 and 106.3(a)?
- Why is dewatering of domestic and/or small agricultural wells that might occur cyclically each summer considered a beneficially sustainable practice, and who is benefitting? Certainly it is not to the small landowner.

5. AquAlliance Exhibits 2 through 5 are modifications of groundwater, land surface, and surface water budgets in the Corning GSP. The modifications include columns and rows that calculate the budget component differences between the average values, differences in the component values by water year type, calculated sums and differences for groundwater pumping and storage, stream gains and losses, and the difference between the Historical baseline and the Current baseline with the Projected 2070 water budget. Columns and rows in these exhibits have been labeled for these comments.

AquAlliance Exhibit 2 lists the values and changes in the Historical and projected 2070 groundwater budget components with summaries for groundwater pumping and storage for the overall average, and the three different water year type groups, critically dry and dry (CD/D), below normal and above normal (BN/AN), and wet (W). The Historical baseline average annual groundwater pumping for all year types is 135,900 afy, Exhibit 2-1A (row 20, column C). Historical baseline pumping increased for CD/D water years by 7% to 145,050 afy and deceased for the other two water year types (row 20, columns G through J). For the projected 2070 scenario, the subbasin average groundwater pumping will be increased above the Historical baseline by 36,300 afy, or 27%, to 172,200 afy, Exhibit 2-2C (row 68, columns D and E) and Exhibit 2-1B (row 44, column C). Projected 2070 pumping will increase 37,250 afy during CD/D water years, 38,500 afy for AN/BN years, and 35,300 afy for W years, Exhibit 2-2C (rows 68, columns E through J).

Increases in groundwater pumping for the 2070 scenario also result in changes in groundwater storage. The Historical baseline average annual change in groundwater storage is a positive 6,900 afy, which resulted in a cumulative change in groundwater storage of 290,300 acre-feet (af), Exhibit 2-1A (rows 21 and 22, column C). During Historical CD/D water years, the storage loss is negative at -27,450 afy (row 21, column E). The 2070 scenario annual average change in storage is -300 afy with a cumulative change of -19,700 af over 50 years (rows 45 and 46, column C). While the 2070 annual average change in groundwater storage doesn't seem significant, the loss in storage during CD/D years increases to -41,800 afy, an additional loss over the Historical baseline of -14,350 afy, Exhibit 2-1B (row 45, column E) and Exhibit 2-2C (row 69, column E). The additional loss in storage for the 2070 scenario is approximately 39% of the 37,250 afy increase in groundwater pumping (-14,350 afy / 37,250 afy = 0.385 = 39%), Exhibit 2-2C (rows 68 and 69, column E). This additional loss in groundwater storge during CD/D water years, or drought years, is important because the change in storage during droughts can be used to establish the depth of the MTs, which will be discussed below in Comment No. 11.

6. The additional loss in groundwater storage with the 2070 scenario isn't the only important decrease in the Corning GSP water budget caused by the increase in pumping. The increase in groundwater pumping also causes a significant decline in the interconnected surface water flows. AquAlliance Exhibit 2 calculates the change in the net stream gains, i.e., the amount of groundwater discharging to the streams minus the amount of surface water seeping to groundwater. For the Historical baseline, the annual average net stream gain is a positive 33,100 afy, Exhibit 2-1A (row 23, column C). In other words, the streams gain flow from discharging groundwater. There is an assumption that when streams gain flow from groundwater and the flow changes with the pumping of groundwater, then those streams are interconnected surface waters and subject to SGMA.[3]

[3] See these articles about how the disconnection of streams and groundwater results in maximum stream flow losses that spread as the groundwater depression enlarges.

The Historical baseline net stream gain is also positive for all water year types (row 23, columns E through J). In contrast, the 2070 scenario has a net loss in average annual stream flow of -4,600 afy, Exhibit 2-1B (row 47, column C). This 2070 scenario loss in annual stream flow continues in the CD/D and BN/AN water years with a maximum loss of -11,000 afy, Exhibit 2-1B (row 47, columns E through J). Although the 2070 Wet year has a positive net stream gain of 3,700 afy, it is a -47,200 afy reduction from the Historical baseline wet year gain of 50,900 afy, Exhibits 2-1A and 2-1B (column I, rows 47 versus 23) and Exhibit 2-2C (row 70, column I).

The 2070 scenario loss in net stream gain is greater than the increase in groundwater pumping. The 2070 scenario average annual loss in stream flow relative to the Historical baseline of -37,700 afy is approximately 104% of the 36,300 afy 2070 increase in average annual groundwater production, Exhibit 2-2C (rows 68, 70 and 71, column C). The 2070 scenario stream flow loss from the Historical baseline continues for the different water year types ranging from -81% to -134%, Exhibit 2-2C (rows 70 and 71, columns E to J).

The Corning GSP planned increase in groundwater pumping with the 2070 scenario appears to result in both a loss in groundwater storage and a loss in surface water flows, Exhibit 2-1B (rows 45, 46 and 47, column C). These losses contrast with the Historical baseline where annual average for both water budget components is positive, Exhibit 2-1A (rows 21, 22 and 23, column C). The 2070 loss in surface water flow that exceeds the increase in pumping suggests that the subbasin may be at a hydraulic and ecological tipping point. The Corning GSP proposed 2070 management of subbasin raises the several questions about the sustainability of future stream flows:

Brunner P., Cook P. G., and Simmons C. T., 2009, Hydrogeologic controls on disconnection between surface water and groundwater, Water Resources Research, v. 45, W01422, pp. 1-13.
https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2008WR006953

Brunner P., Cook P.G. and Simmons C.T., 2011, Disconnected Surface Water and Groundwater: From Theory to Practice, Ground Water, v. 49, no. 4, pp. 460-467.
https://libra.unine.ch/Publications/Philip_Brunner/25762

Cook P.G., Brunner P., Simmons C.T., Lamontagne S., 2010, What is a Disconnected Stream?, Groundwater 2010, Canberra, October 31, 2010 – November 4, 2010, p. 4.
https://www.researchgate.net/profile/Philip-Brunner/publication/266251504_What_is_a_Disconnected_Stream/links/54dfa2c80cf29666378b9e57/What-is-a-Disconnected-Stream.pdf

Fox G.A. and Durnford D.S., 2003, Unsaturated hyporheic zone flow in stream/aquifer conjunctive systems, Advances in Water Resources, v. 26, pp.. 989-1000.
http://www.geol.lsu.edu/blanford/NATORBF/5%20Modeling%20Papers%20of%20Groundwater%20Flow%20of%20Stream&Aquifer%20Systems/Fox%20et%20al_Water%20Resources_2003.PDF

- Why is a loss in stream flow that exceeds the increase in groundwater pumping by 104% considered a beneficially sustainable management practice?
- Shouldn't the loss in stream flow caused by an increase in pumping be considered an undesirable result to interconnected surface waters, and a negative impact to the Public Trust?
- Doesn't SGMA require that the proposed 2070 scenario groundwater production in the Corning Subbasin be reduced below the proposed sustainable yield of 171,800 afy, Section 4.4.6 (pages 4-88 and 4-89, pdf 361 and 362), to prevent the undesirable results of a significant and unreasonable loss of interconnected surface water flow?
- Does the additional loss of surface water proposed by the GSP require a water rights diversion and storage permit? If yes, where is the point of diversion and what are the permit conditions?
- Does SGMA allow a GSP to reduce surface water flows without a full water availability analysis that documents the impacts of the reductions on existing water rights, demonstrates that the minimum surface water flows and by-pass flow requirements will be met, and shows that ecological and Public Trust resources will be protected?

7. In addition to the calculation of the basin-wide loss in interconnected stream flow with the 2070 scenario, the Corning GSP provides data on the change in stream flows for three major surface water bodies in the subbasin: the Sacramento River, Stony Creek and Black Butte Lake, and Thomes Creek, Exhibit 4.

   The Sacramento River is the only major stream during the Historical baseline period that had a positive net gain in flow from groundwater discharge, i.e., an increase in surface flows, Exhibit 4-1A (row 3, columns B through I). Stony Creek and Black Butte Lake received a small amount of discharge from groundwater, but that's minor compared to the seepage losses, so the net stream gain was negative, Exhibit 4-1A (row 4 through 8, columns B through I). For Thomes Creek, the net stream gain was all negative with apparently no groundwater discharging to the creek, Exhibit 4-1A (rows 9 through 11, columns B through I). Note, streams that don't receive discharge from groundwater can still be affected by changes in groundwater level and therefore be interconnected, see references listed in footnote 2 of Comment No. 6.

   The projected 2070 scenario exhibits a significant reduction in the net stream gain in all three of these surface water bodies, which is consistent with the basin-wide change, Exhibit 4-1B. **The Sacramento River will have the greatest change in net stream flow with an annual average of loss of -63,000 afy, a -178% loss from the Historical baseline**, Exhibit 4-2C (row 31, columns B and C). The majority of the subbasin stream flow losses continue with the Sacramento River for all water year types (row 31, columns B through I). The sum of the changes in the three surface water bodies is a loss averaging -86,000 afy with the water year type losses ranging from -57,850 afy to -84,200 afy, Exhibit 4-2C (row 42, columns B through I). Note that the sum of the losses in net stream gains for these three surface water bodies is greater than the basin-wide loss in net stream gains for the annual average and all water year types; compare Exhibit 4-2C (row 42, columns B through I) with Exhibit 2-2C (row 70, columns C through J). It is unclear what causes this difference even though the summation of the three stream net gains doesn't include the change in the net gains from Black Butte Lake. Including the lake doesn't make up for the difference between the two surface water budgets.

The conclusion that's reached from the change in net stream gains using both the basin-wide and the three itemized surface water body water budgets is that the 2070 scenario predicts significant and unreasonable losses from interconnected surface waters, which should be considered an undesirable result, and a negative impact to the Public Trust. The GSP doesn't quantify or analyze the effects of the interconnected surface water loss on beneficial uses of the surface water. Without the beneficial uses and water availability analyses, the management of the subbasin should maintain the Historical baseline surface water flows.

Maintaining Historical baseline surface water flows may require reductions in the annual groundwater pumping below the historical rates because of climate change. AquAlliance Exhibit 3 compares the Current scenario water budget to the Projected 2070 scenario. The Current scenario water budget evaluates the existing supply, demand, and change in storage under the most recently available population, land use, and hydrologic conditions, Section 4.1.3 (page 4-13, pdf 286). The Current water budget shows an increase in annual average groundwater pumping to 157,900 afy, an increase of 22,000 afy over the Historical baseline of 135,900 afy. The Current scenario has an annual average net stream gain of 10,000 afy, a change of -23,100 afy from the 33,100 afy Historical baseline, AquAlliance Exhibits 2-1A and 3-1A (rows 20 and 23, column C). As with the 2070 scenario, the Current scenario ratio of the change in net stream gain to change in groundwater pumping is negative and greater than one at -105% (-23,100 afy / 22,000 afy = -1.05 = -105%). This suggests that future climate changes may cause a reduction in net stream gain even with the Historical baseline rates of groundwater pumping.

Corning GSP and the management actions should be revised so that the 2070 scenario groundwater production is made sustainable by not causing losses in interconnected surface waters. Future subbasin groundwater management should maintain the flows in the subbasin stream and river to, at a minimum, match the Historical baseline in flow quantity, flow timing and flow location.

8. AquAlliance Exhibit 5 gives the values for the Land Surface Budget for the Historical baseline, part A, and the projected 2070 scenario, part B. The differences between the baseline and the 2070 scenario are given in part C. Overall there is an increase in the total inflow and outflow with the 2070 scenario, Exhibit 5C (rows 26 and 31, columns C through J). However, the direction of change is not the same for each water budget component.

The 2070 scenario inflow for precipitation and applied groundwater both increase over the Historical baseline, but the applied surface water decreases. For the 2070 scenario the total outflow increases with the increases in evapotranspiration and overland flow. These increases in outflow appear to cause the decrease in deep percolation and return flow to streams, Exhibit 5C (rows 27 and 30, columns C through J). The total change in soil and unsaturated zone storage from Historical baseline to the 2070 scenario is negative for the annual average and the BN/AN water year, positive for the CD/D drought water years, and zero for the wet years, Exhibit 5C (row 32, columns C through J). It is unclear if the loss in return flow to streams in the Land Surface Budget, Exhibit 5 (row 30), is a part of the net stream gains component in the Groundwater and Surface Water budgets, Exhibits 2, 3 and 4.

9. The MT depths are apparently calculated assuming the sustainable yield of 171,800 afy for the 2070 scenario. The Corning GSP calculates a sustainable yield by subtracting the average annual negative change in annual groundwater storage in the projected 2070 scenario from the average annual groundwater production, Section 4.4.6 (pages 3-61 and 3-62, pdf 361 and 362), Table 4-15 (page 4-69, pdf 432), and AquAlliance Exhibit 2-1B (rows 44 and 45, Column C). As discussed in Comments Nos. 6 and 7, the proposed 2070 scenario management of the subbasin will result in a significant loss in interconnected surface waters while groundwater pumping is allowed to increase presumably up to this sustainable yield. Note that the projected pumping during CD/D water years is greater than the sustainable yield at 182,300 afy, AquAlliance Exhibit 2-1B (row 44, column E).

   The calculation of the 2070 scenario sustainable yield, using only the change in storage, doesn't address the undesirable loss to interconnected surface waters. The estimated 2070 scenario loss of interconnected surface waters should be considered an undesirable result for the Corning Subbasin unless beneficial uses and water availability analyses are done to demonstrate that the management actions and the GSP cause no significant and unreasonable impacts on the subbasin's beneficial uses of water, water users, and/or Public Trust resources. The GSP does cite a portion of the description of role of the sustainable yield estimate in SGMA from the 2017 Sustainable Management Criteria Best Management Practices,[4] Section 4.4.6 (page 4-88, pdf 361). The following is the full text from the BMP document with italics and underlines added:

<u>Role of Sustainable Yield Estimates in SGMA</u>

> *In general, <u>the sustainable yield of a basin is the amount of groundwater that can be withdrawn annually without causing undesirable results</u>. Sustainable yield is referenced in SGMA as part of the estimated basinwide water budget and as the outcome of avoiding undesirable results.*

[4] https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT_ay_19.pdf

> *Sustainable yield estimates are part of SGMA's required basinwide water budget. Section 354.18(b)(7) of the GSP Regulations requires that an estimate of the basin's sustainable yield be provided in the GSP (or in the coordination agreement for basins with multiple GSPs). A single value of sustainable yield must be calculated basinwide. This sustainable yield estimate can be helpful for estimating the projects and programs needed to achieve sustainability.*
>
> *SGMA does not incorporate sustainable yield estimates directly into sustainable management criteria. Basinwide pumping within the sustainable yield estimate is neither a measure of, nor proof of, sustainability.* <u>*Sustainability under SGMA is only demonstrated by avoiding undesirable results for the six sustainability indicators.*</u>

If this description of the role of the sustainable yield estimate in SGMA is followed, then the loss of flows in interconnected surface waters should be accounted for in the yield estimate. The Historical baseline water budget shows that the net stream gains are always positive for each water year type, AquAlliance Exhibit 2-1A (row 23, columns C through J). Even the Current scenario water years have positive net stream gains, although they are reduced from the Historical baseline, also see Comment No. 7, AquAlliance Exhibit 3-1A (row 23, columns C through J), whereas the net gains for the 2070 scenario are all negative, except for wet water years when a positive 3,700 afy gain is estimated, a 93% reduction from the Historical baseline of 50,900 afy for wet water years, AquAlliance Exhibit 2-1B (rows 23, 47 and 70, columns C through J).

The GSP's estimate of the sustainable yield for the Corning Subbasin using only the storage imbalance isn't consistent with the requirements of SGMA because it ignores the undesirable result to interconnected surface waters. The definition of sustainable yield in SGMA, WC 10721(w), requires that annual groundwater withdrawals do not cause *an undesirable result*, that is one or more. All six of the sustainability indicators listed in WC 10721(x) need to be considered when estimating the volume of groundwater that can be sustainably produced, that is, the sustainable yield.

The sustainable yield for the Corning Subbasin should be revised to account for impacts on interconnected surface water flows and the other five sustainability indicators. If [t]*he key to demonstrating a basin is meeting its sustainability goal is by avoiding undesirable results* (page 33 in DWR, 2017, Sustainability BMPs footnote 3)*,* then the GSP must prevent impacts to interconnected surface waters and the other undesirable results.

Without an impact analyses, the Corning Subbasin sustainable yield must result in net stream gains to interconnected surface water that are equal to or greater than the Historical baseline at the start of SGMA. This may require a reduction in groundwater pumping from the Historical baseline if other components of the water budget result in additional losses to surface water flows or other undesirable results, see Comment No. 7. The multiple scenarios of the Corning Subbasin need to be run using the subbasin's groundwater model until a water budget that doesn't result in undesirable results is achieved. The estimated groundwater pumping from that iterative analysis would be the appropriate sustainable yield.

The conclusion that's reached from the changes in net stream gains with both the basin-wide and the three itemized surface water body water budgets is that the 2070 scenario predicts **significant and unreasonable losses from interconnected surface waters** which should be considered an undesirable result, and a negative impact to the Public Trust. The Corning GSP doesn't quantify or analyze the effects of the interconnected surface water loss on beneficial uses, users, or the Public Trust. Without the beneficial uses and water availability analyses, the management of the subbasin shouldn't allow degradation of the interconnected surface waters sustainability indicator below levels of the Historical baseline, and, in fact, may need to improve the conditions in the subbasin to correct the management problems that lead to the subbasin's SGMA high-priority status[5], which triggered the need to develop a GSP for the Corning Subbasin.

10. The apparently arbitrary decisions used in setting the MT depths were discussed above in Comment No. 1. A more appropriate method for establishing the MT depths to prevent undesirable results is to use the historical data of changes in groundwater levels and groundwater storage during periods of extended below-normal water years,(i.e., droughts). The Corning GSP provides information on the groundwater water budgets for each type of water year with the Historical baseline, Current, and Projected 2070 scenarios in Appendix 4D Tables 4D-6, 4D-14, and 4D-34, respectively (appendices only file pdf 421, 429, and 449). The cumulative change in groundwater storage for the Historical baseline is plotted in Figure 3-31 (page 3-75, pdf 224). The GSP doesn't provide a plot of the other scenario cumulative change in storage.

    AquAlliance Exhibit 6 is a plot of the Current and Projected 2070 cumulative changes in groundwater storage based on the groundwater model of the Corning Subbasin. A table is included on the exhibit that lists values for the averages and three water year types for the Historical baseline, Current, and 2070 scenario water budgets, see AquAlliance Exhibits 1, 2 and 3. Lines are drawn on top of the cumulative change graphs that estimate the slope of the annual loss groundwater storage during droughts lasting 3 or more years. The estimated annual loss in storage ranges from -34,375 afy to -57,600 afy. The estimated average annual loss in groundwater storage for the 2070 scenario in CD/D water years falls within this range at -41,800 afy, AquAlliance Exhibit 2-1B (row 45, column D).

    The Corning GSP also provides information on the changes in groundwater level in the subbasin from 2010 to 2015 on Figure 3-22 (page 3-55, pdf 204) and the change in groundwater storage during this time in Table 4D-2 (appendices only file pdf 417), and in Section 3.2.3 (pages 3-72 and 3-74, pdf 222 and 223). Using the average changes in

[5] Corning Subbasin 5-021.51, high priority with 22.5 priority points, accessed 4.16.2022; https://gis.water.ca.gov/app/bp-dashboard/final/

groundwater levels and the cumulative change in groundwater storage from 2010 to 2015, an estimate can be made of the basin-wide volume of groundwater yielded with each 1-foot decline in groundwater level. The volume in acre-feet per foot (af/f) can then be used to estimate a basin-wide average decline groundwater during consecutive years of drought.

AquAlliance Exhibit 7 provides several tables that list and calculate the average decline in depth of groundwater from 2010 to 2015 taken from Figure 3-22 and sorted into the stable, slight decline and declining sub-regions as shown on Figure 6-1 (page 6-12, pdf 421). The decrease in groundwater levels from 2010 to 2015 ranged from -9.2 feet for the stable region to -16.8 for the declining region, with a basin-wide average of -13.75 feet. Using this average decline and the cumulative loss in groundwater storage of -114,600 af calculated from data in Table 4D-2, a basin-wide average yield of 8,334 af/f is estimated. Using the 207,342 total acres for the Corning Subbasin, Section 3.1.1 (page 3-1, pdf 150), an average specific yield of approximately 4% is calculated for the shallow aquifer system.

If the acreage for the available groundwater is less than the full subbasin area, the specific yield increases to approximately 5.56% and 8.33% for 150,000 and 100,000 acres of available groundwater source area. Using the estimated basin-wide yield of 8,334 af/f, a calculation can be made for the basin-wide average decline in groundwater level that would occur during multiple CD/D water years, i.e., a drought, for both the Historical baseline and the 2070 scenario.

11. The sustainable management of groundwater as envisioned by SGMA likely requires that a temporary groundwater storage surplus be **maintained** to meet the needs of users during droughts and to protect the beneficial uses of streams, wildlife, and groundwater dependent ecosystem (WC 10721(w)). That is, subbasin management actions should provide for storing sufficient groundwater needed to counter the losses from a drought to protect and minimize drought impacts to all beneficial uses and users, and the Public Trust.

    If that is a goal of SGMA, shouldn't the depth of the MTs be set at a depth caused by declining groundwater levels for a reasonable number of continuous years of drought after adjusting for the temporary storage surplus created during normal, above normal, and wet years? Shouldn't a GSP use a method based on anticipated storage loss during a drought, rather than the arbitrary method of the Corning GSP that set the depths far below the recent historical maximum, which then results in several decades of continuous groundwater level declines and loss in storage before an undesirable result needs to be declared?

    The average annual Historical baseline change in groundwater storage for CD/D water years is -27,450 afy, AquAlliance Exhibit 2-1A (row 21, column E). Using the 8,334 af/f basin-wide yield and the Historic baseline change in annual storage, an average annual decline in groundwater level of -3.29 ft is calculated, AquAlliance Exhibit 7. For a drought of 3 consecutive CD/D water years, a cumulative storage loss of -82,350 af would be accompanied by a -9.9 ft decline in groundwater level. For 4 consecutive CD/D water years, the cumulative storage loss would be -109,800 af with a groundwater level decline of -13.2 ft. This estimated decline in groundwater level is consistent with the 2010 -2015 decline of 13.75 ft.

If the change in groundwater storage for CD/D water years with the 2070 scenario of -41,800 afy is used, the decline in groundwater would be approximately -5 feet per drought year. For 3 consecutive 2070 scenario CD/D drought years, the decline would be -15 feet, and for 4 consecutive years the decline would be -20 feet. The -20 feet is consistent with the Corning GSP setting the MT depth for the stable shallow aquifer zone at the [*m*]*inimum fall groundwater elevation since 2012 minus 20-foot buffer*, AquAlliance Exhibit 1. In other words, the MTs are apparently set to allow for 4 years of additional drought after groundwater levels decline to the lowest fall groundwater elevation since 2012. Declaration of an undesirable result wouldn't occur until after another 2 years of continuous drought under the GSP's 24-month exceedance requirement, or 6 years after the lowest historical groundwater level is reached. The decline to the lowest elevation since 2012 may take one or more years based on the elevation difference between the MOs and the 2012 low, AquAlliance Exhibit 1-2. Therefore, the MTs appear to be set to allow for 7 years of continuous drought at the 2070 scenario rate of storage loss. Setting the MT depths to trigger an undesirable result in the lowering of groundwater level at 7+ years of drought is a questionable management practice that will likely result in significant and unreasonable impacts to shallow domestic wells and interconnected surface waters.

12. A more appropriate method for determining the MT depth would be to use the estimated decline in groundwater levels from an extended period of drought, such as 3 years. The MTs depths would be set at the depth below the MOs that accommodates the decline in groundwater levels during this extended period of drought. From the discussion in Comment No. 11, the MTs for 2070 scenario should be set at no deeper than 15 feet below the MO elevations. The MT depth may need to be less to accommodate the 24 months of MT exceedance requirement.

    The GSP proposes that a declaration of an undesirable result can be made only after groundwater levels decline below the MT depth and remain there for 24 continuous months. If the MTs are set at 15 feet below the MOs, then a drought of 5 years could occur before an undesirable result would be declared with possibly an additional 10 feet of groundwater decline. This would result in 25 feet of groundwater level decline under the 2070 scenario and a total storage loss of approximately 200,000 af (25 years X 8,334 af/f = 208,350 af), which is not quite double the 114,600 af historical storage loss from 2010 to 2015, AquAlliance Exhibit 7. This suggests that perhaps **a more appropriate sustainable depth for the MTs should be set at 5 feet below the MOs** that allows only 1 year of drought storage loss with the assumption that an additional 2 years of drought can occur before an undesirable result is declared.

13. As discussed in Comment Nos. 6, 7 and 9, the 2070 scenario assumption that the Corning Subbasin has a sustainable yield of 171,800 afy is inappropriate because this volume of

pumping results in significant and unreasonable loss to interconnected surface waters, which is a SGMA unreasonable result. The 2070 scenario CD/D water year pumping is estimated at 182,300 afy, which results in greater losses to stream flow than with the average annual 2070 production, AquAlliance Exhibit 2-1B (rows 44 and 47, columns C and E).

As discussed in Comment No. 9, the sustainable yield of the subbasin needs to be recalculated based on beneficial uses and surface water availability analyses so that none of the six SGMA undesirable results occur. Without the beneficial uses and water availability analyses, the GSP should assume that the future pumping volumes are no greater than the Historical baseline. The **sustainable yield pumping may need to be less to accommodate future climate changes**, see Comment No. 7. With a reduction in sustainable yield pumping volume, the annual loss in groundwater storage will likely be reduced. A reduction in CD/D water year storage losses would require recalculation of the proper depth for the MTs below the MOs, which would likely reduce the elevation difference between the MOs and MTs.

14. The Corning GSP identified salinity, nitrate, and arsenic as Contaminants of Concern (COC) for the subbasin, Section 3.2.6.3 (page 3-94, pdf 243). The plan also identified the locations of historical and current contaminant cleanup sites, Figures 3-37 through 3-40 and Table 3-8 (pages 3-86 through 3-90, pdf 235 through 239). The COC at the cleanup site include fuels, solvents, herbicides, fumigants, and pesticides, Table 3-8. The GSP states that …*local, state, and federal water quality standards applicable to the Subbasin need to be taken into consideration when setting water quality sustainable management criteria (SMC)*, and that …*existing water quality monitoring programs may be used by the GSA to help collect data during GSP implementation and establish consistency with other programs*, Section 6.8.2 (page 6-41, pdf 450).

    Despite the occurrence of multiple COCs in the subbasin, the GSP will track as a sustainable management criterion only one water quality COC, salinity, using Total Dissolved Solids (TDS) concentrations. To track salinity, the GSP will rely on a RMP groundwater quality monitoring well network of 15 wells, made up of 11 municipal wells in the City of Corning and Hamilton City, and 4 small water supply wells, Section 5.4.1.6, and Figure 5-8 (page 5-27 and 5-28, pdf 389 and 390). Tables 5-3 and 5-4 (pages 5-21 and 5-25, pdf 383 and 387) list public water supply wells and groundwater quality network wells, but the 15 RMP network water quality wells aren't clearly identified in these tables, except in Figure 5-8, which has only general well owner identifications. Therefore, the actual wells the GSP will use for the RMP water quality monitoring network aren't clearly identified by name and location. A table is needed that lists the RMP groundwater water quality wells names, well locations, well owners, screened intervals, well types, water quality monitoring frequency, all the COC that will be monitored at each well, the water quality standards for each COC, the monitoring and reporting frequency, and the monitoring and reporting agency.

    The SMC for groundwater quality requires that at least 25% of the 15 RMP network water quality monitoring wells, i.e., 3 wells, must exceed the salinity MT for 2 consecutive years *where it is established that the GSP implementation is the cause of the exceedance to trigger an undesirable resul*t, Table ES-1, and Section 6.8.4.1 (page ES-22, 6-45 and 6-46, pdf 42, 455 and 456). The justification for requiring water quality exceedance in multiple wells for multiple years isn't clear and seems to allow for the expansion of water quality degradation before the Corning GSAs will act to prevent an undesirable result. Taking action to protect water quality, especially for drinking water supplies, isn't something that is normally delayed until the problem gets widespread and pervasive. In addition, the requirement that someone must prove that the GSP implementation caused the exceedance isn't consistent with the SGMA requirement to protect water quality.

The definition of unreasonable result for water quality degradation includes the migration of contaminant plumes that impair water supplies, WC 10721(x)(4), even when the plumes aren't caused by the GSA's implementation of the GSP. The GSAs can't ignore the water quality impacts just because their past actions didn't cause the problem. The sustainability standard directs the GSAs to prevent the spread of the contaminant(s), regardless of who is to blame for the plume or water quality degradation. Actions by the GSAs shouldn't need to wait for long-term exceedance of a water quality standard at multiple wells across a large portion of the subbasin before actions are taken to mitigate the impact. In addition, groundwater management actions should prevent the migration of contaminant plumes into the Corning Subbasin from adjacent subbasins.

The GSP should describe future management actions that will be taken to prevent the spread of contaminants even before they exceed the water quality standards at one or more of the RMP network wells, and at the other water quality monitoring wells in the Corning Subbasin and adjacent subbasins. The GSP should also address how the Well Mitigation Program will assist domestic wells owners whose wells have become polluted. Assistance such as well head testing and treatment should be part of the Corning GSPs water quality mitigation program.

Although the Corning GSP calls for coordination in management of water quality with other governmental agencies, the plan doesn't indicate what are the MOs or MTs for all the potential contaminants of concern in the Corning Subbasin, or what GSP management actions will be taken whenever a water quality impact is identified by these coordinating agencies.

What is the role of the GSAs in protecting water quality for all beneficial uses and users? In particular, the protection of domestic water supply must be the primary concern for managing the subbasin, WC 106.3(a). SGMA empowers the GSAs with the authority to control pumping rates and locations throughout the subbasin to protect all beneficial uses and users of groundwater, an authority over groundwater resources that other regulatory agencies don't possess. This is likely the reasoning behind the recent Governor's Executive Order N-7-22.

The Corning GSP should provide a concise description of what projects and management actions the GSAs will be taking to prevent degradation of the subbasin water quality for all potential COCs, describe how the GSAs will remedy in a timely manner any water quality degradation that occurs, and develop a Well Mitigation Program that is fully funded and provides for meaningful assistance to impacted well owners with repair, treatment, and/or well replacement.

15. The Corning GSP sets the MO at zero feet *for inelastic subsidence solely due to lowered groundwater elevations throughout the subbasin, in addition to any measurement error*, Section 6.9.3 (page 6-55, pdf 464). If the InSAR dataset is used with its measurement error of 0.1 ft, then annual subsidence of 0.1 ft or less would not be considered measurable inelastic subsidence.

    The MT rate for inelastic subsidence is 0.50 ft over 5 years, Table ES-1 and Sections 6.9.2 (pages 6-48, pdf 457). Although the Corning Subbasin has experienced little to no historical inelastic subsidence since the start of monitoring in 2004 (page 6-48, pdf 457), the MT was set …*to maintain consistency with neighboring subbasins,* Section 6.9.2.3 (pages 6-55 and 6-54, pdf 462 and 463). The neighboring subbasin to the south, Colusa Subbasin, has historically experienced inelastic subsidence and the MT for subsidence for that subbasin is also 0.5 feet over 5 years. Figure 6-11 shows the InSAR land subsidence data for the area at the southern border between the two subbasins surrounding Orland and Hamilton City (page 6-49, pdf 458). A north-south oriented area of subsidence ranging from -0.25 to -0.75 feet occurs just south of Orland. The Corning GSP indicates that groundwater pumping in the Colusa Subbasin near Orland has …*the potential to impact the ability of the Corning Subbasin GSAs to meet the subsidence minimum thresholds*… (page 6-54, pdf 463). Apparently, to be *consistent* with a neighboring subbasin that's experiencing ongoing subsidence, the Corning GSP will use the same MT, so that an undesirable result from subsidence doesn't have to be declared.

    The Corning GSP doesn't offer a reasonable explanation for why an MT that allows northward expansion of the Colusa Subbasin subsidence is beneficial to the infrastructure and landowners in the Corning Subbasin. The GSP notes that there's been very little historical long-term subsidence in the Subbasin, and if this doesn't change in the future, then beneficial users and land uses should not be impacted by the subsidence minimum threshold, Section 6.9.2.4 (page 6-54, pdf 463).

    While it is probably true that if the Corning Subbasin continues to have little or no inelastic subsidence, the MT value will have no effect. However, it might not be true if subsidence begins to occur, especially if it's migrating northward from the Colusa Subbasin, that the 0.50 ft over 5 years MT subsidence rate is a reasonable standard for an area that hasn't experience inelastic subsidence. The logic of the Corning GSP in setting the MT the same as the Colusa GSP seems to be that if they are 'okay' with this amount of subsidence, then we should be 'okay' too. No actual assessment of the impacts of this level of subsidence on the infrastructures in the Corning Subbasin are proposed in the GSP.

The Corning GSP takes the approach that:

> *The undesirable result for subsidence allows for no more than 0.5 foot of cumulative subsidence in the Subbasin during a 5-year period. This amount of subsidence is not likely to impact beneficial users and land uses such as highways, canals, and pipelines as it is about equal to the total subsidence in one portion of the Subbasin and no impacts to infrastructure have been reported to date. No other beneficial users or land uses are anticipated to be impacted by subsidence in the Subbasin.* Section 6.9.4.3 (page 6-57, pdf 466)

This technical standard of "not likely" to cause an impact to beneficial users and land uses needs some technical justification. The Corning GSP should be revised to provide specific information on the critical infrastructure in the Subbasin that includes: a description of the structures, the entities responsible for maintenance, how much subsidence these structures can tolerate without structural damage, the linkage and/or interdependence of these structures, the alternatives should a structure fail, the estimated costs for repairing structural damage, and the frequency of structural inspections, etc.

In addition to evaluating critical infrastructure, the GSP should address how small areas of subsidence, such as sinkholes, will be managed. Sinkholes, peat decomposition, and natural settlement can all be triggered by declining groundwater levels. The GSP appears to require proof that settlement or subsidence is due to groundwater pumping, Section 6.9 (page 6-47, pdf 456). The GSP doesn't explain how and by whom this determination will be made, in particular, when the subsidence doesn't cover a broad area and affects only a few private structures, like homes. The GSP seems to say that the landowner is responsible for demonstrating to the GSAs that the cause of any local settlement is groundwater decline due to pumping. Even if the landowner was able to prove the cause was declining groundwater levels, the GSP doesn't appear to propose any mitigation program to assist in making structural repairs.

Lastly, the Plan fails to disclose the numerous sinkholes within and just outside the subbasin. The sinkholes were widely discussed by local and state government from August 2021 forward, allowing time to insert this information in the draft and final GSPs.[6] [7] This serious omission adds to the conclusion that the Corning GSP and GSAs are not ready to take on the task of managing the subbasin.

[6] Massa, Rick August 16, 2021 e-mail to Lisa Hunter of Glenn County. "We have learned of orchardists that are experiencing sink holes in their orchards."
[7] "Ms. Hunter also stated that staff was made aware of sink holes developing in the Colusa and Corning subbasins, and that a site visit has been conducted with Department of Water Resources." Glenn Groundwater Authority December 14, 2021 minutes p. 2 (packet pdf p. 8).

Conclusion

For all the reasons discussed in our comments on the Corning Subbasin here, the Plan fails to meet SGMA's goal of water resource sustainability and protection of the water rights of all beneficial users and uses. In accordance with legal requirements to protect the Public Trust, the Plan also fails. It also appears that the GSP will foist the responsibility to demonstrate damage from undesirable results on the unsuspecting public, creating an impossible burden for all but the large water districts with deep pockets. The Plan must be rejected by DWR and the SWRB.

Respectfully submitted,

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AquAlliance Exhibit 1-1

Corning Subbasin RMP Wells[1]

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	RMP Network	State Well Number	Well Type	Groundwater Level Trend	Total Well Depth, Feet	Perforated Interval (feet bgs)	Reference Point Elevation (feet AMSL)	MO Depth, (feet)	MO Elevation, (feet AMSL)	MT Depth, (feet)	MT Elevation, (feet AMSL)	MO - MT, (feet)	2012 Minimum GW Depth, (feet)	2012 Minimum GW Elevation, (feet AMSL)	Difference MO and 2012 Min. Depth, Feet	Difference MT and 2012 Min. Elevation, Feet
1	Shallow	21N01W04N001M	Domestic	Stable	100	--	137.68	21.6	116.1	48.4	89.3	26.8	28.4	109.3	6.8	20.0
2	Shallow	22N01W19E003M	Irrigation	Stable	500	80 - 400	157.79	29.7	128.1	60.1	97.7	30.4	40.1	117.7	10.4	20.0
3	Shallow	22N01W29N003M	Observation	Stable	400	189 - 380	149.99	26.6	123.4	58.3	91.7	31.7	38.3	111.7	11.7	20.0
4	Shallow	22N02W01N003M	Observation	Stable	440	210 - 370	161.50	25.0	136.5	62.2	99.3	37.2	42.2	119.3	17.2	20.0
5	Shallow	22N02W15C004M	Observation	Stable	258	210 - 220	192.25	48.2	144.1	108.3	84.0	60.2	88.3	104.0	40.2	20.0
6	Shallow	23N02W16B001M	Irrigation	Stable	120	100 - 120	186.53	51.2	135.3	88.1	98.4	36.9	68.1	118.4	16.9	20.0
7	Shallow	23N02W28N004M	Observation	Stable	205	100 - 170	204.43	61.7	142.7	100.1	104.3	38.4	80.1	124.3	18.4	20.0
8	Shallow	23N02W34A003M	Irrigation	Stable	125	104 - 124	171.01	35.5	135.5	61.8	109.2	26.3	41.8	129.2	6.3	20.0
9	Shallow	23N02W34N001M	Industrial	Stable	100	70 - 100	185.92	40.0	145.9	74.1	111.8	34.1	54.1	131.8	14.1	20.0
10	Shallow	24N02W17A001M	Domestic	Stable	140	120 - 140	212.20	41.3	170.9	61.3	150.9	20.0	41.3	170.9	0.0	20.0
11	Shallow	24N02W20B001M	Domestic	Stable	120	100 - 120	223.43	50.0	173.4	73.1	150.3	23.1	53.1	170.3	3.1	20.0
12	Shallow	25N02W31G002M	Irrigation	Stable	115	93 - 113	223.80	32.4	191.4	54.5	169.3	22.1	34.5	189.3	2.1	20.0
13	Deep	22N01W29N002M	Observation	Stable	670	549 - 641	150.68	28.8	121.9	73.5	77.2	44.7	53.5	97.2	24.7	20.0
14	Deep	22N02W01N002M	Observation	Stable	730	700 - 710	161.31	26.6	134.7	86.8	74.5	60.2	66.8	94.5	40.2	20.0
15	Deep	22N02W15C002M	Observation	Stable	825	760 - 781	192.37	70.8	121.6	134.7	57.7	63.9	114.7	77.7	43.9	20.0
16	Deep	23N02W28N002M	Observation	Stable	580	550 - 570	204.37	70.5	133.9	104.4	100.0	33.9	84.4	120.0	13.9	20.0
17	Deep	25N03W36H001M	Irrigation	Stable	524	--	241.00	57.7	183.3	80.1	160.9	22.4	60.1	180.9	2.4	20.0
18	Shallow	22N02W18C003M	Observation	Slight Decline	188	165 - 175	225.54	77.1	148.4	93.9	131.6	16.8	78.3	147.3	1.1	15.7
19	Shallow	22N03W01R002M	Observation	Slight Decline	314	270 - 280	228.53	84.6	143.9	104.9	123.6	20.3	87.4	141.1	2.8	17.5
20	Shallow	22N03W05F002M	Irrigation	Slight Decline	218	188 - 218	298.89	94.4	204.5	121.0	177.9	26.6	100.8	198.1	6.4	20.2
21	Shallow	22N03W06B001M	Domestic	Slight Decline	210	195 - 210	309.90	45.8	264.1	71.9	238.0	26.1	59.9	250.0	14.1	12.0
22	Shallow	22N03W12Q003M	Domestic	Slight Decline	124	112 - 123	232.94	58.1	174.8	69.7	163.2	11.6	58.1	174.9	-0.1	11.6
23	Shallow	23N03W04H001M	Irrigation	Slight Decline	270	200 - 270	261.90	67.9	194.0	81.5	180.4	13.6	67.9	194.0	0.0	13.6
24	Shallow	23N03W13C006M	Observation	Slight Decline	182	95 - 135	215.59	70.0	145.6	92.5	123.1	22.5	77.1	138.5	7.1	15.4
25	Shallow	23N03W16H001M	Domestic	Slight Decline	150	144 - 150	278.08	84.7	193.4	103.8	174.3	19.1	86.5	191.6	1.8	17.3
26	Shallow	23N03W22Q001M	Irrigation	Slight Decline	380	--	235.97	83.3	152.7	106.1	129.9	22.8	88.4	147.6	5.1	17.7
27	Shallow	23N03W24A003M	Domestic	Slight Decline	199	180 - 199	207.44	70.0	137.4	88.8	118.6	18.8	74.0	133.4	4.0	14.8
28	Shallow	23N03W25M004M	Observation	Slight Decline	155	120 - 130	237.40	87.1	150.3	114.7	122.7	27.6	95.6	141.8	8.5	19.1
29	Shallow	24N02W29N003M	Observation	Slight Decline	388	200 - 290	213.76	55.7	158.1	90.6	123.2	34.9	75.5	138.3	19.8	15.1
30	Shallow	24N03W02R001M	Domestic	Slight Decline	270	--	257.95	69.4	188.6	85.4	172.6	16.1	71.2	186.8	1.8	14.2
31	Shallow	24N03W03R002M	Domestic	Slight Decline	132	112 - 132	279.46	72.2	207.3	86.7	192.8	14.5	72.3	207.2	0.1	14.5
32	Shallow	24N03W14B001M	Industrial	Slight Decline	140	130 - 140	294.05	98.8	195.3	118.6	175.5	19.9	98.8	195.2	0.1	19.8
33	Shallow	24N03W16A001M	Irrigation	Slight Decline	195	85 - 195	290.97	90.3	200.7	108.4	182.6	18.1	90.3	200.6	0.1	18.1
34	Shallow	24N03W24E001M	Domestic	Slight Decline	224	212 - 220	298.45	129.3	169.2	161.8	136.7	32.6	134.8	163.6	5.6	27.0
35	Shallow	24N03W26K001M	Irrigation	Slight Decline	245	103 - 175	283.46	92.4	191.1	110.9	172.6	18.5	92.4	191.0	0.1	18.5
36	Shallow	24N03W35P005M	Domestic	Slight Decline	120	100 - 120	251.46	59.5	192.0	71.4	180.1	11.9	59.5	192.0	0.0	11.9
37	Deep	22N02W18C001M	Observation	Slight Decline	1,062	841 - 1029	224.64	134.2	90.4	161.1	63.5	26.9	134.3	90.4	0.0	26.9
38	Deep	22N03W01R001M	Observation	Slight Decline	515	470 - 480	228.17	93.0	135.2	111.6	116.6	18.6	93.0	135.2	0.0	18.6
39	Deep	23N03W13C004M	Observation	Slight Decline	835	815 - 825	215.88	84.8	131.1	108.7	107.2	23.9	90.6	125.3	5.8	18.1
40	Deep	23N03W25M002M	Observation	Slight Decline	513	470 - 500	237.68	86.2	151.5	126.1	111.6	39.9	105.1	132.6	18.9	21.0
41	Deep	24N02W29N004M	Observation	Slight Decline	741	590 - 710	213.45	58.0	155.5	88.6	124.9	30.7	73.8	139.6	15.9	14.8

AquAlliance Exhibit 1-2

Corning Subbasin RMP Wells[1]

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	RMP Network	State Well Number	Well Type	Groundwater Level Trend	Total Well Depth, Feet	Perforated Interval (feet bgs)	Reference Point Elevation (feet AMSL)	MO Depth, (feet)	MO Elevation, (feet AMSL)	MT Depth, (feet)	MT Elevation, (feet AMSL)	MO - MT, (feet)	2012 Minimum GW Depth, (feet)	2012 Minimum GW Elevation, (feet AMSL)	Difference MO and 2012 Min. Depth, Feet	Difference MT and 2012 Min. Elevation, Feet
42	Shallow	24N03W17M001M	Domestic	Decline	108	**<u>100 - 108</u>**	316.48	100.2	216.3	**<u>126.0</u>**	190.5	25.8	105.0	211.5	4.8	21.0
43	Shallow	24N03W29Q001M	Observation	Decline	372	130 - 360	316.18	104.6	211.6	136.9	179.3	32.3	114.1	202.1	9.5	22.8
44	Shallow	24N04W14N002M	Domestic	Decline	180	--	375.52	128.1	247.4	153.7	221.8	25.6	128.1	247.4	0.0	25.6
45	Deep	23N03W07F001M	Irrigation	Decline	790	240 - 790	314.40	104.5	209.9	126.0	188.4	21.5	105.0	209.4	0.5	21.0
46	Deep	23N03W17R001M	Irrigation	Decline	720	360 - 720	302.50	94.8	207.7	115.2	187.3	20.4	96.0	206.5	1.2	19.2
47	Deep	23N04W13G001M	Irrigation	Decline	560	--	360.71	162.1	198.6	201.0	159.7	38.9	167.5	193.2	5.4	33.5
48	Deep	24N03W17M002M	Irrigation	Decline	505	315 - 495	316.80	120.0	196.8	144.0	172.8	24.0	120.0	196.8	0.0	24.0
49	Deep	24N03W29Q002M	Observation	Decline	575	490 - 550	315.76	103.2	212.6	140.9	174.9	37.7	117.4	198.3	14.3	23.5
50	Deep	24N04W33P001M	Irrigation	Decline	780	250 - 780	424.56	184.6	240.0	241.1	183.5	56.5	200.9	223.6	16.4	40.2
51	Deep	24N04W34K001M	Irrigation	Decline	750	310 - 750	421.50	197.6	223.9	237.1	184.4	39.5	197.6	223.9	0.0	39.5
52	Deep	24N04W34P001M	Irrigation	Decline	535	290 - 475	440.10	225.8	214.3	256.6	183.5	30.8	225.8	214.3	0.0	30.8
53	Deep	24N04W36G001M	Irrigation	Decline	750	320 - 750	362.20	147.8	214.4	179.0	183.2	31.2	149.2	213.0	1.4	29.8
54	Shallow	24N05W23L001M	Stock	--	235	--	530.90	185.1	345.8	218.9	312.0	33.8	--	--	--	--
55	Shallow	Glenn TSS Well	Observation	--	TBD	TBD	TBD	--	262.8	--	237.5	25.3	--	--	--	--
56	Deep	Glenn TSS Well	Observation	--	TBD	TBD	TBD	--	184.0	--	149.3	34.7	--	--	--	--
57	Shallow	Tehama CWT Well	Observation	--	TBD	TBD	TBD	--	199.6	--	181.8	17.8	--	--	--	--
58	Deep	Tehama CWT Well	Observation	--	TBD	TBD	TBD	--	186.1	--	160.3	25.8	--	--	--	--

1. Data taken from Tables 5-2. 5-7 and 6-2.

- Highlighted wells part of ICSW monitoring network, Table 5-7.
- Bolded and underrlined wells have MT depth below lower screen depth.

	Average MO Depth, ft	Average MT Depth, ft	MO - MT, ft	(MO-MT) / (MO-2-12)	MO - 2012, ft	2012 - MT, ft
All Shallow	70.6	96.2	25.6	3.7	6.9	17.8
All Deep	107.9	143.0	35.0	3.2	10.8	24.3
Stable Shallow	38.6	70.9	32.3	2.6	12.3	20.0
Stable Deep	50.9	95.9	45.0	1.8	25.0	20.0
Slight Decline Shallow	78.4	99.1	20.6	5.0	4.1	16.5
Slight Decline Deep	91.2	119.2	28.0	3.4	8.1	19.9
Decline Shallow	111.0	138.9	27.9	5.9	4.8	23.1
Decline Deep	148.9	182.3	33.4	7.7	4.3	29.1
ICSW Shallow	54.1	88.3	34.2	2.2	15.9	18.3

AquAlliance Exhibit 2-1

Modified Corning Subbasin Historical vs 2070 Groundwater Budget

Modified Table 4D-1 Corning Subbasin Historical Groundwater Budget, Annual Average by Water Year Type

	A	B	C	D	E	F	G	H	I	J
	A	Component	Average, AFY	% Contribution*	Average in Critically Dry/Dry Years, AFY	% Change from Historical Average	Average in Below Normal/Above Normal Years, AFY	% Change from Historical Average	Average in Wet Years, AFY	% Change from Historical Average
1	Inflows	Deep Percolation to Groundwater	161,200	52%	116,350	-28%	176,100	13%	212,600	29%
2		Streambed Recharge	51,100	16%	46,400	-9%	56,150	11%	53,500	4%
3		Inflow from Colusa	17,700	6%	16,650	-6%	18,550	5%	18,600	5%
4		Inflow from Red Bluff	44,500	14%	43,950	-1%	45,550	2%	44,500	0%
5		Inflow from Butte	1,500	0.5%	1,350	-10%	1,400	-7%	1,800	21%
6		Inflow from Los Molinos	21,300	7%	21,200	0%	22,000	3%	20,800	-2%
7		Inflow from Vina	10,700	3%	21,200	98%	22,000	53%	20,800	46%
8		Inflow from Foothills	1,500	0.5%	1,100	-27%	1,650	14%	1,900	24%
9		Recharge to Groundwater from Black Butte Lake	2,600	1%	2,100	-19%	2,750	7%	3,000	15%
10		**Total Inflows**	**312,100**		**270,300**	**-13%**	**346,150**	**13%**	**377,500**	**19%**
11	Outflows	Urban and Domestic Pumping	3,600	1%	3,650	1%	3,850	7%	3,500	-3%
12		Agricultural Pumping	132,300	43%	141,400	7%	127,700	-3%	122,600	-8%
13		Outflow to Colusa	32,200	11%	32,350	0%	31,450	-2%	32,200	0%
14		Outflow to Red Bluff	12,300	4%	11,750	-4%	12,050	-2%	13,500	10%
15		Outflow to Butte	1,500	0.5%	1,550	3%	1,600	6%	1,300	-13%
16		Outflow to Los Molinos	12,900	4%	11,800	-9%	12,200	-6%	14,600	14%
17		Outflow to Vina	26,200	9%	25,000	-5%	25,650	-2%	28,200	8%
18		Groundwater Discharge to Streams	84,200	28%	70,250	-17%	83,900	0%	104,400	24%
19		**Total Outflows**	**305,200**	**-**	**297,750**	**-2%**	**298,400**	**-2%**	**320,300**	**5%**
20		**Total Groundwater Pumping**	**135,900**	**-**	**145,050**	**7%**	**131,550**	**-3%**	**126,100**	**-7%**
21	Storage	**Annual Change of Groundwater in Storage**	**6,900**	**-**	**-27,450**	**-498%**	**47,750**	**592%**	**57,200**	**729%**
22		**Cumulative Change of Groundwater in Storage from WY 1974 to WY 2015**	**290,300**	-	-	-	-	-	-	-
23		**Net Stream Gains (Discharge - Seepage)**	**33,100**	**-**	**23,850**	**-28%**	**27,750**	**-16%**	**50,900**	**54%**
24		**Net Stream Gains / GW Pumping**	**24%**	**-**	**16%**	**-**	**21%**	**-**	**40%**	**-**

Modified Table 4D-33. Corning Subbasin 2070 Annual Groundwater Budget Summary, Annual Average by Water Year Type

	A	B	C	D	E	F	G	H	I	J
	B	Component	Average, AFY	% Contribution*	Average in Critically Dry/Dry Years, AFY	% Change from 2070 Average	Average in Below Normal/Above Normal Years, AFY	% Change from 2070 Average	Average in Wet Years, AFY	% Change from 2070 Average
25	Inflows	Deep Percolation to Groundwater	140,300	45%	96,500	-31%	156,500	17%	184,000	28%
26		Streambed Recharge	66,100	21%	57,300	-13%	73,100	12%	71,800	8%
27		Inflow from Colusa	14,300	5%	12,800	-10%	14,850	4%	16,200	13%
28		Inflow from Red Bluff	49,800	16%	49,350	-1%	50,100	1%	50,400	1%
29		Inflow from Butte	800	0.3%	650	-19%	850	8%	1,000	24%
30		Inflow from Los Molinos	25,000	8%	24,900	0%	25,300	1%	24,800	-1%
31		Inflow from Vina	12,600	4%	24,900	98%	25,300	51%	24,800	48%
32		Inflow from Foothills	1,100	0.4%	850	-23%	1,100	0%	1,200	9%
33		Recharge to Groundwater from Black Butte Lake	2,100	1%	1,750	-17%	2,400	17%	2,300	8%
34		**Total Inflows**	**312,100**		**269,000**	**-14%**	**349,500**	**12%**	**376,500**	**21%**
35	Outflows	Urban and Domestic Pumping	4,900	2%	4,900	0%	4,900	0%	4,900	0%
36		Agricultural Pumping	167,300	54%	177,400	6%	164,950	-1%	156,500	-7%
37		Outflow to Colusa	37,400	12%	38,250	2%	38,150	2%	34,800	-7%
38		Outflow to Red Bluff	9,800	3%	9,350	-5%	9,600	-2%	10,600	8%
39		Outflow to Butte	2,500	1%	2,500	0%	2,500	0%	2,300	-8%
40		Outflow to Los Molinos	8,900	3%	8,400	-6%	8,650	-3%	9,800	10%
41		Outflow to Vina	20,100	6%	18,950	-6%	19,900	-1%	21,800	9%
42		Groundwater Discharge to Streams	61,500	20%	51,050	-17%	61,800	1%	75,500	23%
43		**Total Outflows**	**312,400**	**-**	**310,800**	**-1%**	**310,450**	**-1%**	**316,200**	**1%**
44		**Total Groundwater Pumping**	**172,200**	**-**	**182,300**	**6%**	**169,850**	**-1%**	**161,400**	**-6%**
45	Storage	**Annual Change of Groundwater in Storage**	**-300**	**-**	**-41,800**	**-13833%**	**39,050**	**13117%**	**60,300**	**20200%**
46		**Cumulative Change of Groundwater in Storage Projected to 2070**	**-19,700**	-	-	-	-	-	-	-
47		**Net Stream Gains (Discharge - Seepage)**	**-4,600**	**-**	**-6,250**	**-36%**	**-11,300**	**-146%**	**3,700**	**180%**
48		**Net Stream Gains / GW Pumping**	**-2.7%**	**-**	**-3.4%**	**-**	**-6.7%**	**-**	**2.3%**	**-**

** Percent contribution of component to average total inflow/outflow. Small discrepancies between inflow minus outflow and change in storage may occur due to rounding.*

AquAlliance Exhibit 2-1

Difference Between Corning Subbasin Historical and Projected 2070 Annual Groundwater Budget Summary, Annual Average By Water Year Type

	A	B	C	D	E	F	G	H	I	J
	C	**Component**	**Average Difference, AFY**	**% Change from Historical Average**	**Average in Critically Dry/Dry Years, AFY**	**% Change from Historical Average**	**Average in Below Normal/Above Normal Years, AFY**	**% Change from Historical Average**	**Average in Wet Years, AFY**	**% Change from Historical Average**
49	**Inflows**	Deep Percolation to Groundwater	-20,900	-13%	-19,850	-17%	-19,600	-11%	-28,600	-13%
50		Streambed Recharge	15,000	29%	10,900	23%	16,950	30%	18,300	34%
51		Inflow from Colusa	-3,400	-19%	-3,850	-23%	-3,700	-20%	-2,400	-13%
52		Inflow from Red Bluff	5,300	12%	5,400	12%	4,550	10%	5,900	13%
53		Inflow from Butte	-700	-47%	-700	-52%	-550	-39%	-800	-44%
54		Inflow from Los Molinos	3,700	17%	3,700	17%	3,300	15%	4,000	19%
55		Inflow from Vina	1,900	18%	3,700	17%	3,300	15%	4,000	19%
56		Inflow from Foothills	-400	-27%	-250	-23%	-550	-33%	-700	-37%
57		Recharge to Groundwater from Black Butte Lake	-500	-19%	-350	-17%	-350	-13%	-700	-23%
58		**Total Change in Inflows**	**0**	**0%**	**-1,300**	**-0.5%**	**3,350**	**1%**	**-1,000**	**-0.3%**
59	**Outflows**	Urban and Domestic Pumping	1,300	36%	1,250	34%	1,050	27%	1,400	40%
60		Agricultural Pumping	35,000	26%	36,000	25%	37,250	29%	33,900	28%
61		Outflow to Colusa	5,200	16%	5,900	18%	6,700	21%	2,600	8%
62		Outflow to Red Bluff	-2,500	-20%	-2,400	-20%	-2,450	-20%	-2,900	-21%
63		Outflow to Butte	1,000	67%	950	61%	900	56%	1,000	77%
64		Outflow to Los Molinos	-4,000	-31%	-3,400	-29%	-3,550	-29%	-4,800	-33%
65		Outflow to Vina	-6,100	-23%	-6,050	-24%	-5,750	-22%	-6,400	-23%
66		Groundwater Discharge to Streams	-22,700	-27%	-19,200	-27%	-22,100	-26%	-28,900	-28%
67		**Total Change in Outflows**	**7,200**	**2%**	**13,050**	**4%**	**12,050**	**4%**	**-4,100**	**-1%**
68		**Change In Groundwater Pumping**	**36,300**	**27%**	**37,250**	**26%**	**38,300**	**29%**	**35,300**	**28%**
69	**Storage**	**Annual Change of Groundwater in Storage**	**-7,200**	**-104%**	**-14,350**	**-52%**	**-8,700**	**-18%**	**3,100**	**5%**
70		**Net Change in Stream Gains**	**-37,700**	**-114%**	**-30,100**	**-126%**	**-39,050**	**-141%**	**-47,200**	**-93%**
71		**Net Change in Stream Gains / Change in GW Pumping**	**-104%**	**-**	**-81%**	**-**	**-102%**	**-**	**-134%**	**-**

** Percent contribution of component to average total inflow/outflow. Small discrepancies between inflow minus outflow and change in storage may occur due to rounding.*

AquAlliance Exhibit 3-1

Modified Corning Subbasin Current vs 2070 Groundwater Budget

Modified Table 4D-13 Corning Subbasin Current Groundwater Budget, Annual Average by Water Year Type

	A	B	C	D	E	F	G	H	I	J
	A	Component	Average, AFY	% Contribution*	Average in Critically Dry/Dry Years, AFY	% Change from Historical Average	Average in Below Normal/Above Normal Years, AFY	% Change from Historical Average	Average in Wet Years, AFY	% Change from Historical Average
1	Inflows	Deep Percolation to Groundwater	141,800	47%	97,650	-31%	157,450	16%	185,800	28%
2		Streambed Recharge	57,900	19%	51,200	-12%	63,400	11%	62,200	7%
3		Inflow from Colusa	14,500	5%	13,000	-10%	15,050	4%	16,200	11%
4		Inflow from Red Bluff	48,100	16%	47,550	-1%	48,250	0%	48,800	1%
5		Inflow from Butte	1,000	0.3%	850	-15%	900	-12%	1,100	11%
6		Inflow from Los Molinos	24,100	8%	24,100	0%	24,250	1%	24,100	0%
7		Inflow from Vina	12,300	4%	24,100	96%	24,250	50%	24,100	49%
8		Inflow from Foothills	1,600	0.5%	1,250	-22%	1,700	8%	2,000	24%
9		Recharge to Groundwater from Black Butte Lake	2,000	1%	1,700	-15%	2,300	18%	2,300	13%
10		**Total Inflows**	**303,300**		**261,400**	**-14%**	**337,550**	**13%**	**366,600**	**19%**
11	Outflows	Urban and Domestic Pumping	4,900	2%	4,900	0%	4,900	0%	4,900	0%
12		Agricultural Pumping	153,000	51%	163,400	7%	149,550	-2%	142,800	-7%
13		Outflow to Colusa	34,000	11%	34,950	3%	34,450	1%	31,700	-7%
14		Outflow to Red Bluff	10,300	3%	9,900	-4%	10,200	-1%	11,000	7%
15		Outflow to Butte	2,300	0.8%	2,350	2%	2,350	2%	2,100	-9%
16		Outflow to Los Molinos	9,600	3%	9,050	-6%	9,500	-1%	10,700	12%
17		Outflow to Vina	20,000	7%	19,050	-5%	19,800	-1%	21,500	8%
18		Groundwater Discharge to Streams	67,900	22%	56,900	-16%	68,400	1%	82,200	21%
19		**Total Outflows**	**302,000**		**300,500**	**-0.5%**	**299,150**	**-1%**	**306,900**	**2%**
20		**Total Groundwater Pumping**	**157,900**	**-**	**168,300**	**7%**	**154,450**	**-2%**	**147,700**	**-7%**
21	Storage	**Annual Change of Groundwater in Storage**	**1,300**	**-**	**-39,100**	**-3108%**	**38,400**	**2854%**	**59,700**	**4492%**
22		**Cumulative Change of Groundwater in Storage from WY 1974 to WY 2015**	**290,300**	-	-	-	-	-	-	-
23		**Net Stream Gains (Discharge - Seepage)**	**10,000**	**-**	**5,700**	**-43%**	**5,000**	**-50%**	**20,000**	**100%**
24		**Net Stream Gains / GW Pumping**	**6%**	**-**	**3%**	**-**	**3%**	**-**	**14%**	**-**

Modified Table 4D-33 Corning Subbasin 2070 Annual Groundwater Budget Summary, Annual Average by Water Year Type

	A	B	C	D	E	F	G	H	I	J
	B	Component	Average, AFY	% Contribution*	Average in Critically Dry/Dry Years, AFY	% Change from 2070 Average	Average in Below Normal/Above Normal Years, AFY	% Change from 2070 Average	Average in Wet Years, AFY	% Change from 2070 Average
25	Inflows	Deep Percolation to Groundwater	140,300	45%	96,500	-31%	156,500	17%	184,000	28%
26		Streambed Recharge	66,100	21%	57,300	-13%	73,100	12%	71,800	8%
27		Inflow from Colusa	14,300	5%	12,800	-10%	14,850	4%	16,200	13%
28		Inflow from Red Bluff	49,800	16%	49,350	-1%	50,100	1%	50,400	1%
29		Inflow from Butte	800	0.3%	650	-19%	850	8%	1,000	24%
30		Inflow from Los Molinos	25,000	8%	24,900	0%	25,300	1%	24,800	-1%
31		Inflow from Vina	12,600	4%	24,900	98%	25,300	51%	24,800	48%
32		Inflow from Foothills	1,100	0.4%	850	-23%	1,100	0%	1,200	9%
33		Recharge to Groundwater from Black Butte Lake	2,100	1%	1,750	-17%	2,400	17%	2,300	8%
34		**Total Inflows**	**312,100**		**269,000**	**-14%**	**349,500**	**12%**	**376,500**	**21%**
35	Outflows	Urban and Domestic Pumping	4,900	2%	4,900	0%	4,900	0%	4,900	0%
36		Agricultural Pumping	167,300	54%	177,400	6%	164,950	-1%	156,500	-7%
37		Outflow to Colusa	37,400	12%	38,250	2%	38,150	2%	34,800	-7%
38		Outflow to Red Bluff	9,800	3%	9,350	-5%	9,600	-2%	10,600	8%
39		Outflow to Butte	2,500	1%	2,500	0%	2,500	0%	2,300	-8%
40		Outflow to Los Molinos	8,900	3%	8,400	-6%	8,650	-3%	9,800	10%
41		Outflow to Vina	20,100	6%	18,950	-6%	19,900	-1%	21,800	9%
42		Groundwater Discharge to Streams	61,500	20%	51,050	-17%	61,800	1%	75,500	23%
43		**Total Outflows**	**312,400**		**310,800**	**-1%**	**310,450**	**-1%**	**316,200**	**1%**
44		**Total Groundwater Pumping**	**172,200**	**-**	**182,300**	**6%**	**169,850**	**-1%**	**161,400**	**-6%**
45	Storage	**Annual Change of Groundwater in Storage**	**-300**	**-**	**-41,800**	**-13833%**	**39,050**	**13117%**	**60,300**	**20200%**
46		**Cumulative Change of Groundwater in Storage Projected to 2070**	**-19,700**	-	-	-	-	-	-	-
47		**Net Stream Gains (Discharge - Seepage)**	**-4,600**	**-**	**-6,250**	**-36%**	**-11,300**	**-146%**	**3,700**	**180%**
48		**Net Stream Gains / GW Pumping**	**-2.7%**	**-**	**-3.4%**	**-**	**-6.7%**	**-**	**2.3%**	**-**

** Percent contribution of component to average total inflow/outflow. Small discrepancies between inflow minus outflow and change in storage may occur due to rounding.*

Modified Corning Subbasin Current vs 2070 Groundwater Budget

Modified Table 4D-13 Corning Subbasin Current Groundwater Budget, Annual Average by Water Year Type

Difference Between Corning Subbasin Current and Projected 2070 Annual Groundwater Budget Summary, Annual Average By Water Year Type

	A	B	C	D	E	F	G	H	I	J
	C	Component	Average Difference, AFY	% Change from Historical Average	Average in Critically Dry/Dry Years, AFY	% Change from Historical Average	Average in Below Normal/Above Normal Years, AFY	% Change from Historical Average	Average in Wet Years, AFY	% Change from Historical Average
49	Inflows	Deep Percolation to Groundwater	-1,500	-1%	-1,150	-1%	-950	-1%	-1,800	-1%
50		Streambed Recharge	8,200	14%	6,100	12%	9,700	15%	9,600	15%
51		Inflow from Colusa	-200	-1%	-200	-2%	-200	-1%	0	0%
52		Inflow from Red Bluff	1,700	4%	1,800	4%	1,850	4%	1,600	3%
53		Inflow from Butte	-200	-20%	-200	-24%	-50	-6%	-100	-9%
54		Inflow from Los Molinos	900	4%	800	3%	1,050	4%	700	3%
55		Inflow from Vina	300	2%	800	3%	1,050	4%	700	3%
56		Inflow from Foothills	-500	-31%	-400	-32%	-600	-35%	-800	-40%
57		Recharge to Groundwater from Black Butte Lake	100	5%	50	3%	100	4%	0	0%
58		**Total Change in Inflows**	**8,800**	**0%**	**7,600**	**2.9%**	**11,950**	**4%**	**9,900**	**2.7%**
59	Outflows	Urban and Domestic Pumping	0	0%	0	0%	0	0%	0	0%
60		Agricultural Pumping	14,300	9%	14,000	9%	15,400	10%	13,700	10%
61		Outflow to Colusa	3,400	10%	3,300	9%	3,700	11%	3,100	10%
62		Outflow to Red Bluff	-500	-5%	-550	-6%	-600	-6%	-400	-4%
63		Outflow to Butte	200	9%	150	6%	150	6%	200	10%
64		Outflow to Los Molinos	-700	-7%	-650	-7%	-850	-9%	-900	-8%
65		Outflow to Vina	100	1%	-100	-1%	100	1%	300	1%
66		Groundwater Discharge to Streams	-6,400	-9%	-5,850	-10%	-6,600	-10%	-6,700	-8%
67		**Total Change in Outflows**	**10,400**	**3%**	**10,300**	**3%**	**11,300**	**4%**	**9,300**	**3%**
68		**Change In Groundwater Pumping**	**14,300**	**9%**	**14,000**	**8%**	**15,400**	**10%**	**13,700**	**9%**
69	Storage	**Annual Change of Groundwater in Storage**	**-1,600**	**-123%**	**-2,700**	**-7%**	**650**	**2%**	**600**	**1%**
70		**Net Change in Stream Gains**	**-14,600**	**-146%**	**-11,950**	**-210%**	**-16,300**	**-326%**	**-16,300**	**-82%**
71		**Net Change in Stream Gains / Change in GW Pumping**	**-102%**	**-**	**-85%**	**-**	**-106%**	**-**	**-119%**	**-**

** Percent contribution of component to average total inflow/outflow. Small discrepancies between inflow minus outflow and change in storage may occur due to rounding.*

Corning Subbasin Changes in Net Stream Gains

Historical Baseline vs Projected 2070 Water Years

A

1974 to 2015 Annual Water Year Historical Baseline Surface Water Budget Components

	A	B	C	D	E	F	G	H	I
	River	Average, AFY	% Contribution	Average in Critically Dry/Dry Years, AFY	% Change from Historical Average	Average in Below Normal/Above Normal Years, AFY	% Change from Historical Average	Average in Wet Years, AFY	% Change from Historical Average
	Sacramento River - Table 4D-7								
1	Groundwater Discharge to Streams	88,700	1%	71,200	-20%	89,150	1%	113,000	27%
2	Streambed Recharge to Groundwater	7,300	<1%	13,600	86%	2,550	-65%	1,500	-79%
3	**Net Stream Gains (GW Discharge - SW Seepage)**	**81,400**	-	**57,600**	**-29%**	**86,600**	**6%**	**111,500**	**37%**
	Stony Creek and Black Butte Lake - Table 4D-9								
4	Groundwater Discharge to Streams	1,700	<1%	350	-79%	400	-76%	4,800	182%
5	Streambed Recharge to Groundwater	19,200	4%	19,550	2%	29,400	53%	10,600	-45%
6	Recharge to Groundwater from Black Butte Lake	17,800	4%	17,150	-4%	18,150	2%	18,500	4%
7	**Total Net Stream Gains (GW Discharge - SW Seepage)**	**-35,300**	-	**-36,350**	**-3%**	**-47,150**	**-34%**	**-24,300**	**31%**
8	**Stony Creek Net Stream Gains (GW Discharge - SW Seepage)**	**-17,500**	-	**-19,200**	**-10%**	**-29,000**	**-66%**	**-5,800**	**67%**
	Thomes Creek - Table 4D-11								
9	Groundwater Discharge to Streams	0	0%	0	0%	0	0%	0	0%
19	Streambed Recharge to Groundwater	27,000	11%	23,500	-13%	30,350	12%	29,300	9%
11	**Net Stream Gains (GW Discharge - SW Seepage)**	**-27,000**	-	**-23,500**	**13%**	**-30,350**	**-12%**	**-29,300**	**-9%**
	Total of Three Streams in Corning Subbasin - Table 4D-5								
12	Groundwater Discharge to Streams	90,400	1%	71,550	-21%	89,550	-1%	117,800	30%
13	Streambed Recharge to Groundwater[1]	53,500	0%	56,650	6%	62,300	16%	41,400	-23%
14	**Net Stream Gains (GW Discharge - SW Seepage)**	**36,900**	-	**14,900**	**-60%**	**27,250**	**-26%**	**76,400**	**107%**

B

Projected 2070 Annual Water Year Surface Water Budget Components

	A	B	C	D	E	F	G	H	I
	River	Average, AFY	% Contribution	Average in Critically Dry/Dry Years, AFY	% Change from 2070 Average	Average in Below Normal/Above Normal Years, AFY	% Change from 2070 Average	Average in Wet Years, AFY	% Change from 2070 Average
	Sacramento River - Table 4D-37								
15	Groundwater Discharge to Streams	49,300	<1%	38,900	-21%	48,450	-2%	64,500	31%
16	Streambed Recharge to Groundwater	31,000	<1%	44,000	42%	26,450	-15%	16,600	-46%
17	**Net Stream Gains (GW Discharge - SW Seepage)**	**18,300**	-	**-5,100**	**-128%**	**22,000**	**20%**	**47,900**	**162%**
	Stony Creek and Black Butte Lake - Table 4D-39								
18	Groundwater Discharge to Streams	600	<1%	650	8%	500	-17%	600	0%
19	Streambed Recharge to Groundwater	36,500	8%	25,300	-31%	49,600	36%	41,700	14%
20	Recharge to Groundwater from Black Butte Lake	17,100	4%	16,550	-3%	17,550	3%	17,600	3%
21	**Total Net Stream Gains (GW Discharge - SW Seepage)**	**-53,000**	-	**-41,200**	**22%**	**-66,650**	**-26%**	**-58,700**	**-11%**
22	**Stony Creek Net Stream Gains (GW Discharge - SW Seepage)**	**-35,900**	-	**-24,650**	**31%**	**-49,100**	**-37%**	**-41,100**	**-14%**
	Thomes Creek- Table 4D-41								
23	Groundwater Discharge to Streams	0	0%	0	0%	0	0%	0	0%
24	Streambed Recharge to Groundwater	32,300	11%	25,250	-22%	35,550	10%	38,700	20%
25	**Net Stream Gains (GW Discharge - SW Seepage)**	**-32,300**	-	**-25,250**	**22%**	**-35,550**	**-10%**	**-38,700**	**-20%**
	Total of Three Streams in Corning Subbasin[2]								
26	Groundwater Discharge to Streams	49,900	-	39,550	-21%	48,950	-2%	65,100	30%
27	Streambed Recharge to Groundwater[1]	99,800	-	85,800	-14%	79,550	-20%	72,900	-27%
28	**Net Stream Gains (GW Discharge - SW Seepage)**	**-49,900**	-	**-46,250**	**7%**	**-30,600**	**39%**	**-7,800**	**84%**

Percentages rounded off.

Corning Subbasin Changes in Net Stream Gains

Historical Baseline vs Projected 2070 Water Years

C

Difference Between Historical and 2070 Projected Annual Water Year Surface Water Budget Components

	A	B	C	D	E	F	G	H	I
	River	**Average, AFY**	**% Change from Historical Average**	**Average in Critically Dry/Dry Years, AFY**	**% Change from Average Difference**	**Average in Below Normal/Above Normal Years, AFY**	**% Change from Average Difference**	**Average in Wet Years, AFY**	**% Change from Average Difference**
	Change in Sacramento River								
29	Groundwater Discharge to Streams	-39,400	-144%	-32,300	18%	-40,700	-3%	-48,500	-23%
30	Streambed Recharge to Groundwater	23,700	225%	30,400	28%	23,900	1%	15,100	-36%
31	**Net Stream Gains (GW Discharge - SW Seepage)**	**-63,100**	**-178%**	**-62,700**	**1%**	**-64,600**	**-2%**	**-63,600**	**-1%**
	Change in Stony Creek and Black Butte Lake								
32	Groundwater Discharge to Streams	600	-65%	650	8%	500	-17%	600	0%
33	Streambed Recharge to Groundwater	17,300	-10%	5,750	-67%	20,200	17%	31,100	80%
34	Recharge to Groundwater from Black Butte Lake	-700	-104%	-600	14%	-600	14%	-900	-29%
35	**Total Net Stream Gains (GW Discharge - SW Seepage)**	**-16,000**	**55%**	**-4,850**	**70%**	**-19,500**	**-22%**	**-34,400**	**-115%**
36	**Stony Creek Net Stream Gains (GW Discharge - SW Seepage)**	**-18,400**	**-5%**	**-5,450**	**70%**	**-20,100**	**-9%**	**-35,300**	**-92%**
	Change in Thomes Creek								
37	Groundwater Discharge to Streams	0	0%	0	0%	0	0%	0	0%
38	Streambed Recharge to Groundwater	5,300	-80%	1,750	-67%	5,200	-2%	9,400	77%
39	**Net Stream Gains (GW Discharge - SW Seepage)**	**-5,300**	**80%**	**-1,750**	**67%**	**-5,200**	**2%**	**-9,400**	**-77%**
	Change in Total for Three Streams in Corning Subbasin[2]								
40	Groundwater Discharge to Streams	-40,500	-145%	-32,000	21%	-40,600	0.2%	-52,700	-30%
41	Streambed Recharge to Groundwater[1]	46,300	-13%	29,150	-37%	17,250	-63%	31,500	-32%
42	**Net Stream Gains (GW Discharge - SW Seepage)**	**-86,800**	**-335%**	**-61,150**	**30%**	**-57,850**	**33%**	**-84,200**	**3%**

Percentages rounded off.

1. The sum of the streambed recharge for all three streams exclude the recharge from Black Butte Lake based on the sums given in the GPS table.

2. Total for subbasin streams calculated by summing values in Tables 4D-37, 4D-39, and 4D-41.

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Modified Table 4D-3. Corning Subbasin Historical Land Surface Budget, Annual Average by Water Year Type

	A	B	C	D	E	F	G	H	I	J
	A	Component	Average, AFY	% Contribution*	Average in Critically Dry/Dry Years, AFY	% Change from Historical Average	Average in Below Normal/Above Normal Years, AFY	% Change from Historical Average	Average in Wet Years, AFY	% Change from Historical Average
1	Inflows	Precipitation	391,800	65%	282,000	-28%	427,350	9%	516,700	32%
2		Applied Groundwater	135,900	22%	144,900	7%	131,550	-3%	126,100	-7%
3		Applied SurfaceWater	79,000	13%	75,900	-4%	80,500	2%	83,200	5%
4		**Total Inflows**	**606,700**	-	**502,800**	-17%	**639,400**	5%	**726,000**	20%
5	Outflows	Deep Percolation to Groundwater	157,000	26%	112,250	-29%	171,700	9%	208,000	32%
6		Evapotranspiration	292,200	48%	280,850	-4%	297,750	2%	303,000	4%
7		Overland Flow	136,000	22%	72,350	-47%	151,550	11%	212,700	56%
8		Return Flow to Streams	19,900	3%	18,900	-5%	20,750	4%	21,000	6%
9		**Total Outflows**	**605,100**	-	**484,350**	-20%	**641,750**	6%	**744,700**	23%
10	Storage	**Change in Soil and Unsaturated Zone Storage**	**1,600**	-	**18,450**	**1053%**	**-2,350**	**-247%**	**-18,700**	**-1269%**
11		**Ratio of Deep Percolation to Total Inflows**	**25.9%**	-	**22%**	-	**27%**	-	**29%**	-

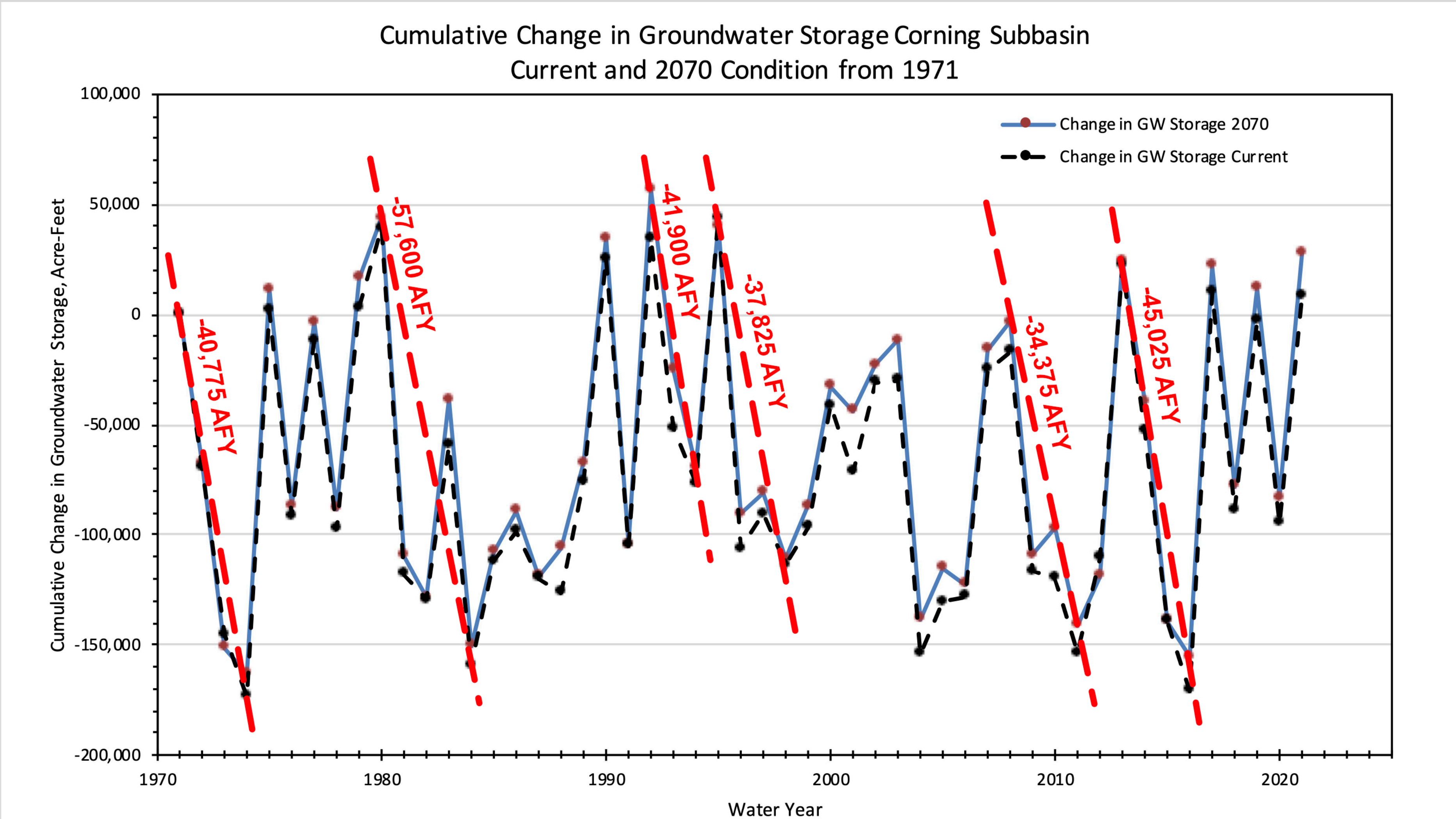
Modified Table 4D-35. Corning Subbasin Projected 2070 Land Surface Budget, Annual Average by Water Year Type

	A	B	C	D	E	F	G	H	I	J
	B	Component	Average, AFY	% Contribution*	Average in Critically Dry/Dry Years, AFY	% Change from Historical Average	Average in Below Normal/Above Normal Years, AFY	% Change from Historical Average	Average in Wet Years, AFY	% Change from Historical Average
12	Inflows	Precipitation	413,700	65%	290,250	-30%	460,400	11%	536,600	30%
13		Applied Groundwater	172,100	27%	182,150	6%	169,850	-1%	161,400	-6%
14		Applied SurfaceWater	46,400	7%	46,350	0%	46,200	0%	46,700	1%
15		**Total Inflows**	**632,200**	-	**518,750**	-18%	**676,450**	7%	**744,700**	18%
16	Outflows	Deep Percolation to Groundwater	137,800	22%	93,950	-32%	154,000	12%	181,400	32%
17		Evapotranspiration	319,800	51%	309,200	-3%	322,550	1%	331,300	4%
18		Overland Flow	158,500	25%	81,400	-49%	188,200	19%	235,000	48%
19		Return Flow to Streams	15,400	2%	15,450	0%	15,000	-3%	15,700	2%
20		**Total Outflows**	**631,500**	-	**500,000**	-21%	**679,750**	8%	**763,400**	21%
21	Storage	**Change in Soil and Unsaturated Zone Storage**	**700**	-	**18,750**	**2579%**	**-3,300**	**-571%**	**-18,700**	**-2771%**
22		**Ratio of Deep Percolation to Total Inflows**	**21.8%**	-	**18%**	-	**23%**	-	**24%**	-

Difference Between Corning Subbasin Historical and Projected 2070 Land Surface Budget, Annual Average by Water Year Type

	A	B	C	D	E	F	G	H	I	J
	C	Component	Average, AFY	% Change from Historical Average	Average in Critically Dry/Dry Years, AFY	% Change from Historical Average	Average in Below Normal/Above Normal Years, AFY	% Change from Historical Average	Average in Wet Years, AFY	% Change from Historical Average
23	Inflows	Precipitation	21,900	5.6%	8,250	2.9%	33,050	7.7%	19,900	3.9%
24		Applied Groundwater	36,200	26.6%	37,250	25.7%	38,300	29.1%	35,300	28.0%
25		Applied SurfaceWater	-32,600	-41.3%	-29,550	-38.9%	-34,300	-42.6%	-36,500	-43.9%
26		**Change in Total Inflows**	**25,500**	4.2%	**15,950**	3.2%	**37,050**	5.8%	**18,700**	2.6%
27	Outflows	Deep Percolation to Groundwater	-19,200	-12.2%	-18,300	-16.3%	-17,700	-10.3%	-26,600	-12.8%
28		Evapotranspiration	27,600	9.4%	28,350	10.1%	24,800	8.3%	28,300	9.3%
28		Overland Flow	22,500	16.5%	9,050	12.5%	36,650	24.2%	22,300	10.5%
30		Return Flow to Streams	-4,500	-22.6%	-3,450	-18.3%	-5,750	-27.7%	-5,300	-25.2%
31		**Change in Total Outflows**	**26,400**	**4.4%**	**15,650**	**3.2%**	**38,000**	**5.9%**	**18,700**	**2.5%**
32	Storage	**Change in Soil and Unsaturated Zone Storage**	**-900**	**-56.3%**	**300**	**1.6%**	**-950**	**40.4%**	**0**	**0%**
33		**Change in Deep Perc. to Change in Inflows**	**-75%**	-	**-115%**	-	**-48%**	-	**-142%**	-

* Percent contribution of component to average total inflow/outflow. Small discrepancies between inflow minus outflow and change in storage may occur due to rounding.



Data taken from Table 4D-14 and 4D-34

-45,025 AFY 2070 Projected Average Annual Loss in Groundwater Storage, acre-feet per year

Groundwater Budget Annual Average by Water Year Type	Historical, AFY	Current, AFY	2070, AFY
Average	6,900	-1,300	-300
Critically Dry / Dry	-27,450	-39,100	-41,800
Below Normal / Above Normal	47,750	38,400	39,050
Wet	57,200	59,700	60,300

Estimate of Groundwater Decline During Drought Years from Historical Change in Storage
Figure 3-22 Groundwater Change Fall 2010 to Fall 2015
Change in Groundwater Levels 2010 to 2015 by Trend Regions Figure 6-1

Regions				
Declining	**Slight Decline**	**Stable**		
-23.9	-23.1	-1.9		
-23.5	-20.5	-13.5		
-26.3	-17.0	-8.3		
-7.7	-19.2	-4.0		
-29.1	-24.2	-6.25		
-13.8	-19.6	-12.7		
-10.9	-18.4	-16.94		
-8.3	-17.7	-15.75		
-7.7	-12.6	-9.72		
	-6.5	-16.07		
	-10.1	-16.33		
	-14.0	-3.45		
	-14.7	-4.56		
	-13.7	-9.13		
	-15.0	-7.54		
	-16.27	-0.68		
	-16.43			
	-16.56			
	-13.12			
	-12.12			
-151.2	-320.8	-146.8	-618.815	Sum of Decline, feet
9	20	16	45	Number of Wells
-16.8	**-16.0**	**-9.2**	**-13.75**	Average decline, feet

Change in Storage 2010 to 2015 from Table 4D-2

Water Year	**Change in Storage, AFY**
2010	40,300
2011	62,700
2012	-39,200
2013	-40,600
2014	-91,900
2015	-45,900
Total	**-114,600**

-13.75	Average decline, feet
8,334	**Acre-Feet per Foot of Decline**
207,342	Total Acres of Corning Subbasin
4.02%	**Average Specific Yield**
150,000	Reduced Area of Water Yield
5.56%	**Average Specific Yield**
100,000	Reduced Area of Water Yield
8.33%	**Average Specific Yield**

Change in Storage 2070 CD/DWater Years

-41,800	AFY - Table 4D-33
-5.02	Feet decline per drought years
3	Average years of drought
-125,400	Total Storage loss in 3 years
-15.0	**3 years of drought average decline**
4	Average years of drought
-167,200	Total Storage loss in 4 years
-20.1	**4 years of drought average decline**

Change in Storage Historical CD/D Water Years

-27,450	AFY - Table 4D-1
-3.29	Feet decline per drought years
3	Average years of drought
-82,350	Total Storage loss in 3 years
-9.9	**3 years of drought average decline**
4	Average yrs of drought
-109,800	Total Storage loss in 4 years
-13.2	**4 years of drought average decline**

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April 22, 2022

Paul Gosselin
Department of Water Resources
901 P Street Room 213
Sacramento, CA 94236

Re: Comments to the GSP for the Corning Groundwater Basin

Dear Mr. Gosselin:

The purpose of this letter is to provide the Department of Water Resources (DWR) with the comments of Farmland Reserve, Inc. (as the landowner) and Deseret Farms of California (as the operator) to Tehama County Flood Control & Water Conservation District Groundwater Sustainability Agency and Corning Subbasin Groundwater Sustainability Agency's (collectively, the "GSAs") adopted groundwater sustainability plan (GSP). Provided are those comments:

1. The GSAs should refine Figures 6-1 and 6-2 of the GSP using the "polygon approach."

Section 6.6 of the Sustainable Management Criteria (SMC) chapter, regarding the Chronic Lowering of Groundwater Levels identifies three general zones with distinct groundwater level trends. (see GSP, Section 6.6.2.1 (Pg. 6-12 – 6-13).) The grouping of these three general zones, as illustrated in Figures 6-1 and 6-2, demonstrates the variability of groundwater conditions across the Subbasin *using oval shapes*. The "west" general zone demonstrates the area within the Subbasin in which groundwater levels are declining the most. The "central" general zone demonstrates the area within the Subbasin in which groundwater levels are only slightly declining. And finally, the "east" general zone demonstrates the area within the Subbasin in which groundwater levels are stable. Notably, however, this "oval approach" creates overlaps between each of the three general zones. This overlap could result in unclear or incorrect data and therefore affect the GSAs' overall understanding of the Subbasin and the unique characteristics of each general zone. To avoid this issue, the GSAs should refine Figures 6-1 and 6-2 using the "polygon approach."

The "polygon approach" will allow the GSAs to better define areas related to selected representative monitoring points (RMP). It will also help to avoid overlap of information, and tie in land and aquifer characteristics based on established RMPs. Vina Groundwater Sustainability Agency's (Vina GSA) use of the "polygon approach" provides a good example of how this approach can be used successfully. There, Vina GSA created management areas by dividing the subbasin into specific polygons. Each polygon, being different in shape and size, was determined by the distribution of the representative monitoring site wells in the area. Vina GSA found that its use of this approach resulted in a more refined data set for use in its GSP. Therefore, we recommend that the GSAs refine Figures 6-1 and 6-2 using the "polygon approach," and in doing so, refer to Vina GSA's development and use of this approach.

We raised this concern to the GSAs; however, their response quickly dismissed our comment, stating that:

> The three groundwater level trends do not provide a specific boundary for each trend and were not indented to be used as management areas. The generalized zones are for visual representation only.

The GSAs concern regarding a lack of specific boundaries could be easily addressed by using the "polygon approach." The "polygon approach" would eliminate any existing overlap and create those specific boundaries sought after by the GSAs. Further, while the GSAs claim that these general zones were created for "visual representation only," the fact of the matter is that each general zone depicts a unique area of the Subbasin with unique groundwater characteristics, thereby creating the beginnings of three separate management areas.

2. The GSAs should establish three management areas using those newly established polygons.

Currently, the GSAs have not established management areas within the Subbasin. (GSP, Section 6.4 (Pg. 6-6).) Notably, however, the GSAs expressly "reserve the right to establish management areas, if deemed necessary." (*Ibid*.)

As noted above, the GSAs have already identified significant differences in three areas within the Subbasin. Accordingly, we do not believe that the GSAs should subject the entire Subbasin and its stakeholders to the same management practices. Instead, we believe that management areas are necessary, and therefore recommend that the GSAs establish these areas to reflect the polygons discussed above, once established.

3. The GSAs should revise the Measurable Objectives and the Minimum Thresholds.

The GSP establishes Measurable Objectives (MO) and Minimum Thresholds (MT) for each SMC beyond what is required to achieve the GSAs' sustainability goal for the Subbasin. For example, the MTs for the Chronic Lowering of Groundwater SMC are set as follows:

- For wells that had recent historical (between 2010 and 2019) stable groundwater elevations (stable wells): Minimum fall groundwater elevation since 2012 minus 20-foot buffer.

- For wells that had recent historical (between 2010 and 2019) declining groundwater elevations (declining wells): Minimum fall groundwater elevation since 2012 minus 20% of minimum groundwater level depth.

(GSP, Section 6.6.2 (Pg. 6-8).)

These MTs provide little to no operational flexibility to landowners within the Subbasin. Instead, these MTs make it harder for landowners to operate their respective farms and ranches while working towards the sustainability goal of the Subbasin. The GSAs should look towards their neighbors, Red Bluff Subbasin GSA and Antelope Subbasin GSA, to consider potential revisions to the MTs.

Red Bluff Subbasin GSA's GSP and Antelope Subbasin GSA's GSP provide less drastic MTs. Both GSAs have set the MTs for the Chronic Lowering of Groundwater SMC as follows:

- Upper Aquifer: Spring groundwater elevation where less than 10 - 20% (on average) of domestic wells could potentially be impacted.

- Lower Aquifer: Spring groundwater elevation minus 20 to 120 feet.

(see Red Bluff Subbasin GSA GSP, Section 3.3.1.1 (Pg. 3-19); see also Antelope Subbasin GSA GSP, Section 3.3.1.1 (Pg. 3-17).)

If the GSAs' MTs were revised to reflect those of these neighboring GSAs, landowners within the Subbasin would have the flexibility needed to realistically and timely achieve the purpose of the MTs, while allowing for flexibility to weather the next 20 years and beyond. In addition, such revisions would continue to be cognitive of domestic well concerns.

Please feel free to contact us if you have any questions or wish to discuss any of our comments.

Very truly yours,

Joseph D. Hughes

JDH:AND

cc: Farmland Reserve, Inc.
Deseret Farms of California

April 23, 2022

Paul Gosselin
Deputy Director, Sustainable Groundwater Management Office
California Department of Water Resources
Sacramento, California
Submitted via SGMA GSP Portal

Re: Comments on the Corning Groundwater Sustainability Plan

Dear Deputy Director Gosselin,

On behalf of the above-listed organizations, we appreciate the opportunity to comment on the Groundwater Sustainability Plan (GSP) for the Corning Basin. Our organizations are deeply engaged in and committed to the successful implementation of the Sustainable Groundwater Management Act (SGMA) because we understand that groundwater is critical for the resilience of California's water portfolio, particularly in light of climate change. Our review focuses on how well drinking water users, disadvantaged communities, tribes, environment, stakeholder involvement, and climate change were addressed in the GSP.[1] Collectively, these issues are true indicators of sustainability. Because California's water and economy are interconnected, the sustainable management of each basin is of interest to both local communities and the state as a whole.

Under the requirements of SGMA, Groundwater Sustainability Agencies (GSAs) must consider the interests of all beneficial uses and users of groundwater, including domestic well owners, environmental users, surface water users, state and federal government, California Native American tribes, and

[1] Our organizations are non-tribal NGOs that are providing a review of the identification of federally and state recognized tribes (Data source: SGMA Data viewer) or other tribal interests identified within the GSP. We recognize that there are likely tribal interests that we are not able to detect through mapped lands and stated interests in the GSP. The lack of detection of tribal interests in our analysis should not be taken as evidence for a lack of tribal interests in a basin, but rather that our method could not identify tribal interests. We recommended during our review of draft GSPs that the GSA utilize the DWR's "Engagement with Tribal Governments" Guidance Document to comprehensively address these important beneficial users in their GSP.

disadvantaged communities (DACs).[2,3] As stakeholders, we reviewed all the draft and final versions of the 2022 GSPs. We appreciate that some basins have consulted us directly via focus groups, workshops, and working groups. Recognizing that GSPs are complicated and resource intensive to develop, we provided technical and policy relevant feedback on each of the 2022 draft GSPs directly to each GSA with the goal of supporting the improvement of GSPs prior to the submission of the final GSP to the California Department of Water Resources (DWR).

Our organizations evaluated the GSPs based on the following nine criteria:

1. Stakeholder engagement
2. Identification of DACs, domestic wells, and tribes
3. Identification of interconnected surface waters (ISWs)
4. Identification of groundwater dependent ecosystems (GDEs)
5. Incorporation of climate change in the water budget
6. Inclusion of ecosystems in the water budget
7. Consideration of impacts to DACs, drinking water users, and environmental users in the sustainable management criteria (SMC)
8. Identification and reconciliation of data gaps
9. Identification of potential impacts to beneficial users in the Projects and Management Actions

Our reviews did not assess the quality of the data provided in the GSP, but analyzed whether data were provided, what data sources were cited, how information about beneficial users of groundwater were used to develop the plan, and whether or not the GSP included plans to reconcile existing data gaps. In our review of the final GSPs, we have specifically looked to see whether the GSA responded to our comments on the draft GSP and whether corresponding edits were made in the final plan.[4]

Based on our evaluation, we found this plan to be **incomplete,** meaning that we found gaps in how beneficial users were addressed within our nine evaluation criteria. Based on this, we recommend that this plan be found incomplete and the GSA be given up to 180 days to address the missing components.

In general, we found the plan to have deficiencies in the following areas:

- DAC and environmental stakeholder engagement during the GSP development process
- Identification of GDEs
- Identification of ISWs
- Inclusion of managed wetlands in the water budget
- Consideration of DACs, drinking water users, and environmental users during the establishment of the sustainable management criteria
- Lack of firm plans for a drinking water well impact mitigation program
- Representative monitoring well locations relative to key beneficial users

Our specific comments related to the GSP in the Corning Basin along with detailed recommendations are provided in **Attachment A.** Please refer to the enclosed list of attachments for additional technical recommendations:

[2] "The groundwater sustainability agency shall consider the interests of all beneficial uses and users of groundwater" [Water Code 10723.2]
[3] "When evaluating whether a Plan is likely to achieve the sustainability goal for the basin, the Department shall consider the following: [...] (4) Whether the interests of the beneficial uses and users of groundwater in the basin, and the land uses and property interests potentially affected by the use of groundwater in the basin, have been considered." [23 CCR § 355.4(b)(4)]
[4] "When evaluating whether a Plan is likely to achieve the sustainability goal for the basin, the Department shall consider the following: [...] (10) Whether the Agency has adequately responded to comments that raise credible technical or policy issues with the Plan." [23 CCR § 355.4(b)(10)]

Attachment A GSP Specific Comments
Attachment B Freshwater species located in the basin
Attachment C Maps of representative monitoring sites in relation to key beneficial users

The success of SGMA - the sustainable management of groundwater for current and future social, economic, and environmental benefits - depends on the inclusion of *all* beneficial users in the development and implementation of GSPs. The degree to which key beneficial users are included in GSPs is a critical indicator of whether a plan is indeed on the path to sustainability. Sustainably managing our groundwater resources is critical to the long-term resilience of California's communities, economy, and environment.

We appreciate the opportunity to comment and are available to respond to any questions you might have.

Best Regards,

Ngodoo Atume
Water Policy Analyst
Clean Water Action/Clean Water Fund

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

Samantha Arthur
Working Lands Program Director
Audubon California

Roger Dickinson
Policy Director
CivicWell (formerly Local Government Commission)

E.J. Remson
Senior Project Director, California Water Program
The Nature Conservancy

Melissa M. Rohde
Groundwater Scientist
The Nature Conservancy

Attachment A

Specific Comments on the Corning Basin Final Groundwater Sustainability Plan

This attachment contains our findings for nine criteria used for the evaluation of the basin's draft and final GSP. Here, each of the nine criteria are separated into separate sections and contain a short description of our evaluation criteria and observations.

1. Stakeholder engagement
2. Identification of DACs, domestic wells, and tribes
3. Identification of interconnected surface waters (ISWs)
4. Identification of groundwater dependent ecosystems (GDEs)
5. Incorporation of climate change in the water budget
6. Inclusion of ecosystems in the water budget
7. Consideration of impacts to DACs, drinking water users, and environmental users in the sustainable management criteria (SMC)
8. Identification and reconciliation of data gaps
9. Identification of potential impacts to beneficial users in the Project and Management Actions

A table containing the original evaluation questions for each of the nine criteria are also included under the corresponding section. Within the table, there are a range of three possible answers based on how well the GSP satisfactorily answered the question. In the last column to the right of the table, we also indicate whether or not we saw improvements from the draft GSP for the corresponding question in the final GSP.

1. Stakeholder engagement

The SGMA statute requires that the GSP Notice and Communication chapter identify how stakeholders were actively engaged in the SGMA process.[5] Stakeholder engagement is critical for the GSAs to fully understand the specific interests and water demands of all beneficial users, and to support the identification and consideration of beneficial users in the development of sustainable management criteria and selection of projects and management actions. To evaluate this, we used the International Association of Public Participation (IAP2) spectrum of public participation referenced in DWR's "Stakeholder Communication and Engagement" guidance document.[6] To differentiate between engagement processes for various stakeholders, we considered participation activities that fell under the inform, consult, involve, collaborate, or empower categories. A "Yes" score was given to plans where GSAs proactively identified and targeted outreach to stakeholders to invite stakeholder perspectives into the GSP development process, such as through working groups, advisory committees and GSA board seats. While a "Somewhat" score was given to plans where GSAs had public meetings, email notifications list and public comment process. A "No" score was given to plans where the GSAs failed to identify and engage stakeholders.

However, it is important to note here that it is nearly impossible through reading the plans to decipher whether stakeholder voices are being heard and empowered via these processes. To assess actual engagement, local stakeholders would need to be directly consulted to share their feedback, which was not possible for us to assess during our evaluation of the 2022 GSPs. The expectation is that robust stakeholder engagement includes active and targeted outreach to ensure that stakeholder concerns are consistently understood and stakeholder feedback is incorporated in the decision making process. Because our evaluation of stakeholder engagement across the 2022 GSPs is limited to what is presented in the GSP text, it is possible that despite stakeholders being represented on a GSA board or advisory group that stakeholder feedback was not fully considered and incorporated into the GSP. When stakeholders are considered and empowered in the GSP development process, we would expect to see stakeholder interests adequately reflected throughout the plan.

Table 1 provides a list of questions we used to evaluate how stakeholder engagement was documented in the GSP for key stakeholders, such as DACs, tribes, and the environment. The GSP satisfactorily answered three of seven questions for this criteria. Recommendations from our Draft GSP comment letter that have not been addressed in the Final GSP are listed below.

Table 1. Questions used to evaluate stakeholder engagement in the GSP.

Does the GSP engage stakeholders?	No	Somewhat	Yes	Draft vs. Final GSP
Does the GSP document how DAC stakeholders were given opportunities to engage in the GSP development process?	Little to no mention or details of engagement	Inform OR consult	Involve, collaborate, OR empower	**No Change**
Does the GSP document how tribal stakeholders were given opportunities to engage in the GSP development process?	Little to no mention or details of engagement	Inform OR consult	Involve, collaborate, OR empower	**Draft Sufficient**
Does the GSP document how environmental stakeholders were given opportunities to engage in the GSP development process?	Little to no mention or details of engagement	Inform OR consult	Involve, collaborate, OR empower	**No Change**
Does the Stakeholder Communication and Engagement Plan or GSP include outreach to DACs during GSP implementation?	Little to no mention or details of engagement	Inform OR consult	Involve, collaborate, OR empower	**No Change**

[5] "A communication section of the Plan shall include a requirement that the GSP identify how it encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin." [23 CCR §354.10(d)(3)]
[6] California Department of Water Resources. 2018. Guidance Document for Groundwater Sustainability Plan: Stakeholder Communication and Engagement. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Assistance-and-Engagement/Files/Guidance-Doc-for-GSP---Stakeholder-Communication-and-Engagement.pdf

Does the Stakeholder Communication and Engagement Plan or GSP include outreach to tribes during GSP implementation?	Little to no mention or details of engagement	Inform OR consult	Involve, collaborate, OR empower	**Final Improved**
Does the Stakeholder Communication and Engagement Plan or GSP include outreach to environmental stakeholders during GSP implementation?	Little to no mention or details of engagement	Inform OR consult	Involve, collaborate, OR empower	**No Change**
Does the GSP include a Stakeholder Communication and Engagement Plan?	Not Included		Included	**Draft Sufficient**

RECOMMENDATIONS

- In the Communications and Engagement Plan, describe active and targeted outreach to engage DAC members, domestic well owners, and environmental stakeholders throughout the GSP development and implementation phases. Refer to "Collaborating for Success: Stakeholder Engagement for Sustainable Groundwater Management Act Implementation" for specific recommendations on how to actively engage stakeholders during all phases of the GSP process.[7]

- Continue to utilize DWR's tribal engagement guidance to comprehensively address all tribes and tribal interests in the basin within the GSP.[8]

[7] Collaborating for Success: Stakeholder Engagement for Sustainable Groundwater Management Act Implementation. Available at: https://static1.squarespace.com/static/5e83c5f78f0db40cb837cfb5/t/5f3ca8c136dbe60157dd5664/1597810892937/SGMA_Stakeholder_Engagement_White_Paper.pdf
[8] Engagement with Tribal Governments Guidance Document. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Guidance-Doc-for-SGM-Engagement-with-Tribal-Govt_ay_19.pdf

2. Identification of DACs, domestic wells, and tribes

The consideration of beneficial uses and users in GSP development is contingent upon adequate identification of *all* beneficial users, including DACs, domestic wells, and tribes.[1,2] Table 2 provides a list of questions we used to evaluate how these beneficial users were identified in the GSP. These elements are critical for the GSA to fully understand the specific interests and water demands of these beneficial users, and to support their consideration in the development of sustainable management criteria and selection of projects and management actions.

Table 2 shows the GSP satisfactorily answered all six questions for this criteria. We thank the GSA for the improvements to the identification of beneficial users from Draft to Final GSP, which include providing the map of tribal lands and providing more detail about the DAC populations in the basin.

Table 2. Questions used to evaluate the identification of DACs, domestic wells, and tribes in the GSP.

Does the GSP identify DACs, domestic wells, and tribes?	No	Somewhat	Yes	Draft vs. Final GSP
Does the GSP identify each DAC by name and location on a map?	Neither mapped NOR identified by name in text	Mapped OR identified by name in text	Mapped AND identified by name in text	**Draft Sufficient**
Are tribal lands identified and mapped in the basin?	Neither mapped NOR identified in text	Mapped OR identified in text	Mapped AND identified in text	**Final Improved**
Does the GSP describe the size of the population in each DAC?	Not included	Vaguely mentioned or mapped	Explicitly mentioned or mapped	**Final Improved**
Does the GSP map minimum well depth, or depth range of domestic wells?	Neither mapped NOR depth ranges included	Map OR depth ranges included	Map AND depth ranges included	**Final Improved**
Does the GSP map the density of domestic wells in the basin?	Not included		Included	**Draft Sufficient**
Does the GSP identify the water source for DACs?	No mention	Only general reference	Explicit identification	**Final Improved**

3. Identification of interconnected surface waters

SGMA requires that the GSP identify ISWs in the basin, including estimates of the quantity and timing of depletions.[9] Table 3 provides a list of questions we used to evaluate how well ISWs were identified in the GSP. The complete analysis of ISWs requires mapping of gaining and losing reaches and assessing the temporal variability in stream depletions to account for the inherent variability within California's Mediterranean climate. Since this relies upon seasonal and multiple water years of data, the GSP should discuss the spatial and temporal gaps in data needed to adequately characterize the interaction between groundwater and surface water within the basin. In the absence of data, the GSP should not exclude any segments with data gaps from the ISW map and instead consider and map them explicitly as potential ISWs until data gaps are reconciled. The absence of evidence is not the evidence of absence.

In our review of the identification of interconnected surface waters, we found that the GSP did not provide a clear summary of the locations of groundwater wells and their screen depths used in the analysis, and description of temporal (seasonal and interannual) variability of the data used to calibrate the model. This information should be provided in the GSP to support the conclusions presented.

Table 3 shows the GSP satisfactorily answered three of five questions for this criteria. We thank the GSA for confirming the results of the ISW modeling analysis with The Nature Conservancy's Interconnected Surface Water in the Central Valley (ICONS) website.[10] Recommendations from our Draft GSP comment letter that have not been addressed in the Final GSP are listed below.

Table 3. Questions used to evaluate the identification of ISWs in the GSP.

Does the GSP identify interconnected surface water (ISW)?	No	Somewhat	Yes	Draft vs. Final GSP
Are gaining and losing reaches adequately assessed spatially and temporally?	No ISW map	ISW map with single water year data; unclear methods	ISW map with multiple water year data; clear methods	**No Change**
Are the conclusions of ISWs consistent with the assessment?	Vague and contradictory with analysis OR No evidence to support conclusion.	Lacking some detail and evidence	Coherent with analysis and available data	**No Change**
Are all shallow principal aquifers acknowledged in defining ISW?	Not acknowledged	Not explicitly or adequately acknowledged	Acknowledged	**Draft Sufficient**
Were data gaps identified when mapping ISWs?	Not identified	Vague description	Clear identification	**Draft Sufficient**
In the case of data gaps and uncertainty, were streams mapped and described as potential ISWs in the GSP?	Not described NOR mapped	Vague description OR no map	Clearly described AND mapped temporarily and spatially	**Draft Sufficient**

[9] "Each plan shall provide a description of current and historic groundwater conditions in the basin, including data from January 1, 2015, to current conditions, based on the best available information that includes [...] (f) Identification of interconnected surface water systems within the basin and an estimate of the quantity and timing of depletions of those systems, utilizing data available from the Department, as specified in Section 353.2, or the best available information." [23 CCR § 354.16(f)]
[10] Available online at: https://icons.codefornature.org/

RECOMMENDATIONS
• Further describe the groundwater elevation data and stream flow data used in the modeling analysis. Discuss screening depth of monitoring wells and ensure they are monitoring the shallow principal aquifer. Discuss temporal (seasonal and interannual) variability of the data used to calibrate the model.

4. Identification of groundwater dependent ecosystems

SGMA requires that GDEs be identified in the GSP.[11,12] Table 4 provides a list of questions we used to evaluate how these beneficial users were identified in the GSP. These elements are critical for the GSA to fully understand the specific interests and water demands of these beneficial users, and to support their consideration in the development of sustainable management criteria and selection of projects and management actions.

In our review of the identification of GDEs, we found that the GSP improperly disregarded some mapped features in the NC dataset.[13] NC dataset polygons were incorrectly removed due to lack of data in some areas of the basin. While the GSP does acknowledge the data gap, the GSP should not ignore these GDEs just because there is a lack of data to support their characterization. The absence of evidence is not the evidence of absence. If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons as "potential GDEs" in the GSP until data gaps are reconciled in the monitoring network.

Furthermore, the GSP used depth-to-groundwater data from a single date (spring 2018) to characterize groundwater conditions supporting the basin's GDEs. We recommend using groundwater data from multiple seasons and water year types to determine the range of depth to groundwater around NC dataset polygons.

Table 4 shows the GSP satisfactorily answered five of eight questions for this criteria. Recommendations from our Draft GSP comment letter that have not been addressed in the Final GSP are listed below.

Table 4. Questions used to evaluate the identification of GDEs in the GSP.

Does the GSP identify groundwater dependent ecosystems (GDEs)?	No	Somewhat	Yes	Draft vs. Final GSP
Is there an inventory, map, or description of fauna (e.g., birds, fish, amphibian) and flora (e.g., plants) species or habitat types in the basin's GDEs? Please indicate in the notes if threatened and endangered species are identified in the GSP.	No description of flora NOR fauna in GDEs	Some details lacking on flora, fauna OR threatened or endangered species	Includes flora, fauna AND threatened or endangered species	**Final Improved**
Were GDEs in the basin identified (mapped) and described in the GSP using best available data (e.g., NC dataset, localized VegMap data)?	No GDE map	GDE map provided, but based on unclear or incorrect data/methods	GDE map included with best available data	**Draft Sufficient**
Was depth-to-groundwater data from the underlying principal aquifer used to verify the NC dataset?	Not incorporated	Incorporated, but unclear spatial or temporal data	Clearly incorporated and described	**Draft Sufficient**
Did the GSP avoid using any of the following criteria when deciding whether or not to remove NC dataset polygons from the final GDE map: 1) presence of surface water, 2) distance from agricultural fields, 3) shallow principal aquifer was not considered main pumping aquifer, 4) groundwater connection only some percentage of the time, 5) other?	No	Unclear	Yes	**No Change**
Were multiple water year types (e.g., wet, average, dry) of groundwater level data used to characterize groundwater conditions in the GDEs?	No	Unclear	Yes	**No Change**

[11] "Each plan shall provide a description of current and historic groundwater conditions in the basin, including data from January 1, 2015, to current conditions, based on the best available information that includes [... (g)] Identification of GDEs within the basin, utilizing data available from the Department, as specified in Section 353.2, or the best available information." [23 CCR § 354.16(g)]
[12] Refer to Attachment B for a list of freshwater species located in the basin.
[13] Department of Water Resources. 2018. Natural Communities Commonly Associated with Groundwater dataset (NC Dataset). Available at: https://gis.water.ca.gov/app/NCDatasetViewer/.

Were depth-to-groundwater measurements under GDEs corrected for land surface elevations?	No	Unclear	Yes	**Final Improved**
Were data gaps identified when mapping GDEs?	Data gaps not identified	Data gaps described vaguely	Data gaps described clearly	**Draft Sufficient**
In the case of data gaps and uncertainty, were potential GDEs mapped and described in the GSP?	Not mapped NOR described	No map OR vague description	Clearly mapped AND described	**No Change**

RECOMMENDATIONS

- Use depth-to-groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) to determine the range of depth to groundwater around NC dataset polygons. We recommend that a baseline period (10 years from 2005 to 2015) be established to characterize groundwater conditions over multiple water year types. Refer to The Nature Conservancy's "Identifying GDEs under SGMA: Best Practices for using the NC Dataset" for best practices for using local groundwater data to verify whether polygons in the NC Dataset are supported by groundwater in an aquifer.[14]
- Refer to The Nature Conservancy's plant rooting depth database.[15] Deeper thresholds are necessary for plants that have reported maximum root depths that exceed the averaged 30-ft threshold, such as valley oak (*Quercus lobata*). We recommend that the reported max rooting depth for these deeper-rooted plants be used, if these species are present in the basin. For example, a depth-to-groundwater threshold of 80 feet should be used instead of the 30-ft threshold, when verifying whether valley oak polygons from the NC Dataset are connected to groundwater.
- If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons as "potential GDEs" in the GSP until data gaps are reconciled in the monitoring network.
- For more information on shallow groundwater conditions in the basin, refer to The Nature Conservancy's new tool, "SAGE: Shallow Groundwater Estimation Tool", which uses machine learning and 35 years of satellite data to predict depth to groundwater and determine groundwater level trends for every polygon within the NC Dataset.[16,17]

[14] The Nature Conservancy's "Identifying GDEs under SGMA: Best Practices for using the NC Dataset." Available at: https://groundwaterresourcehub.org/public/uploads/pdfs/TNC_NCdataset_BestPracticesGuide_2019.pdf
[15] The Nature Conservancy's plant rooting depth database. Available at: https://groundwaterresourcehub.org/sgma-tools/gde-rooting-depths-database-for-gdes/
[16] Webtool available at: https://igde-work.earthengine.app/view/sage
[17] Rohde, M.M., T. Biswas, I.W. Housman, L.S. Campbell, K.R. Klausmeyer, J.K. Howard. 2021. A machine learning approach to predict groundwater levels in California reveals ecosystems at risk. *Frontiers in Earth Science*, doi: 10.3389/feart.2021.784499. Available at: https://www.frontiersin.org/articles/10.3389/feart.2021.784499/full

5. Incorporation of climate change in the water budget

The SGMA statute identifies climate change as a significant threat to groundwater resources and one that must be examined and incorporated in the GSPs. The GSP Regulations require integration of climate change into the projected water budget to ensure that projects and management actions sufficiently account for the range of potential climate futures.[18]

In our review of climate change in the projected water budget, we found that the GSP did incorporate climate change into the projected water budget using DWR change factors for 2030 and 2070. However, the GSP did not consider multiple climate scenarios (such as the 2070 wet and 2070 extremely dry climate scenarios) in the projected water budget. The GSP would benefit from clearly and transparently incorporating the extremely wet and dry scenarios provided by DWR into projected water budgets or selecting more appropriate extreme scenarios for the basin. While these extreme scenarios may have a lower likelihood of occurring and their consideration is only suggested by DWR, their consequences could be significant and their inclusion can help identify important vulnerabilities in the basin's approach to groundwater management.

We also found it unclear whether the GSP adjusted imported water for climate change and incorporated it into the surface water flow inputs of the projected water budget.

Table 5 shows the GSP satisfactorily answered four of six relevant questions for this criteria. Recommendations that would improve the Final GSP are listed below.

Table 5. Questions used to evaluate whether the GSP accounted for climate change.

Does the GSP account for climate change in the water budget?	No	Somewhat	Yes	Draft vs. Final GSP
Does the GSP incorporate climate change into the projected water budget using DWR change factors or other source?	No	Unclear	Yes	Draft Sufficient
Does the GSP consider multiple climate scenarios (e.g., the 2070 wet and 2070 extremely dry) scenarios in the projected water budget?	No	Somewhat	Yes	No Change
Does the GSP incorporate climate change into precipitation inputs for the projected water budget?	No	Unclear	Yes	Draft Sufficient
Does the GSP incorporate climate change into evapotranspiration inputs for the projected water budget?	No	Unclear	Yes	Draft Sufficient
Does the GSP incorporate climate change into surface water flow inputs (e.g., imported water, streamflow) for the projected water budget?	No	Unclear	Yes	No Change
Does the GSP incorporate climate change into sea level inputs for the projected water budget?	No	Unclear	Yes	Not Applicable
Does the GSP calculate a sustainable yield based on the projected water budget with climate change incorporated?	No		Yes	Draft Sufficient

[18] "Each Plan shall rely on the best available information and best available science to quantify the water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow." [23 CCR §354.18(e)]

RECOMMENDATIONS

- Integrate climate change, including extremely wet and dry scenarios, into all elements of the projected water budget to form the basis for development of sustainable management criteria and projects and management actions.
- Incorporate climate change into imported water inputs for the projected water budget.

6. Inclusion of ecosystems in the water budget

Native vegetation and managed wetlands are water use sectors that are required to be included into the water budget.[19,20] Based on our review, we found native vegetation was properly included in the water budget. The GSP did not include the current, historical, and projected demands of managed wetlands. The GSP states that managed wetlands exist along the Sacramento River and are managed by the Sacramento River National Wildlife Refuge.

Table 6 shows the GSP satisfactorily answered one of two questions for this criteria. Recommendations from our Draft GSP comment letter that have not been addressed in the Final GSP are listed below.

Table 6. Questions used to evaluate whether the GSP accounted for ecosystems in the water budget.

Does the GSP account for ecosystems in the water budget?	No	Somewhat	Yes	Draft vs. Final GSP
Does the GSP include water demands for native vegetation in the historic, current, and projected water budgets?	No	Vague description	Yes	**Draft Sufficient**
Does the GSP include water demands for managed wetlands in the historic, current, and projected water budgets?	No	Vague description	Yes	**No Change**

RECOMMENDATIONS

- Quantify and present all water use sector demands in the historical, current, and projected water budgets with individual line items for each water use sector, including managed wetlands.

[19] "'Water use sector' refers to categories of water demand based on the general land uses to which the water is applied, including urban, industrial, agricultural, managed wetlands, managed recharge, and native vegetation." [23 CCR §351(al)]
[20] "The water budget shall quantify the following, either through direct measurements or estimates based on data: (3) Outflows from the groundwater system by water use sector, including evapotranspiration, groundwater extraction, groundwater discharge to surface water sources, and subsurface groundwater outflow." [23 CCR §354.18]

7. Consideration of impacts to DACs, drinking water users, and environmental users in the sustainable management criteria?

The consideration of potential impacts on *all* beneficial users of groundwater in the basin are required when defining undesirable results and establishing minimum thresholds.[21,22,23] Table 7 provides a list of questions we used to evaluate the consideration of DACs, drinking water users, and environmental users in the sustainable management criteria of the GSP. Adequate consideration of potential impacts on these beneficial users is contingent upon adequate identification and engagement of the appropriate stakeholders, and is essential for ensuring the GSP integrates existing state policies on the Human Right to Water and the Public Trust Doctrine.[24]

SGMA requires that the sustainable management criteria be consistent with the Human Right to Water policy and avoid significant and unreasonable impacts on drinking water users. The GSP should describe direct and indirect impacts on DACs and drinking water users when defining undesirable results and minimum thresholds for chronic lowering of groundwater levels and degraded water quality.

> Disadvantaged Communities (DACs)
>
> The GSP does not provide an analysis of the direct or indirect impacts on DACs when defining undesirable results. In addition, the GSP does not provide an analysis of the impacts of the proposed minimum thresholds nor measurable objectives for the groundwater elevation nor water quality sustainability indicators. This is particularly concerning given the absence of firm plans for a drinking water well mitigation program in the GSP.
>
> Drinking Water Users
>
> The GSP provides an analysis of the impacts of the proposed minimum thresholds for the groundwater elevation and water quality sustainability indicators. While the GSP does provide an analysis of the impacts of the proposed measurable objectives for the groundwater elevation sustainability indicator, it does not provide an analysis for the water quality sustainability indicator. The GSP does not provide an analysis of the direct or indirect impacts on drinking water users when defining undesirable results. This is particularly concerning given the absence of firm plans for a drinking water well mitigation program in the GSP.

SGMA specifically requires that GSPs include "impacts on groundwater dependent ecosystems" and to assess whether surface water depletions caused by groundwater use are having an adverse impact on beneficial users of surface water and groundwater.[25,26,27] The GSP should describe direct and indirect impacts on GDEs and instream habitats within ISWs when defining undesirable results and minimum thresholds for chronic lowering of groundwater levels, degraded water quality, and depletion of interconnected surface water.

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[21] "The description of undesirable results shall include [...] potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results." [23 CCR §354.26(b)(3)]
[22] "The description of minimum thresholds shall include [...] how minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests." [23 CCR §354.28(b)(4)]
[23] "The description of minimum thresholds shall include [...] how state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the agency shall explain the nature of and the basis for the difference." [23 CCR §354.28(b)(5)]
[24] "The Department shall consider the state policy regarding the human right to water when implementing these regulations." [23 CCR §350.4(g)]
[25] "The minimum threshold for depletions of interconnected surface water shall be the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results." [23 CCR §354.28(c)(6)]
[26] "The description of minimum thresholds shall include the following: [...] (4) How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests." [23 CCR §354.28(b)(4)]
[27] Water Code §10727.4(l)

Environmental Users

For the depletion of interconnected surface water sustainability indicator, the GSP provides an analysis of the direct or indirect impacts on GDEs and environmental beneficial users of surface water when defining undesirable results. The GSP provides an analysis of the impacts of the proposed minimum thresholds, but does not provide an analysis of measurable objectives.

For the groundwater elevation and water quality sustainability indicators, the GSP does not provide an analysis of the direct or indirect impacts on GDEs when defining undesirable results. In addition, the GSP does not provide an analysis of the impacts of the proposed minimum thresholds nor measurable objectives.

Table 7 shows the GSP satisfactorily answered two of eleven questions for this criteria. Recommendations from our Draft GSP comment letter that have not been addressed in the Final GSP are listed below.

Table 7. Questions used to evaluate the consideration of DACs, drinking water users, and environmental users in the sustainable management criteria of the GSP.

Does the GSP consider impacts to DACs, drinking water users, and GDEs in the sustainable management criteria?	No	Somewhat	Yes	Draft vs. Final GSP
Does the GSP analyze direct or indirect impacts on domestic drinking wells when defining Undesirable Results?	No mention	Mentioned, but not well analyzed	Analyzed and described	No Change
Does the GSP analyze direct and indirect impacts on DACs when defining Undesirable Results?	No mention	Mentioned, but not well analyzed	Analyzed and described	No Change
Does the GSP analyze direct and indirect impacts on GDEs when defining Undesirable Results?	No mention	Mentioned, but not well analyzed	Analyzed and described	No Change
Does the GSP evaluate the cumulative or indirect impacts of proposed groundwater elevation and water quality minimum thresholds on drinking water users (e.g., domestic wells, municipal water suppliers)?	No mention	Mentioned, but not well analyzed for all relevant sustainability indicators	Analyzed and described	Draft Sufficient
Does the GSP evaluate the cumulative or indirect impacts of proposed groundwater elevation and water quality minimum thresholds on DACs?	No mention	Mentioned, but not well analyzed for all relevant sustainability indicators	Analyzed and described	Final Improved
Does the GSP evaluate the cumulative or indirect impacts of proposed minimum thresholds for groundwater elevations and ISW on GDEs or environmental beneficial users of surface water?	No mention	Mentioned, but not well analyzed for all relevant sustainability indicators	Analyzed and described	No Change
Does the GSP establish Water Quality minimum thresholds and measurable objectives for the identified constituents/contaminants identified in the plan area?	No	Only for some constituents of concern	Yes	No Change
Are Water Quality minimum thresholds based on or within the Maximum Contaminant levels (MCLs)?	No	Only for some constituents of concern	Yes	Draft Sufficient
Does the GSP consider drinking water users when establishing water quality and groundwater elevation measurable objectives?	No mention	Mentioned, but not well analyzed for all relevant sustainability indicators	Analyzed and described	No Change
Does the GSP consider DACs when establishing water quality and groundwater elevation measurable objectives?	No mention	Mentioned, but not well analyzed for all relevant sustainability indicators	Analyzed and described	No Change
Does the GSP consider GDEs when establishing ISW and groundwater elevation measurable objectives?	No mention	Mentioned, but not well analyzed for all relevant sustainability indicators	Analyzed and described	No Change

RECOMMENDATIONS

- Describe direct and indirect impacts on drinking water users and DACs when describing undesirable results and defining minimum thresholds for chronic lowering of groundwater levels.
- Describe direct and indirect impacts on drinking water users and DACs when defining undesirable results for degraded water quality. For specific guidance on how to consider these users, refer to "Guide to Protecting Water Quality Under the Sustainable Groundwater Management Act."[28]
- Evaluate the cumulative or indirect impacts of proposed minimum thresholds for degraded water quality on drinking water users and DACs.
- Set minimum thresholds and measurable objectives for all water quality constituents within the basin. Ensure they align with drinking water standards.[29]
- Define chronic lowering of groundwater SMC directly for environmental beneficial users of groundwater. When defining undesirable results for chronic lowering of groundwater levels, provide specifics on what biological responses (e.g., extent of habitat, growth, recruitment rates) would best characterize a significant and unreasonable impact on GDEs. Undesirable results to environmental users occur when 'significant and unreasonable' effects on beneficial users are caused by one of the sustainability indicators (i.e., chronic lowering of groundwater levels, degraded water quality, or depletion of interconnected surface water). Thus, potential impacts on environmental beneficial uses and users need to be considered when defining undesirable results in the basin.[30] Defining undesirable results is the crucial first step before the minimum thresholds can be determined.[31]
- When establishing SMC for the basin, consider that the SGMA statute [Water Code §10727.4(l)] specifically calls out that GSPs shall include "impacts on groundwater dependent ecosystems".
- To identify beneficial users in the basin that may be at risk to groundwater level declines, refer to The Nature Conservancy's new tool, "SAGE: Shallow Groundwater Estimation Tool", which uses machine learning and 35 years of satellite data to predict depth to groundwater for each polygon within the NC Dataset.[16,17]

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[28] Guide to Protecting Water Quality under the Sustainable Groundwater Management Act https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858

[29] "Degraded Water Quality [...] collect sufficient spatial and temporal data from each applicable principal aquifer to determine groundwater quality trends for water quality indicators, as determined by the Agency, to address known water quality issues." [23 CCR §354.34(c)(4)]

[30] "The description of undesirable results shall include [...] potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results". [23 CCR §354.26(b)(3)]

[31] The description of minimum thresholds shall include [...] how minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests." [23 CCR §354.28(b)(4)]

8. Identification and reconciliation of data gaps

Adaptive Management is at the core of SGMA. SGMA also requires that impacts to beneficial uses or users of groundwater be monitored.[32] Beneficial users may remain unprotected by the GSP without adequate monitoring. When data gaps are not identified, particularly in shallow aquifers, impacts disproportionately threaten GDEs, aquatic habitats, and shallow domestic well water users. In addition to monitoring wells, biological monitoring is an important component to ensure impacts to GDEs do not occur.[12] Table 8 provides a list of questions we used to evaluate whether the GSP identified data gaps in the monitoring network and made plans to reconcile them. In many cases, GSPs did not provide adequate mapping to clearly convey whether current and proposed monitoring well locations sufficiently monitored groundwater conditions for key beneficial users. For this reason, we created a set of maps (provided in Attachment C) that we included in the draft GSP comment letters to help us evaluate the questions in Table 8.

In our review, we found that the GSP did not identify and reconcile data gaps for some beneficial users in the basin. Table 8 shows the GSP satisfactorily answered one of four questions for this criteria. Recommendations from our Draft GSP comment letter that have not been addressed in the Final GSP are listed below.

Table 8. Questions used to evaluate whether the GSP identified data gaps and made plans to reconcile them.

Does the GSP identify and reconcile data gaps?	No	Somewhat	Yes	Draft vs. Final GSP
Do the Representative Monitoring Sites (RMS) in the monitoring network adequately represent water quality conditions around DACs, domestic wells, tribes, and GDEs (in the case of data gaps, evaluate proposed monitoring sites)?	Not present within DAC, domestic well, tribal areas, NOR GDEs.	Not adequately cover DAC, domestic well, tribal areas, OR GDEs.	Adequately distributed (<1 mi) across DAC, domestic well, tribal areas, AND GDEs.	**No Change**
Do the Representative Monitoring Sites (RMS) in the monitoring network adequately represent shallow groundwater elevations around DACs, domestic wells, tribes, and GDEs (in the case of data gaps, evaluate proposed monitoring sites).	Not present within DAC, domestic well, tribal areas, NOR GDEs.	Not adequately cover DAC, domestic well, tribal areas, OR GDEs.	Adequately distributed (<1 mi) across DAC, domestic well, tribal areas, AND GDEs.	**No Change**
Does the GSP include a plan to identify and fill shallow monitoring well data gaps around GDEs and ISWs in the monitoring network?	No	Vague description	Yes	**No Change**
Does the GSP include any plans to incorporate GDE-related biological monitoring into the monitoring network?	No	Vague description	Yes	**Draft Sufficient**

RECOMMENDATIONS

- Provide maps that overlay current and proposed monitoring well locations with the locations of DACs, domestic wells, GDEs, and ISWs to clearly identify potentially impacted areas.
- Increase the number of representative monitoring sites (RMSs) in the shallow aquifer across the basin as needed to adequately monitor all groundwater condition indicators across the basin and at appropriate depths. Prioritize proximity to DACs, domestic wells, and GDEs when identifying new RMSs.

[32] "The monitoring network objectives shall be implemented to accomplish the following: [...] (2) Monitor impacts to the beneficial uses or users of groundwater." [23 CCR §354.34(b)(2)]

- Prioritize the installation of new wells around beneficial uses most susceptible to groundwater decline by referring to The Nature Conservancy's new tool, "SAGE: Shallow Groundwater Estimation Tool", which uses machine learning and 35 years of satellite data to predict depth to groundwater for each polygon within the NC Dataset.[33,34]

[33] Webtool available at: https://igde-work.earthengine.app/view/sage
[34] Rohde, M.M., T. Biswas, I.W. Housman, L.S. Campbell, K.R. Klausmeyer, J.K. Howard. 2021. A machine learning approach to predict groundwater levels in California reveals ecosystems at risk. *Frontiers in Earth Science*, doi: 10.3389/feart.2021.784499. Available at: https://www.frontiersin.org/articles/10.3389/feart.2021.784499/full

9. Identification of potential impacts to beneficial users in the Project and Management Actions

Project and Management Actions are essential for ensuring the basin stays within or achieves its sustainable yield and avoids undesirable results for *all* beneficial users in the basin. Therefore, it is important that the GSP identifies benefits or impacts of project and management actions to key beneficial users. Table 9 provides a list of questions we used to evaluate whether benefits and potential impacts to beneficial users were identified in the GSP's Project and Management Actions. While not all projects and management actions are applicable to every basin, the GSP should include benefits and evaluate impacts to vulnerable beneficial users in all planned projects and management actions, and include a drinking water well mitigation program to protect drinking water. We assessed whether or not the projects had specific plans (such as a timeline and funding) in place during the GSP planning horizon, or whether it was described as a potential future project.

Table 9 shows the GSP satisfactorily answered three of six questions for this criteria. Recommendations that would improve the Final GSP are listed below.

Table 9. Questions used to evaluate whether potential impacts to beneficial users were identified in the GSP's Project and Management Actions.

Does the GSP identify potential impacts to beneficial users in the Project and Management Actions?	No	Somewhat	Yes	Draft vs. Final GSP
Does the GSP include any recharge projects with explicit benefits to the environment?	No	Vague description or listed as potential project	Yes	**Draft Sufficient**
Does the GSP include any habitat or stream restoration or invasive species removal projects (e.g., to improve water supply in the basin or GDE habitats)?	No	Vague description or listed as potential project	Yes	**Draft Sufficient**
Does the GSP identify benefits or impacts of identified projects and management actions to key beneficial users such as GDEs, drinking water users, tribes, DACs?	No	Vague description	Yes	**Draft Sufficient**
Does the GSP include any recharge projects with explicit benefits to DACs?	No	Vague description or listed as potential project	Yes	**No Change**
Does the GSP include a drinking water well mitigation program to avoid significant and unreasonable loss of drinking water?	No	Vague description or listed as potential project	Yes	**No Change**
Does the GSP identify potential impacts to water quality from Projects and Management Actions?	No	Vague description or listed as potential project	Yes	**No Change**

RECOMMENDATIONS

- For DACs and domestic well owners, include detailed plans for a drinking water well impact mitigation program to proactively monitor and protect drinking water wells through GSP implementation. Refer to "Framework for a Drinking Water Well Impact Mitigation Program" for specific recommendations on how to implement a drinking water well mitigation program.[35]

[35] Framework for a Drinking Water Well Impact Mitigation Program. Available at: https://static1.squarespace.com/static/5e83c5f78f0db40cb837cfb5/t/5f3ca9389712b732279e5296/1597811008129/Well_Mitigation_English.pdf

- For DACs and domestic well owners, include a discussion of whether potential impacts to water quality from projects and management actions could occur and how the GSA plans to mitigate such impacts.

Attachment B

Freshwater Species Located in the Corning Subbasin

To assist in identifying the beneficial users of surface water necessary to assess the undesirable result "depletion of interconnected surface waters", Attachment C provides a list of freshwater species located in the Corning Subbasin. To produce the freshwater species list, we used ArcGIS to select features within the California Freshwater Species Database version 2.0.9 within the basin boundary. This database contains information on ~4,000 vertebrates, macroinvertebrates and vascular plants that depend on fresh water for at least one stage of their life cycle. The methods used to compile the California Freshwater Species Database can be found in Howard et al. 2015[1]. The spatial database contains locality observations and/or distribution information from ~400 data sources. The database is housed in the California Department of Fish and Wildlife's BIOS[2] as well as on The Nature Conservancy's science website[3].

Scientific Name	Common Name	Legal Protected Status		
		Federal	State	Other
BIRDS				
Agelaius tricolor	Tricolored Blackbird	Bird of Conservation Concern	Special Concern	BSSC - First priority
Coccyzus americanus occidentalis	Western Yellow-billed Cuckoo	Candidate - Threatened	Endangered	
Riparia riparia	Bank Swallow		Threatened	
Actitis macularius	Spotted Sandpiper			
Aechmophorus clarkii	Clark's Grebe			
Aechmophorus occidentalis	Western Grebe			
Aix sponsa	Wood Duck			
Anas acuta	Northern Pintail			
Anas americana	American Wigeon			
Anas clypeata	Northern Shoveler			
Anas crecca	Green-winged Teal			
Anas cyanoptera	Cinnamon Teal			
Anas platyrhynchos	Mallard			
Anas strepera	Gadwall			
Anser albifrons	Greater White-fronted Goose			
Ardea alba	Great Egret			
Ardea herodias	Great Blue Heron			
Aythya affinis	Lesser Scaup			
Aythya collaris	Ring-necked Duck			
Aythya marila	Greater Scaup			
Aythya valisineria	Canvasback		Special	

[1] Howard, J.K. et al. 2015. Patterns of Freshwater Species Richness, Endemism, and Vulnerability in California. PLoSONE, 11(7). Available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0130710

[2] California Department of Fish and Wildlife BIOS: https://www.wildlife.ca.gov/data/BIOS

[3] Science for Conservation: https://www.scienceforconservation.org/products/california-freshwater-species-database

Botaurus lentiginosus	American Bittern			
Bucephala albeola	Bufflehead			
Bucephala clangula	Common Goldeneye			
Butorides virescens	Green Heron			
Calidris alpina	Dunlin			
Calidris mauri	Western Sandpiper			
Calidris minutilla	Least Sandpiper			
Chen caerulescens	Snow Goose			
Chen rossii	Ross's Goose			
Chlidonias niger	Black Tern		Special Concern	BSSC - Second priority
Chroicocephalus philadelphia	Bonaparte's Gull			
Cistothorus palustris palustris	Marsh Wren			
Cygnus columbianus	Tundra Swan			
Egretta thula	Snowy Egret			
Empidonax traillii	Willow Flycatcher	Bird of Conservation Concern	Endangered	
Fulica americana	American Coot			
Gallinago delicata	Wilson's Snipe			
Geothlypis trichas trichas	Common Yellowthroat			
Grus canadensis	Sandhill Crane			
Haliaeetus leucocephalus	Bald Eagle	Bird of Conservation Concern	Endangered	
Himantopus mexicanus	Black-necked Stilt			
Icteria virens	Yellow-breasted Chat		Special Concern	BSSC - Third priority
Limnodromus scolopaceus	Long-billed Dowitcher			
Lophodytes cucullatus	Hooded Merganser			
Megaceryle alcyon	Belted Kingfisher			
Mergus merganser	Common Merganser			
Mergus serrator	Red-breasted Merganser			
Numenius americanus	Long-billed Curlew			
Numenius phaeopus	Whimbrel			
Nycticorax nycticorax	Black-crowned Night-Heron			
Oxyura jamaicensis	Ruddy Duck			
Pandion haliaetus	Osprey		Watch list	
Pelecanus erythrorhynchos	American White Pelican		Special Concern	BSSC - First priority
Phalacrocorax auritus	Double-crested Cormorant			

Phalaropus tricolor	Wilson's Phalarope			
Plegadis chihi	White-faced Ibis		Watch list	
Pluvialis squatarola	Black-bellied Plover			
Podiceps nigricollis	Eared Grebe			
Podilymbus podiceps	Pied-billed Grebe			
Porzana carolina	Sora			
Recurvirostra americana	American Avocet			
Setophaga petechia	Yellow Warbler			BSSC - Second priority
Tachycineta bicolor	Tree Swallow			
Tringa melanoleuca	Greater Yellowlegs			
Xanthocephalus xanthocephalus	Yellow-headed Blackbird		Special Concern	BSSC - Third priority
CRUSTACEANS				
Branchinecta lynchi	Vernal Pool Fairy Shrimp	Threatened	Special	IUCN - Vulnerable
Lepidurus packardi	Vernal Pool Tadpole Shrimp	Endangered	Special	IUCN - Endangered
Linderiella occidentalis	California Fairy Shrimp		Special	IUCN - Near Threatened
FISH				
Oncorhynchus mykiss irideus	Coastal rainbow trout			Least Concern - Moyle 2013
Acipenser medirostris ssp. 1	Southern green sturgeon	Threatened	Special Concern	Endangered - Moyle 2013
Oncorhynchus mykiss - CV	Central Valley steelhead	Threatened	Special	Vulnerable - Moyle 2013
Oncorhynchus tshawytscha - CV spring	Central Valley spring Chinook salmon	Threatened	Threatened	Vulnerable - Moyle 2013
Oncorhynchus tshawytscha - CV winter	Central Valley winter Chinook salmon	Endangered	Endangered	Vulnerable - Moyle 2013
HERPS				
Actinemys marmorata marmorata	Western Pond Turtle		Special Concern	ARSSC
Anaxyrus boreas boreas	Boreal Toad			
Rana boylii	Foothill Yellow-legged Frog	Under Review in the Candidate or Petition Process	Special Concern	ARSSC
Rana draytonii	California Red-legged Frog	Threatened	Special Concern	ARSSC
Spea hammondii	Western Spadefoot	Under Review in the Candidate or	Special Concern	ARSSC

		Petition Process		
Thamnophis gigas	Giant Gartersnake	Threatened	Threatened	
Thamnophis sirtalis sirtalis	Common Gartersnake			
Pseudacris regilla	Northern Pacific Chorus Frog			
INSECTS & OTHER INVERTS				
Anax junius	Common Green Darner			
Argia emma	Emma's Dancer			
Argia lugens	Sooty Dancer			
Sympetrum corruptum	Variegated Meadowhawk			
Tramea lacerata	Black Saddlebags			
MAMMALS				
Castor canadensis	American Beaver			Not on any status lists
Lontra canadensis canadensis	North American River Otter			Not on any status lists
Neovison vison	American Mink			Not on any status lists
Ondatra zibethicus	Common Muskrat			Not on any status lists
MOLLUSKS				
Anodonta californiensis	California Floater		Special	
Gonidea angulata	Western Ridged Mussel		Special	
Margaritifera falcata	Western Pearlshell		Special	
PLANTS				
Downingia pusilla	Dwarf Downingia		Special	CRPR - 2B.2
Alisma triviale	Northern Water-plantain			
Alopecurus saccatus	Pacific Foxtail			
Ammannia robusta	Grand Redstem			
Arundo donax	NA			
Azolla filiculoides	NA			
Baccharis salicina				Not on any status lists
Bergia texana	Texas Bergia			
Callitriche heterophylla bolanderi	Large Water-starwort			
Callitriche heterophylla heterophylla	Northern Water-starwort			
Callitriche marginata	Winged Water-starwort			
Carex densa	Dense Sedge			
Carex vulpinoidea	NA			
Cicendia quadrangularis	Oregon Microcala			
Crassula aquatica	Water Pygmyweed			
Crypsis vaginiflora	NA			

Cyperus erythrorhizos	Red-root Flatsedge			
Cyperus squarrosus	Awned Cyperus			
Downingia bella	Hoover's Downingia			
Downingia cuspidata	Toothed Calicoflower			
Echinodorus berteroi	Upright Burhead			
Eleocharis acicularis acicularis	Least Spikerush			
Eleocharis macrostachya	Creeping Spikerush			
Eleocharis radicans	Rooted Spikerush			
Epilobium cleistogamum	Cleistogamous Spike-primrose			
Eragrostis hypnoides	Teal Lovegrass			
Eryngium vaseyi vaseyi	Vasey's Coyote-thistle			Not on any status lists
Gratiola ebracteata	Bractless Hedge-hyssop			
Gratiola heterosepala	Boggs Lake Hedge-hyssop		Endangered	CRPR - 1B.2
Hypericum anagalloides	Tinker's-penny			
Isoetes howellii	NA			
Juncus acuminatus	Sharp-fruit Rush			
Juncus uncialis	Inch-high Rush			
Lasthenia fremontii	Fremont's Goldfields			
Legenere limosa	False Venus'-looking-glass		Special	CRPR - 1B.1
Lemna minor	Lesser Duckweed			
Ludwigia peploides peploides	NA			Not on any status lists
Marsilea vestita vestita	NA			Not on any status lists
Mimulus pilosus				Not on any status lists
Myosurus minimus	NA			
Myosurus sessilis	Sessile Mousetail			
Navarretia heterandra	Tehama Navarretia			
Navarretia leucocephala leucocephala	White-flower Navarretia			
Navarretia leucocephala minima	Least Navarretia			
Persicaria amphibia				Not on any status lists
Phyla lanceolata	Fog-fruit			
Phyla nodiflora	Common Frog-fruit			
Pilularia americana	NA			
Plagiobothrys austiniae	Austin's Popcorn-flower			
Plagiobothrys greenei	Greene's Popcorn-flower			

Plagiobothrys leptocladus	Alkali Popcorn-flower			
Pleuropogon californicus californicus				Not on any status lists
Pogogyne douglasii	NA			
Pogogyne zizyphoroides				Not on any status lists
Potamogeton nodosus	Longleaf Pondweed			
Psilocarphus brevissimus brevissimus	Dwarf Woolly-heads			
Psilocarphus oregonus	Oregon Woolly-heads			
Rorippa curvisiliqua curvisiliqua	Curve-pod Yellowcress			
Sagittaria latifolia latifolia	Broadleaf Arrowhead			
Sagittaria longiloba	Longbarb Arrowhead			
Salix exigua exigua	Narrowleaf Willow			
Salix gooddingii	Goodding's Willow			
Salix laevigata	Polished Willow			
Salix lasiolepis lasiolepis	Arroyo Willow			
Salix melanopsis	Dusky Willow			
Schoenoplectus acutus occidentalis	Hardstem Bulrush			
Sidalcea hirsuta	Hairy Checker-mallow			
Stachys stricta	Sonoma Hedge-nettle			
Typha latifolia	Broadleaf Cattail			
Zannichellia palustris	Horned Pondweed			

Attachment C

Maps of representative monitoring sites in relation to key beneficial users

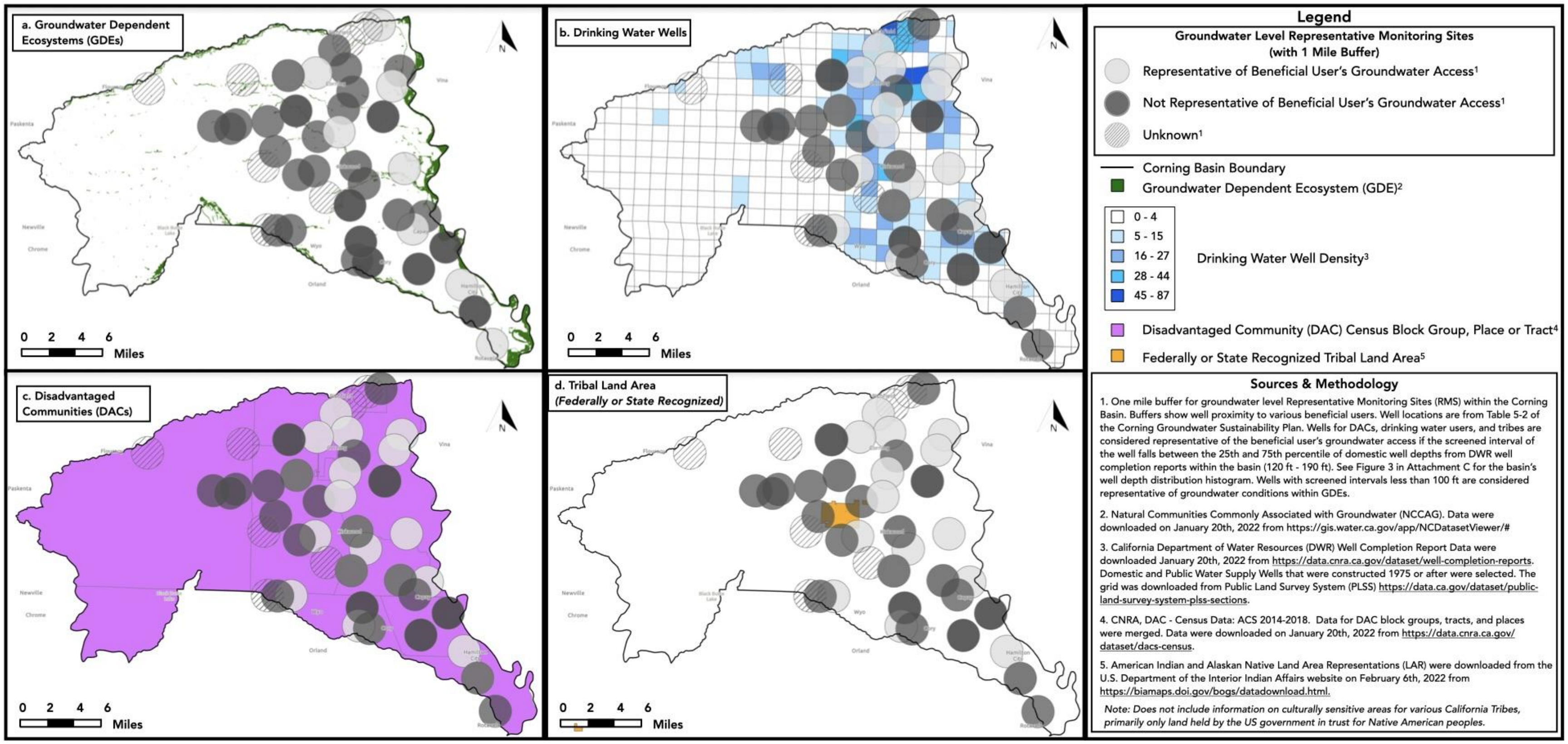


Figure 1. Groundwater elevation representative monitoring sites in relation to key beneficial users: a) Groundwater Dependent Ecosystems (GDEs), b) Drinking Water users, c) Disadvantaged Communities (DACs), and d) Tribe

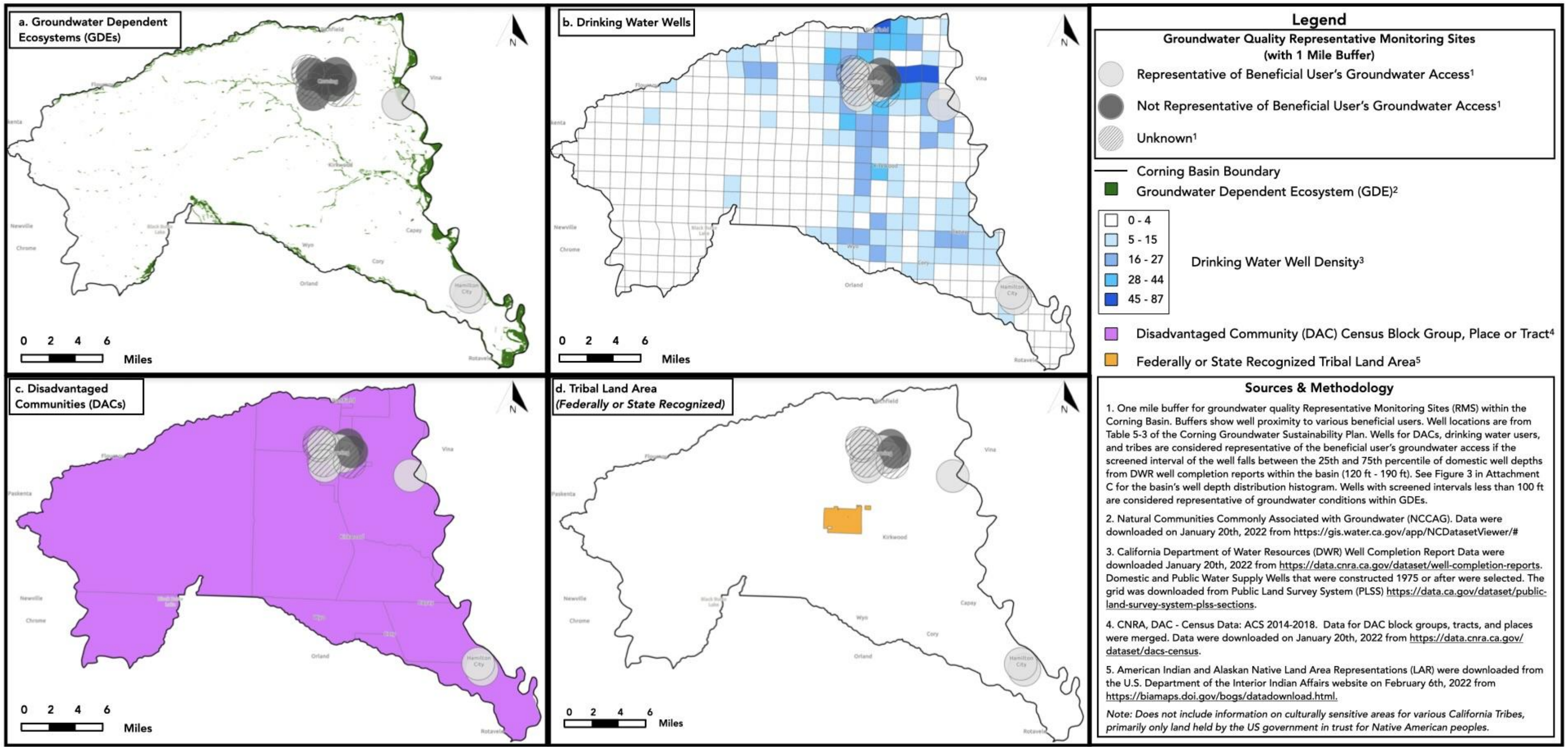


Figure 2. Groundwater quality representative monitoring sites in relation to key beneficial users: a) Groundwater Dependent Ecosystems (GDEs), b) Drinking Water users, c) Disadvantaged Communities (DACs), and d) Tribes.

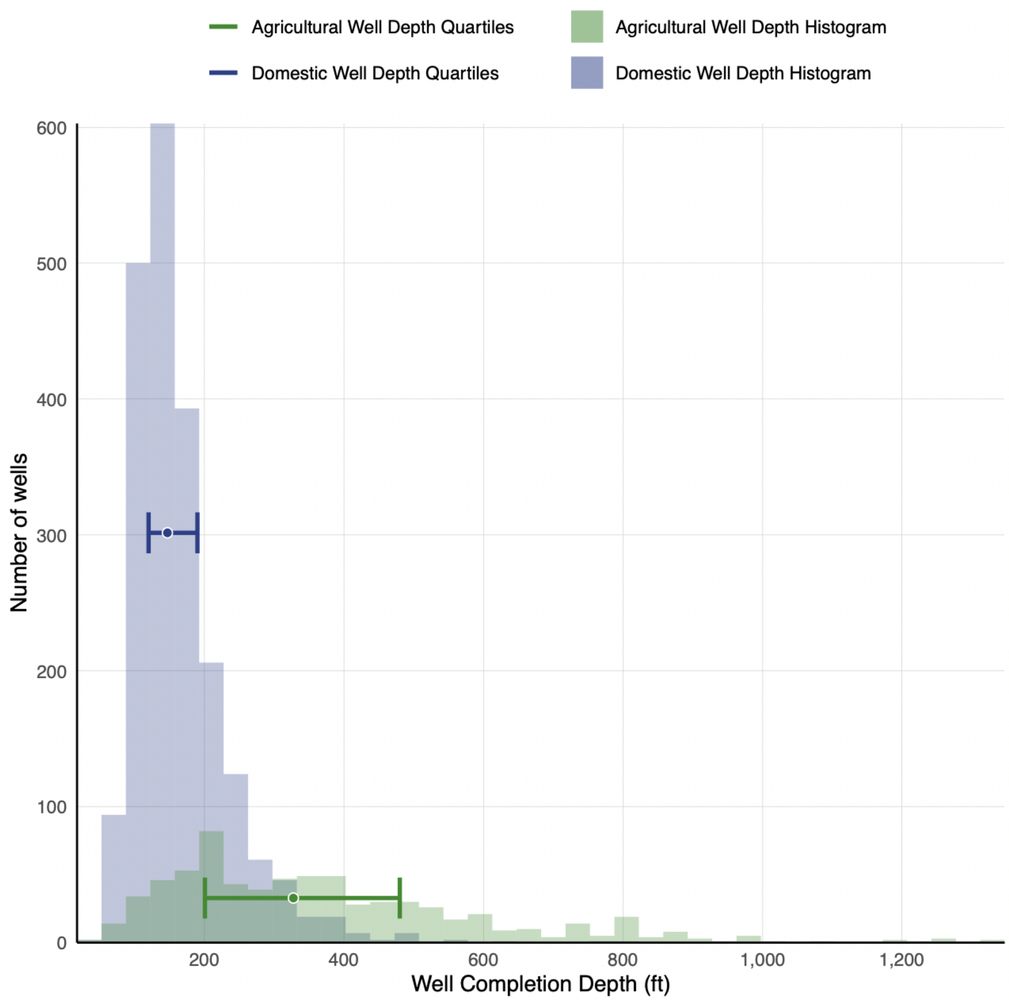


Figure 3. Groundwater well depth histogram for domestic (blue) and agricultural (green) wells. If less than 10 agricultural or domestic wells are present within the basin, the sector histogram is not shown. Data from California Department of Water Resources' Online System for Well Completion Reports (https://data.cnra.ca.gov/dataset/well-completion-reports).

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY **GAVIN NEWSOM,** GOVERNOR

CENTRAL VALLEY FLOOD PROTECTION BOARD
3310 El Camino Ave., Ste. 170
SACRAMENTO, CA 95821
(916) 574-0609 FAX: (916) 574-0682

April 22, 2022

Paul Gosselin, Deputy Director
Statewide Groundwater Management
California Department of Water Resources
1416 9th Street
Sacramento, CA 95814

Lisa Hunter, Plan Manager
County of Glenn GSA - Corning
225 North Tehama Street
Willows, CA 95988

Subject: Comments on Corning Subbasin Groundwater Sustainability Plan

Dear Mr. Gosselin and Ms. Hunter,

Thank you for the opportunity to comment on the Corning Subbasin Groundwater Sustainability Plan (GSP), which is a joint document prepared by two Groundwater Sustainability Agencies (GSAs).[1] The GSP describes how the GSAs will reach long term groundwater sustainability by outlining the need to reduce overdraft conditions and by identifying projects that may replace or supplement groundwater supplies to meet current and future water demands.

The Central Valley Flood Protection Board (Board) is the State's regulatory agency responsible for ensuring appropriate standards are met for the construction, maintenance, and operation of the flood control system that protects life, property, and habitat in California's Central Valley. The Board serves as the State coordinator between the local flood management agencies, and the federal government, with the goal of providing the highest level of flood protection possible to California's Central Valley.

Encroachment Permit

As required by California Code of Regulations, Title 23, Division 1 (Title 23), Section 6, approval by the Board is required for all proposed encroachments within a floodway, on adjacent levees, and within any Regulated Stream identified in Title 23, Table 8.1. Specifically, Board jurisdiction includes the levee section, the waterward area between project levees, a minimum 10-foot-wide strip adjacent to the landward levee toe, the area within 30 feet from the top of bank(s) of Regulated Streams, and inside Board's Designated Floodways. Activities

[1] The Corning Subbasin GSP was prepared by the following GSAs: Corning Sub-basin GSA and the Tehama County Flood Control and Water Conservation District.

outside of these limits which could adversely affect Federal-State flood control facilities, as determined by Board staff, are also under Board's jurisdiction. Permits may also be required for existing unpermitted encroachments or where it is necessary to establish the conditions normally imposed by permitting, including where responsibility for the encroachment has not been clearly established or ownership or uses have been changed.

Some of the proposed projects identified in the GSP are within the Board's jurisdiction, thereby requiring Board approval. These projects include, but are not limited to, the levee setback and stream channel restoration projects. Please alert Board staff if you would like to schedule a pre-application meeting to discuss any of the projects in detail and/or to determine the documentation required to process an encroachment permit.

Federal permits, including U.S. Army Corps of Engineers (USACE) Section 404 and Section 10 regulatory permits and Section 408 Permission, in conjunction with a Board permit, may be required for the proposed projects. In addition to federal permits, state and local agency permits, certification, or approvals may also be required. State approvals may include, but are not limited to, California Department of Fish and Wildlife's Lake and Streamed Alteration Agreement and Regional Water Quality Control Board's Section 401 Water Quality Certification. The project proponent must obtain these authorizations.

Closing

The Board recognizes the importance of groundwater sustainability in California and commends the GSAs on their effort in planning for a more resilient future. However, the potential risks to public safety, including increased flood risks, need to be considered when developing proposed projects that seek to mitigate for unsustainable groundwater extraction. The Board seeks to establish a collaborative approach with GSAs to better fulfill our regulatory responsibilities in the new paradigm of SGMA. Board staff is available to discuss any project(s) proposed under the GSP as it relates to flood control works.

If you have any questions regarding these comments, please contact Ruth Darling at (916) 574-1417, or via email at Ruth.Darling@cvflood.ca.gov.

Sincerely,

Ruth Darling

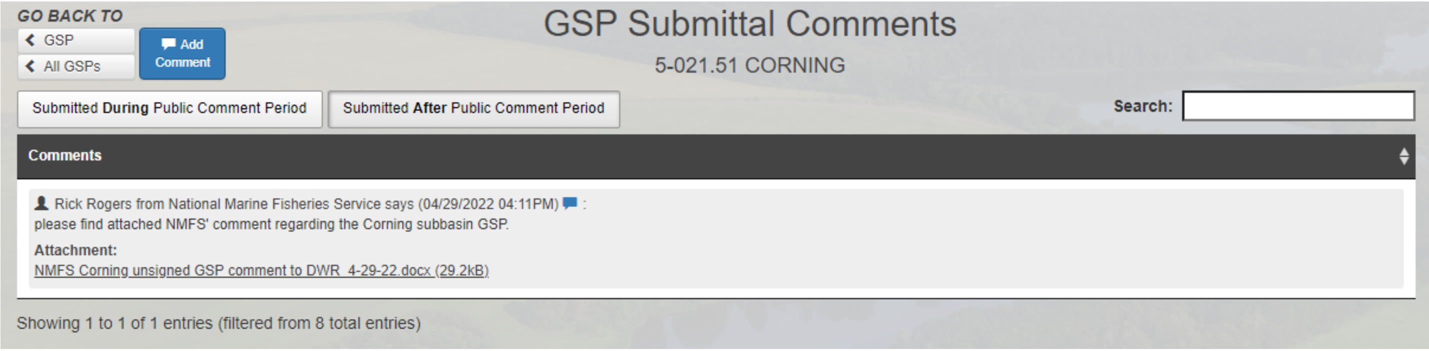
Ruth Darling, Program Manager
Flood Planning and Programs Branch

ec: Lisa Hunter, Plan Manager
lhunter@countyofglenn.net

Paul Gosselin, Deputy Director
Paul.Gosselin@water.ca.gov

Portal Submission: https://sgma.water.ca.gov/portal/gsp/comments/94

Public Comments Received After the Public Comment Period



Re: NOAA's National Marine Fisheries Service comments on the Corning subbasin Groundwater Sustainability Plan

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

Surface water and groundwater are hydraulically linked in the Corning subbasin. Several waterways that overlie portions of the Corning subbasin support federally threatened California Central Valley (CCV) steelhead (*Oncorhynchus mykiss*), threatened Central Valley (CV) spring-run Chinook salmon (*O. tshawytscha*), the threatened Southern Distinct Population Segment (sDPS) of North American green sturgeon (*Acipenser medirostris*), and federally endangered Sacramento River winter-run Chinook salmon (*O. tshawytscha*). In addition, the Corning subbasin is designated as Essential Fish Habitat (EFH) for Pacific Coast Chinook salmon, including CV fall-run Chinook salmon and CV late fall-run Chinook, which are managed under the MSA. Where the groundwater aquifer supplements streamflow, the influx of cold, clean water is critically important for maintaining temperature and flow volume. Pumping water from these aquifer-stream complexes is likely affecting salmon and steelhead habitat by lowering groundwater levels and interrupting the hyporheic flow between the aquifer and stream.

<u>General Comments</u>

1) The Final GSP does not adequately address the following requirement for minimum thresholds as defined in the SGMA regulations:

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

   The GSA has not explained how the proposed minimum thresholds for streamflow depletion (i.e., groundwater levels lower than the minimum levels seen since 2012) avoids significant and unreasonable impacts to beneficial uses of surface water. Surface water beneficial uses are not described or characterized in the GSP, nor is the ability of the proposed sustainable management criteria to avoid impacting those uses analyzed. We maintain that groundwater and surface water conditions likely to be associated with the GSP's sustainable management criteria would mirror extreme drought conditions, and are very likely to harm ESA-listed salmonids and degrade their designated critical habitat. As we have noted in our prior comment letter to the Corning GSA, surface water beneficial uses for the Corning surface waters include cold freshwater habitat; migration of aquatic organisms; and spawning, reproduction, and/or early development of aquatic organisms[1].

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[1] Central Valley Regional Water Quality Control Board Basin Plan. Copy available at: https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/#basinplans

GSP Regulations require that the description of minimum thresholds include how minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests, and that the description of undesirable results must include potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results. The GSP does not adequately address these requirements. Furthermore, GSPs must include "a thorough and reasonable analysis of the groundwater conditions and the associated effects the GSAs must manage the groundwater basin to avoid, and the GSAs' stated rationale for setting objective and quantitative sustainable management criteria to prevent those undesirable conditions from occurring."[2] The GSP does not appear to include any description or analysis of the effects associated with interconnected surface water depletion that the plan is attempting to avoid. Finally, the measurable objective (i.e., maximum fall groundwater elevation since 2012 or maximum fall groundwater elevation in 2015) does not define *specific* significant and unreasonable effects constituting the interconnected surface water depletion undesirable result, a result of applying the groundwater storage measurable objective without appropriately considering impacts to surface water beneficial uses.

2) We remain concerned the chosen sustainable management criteria for the streamflow depletion undesirable result are inappropriate for avoiding significant impacts to ESA-listed salmonids and their habitat. Groundwater flow to a stream, or conversely seepage from a stream to the underlying aquifer, is proportional to the difference between water elevation in the stream and groundwater elevations at locations away from the stream. Simply stated, the minimum threshold likely creates groundwater conditions (and streamflow depletion impacts) consistent with severe drought. In fact, the established sustainable management criteria would allow groundwater levels to drop well below those seen in 2015, near the peak of the state's historic drought. These conditions significantly impacted aquatic resources throughout the state (CDFW 2019), and thus would be very likely to adversely affect CV steelhead and CV spring-run Chinook salmon, as well as their designated critical habitat. Furthermore, per SGMA regulations, minimum thresholds must "represent a point in the basin that, if exceeded, may cause undesirable results." Based upon the reasoning presented above, we believe the chosen minimum thresholds do not represent a point at which those effects may arise, as is required, but instead represent a likely impact level far past that point. Finally, SGMA regulations direct GSAs to describe in their plans "[h]ow state, federal or local standards relate to the sustainability indicator[s]" for each of the applicable undesirable results. For the reasons stated above, we do not believe the GSP has justified how the chosen sustainability indicator for streamflow depletion relates to federal standards under the ESA, namely avoiding unlawful take of ESA-listed species.

3) The trigger for the streamflow depletion undesirable result occurs when "20% of groundwater elevations measured at RMP wells drop below the associated minimum threshold during 2 consecutive years. (page ES-22)." The GSP does not justify or discuss how the 20 percent threshold was developed, or how that threshold informs the onset of significant and unreasonable impacts to beneficial uses of surface water. Moreover, the undesirable result reasons that exceeding the minimum thresholds during dry years is not an undesirable result if management "allows for recovery in average or wetter years." However, this provision applies

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[2] DWR Groundwater Sustainability Plan Assessment for the Eastern San Joaquin subbasin. Copy available at: https://sgma.water.ca.gov/portal/gsp/assessments/47

to depletion of groundwater storage, and was not intended to be expanded to other undesirable results. Finally, aquatic organisms persist or perish based upon the impacts to aquatic habitat occurring at a moment in time. In essence, the current definition would allow severe impacts to surface water beneficial uses and ESA-listed species during one year, but an undesirable result would not arise unless a second year of impacts followed the first. Requiring two consecutive years of minimum threshold violations makes little ecological sense when trying to monitor and address impacts to surface water beneficial uses and groundwater dependent ecosystems caused by groundwater pumping.

4) When developing sustainable management criteria, and projects and management actions, the GSP appears to be missing adequate analysis and consideration of public trust resources, as required by the Public Trust Doctrine. A recent California Court of Appeal decision[3] held that the public trust doctrine must be considered—and public trust resources protected whenever feasible—in any decision governing groundwater withdrawals hydrologically connected to public trust surface waters. Concerning public trust resources, the GSP states the following:

> *The various beneficial uses and users of surface waters were addressed when setting the interconnected surface water depletion minimum thresholds including riparian rights holders, ecological surface water users, and recreational surface water users. This is a reasonable review of all uses and users in an attempt to balance all interests. This is not an assessment about what constitutes a reasonable beneficial use under Article X, Section 2 of the California Constitution.*

As noted above, CV steelhead and CV Chinook salmon, listed as threatened under the federal Endangered Species Act, inhabit many of the navigable waterways overlying the Corning subbasin, and should clearly be considered a public trust resource. Moreover, many of these streams and rivers clearly meet the definition of public trust surface waters.[4] We reiterate our view that streamflow conditions associated with the chosen sustainability criteria are very likely to impair or preclude salmon and steelhead migration, rearing, and spawning habitat, and thus harm public trust resources. Thus, the assertion that providing full historical groundwater extraction while likely harming ESA-listed species and their habitat in consistent with “an attempt to balance all interests” is groundless. In short, the GSP does not appear to conduct an appropriate public trust analysis, nor does it even discuss what ecological public trust resources are applicable to the subbasin. Likewise, no weighing of public trust benefits or impacts occurs within the GSP. Lastly, the GSP fails to adequately consider and evaluate alternative measures that would likely protect ecological public trust resources, such as the feasibility of adopting more conservative sustainable management criteria that will avoid harming NA green sturgeon, CV steelhead, CV Chinook salmon, and their designated critical habitat.

Essential Fish Habitat

NMFS is the lead federal agency responsible for the stewardship of the nation's offshore living

[3] Environmental Law Foundation v. State Water Resources Control Board (2018) 26 Cal.App.5th 844
[4] The public trust applies to navigable water bodies, as well as non-navigable water bodies where the harm to such water bodies manifests itself downstream to a navigable water body. See ELF v. SWRCB (2018)

marine resources and their habitats, and implements the ESA and the Magnuson Stevens Fishery Conservation and Management Act (MSA) to fulfill its mission of promoting healthy ecosystems. Federally-managed living marine resources provide an important source of food and recreation for the nation, as well as thousands of jobs and a traditional way of life for many coastal communities. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the associated physical, chemical, and biological properties that are used by fish (50 CFR 600.10).

EFH has been designated within the GSP area by the Pacific Fishery Management Council (PFMC) for the Pacific Coast Salmon Federal Fishery Management Plan (PFMC 2016). Waterways overlying the Corning subbasin contain EFH for the Pacific Coast Salmon FMP. Given the high likelihood that managing groundwater elevations consistent with historically low drought levels will continue to negatively affect listed species viability and generally degrade the greater ecosystem (see comments #1 and #2 above). Implementing these conservation recommendations would minimize the adverse and unreasonable effects to EFH and fulfill the obligations under Section 305(b) of the MSA.

1. The GSP should be revised to incorporate more conservative sustainability management criteria for the streamflow depletion undesirable result to avoid likely adversely affecting ESA-listed salmonids and their critical habitat within the Corning subbasin. This recommendation is especially critical given the admitted lack of appropriate data and analysis throughout the subbasin concerning streamflow depletion impacts on salmonid populations and their habitat.

This recommendation fulfills our obligation to provide EFH conservation recommendations to the State as required by MSA Section 305(b)(4)(A). Please let us know how we can assist DWR in addressing this issue.

Conclusion

Given the significant shortcomings outlined in this letter, we recommend DWR find the Corning subbasin GSP insufficient at this time until those shortcomings can be rectified. Please direct questions regarding this letter to Amanda Cranford, of my staff, at Amanda.Cranford@noaa.gov or (916) 930-3706.

Literature Cited

Department of Fish and Wildlife. 2019. Statewide Drought Response: Stressor Monitoring – Summary Report: 2014-2017. Copy available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=174241

9. Corning Subbasin Advisory Board Report

The Corning Subbasin Advisory Board (CSAB) met on April 6, 2022. The CSAB received a presentation by Montgomery & Associates providing an overview of the Water Year 2021 Corning Subbasin Annual Report, which was discussed at the April 13, 2022 CSGSA meeting. The next CSAB meeting is scheduled for June 8, 2022 at 1:30 p.m.

CSAB meeting materials, including presentations, agendas, and meeting summaries are available on the website at: www.corningsubbasingsp.org.

Advisory Board members may provide additional updates.

10. Discussion on Executive Order N-7-22

a. *Approve Well Permit Acknowledgement Form and authorize staff to finalize process with the Glenn County Environmental Health Department

On March 28, 2022, Governor Newsom issued Executive Order N-7-22 which included well permitting requirements during this drought emergency (Action 9). DWR shared a Fact Sheet on April 5 to help agencies navigate the new requirements and outlined DWR resources that may be useful.

The CSGSA discussed the Executive Order on April 13, 2022. A suggestion was made to utilize the Acknowledgment Form, consistent with the Glenn Groundwater Authority, to be compliant with the Executive Order. This form, or a similar form is being utilized by several GSAs in the region.

The Glenn County Environmental Health Department is the local permitting agency. If desired, staff could work with the Environmental Health Department to determine a mutually agreeable process to communicate regarding well permitting, review of applications, and compliance with the Executive Order.

Additional discussion may take place on other options to best address this new requirement.

Attachments:

- Executive Order N-7-22
- DWR Fact Sheet: Drought Well Permitting Requirements
- Well Permit Acknowledgement Form

EXECUTIVE DEPARTMENT
STATE OF CALIFORNIA

EXECUTIVE ORDER N-7-22

WHEREAS on April 12, 2021, May 10, 2021, July 8, 2021, and October 19, 2021, I proclaimed states of emergency that continue today and exist across all the counties of California, due to extreme and expanding drought conditions; and

WHEREAS climate change continues to intensify the impacts of droughts on our communities, environment, and economy, and California is in a third consecutive year of dry conditions, resulting in continuing drought in all parts of the State; and

WHEREAS the 21st century to date has been characterized by record warmth and predominantly dry conditions, and the 2021 meteorological summer in California and the rest of the western United States was the hottest on record; and

WHEREAS since my October 19, 2021 Proclamation, early rains in October and December 2021 gave way to the driest January and February in recorded history for the watersheds that provide much of California's water supply; and

WHEREAS the ongoing drought will have significant, immediate impacts on communities with vulnerable water supplies, farms that rely on irrigation to grow food and fiber, and fish and wildlife that rely on stream flows and cool water; and

WHEREAS the two largest reservoirs of the Central Valley Project, which supplies water to farms and communities in the Central Valley and the Santa Clara Valley and provides critical cold-water habitat for salmon and other anadromous fish, have water storage levels that are approximately 1.1 million acre-feet below last year's low levels on this date; and

WHEREAS the record-breaking dry period in January and February and the absence of significant rains in March have required the Department of Water Resources to reduce anticipated deliveries from the State Water Project to 5 percent of requested supplies; and

WHEREAS delivery of water by bottle or truck is necessary to protect human safety and public health in those places where water supplies are disrupted; and

WHEREAS groundwater use accounts for 41 percent of the State's total water supply on an average annual basis but as much as 58 percent in a critically dry year, and approximately 85 percent of public water systems rely on groundwater as their primary supply; and

WHEREAS coordination between local entities that approve permits for new groundwater wells and local groundwater sustainability agencies is important to achieving sustainable levels of groundwater in critically overdrafted basins; and

WHEREAS the duration of the drought, especially following a multiyear drought that abated only five years ago, underscores the need for California to redouble near-, medium-, and long-term efforts to adapt its water management and delivery systems to a changing climate, shifting precipitation patterns, and water scarcity; and

WHEREAS the most consequential, immediate action Californians can take to extend available supplies is to voluntarily reduce their water use by 15 percent from their 2020 levels by implementing the commonsense measures identified in operative paragraph 1 of Executive Order N-10-21 (July 8, 2021); and

WHEREAS to protect public health and safety, it is critical the State take certain immediate actions without undue delay to prepare for and mitigate the effects of the drought conditions, and under Government Code section 8571, I find that strict compliance with various statutes and regulations specified in this Proclamation would prevent, hinder, or delay the mitigation of the effects of the drought conditions.

NOW, THEREFORE, I, GAVIN NEWSOM, Governor of the State of California, in accordance with the authority vested in me by the State Constitution and statutes, including the California Emergency Services Act, and in particular, Government Code sections 8567, 8571, and 8627, do hereby issue the following Order to become effective immediately:

IT IS HEREBY ORDERED THAT:

1. The orders and provisions contained in my April 21, 2021, May 10, 2021, July 8, 2021, and October 19, 2021 Proclamations remain in full force and effect, except as modified by those Proclamations and herein. State agencies shall continue to implement all directions from those Proclamations and accelerate implementation where feasible.

2. To help the State achieve its conservation goals and ensure sufficient water for essential indoor and outdoor use, I call on all Californians to strive to limit summertime water use and to use water more efficiently indoors and out. The statewide Save Our Water conservation campaign at SaveOurWater.com provides simple ways for Californians to reduce water use in their everyday lives. Furthermore, I encourage Californians to understand and track the amount of water they use and measure their progress toward their conservation goals.

3. By May 25, 2022, the State Water Resources Control Board (Water Board) shall consider adopting emergency regulations that include all of the following:

    a. A requirement that each urban water supplier, as defined in section 10617 of the Water Code, shall submit to the Department of Water Resources a preliminary annual water supply and demand assessment consistent with section 10632.1 of the Water Code no later than June 1, 2022, and submit a final annual water supply and demand assessment to the Department of Water Resources no later than the deadline set by section 10632.1 of the Water Code;

b. A requirement that each urban water supplier that has submitted a water shortage contingency plan to the Department of Water Resources implement, at a minimum, the shortage response actions adopted under section 10632 of the Water Code for a shortage level of up to twenty percent (Level 2), by a date to be set by the Water Board; and

c. A requirement that each urban water supplier that has not submitted a water shortage contingency plan to the Department of Water Resources implement, at a minimum, shortage response actions established by the Water Board, which shall take into consideration model actions that the Department of Water Resources shall develop for urban water supplier water shortage contingency planning for Level 2, by a date to be set by the Water Board.

To further conserve water and improve drought resiliency if the drought lasts beyond this year, I encourage urban water suppliers to conserve more than required by the emergency regulations described in this paragraph and to voluntarily activate more stringent local requirements based on a shortage level of up to thirty percent (Level 3).

4. To promote water conservation, the Department of Water Resources shall consult with leaders in the commercial, industrial, and institutional sectors to develop strategies for improving water conservation, including direct technical assistance, financial assistance, and other approaches. By May 25, 2022, the Water Board shall consider adopting emergency regulations defining "non-functional turf" (that is, a definition of turf that is ornamental and not otherwise used for human recreation purposes such as school fields, sports fields, and parks) and banning irrigation of non-functional turf in the commercial, industrial, and institutional sectors except as it may be required to ensure the health of trees and other perennial non-turf plantings.

5. In order to maximize the efficient use of water and to preserve water supplies critical to human health and safety and the environment, Public Resources Code, Division 13 (commencing with section 21000) and regulations adopted pursuant to that Division are hereby suspended, with respect to the directives in paragraphs 3 and 4 of this Order and any other projects and activities for the purpose of water conservation to the extent necessary to address the impacts of the drought, and any permits necessary to carry out such projects or activities. Entities that desire to conduct activities under this suspension, other than the directives in paragraphs 3 and 4 of this Order, shall first request that the Secretary of the Natural Resources Agency make a determination that the proposed activities are eligible to be conducted under this suspension. The Secretary shall use sound discretion in applying this Executive Order to ensure that the suspension serves the purpose of accelerating conservation projects that are necessary to address impacts of the drought, while at the same time

protecting public health and the environment. The entities implementing these directives or conducting activities under this suspension shall maintain on their websites a list of all activities or approvals for which these provisions are suspended.

6. To support voluntary approaches to improve fish habitat that would require change petitions under Water Code section 1707 and either Water Code sections 1425 through 1432 or Water Code sections 1725 through 1732, and where the primary purpose is to improve conditions for fish, the Water Board shall expeditiously consider petitions that add a fish and wildlife beneficial use or point of diversion and place of storage to improve conditions for anadromous fish. California Code of Regulations, title 23, section 1064, subdivisions (a)(1)(A)(i)-(ii) are suspended with respect to any petition that is subject to this paragraph.

7. To facilitate the hauling of water for domestic use by local communities and domestic water users threatened with the loss of water supply or degraded water quality resulting from drought, any ordinance, regulation, prohibition, policy, or requirement of any kind adopted by a public agency that prohibits the hauling of water out of the water's basin of origin or a public agency's jurisdiction is hereby suspended. The suspension authorized pursuant to this paragraph shall be limited to the hauling of water by truck or bottle to be used for human consumption, cooking, or sanitation in communities or residences threatened with the loss of affordable safe drinking water. Nothing in this paragraph limits any public health or safety requirement to ensure the safety of hauled water.

8. The Water Board shall expand inspections to determine whether illegal diversions or wasteful or unreasonable use of water are occurring and bring enforcement actions against illegal diverters and those engaging in the wasteful and unreasonable use of water. When access is not granted by a property owner, the Water Board may obtain an inspection warrant pursuant to the procedures set forth in Title 13 (commencing with section 1822.50) of Part 3 of the Code of Civil Procedure for the purposes of conducting an inspection pursuant to this directive.

9. To protect health, safety, and the environment during this drought emergency, a county, city, or other public agency shall not:

    a. Approve a permit for a new groundwater well or for alteration of an existing well in a basin subject to the Sustainable Groundwater Management Act and classified as medium- or high-priority without first obtaining written verification from a Groundwater Sustainability Agency managing the basin or area of the basin where the well is proposed to be located that groundwater extraction by the proposed well would not be inconsistent with any sustainable groundwater management program established in any applicable Groundwater Sustainability Plan adopted by that Groundwater Sustainability

Agency and would not decrease the likelihood of achieving a sustainability goal for the basin covered by such a plan; or

b. Issue a permit for a new groundwater well or for alteration of an existing well without first determining that extraction of groundwater from the proposed well is (1) not likely to interfere with the production and functioning of existing nearby wells, and (2) not likely to cause subsidence that would adversely impact or damage nearby infrastructure.

This paragraph shall not apply to permits for wells that will provide less than two acre-feet per year of groundwater for individual domestic users, or that will exclusively provide groundwater to public water supply systems as defined in section 116275 of the Health and Safety Code.

10. To address household or small community drinking water shortages dependent upon groundwater wells that have failed due to drought conditions, the Department of Water Resources shall work with other state agencies to investigate expedited regulatory pathways to modify, repair, or reconstruct failed household or small community or public supply wells, while recognizing the need to ensure the sustainability of such wells as provided for in paragraph 9.

11. State agencies shall collaborate with tribes and federal, regional, and local agencies on actions related to promoting groundwater recharge and increasing storage.

12. To help advance groundwater recharge projects, and to demonstrate the feasibility of projects that can use available high water flows to recharge local groundwater while minimizing flood risks, the Water Board and Regional Water Quality Control Boards shall prioritize water right permits, water quality certifications, waste discharge requirements, and conditional waivers of waste discharge requirements to accelerate approvals for projects that enhance the ability of a local or state agency to capture high precipitation events for local storage or recharge, consistent with water right priorities and protections for fish and wildlife. For the purposes of carrying out this paragraph, Division 13 (commencing with section 21000) of the Public Resources Code and regulations adopted pursuant to that Division, and Chapter 3 (commencing with section 85225) of Part 3 of Division 35 of the Water Code and regulations adopted pursuant thereto are hereby suspended to the extent necessary to address the impacts of the drought. This suspension applies to (a) any actions taken by state agencies, (b) any actions taken by local agencies where the state agency with primary responsibility for the implementation of the directives concurs that local action is required, and (c) permits necessary to carry out actions under (a) or (b). The entities implementing these directives shall maintain on their websites a list of all activities or approvals for which these provisions are suspended.

13. With respect to recharge projects under either Flood-Managed Aquifer Recharge or the Department of Water Resources Sustainable

Groundwater Management Grant Program occurring on open and working lands to replenish and store water in groundwater basins that will help mitigate groundwater conditions impacted by drought, for any (a) actions taken by state agencies, (b) actions taken by a local agency where the Department of Water Resources concurs that local action is required, and (c) permits necessary to carry out actions under (a) or (b), Public Resources Code, Division 13 (commencing with section 21000) and regulations adopted pursuant to that Division are hereby suspended to the extent necessary to address the impacts of the drought. The entities implementing these directives shall maintain on their websites a list of all activities or approvals for which these provisions are suspended.

14. To increase resilience of state water supplies during prolonged drought conditions, the Department of Water Resources shall prepare for the potential creation and implementation of a multi-year transfer program pilot project for the purpose of acquiring water from willing partners and storing and conveying water to areas of need.

15. By April 15, 2022, state agencies shall submit to the Department of Finance for my consideration proposals to mitigate the worsening effects of severe drought, including emergency assistance to communities and households and others facing water shortages as a result of the drought, facilitation of groundwater recharge and wastewater recycling, improvements in water use efficiency, protection of fish and wildlife, mitigation of drought-related economic or water-supply disruption, and other potential investments to support short- and long-term drought response.

IT IS FURTHER ORDERED that as soon as hereafter possible, this Order be filed in the Office of the Secretary of State and that widespread publicity and notice be given of this Order.

This Order is not intended to, and does not, create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its agencies, departments, entities, officers, employees, or any other person.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 28th day of March 2022.

GAVIN NEWSOM
Governor of California

ATTEST:

SHIRLEY N. WEBER, PH.D.
Secretary of State

Drought Well Permitting Requirements

Drought Executive Order N-7-22

On March 28, 2022 Governor Newsom issued Drought Executive Order N-7-22 that included new well permitting requirements for local agencies to prepare for and lessen the effects of drought conditions (Action 9).

Well Permitting Authority and Groundwater Management Oversight

In California, regulatory authority over well construction, alteration, and destruction activities resides with local agencies (cities, counties, or water agencies), who have the authority to adopt a local well ordinance. Well permits are administered and enforced by local agencies (or local enforcing agencies, LEAs), often the Department of Environmental Health within a given county.

With the enactment of the Sustainable Groundwater Management Act (SGMA) in 2014, local public agencies – called groundwater sustainability agencies or GSAs – formed to provide specific oversight and management of groundwater resources, and to achieve sustainable groundwater management within 20 years through the development and implementation of groundwater sustainability plans (GSPs) and associated projects and management actions. The local GSAs are required to include in their GSPs a discussion of how they will coordinate these efforts with local land use authorities, including local well permitting agencies.

Drought Well Permitting Requirements

Local well ordinances authorize the conditions for agencies to issue a well permit or permit modification. Given the record drought conditions the state has faced over the last three years, Drought Executive Order N-7-22 requires additional actions be taken by local well permitting agencies prior to issuing a well permit.

Excerpt of Action 9 from Drought Executive Order N-7-22:

9. To protect health, safety, and the environment during this drought emergency, a county, city, or other public agency shall not:

a. Approve a permit for a new groundwater well or for alteration of an existing well in a basin subject to the Sustainable Groundwater Management Act and classified as medium- or high-priority without first obtaining written verification from a Groundwater Sustainability Agency managing the basin or area of the basin where the well is proposed to be located that groundwater extraction by the proposed well would not be inconsistent with any sustainable groundwater management program established in any applicable Groundwater Sustainability Plan adopted by that Groundwater Sustainability Agency and would not decrease the likelihood of achieving a sustainability goal for the basin covered by such a plan; or

b. Issue a permit for a new groundwater well or for alteration of an existing well without first determining that extraction of groundwater from the proposed well is (1) not likely to interfere with the production and functioning of existing nearby wells, and (2) not likely to cause subsidence that would adversely impact or damage nearby infrastructure.

This paragraph shall not apply to permits for wells that will provide less than two acre-feet per year of groundwater for individual domestic users, or that will exclusively provide groundwater to public water supply systems as defined in section 116275 of the Health and Safety Code.

Local well permitting agencies retain existing well permitting authorities, including reviewing and administering well permits. Under the Executive Order Action 9, local well permitting agencies must take the following steps during the well permitting process for wells intending to extract groundwater:

1. Consultation with the GSA – If the proposed well would be in a high or medium priority groundwater basin, the well permitting agency must consult with the GSA and receive written verification from the GSA that the proposed well location is generally consistent (not inconsistent) with the applicable GSP and will not decrease the likelihood of achieving the sustainability goals that the GSAs have developed under SGMA.

2. Permit Evaluation – For every well permit application, the local well permitting agency must determine before issuing a well permit that extraction of groundwater from the proposed well is not likely to interfere with the production and functioning of existing nearby wells and is not likely to cause subsidence that would adversely impact or damage nearby infrastructure.

These requirements do not apply to wells that pump less than 2 acre-feet per year (de minimus users) and wells that exclusively provide groundwater to public water supply systems as defined in section 116275 of the Health and Safety Code.

State Resources Available to Local Agencies

The California Department of Water Resources (DWR) provides technical and other support services to local agencies to support decision-making. The following resources are available to help local agencies navigate the well permitting requirements in this Drought Executive Order:

- To find the **groundwater basins subject to SGMA** and classified as medium or high priority: Basin Prioritization Dashboard

- To find the **Groundwater Sustainability Agency** managing the applicable basin or area of the basin: GSA Map Viewer

- To find the **Groundwater Sustainability Plan** adopted by the local Groundwater Sustainability Agency: GSP Map Viewer

- To view **existing nearby wells** (domestic, irrigation, public supply and reported dry wells): California's Groundwater Live – Well Infrastructure

- To view **groundwater levels and trends**: California's Groundwater Live – Groundwater Levels

- To view **subsidence data** and nearby infrastructure: California's Groundwater Live – Subsidence Data

For more information or questions, please contact DWR's Sustainable Groundwater Management Office at: SGMPS@water.ca.gov.

For more information about the State's Drought Response and Assistance, please visit drought.ca.gov.

CORNING SUB-BASIN GROUNDWATER SUSTAINABILITY AGENCY

COMPLIANCE WITH EXECUTIVE ORDER N-7-22

Pursuant to Executive Order N-7-22, the Corning Sub-basin Groundwater Sustainability Agency (CSGSA) provides the following acknowledgment, which if executed by a well applicant, would allow the CSGSA to conclude that the well permit would not be inconsistent with the existing groundwater sustainability plan.

ACKNOWLEDGMENT

_____ I acknowledge that the Sustainable Groundwater Management Act requires that a groundwater sustainability agency manage groundwater in the Corning Subbasin and the CSGSA is the agency with groundwater management authority over the land subject to Permit # xxx.

______ I acknowledge that the CSGSA has the authority to limit, regulate and/or suspend extractions within its jurisdiction including extractions from any well permitted pursuant to Permit #XXXX.

______I acknowledge that a well permit issued by the County does not guarantee the extraction of any specific amount of water now or in the future.

_____ I acknowledge that the Corning Subbasin GSP includes specific groundwater requirements through minimum thresholds and measurable objectives and agree that my groundwater use will comply with these requirements.

_____ I acknowledge the CSGSA cannot guarantee the maintenance of any defined water level or level of water quality in the Corning Subbasin.

___ I acknowledge the CSGSA is not responsible for or otherwise liable for any costs, investments or payments related to any groundwater well permitted pursuant to Permit #xxxx, including pumping fees, extraction limits, costs related to well failure, well deepening, increased maintenance, replacement, or operational costs.

___I agree to hold the CSGSA harmless and indemnify the CSGSA for any liability stemming from or related to the County issuing a well Permit #xxxx, any use restrictions imposed upon such well, and from any claim or cause of action alleged against the CSGSA relating to or resulting from the use or operation of such well.

By acknowledging and initialing the above provisions, [WELL APPLICANT] agrees the above ACKNOWLEDGMENT will be incorporated into the terms and conditions of any well permit issued pursuant to Permit #xxxx.

________________________ ____________________

Name of WELL APPLICANT Date

____

Signature of WELL APPLICANT

Received by:

____________________ ______________

Signature of CSGSA Date

11. Corning Sub-basin GSA 2022/2023 Budget

a. Discuss Short Term Funding Strategy

b. Provide direction on a proposed agreement among member agencies to fund specific tasks or explore other potential options to meet short term funding needs

Over the past several months the CSGSA has discussed funding needs for GSP Implementation. At the April 13, 2022 meeting, the CSGSA requested figures for immediate short-term funding needs and longer term needs, breaking the discussion into two parts. The short-term funding strategy will address immediate needs to provide for GSA administration and prioritized tasks. The longer term needs will be discussed during Item 12.

If a funding mechanism is prepared and finalized by August 10, 2022, the fee could be placed on the County Tax Roll. The first installment would likely be received by the CSGSA in January 2023. It is unlikely that a Proposition 218 fee could be developed and approved in that short of time. A Proposition 26 mechanism may provide a medium-term funding strategy. In the immediate term, member contributions may be the most effective option to fund the GSA.

Corning Subbasin GSP Section 8.9 Short-Term Implementation Start-Up Budget provides a description of funding needs over the first five years of GSP implementation and estimates of the expenses. Tables 8-5 and 8-6 offer a reasonable estimate for an initial budget. Prioritizing immediate term needs to include legal services, fee study, grant application expenses, fiscal support, annual report, and routine data management system updates, the budget would be $197,000 for fiscal year 2022/2023. If the estimated expenses are split evenly among the three members, each member would contribute $65,667.

If member agencies are agreeable to split the expenses for fiscal year 2022/2023, recognizing that a medium or long term funding strategy will be in place prior to conclusion of the fiscal year, an agreement between the agencies would be helpful to create a shared understanding of the expenses, expectations, and appoint an agency to manage the funds.

Staff requests direction on the preferred path for funding the CSGSA for fiscal year 2022/2023. This could include direction on:

- Short-term funding strategy
- Agreement among member agencies
- Tasks to include in the strategy and agreement
- Fiscal agent
- Other options

Attachments:

- Corning Subbasin GSP Section 8.9 Short-Term Implementation Start-Up Budget
- Draft Budget Worksheets

C2VSimFG updates should be tracked and incorporated into the NSac model as appropriate. Future C2VSimFG model updates released by DWR should be evaluated, with major changes considered for incorporation into the NSac model as part of the 5-year GSP update process.

8.8 Implementation Activity 8: Refine and Implement Projects and Management Actions

A combination of projects and management actions will need to be implemented to achieve sustainability in the Subbasin. Section 7 identifies potential projects and management actions that would help achieve sustainability. The GSAs will refine and assess feasibility and timeline of the projects and management actions during the first 5 years of GSP implementation. The projects and actions will be implemented in a coordinated fashion across the Subbasin to achieve sustainability. Refinement of the projects and actions will occur simultaneously with refinement of the funding mechanism that supports the projects and actions. Planned activities during the first 5 years of implementation will include the following tasks as needed:

- Performing feasibility studies, as needed, on potential projects
- Clarifying water rights and water availability for recharge opportunities
- Applying for new or change of diversion, place of use, or timing on new water rights as necessary
- Refining benefit analysis for proposed projects using the groundwater model
- Developing proposed project costs
- Producing preliminary design of projects if projects are adequately defined
- Initiating environmental permitting for projects as necessary
- Applying for grant funding

Cost-sharing agreements between the GSAs and other local agencies that may benefit directly from these projects will be developed as needed.

8.9 Short-Term Implementation Start-Up Budget

Initial GSP implementation budget consists of general administrative costs and additional costs to cover the 8 implementation activities described above. The following subsections and tables provide additional detail on estimated initial GSP implementation costs. Costs will be further refined early in implementation as funding mechanisms are put into place. See Section 8.2 for additional discussion on anticipated funding sources and mechanisms.

8.9.1 GSA Operational Expenses

The operational expenses of the Corning Sub-basin GSAs will generally include the following budget category items:

- **General Management:** General management costs include items such as staffing, administrative support, accounting services, audits, and insurance. It is anticipated that dedicated staff from Tehama and Glenn Counties will continue to act as the primary personnel serving the GSAs of the Corning Subbasin. However, staffing needs may also be contracted out. For planning purposes, it is estimated that at least 2 management-level staff and 2 administrative-level staff will support the administration of the GSAs on a part-time basis. Staff serve as the key points of contact for members of the public, the GSA governing boards, CSAB, and other stakeholders. Moreover, staff are tasked with fundamental administrative duties, such as hiring and managing consultants, billing and accounting, development of meeting materials, and organizing outreach efforts.
- **Technical Services:** It is anticipated that the Corning Sub-basin GSAs will have an ongoing need for on-call consulting and legal services to support regular operations. As directed by staff, professional consultants may carry out a variety of tasks to support general analytical needs or provide additional technical capacity on an as-needed basis. Examples of potential tasks include technical education, legislative and regulatory interpretation, data analysis (e.g., hydrological, economic, agricultural, etc.), inter- and intra-basin coordination, opportunities assessments, and program evaluation. Legal services are currently provided to the GSAs within the Corning Subbasin by the Legal Counsels of Glenn County, Tehama County, and the member agencies of the CSGSA. It is expected that these services will continue to be provided to support items such as contracting, document review, and developing official statements and responses. If needed, special counsel may be engaged to address other needs (e.g., litigation).
- **Materials and Outreach:** Costs for materials and outreach include items such as website maintenance, office supplies, materials reproduction, postage, legal noticing, and general outreach. Funding these items and activities will ensure the Corning Sub-basin GSAs continue to engage a broad range of stakeholders through a variety of mediums and comply with all legal noticing requirements. In addition, it will ensure staff will have the basic supplies necessary to carry out their duties and communicate with relevant entities.
- **Fees & Assessments:** The majority of the GSAs' GSP development costs have been funded under a Proposition 1 Planning Grant. In-kind contributions of Glenn County, Tehama County, and CSGSA member agency staff time have further supported the coordination needs of consultants, stakeholders, and the CSAB. Implementation of the GSP will necessitate that the GSAs identify new sources of revenue to fund general program administration costs and other activities. It is anticipated that the primary source of new revenues will result from either fees, charges, and/or assessments levied in

compliance with Proposition 26 and/or Proposition 218. A rate study (e.g., Cost of Services Study, Engineers Report) will be necessary to develop an appropriate funding methodology, describe the nexus of benefits, establish a recommended charge, and comply with related legal requirements. There will also be additional procedural costs (e.g., noticing, ballots, etc.) depending on process and type of charge the GSAs seek to levy. Public engagement and outreach beyond the minimum legal requirements under the Proposition 218 and 26 processes will bear additional costs. Once adopted, it is anticipated that charges will initially be collected by each county on behalf of the GSAs using their respective tax rolls.

- **Reserve:** GSAs are permitted to fund the costs of maintaining a prudent reserve. Reserve funds are a common financial management strategy among public agencies that allow entities to better manage cash flow and mitigate the risk of unanticipated cost overages. It is recommended that a minimum contingency rate of 10% of all program administration costs be used when developing the initial reserve fund amount. This rate should be re-evaluated in the future after the Corning Subbasin GSAs have established several years of financial activities that can be analyzed to support an updated rate.

Table 8-4 and Table 8-5 provide a summary of the estimated operational costs for each GSA by budget category and associated line items for the initial implementation phase of the Corning Subbasin GSP (i.e., 2022 – 2026). Estimated costs are identified as either annual costs or lump sum costs. Annual costs are directly related to recurring operational work or activities that need to be funded each year. Lump sum costs are for items that will not recur annually, although their completion timelines may require more than 1 year. Expenditures for lump sum costs are anticipated to occur within the 5-year timeframe of the initial implementation phase, but these costs will not necessarily need to be fully funded in the first year of GSP implementation. Some costs are anticipated to be borne individually by each GSA, while others may be shared among the GSAs and other/their member agencies. Because each GSA and/or their members also have SGMA responsibilities in other subbasins, the actual operating costs associated with their management of the Corning Subbasin may be further reduced as common staff, materials, and services are shared across multiple subbasins. Pursuant to the MOU among Corning Sub-basin GSA members, any future cost-sharing allocations shall be agreed to in writing by the members in advance of executing any contracts with consultants, vendors, or other contractors or incurring any expense.

Table 8-4. Estimated TCFCWCD GSA Operational Expenses, 2022 – 2026

[approximate draft; to be revised during GSP implementation and following additional legal review]

Budget Categories and Tasks	Annual Cost - TCFCWCD GSA	Lump Sum Items - TCFCWCD GSA	5-year Total	Annualized Total (5 years)
General Management				
Management Staff	$75,000	$0	$375,000	$75,000
Administrative Support	$60,000	$0	$300,000	$60,000
Audits & Accounting	$25,000	$0	$125,000	$25,000
Insurance	$2,000	$0	$10,000	$2,000
Technical Services				
Consulting Services	$20,000	$0	$100,000	$20,000
Legal Services	$50,000	$0	$250,000	$50,000
Materials & Outreach				
Supplies & Materials	$5,000	$0	$25,000	$5,000
Legal Notices	$1,000	$0	$5,000	$1,000
Community Outreach	$12,000	$0	$60,000	$12,000
Fees & Assessments				
Fee Studies & Adoption	$0	$40,000	$40,000	$8,000
County Tax Roll	$10,000	$0	$50,000	$10,000
Grants				
Grant Applications	$20,000	$0	$100,000	$20,000
Reserve & Contingency				
General Reserve (10%)	$28,000	$4,000	$144,000	$28,800
Total	**$308,000**	**$44,000**	**$1,584,000**	**$316,800**

Table 8-5. Estimated CSGSA Operational Expenses, 2022 - 2026
[approximate draft; to be revised during GSP implementation and following additional legal review]

Budget Categories and Tasks	Annual Cost - CSGSA	Lump Sum Items - CSGSA	5-year Total	Annualized Total (5 years)
General Management				
Management Staff	$75,000	$0	$375,000	$75,000
Administrative Support	$40,000	$0	$200,000	$40,000
Audits & Accounting	$15,000	$0	$75,000	$15,000
Insurance	$2,000	$0	$10,000	$2,000
Technical Services				
Consulting Services	$20,000	$0	$100,000	$20,000
Legal Services	$50,000	$0	$400,000	$80,000
Materials & Outreach				
Supplies & Materials	$5,000	$0	$25,000	$5,000
Legal Notices	$1,000	$0	$5,000	$1,000
Community Outreach	$12,000	$0	$60,000	$12,000
Fees & Assessments				
Fee Studies & Adoption	$0	$90,000	$90,000	$18,000
County Tax Roll	$5,000	$0	$25,000	$5,000
Grants				
Grant Applications	$20,000	$0	$100,000	$20,000
Reserve & Contingency				
General Reserve (10%)	$27,500	$9,000	$146,500	$29,300
Total	**$302,500**	**$99,000**	**$1,611,500**	**$322,300**

On an annualized basis, the operational expenses for the TCFCWCD and CSGSA are estimated to be $316,800 per year and $322,300 per year, respectively, during the first 5 years following GSP implementation. Total operational expenses on an annualized basis are estimated to be $639,100 per year during this same period. The costs estimated in Table 8-4 and Table 8-5 will be refined and their actual allocation re-assessed prior to the implementation of any fees or assessments by the GSAs. Some estimated costs may be further reduced as a result of the GSAs and/or their member agencies providing common staff, materials, and services to other basins within their jurisdiction.

8.9.2 Implementation Activities Funding

Table 8-6 summarizes the conceptual planning-level costs for the initial 5 years of GSP implementation. These costs do not include costs to implement projects and management actions. Annual costs are directly related to work that needs to be done consistently to meet the requirements in the GSP Regulations and to fund the 8 implementation activities. This initial cost estimate will likely change as more data become available and GSP implementation approaches, and funding mechanisms are developed.

Table 8-6. Estimated Planning-Level Costs for First 5 Years of Implementation

Activity	Budget Categories and Tasks	Annual Cost	Lump Sum Items	5-year Total	Annualized Cost (5 years)	Notes
1 and 2	GSA Administration, Program Management, and Funding	$610,500	$143,000	$3,195,500	$639,100	Includes costs for GSA administration, communication, outreach, (Section 8.1) and funding mechanisms (Section 8.2) per Tables 8-4 and 8-5.
3	**Monitoring & Reporting**					
	Groundwater Conditions Monitoring	$50,000	$0	$250,000	$50,000	Placeholder costs for groundwater level monitoring
	Annual Reports ($50,000 for first report, $30,000 for subsequent reports)	$34,000	$0	$170,000	$34,000	Assumes $50,000 for first report, $30,000 for subsequent reports
	GSP 5-year Update	$0	$150,000	$150,000	$30,000	
4	**Address HCM and Groundwater Conditions Data Gaps**					
	AEM or other geophysical testing to refine hydrogeologic conceptual model	$0	$100,000	$100,000	$20,000	Placeholder costs. Expect majority of work to be funded by DWR.
	Aquifer testing to refine hydrogeologic conceptual model	$0	$100,000	$100,000	$20,000	Placeholder costs
	GDE mapping	$0	$150,000	$150,000	$30,000	Placeholder costs
6	**Expand Existing Monitoring Networks**					
	Videologging of wells with unknown screen intervals	$0	$10,000	$10,000	$2,000	Placeholder costs. Expect work to be funded by DWR TSS grant. GSA responsibilities: administer grant; coordinate with DWR
	Install 5 new observation wells	$0	$125,000	$125,000	$25,000	Placeholder costs. Expect work to be funded by DWR TSS grant. GSA responsibilities: administer grant; coordinate with DWR and landowner; identify well locations; obtain property access; review and coordinate execution of agreements. Recent TSS applications showed a GSA contribution* of $25,000 for 1 observation well cluster.
	Coordinate with DWR to continue groundwater quality monitoring	$2,000	$0	$10,000	$2,000	Placeholder costs. The GSAs will coordinate with DWR to explore the continuation of regular groundwater quality monitoring in observation well clusters in the Subbasin
	Assess modification or replacement of surface water gages on Thomes Creek	$0	$40,000	$40,000	$8,000	Placeholder costs

Activity	Budget Categories and Tasks	Annual Cost	Lump Sum Items	5-year Total	Annualized Cost (5 years)	Notes
6	**Update Data Management System**					
	Routine Data Management System Updates	$10,000	$0	$50,000	$10,000	Placeholder costs.
	Well Database Update	$0	$50,000	$50,000	$10,000	Placeholder costs for updating Tehama Co well database similar to Glenn Co update, in collaboration with the other Tehama County GSPs and updating the Glenn County database.
	Well Registration Pilot Program	$0	$50,000	$50,000	$10,000	Placeholder costs for developing a pilot well registration program.
7	**Update and Refine Groundwater Model**	$0	$150,000	$150,000	$30,000	Placeholder costs
8	Evaluate, Prioritize, and Refine Projects and Management Actions	$60,000	$0	$300,000	$60,000	Depends on projects and management actions pursued; Could be grant or project match; Will be coordinated with agencies that benefit.
	Contingency (10%)	$76,650	$106,800	$490,050	$95,310	
	TOTAL	**$843,150**	**$1,174,800**	**$5,390,550**	**$1,078,110**	

Notes:
Some of the line items may be optional costs, such as well registration pilot program and well database updates.
Some of the implementation activities may be delayed beyond the first few years to allow for funding to be arranged.
*GSA contribution is expected to encompass in-kind staff time to collect and manage data and maintain equipment over the useful life of the well (approximately 20 years)

Initial Budget Worksheets FY 2022/2023

CSGSA Estimated Operational Expenses- Based on GSP Table 8-5

Budget Categories and Tasks	Annual Cost - CSGSA (CORRECTED)	Lump Sum Items - CSGSA	5-year Total (CORRECTED)	Annualized Total (CORRECTED)	Proposed FY 22/23 (NEW)	Notes (NEW)
				(5 years)		
General Management						
Management Staff	$75,000	$0	$375,000	$75,000	$0	In kind for FY 22/23; past work has been approx. 45 hours per month
Administrative Support	$40,000	$0	$200,000	$40,000	$0	In kind for FY 22/23
Audits & Accounting	$15,000	$0	$75,000	$15,000	$10,000	
Insurance	$2,000	$0	$10,000	$2,000	$2,000	Is this needed? Each agency has its own.
Technical Services						
Consulting Services	$20,000	$0	$100,000	$20,000	$0	
Legal Services	$50,000	$0	$250,000	$50,000	$50,000	**PRIORITY**
Materials & Outreach						
Supplies & Materials	$5,000	$0	$25,000	$5,000	$0	In kind for FY 22/23
Legal Notices	$1,000	$0	$5,000	$1,000	$0	In kind for FY 22/23
Community Outreach	$12,000	$0	$60,000	$12,000	$0	In kind for FY 22/23
Fees & Assessments						
Fee Studies & Adoption	$0	$90,000	$90,000	$18,000	$90,000	**PRIORITY**
County Tax Roll	$5,000	$0	$25,000	$5,000	$0	Unlikley to have fee study done by August 10
Grants						
Grant Applications	$20,000	$0	$100,000	$20,000	$20,000	**PRIORITY;** SGMA implementation funding expected in Fall 2022
Reserve & Contingency						
General Reserve (10%)	$24,500	$9,000	$131,500	$26,300	$0	put out additional call if needed
Total	**$269,500**	**$99,000**	**$1,446,500**	**$289,300**	**$172,000**	
Equal split among agencies					$57,333	
CORRECTED FIGURES						

Estimated Panning-Level Cost for First 5 Years of Implementation- Based on GSP Table 8-6

Activity	Budget Categories and Tasks	Annual Cost	Lump Sum Items	5-year Total	Annualized Cost	Notes	Proposed FY 22/23 (NEW)	Notes (NEW)
					(5 years)			
1 and 2	GSA Administration, Program Management, and Funding	$610,500	$143,000	$3,195,500	$639,100	Includes costs for GSA administration, communication, outreach, (Section 8.1) and funding mechanisms (Section 8.2) per Tables 8-4 and 8-5.	$172,000	Priority includes legal, fee study, grant applications, fiscal management/audits, and insurance (if needed)
3	**Monitoring & Reporting**							
	Groundwater Conditions Monitoring	$50,000	$0	$250,000	$50,000	Placeholder costs for groundwater level monitoring	$0	DWR and in kind
	Annual Reports ($50,000 for first report, $30,000 for subsequent reports)	$34,000	$0	$170,000	$34,000	Assumes $50,000 for first report, $30,000 for subsequent reports	$20,000	**PRIORITY;** assumes $40,000 for annual report equal split between GSAs
	GSP 5-year Update	$0	$150,000	$150,000	$30,000		$0	
4	**Address HCM and Groundwater Conditions Data Gaps**							These tasks could be evaluated as opportunities arise or funding becomes available
	AEM or other geophysical testing to refine hydrogeologic conceptual model	$0	$100,000	$100,000	$20,000	Placeholder costs. Expect majority of work to be funded by DWR.	$0	
	Aquifer testing to refine hydrogeologic conceptual model	$0	$100,000	$100,000	$20,000	Placeholder costs	$0	
	GDE mapping	$0	$150,000	$150,000	$30,000	Placeholder costs	$0	
6	**Expand Existing Monitoring Networks**							These tasks could be evaluated as opportunities arise or funding becomes available- may apply for TSS for some
	Videologging of wells with unknown screen intervals	$0	$10,000	$10,000	$2,000	Placeholder costs. Expect work to be funded by DWR TSS grant. GSA responsibilities: administer grant; coordinate with DWR		
	Install 5 new observation wells	$0	$125,000	$125,000	$25,000	Placeholder costs. Expect work to be funded by DWR TSS grant. GSA responsibilities: administer grant; coordinate with DWR and landowner; identify well locations; obtain property access; review and coordinate execution of agreements. Recent TSS applications showed a GSA contribution* of $25,000 for 1 observation well cluster.		
	Coordinate with DWR to continue groundwater quality monitoring	$2,000	$0	$10,000	$2,000	Placeholder costs. The GSAs will coordinate with DWR to explore the continuation of regular groundwater quality monitoring in observation well clusters in the Subbasin		in kind and DWR

	Assess modification or replacement of surface water gages on Thomes Creek	$0	$40,000	$40,000	$8,000	Placeholder costs		
6	**Update Data Management System**							
	Routine Data Management System Updates	$10,000	$0	$50,000	$10,000	Placeholder costs.	$5,000	consultant or in kind?- need to discuss with TC GSA
	Well Database Update	$0	$50,000	$50,000	$10,000	Placeholder costs for updating Tehama Co well database similar to Glenn Co update, in collaboration with the other Tehama County GSPs and updating the Glenn County database.	$0	may be needed for fee mechanism
	Well Registration Pilot Program	$0	$50,000	$50,000	$10,000	Placeholder costs for developing a pilot well registration program.	$0	may be needed for fee mechanism
7	**Update and Refine Groundwater Model**	$0	$150,000	$150,000	$30,000	Placeholder costs		address when a grant or other funding is available
8	Evaluate, Prioritize, and Refine Projects and Management Actions	$60,000	$0	$300,000	$60,000	Depends on projects and management actions pursued; Could be grant or project match; Will be coordinated with agencies that benefit.		
	Contingency (10%)	$76,650	$106,800	$490,050	$98,010		$0	
TOTAL		**$843,150**	**$1,174,800**	**$5,390,550**	**$1,078,110**		**$197,000**	
Equal split among agencies							**$65,666.67**	

CORRECTED FIGURES

Notes:

Some of the line items may be optional costs, such as well registration pilot program and well database updates.

Some of the implementation activities may be delayed beyond the first few years to allow for funding to be arranged.

*GSA contribution is expected to encompass in-kind staff time to collect and manage data and maintain equipment over the useful life of the well (approximately 20 years)

12. Discussion on Funding Mechanisms for GSP Implementation

a. *Appoint an ad hoc committee to develop and release a Request for Proposals to solicit a consultant to develop and implement one or more funding mechanisms for Corning Subbasin GSP implementation

At the January 12, 2022 CSGSA meeting, members indicated a desire to begin having more detailed discussions regarding funding mechanisms and a potential path forward to fund GSP implementation. Staff kicked off these discussions at the February 9, 2022 meeting by sharing past presentations by the Consulting Team to the Corning Subbasin Advisory Board, letters provided by interested stakeholders, and other relevant information. Discussion continued at the March 9, 2022 and April 13, 2022 meetings. At the April 13, 2022 meeting, the discussion was broken into two parts- one to focus on short-term funding needs (discussed during Item 11) and one to focus on long-term implementation and funding mechanisms.

Significant discussions have taken place relating to potential and preferred options, concerns and benefits of options, data needs, timing, level of effort, and other related items. In order to effectively move the longer term discussion forward, staff recommends beginning the process of hiring a consultant to guide the funding mechanism process, which may include short/medium term funding, long-term funding, and/or project specific funding. Moving the process forward could include appointing an ad hoc committee of two members to work with staff to develop and release a Request for Proposals. If desired, the committee could also manage the solicitation, review proposals, interview applicants, and bring a recommendation to the CSGSA for approval. The process to bring a recommendation to the CSGSA is expected to take approximately 10-12 weeks.

This process will also require legal counsel input; therefore, the discussions during Item 7 and Item 11 are relevant to this task as well.

13. Corning Sub-basin GSA Committee Member Reports and Comments

Members of the CSGSA Committee are encouraged to share information, reports, comments, and suggest future agenda items. Action cannot be taken on matters brought up under this item.

14. Next Meeting

The next meeting is scheduled for June 8, 2022 at 9:30 a.m.

15. Adjourn

The meeting will be adjourned.