

# **Appendix 1-C Butte Valley Comment Response Summary**

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**Butte Valley Groundwater  
Sustainability Plan Public  
Comment Summary**

**DRAFT**

November 2021

Prepared for:

Siskiyou County Flood Control and  
Water Conservation District

Prepared by:

Stantec Consulting Services, Inc.

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# BUTTE VALLEY GROUNDWATER SUSTAINABILITY PLAN PUBLIC COMMENT SUMMARY

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## ABBREVIATIONS

Advisory Committee	Butte Valley Groundwater Basin Advisory Committee
Board	County of Siskiyou Board of Supervisors
CIN	Comment Identification Number
County	County of Siskiyou
DAC	Disadvantaged Community
District	Siskiyou County Flood Control and Water Conservation District
DWR	California Department of Water Resources
GDE	Groundwater-Dependent Ecosystem
GL	Groundwater Level

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GS	Groundwater Storage
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
ISW	Interconnected Surface Waters
Matrix	Comment and Comment Response Matrix
MCR	Multiple Comment Response
SGMA	Sustainable Groundwater Management Act of 2014
SMC	Sustainable Management Criteria
WQ	Water Quality

## **ATTACHMENTS**

Attachment A – Notice to Cities, Counties, and Tribes

Attachment B – Annotated Comment Letters Received on Draft Groundwater Sustainability Plan

Attachment C – Butte Valley Groundwater Sustainability Plan Comment and Comment Response Matrix

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# BUTTE VALLEY GROUNDWATER SUSTAINABILITY PLAN PUBLIC COMMENT SUMMARY

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## 1.0 INTRODUCTION

This Public Comment Summary (Summary) describes the process and tools used by the Siskiyou County Flood Control and Water Conservation District (District) Groundwater Sustainability Agency (GSA) to solicit, review, and respond to public and stakeholder comments on the Draft Butte Valley Groundwater Sustainability Plan (GSP) and notify cities and counties within the plan area of the District's intent to adopt the GSP. These public review and notification processes were developed pursuant to the Sustainable Groundwater Management Act of 2014 (SGMA) and the California Department of Water Resources' (DWR) Groundwater Sustainability Plan Emergency Regulations, developed in May 2016.

California Code of Regulations (CCR) Title 23 Section (§) 355.4 provides the basis for DWR's determination of a GSP's compliance with SGMA and whether a GSP is likely to achieve the sustainability goal for the basin. As part of this criteria, DWR will consider:

*(10) Whether the Agency has adequately responded to comments that raise credible technical or policy issues with the Plan. (§ 355.4(b)(10))*

This document reviews the GSA's actions to notify the public and other interested parties of the availability of the Draft GSP and the GSA's approach to soliciting, reviewing, and responding to technical and policy comments submitted by the public and other interested parties.

## 1.1 DOCUMENT FORMAT

This Summary is comprised of the following four sections:

- Section 1 – Introduction: Section 1 provides an overview of the purpose and structure of the document, as well as the GSP evaluation criteria for addressing comments on the GSP.
- Section 2 – Commenting Process: Section 2 describes the public comment process for the Draft GSP and method by which the GSA notified cities, counties, and Tribes within the plan area of the proposed plan. The notification letters are included as **Attachment A** to this Summary.
- Section 3 – Submitted Comments: Section 3 provides an overview of comment letters received on the Draft GSP during the public comment period. The comment letters in their entirety are included as **Attachment B** to this Summary.
- Section 4 – Comment Management and Review: Section 4 describes how the GSA reviewed and responded to comment letters received during the public comment period, including the processes for identifying and categorizing individual comments and responding to comments that raised credible technical and policy issues. This section also describes the tool used to manage the comments and comment responses. A copy of the final tool is provided as **Attachment C** to this Summary.

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## **2.0 COMMENTING PROCESS**

The GSA solicited public comments from individuals, agencies, and organizations representing beneficial uses and users of groundwater described in Water Code § 10723.2 as well as any other interested members of the public. This section describes the Draft GSP notification and public comment process. In addition, it describes the method by which the GSA notified cities and counties of availability of the Draft GSP, pursuant to California Water Code § 10728.4.

### **2.1 DRAFT GSP RELEASE AND PUBLIC COMMENT PERIOD**

The District authorized the release of the Draft GSP on August 10, 2021. The Plan was released for public review and comment on Wednesday August 11, 2021, marking the beginning of a 45-day public comment period which ended on Sunday September 26, 2021. The GSA notified interested parties and members of the public of the release of the Draft GSP and public comment period through posting on the Siskiyou County website and an email sent out through the interested parties list.

Additional technical appendices to the Draft GSP were released during the public review and comment period on September 13, 2021. These appendices, listed below, provided supplemental, technical information only.

- Appendix 2D: Butte Model Documentation
- Appendix 2E: ET and Applied Water Estimates
- Appendix 2F: Butte Valley Wildlife Area Water Budget

The Draft GSP was available for review on the County of Siskiyou website throughout the public comment period. In addition, hard copies of the documents were made available for review at the following public locations:

- Dorris City Hall, 307 S. Main St, Dorris, CA 96023
- Butte Valley Library, 800 W 3rd St, Dorris, CA 96023

Members of the public were provided three methods to submit comment on the Draft GSP:

1. Hard copies of comments could be sent by mail or hand delivered to the GSA mailing address: 1312 Fairlane Rd, Yreka CA 96097 with Attention to SGMA.
2. Electronic copies of comment could be submitted to the GSA email address at [SGMA@co.siskiyou.ca.us](mailto:SGMA@co.siskiyou.ca.us).
3. Comment cards could be written and returned at the September 15 and 16 GSP Open Houses.



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## 2.2 NOTICE TO CITIES, COUNTIES, AND TRIBES

SGMA (as chaptered in California Water Code § 10728.4) requires that:

*A groundwater sustainability agency may adopt or amend a groundwater sustainability plan after a public hearing, held at least 90 days after providing notice to a city or county within the area of the proposed plan or amendment. The groundwater sustainability agency shall review and consider comments from any city or county that receives notice pursuant to this section and shall consult with a city or county that requests consultation within 30 days of receipt of the notice. Nothing in this section is intended to preclude an agency and a city or county from otherwise consulting or commenting regarding the adoption or amendment of a plan.*

Pursuant to these regulations, the GSA notified cities and counties within the GSP area of its intention to adopt the GSP at least 90 days before adoption of the Final GSP. This notification included a letter sent to the City of Dorris, the Siskiyou County Board of Supervisors, and the Siskiyou County Planning Department on August 13 and 16, 2021. As a courtesy, the GSA also provided notice to the Yurok, Shasta Indian Nation, and Karuk Tribes. In addition to the letter, cities and counties were notified about release of the Draft GSP via postings on the Siskiyou County website. The requests for consultation as well as an example of the notification letter are included in **Attachment A** to this Summary.

## 2.3 PUBLIC AND STAKEHOLDER INPUT ON DRAFT GSP CHAPTERS

The GSA solicited input on the Draft GSP from stakeholders and members of the public through public meetings and workshops. The Butte Valley Groundwater Basin Advisory Committee (Advisory Committee) is composed of eleven individuals representing beneficial users of groundwater in the basin. The Advisory Committee includes representation from agricultural groundwater users, residential groundwater users, water and irrigation agencies or districts, environmental/conservation organizations, and Tribal governments. The group provides information and recommendations to the GSA Board. The Advisory Committee was actively involved and provided input in development of the Draft GSP. Draft GSP chapters were brought to the Advisory Committee for their review at regular public meetings and during internal public comment periods. Advisory Committee members also provided input on key GSP topics.

Members of the public had the opportunity to provide comments on Draft GSP chapters during public GSA Board meetings, Advisory Committee meetings, public workshops, and Draft GSP chapter public comment periods. The technical team also solicited comments via emails and phone calls with Advisory Committee members and other key stakeholders in the basin.

Draft GSP chapters and meeting materials were included in Advisory Committee and District meeting packets and posted on the District website. Preliminary drafts of GSP Chapters 2, 3, and 4 were made available on the GSA website to the public, Advisory Committee, and GSA Board on April 23, 2021. Draft Chapters 3 and 4 were also presented and discussed at the Board meeting on July 8, 2021.

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The GSA also held two public workshops on August 17 and September 16 to inform and solicit input from stakeholders and members of the public about the content of the Draft GSP. The workshops were noticed via emails to the GSA's Interested Parties Database and on the District's website.

## 3.0 SUBMITTED COMMENTS

The GSA received two comment letters on the Draft GSP during the public comment period. Both letters were submitted from organizations representing beneficial uses and users of groundwater in the region, including state and federal agencies, special districts, and organizations representing environmental, and domestic users of groundwater. **Table 1**, shown below, provides the list of comments that were received on the Draft GSP, organized alphabetically by name. Copies of the comment letters received are provided in **Attachment B** to this Summary.

**Table 1. Submitted Comments**

Commenter or Agency Name	Commenter Type	Date Comment was Received
California Department of Fish and Wildlife	State Agency	9/23/2021
NGO Consortium	Non-Governmental Organizations	9/23/2021

## 4.0 COMMENT REVIEW AND RESPONSE

This section describes the process and tools the GSA used to review and respond to comments on the Draft GSP. Following the close of the public comment period, the GSA reviewed each comment letter to identify individual comments on the Draft GSP. To organize and manage the review of issue-specific comments, staff created a database, or matrix, that allowed for the categorization, grouping, and response to comments. This comment management approach is described below.

### 4.1 COMMENT MANAGEMENT

This subsection describes the process the GSA used to categorize each of the comment letters received on the Draft GSP and identify issue-specific comments for review and response. Of the two letters received, a total of 67 issue-specific comments applicable to the Draft GSP were identified. Each comment was assigned an individual comment identification number and entered into the database referred to as the Butte Valley GSP Comment and Comment Response Matrix (Matrix), further described below. GSA staff then used the Matrix to group technical or policy issues raised on the GSP, identify potential changes to the GSP to address comments, and develop comment responses.

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## 4.1.1 Comment and Comment Response Matrix

The Matrix is an Excel database developed and used by GSA staff and consultants to categorize and respond to comments submitted on the Draft GSP. **Table 2** describes the types of information included in the Matrix. A copy of the completed Matrix is provided in **Attachment C** to this Summary.

**Table 2. Butte Valley Groundwater Sustainability Plan Comment and Comment Response Matrix Columns**

Matrix Column	Column Description
Author	Name of agency or organization that signed or submitted the comment letter.
Comment Identification Number (CIN)	Unique identifier assigned to each comment received. A single comment letter may contain multiple individual comments, each with its own comment identification number.
Multiple Comment Response (MCR) number	Comments that were similar in scope were grouped together based on the GSP sections or content they discussed. Each group of comments were assigned an MCR number, identified here.
Group	Comment grouping to facilitate structured review by Advisory Committee and GSA staff.
Sub-Category	Topic within the Draft GSP that the comment identifies with, describes, or otherwise raises questions about.
Description	Short description of the main topic or issues raised in the comment.
Code/Regulation	The code or regulation cited in the comment, if referenced.
Location in GSP	The chapter, page, and line number in the Draft GSP cited in the comment, if referenced.
Comment	Copies of the comment text directly from the comment letter.
Response/Recommended Action	Response or recommended action to address the comment.
Response Location in GSP	Location in Draft GSP text changes were made in response to comment, if applicable.

Key:

GSA = Groundwater Sustainability Agency

GSP = Groundwater Sustainability Plan

## 4.1.2 Sub-Categories

To aid the comment management process, GSA staff and consultants assigned all comments a sub-category based on the primary topic or issue the comment raised. The sub-categories were used to review similar comments and assign the appropriate subject-matter expert to develop the comment response. **Table 3** provides a list of these sub-categories.

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**Table 3. Groundwater Sustainability Plan Comment Sub-Categories**

<b>Acronym</b>	<b>Sub-Category</b>
AL	Pumping Allocations/ Metering/ De Minimus Extractors/ Water Marketing/ Extraction – Water Accounting Framework
BR	Broader Regulations (such as: Endangered Species Act, Public Trust Doctrine)
DC	Disadvantaged Communities
DW	Domestic Wells
GA	GSA Organization
GD	Groundwater Dependent Ecosystems/ Environmental Beneficial Users
GE	General
GL	Groundwater Levels
GS	Groundwater Storage
GP	County General Plan
HM	Hydrogeologic Modeling
IS	Interconnected Surface Waters
LS	Land Subsidence
MA	Management Areas
MN	Monitoring Network
MU	Municipal Land/ Water Use
OR	Groundwater Sustainability Plan Organization
PM	Projects and Management Actions
PO	Public Outreach
SB	Subbasin Characteristics
TR	Transparency
WB	Water Budget/ Water Accounting Framework
WI	Well Inventory
WR	Water Resources/ Water Rights
WQ	Water Quality

### 4.1.3 Comment Groups

After assigning sub-categories and writing brief descriptions of the comments, GSA staff and consultants conducted a detailed evaluation of the scope, relevance, and importance of each individual comment. Through this activity, staff and consultants conducted an initial grouping, or prioritization, of these comments based, in part, on their applicability to 23 CCR § 355.4(b)(10). These groupings are further described below.

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- **“Group A”**: Comments were assigned to Group A if they raised substantial technical, policy, or legal issues most likely to be subject to 23 CCR § 355.4(b)(10). Of the 67 comments received, 28 were assigned to Group A.
- **“Group B”**: Comments were assigned to Group B if they required additional evaluation or significant changes to the GSP and considered valid technical or policy issues for focused review. This included comments that referred to content and themes included throughout the GSP and would require more consideration to address. Of the 67 comments received, 24 comments were assigned to Group B.
- **“Group C”**: Comments were assigned to Group C if they primarily raised editorial issues or could be addressed without requiring further technical evaluations or significant changes to the GSP text. For example, if a comment indicated that a certain passage or section of the GSP could be improved through a closer editorial review, it was categorized as Group C. Of the 67 comments, 15 were assigned to Group C and directly addressed by the GSA and consultant staff.

## 4.2 REVIEW AND RESPONSE

This subsection describes the approach and process GSA and consultant staff used to review, respond to, and address comments received on the Draft GSP and approval of amendments to the Draft GSP. This review and response process included preparation of draft multiple comment responses and a meeting of the Butte Valley Advisory Committee. These meetings, and their focus, are as noted in the following subsections.

### 4.2.1 Multiple Comment Responses

Comments of a similar nature were assigned a “Multiple Comment Response” or MCR. An MCR is a single response that applies to multiple comments of a similar nature. Draft MCRs pertaining to Group A comments were shared with the Advisory Committee in advance of the Comment Response Workshop. Based on feedback from the Workshop, the MCRs were finalized and are included in **Attachment C** to this Summary.

### 4.2.2 Comment Response Workshop

On October 28, 2021, the Butte Valley Advisory Committee held a publicly noticed meeting to review and respond to comments GSA staff and consultants had identified as Group A comments. A draft of the Matrix was provided to the Advisory Committee on October 22 and posted on the District website. Copies of the annotated comment letters were also distributed to the Advisory Committee and posted on the website. Committee members were invited to amend the priority designations of Group B and C comments; however, none were revised to Group A status. The Group A comments fell into the following major topics:

- Public Trust Doctrine
- Endangered Species Act

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- Monitoring Networks
- Water Budgets
- Groundwater Dependent Ecosystems

Through a facilitated session, the GSA staff, consultants, and the Advisory Committee reviewed and provided staff direction, as appropriate, to approve or amend each of the staff-developed responses. The Advisory Committee reached a consensus vote on a recommendation to the District to adopt the Final GSP at its December 7 meeting, based on the agreed upon revisions to the Draft GSP.

### 4.2.3 Public Hearing <PLACEHOLDER>

On December 7, 2021, the Siskiyou County Board of Supervisors held a publicly noticed public hearing for adoption of the GSP. **Table 4** provides a summary of comments provided during the public comment period of the public hearing. The table provides the commenter's name and affiliation, the comment provided, and direction provided to staff by the GSA Board (if any). This meeting was recorded and posted to the County's website. Members of the public will be able to further comment and provide feedback on the GSP during DWR's established comment period under California Water Code § 10733.4. The GSA will continue to track written comments provided to DWR.

**Table 4. Public Comments Received during the Public Hearing to Adopt  
<PLACEHOLDER>**

Commenter Name	Commenter Affiliation	Comment Provided	Direction Provided to Staff by GSA Board

**Attachment A – Notice to Cities, Counties, and Tribes**

# COUNTY OF SISKIYOU

## Flood Control and Water Conservation District

P.O. Box 750 □ 1312 Fairlane Rd  
Yreka, California 96097  
[www.co.siskiyou.ca.us](http://www.co.siskiyou.ca.us)

(530) 842-8005  
FAX (530) 842-8013  
Toll Free: 1-888-854-2000, ext. 8005

August 10, 2021

Attn: [Recipient]

**Subject: Notice of Upcoming Hearing for Adoption of Groundwater Sustainability Plans**

Dear [Recipient],

This letter is intended to provide the [Recipient] with notice of the Siskiyou County Flood Control and Water Conservation Districts (District) proposed adoption of a Groundwater Sustainability Plan (GSP) pursuant to California Water Code (CWC) section 10728.4. As required by the Sustainable Groundwater Management Act (SGMA) of 2014 (CWC §10720 et seq.), the District, acting as the Groundwater Sustainability Agency, must provide notice to a city or county within the area of the proposed GSP at least 90-days prior to holding a public hearing to adopt the GSP (CWC §10728.4).

The District has scheduled a public hearing to consider adoption of the Butte Valley, Shasta Valley and Scott River Valley GSP on December 7, 2021, at a time to be determined, during a meeting of the District, located in the Siskiyou County Board Chambers, 311 Fourth St, Yreka, CA 96097.

In accordance with CWC §10728.4, your city is eligible to request consultation with the District in advance of the public hearing. If you wish to consult with the District regarding the adoption of its GSP, please provide notice within 30 days of receipt of this letter.

You may also submit comments on the GSP during the scheduled public comment period. All relevant material, including instructions for commenting, can be found in a downloadable pdf format on the District's website at the following link: <https://www.co.siskiyou.ca.us/naturalresources/page/sustainable-groundwater-management-act-sgma>

If you have any questions, contact Matt Parker, Natural Resources Specialist at (530) 842-8019, or [mparker@co.siskiyou.ca.us](mailto:mparker@co.siskiyou.ca.us). This letter was approved by the Siskiyou County Board of Supervisors on August 10, 2021 by the following vote:

AYES: Director Criss, Kobseff, Valenzuela, Ogren and Haupt

NOES: None

ABSENT: None

ABSTAIN: None

Sincerely,

Ray A. Haupt, Chair  
Siskiyou County Flood Control and Water Conservation District



**Attachment B – Annotated Comment Letters  
Received on Draft Groundwater Sustainability Plan**

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The Nature  
Conservancy



Audubon | CALIFORNIA



Local  
Government  
Commission

Leaders for Livable Communities

**Union of  
Concerned Scientists**  
Science for a healthy planet and safer world

 CLEAN WATER ACTION | CLEAN WATER FUND

September 26, 2021

Siskiyou County Flood Control and Water Conservation District  
1312 Fairlane Road  
Yreka, CA 96097

Submitted via email: [lauraf@lwa.com](mailto:lauraf@lwa.com); [katie.duncan@stantec.com](mailto:katie.duncan@stantec.com); [sgma@co.siskiyou.ca.us](mailto:sgma@co.siskiyou.ca.us)

## Re: Public Comment Letter for Butte Valley Draft Groundwater Sustainability Plan

Dear Laura Foglia,

On behalf of the above-listed organizations, we appreciate the opportunity to comment on the Draft Groundwater Sustainability Plan (GSP) for the Butte Valley Basin being prepared under the Sustainable Groundwater Management Act (SGMA). Our organizations are deeply engaged in and committed to the successful implementation of SGMA because we understand that groundwater is critical for the resilience of California's water portfolio, particularly in light of changing climate. Under the requirements of SGMA, Groundwater Sustainability Agencies (GSAs) must consider the interests of all beneficial uses and users of groundwater, such as domestic well owners, environmental users, surface water users, federal government, California Native American tribes and disadvantaged communities (Water Code 10723.2).

As stakeholder representatives for beneficial users of groundwater, our GSP review focuses on how well disadvantaged communities, drinking water users, tribes, climate change, and the environment were addressed in the GSP. While we appreciate that some basins have consulted us directly via focus groups, workshops, and working groups, we are providing public comment letters to all GSAs as a means to engage in the development of 2022 GSPs across the state. Recognizing that GSPs are complicated and resource intensive to develop, the intention of this letter is to provide constructive stakeholder feedback that can improve the GSP prior to submission to the State.

Based on our review, we have significant concerns regarding the treatment of key beneficial users in the Draft GSP and consider the GSP to be **insufficient** under SGMA. We highlight the following findings:

1. Beneficial uses and users **are not sufficiently** considered in GSP development.
  - a. Human Right to Water considerations **are not sufficiently** incorporated.
  - b. Public trust resources **are not sufficiently** considered.
  - c. Impacts of Minimum Thresholds, Measurable Objectives and Undesirable Results on beneficial uses and users **are not sufficiently** analyzed.
2. Climate change **is not sufficiently** considered.

3. Data gaps **are not sufficiently** identified and the GSP **does not have a plan** to eliminate them.
4. Projects and Management Actions **do not sufficiently consider** potential impacts or benefits to beneficial uses and users.

Our specific comments related to the deficiencies of the Butte Valley Draft GSP along with recommendations on how to reconcile them, are provided in detail in **Attachment A**.

Please refer to the enclosed list of attachments for additional technical recommendations:

<b>Attachment A</b>	GSP Specific Comments
<b>Attachment B</b>	SGMA Tools to address DAC, drinking water, and environmental beneficial uses and users
<b>Attachment C</b>	Freshwater species located in the basin
<b>Attachment D</b>	The Nature Conservancy's "Identifying GDEs under SGMA: Best Practices for using the NC Dataset"

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

Best Regards,



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



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



Samantha Arthur  
Working Lands Program Director  
Audubon California



Danielle V. Dolan  
Water Program Director  
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 Butte Valley Draft Groundwater Sustainability Plan

### 1. Consideration of Beneficial Uses and Users in GSP development

Consideration of beneficial uses and users in GSP development is contingent upon adequate identification and engagement of the appropriate stakeholders. The (A) identification, (B) engagement, and (C) consideration of disadvantaged communities, drinking water users, tribes, groundwater dependent ecosystems, streams, wetlands, and freshwater species are essential for ensuring the GSP integrates existing state policies on the Human Right to Water and the Public Trust Doctrine.

#### A. Identification of Key Beneficial Uses and Users

##### Disadvantaged Communities, Drinking Water Users, and Tribes

The identification of Disadvantaged Communities (DACs), drinking water users, and tribes is **insufficient**. We note the following deficiencies with the identification of these key beneficial users.

- The GSP states that there are three Severely Disadvantaged Communities (SDACs) in the basin, but these areas are not mapped.
- The GSP provides a map of domestic well density in Figure 1.5, but fails to provide depth of these wells (such as minimum well depth, average well depth, or depth range) within the basin.
- The GSP fails to identify the population dependent on groundwater as their source of drinking water in the basin. Specifics are not provided on how much each SDAC community relies on a particular water supply (e.g., what percentage is supplied by groundwater).

NGO-001

NGO-002

NGO-003

These missing elements are required for the GSA to fully understand the specific interests and water demands of these beneficial users, and to support the development of sustainable management criteria and projects and management actions that are protective of these users.

#### RECOMMENDATIONS

- Provide a map of the SDACs in the basin. The DWR DAC mapping tool<sup>1</sup> can be used for this purpose.
- The statement on p. 2-11 that there are no DACs in the basin is confusing, since SDACs are a subset of DACs. Please remove or clarify this sentence.
- Include a map showing domestic well locations and average well depth across the basin.

NGO-001  
cont.

NGO-002  
cont.

<sup>1</sup> The DWR DAC mapping tool is available online at: <https://gis.water.ca.gov/app/dacs/>

- Identify the sources of drinking water for SDAC members, including an estimate of how many people rely on groundwater (e.g., domestic wells, state small water systems, and public water systems).
- Describe the occurrence of tribal lands in the basin. If tribes have interests in the basin or if groundwater management within Butte Valley Basin will have impacts on downstream tribes, describe them in detail.

NGO-003  
cont.

NGO-004

**Interconnected Surface Waters**

The identification of Interconnected Surface Waters (ISWs) is **insufficient**. There is no map presented in the ISW section (Section 2.2.2.6) of stream reaches in the basin. The GSP provides a vague assessment of groundwater levels in the vicinity of stream reaches, with no specific details provided. The analysis concludes with the statement (p. 89): “Until the associated data gaps are addressed, Butte Creek is tentatively assumed disconnected from the Basin groundwater aquifer due to nearby deep groundwater levels.”

NGO-005

NGO-006

The GSP acknowledges large data gaps for the determination of ISWs. However, given the gaps in groundwater level data and streamflow data, the stream reaches should be considered potential ISWs until further data can be gathered. Because the potential ISWs have not been identified, they cannot be adequately managed in the GSP. Until a disconnection can be proven, all potential ISWs should be included in the GSP. This is necessary to assess whether surface water depletions caused by groundwater use are having an adverse impact on environmental beneficial users of surface water.

NGO-007

<b>RECOMMENDATIONS</b>	
<ul style="list-style-type: none"> <li>• Provide a map showing all the stream reaches in the basin, with reaches clearly <u>labeled with stream name and interconnected or disconnected</u>. Consider any segments with data gaps as potential ISWs and clearly mark them as such on maps provided in the GSP.</li> </ul>	<p>NGO-005 cont.</p> <p>NGO-007 cont.</p>
<ul style="list-style-type: none"> <li>• Provide depth-to-groundwater contour maps using the best practices presented in Attachment D, to aid in the determination of ISWs. Specifically, ensure that the first step is contouring groundwater elevations, and then subtracting this layer from land surface elevations from a digital elevation model (DEM) to estimate depth-to-groundwater contours across the landscape. This will provide accurate contours of depth to groundwater along streams and other land surface depressions where GDEs are commonly found.</li> </ul>	<p>NGO-008</p>
<ul style="list-style-type: none"> <li>• Use seasonal data over multiple water year types (we recommend 10 years from 2005 to 2015) to capture the variability in environmental conditions inherent in California’s climate, when mapping ISWs.</li> </ul>	<p>NGO-009</p>
<ul style="list-style-type: none"> <li>• Reconcile ISW data gaps with specific measures (shallow monitoring wells, stream gauges, and nested/clustered wells) along surface water features in the Monitoring Network section of the GSP. Data gaps are discussed in general terms in the ISW section (Section 2.2.2.6), but very little detail is provided.</li> </ul>	<p>NGO-007 cont.</p>

### **Groundwater Dependent Ecosystems**

The identification of Groundwater Dependent Ecosystems (GDEs) is **insufficient**, due to lack of clarity around the monitoring well data (well location and screen depth) used to map groundwater elevations and depth to groundwater. The GSP references TNC Best Practices for using the NC Dataset (2019) as the approach used to map depth to groundwater, using the difference between land surface elevation and interpolated groundwater elevation above mean sea level. However, the GSP does not further describe the monitoring well data (well location and screen depth) used to create the depth-to-groundwater maps.

NGO-010

The GSP took initial steps to identify and map GDEs using the Natural Communities Commonly Associated with Groundwater dataset (NC dataset) and other sources. However, we found that some mapped features in the NC dataset were improperly disregarded, as described below.

- NC dataset polygons were incorrectly removed in areas adjacent to irrigated fields due to the presence of surface water. However, this removal criteria is flawed since GDEs, in addition to groundwater, can rely on multiple water sources – including shallow groundwater receiving inputs from irrigation return flow from nearby irrigated fields – simultaneously and at different temporal/spatial scales. NC dataset polygons adjacent to irrigated land can still potentially be reliant on shallow groundwater aquifers, and therefore should not be removed solely based on their proximity to irrigated fields.
- NC dataset polygons were incorrectly removed based on the amount of time that they access groundwater. As presented in the GSP, assumed GDEs have access to groundwater >50% of time and assumed non-GDEs have access to groundwater <50% of the time. However, NC dataset polygons should not be assumed to be disconnected if there is any connection to groundwater (regardless of temporal percentage). Many GDEs often simultaneously rely on multiple sources of water (i.e., both groundwater and surface water), or shift their reliance on different sources on an interannual or inter-seasonal basis.

NGO-011

NGO-012

### **RECOMMENDATIONS**

- On the depth-to-groundwater level maps presented in Appendix 2-C, include the location of groundwater monitoring wells used to produce the maps. Discuss screening depth of monitoring wells and ensure they are monitoring the shallow principal aquifer.
- Use depth-to-groundwater data from multiple seasons and water year types to verify whether polygons in the NC Dataset are supported by groundwater, instead of the incorrect criteria mentioned above (presence of irrigation water or less than 50% time connected to groundwater).
- Refer to Attachment B for more information on TNC's plant rooting depth database. Deeper thresholds are necessary for plants that have reported maximum root depths that exceed the averaged 30 feet threshold, such as valley oak (*Quercus lobata*). We recommend that the reported max rooting depth for these deeper-rooted plants be used. For example, a depth-to-groundwater threshold of 80 feet should be used instead of the 30 feet threshold, when verifying whether valley oak polygons from the NC Dataset are connected to groundwater. It is important to re-emphasize that actual rooting depth data are limited and will depend on the plant species and site-specific conditions such as soil and aquifer types, and availability to other water sources.

NGO-010  
cont.

NGO-012  
cont.

NGO-013

- 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.

NGO-014

### **Native Vegetation and Managed Wetlands**

Native vegetation and managed wetlands are water use sectors that are required<sup>2,3</sup> to be included into the water budget. The integration of native vegetation and managed wetlands into the water budget is **insufficient**, due to the absence of Appendix 2-D (Water Budget). We could not determine if the water budget included the current, historical, and projected demands of native vegetation and managed wetlands. The inclusion of explicit water demands for native vegetation and managed wetlands is crucial, so that key environmental uses of groundwater are accounted for as water supply decisions are made using this budget and considered in project and management actions.

NGO-015

### **RECOMMENDATION**

- Include Appendix 2-D (Water Budget) in the GSP. 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 native vegetation and managed wetlands.

NGO-015  
cont.

## **B. Engaging Stakeholders**

### **Stakeholder Engagement during GSP development**

Stakeholder engagement during GSP development is **insufficient**. SGMA’s requirement for public notice and engagement of stakeholders<sup>4</sup> is not fully met by the description in the Stakeholder Communication and Engagement Plan included in the GSP (Appendix 1-A).

NGO-016

The GSP describes outreach to tribal and environmental stakeholders in the basin and states that members of these groups are on the Stakeholder Advisory Committee. However, we note the following deficiencies with other aspects of the stakeholder engagement process:

- The opportunities for public involvement and engagement are described in very general terms. They include attendance at public meetings, stakeholder email list, and updates to

NGO-017

<sup>2</sup> “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(a)]

<sup>3</sup> “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]

<sup>4</sup> “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)]

the GSP website. There is no specific outreach described for members of the SDAC communities or domestic well owners.

NGO-017

- The Stakeholder Communication and Engagement Plan does not include a plan for continual opportunities for engagement through the *implementation* phase of the GSP for SDACs, domestic well owners, and environmental stakeholders.

NGO-018

RECOMMENDATION
<ul style="list-style-type: none"> <li>• In the Stakeholder Communication and Engagement Plan, describe active and targeted outreach to engage SDAC members, domestic well owners, and environmental stakeholders throughout the GSP development and implementation phases. Refer to Attachment B for specific recommendations on how to actively engage stakeholders during all phases of the GSP process.</li> </ul>

NGO-016  
cont.

### C. Considering Beneficial Uses and Users When Establishing Sustainable Management Criteria and Analyzing Impacts on Beneficial Uses and Users

The consideration of beneficial uses and users when establishing sustainable management criteria (SMC) is **insufficient**. The consideration of potential impacts on all beneficial users of groundwater in the basin are required when defining undesirable results<sup>5</sup> and establishing minimum thresholds.<sup>6,7</sup>

#### Disadvantaged Communities and Drinking Water Users

For chronic lowering of groundwater levels, the GSP does not sufficiently describe or analyze direct or indirect impacts on domestic drinking water wells, DACs, or tribes when defining undesirable results. The GSP does not sufficiently describe how the existing minimum threshold groundwater levels are consistent with avoiding undesirable results in the basin. The GSP states (p. 3-34): “The minimum threshold is expected to cause as much as 15% well outages.” This is the only quantitative statement made however, and it is not supported by data or analysis.

NGO-019

For degraded water quality, minimum thresholds for the following three constituents of concern (COCs) are set at the maximum contaminant levels (MCLs): nitrate, specific conductivity and arsenic. However, the GSP does not set SMC for the other COCs in the basin (boron, benzene, and 1,2-dibromoethane). The GSP states on p. 3-37 that because 1,2-dibromoethane and benzene are already being monitored and managed by the Regional Board through the Leaking Underground Storage Tank (LUST) program, SMC are not needed. The GSP states that since boron is naturally occurring, SMC are not needed. However, SMC should be established for all COCs in the basin, in addition to coordinating with water quality regulatory programs. Naturally occurring COCs can be exacerbated as a result of groundwater use or groundwater management within the basin.

NGO-020

<sup>5</sup> “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)]

<sup>6</sup> “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)]

<sup>7</sup> “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)]



The GSP only includes a very general discussion of indirect impacts to drinking water users when defining undesirable results and evaluating the cumulative or indirect impacts of proposed minimum thresholds. The GSP does not, however, mention or discuss direct and indirect impacts on DACs or tribes when defining undesirable results for degraded water quality, nor does it evaluate the cumulative or indirect impacts of proposed minimum thresholds on DACs or tribes.

NGO-021

RECOMMENDATIONS	
<b>Chronic Lowering of Groundwater Levels</b> <ul style="list-style-type: none"><li>Describe direct and indirect impacts on drinking water users, DACs, and tribes when describing undesirable results and defining minimum thresholds for chronic lowering of groundwater levels.</li></ul>	NGO-019 cont.
<b>Degraded Water Quality</b> <ul style="list-style-type: none"><li>Describe direct and indirect impacts on drinking water users, DACs and tribes 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.”<sup>8</sup></li><li>Evaluate the cumulative or indirect impacts of proposed minimum thresholds for degraded water quality on drinking water users, DACs, and tribes.</li><li>Set minimum thresholds and measurable objectives for boron, benzene and 1,2-dibromoethane. Ensure they align with drinking water standards<sup>9</sup>.</li></ul>	NGO-021 cont. NGO-020 cont.

**Groundwater Dependent Ecosystems and Interconnected Surface Waters**

Sustainable management criteria provided in the GSP do not consider potential impacts to environmental beneficial users. The GSP neither describes nor analyzes direct or indirect impacts on environmental users of groundwater or surface water when defining undesirable results. This is problematic because without identifying potential impacts to GDEs and beneficial users of interconnected surface waters, minimum thresholds may compromise, or even destroy, environmental beneficial users. Since GDEs are present in the basin, they must be considered when developing SMC for the basin.

NGO-021 cont.

The GSP states that the depletion of interconnected surface water sustainability indicator is not applicable in the Basin, but this has not been proven. Chapter 2 of the GSP disregards ISWs due to data gaps. However, they should be retained as potential ISWs and preliminary SMC for the depletion of interconnected surface water sustainability indicator should be established.

NGO-022

<sup>8</sup> 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](https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858).

<sup>9</sup> “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)]

RECOMMENDATIONS	
<ul style="list-style-type: none"> <li>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 to 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<sup>10</sup> in the basin. Defining undesirable results is the crucial first step before the minimum thresholds<sup>11</sup> can be determined.</li> </ul>	NGO-023
<ul style="list-style-type: none"> <li>Establish preliminary SMC for the depletion of interconnected surface water sustainability indicator, that can be refined when data gaps are filled. When defining undesirable results for depletion of interconnected surface water, include a description of potential impacts on instream habitats within ISWs when defining minimum thresholds in the basin<sup>12</sup>. The GSP should confirm that minimum thresholds for ISWs avoid adverse impacts to environmental beneficial users of interconnected surface waters as these environmental users could be left unprotected by the GSP. These recommendations apply especially to environmental beneficial users that are already protected under pre-existing state or federal law<sup>6,13</sup>.</li> </ul>	NGO-022 cont.

## 2. Climate Change

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<sup>14</sup> 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.

The integration of climate change into the projected water budget is **incomplete**. The GSP does not incorporate climate change into the projected water budget using DWR change factors for 2030 and 2070. The GSP also considers multiple climate scenarios (e.g., the 2070 extremely wet and extremely dry climate scenarios) in the projected water budget. The GSP includes climate change into key inputs (e.g., precipitation, evaporation, and surface water flow) of the projected water budget. However, we are

NGO-024

NGO-024  
cont.

<sup>10</sup> “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)]

<sup>11</sup> 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)]

<sup>12</sup> “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)]

<sup>13</sup> Rohde MM, Seapy B, Rogers R, Castañeda X, editors. 2019. Critical Species LookBook: A compendium of California’s threatened and endangered species for sustainable groundwater management. The Nature Conservancy, San Francisco, California. Available at: [https://groundwaterresourcehub.org/public/uploads/pdfs/Critical\\_Species\\_LookBook\\_91819.pdf](https://groundwaterresourcehub.org/public/uploads/pdfs/Critical_Species_LookBook_91819.pdf)

<sup>14</sup> “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)]

concerned that the selected period is from 1991-2011 and therefore it does not include the drought from 2012-2016. We look forward to reading Appendix 2-D (Water Budget) in the next draft of the GSP to learn about how you are integrating drought risk in your future water budget.

NGO-024  
cont.

The GSP does not calculate a sustainable yield based on the projected water budget with climate change incorporated, but instead states that the sustainable yield will vary over time as new project and management actions are added. The GSP states (p. 2-126): “The sustainable yield is not a number that is constant over time, as future conditions may decrease or increase the amount of groundwater that can be withdrawn without causing undesirable results” and continues: “For every implementation of a PMA resulting in the reduction in groundwater pumping, including some conservation easements, there is a commensurate downward adjustment in sustainable yield. The exact amount of that adjustment varies over time and will depend on the future portfolio of PMAs implemented (see chapters 3 and 4). Without the automatic adjustment of the sustainable yield to future agreed-upon reductions in groundwater pumping, other water users in the Basin may claim that the reduction in groundwater pumping, e.g., for in lieu recharge, makes groundwater available for pumping elsewhere or at other times, up to the (constant) limit of the sustainable yield. This must be avoided to successfully manage the basin.” Keep in mind that sustainable yield is a legally required component of SGMA and necessary for informing what project and management actions are necessary in the basin. If sustainable yield is not calculated, then there is also increased uncertainty in virtually every subsequent calculation used to plan for projects, derive measurable objectives, and set minimum thresholds. Plans that do not explicitly calculate sustainable yield may underestimate future impacts on vulnerable beneficial users of groundwater such as ecosystems, DACs, domestic well owners, and tribes.

NGO-025

NGO-025  
cont.

RECOMMENDATIONS	
• Include Appendix 2-D (Water Budget) in the next draft of the GSP, so that the manner in which climate change is incorporated into the water budgets is fully explained.	NGO-024 cont.
• Estimate sustainable yield based on the projected water budget with climate change incorporated, to inform the basis for development of projects and management actions.	NGO-025 cont.
• Incorporate climate change scenarios into projects and management actions.	NGO-026 cont.

### 3. Data Gaps

The consideration of beneficial users when establishing monitoring networks is **insufficient**, due to lack of specific plans to increase the Representative Monitoring Points (RMPs) in the monitoring network that represent water quality conditions and shallow groundwater elevations around DACs, domestic wells, GDEs, and ISWs. Beneficial users of groundwater may remain unprotected by the GSP without adequate monitoring and identification of data gaps in the shallow aquifer. The Plan therefore fails to meet SGMA’s requirements for the monitoring network<sup>15</sup>.

NGO-027

The GSP includes a data gap assessment (Appendix 3-A) that identifies and prioritizes data gaps in the monitoring networks. Thus while the GSP recognizes the importance of filling data gaps, it does not provide specific plans, well locations shown on a map, or a timeline to fill the data gaps. The GSP states (p. 3-6): “These additional monitoring or information requirements depend on future availability of funding

NGO-027  
cont.

<sup>15</sup> “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)]

and are not yet considered among the GSP Representative Monitoring Points (RMPs). They will be considered as potential RMPs and may eventually become part of the GSP network at the 5-year GSP update.” However, the additional RMPs should be included in the GSP now, instead of included in the 5-year GSP update. Without a map of proposed new monitoring well locations, a determination cannot be made regarding the adequacy of the monitoring network for sustainability indicators going forward into the GSP implementation phase.

NGO-027  
cont.

RECOMMENDATIONS	
<ul style="list-style-type: none"> <li>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 points (RMPs) across the basin as needed to adequately monitor all groundwater condition indicators. Prioritize proximity to GDEs and drinking water users when identifying new RMPs.</li> </ul>	<p>NGO-028</p> <p>NGO-029</p>
<ul style="list-style-type: none"> <li>Provide specific plans to fill data gaps in the monitoring network. Evaluate how the gathered data will be used to identify and map GDEs and ISWs, and identify DACs and shallow domestic well users that are vulnerable to undesirable results.</li> </ul>	<p>NGO-030</p>
<ul style="list-style-type: none"> <li>Further describe the biological monitoring that will be used to assess the potential for significant and unreasonable impacts to GDEs or ISWs due to groundwater conditions in the basin. Section 4.4 mentions the use of satellite images to evaluate the status of GDEs, however no further details are provided in the GSP.</li> </ul>	<p>NGO-031</p>

#### 4. Addressing Beneficial Users in Projects and Management Actions

The consideration of beneficial users when developing projects and management actions is **insufficient**, due to the failure to completely identify benefits or impacts of identified projects and management actions to beneficial users of groundwater such as DACs and drinking water users.

NGO-032

We commend the GSA for including projects and management actions with explicit benefits to the environment (e.g., the Abandonment of Sam’s Neck Flood Control Facility and Kegg Meadow Enhancement and Butte Creek Channel Restoration). The GSP discusses how these projects will benefit ecosystems, but does not discuss the manner in which DACs, drinking water users, and tribes may be benefitted or impacted by projects and management actions identified in the GSP. Therefore, potential project and management actions may not protect these beneficial users. Groundwater sustainability under SGMA is defined not just by sustainable yield, but by the avoidance of undesirable results for *all* beneficial users.

NGO-032  
cont.

RECOMMENDATIONS	
<ul style="list-style-type: none"> <li>For DACs and domestic well owners, include further discussion of a drinking water well impact mitigation program to proactively monitor and protect drinking water wells through GSP implementation. The GSP describes a well replacement program in Section 4.3 (Tier II PMAs), but no details are provided. Refer to Attachment B for specific recommendations on how to implement a drinking water well mitigation program.</li> </ul>	<p>NGO-033</p>

- For DACs, domestic well owners, and tribes, 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.
- Recharge ponds, reservoirs, and facilities for managed stormwater recharge can be designed as multiple-benefit projects to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. For guidance on how to integrate multi-benefit recharge projects into your GSP, refer to the “Multi-Benefit Recharge Project Methodology Guidance Document”<sup>16</sup>.
- Develop management actions that incorporate climate and water delivery uncertainties to address future water demand and prevent future undesirable results.

NGO-034

NGO-035

NGO-036

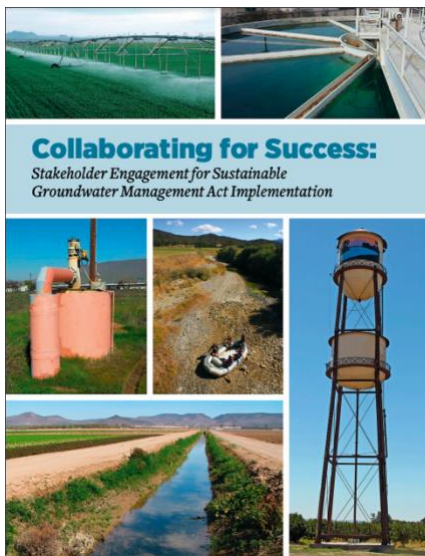
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<sup>16</sup> The Nature Conservancy. 2021. Multi-Benefit Recharge Project Methodology for Inclusion in Groundwater Sustainability Plans. Sacramento. Available at: <https://groundwaterresourcehub.org/sgma-tools/multi-benefit-recharge-project-methodology-guidance/>

# Attachment B

## SGMA Tools to address DAC, drinking water, and environmental beneficial uses and users

### Stakeholder Engagement and Outreach



Clean Water Action, Community Water Center and Union of Concerned Scientists developed a guidance document called [Collaborating for success: Stakeholder engagement for Sustainable Groundwater Management Act Implementation](#). It provides details on how to conduct targeted and broad outreach and engagement during Groundwater Sustainability Plan (GSP) development and implementation. Conducting a targeted outreach involves:

- Developing a robust Stakeholder Communication and Engagement plan that includes outreach at frequented locations (schools, farmers markets, religious settings, events) across the plan area to increase the involvement and participation of disadvantaged communities, drinking water users and the environmental stakeholders.
- Providing translation services during meetings and technical assistance to enable easy participation for non-English speaking stakeholders.
- GSP should adequately describe the process for requesting input from beneficial users and provide details on how input is incorporated into the GSP.

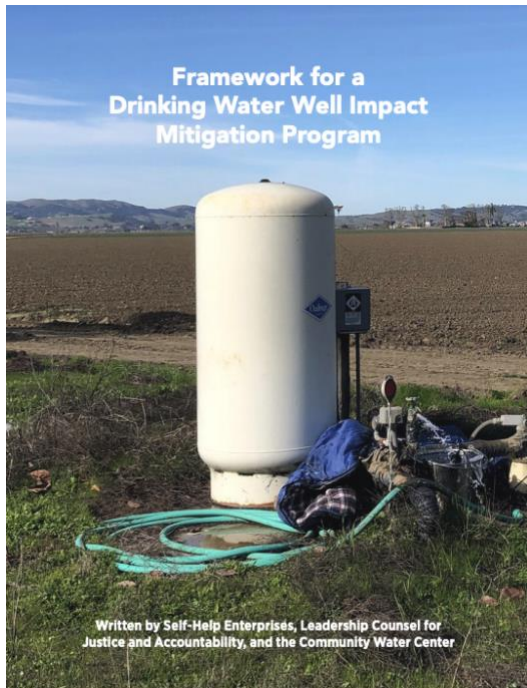
# The Human Right to Water

Human Right To Water Scorecard for the Review of Groundwater Sustainability Plans

Review Criteria <i>(All Indicators Must be Present in Order to Protect the Human Right to Water)</i>		Yes/No
<b>A Plan Area</b>		
1	Does the GSP identify, describe, and provide maps of all of the following beneficial users in the GSA area? <sup>25</sup> a. Disadvantaged Communities (DACs). b. Tribes. c. Community water systems. d. Private well communities.	
2	Land use policies and practices <sup>26</sup> Does the GSP review all relevant policies and practices of land use agencies which could impact groundwater resources? These include but are not limited to the following: a. Water use policies General Plans and local land use and water planning documents b. Plans for development and zoning. c. Processes for permitting activities which will increase water consumption	
<b>B Basin Setting (Groundwater Conditions and Water Budget)</b>		
1	Does the groundwater level conditions section include past and current drinking water supply issues of domestic well users, small community water systems, state small water systems, and disadvantaged communities?	
2	Does the groundwater quality conditions section include past and current drinking water quality issues of domestic well users, small community water systems, state small water systems, and disadvantaged communities, including public water wells that had or have MCLs exceedances? <sup>27</sup>	
3	Does the groundwater quality conditions section include a review of all contaminants with primary drinking water standards known to exist in the GSP area, as well as hexavalent chromium, and PFOs/PFOAs? <sup>28</sup>	
4	Incorporating drinking water needs into the water budget. <sup>29</sup> Does the Future/Projected Water Budget section explicitly include both the current and projected future drinking water needs of communities on domestic wells and community water systems (including but not limited to infill development and communities' plans for infill development,	

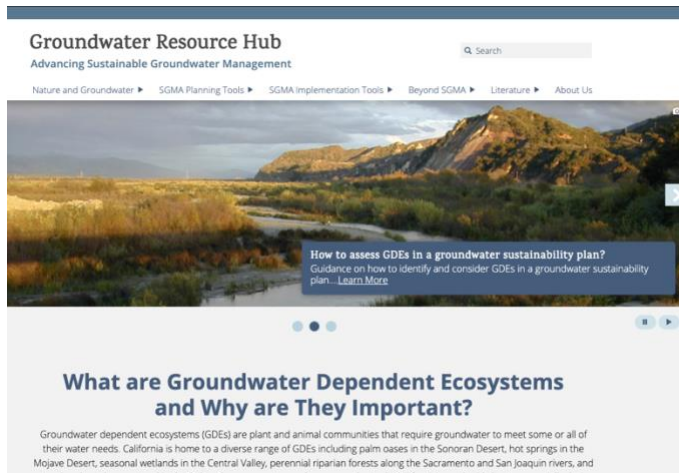
The [Human Right to Water Scorecard](#) was developed by Community Water Center, Leadership Counsel for Justice and Accountability and Self Help Enterprises to aid Groundwater Sustainability Agencies (GSAs) in prioritizing drinking water needs in SGMA. The scorecard identifies elements that must exist in GSPs to adequately protect the Human Right to Drinking water.

# Drinking Water Well Impact Mitigation Framework



The [Drinking Water Well Impact Mitigation Framework](#) was developed by Community Water Center, Leadership Counsel for Justice and Accountability and Self Help Enterprises to aid GSAs in the development and implementation of their GSPs. The framework provides a clear roadmap for how a GSA can best structure its data gathering, monitoring network and management actions to proactively monitor and protect drinking water wells and mitigate impacts should they occur.

## Groundwater Resource Hub



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

## Rooting Depth Database



The [Plant Rooting Depth Database](#) provides information that can help assess whether groundwater-dependent vegetation are accessing groundwater. Actual rooting depths will depend on the plant species and site-specific conditions, such as soil type and



availability of other water sources. Site-specific knowledge of depth to groundwater combined with rooting depths will help provide an understanding of the potential groundwater levels are needed to sustain GDEs.

## How to use the database

The maximum rooting depth information in the Plant Rooting Depth Database is useful when verifying whether vegetation in the Natural Communities Commonly Associated with Groundwater ([NC Dataset](#)) are connected to groundwater. A 30 ft depth-to-groundwater threshold, which is based on averaged global rooting depth data for phreatophytes<sup>1</sup>, is relevant for most plants identified in the NC Dataset since most plants have a max rooting depth of less than 30 feet. However, it is important to note that deeper thresholds are necessary for other plants that have reported maximum root depths that exceed the averaged 30 feet threshold, such as valley oak (*Quercus lobata*), Euphrates poplar (*Populus euphratica*), salt cedar (*Tamarix spp.*), and shadescale (*Atriplex confertifolia*). The Nature Conservancy advises that the reported max rooting depth for these deeper-rooted plants be used. 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. It is important to re-emphasize that actual rooting depth data are limited and will depend on the plant species and site-specific conditions such as soil and aquifer types, and availability to other water sources.

The Plant Rooting Depth Database is an Excel workbook composed of four worksheets:

1. California phreatophyte rooting depth data (included in the NC Dataset)
2. Global phreatophyte rooting depth data
3. Metadata
4. References

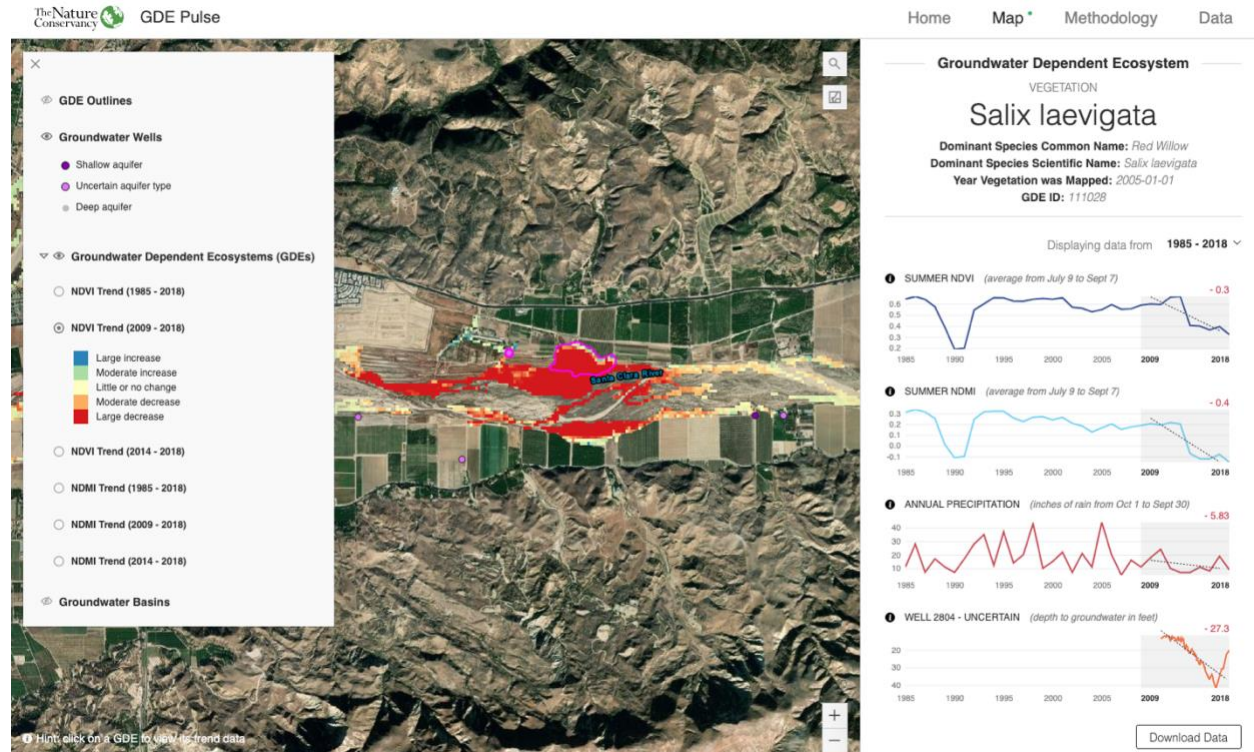
## How the database was compiled

The Plant Rooting Depth Database is a compilation of rooting depth information for the groundwater-dependent plant species identified in the NC Dataset. Rooting depth data were compiled from published scientific literature and expert opinion through a crowdsourcing campaign. As more information becomes available, the database of rooting depths will be updated. Please [Contact Us](#) if you have additional rooting depth data for California phreatophytes.

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<sup>1</sup> Canadell, J., Jackson, R.B., Ehleringer, J.B. et al. 1996. Maximum rooting depth of vegetation types at the global scale. *Oecologia* 108, 583–595. <https://doi.org/10.1007/BF00329030>

# GDE Pulse



[GDE Pulse](#) is a free online tool that allows Groundwater Sustainability Agencies to assess changes in groundwater dependent ecosystem (GDE) health using satellite, rainfall, and groundwater data. Remote sensing data from satellites has been used to monitor the health of vegetation all over the planet. GDE pulse has compiled 35 years of satellite imagery from NASA's Landsat mission for every polygon in the Natural Communities Commonly Associated with Groundwater Dataset. The following datasets are available for downloading:

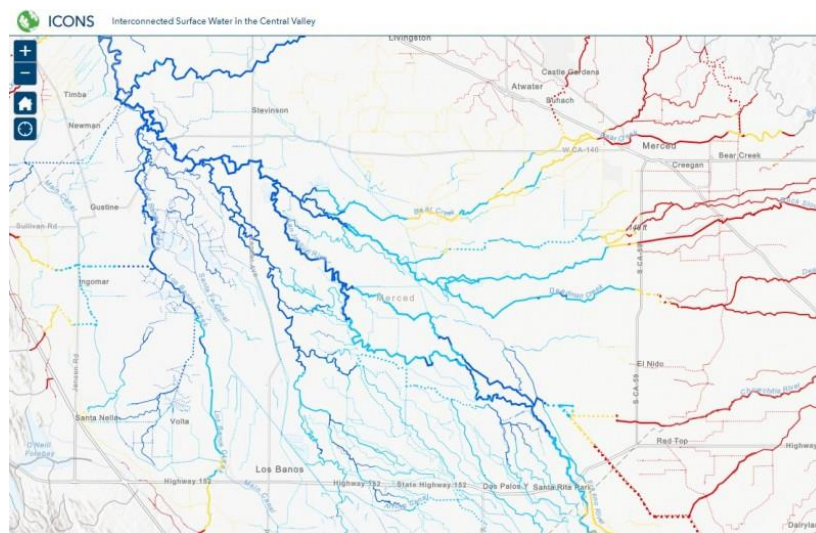
**Normalized Difference Vegetation Index (NDVI)** is a satellite-derived index that represents the greenness of vegetation. Healthy green vegetation tends to have a higher NDVI, while dead leaves have a lower NDVI. We calculated the average NDVI during the driest part of the year (July - Sept) to estimate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

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

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

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

## ICONOS Mapper Interconnected Surface Water in the Central Valley



**ICONOS** maps the likely presence of interconnected surface water (ISW) in the Central Valley using depth to groundwater data. Using data from 2011-2018, the ISW dataset represents the likely connection between surface water and groundwater for rivers and streams in California’s Central Valley. It includes information on the mean, maximum, and minimum depth to groundwater for each stream segment over the years with available data, as well as the likely presence of ISW based on the minimum depth to groundwater. The Nature Conservancy developed this database, with guidance and input from expert academics, consultants, and state agencies.

We developed this dataset using groundwater elevation data [available online](#) from the California Department of Water Resources (DWR). DWR only provides this data for the Central Valley. For GSAs outside of the valley, who have groundwater well measurements, we recommend following our methods to determine likely ISW in your region. The Nature Conservancy’s ISW dataset should be used as a first step in reviewing ISW and should be supplemented with local or more recent groundwater depth data.

# Attachment C

## Freshwater Species Located in the Butte Valley Basin

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 Butte Valley Basin. 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<sup>1</sup>. The spatial database contains locality observations and/or distribution information from ~400 data sources. The database is housed in the California Department of Fish and Wildlife’s BIOS<sup>2</sup> as well as on The Nature Conservancy’s science website<sup>3</sup>.

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

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

<sup>2</sup> California Department of Fish and Wildlife BIOS: <https://www.wildlife.ca.gov/data/BIOS>

<sup>3</sup> Science for Conservation: <https://www.scienceforconservation.org/products/california-freshwater-species-database>

Botaurus lentiginosus	American Bittern			
Bucephala albeola	Bufflehead			
Bucephala clangula	Common Goldeneye			
Calidris mauri	Western Sandpiper			
Calidris minutilla	Least Sandpiper			
Chen caerulescens	Snow Goose			
Chen rossii	Ross's Goose			
Chroicocephalus philadelphia	Bonaparte's Gull			
Cistothorus palustris palustris	Marsh Wren			
Cygnus columbianus	Tundra Swan			
Egretta thula	Snowy Egret			
Fulica americana	American Coot			
Gallinago delicata	Wilson's Snipe			
Grus canadensis	Sandhill Crane			
Haliaeetus leucocephalus	Bald Eagle	Bird of Conservation Concern	Endangered	
Himantopus mexicanus	Black-necked Stilt			
Limnodromus scolopaceus	Long-billed Dowitcher			
Megaceryle alcyon	Belted Kingfisher			
Nycticorax nycticorax	Black-crowned Night-Heron			
Oxyura jamaicensis	Ruddy Duck			
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			
Rallus limicola	Virginia Rail			
Recurvirostra americana	American Avocet			
Riparia riparia	Bank Swallow		Threatened	
Setophaga petechia	Yellow Warbler			BSSC - Second priority
Tachycineta bicolor	Tree Swallow			
Tringa melanoleuca	Greater Yellowlegs			
Tringa semipalmata	Willet			
Xanthocephalus xanthocephalus	Yellow-headed Blackbird		Special Concern	BSSC - Third priority

<b>CRUSTACEANS</b>				
Hyaella muerta	An Amphipod		Special	
Hyaella spp.	Hyaella spp.			
<b>HERPS</b>				
Actinemys marmorata marmorata	Western Pond Turtle		Special Concern	ARSSC
Anaxyrus boreas boreas	Boreal Toad			
Anaxyrus punctatus	Red-spotted Toad			
Pseudacris regilla	Northern Pacific Chorus Frog			
Rana pretiosa	Oregon Spotted Frog	Proposed Threatened	Special Concern	ARSSC
Spea intermontana	Great Basin Spadefoot			ARSSC
Thamnophis sirtalis sirtalis	Common Gartersnake			
<b>INSECTS &amp; OTHER INVERTS</b>				
Ablabesmyia spp.	Ablabesmyia spp.			
Aeshna spp.	Aeshna spp.			
Antocha spp.	Antocha spp.			
Apedilum spp.	Apedilum spp.			
Argia spp.	Argia spp.			
Atractelmis wawona	Wawona Riffle Beetle		Special	
Callibaetis spp.	Callibaetis spp.			
Cenocorixa wileyae				Not on any status lists
Centroptilum spp.	Centroptilum spp.			
Chironomidae fam.	Chironomidae fam.			
Cleptelmis addenda				Not on any status lists
Clinotanypus spp.	Clinotanypus spp.			
Coenagrionidae fam.	Coenagrionidae fam.			
Corisella decolor				Not on any status lists
Corixidae fam.	Corixidae fam.			
Cricotopus spp.	Cricotopus spp.			
Cryptochironomus spp.	Cryptochironomus spp.			
Cryptotendipes spp.	Cryptotendipes spp.			
Eukiefferiella spp.	Eukiefferiella spp.			
Fallceon quilleri	A Mayfly			
Gumaga spp.	Gumaga spp.			
Halipus spp.	Halipus spp.			
Helicopsyche spp.	Helicopsyche spp.			
Hesperocorixa laevigata				Not on any status lists
Hydroptila arctia	A Caddisfly			

Hydroptila spp.	Hydroptila spp.			
Laccophilus maculosus				Not on any status lists
Liodessus obscurellus				Not on any status lists
Microtendipes spp.	Microtendipes spp.			
Mideopsis spp.	Mideopsis spp.			
Notonecta kirbyi				Not on any status lists
Oecetis spp.	Oecetis spp.			
Ophiogomphus spp.	Ophiogomphus spp.			
Optioservus spp.	Optioservus spp.			
Oxyethira spp.	Oxyethira spp.			
Parakiefferiella spp.	Parakiefferiella spp.			
Paralauterborniella spp.	Paralauterborniella spp.			
Paraleptophlebia spp.	Paraleptophlebia spp.			
Parametriocnemus spp.	Parametriocnemus spp.			
Pentaneura spp.	Pentaneura spp.			
Phaenopsectra spp.	Phaenopsectra spp.			
Procladius spp.	Procladius spp.			
Procloeon venosum	A Mayfly			
Psectrocladius spp.	Psectrocladius spp.			
Pseudochironomus spp.	Pseudochironomus spp.			
Radotanypus spp.	Radotanypus spp.			
Rheotanytarsus spp.	Rheotanytarsus spp.			
Sanfilippodytes spp.	Sanfilippodytes spp.			
Sialis spp.	Sialis spp.			
Simulium spp.	Simulium spp.			
Tanytarsus spp.	Tanytarsus spp.			
Tricorythodes spp.	Tricorythodes spp.			
Wormaldia spp.	Wormaldia spp.			
<b>MAMMALS</b>				
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
Sorex palustris	American Water Shrew			Not on any status lists
<b>MOLLUSKS</b>				
Gyraulus spp.	Gyraulus spp.			
Lymnaea spp.	Lymnaea spp.			
Physa spp.	Physa spp.			

Pisidium spp.	Pisidium spp.			
<b>PLANTS</b>				
Potentilla newberryi	Newberry's Cinquefoil		Special	CRPR - 2B.3
Rorippa columbiae	Columbia Yellowcress		Special	CRPR - 1B.2
Alopecurus aequalis aequalis	Short-awn Foxtail			
Amphiscirpus nevadensis				Not on any status lists
Anemopsis californica	Yerba Mansa			
Aquilegia shockleyi	NA			Not on any status lists
Bistorta bistortoides				Not on any status lists
Bolboschoenus maritimus paludosus	NA			Not on any status lists
Carex alma	Sturdy Sedge			
Carex densa	Dense Sedge			
Carex nebrascensis	Nebraska Sedge			
Damasonium californicum				Not on any status lists
Downingia bacigalupii	Bacigalup's Downingia			
Downingia cuspidata	Toothed Calicoflower			
Downingia insignis	Parti-color Downingia			
Downingia pulcherrima				Not on any status lists
Downingia yina	NA			
Eleocharis acicularis acicularis	Least Spikerush			
Eleocharis bella	Delicate Spikerush			
Eleocharis coloradoensis				Not on any status lists
Eleocharis macrostachya	Creeping Spikerush			
Eleocharis montevidensis	Sand Spikerush			
Eleocharis parishii	Parish's Spikerush			
Eleocharis rostellata	Beaked Spikerush			
Epipactis gigantea	Giant Helleborine			
Fimbristylis thermalis	Hot Springs Fimbry		Special	CRPR - 2B.2
Iris missouriensis	Western Blue Iris			
Juncus xiphioides	Iris-leaf Rush			
Lobelia cardinalis cardinalis	NA			
Lythrum californicum	California Loosestrife			



Montia chamissoi	Chamisso's Miner's- lettuce			
Myosurus apetalus	Bristly Mousetail			
Myosurus minimus	NA			
Myosurus sessilis	Sessile Mousetail			
Myriophyllum aquaticum	NA			
Navarretia intertexta	Needleleaf Navarretia			
Navarretia leucocephala leucocephala	White-flower Navarretia			
Navarretia leucocephala minima	Least Navarretia			
Paspalum distichum	Joint Paspalum			
Phacelia distans	NA			
Phragmites australis australis	Common Reed			
Pluchea sericea	Arrow-weed			
Psilocarphus oregonus	Oregon Woolly- heads			
Puccinellia nuttalliana	Nuttall's Alkali Grass			
Rhododendron columbianum				Not on any status lists
Rumex salicifolius salicifolius	Willow Dock			
Salix exigua exigua	Narrowleaf Willow			
Salix exigua hindsiana				Not on any status lists
Salix gooddingii	Goodding's Willow			
Salix laevigata	Polished Willow			
Schoenoplectus americanus	Three-square Bulrush			
Schoenoplectus pungens longispicatus	Three-square Bulrush			
Scirpus microcarpus	Small-fruit Bulrush			
Senecio hydrophilus	Great Swamp Ragwort			
Sidalcea pedata	Pedate Checker- mallow	Endangered	Endangered	CRPR - 1B.1
Stachys albens	White-stem Hedge- nettle			
Stuckenia striata				Not on any status lists
Symphotrichum frondosum	Alkali Aster			
Symphotrichum lanceolatum lanceolatum	NA			
Typha domingensis	Southern Cattail			

Veronica anagallis-aquatica	NA			
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## IDENTIFYING GDEs UNDER SGMA Best Practices for using the NC Dataset

The Sustainable Groundwater Management Act (SGMA) requires that groundwater dependent ecosystems (GDEs) be identified in Groundwater Sustainability Plans (GSPs). As a starting point, the Department of Water Resources (DWR) is providing the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) online<sup>1</sup> to help Groundwater Sustainability Agencies (GSAs), consultants, and stakeholders identify GDEs within individual groundwater basins. To apply information from the NC Dataset to local areas, GSAs should combine it with the best available science on local hydrology, geology, and groundwater levels to verify whether polygons in the NC dataset are likely supported by groundwater in an aquifer (Figure 1)<sup>2</sup>. This document highlights six best practices for using local groundwater data to confirm whether mapped features in the NC dataset are supported by groundwater.

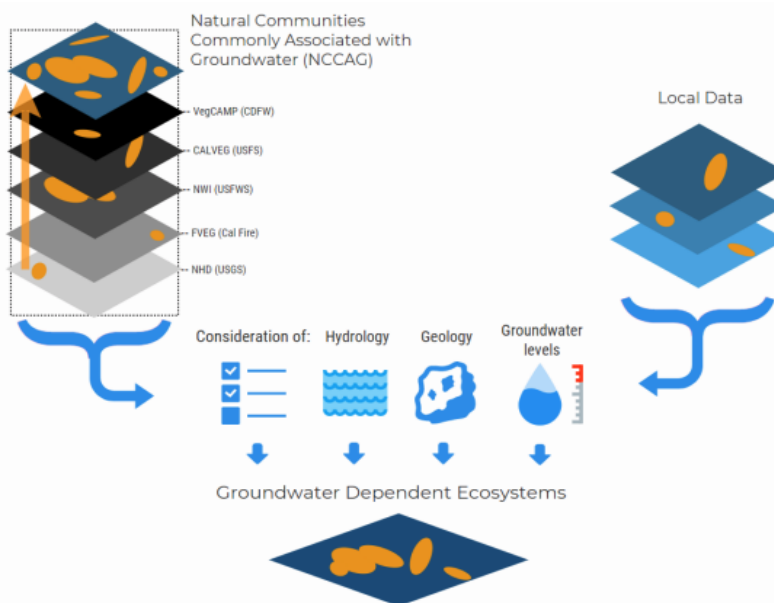


Figure 1. Considerations for GDE identification.  
Source: DWR<sup>2</sup>

<sup>1</sup> NC Dataset Online Viewer: <https://gis.water.ca.gov/app/NCDataSetViewer/>

<sup>2</sup> California Department of Water Resources (DWR). 2018. Summary of the "Natural Communities Commonly Associated with Groundwater" Dataset and Online Web Viewer. Available at: <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Data-and-Tools/Files/Statewide-Reports/Natural-Communities-Dataset-Summary-Document.pdf>

The NC Dataset identifies vegetation and wetland features that are good indicators of a GDE. The dataset is comprised of 48 publicly available state and federal datasets that map vegetation, wetlands, springs, and seeps commonly associated with groundwater in California<sup>3</sup>. It was developed through a collaboration between DWR, the Department of Fish and Wildlife, and The Nature Conservancy (TNC). TNC has also provided detailed guidance on identifying GDEs from the NC dataset<sup>4</sup> on the Groundwater Resource Hub<sup>5</sup>, a website dedicated to GDEs.

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

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

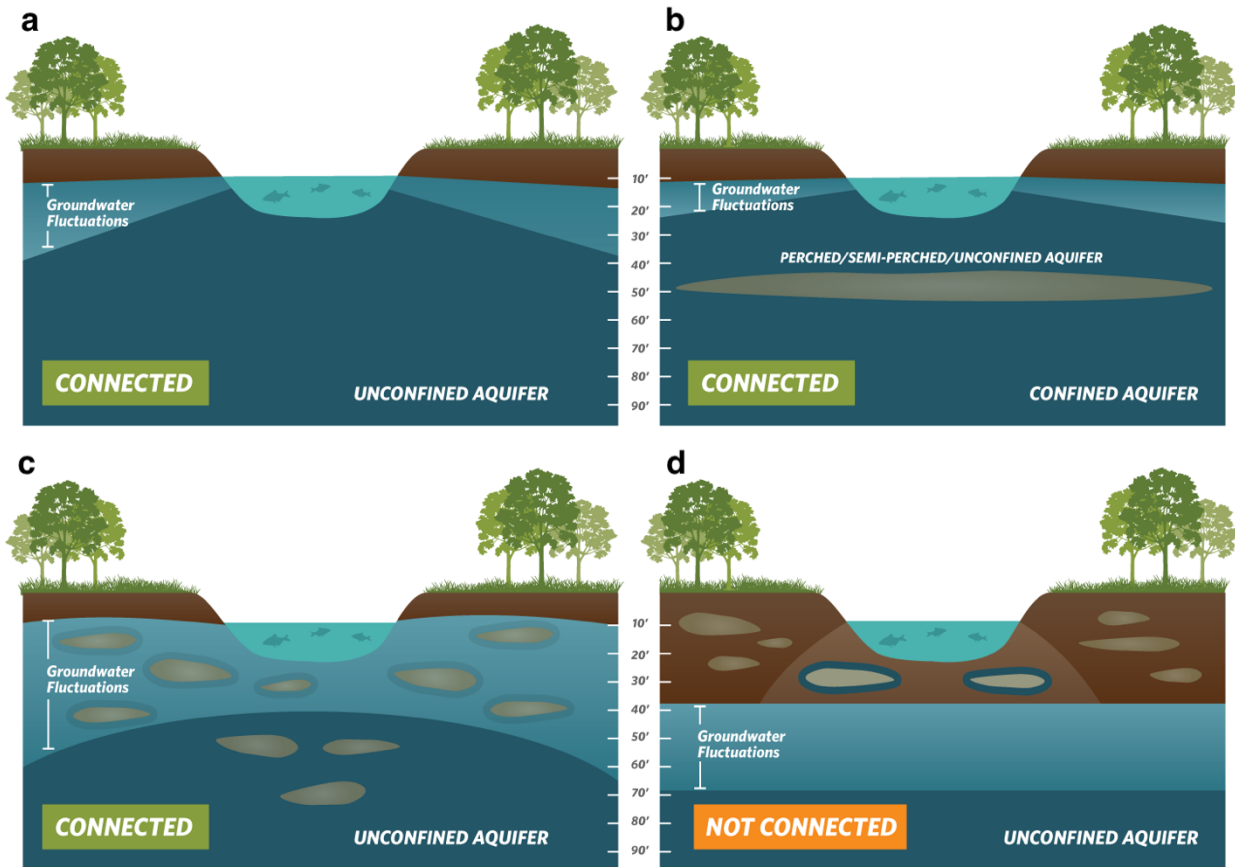
Basins with a stacked series of aquifers (Figure 2b) may have varying levels of pumping across aquifers in the basin, depending on the production capacity or water quality associated with each aquifer. If pumping is concentrated in deeper aquifers, SGMA still requires GSAs to sustainably manage groundwater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

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<sup>3</sup> For more details on the mapping methods, refer to: Klausmeyer, K., J. Howard, T. Keeler-Wolf, K. Davis-Fadtke, R. Hull, A. Lyons. 2018. Mapping Indicators of Groundwater Dependent Ecosystems in California: Methods Report. San Francisco, California. Available at: [https://groundwaterresourcehub.org/public/uploads/pdfs/iGDE\\_data\\_paper\\_20180423.pdf](https://groundwaterresourcehub.org/public/uploads/pdfs/iGDE_data_paper_20180423.pdf)

<sup>4</sup> "Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans" is available at: <https://groundwaterresourcehub.org/gde-tools/gsp-guidance-document/>

<sup>5</sup> The Groundwater Resource Hub: [www.GroundwaterResourceHub.org](http://www.GroundwaterResourceHub.org)



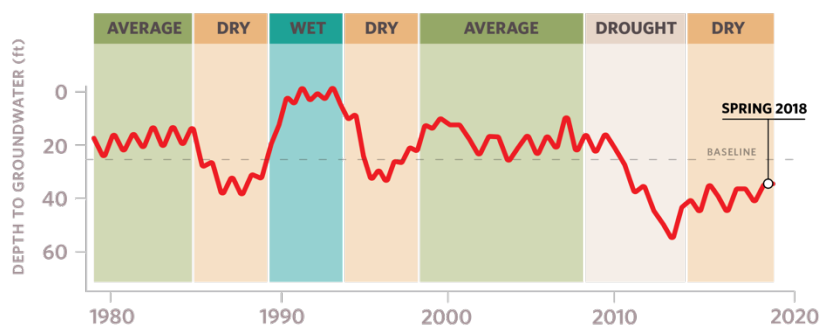
**Figure 2. Confirming whether an ecosystem is connected to groundwater. Top: (a)** Under the ecosystem is an unconfined aquifer with depth-to-groundwater fluctuating seasonally and interannually within 30 feet from land surface. **(b)** Depth-to-groundwater in the shallow aquifer is connected to overlying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

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

SGMA requires GSAs to describe current and historical groundwater conditions when identifying GDEs [23 CCR §354.16(g)]. Relying solely on the SGMA benchmark date (January 1, 2015) or any other single point in time to characterize groundwater conditions (e.g., depth-to-groundwater) is inadequate because managing groundwater conditions with data from one time point fails to capture the seasonal and interannual variability typical of California’s climate. DWR’s Best Management Practices document on water budgets<sup>6</sup> recommends using 10 years of water supply and water budget information to describe how historical conditions have impacted the operation of the basin within sustainable yield, implying that a baseline<sup>7</sup> could be determined based on data between 2005 and 2015. Using this or a similar time period, depending on data availability, is recommended for determining the depth-to-groundwater.

GDEs depend on groundwater levels being close enough to the land surface to interconnect with surface water systems or plant rooting networks. The most practical approach<sup>8</sup> for a GSA to assess whether polygons in the NC dataset are connected to groundwater is to rely on groundwater elevation data. As detailed in TNC’s GDE guidance document<sup>4</sup>, one of the key factors to consider when mapping GDEs is to contour depth-to-groundwater in the aquifer that is supporting the ecosystem (see Best Practice #5).

Groundwater levels fluctuate over time and space due to California’s Mediterranean climate (dry summers and wet winters), climate change (flood and drought years), and subsurface heterogeneity in the subsurface (Figure 3). Many of California’s GDEs have adapted to dealing with intermittent periods of water stress, however if these groundwater conditions are prolonged, adverse impacts to GDEs can result. While depth-to-groundwater levels within 30 feet<sup>4</sup> of the land surface are generally accepted as being a proxy for confirming that polygons in the NC dataset are supported by groundwater, it is highly advised that fluctuations in the groundwater regime be characterized to understand the seasonal and interannual groundwater variability in GDEs. Utilizing groundwater data from one point in time can misrepresent groundwater levels required by GDEs, and inadvertently result in adverse impacts to the GDEs. Time series data on groundwater elevations and depths are available on the SGMA Data Viewer<sup>9</sup>. However, if insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in the GSP until data gaps are reconciled in the monitoring network (see Best Practice #6).



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

<sup>6</sup> DWR. 2016. Water Budget Best Management Practice. Available at:

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

<sup>7</sup> Baseline is defined under the GSP regulations as “historic information used to project future conditions for hydrology, water demand, and availability of surface water and to evaluate potential sustainable management practices of a basin.” [23 CCR §351(e)]

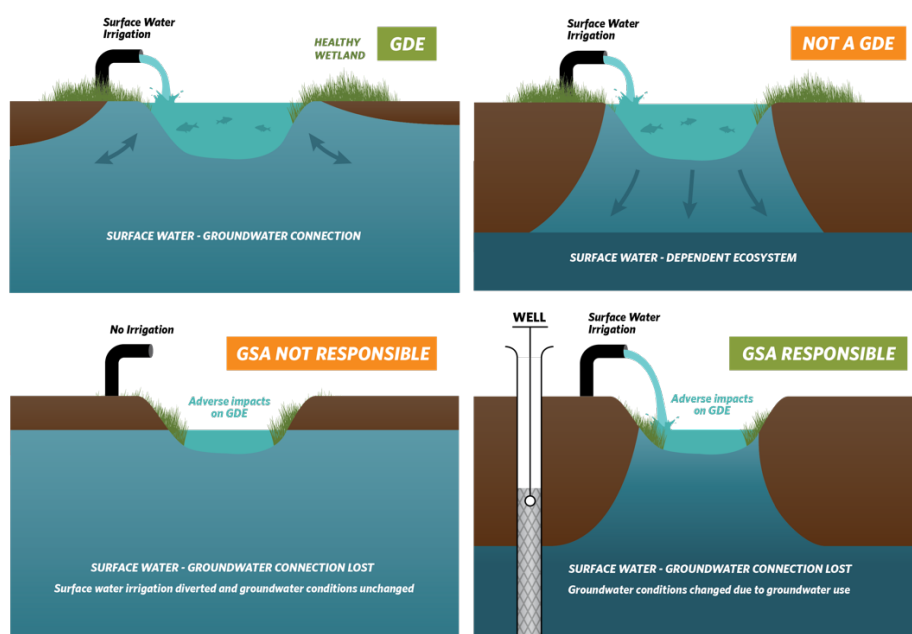
<sup>8</sup> Groundwater reliance can also be confirmed via stable isotope analysis and geophysical surveys. For more information see The GDE Assessment Toolbox (Appendix IV, GDE Guidance Document for GSPs<sup>4</sup>).

<sup>9</sup> SGMA Data Viewer: <https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer>

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

GDEs are plants and animals that rely on groundwater for all or some of its water needs, and thus can be supported by multiple water sources. The presence of non-groundwater sources (e.g., surface water, soil moisture in the vadose zone, applied water, treated wastewater effluent, urban stormwater, irrigated return flow) within and around a GDE does not preclude the possibility that it is supported by groundwater, too. SGMA defines GDEs as "ecological communities and species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface" [23 CCR §351(m)]. Hence, depth-to-groundwater data should be used to identify whether NC polygons are supported by groundwater and should be considered GDEs. In addition, SGMA requires that significant and undesirable adverse impacts to beneficial users of surface water be avoided. Beneficial users of surface water include environmental users such as plants or animals<sup>10</sup>, which therefore must be considered when developing minimum thresholds for depletions of interconnected surface water.

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



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

<sup>10</sup> For a list of environmental beneficial users of surface water by basin, visit: <https://groundwaterresourcehub.org/gde-tools/environmental-surface-water-beneficiaries/>

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

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

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

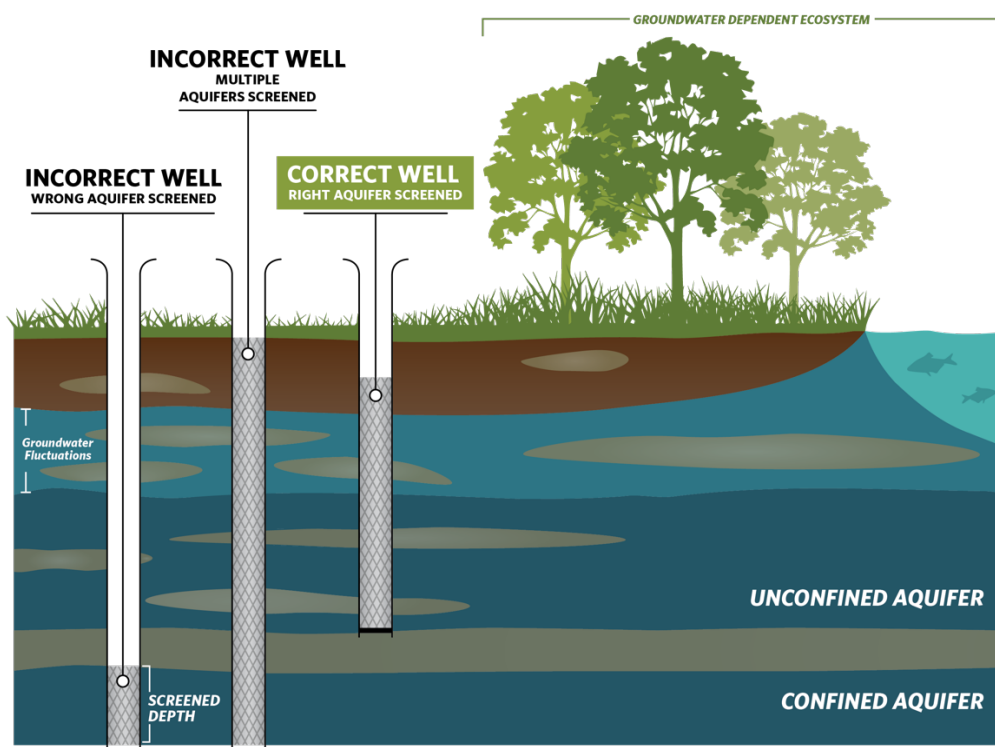
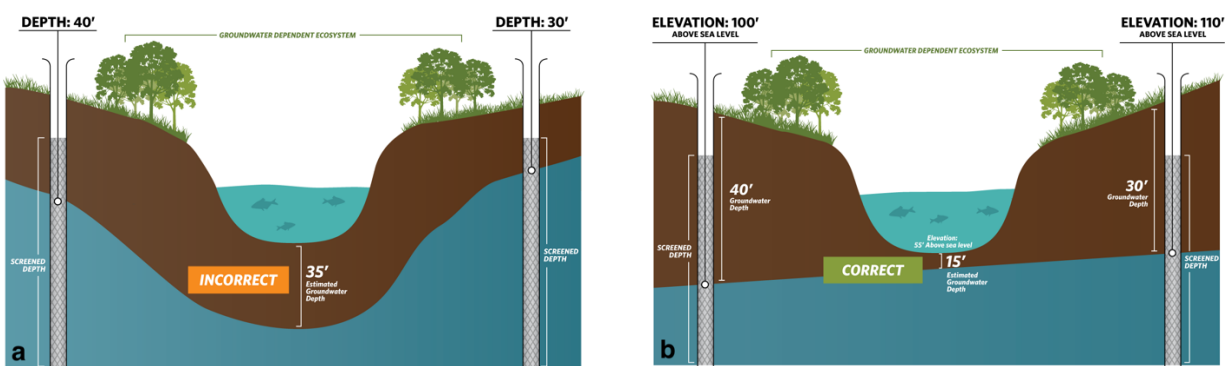


Figure 5. Selecting representative wells to characterize groundwater conditions near GDEs.

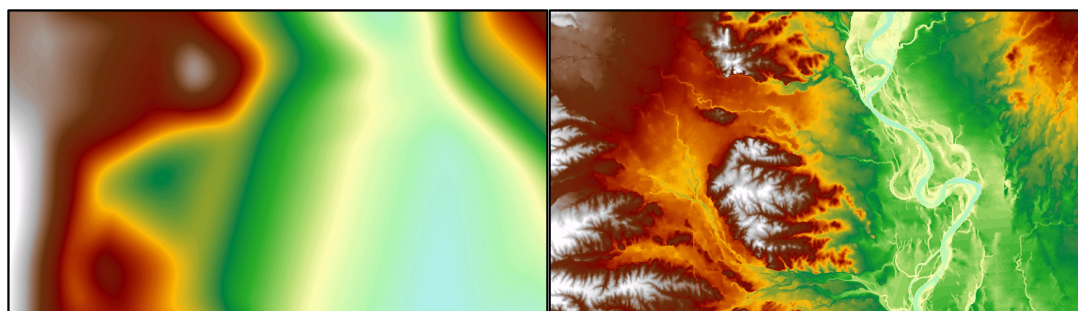


## BEST PRACTICE #5. Contouring Groundwater Elevations

The common practice to contour depth-to-groundwater over a large area by interpolating measurements at monitoring wells is unsuitable for assessing whether an ecosystem is supported by groundwater. This practice causes errors when the land surface contains features like stream and wetland depressions because it assumes the land surface is constant across the landscape and depth-to-groundwater is constant below these low-lying areas (Figure 6a). A more accurate approach is to interpolate **groundwater elevations** at monitoring wells to get groundwater elevation contours across the landscape. This layer can then be subtracted from land surface elevations from a Digital Elevation Model (DEM)<sup>11</sup> to estimate depth-to-groundwater contours across the landscape (Figure b; Figure 7). This will provide a much more accurate contours of depth-to-groundwater along streams and other land surface depressions where GDEs are commonly found.



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



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

<sup>11</sup> USGS Digital Elevation Model data products are described at: <https://www.usgs.gov/core-science-systems/nep/3dep/about-3dep-products-services> and can be downloaded at: <https://iewer.nationalmap.gov/basic/>

## BEST PRACTICE #6. Best Available Science

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

### KEY DEFINITIONS

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

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

**Interconnected surface water (ISW)** surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted. *23 CCR §351(o)*

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

### ABOUT US

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



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*GAVIN NEWSOM, Governor*  
*CHARLTON H. BONHAM, Director*



September 23, 2021

Via Electronic Mail

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**SUBJECT: CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE COMMENTS ON THE BUTTE VALLEY BASIN DRAFT GROUNDWATER SUSTAINABILITY PLAN**

Dear Matt Parker:

The California Department of Fish and Wildlife (Department) appreciates the opportunity to provide comments on the Draft Groundwater Sustainability Plan (GSP) for Butte Valley Basin (Basin) prepared by the Siskiyou County Flood Control and Water Conservation District, designated as the Groundwater Sustainability Agency (GSA).

Since the Basin is designated as medium priority under the Sustainable Groundwater Management Act (SGMA), the Basin must be managed under a GSP by January 31, 2022. Development and implementation of GSPs under SGMA represents a new era of California groundwater management. The Department has an interest in the sustainable management of groundwater, as many sensitive ecosystems and public trust resources depend on groundwater and interconnected surface waters (ISWs), including ecosystems on Department-owned and -managed lands within SGMA-regulated basins. In addition, it is important to note that the Department owns the Butte Valley Wildlife Area (BVWA), including Meiss Lake, which is within the Basin.

**Background**

The GSA appointed an Advisory Committee, composed of members of the Basin community, to work with a group of consultants to develop the Draft GSP. The Advisory Committee requested comments from any stakeholder as it developed the Draft GSP. The Department previously provided comments during Advisory Committee meetings, and on certain draft Chapters as they

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were made available. During Committee meetings, the Department provided comments on issues including the following: use of the best available science and information to develop the model; the water budget; identification and consideration of beneficial users and groundwater-dependent ecosystems (GDEs); well information as it relates to Department-owned and -managed properties; and sustainable management criteria. The Draft GSP does not fully address all comments the Department provided during the Advisory Committee meetings or comments provided on the previous draft chapters. After its review of the Draft GSP, the Department also has additional comments that it had not raised previously. Therefore, the Department is commenting again at this point in time to ensure all of these comments are fully considered in the development of the Draft GSP.

### **Organization of Comments**

The Department has organized its comments below into several key topic areas: (1) the Department's trustee agency role; (2) SGMA requirements relevant to beneficial users and GDEs; (3) SGMA hydrogeologic conceptual model requirements; (4) sustainable management criteria and water budget requirements; (5) monitoring network and well information; (6) data gaps and use of the best available science; and (7) Public Trust Doctrine and California Endangered Species Act (CESA) requirements. This letter highlights key comments and is not inclusive of all comments provided to the Advisory Committee during meetings and/or communication with County staff. The GSA reloaded Chapter 2 online on August 24, 2021. In addition, the model documentation and water budget information, including the Butte Valley Wildlife Area Water Budget, were not provided until September 13, 2021. Since the complete Draft GSP was not publicly available since the beginning of the public review period, limited time was available for review and comment of certain sections of the Draft GSP.

### **Department's Trustee Role**

As the trustee agency for the State's fish and wildlife resources, the Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of such species. (Fish & G. Code, §§ 711.7 & 1802.) The Basin supports populations of bald eagle (CESA endangered), greater sandhill crane (CESA threatened), Swainson's hawk (CESA threatened), tricolored blackbird (CESA threatened), western pond turtle (State species of special concern), pronghorn, and other fish and wildlife species that rely on habitats supported and supplemented by groundwater and surface water.

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The Draft GSP raises significant concerns about potential impacts of groundwater pumping on GDEs, interconnected surface waters (ISWs), and species within the Department's jurisdiction. The Department urges the GSA to plan for and engage in responsible groundwater management that minimizes or avoids these impacts to the maximum extent feasible as required under applicable provisions of SGMA and the Public Trust Doctrine.

CDFW-001

**SGMA Requirements Relevant to Beneficial Users and GDEs**

In addition to other requirements that will be discussed later in this letter, SGMA and its implementing regulations afford beneficial users and GDEs specific consideration, including the following as pertinent to GSPs:

Consideration of Beneficial Uses and Users

GSPs must consider the interests of all beneficial uses and users of groundwater, including environmental users of groundwater. (Water Code § 10723.2.) GSPs must also **identify and consider potential effects on all beneficial uses and users of groundwater.** (23 CCR §§ 354.10(a), 354.26(b)(3), 354.28(b)(4), 354.34(b)(2), and 354.34(f)(3).) The Draft GSP does not adequately identify all the environmental users in the Basin, their locations, the groundwater dependent habitat they depend on at certain life stages, and how the Draft GSP will meet their needs. The Draft GSP identifies a handful of species that are either Endangered Species Act (ESA) or CESA listed species found on BVWA, and does not take into account other special status or locally significant fish and wildlife species and habitats that benefit from or are dependent on groundwater. In Table 1.7 of Chapter 2, the Draft GSP identifies species prioritized for management in the first column, and other species that depend on the same ecosystems as the species prioritized for management in the second column. The Draft GSP species prioritized for management were identified as "riparian vegetation", which is a vegetation type, not an ecosystem or species. Many species, including special-status species, that are known to depend on or may be vulnerable to groundwater fluctuations were not identified in this column. Species identified in the Basin that are not included in the Draft GSP include, but are not limited to, short-eared owl, Swainson's hawk, tri-colored blackbird, Tule white-fronted goose, Vaux's swift, Wawona Riffle Beetle, western pond turtle, and white-faced ibis. The Draft GSP does not indicate where these species were found in the Basin and how these species could be supported by the identified riparian vegetation and impacted by groundwater.

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### Identification and Consideration of GDEs

GSPs must **consider impacts to GDEs**. (Water Code § 10727.4(l); see also 23 CCR § 354.16(g).) The Department is uncertain whether the Draft GSP accurately identifies all GDEs in the Basin. Specifically, the Draft GSP does not provide sufficient detail when describing the methods used for GDE classification and mapping in the Draft GSP and the rationale for the methods used. The Draft GSP mentions desktop methods of using existing mapping tools, root depth to groundwater modeling, and other tools for identifying GDEs. The Draft GSP appears not to include Advisory Committee input, field verification, or any quality assurance/quality control measures to validate the resulting classification and mapping. Without these means of verification, the Department cannot evaluate or comment on the accuracy of the GSP's GDE classification or mapping. However, the Department recommends that GDE mapping be informed by science-based vegetation classification or similar methods, such as the Department's *Survey of California Vegetation Classification and Mapping Standards*.<sup>1</sup> The Draft GSP's GDE classification and mapping should be revised if necessary after utilizing these methods. Classification and mapping methods should be thoroughly described so that GDE classification and mapping can be verified by stakeholders or repeated during future GSP updates and effectiveness monitoring.

CDFW-006

The Draft GSP mentions certain GDEs, but does not provide consideration of those GDEs or assess potential impacts to those GDEs from groundwater pumping. The Draft GSP also fails to identify or appropriately consider certain GDEs, including Meiss Lake within the BVWA. Historically, Meiss Lake was a natural wetland that spanned the Butte Valley Basin and received natural inputs from both groundwater and surface water. Due to unsustainable groundwater management practices, Meiss Lake has been reduced in size to about 4,000 acres, but it continues to support a wide variety of species and habitats. Currently, Meiss Lake receives natural inputs from surface water tributaries and is occasionally supported by pumped groundwater as needed in dry years to support groundwater-dependent species. Thus, Meiss Lake qualifies as a GDE that must be identified and appropriately considered in the draft GSP because it is a historic natural wetland that continues to rely on groundwater inputs to sustain its species and habitat. In defining GDEs entitled to consideration in a GSP, SGMA statutes and regulations do not require features to rely on groundwater from a particular source in order to qualify as GDEs. (23 CCR § 354.16(g); Water Code § 10727.4(l).)

CDFW-007

CDFW-008

<sup>1</sup> <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=102342&inline>

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Alternatively, if the District were to nevertheless conclude that Meiss Lake is not a GDE, Meiss Lake must be considered a managed wetland, with its groundwater inputs appropriately accounted for in the Draft GSP's water budget. GSPs must account for groundwater extraction for all water use sectors including managed wetlands, managed recharge, and native vegetation. (23 CCR §§ 351 (aI) and 354.18(b)(3).)

Chapter 2 of the Draft GSP contains a description of the BVWA's water management practices depending on the water year type or impacts to Meiss Lake, the lowest point in the basin. Many of the streams, including Butte Creek, have been "sufficiently appropriated" during the irrigation season, meaning that allocated water likely exceeds available supplies, leaving little to enter Meiss Lake. The Draft GSP's water budget must consider and account for the fact that Meiss Lake may go dry in certain years and may require inputs of pumped groundwater for wetland habitat restoration and to support groundwater-dependent species. By failing to account for groundwater inputs to Meiss Lake, the GSP has not adequately analyzed the groundwater-surface water relationship in the Basin or developed a complete water budget.

The Draft GSP does not identify projects and management actions (PMAs) or sustainable management criteria to protect GDEs in the basin. The Department will make best efforts to support PMAs anticipated to address both immediate and long-term fish and wildlife resource needs. Not recognizing the role of the GSA to ensure sustainable management and nearly all PMAs through an "integrative and collaborative approach" will make it difficult to achieve sustainability by 2042 as contemplated under SGMA. As explained more fully below, the Department recommends revisiting the Draft GSP to address data gaps, ensure compliance with applicable SGMA statutory requirements, and appropriately consider and address impacts to GDEs and all beneficial users.

### **Hydrogeologic Conceptual Model Requirements**

SGMA regulations require each GSP to include a descriptive hydrogeologic conceptual model (HCM) of the basin based on technical studies and qualified maps that characterizes the physical components and interaction of the surface water and groundwater systems in the basin. (23 CCR § 354.14.) The HCM must include a description of data gaps and uncertainty within the HCM. (*Id.* at § 354.14(b)(4)(5).)

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CDFW-009

CDFW-010

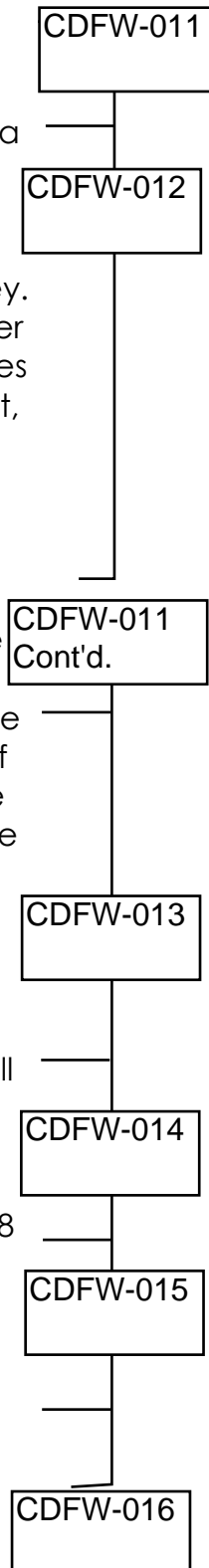
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While the Draft GSP includes an HCM, it is not clear that the HCM accurately characterizes the physical components and surface water-groundwater interactions in the Basin. For example, the HCM in the Draft GSP fails to identify a definable bottom of the basin as required by SGMA regulations. (23 CCR §354.14(b)(3).) As described in Chapter 2 of the Draft GSP, the HCM includes a description of the Western Cascades Subprovince geologic unit, which is the relatively older and less permeable volcanic bedrock that underlies Butte Valley. (p. 48.) Such description states that the Western Cascades unit “acts as a barrier to regional groundwater flow.” As such, it is assumed that the Western Cascades unit surface is the bottom of the Basin. However, the description concludes that, “This formation has not been penetrated by Butte Valley wells (DOI 1980). The unknown depth to the Western Cascades Subprovince precludes its appearance in the cross-sections.” No additional information was noted attempting to characterize the bottom of the Basin boundary.

Several statements in the Draft GSP contribute to the uncertainty regarding the accuracy of the HCM's characterizations of the physical components and surface water-groundwater interactions. For example, the Draft GSP states Butte Valley basin has experienced a decrease in groundwater levels on the order of approximately 30-feet during the study period of spring 1979 to spring 2015 due primarily to decreased precipitation, increased pumping, and a commensurate decrease in the subsurface hydraulic gradient. Similarly, the Draft GSP concludes that, “There is significant long-term trend indicating some groundwater depletion.” Conversely, the Draft GSP finds that the basin is not in overdraft due to significantly higher volumes of lateral groundwater inflow compared to volumes of groundwater extraction and does not exceed the sustainable yield of the Basin. The Draft GSP asserts that the sustainable yield will be a constantly changing value based on future climate conditions, future groundwater pumping needs, and future management actions. The Draft GSP should adequately quantify sustainable yield as required by SGMA regulations to explain this fluctuation for the approach to be acceptable. (23 CCR § 354.18 (b)(7).) Once the GSA clarifies its understanding of these issues, the water budget should be adjusted accordingly and the Draft GSP should identify sustainable management criteria that prevent adverse impacts to beneficial users, such as dewatering of GDEs, and strive for long term groundwater sustainability with PMAs. The GSA should consider developing PMAs that promote more efficient water use through water conservation where feasible.

### **Sustainable Management Criteria and Water Budget Requirements**

GSPs must **establish sustainable management criteria that avoid undesirable results** within 20 years of the applicable statutory deadline, including **depletions**





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**of ISW that have significant and unreasonable adverse impacts on beneficial uses of the surface water.** (23 CCR § 354.22 et seq. and Water Code §§ 10721(x)(6) and 10727.2(b).) The Draft GSP concludes that sustainability will be achieved by 2042 and undesirable results will be avoided, but the underlying analysis and data do not fully support these conclusions. The goal of sustainability cannot be achieved by 2042 without an accurate water budget and clearly-defined sustainable management criteria, including minimum thresholds, that meet SGMA’s requirements including the following:

CDFW-017

Minimum Thresholds for ISW Depletions

SGMA regulations require the GSP to include numeric minimum thresholds to define and avoid undesirable results, which must be explained and justified based on basin-specific information and other data or models as appropriate, with appropriate accounting for any uncertainty in the understanding of the basin setting. (23 CCR § 354.28(a)-(b).) The GSP must explain the relationship between the minimum thresholds and the relevant sustainability indicator, how the minimum thresholds will avoid causing undesirable results, how the minimum thresholds may affect the interests of beneficial uses and users of groundwater, and how each minimum threshold will be quantitatively measured consistent with SGMA monitoring network requirements. (*Id.*)

Specifically, SGMA regulations require minimum thresholds related to depletions of interconnected surface water to 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).) These minimum thresholds must be supported by the “location, quantity, and timing of depletions of interconnected surface water” and “a description of the groundwater and surface water model used to quantify surface water depletion.” (*Id.* at § 354.28(c)(6).) If a numerical groundwater-surface water model is not used to quantify surface water depletion, the GSP must identify and describe an equally effective method, tool, or analytical model to be used for this purpose. The Draft GSP does not meet these requirements because it does not identify a sustainable management criteria for surface water depletions. As such, the Draft GSP does not set minimum thresholds for surface water depletions based on the rate or volume of surface water depletions caused by groundwater use, and it does not utilize a basin-wide groundwater-surface water model or equally effective method, tool, or model to quantify such depletions. The Department requests revisions to the Draft GSP to clarify how the sustainable management criteria were developed, how these criteria relate to the relevant sustainability indicators, and how the criteria may affect the interest of beneficial users.

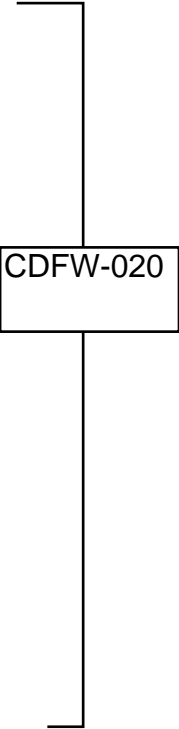
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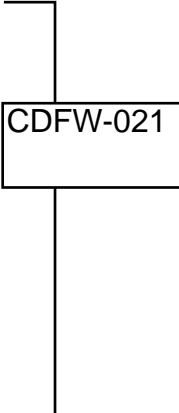
Water Budget Requirements

Per SGMA regulations, each GSP “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).) The water budget is a product of the Butte Valley Integrated Hydrologic Model (BVIHM), which is derived from the larger USGS groundwater model of the Upper Klamath Basin (Gannett et al., 2012, USGS Scientific Investigations Report 2012-5062). A key simplification is utilized by the Draft GSP authors in developing the water budget in that the surface water hydrologic subsystem is removed from the BVIHM. The Department appreciates the justifications for this simplification being few streams contribute perennial flow to the basin surface due, in part, to infiltration into highly permeable volcanic soils outside of the basin boundary. However, some of the Water Budget’s information contradicts the information presented within the HCM discussion. For example, during the HCM discussion in Chapter 2, the GSA acknowledges that streamflow losses, canal seepage and percolation from wetlands (that receive periodic surface flows) all contribute to groundwater recharge. Similarly, the HCM mentions spring-fed creeks that drain into Meiss Lake (currently part of the BVWA). Ultimately, the Department is hesitant to support elimination of all surface water inputs for modeling purposes. The Department is especially concerned with the canal seepage when an economic, environmental, or other benefit may result from a more efficient use of water. The GSA should conduct further analysis of potential surface water input sources to fully comply with applicable SGMA regulations. (see, e.g., 23 CCR §354.18(b)(1).)



Monitoring Network and Well Information

GSPs must describe monitoring networks that can identify adverse impacts to beneficial uses of ISWs. (23 CCR § 354.34(c)(6)(D).) The Draft GSP lacks basin-wide groundwater monitoring, which is necessary to assess potential surface water depletions and impacts to beneficial surface water users, including fish and wildlife species. The GSA should identify how the GSA will achieve a robust monitoring system to capture accurate information on these portions of the basin or use existing data to accurately model these portions and assess impacts. If the GSA intends to rely on basin-specific data, the Draft GSP should elaborate on the description of developing a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface water conditions as required by



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SGMA regulations. (23 CCR §354.34.) The Draft GSP should clearly identify the wells used for monitoring including individual well information. This includes the well ID, ground surface elevation, reference point elevations for water level measurements, well completion depth, perforation intervals, and hydrograph information. For the hydrograph information, the Draft GSP should provide information on the aquifer unit.

CDFW-021  
Cont'd.

**Data Gaps and Use of the Best Available Science**

Per SGMA regulations, the Draft GSP must identify reasonable measures and schedules to eliminate data gaps. (23 CCR § 355.4(b)(2).) As noted above, the Draft GSP does not set forth sustainable management criteria for surface water depletions, nor does it utilize a basin-wide groundwater-surface water model or equally effective method, tool, or model to quantify such depletions. The Draft GSP also lacks basin-wide groundwater monitoring, which is necessary to assess potential surface water depletions and impacts to beneficial surface water users. The Department acknowledges data gaps may initially exist and may make development of certain criteria more challenging. However, the Draft GSP must set forth a reasonable pathway and timeline for addressing these data gaps and developing sustainable management criteria as required under SGMA, supplementing with models and other data if needed to address uncertainties in basin-specific data.

CDFW-022  
CDFW-023

The Draft GSP also lacks quantitative criteria for interconnected surface water, which are needed to assess compliance with SGMA and avoid significant and unreasonable depletions of ISW. After conducting the necessary analysis and establishing appropriate criteria, the Draft GSP should be updated to consider and avoid any unreasonable adverse impacts to beneficial users anticipated to result from ISW depletions. The Draft GSP expanded its sustainability management criteria with additional monitoring points with “soft landing” triggers and “aspirational watershed goals”. This characterization ignores SGMA, which clearly indicates the sustainability goal and sustainable management criteria must be developed to avoid undesirable results within the planning and implementation horizon. (23 CCR §§ 354.24, 354.26, and 354.28.)

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CDFW-026

In addition, SGMA requires the assumptions, criteria, findings, and objectives of a GSP to be reasonable and supported by the best available information and best available science. (23 CCR § 355.4(b)(1).) The Department is aware of available information not being utilized to the fullest for the development of each sustainable management criteria, the water budget and BVIHM in the Draft GSP. Specifically, the Draft GSP lacks consideration of current versus historic surface water extractions, agriculture ditch losses and gains, and new or

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improved wells in the basin. These deficiencies in the analysis suggest BVIHM may not be considering all relevant groundwater pumping and related impacts in the basin. Since SGMA requires sustainable management of the entire basin, the sustainable management criteria and water budget must take a basin-wide approach. The GSA must identify reasonable measures and schedules to address these data gaps and set or revise basin-wide sustainable management criteria as its understanding of the Basin improves.

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### **Public Trust Doctrine and California Endangered Species Act**

The Department urges the GSA to consider its duties under the Public Trust Doctrine while developing its Draft GSP. While the SGMA sustainability requirements must be met within the 20-year planning and implementation horizon, Public Trust Doctrine requirements apply independently of SGMA, are not preempted by SGMA, and are applicable at all times. Under the Public Trust Doctrine, the GSA has the responsibility to consider potential impacts of its groundwater planning decisions on navigable interconnected surface waters and their tributaries, and ISWs that support fisheries and ecological uses, including the level of groundwater contribution to those waters.<sup>2</sup> The GSA has "an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible." (*National Audubon Society v. Alpine County Superior Court* (1983) 33 Cal. 3d 419, 446.)

It is not clear that the GSA has undertaken the analysis and consideration required under the Public Trust Doctrine to support its proposed PMAs and management criteria. Under *Audubon* and *Environmental Law Foundation*, the GSA must conduct a robust analysis that considers the needs of public trust resources and impacts to those resources due to the proposed groundwater management practices, and that clearly explains why protection of public trust resources is infeasible due to inconsistency with the public interest. As explained above, the GSA has yet to resolve significant data gaps relevant to the surface water depletion rate, basin-wide groundwater levels, and the presence and needs of GDEs and beneficial users of interconnected surface waters. These issues must be addressed to ensure appropriate consideration of the needs of public trust resources as required under the Public Trust Doctrine.

CDFW-028

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<sup>2</sup> See, e.g., *People v. Truckee Lumber Co.* (1897) 116 Cal. 397, *National Audubon Society v. Alpine County Superior Court* (1983) 33 Cal. 3d 419, and *Environmental Law Foundation v. State Water Resources Control Board* (2018) 26 Cal. App. 5th 844.

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Based on an accurate understanding of public trust resource needs and impacts, the GSA will need to assess a range of potential protective measures to address impacts of groundwater extractions. These measures may need to go beyond the PMAs identified in the Draft GSP and may include pumping limits or alternative supply options to address existing, new, and expanded extractions. Given overallocation and ongoing drought, it is critical to plan for such eventualities in the Draft GSP. Before rejecting such measures, the GSA will need to engage in a balancing of competing interests that shows that protecting species and habitat through contingent pumping limits, use of supply alternatives, or equivalent protective measures would be infeasible.

CDFW-029

It is also unclear whether the GSA has appropriately considered potential impacts to *all* public trust resources in the basin, including those in Meiss Lake within the BVWA. Meiss Lake provides about 4,000 acres of aquatic wetland habitat that supports a variety of bird species, including migratory waterfowl, sandhill cranes, and other wetland-associated birds along the Pacific Flyway. (1996 Land Management Plan for BVWA.) Surveys since the Land Management Plan of 1996 have documented that in wet cycles, Meiss Lake contains thousands of nests of gull and tern species, including ring-billed gulls, California gulls, Caspian terns, and Forster's terns plus double crested cormorants and American white pelicans. (Novick 2011.) Species known to visit BVWA and use its habitat for nesting and/or foraging include the state endangered bald eagle, the state threatened greater sandhill crane, the state threatened Swainson's hawk, and the state threatened northern spotted owl. (*Id.*) Surveys of BVWA also document peak use of the wildlife area by hundreds of thousands of waterfowl, including nesting species (mallard, gadwall, cinnamon teal, Great Basin Canada goose, redhead, pintail and ruddy duck). (*Id.*) One of the key purposes for acquiring and maintaining the BVWA is to maintain and restore wetlands onsite, including Meiss Lake, to provide habitat and food for species. (1996 Land Management Plan for BVWA.) Failing to manage groundwater to ensure Meiss Lake receives adequate inputs to support these uses would undermine this goal.

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Many state policies and orders recognize the importance of wetlands, including the following:

- Executive Order W-59-93, California Wetlands Conservation Policy, commonly referred to as the "No Net Loss Policy" for wetlands, which aims to "[e]nsure no overall net loss and achieve a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship and respect for private property";

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- SWRCB Resolution No. 2019-0015 (“State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State”), which affirms the SWRCB and Regional Water Boards’ commitment to increasing the quantity, quality, and diversity of wetlands in California; and
- The Fish and Game Commission’s Wetlands Resources policy, which recognizes that wetlands “provide significant and essential habitat for a wide variety of important resident and migratory fish and wildlife species” and that the quality and quantity of wetlands habitat in California has been significantly reduced. The Commission’s policy is to ensure that proposed projects will result in no net loss of wetland or riparian habitat or acreage, and to seek to provide for the protection, preservation, restoration, enhancement, and expansion of wetland habitat in California.

Case law recognizes that these ecological uses of Meiss Lake are subject to the Public Trust Doctrine. In *Marks v. Whitney* (1971) 6 Cal. 3d 251, 259-260, the California Supreme Court recognized that the Public Trust Doctrine extends to preservation of wetlands “...in their natural state, so that they may serve as ecological units for scientific study, as open space, and as environments which provide food and habitat for birds and marine life...” More recently, the same court in *Audubon* recognized applicability of the Public Trust Doctrine to non-navigable tributaries to Mono Lake that supported a variety of bird species. (33 Cal. 3d 419, 436-437.) In *Environmental Law Foundation, supra*, 26 Cal. App. 5th 859-860, the Court applied the Public Trust Doctrine to groundwater extractions from tributaries that adversely impact public trust uses in interconnected surface waters, noting that the key factor is not the nature of the activity, but whether the activity results in harm to public trust resources. Consistent with this case law, the GSA must, if feasible, manage groundwater use to ensure Meiss Lake continues to receive groundwater inputs necessary to support its habitat and ecological uses.

CDFW-030  
Cont'd.

Most critically, the GSA should consider the implications of its GSP development and implementation on species listed under the California Endangered Species Act (CESA). It is unclear whether the current Draft GSP will support all beneficial users, including CESA-listed bald eagle, greater sandhill crane, Swainson’s hawk, and northern spotted owl, since its sustainable management criteria do not appear to account for the needs of these species and its PMAs are deferred to a future date. Actions may need to go beyond SGMA minimum requirements to meet Public Trust Doctrine requirements.

CDFW-031

Matt Parker, Natural Resources Specialist  
Siskiyou County Flood Control and Water Conservation District (GSA)  
September 23, 2021  
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The Department appreciates the opportunity to provide comments on the Draft GSP. For questions, please contact Region 1 SGMA Coordinator, Brad Henderson, at [Brad.Henderson@wildlife.ca.gov](mailto:Brad.Henderson@wildlife.ca.gov) . Additionally, you can contact the Klamath Watershed Coordinator, Janae Scruggs, at [Janae.Scruggs@wildlife.ca.gov](mailto:Janae.Scruggs@wildlife.ca.gov).

Sincerely,

DocuSigned by:  
*Curt Babcock*  
974D273FEE784E2...

**Tina Bartlett**  
Regional Manager

cc: California Department of Fish and Wildlife

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**Attachment C – Butte Valley Groundwater  
Sustainability Plan Comment and Comment  
Response Matrix**

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Author	CIN	Group	Sub-Category	Description	Code/Regulation	Location in GSP	Comment	Response / Recommended Action	Response Location in GSP
California Department of Fish and Wildlife	CDFW-01	A	BR	GDEs, Environmental Beneficial Users, Public Trust Doctrine			The Draft GSP raises significant concerns about potential impacts of groundwater pumping on GDEs, interconnected surface waters (ISWs), and species within the Department's jurisdiction. The Department urges the GSA to plan for and engage in responsible groundwater management that minimizes or avoids these impacts to the maximum extent feasible as required under applicable provisions of SGMA and the Public Trust Doctrine.	See MCR "GDE", "ISW", and "Public Trust Doctrine".	
California Department of Fish and Wildlife	CDFW-02	A	GD	Identification of Environmental Beneficial Users	23 CCR §§ 354.10(a), 354.26(b)(3), 354.28(b)(4), 354.34(b)(2), and 354.34(f)(3)		The Draft GSP does not adequately identify all the environmental users in the Basin, their locations, the groundwater dependent habitat they depend on at certain life stages, and how the Draft GSP will meet their needs.	See MCR "GDE".	
California Department of Fish and Wildlife	CDFW-03	A	BR	Identification of Environmental Beneficial Users, ESA	23 CCR §§ 354.10(a), 354.26(b)(3), 354.28(b)(4), 354.34(b)(2), and 354.34(f)(3)	Chapter 2, Table 1.7	The Draft GSP identifies a handful of species that are either Endangered Species Act (ESA) or CESA listed species found on BVWA, and does not take into account other special status or locally significant fish and wildlife species and habitats that benefit from or are dependent on groundwater.	See MCR "GDE".	
California Department of Fish and Wildlife	CDFW-04	C	GD	GDE- vegetation		Chapter 2, Table 1.7	The Draft GSP species prioritized for management were identified as "riparian vegetation", which is a vegetation type, not an ecosystem or species.	The language has been updated for clarity.	
California Department of Fish and Wildlife	CDFW-05	A	GD	Identification of Environmental Beneficial Users		Chapter 2, Table 1.7	Many species, including special-status species, that are known to depend on or may be vulnerable to groundwater fluctuations were not identified in this column. Species identified in the Basin that are not included in the Draft GSP include, but are not limited to, short-eared owl, Swainson's hawk, tri-colored blackbird, Tule white-fronted goose, Vaux's swift, Wawona Riffle Beetle, western pond turtle, and white-faced ibis. The Draft GSP does not indicate where these species were found in the Basin and how these species could be supported by the identified riparian vegetation and impacted by groundwater.	See MCR "GDE".	
California Department of Fish and Wildlife	CDFW-06	C	GD	GDE Classification Methodology	Water Code § 10727.4(l); 23 CCR § 354.16(g)		The Draft GSP does not provide sufficient detail when describing the methods used for GDE classification and mapping in the Draft GSP and the rationale for the methods used. The Draft GSP mentions desktop methods of using existing mapping tools, root depth to groundwater modeling, and other tools for identifying GDEs. The Draft GSP appears not to include Advisory Committee input, field verification, or any quality assurance/quality control measures to validate the resulting classification and mapping. Without these means of verification, the Department cannot evaluate or comment on the accuracy of the GSP's GDE classification or mapping. However, the Department recommends that GDE mapping be informed by science-based vegetation classification or similar methods, such as the Department's Survey of California Vegetation Classification and Mapping Standards. <sup>1</sup> The Draft GSP's GDE classification and mapping should be revised if necessary after utilizing these methods. Classification and mapping methods should be thoroughly described so that GDE classification and mapping can be verified by stakeholders or repeated during future GSP updates and effectiveness monitoring.	See MCR "GDE".	
California Department of Fish and Wildlife	CDFW-07	A	GD	Consideration of Impacts to GDEs			The Draft GSP mentions certain GDEs, but does not provide consideration of those GDEs or assess potential impacts to those GDEs from groundwater pumping.	See MCR "GDE".	

California Department of Fish and Wildlife	CDFW-08	A	GD	Identification of GDEs, Inclusion in Water Budget- Meiss Lake	23 CCR § 354.16(g); Water Code § 10727.4(l); 23 CCR §§ 351(a) and 354.18(b)(3)	Chapter 2	The Draft GSP also fails to identify or appropriately consider certain GDEs, including Meiss Lake within the BVWA. Historically, Meiss Lake was a natural wetland that spanned the Butte Valley Basin and received natural inputs from both groundwater and surface water. Due to unsustainable groundwater management practices, Meiss Lake has been reduced in size to about 4,000 acres, but it continues to support a wide variety of species and habitats. Currently, Meiss Lake receives natural inputs from surface water tributaries and is occasionally supported by pumped groundwater as needed in dry years to support groundwater-dependent species. Thus, Meiss Lake qualifies as a GDE that must be identified and appropriately considered in the draft GSP because it is a historic natural wetland that continues to rely on groundwater inputs to sustain its species and habitat. In defining GDEs entitled to consideration in a GSP, SGMA statutes and regulations do not require features to rely on groundwater from a particular source in order to qualify as GDEs. Alternatively, if the District were to nevertheless conclude that Meiss Lake is not a GDE, Meiss Lake must be considered a managed wetland, with its groundwater inputs appropriately accounted for in the Draft GSP's water budget. GSPs must account for groundwater extraction for all water use sectors including managed wetlands, managed recharge, and native vegetation. Chapter 2 of the Draft GSP contains a description of the BVWA's water management practices depending on the water year type or impacts to Meiss Lake, the lowest point in the basin. Many of the streams, including Butte Creek, have been "sufficiently appropriated" during the irrigation season, meaning that allocated water likely exceeds available supplies, leaving little to enter Meiss Lake. The Draft GSP's water budget must consider and account for the fact that Meiss Lake may go dry in certain years and may require inputs of pumped groundwater for wetland habitat restoration and to support groundwater-dependent species. By failing to account for groundwater inputs to Meiss Lake, the GSP has not adequately analyzed the groundwater-surface water relationship in the Basin or developed a complete water budget.	CDFW's comment suggests that Meiss Lake is a groundwater dependent ecosystem. 23 CCR 351(o) provides that a groundwater dependent ecosystem refers to "ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface." According to the data in the GSP, it does not appear that Meiss Lake depends on aquifers or groundwater occurring near the ground surface. While Meiss Lake may have depended on aquifers or groundwater occurring near the ground surface prior to an increase in groundwater pumping in the Butte Valley, any disconnection arose long before January 1, 2015. Therefore, even if such disconnection were classified as an "undesirable result", it is not something that the GSA must address. Also see MCR "GDE".	
California Department of Fish and Wildlife	CDFW-09	A	PM	Developing PMAs to Protect GDEs			The Draft GSP does not identify projects and management actions (PMAs) or sustainable management criteria to protect GDEs in the basin. The Department will make best efforts to support PMAs anticipated to address both immediate and long-term fish and wildlife resource needs. Not recognizing the role of the GSA to ensure sustainable management and nearly all PMAs through an "integrative and collaborative approach" will make it difficult to achieve sustainability by 2042 as contemplated under SGMA.	See MCR "GDE".	
California Department of Fish and Wildlife	CDFW-10	B	GE	Addressing Data Gaps, Consider Impacts to GDEs and Beneficial Users			The Department recommends revisiting the Draft GSP to address data gaps, ensure compliance with applicable SGMA statutory requirements, and appropriately consider and address impacts to GDEs and all beneficial users.	See MCR "GDE".	
California Department of Fish and Wildlife	CDFW-11	B	HM	Accuracy of the Hydrogeologic Model	23 CCR § 354.14.(b)(4)(5)		While the Draft GSP includes an HCM, it is not clear that the HCM accurately characterizes the physical components and surface water-groundwater interactions in the Basin.  Several statements in the Draft GSP contribute to the uncertainty regarding the accuracy of the HCM's characterizations of the physical components and surface water-groundwater interactions.	See MCR "ISW".	
California Department of Fish and Wildlife	CDFW-12	B	HM	Accuracy of the Hydrogeologic Model	23 CCR §354.14(b)(3)	Chapter 2, page 48	The HCM in the Draft GSP fails to identify a definable bottom of the basin as required by SGMA regulations. As described in Chapter 2 of the Draft GSP, the HCM includes a description of the Western Cascades Subprovince geologic unit, which is the relatively older and less permeable volcanic bedrock that underlies Butte Valley. (p. 48.) Such description states that the Western Cascades unit "acts as a barrier to regional groundwater flow." As such, it is assumed that the Western Cascades unit surface is the bottom of the Basin. However, the description concludes that, "This formation has not been penetrated by Butte Valley wells (DOI 1980). The unknown depth to the Western Cascades Subprovince precludes its appearance in the cross-sections." No additional information was noted attempting to characterize the bottom of the Basin boundary. Several statements in the Draft GSP contribute to the uncertainty regarding the accuracy of the HCM's characterizations of the physical components and surface water-groundwater interactions.	The HCM is appropriate and properly reflects uncertainty about the depth of Western Cascades Subprovince. Due to the volcanic nature of Butte Valley many uncertainties surround Basin characterization such as the depth of the Western Cascades Subprovince. The Department of Water Resources is conducting airborne electromagnetic (AEM) surveys throughout California to assist implementing SGMA, which may improve some uncertainties in the HCM. At this time the GSP will focus on the critical data gaps listed in Appendix 3-A. Any future studies to improve the HCM will depend on partnerships with other agencies.	
California Department of Fish and Wildlife	CDFW-13	C	GL	Groundwater Depletion- Conflicting Information in GSP			The Draft GSP states Butte Valley basin has experienced a decrease in groundwater levels on the order of approximately 30-feet during the study period of spring 1979 to spring 2015 due primarily to decreased precipitation, increased pumping, and a commensurate decrease in the subsurface hydraulic gradient. Similarly, the Draft GSP concludes that, "There is significant long-term trend indicating some groundwater depletion." Conversely, the Draft GSP finds that the basin is not in overdraft due to significantly higher volumes of lateral groundwater inflow compared to volumes of groundwater extraction and does not exceed the sustainable yield of the Basin.	Model results suggest that the decline in groundwater levels is a reaction of the Butte Valley system to a decrease of recharge due to a long term decline of precipitation and climate change. The GSA aims to balance groundwater pumping needs with the decline in recharge through the PMAs outlined in Chapter 4. A series of PMAs also address filling data gaps and updating the groundwater basin numerical model for better representation of the system dynamics. See MCR "General Data Gaps".	
California Department of Fish and Wildlife	CDFW-14	A	WB	Sustainable Yield calculation	23 CCR § 354.18 (b)(7)		The Draft GSP asserts that the sustainable yield will be a constantly changing value based on future climate conditions, future groundwater pumping needs, and future management actions. The Draft GSP should adequately quantify sustainable yield as required by SGMA regulations to explain this fluctuation for the approach to be acceptable.	See MCR "Sustainable Yield".	
California Department of Fish and Wildlife	CDFW-15	B	WB	Adjust Water Budget, Identify SMCs to protect GDEs			Once the GSA clarifies its understanding of these issues, the water budget should be adjusted accordingly and the Draft GSP should identify sustainable management criteria that prevent adverse impacts to beneficial users, such as dewatering of GDEs, and strive for long term groundwater sustainability with PMAs.	Based on current knowledge and data, the current GSP has chosen sustainable management criteria (SMC) that protects beneficial users. The SMCs will be revisited after additional data is collected at subsequent 5-year GSP updates. See MCR "PMA Selection Criteria".	Chapter 3
California Department of Fish and Wildlife	CDFW-16	C	PM	Water Conservation PMAs			The GSA should consider developing PMAs that promote more efficient water use through water conservation where feasible.	More efficient water use through water conservation is an innate characteristic of many PMAs such as Tier 2 - Irrigation Efficiency Improvements and Tier 2 - Dorris Water Meter Installation Project.	

California Department of Fish and Wildlife	CDFW-17	A	GE	Meeting SGMA Requirements	23 CCR § 354.22 et seq.; Water Code §§ 10721(x)(6) and 10727.2(b)		The Draft GSP concludes that sustainability will be achieved by 2042 and undesirable results will be avoided, but the underlying analysis and data do not fully support these conclusions. The goal of sustainability cannot be achieved by 2042 without an accurate water budget and clearly-defined sustainable management criteria, including minimum thresholds.	See MCR "General Data Gaps".	
California Department of Fish and Wildlife	CDFW-18	A	IS	ISW Depletion-Modeling and Minimum Threshold	23 CCR § 354.28(c)(6)		If a numerical groundwater-surface water model is not used to quantify surface water depletion, the GSP must identify and describe an equally effective method, tool, or analytical model to be used for this purpose. The Draft GSP does not meet these requirements because it does not identify a sustainable management criteria for surface water depletions. As such, the Draft GSP does not set minimum thresholds for surface water depletions based on the rate or volume of surface water depletions caused by groundwater use, and it does not utilize a basin-wide groundwater-surface water model or equally effective method, tool, or model to quantify such depletions.	See MCR "ISW".	Section 2.2.2.6 and Chapter 3
California Department of Fish and Wildlife	CDFW-19	A	IS	ISW Depletion- SMC Calculation			The Department requests revisions to the Draft GSP to clarify how the sustainable management criteria were developed, how these criteria relate to the relevant sustainability indicators, and how the criteria may affect the interest of beneficial users.	See MCR "ISW".	Section 2.2.2.6 and Chapter 3
California Department of Fish and Wildlife	CDFW-20	B	WB	Water Budget, Hydrogeologic Model	23 CCR § 354.18(e) and 354.18(b)(1)	Chapter 2	A key simplification is utilized by the Draft GSP authors in developing the water budget in that the surface water hydrologic subsystem is removed from the BVIHM. The Department appreciates the justifications for this simplification being few streams contribute perennial flow to the basin surface due, in part, to infiltration into highly permeable volcanic soils outside of the basin boundary. However, some of the Water Budget's information contradicts the information presented within the HCM discussion. For example, during the HCM discussion in Chapter 2, the GSA acknowledges that streamflow losses, canal seepage and percolation from wetlands (that receive periodic surface flows) all contribute to groundwater recharge. Similarly, the HCM mentions spring-fed creeks that drain into Meiss Lake (currently part of the BVWA). Ultimately, the Department is hesitant to support elimination of all surface water inputs for modeling purposes. The Department is especially concerned with the canal seepage when an economic, environmental, or other benefit may result from a more efficient use of water. The GSA should conduct further analysis of potential surface water input sources to fully comply with applicable SGMA regulations.	A PMA has been added in Chapter 4 to add the surface water hydrologic subsystem to the BVIHM. The PMA is dependent on first filling existing data gaps in Basin surface water. Additional text has been added to Chapter 5 outlining the implementation plan for the new PMA.	
California Department of Fish and Wildlife	CDFW-21	B	MN	Groundwater Monitoring Network	23 CCR § 354.34		The Draft GSP lacks basinwide groundwater monitoring, which is necessary to assess potential surface water depletions and impacts to beneficial surface water users, including fish and wildlife species. The GSA should identify how the GSA will achieve a robust monitoring system to capture accurate information on these portions of the basin or use existing data to accurately model these portions and assess impacts. If the GSA intends to rely on basin-specific data, the Draft GSP should elaborate on the description of developing a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface water conditions as required by SGMA regulations. The Draft GSP should clearly identify the wells used for monitoring including individual well information. This includes the well ID, ground surface elevation, reference point elevations for water level measurements, well completion depth, perforation intervals, and hydrograph information. For the hydrograph information, the Draft GSP should provide information on the aquifer unit.	See MCR "General Data Gaps" and the PMA "Well Inventory Program".	
California Department of Fish and Wildlife	CDFW-22	A	IS	ISW Depletion- SMC	23 CCR § 355.4(b)(2)		The Draft GSP does not set forth sustainable management criteria for surface water depletions, nor does it utilize a basin-wide groundwater-surface water model or equally effective method, tool, or model to quantify such depletions.	See MCR "ISW".	Section 2.2.2.6, Chapter 3, Appendix 3-A
California Department of Fish and Wildlife	CDFW-23	A	MN	Monitoring Network- ISW Depletion and Environmental Beneficial Users	23 CCR § 355.4(b)(2)		The Draft GSP also lacks basin-wide groundwater monitoring, which is necessary to assess potential surface water depletions and impacts to beneficial surface water users.	See MCR "ISW".	Section 3.3 and Appendix 3 A.
California Department of Fish and Wildlife	CDFW-24	A	MN	Addressing Data Gaps	23 CCR § 355.4(b)(2)		The Draft GSP must set forth a reasonable pathway and timeline for addressing these data gaps and developing sustainable management criteria as required under SGMA, supplementing with models and other data if needed to address uncertainties in basin-specific data.	See MCR "General Data Gaps".	
California Department of Fish and Wildlife	CDFW-25	A	IS	ISW Depletion- SMCs, impact to Environmental Beneficial Users	23 CCR §§ 354.24, 354.26, and 354.28.		The Draft GSP also lacks quantitative criteria for interconnected surface water, which are needed to assess compliance with SGMA and avoid significant and unreasonable depletions of ISW. After conducting the necessary analysis and establishing appropriate criteria, the Draft GSP should be updated to consider and avoid any unreasonable adverse impacts to beneficial users anticipated to result from ISW depletions.	See MCR "ISW".	Section 2.2.2.6, Chapter 3, Appendix 3-A
California Department of Fish and Wildlife	CDFW-26	A	GE	Development of SMCs	23 CCR §§ 354.24, 354.26, and 354.28		The Draft GSP expanded its sustainability management criteria with additional monitoring points with "soft landing" triggers and "aspirational watershed goals". This characterization ignores SGMA, which clearly indicates the sustainability goal and sustainable management criteria must be developed to avoid undesirable results within the planning and implementation horizon.	The goal of the GSA remains to keep or return groundwater levels to the defined measurable objective. The defined triggers and "soft landing" triggers represent operational mechanisms to activate certain PMAs to address falling groundwater levels before they reach the minimum threshold and cause undesirable results. The system of PMAs to be activated at each trigger will be resolved during GSP implementation as needed and may operate anywhere from a local to Basin-wide scale. See MCR "PMA Selection Criteria".	

California Department of Fish and Wildlife	CDFW-27	B	GE	Development of SMCs, Hydrogeologic Model, and Water Budget	23 CCR § 355.4(b)(1)		The Department is aware of available information not being utilized to the fullest for the development of each sustainable management criteria, the water budget and BVIHM in the Draft GSP. Specifically, the Draft GSP lacks consideration of current versus historic surface water extractions, agriculture ditch losses and gains, and new or improved wells in the basin. These deficiencies in the analysis suggest BVIHM may not be considering all relevant groundwater pumping and related impacts in the basin.	The GSP used all available data in its development. While additional data may exist in the Basin, the GSA was not given access, which is at the discretion of private land owners and public agencies if they choose not to be collaborators. If CDFW is aware of additional information and data sources that are comfortable sharing with the GSA, it should forward the contact information to the GSA. Also see MCR "General Data Gaps".	
California Department of Fish and Wildlife	CDFW-28	A	BR	Public Trust Doctrine-GSP shortcomings	National Audubon Society v. Alpine County Superior Court (1983) 33 Cal. 3d 419, 446; People v. Truckee Lumber Co. (1897) 116 Cal. 397, 33 Cal. 3d 419, and Environmental Law Foundation v. State Water Resources Control Board (2018) 26 Cal. App. 5th 844		It is not clear that the GSA has undertaken the analysis and consideration required under the Public Trust Doctrine to support its proposed PMAs and management criteria. Under Audubon and Environmental Law Foundation, the GSA must conduct a robust analysis that considers the needs of public trust resources and impacts to those resources due to the proposed groundwater management practices, and that clearly explains why protection of public trust resources is infeasible due to inconsistency with the public interest. As explained above, the GSA has yet to resolve significant data gaps relevant to the surface water depletion rate, basin-wide groundwater levels, and the presence and needs of GDEs and beneficial users of interconnected surface waters. These issues must be addressed to ensure appropriate consideration of the needs of public trust resources as required under the Public Trust Doctrine.	See MCR "Public Trust".	
California Department of Fish and Wildlife	CDFW-29	A	PM	Consider Public Trust Doctrine when setting PMAs			Based on an accurate understanding of public trust resource needs and impacts, the GSA will need to assess a range of potential protective measures to address impacts of groundwater extractions. These measures may need to go beyond the PMAs identified in the Draft GSP and may include pumping limits or alternative supply options to address existing, new, and expanded extractions. Given overallocation and ongoing drought, it is critical to plan for such eventualities in the Draft GSP. Before rejecting such measures, the GSA will need to engage in a balancing of competing interests that shows that protecting species and habitat through contingent pumping limits, use of supply alternatives, or equivalent protective measures would be infeasible.	See MCR "Public Trust".	
California Department of Fish and Wildlife	CDFW-30	A	BR	Public Trust- Meiss Lake	Environmental Law Foundation, supra, 26 Cal. App. 5th 859-860		It is also unclear whether the GSA has appropriately considered potential impacts to all public trust resources in the basin, including those in Meiss Lake within the BVWA.  One of the key purposes for acquiring and maintaining the BVWA is to maintain and restore wetlands onsite, including Meiss Lake, to provide habitat and food for species. (1996 Land Management Plan for BVWA.)  Failing to manage groundwater to ensure Meiss Lake receives adequate inputs to support these uses would undermine this goal.  In Environmental Law Foundation, supra, 26 Cal. App. 5th 859-860, the Court applied the Public Trust Doctrine to groundwater extractions from tributaries that adversely impact public trust uses in interconnected surface waters, noting that the key factor is not the nature of the activity, but whether the activity results in harm to public trust resources. Consistent with this case law, the GSA must, if feasible, manage groundwater use to ensure Meiss Lake continues to receive groundwater inputs necessary to support its habitat and ecological uses.	See MCR "Public Trust" and "GDE".	
California Department of Fish and Wildlife	CDFW-31	A	BR	Endangered Species Act	CESA		The GSA should consider the implications of its GSP development and implementation on species listed under the California Endangered Species Act (CESA). It is unclear whether the current Draft GSP will support all beneficial users, including CESA-listed bald eagle, greater sandhill crane, Swainson's hawk, and northern spotted owl, since its sustainable management criteria do not appear to account for the needs of these species and its PMAs are deferred to a future date. Actions may need to go beyond SGMA minimum requirements to meet Public Trust Doctrine requirements.	See MCR "Public Trust" and "GDE".	Section 2.2.2.7
NGO Consortium	NGO-001	C	DC	Identification and Mapping of SDACs			The GSP states that there are three Severely Disadvantaged Communities (SDACs) in the basin, but these areas are not mapped.  Provide a map of the SDACs in the basin. The DWR DAC mapping tool can be used for 1 this purpose.  The statement on p. 2-11 that there are no DACs in the basin is confusing, since SDACs are a subset of DACs. Please remove or clarify this sentence.	One map showing DACs and SDACs has been added to Chapter 2. The statement on DACs and overall section has been edited for clarity.	Section 2.1.1.1

NGO Consortium	NGO-002	C	DW	Domestic Well Mapping			The GSP provides a map of domestic well density in Figure 1.5, but fails to provide depth of these wells (such as minimum well depth, average well depth, or depth range) within the basin.  Include a map showing domestic well locations and average well depth across the basin.	The requested information is included in the well outage analysis in Appendix 3-C.	Appendix 3-C
NGO Consortium	NGO-003	B	DC	Mapping of DAC groundwater users			The GSP fails to identify the population dependent on groundwater as their source of drinking water in the basin. Specifics are not provided on how much each SDAC community relies on a particular water supply (e.g., what percentage is supplied by groundwater).  Identify the sources of drinking water for SDAC members, including an estimate of how many people rely on groundwater (e.g., domestic wells, state small water systems, and public water systems).	Added a sentence about SDAC dependence on groundwater as a source of drinking water. Details on water suppliers and SDAC population was already included in the section.	Section 2.1.1.1
NGO Consortium	NGO-004	C	DC	Identification and engagement of Tribes			Describe the occurrence of tribal lands in the basin. If tribes have interests in the basin or if groundwater management within Butte Valley Basin will have impacts on downstream tribes, describe them in detail.	Chapter 2 has been edited to clarify that no tribal lands exist within Butte Valley. Additionally, at this time we are not aware of any tribal interests.	Section 2.1.1.1
NGO Consortium	NGO-005	C	IS	Interconnected Surface Water-Mapping		2.2.2.6	There is no map presented in the ISW section (Section 2.2.2.6) of stream reaches in the basin.  Provide a map showing all the stream reaches in the basin, with reaches clearly labeled with stream name and interconnected or disconnected. Consider any segments with data gaps as potential ISWs and clearly mark them as such on maps provided in the GSP.	A dedicated map showing stream reaches and other waterbodies in the Basin has been added to Section 2.2.2.6. An additional map of the Butte Valley Wildlife Area has been added, showing several stream reaches terminating in the Perimeter Canal of the managed wetlands. Comparison with groundwater elevation maps suggest that all surface water is disconnected, as discussed in the section. The need for additional data is discussed as a data gap.	Section 2.2.2.6
NGO Consortium	NGO-006	C	GL	Groundwater Levels			The GSP provides a vague assessment of groundwater levels in the vicinity of stream reaches, with no specific details provided.	The section has been updated to refer to Appendix 2-A for groundwater level maps.	Section 2.2.2.6
NGO Consortium	NGO-007	A	IS	Interconnected Surface Water determination- Data Gaps, Mapping		2.2.2.6	Given the gaps in groundwater level data and streamflow data, the stream reaches should be considered potential ISWs until further data can be gathered. Because the potential ISWs have not been identified, they cannot be adequately managed in the GSP. Until a disconnection can be proven, all potential ISWs should be included in the GSP.  Reconcile ISW data gaps with specific measures (shallow monitoring wells, stream gauges, and nested/clustered wells) along surface water features in the Monitoring Network section of the GSP. Data gaps are discussed in general terms in the ISW section (Section 2.2.2.6), but very little detail is provided.	See MCR "ISW".	Section 2.2.2.6 and Appendix 3A
NGO Consortium	NGO-008	B	IS	ISW determination- Groundwater Contour Maps			Provide depth-to-groundwater contour maps using the best practices presented in Attachment D, to aid in the determination of ISWs. Specifically, ensure that the first step is contouring groundwater elevations, and then subtracting this layer from land surface elevations from a digital elevation model (DEM) to estimate depth-to-groundwater contours across the landscape. This will provide accurate contours of depth to groundwater along streams and other land surface depressions where GDEs are commonly found.	The recommended approach in this comment cannot be done due to existing data gaps. See MCR "ISW" and "General Data Gaps".	Appendix 2-A
NGO Consortium	NGO-009	B	IS	ISW determination- seasonal data			Use seasonal data over multiple water year types (we recommend 10 years from 2005 to 2015) to capture the variability in environmental conditions inherent in California's climate, when mapping ISWs.	Seasonal groundwater level data is included in Appendix 2-A.	Appendix 2-A
NGO Consortium	NGO-010	A	GD	Identification of GDEs			The identification of Groundwater Dependent Ecosystems (GDEs) is insufficient, due to lack of clarity around the monitoring well data (well location and screen depth) used to map groundwater elevations and depth to groundwater. The GSP references TNC Best Practices for using the [Natural Communities Commonly Associated with Groundwater (NC)] NC Dataset (2019) as the approach used to map depth to groundwater, using the difference between land surface elevation and interpolated groundwater elevation above mean sea level. However, the GSP does not further describe the monitoring well data (well location and screen depth) used to create the depth-to-groundwater maps.  On the depth-to-groundwater level maps presented in Appendix 2-C, include the location of groundwater monitoring wells used to produce the maps. Discuss screening depth of monitoring wells and ensure they are monitoring the shallow principal aquifer.	See MCR "GDE".	
NGO Consortium	NGO-011	B	GD	Identification of GDEs			NC dataset polygons were incorrectly removed in areas adjacent to irrigated fields due to the presence of surface water. However, this removal criteria is flawed since GDEs, in addition to groundwater, can rely on multiple water sources – including shallow groundwater receiving inputs from irrigation return flow from nearby irrigated fields – simultaneously and at different temporal/spatial scales. NC dataset polygons adjacent to irrigated land can still potentially be reliant on shallow groundwater aquifers, and therefore should not be removed solely based on their proximity to irrigated fields.	See MCR "GDE".	
NGO Consortium	NGO-012	B	GD	Identification of GDEs			NC dataset polygons were incorrectly removed based on the amount of time that they access groundwater. As presented in the GSP, assumed GDEs have access to groundwater >50% of time and assumed non-GDEs have access to groundwater <50% of the time. However, NC dataset polygons should not be assumed to be disconnected if there is any connection to groundwater (regardless of temporal percentage). Many GDEs often simultaneously rely on multiple sources of water (i.e., both groundwater and surface water), or shift their reliance on different sources on an interannual or inter-seasonal basis.  Use depth-to-groundwater data from multiple seasons and water year types to verify whether polygons in the NC Dataset are supported by groundwater, instead of the incorrect criteria mentioned above (presence of irrigation water or less than 50% time connected to groundwater).	See MCR "GDE".	

NGO Consortium	NGO-013	B	GD	GDEs- rooting depth			Refer to Attachment B for more information on TNC's plant rooting depth database. Deeper thresholds are necessary for plants that have reported maximum root depths that exceed the averaged 30 feet threshold, such as valley oak ( <i>Quercus lobata</i> ). We recommend that the reported max rooting depth for these deeper-rooted plants be used. For example, a depth-to-groundwater threshold of 80 feet should be used instead of the 30 feet threshold, when verifying whether valley oak polygons from the NC Dataset are connected to groundwater. It is important to re-emphasize that actual rooting depth data are limited and will depend on the plant species and site-specific conditions such as soil and aquifer types, and availability to other water sources.	See MCR "GDE".	
NGO Consortium	NGO-014	B	GD	Identification of GDEs			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.	See MCR "GDE".	
NGO Consortium	NGO-015	A	WB	Water Budget- Accounting for GDEs			The integration of native vegetation and managed wetlands into the water budget is <b>insufficient</b> , due to the absence of Appendix 2-D (Water Budget). We could not determine if the water budget included the current, historical, and projected demands of native vegetation and managed wetlands.  Include Appendix 2-D (Water Budget) in the GSP. 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 native vegetation and managed wetlands.	See MCR "Water Budget".	
NGO Consortium	NGO-016	B	PO	Targeted Stakeholder Outreach	23 CCR §354.10(d)(3)	Appendix 1-A	SGMA's requirement for public notice and engagement of stakeholders is not fully met by the description in the Stakeholder Communication and Engagement Plan included in the GSP (Appendix 1-A).  In the Stakeholder Communication and Engagement Plan, describe active and targeted outreach to engage SDAC members, domestic well owners, and environmental stakeholders throughout the GSP development and implementation phases. Refer to Attachment B for specific recommendations on how to actively engage stakeholders during all phases of the GSP process.	Targeted outreach was not conducted to specific DACs but a large portion of the GSP area is classified as SDAC or DAC and thus outreach to the entire basin area was intended to cover those communities. See Chapter 1 for additional information.	
NGO Consortium	NGO-017	C	PO	Targeted Stakeholder Outreach	23 CCR §354.10(d)(3)	Appendix 1-A	The opportunities for public involvement and engagement are described in very general terms. They include attendance at public meetings, stakeholder email list, and updates to the GSP website. There is no specific outreach described for members of the SDAC communities or domestic well owners.	Noted. Specific outreach activities are detailed in Appendix 1-B.	
NGO Consortium	NGO-018	B	PO	Sustained stakeholder engagement	23 CCR §354.10(d)(3)	Appendix 1-A	The Stakeholder Communication and Engagement Plan does not include a plan for continual opportunities for engagement through the implementation phase of the GSP for SDACs, domestic well owners, and environmental stakeholders.	Noted. Planned outreach during the implementation phase of the plan is described in Chapter 5.	
NGO Consortium	NGO-019	B	GL	Groundwater Level Minimum Threshold- Domestic Wells, DACs, Tribes			For chronic lowering of groundwater levels, the GSP does not sufficiently describe or analyze direct or indirect impacts on domestic drinking water wells, DACs, or tribes when defining undesirable results. The GSP does not sufficiently describe how the existing minimum threshold groundwater levels are consistent with avoiding undesirable results in the basin. The GSP states (p. 3-34): "The minimum threshold is expected to cause as much as 15% well outages." This is the only quantitative statement made however, and it is not supported by data or analysis.  Describe direct and indirect impacts on drinking water users, DACs, and tribes when describing undesirable results and defining minimum thresholds for chronic lowering of groundwater levels.	Appendix 3-C includes an expanded well outage analysis that reviews the impact of falling groundwater levels on groundwater wells within the groundwater basin, including domestic wells. The entire groundwater basin is a DAC or SDAC and there are no tribal lands. Chapter 3 has been updated to refer to the appendix for the data and discusses the results of the updated analysis.	
NGO Consortium	NGO-020	B	WQ	SMCs for Constituents of Concern	23 CCR §354.34(c)(4)	pages 3-37	For degraded water quality, minimum thresholds for the following three constituents of concern (COCs) are set at the maximum contaminant levels (MCLs): nitrate, specific conductivity and arsenic. However, the GSP does not set SMC for the other COCs in the basin (boron, benzene, and 1,2-dibromoethane). The GSP states on p. 3-37 that because 1,2-dibromoethane and benzene are already being monitored and managed by the Regional Board through the Leaking Underground Storage Tank (LUST) program, SMC are not needed. The GSP states that since boron is naturally occurring, SMC are not needed. However, SMC should be established for all COCs in the basin, in addition to coordinating with water quality regulatory programs. Naturally occurring COCs can be exacerbated as a result of groundwater use or groundwater management within the basin.  Set minimum thresholds and measurable objectives for boron, benzene and 1,2-ibromoethane. Ensure they align with drinking water standards.	The GSA only sets SMCs for three COCs but will continue to monitor other identified COCs for any increasing temporal and spatial trends. As shown in Appendix 2-B, 1,2-dibromoethane and benzene contamination is highly localized and decreasing down to drinking level standards through management by the Regional Board through the Leaking Underground Storage Tank (LUST) program. The GSA feels that SMCs are not needed at this time for 1,2-dibromoethane and benzene but will continue to monitor trends. Historical data of boron shows a decreasing or steady trend. The GSA feels that an SMC is not needed for boron, but will continue to monitor boron for any future issues.	Chapter 3

NGO Consortium	NGO-021	B	WQ	Degraded Water Quality Minimum Threshold- Impact on Water Users			<p>The GSP only includes a very general discussion of indirect impacts to drinking water users when defining undesirable results and evaluating the cumulative or indirect impacts of proposed minimum thresholds. The GSP does not, however, mention or discuss direct and indirect impacts on DACs or tribes when defining undesirable results for degraded water quality, nor does it evaluate the cumulative or indirect impacts of proposed minimum thresholds on DACs or tribes.</p> <p>Describe direct and indirect impacts on drinking water users, DACs and tribes 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."</p> <p>Evaluate the cumulative or indirect impacts of proposed minimum thresholds for degraded water quality on drinking water users, DACs, and tribes.</p> <p>Sustainable management criteria provided in the GSP do not consider potential impacts to environmental beneficial users. The GSP neither describes nor analyzes direct or indirect impacts on environmental users of groundwater or surface water when defining undesirable results.</p>	<p>The discussion of indirect impacts to drinking water users is valid because there are no tribal lands or interests within the Butte Valley groundwater basin and the entire valley is considered a disadvantaged community (DAC). Chapter 3 already describes the impact on water users when defining undesirable results for degraded water quality. The cumulative and indirect impact of the proposed minimum thresholds will avoid the described undesirable results for degraded water quality. Due to the lack of data, as described in Chapter 2 and Appendix 3-A, the GSA cannot complete qualitative analysis of the impact on the proposed SMCs on surface waters and groundwater dependent ecosystems. The current discussion in the GSP is valid until the outlined data gaps are addressed in the 5-year GSP update.</p>	Chapter 3
NGO Consortium	NGO-022	A	IS	SMCs for ISW Depletion	23 CCR §354.28(c)(6) 23 CCR §354.28(b)(4)		<p>The GSP states that the depletion of interconnected surface water sustainability indicator is not applicable in the Basin, but this has not been proven. Chapter 2 of the GSP disregards ISWs due to data gaps. However, they should be retained as potential ISWs and preliminary SMC for the depletion of interconnected surface water sustainability indicator should be established.</p> <p>Establish preliminary SMC for the depletion of interconnected surface water sustainability indicator, that can be refined when data gaps are filled. When defining undesirable results for depletion of interconnected surface water, include a description of potential impacts on instream habitats within ISWs when defining minimum thresholds in the basin. The GSP should confirm that minimum thresholds for ISWs avoid adverse impacts to environmental beneficial users of interconnected surface waters as these environmental users could be left unprotected by the GSP. These recommendations apply especially to environmental beneficial users that are already protected under pre-existing state or federal law.</p>	See MCR "ISW".	
NGO Consortium	NGO-023	C	GL	Chronic Lowering of Groundwater Level-undesirable result for GDEs			<p>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 to GDEs.</p>	Discussion regarding SMCs for protecting GDEs has been added to the new PMA "Groundwater Dependent Ecosystem Data Gaps" of Chapter 4. See MCR "GDE".	
NGO Consortium	NGO-024	B	WB	Water Budget- climate change, data source		Appendix 2-D	<p>The integration of climate change into the projected water budget is incomplete.</p> <p>The GSP includes climate change into key inputs (e.g., precipitation, evaporation, and surface water flow) of the projected water budget. However, we are concerned that the selected period is from 1991-2011 and therefore it does not include the drought from 2012-2016. We look forward to reading Appendix 2-D (Water Budget) in the next draft of the GSP to learn about how you are integrating drought risk in your future water budget. Include Appendix 2-D (Water Budget) in the next draft of the GSP, so that the manner in which climate change is incorporated into the water budgets is fully explained.</p>	The GSP follows DWR guidance. Future updates may be used to improve climate change predictions.	
NGO Consortium	NGO-025	A	WB	Sustainable Yield calculation			<p>The GSP does not calculate a sustainable yield based on the projected water budget with climate change incorporated, but instead states that the sustainable yield will vary over time as new project and management actions are added.</p> <p>If sustainable yield is not calculated, then there is also increased uncertainty in virtually every subsequent calculation used to plan for projects, derive measurable objectives, and set minimum thresholds. Plans that do not explicitly calculate sustainable yield may underestimate future impacts on vulnerable beneficial users of groundwater such as ecosystems, DACs, domestic well owners, and tribes.</p> <p>Estimate sustainable yield based on the projected water budget with climate change incorporated, to inform the basis for development of projects and management actions.</p>	See MCR "Sustainable Yield"	Chapter 2
NGO Consortium	NGO-026	C	PM	Incorporate Climate Change into PMAs			<p>Incorporate climate change scenarios into projects and management actions.</p>	The future climate models were prepared by DWR and used in accordance with DWR guidance.	
NGO Consortium	NGO-027	A	MN	Monitoring Network-Add Representative Monitoring Points			<p>The consideration of beneficial users when establishing monitoring networks is insufficient, due to lack of specific plans to increase the Representative Monitoring Points (RMPs) in the monitoring network that represent water quality conditions and shallow groundwater elevations around DACs, domestic wells, GDEs, and ISWs.</p> <p>While the GSP recognizes the importance of filling data gaps, it does not provide specific plans, well locations shown on a map, or a timeline to fill the data gaps.</p> <p>The additional RMPs should be included in the GSP now, instead of included in the 5-year GSP update. Without a map of proposed new monitoring well locations, a determination cannot be made regarding the adequacy of the monitoring network for sustainability indicators going forward into the GSP implementation phase.</p>	<p>Current GSP has been approved by the stakeholder committee and meets regulatory requirements. The current GSP has identified these data gaps (Appendix 3-A), PMAs to address these data gaps, and is consistent with regulations, communications by DWR, and DWR approved GSPs. In response to the public comment period, additional PMAs and language regarding data gap processes have been added to the GSP.</p>	



NGO Consortium	NGO-028	B	MN	Monitoring Network-Mapping			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.	A map of current monitoring locations, beneficial users, GDEs, and waterbodies has been added to Section 3.3. General tentative locations of proposed monitoring locations has been added to Appendix 3-A. Final locations of additional monitoring locations will depend on local well owner volunteers and funding availability.	
NGO Consortium	NGO-029	A	MN	Monitoring Networks-Add Representative Monitoring Points			Increase the number of representative monitoring points (RMPs) across the basin as needed to adequately monitor all groundwater condition indicators. Prioritize proximity to GDEs and drinking water users when identifying new RMPs.	Chapter 3 and Appendix 3-A outline existing data gaps and the need to expand the monitoring networks. An additional PMA clarifying this need has been added to Chapter 4. See MCR "GDE and "General Data Gaps".	
NGO Consortium	NGO-030	A	MN	Monitoring Network-Addressing Data Gaps			Provide specific plans to fill data gaps in the monitoring network. Evaluate how the gathered data will be used to identify and map GDEs and ISWs, and identify DACs and shallow domestic well users that are vulnerable to undesirable results.	See MCR "General Data Gaps". The entire Basin is considered DAC or SDAC so the current discussion in the GSP is valid. Vulnerable domestic well users are analyzed in a well outage analysis included in Appendix 3-C.	
NGO Consortium	NGO-031	C	MN	Using Monitoring Networks to Assess Impact to Water Users		4.4	Further describe the biological monitoring that will be used to assess the potential for significant and unreasonable impacts to GDEs or ISWs due to groundwater conditions in the basin. Section 4.4 mentions the use of satellite images to evaluate the status of GDEs, however no further details are provided in the GSP.	Discussion regarding biological monitoring has been added to the new PMA "Groundwater Dependent Ecosystem Data Gaps" of Chapter 4. See MCR "GDE".	
NGO Consortium	NGO-032	B	PM	PMA- DACs			The consideration of beneficial users when developing projects and management actions is insufficient, due to the failure to completely identify benefits or impacts of identified projects and management actions to beneficial users of groundwater such as DACs and drinking water users.  [The GSP] does not discuss the manner in which DACs, drinking water users, and tribes may be benefitted or impacted by projects and management actions identified in the GSP. Therefore, potential project and management actions may not protect these beneficial users.	There is no tribal land in the Butte Valley groundwater basin and the entire valley is listed as a Disadvantaged Community (DAC) so the current discussion of projects and management actions in the GSP is sufficient.	Chapter 4
NGO Consortium	NGO-033	B	PM	Drinking Water Well Impact Mitigation Program for DACs and Domestic Well Owners		4.3 Tier II PMAs	For DACs and domestic well owners, include further discussion of a drinking water well impact mitigation program to proactively monitor and protect drinking water wells through GSP implementation. The GSP describes a well replacement program in Section 4.3 (Tier II PMAs), but no details are provided. Refer to Attachment B for specific recommendations on how to implement a drinking water well mitigation program.	We already follow the Appendix B recommendations for a drinking water well impact mitigation program. The key elements include (Section 2 of Appendix B): - Drinking water well monitoring program (see RMP for water level); - Adaptive management trigger system (see water level SMC, where the MO is in the "green light" and the minimum threshold in the "yellow light" zone, for which potential corrective actions have been identified (see PMAs that address: - Undertake an analysis to pinpoint the cause; - Undertake water quality testing for selected domestic and public supply wells; - Provide immediate support to groundwater users experiencing impacts; - Reassess pumping allocation and pumping patterns; - Consider restricting or limiting groundwater extraction near the impacted area.); - drinking water well impact model (Appendix 3-C of GSP); - public outreach and education (see PMAs); - development of mitigation measures, - identifying eligibility and access.	
NGO Consortium	NGO-034	C	PM	PMA Impact on Water Quality			For DACs, domestic well owners, and tribes, 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.	There is no tribal land in the Butte Valley groundwater basin and the entire valley is listed as a Disadvantaged Community (DAC) so the current discussion of projects and management actions in the GSP is sufficient. For domestic well users, a well outage analysis is included in Appendix 3-C, which will be used during GSP implementation. The PMA "Well Inventory Program" will also work towards creating a better database of domestic wells in the Basin, which will improve the ability of the GSA to protect those beneficial users.	
NGO Consortium	NGO-035	C	PM	Multi-benefit projects			Recharge ponds, reservoirs, and facilities for managed stormwater recharge can be designed as multiple-benefit projects to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. For guidance on how to integrate multi-benefit recharge projects into your GSP, refer to the "Multi-Benefit Recharge Project Methodology Guidance Document."	The groundwater basin has no surface outflow. All stormwater is already recharged to groundwater.	Chapter 4
NGO Consortium	NGO-036	B	PM	Incorporate Uncertainty into PMAs			Develop management actions that incorporate climate and water delivery uncertainties to address future water demand and prevent future undesirable results.	The future climate models were prepared by DWR and used in accordance with DWR guidance.	

**BUTTE VALLEY GROUNDWATER SUSTAINABILITY PLAN  
PUBLIC COMMENT SUMMARY – MULTIPLE COMMENT RESPONSE**

November 2021

**Multiple Comment Response Directory Table**

<b>ID</b>	<b>Multiple Comment Response</b>
<b>GDE</b>	<p>Section 2.2.2.7 lists all the protected species in Butte Valley. The section provides Table 2.6, which is three pages of all freshwater species with any federal and state level status, from endangered to watch list. This list of observed species within the Butte Valley groundwater basin was collected from the Nature Conservancy and California Department of Fish and Wildlife (CDFW) Butte Valley Wildlife Area (BVWA) Management Plan, with the assistance of CDFW BVWA staff. Table 2.7 lists all these species again, but text has been modified for clarity on GSA management. Species maps generated by the CDFW Biogeographic Information and Observation System (BIOS) Viewer were shown to CDFW BVWA staff, who expressed displeasure on the accuracy of the maps and asked them to be removed from the GSP.</p> <p>Section 2.2.2.7 lists and discusses all the species in Butte Valley listed under the California Endangered Species Act (CESA). The section is clear that these species are considered environmental beneficial water users within the Basin and that the GSA will partner with relevant federal and state agencies to ensure that they are protected during implementation of the GSP.</p> <p>Describing potential impacts on GDEs requires a better understanding of the location and nature of GDEs in the Basin. Representative areas currently classed as 'Assumed not a GDE' will be reviewed in the field as part of future work and reanalyzed as data gaps are filled.</p> <p>Section 2.2.2.7 analyzes Meiss Lake and Butte Valley Wildlife Area (BVWA) as potential groundwater dependent ecosystems (GDE). However due to the lack of groundwater level data within BVWA, potential groundwater levels for the GDE analysis were contoured from wells outside BVWA with groundwater levels (see Appendix 2-A and 2-C) were deeper than the GDE rooting depths.</p> <p>Valley oak does not exist in Butte Valley and the associated rooting depth is not relevant to the local environment.</p> <p>The GSA acknowledges the data gaps in the GDE analysis in Section 2.2.2.7 and outlines how to address them in Appendix 3-A. Additional text has been added to Section 2.2.2.7 and Appendix 3-A for clarity and an additional management action "Groundwater Dependent Ecosystem Data Gaps" has been added to Chapter 4. The GSA looks forward to working with CDFW and other relevant agencies to fill these data gaps of local habitat and groundwater level data in Butte Valley in the next 5 years for the next GSP update.</p>

**BUTTE VALLEY GROUNDWATER SUSTAINABILITY PLAN  
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<b>ID</b>	<b>Multiple Comment Response</b>
<b>ISW</b>	<p>Sustainable management criteria (SMCs) must be quantitative, which cannot be done at this time due to the lack of data on potential ISWs in the Basin. The GSP cannot quantify surface water depletion because there is not enough data at this time. Groundwater contour maps in the GSP are based on the best available groundwater level data, with large data gaps near potential ISWs. The potential ISWs are along the Basin edges while the available historical groundwater level data is within the center of the groundwater basin. The limited data that is available suggests that potential ISWs are disconnected from the groundwater aquifer (see Section 2.2.2.6). Current groundwater maps suggest that the water table is sufficiently deep below the potential ISWs to assume disconnection until further data is collected.</p> <p>SMCs for ISWs will be revisited during the next 5-year GSP update. The GSA acknowledges the data gaps in the ISW analysis in Section 2.2.2.6 and outlines how to address them in Appendix 3-A. Additional text has been added to Section 2.2.2.6 and Appendix 3-A for clarity and an additional management action "Interconnected Surface Water Data Gaps" has been added to Chapter 4. Details on specific measures to fill these data gaps depends heavily on awarded funding and will be developed for future funding proposals. The GSA looks forward to working with CDFW and other relevant agencies to fill these data gaps of ISWs in Butte Valley in the next 5 years for the next GSP update.</p>
<b>Water Budget</b>	<p>A PMA has been added in Chapter 4 to add the surface water hydrologic subsystem to the BVIHM. The PMA is dependent on first filling existing data gaps in Basin surface water. Additional text has been added to Chapter 5 outlining the implementation plan for the new PMA.</p>
<b>Public Trust</b>	<p>Assuming ELF/Audubon require a GSA, or special act district acting in this capacity, to consider the impacts of groundwater production on public trust resources in the Butte Valley in preparing its GSP, where there is not evidence that groundwater production is harming public trust resources due to the disconnection between groundwater and surface waters or GDEs, then any duty that may exist does not arise.</p>

**BUTTE VALLEY GROUNDWATER SUSTAINABILITY PLAN  
PUBLIC COMMENT SUMMARY – MULTIPLE COMMENT RESPONSE**

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ID	Multiple Comment Response
<b>Sustainable Yield</b>	<p>The GSP is more conservative than a specific sustainable yield. Sustainable yield is a function of future climate and of project implementation. It may be less in the future than it is currently. The sustainable yield selected by the GSP is a formula that accounts for such changes. Prescribing a fixed sustainable yield is technically incorrect and practically insufficient to achieve long-term sustainability. The starting value of the sustainable yield is focused on the historic average of groundwater pumping which will translate into looking at the future averages of annual groundwater pumping rather than specific years.</p> <p>The undesirable results are prevented through the minimum threshold. The minimum threshold will be reached by implementation of PMAs that avoid all minimum thresholds and achieve the measurable objective. To the degree that those PMAs require a future reduction in groundwater pumping, that amount of pump reduction must be reflected in recomputed future sustainable yield. By providing a definition of sustainable yield that is not a fixed number, but accounts for future PMAs in a well-prescribed protocol, the sustainable yield is specific and implicitly adjusts to the implementation of PMAs. The GSP’s definition of sustainable yield avoids the possibility that a new pumper will claim the amount of pumping that was retired through a PMA elsewhere in the basin. The approach is consistent with basin plans already approved by DWR (e.g., Oxnard, Mid-County Santa Cruz).</p>
<b>PMA Selection Criteria</b>	<p>Chapter 5 outlines how PMAs will be selected for prioritization during GSP implementation. Text has been added to Chapter 4.1 and Chapter 5 implementation schedule. After GSP adoption, the GSA will prioritize certain PMAs for feasibility reviews and preliminary engineering studies. Based on review and study results, PMAs may move forward to implementation.</p>
<b>5-year Update</b>	<p>At this time, the GSA has elected to use a voluntary program for groundwater extraction reporting. For the next five years, the GSA will conduct public outreach to encourage voluntary participation. This may be revisited in the 5-year update. Siskiyou County is currently considering a revised well drilling permit.</p>
<b>Data System</b>	<p>The GSA will follow DWR guidelines for data and model transparency. Per DWR’s modeling BMP document, "final model files used for decision making in the GSP should be packaged for release to the Department". We anticipate that model files will be uploadable with the GSP in digital format. Similarly, we anticipate that DWR will collect annual report data in digital format.</p>

# BUTTE VALLEY GROUNDWATER SUSTAINABILITY PLAN PUBLIC COMMENT SUMMARY – MULTIPLE COMMENT RESPONSE

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ID	Multiple Comment Response
<p><b>General Data Gaps</b></p>	<p>The GSA acknowledges existing data gaps in Chapter 3 and Appendix 3-A, proposes PMAs in Chapter 4, and discusses an implementation plan in Chapter 5. General data gaps include water levels from domestic wells and groundwater extraction. Based on existing and available data, the GSP contains an accurate water budget, clearly defined sustainable management criteria, including minimum thresholds. The GSP will be updated as needed when data gaps are filled but will be dependent on outside sources of funding.</p> <p>The current data gap in groundwater extraction does not limit effective groundwater management as estimating groundwater extraction based on land use is sufficient to quantify basin groundwater budgets that determine groundwater sustainability for the basin. Future voluntary collection of groundwater extraction will serve for modeled groundwater pumping validation and verification of the success of PMAs.</p>

Table Key:

- BIOS = Biogeographic Information and Observation System
- BMP = best management practice
- BVIHM = Butte Valley Integrated Hydrologic Model
- CDFW = California Department of Fish and Wildlife
- CESA = California Endangered Species Act
- DWR = Department of Water Resources
- GDE = Groundwater Dependent Ecosystem
- GSA = Groundwater Sustainability Agency
- GSP = Groundwater Sustainability Plan
- ISW = Interconnected Surface Water
- PMA = Project and Management Action
- PTD = Public Trust Doctrine
- SGMA= Sustainable Groundwater Management ACT
- SMC = Sustainable Management Criteria