

## **Siskiyou County, Butte Valley Groundwater Basin, SGMA Compliance**

### **Butte Valley Wildlife Area Shallow Groundwater Investigation**

### **Description of Proposed Work**

April 2025

## **Introduction**

This document provides a description of a proposed hydrogeological investigation in the Meiss Lake area taken by the Butte Valley Groundwater Sustainability Agency (GSA) to implement the Butte Valley Groundwater Sustainability Plan (GSP). The work described is based on an understanding of project requirements and timeline. Data for this project will be compiled into a technical memo used to satisfy the requirements of the Sustainable Groundwater Management Act.

## **Problem and Solution**

Assessment of Interconnected Surface Water (ISW) and Groundwater-Dependent Ecosystems (GDEs) is required by SGMA (Water Code §§ 10720–10737.8) and its implementing regulations (23 CCR 354.16[g] and 354.28[c][6]). Without accurate shallow groundwater monitoring data near potential ISW and GDE areas the GSP’s ability to set defensible sustainable management criteria and protect beneficial uses is limited. The Butte Valley GSP identifies a critical data gap in assessing whether surface water in Butte Valley interacts hydraulically with the underlying aquifer in Chapter 2, section 2.2.2.6 (ISW summary) and 2.2.2.7 (GDE summary). Additionally, during GSP development multiple agencies provided public comment highlighting the need for additional data collection of ISW and GDEs. A summary of the comments is provided in the following section, “GSP Development Comments” and provided in **Attachment A**.

Butte Valley is topographically closed and under natural conditions surface water flows to Meiss Lake. Meiss Lake and the surrounding wetlands constitute the largest potential GDE in the Valley and are habitat for wildlife. Meiss Lake is managed by the California Department of Fish and Wildlife (CDFW) which is supportive of improved understanding of Meiss Lake and the surrounding area. For these reasons, a study of groundwater connectivity to the underlying aquifer near Meiss Lake would efficiently close the ISW and GDE data gap identified in the GSP.

## **GSP Development Comments**

CDFW Letter to Butte Valley GSA (September 23, 2021) in comments CDFW-007 and CDFW-008 cites the hydrologic and habitat importance of Meiss Lake and state that in their opinion the GSP does not adequately address or classify the lake and wetland under 23 CCR § 354.16(g); Water Code § 10727.4(l).

The Nature Conservancy letter to Butte Valley GSA (September 26, 2021) does not explicitly state Meiss Lake, but broadly critiques insufficient data used for ISW and GDE classification in comments NGO-021 and NGO-022 which results in inadequate identification of ISW or GDE locations.

### **Butte Valley GSP Alignment**

The proposed work directly addresses the GSP's call for more robust data collection and identification around potential GDEs, including Meiss Lake. The proposed monitoring wells and continuous measurements will significantly reduce interpolation gaps, ensuring the GSP's conceptual model accurately reflects local conditions. The results of improved data collection will determine if Meiss Lake is:

- Primarily groundwater-fed (a gaining lake),
- Primarily feeding the groundwater (a losing lake),
- Subject to seasonal reversals in flow direction, or
- Not significantly hydraulically connected to the aquifer.

Determining which of these scenarios applies is critical to closing data gaps identified during GSP development and satisfying the requirements of SGMA. Determining the status of ISW and/or GDEs in the Meiss lake region will allow for the appropriate determination of ISW sustainable management criteria and avoid incorrect or misguided classifications of groundwater connectivity in the region.

To address these legal and technical requirements, the Butte Valley GSA proposes to install and monitor a network of shallow wells around Meiss Lake. This combined approach of water-level, periodic water-quality sampling, and a continuous surface-water gauge will generate the data necessary for verifying conditions of GDEs/ISWs, refining the conceptual hydrogeologic model, and maintaining compliance with SGMA and the Butte Valley GSP's sustainability goals.

This work aligns with the following Executed Grant Agreement with the Department of Water Resources (Agreement Number 4600015620):

- Component 4: Well Inventory which is for monitoring well construction and/or instrumentation,
- Component 5: Monitoring Network which includes collection and analysis of hydrogeochemical samples, and improved analysis of GDEs.

### **Proposed Scope of Work**

#### **Task 1: Finalize Planning and Permitting**

This task involves identifying up to 10 potential well locations around Meiss Lake, prioritizing known data gap areas referenced in the GSP. It also includes securing site access and appropriate permits through coordination with the California Department of Fish and Wildlife, as well as

selecting and contracting a C-57 licensed driller (Driller) and identify a licensed geologist to oversee drilling. The goal is to install 6 to 8 wells.

**Task 1 Approach:**

- a) A finalized project plan and permit package.
- b) Seek and review qualified well drillers.
- c) Execute contractor agreements.

**Task 2: Well Drilling and Construction**

Under this task, direct push technology (e.g., GeoProbe) will be used to install 2-inch diameter pre-packed screen wells using appropriate-sized rigs and tooling. These technologies are expected to reach a maximum depth of approximately 20-30 feet. The driller will be responsible for coordinating with a licensed geologist who will prepare a technical memo or brief report summarizing the construction of the wells, including a map of locations, well logs developed during drilling, and copies of submitted well completion reports. The memo or report must be stamped by a California Professional Geologist (PG). The PG may be provided by the GSA or by the driller. Cuttings will be used to develop logs following the Unified Soil Classification System (USCS) and will be stored at the CDFW field office at the end of drilling.

**Task 2 Deliverable:**

- a) As-built diagrams for each installed well.
- b) Technical memo or report stamped by a PG with well logs, map of locations, and DWR well completion reports.
- c) Documentation of final well count (anticipated 6–8 total) based on field conditions.
- d) Storage of drilling cuttings at the CDFW field office.

**Task 3: Instrumentation and Initial Sampling**

After well construction, each nested well will be equipped with a telemetered, pressure-compensated data logger recording water level at 15-minute intervals. A dedicated lake gauge will be installed in Meiss Lake to monitor lake stage at the same intervals. This will be located adjacent to the existing gauge. An initial round of groundwater and surface water sampling will be conducted for general chemistry (major ions, nutrients) and radon analyses.

**Task 3 Deliverable:**

- a) Map of installed sensors and telemetered systems transmitting continuous data.
- b) An initial sampling report summarizing baseline water-quality parameters and radon levels.

**Task 4: Ongoing Monitoring**

Continuous monitoring of water levels in all wells and the lake gauge will be performed. As needed seasonal radon and chemistry sampling campaigns will be conducted to capture variations in groundwater–surface water interactions. If needed, additional weather or rain

gauges will be installed on one or more well location to correlate precipitation and evaporation with observed water-level changes.

**Task 4 Deliverable:**

- a) Any interim recommendations for adjusting instrumentation or sampling frequencies based on data trends.

**Task 5: Reporting and GSP Integration**

This task evaluates time-series water-level data, geochemical signatures, and radon tracer results to determine groundwater–surface water connectivity and possible seasonal flow reversals. This analysis will refine the local hydrogeologic conceptual model around Meiss Lake and guide any recommended updates to sustainable management criteria under the Butte Valley GSP. Key findings will be presented to stakeholders, and if needed, integrated into the GSP 5 year update submitted in early 2027.

**Task 5 Deliverable:**

- a) A final technical memorandum presenting refined conceptual models, recommended GSP revisions or management strategies, and data interpretations included in the next Butte Valley Annual Report.
- b) Presentation materials for engaging the GSA, Advisory Committee, and other stakeholders.

**Schedule**

The project is anticipated to extend over two years (Q1 2025 through Q4 2026) with data collection continuing as needed during the duration of GSP implementation. The first year (2025) will focus on site planning, permitting, drilling, and baseline sampling. During the second year (2026), ongoing monitoring will be maintained, leading to final data analysis, reporting, and integration with the Butte Valley GSP. The schedule is shown in **Table 1**.

**Table 1. Schedule**

Task	Task Description	Expected Completion Dates
1	Planning and Permitting	Draft: Q1-Q2, 2025
2	Well Drilling and Construction	Draft: Q2-Q3, 2025
3	Instrumentation & Initial Sampling	Draft: Q3-Q4, 2025
4	Ongoing Monitoring	Draft: Q1-Q4, 2026
5	Reporting & GSP Integration	Draft: Q4, 2026

## **Attachments**

**Attachment A** - Comments from GSP Development

**Attachment B** - Map of Proposed Monitoring Well Locations near Meiss Lake

## Attachment A - Comments from GSP Development

### California Department of Fish and Wildlife comments:

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

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 (al) and 354.18(b)(3).)

CDFW-008  
Cont'd.

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 Nature Conservancy Comments:

**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

## Attachment B - Map of Proposed Monitoring Well Locations near Meiss Lake

