Owens Valley and Fish Slough Subbasins GSP Annual Report Water Year 2022

Submitted to

California Department of Water Resources

Submitted by

OWENS VALLEY GROUNDWATER AUTHORITY

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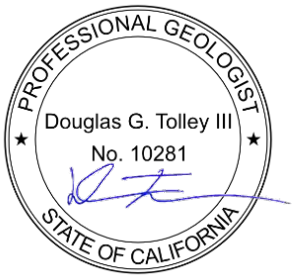

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AF	acre-feet
AFY	acre-feet per year
amsl	above mean sea level
Basins	Owens Valley and Fish Slough Subbasins
BLM	Bureau of Land Management
CASGEM	California Statewide Groundwater Elevation Monitoring
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CIMIS	California Irrigation Management Information System
cfs	cubic feet per second
DMS	Database Management System
DWR	[CA] Department of Water Resources
eWRIMS	Electronic Water Rights Information Management System
ET	Evapotranspiration
ft	feet
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
LADWP	Los Angeles Department of Water and Power
LTWA	Inyo - Los Angeles Long Term Water Agreement
MO	Measurable Objective
MT	Minimum Threshold
OLGDP	Owens Lake Groundwater Development Project
OVGA	Owens Valley Groundwater Authority
RMP	Representative Monitoring Point
SGMA	Sustainable Groundwater Management Act
SMC	Sustainable Management Criteria
SWRCB	State Water Resources Control Board
TVGMD	Tri-Valley Groundwater Management District
WLE	water level elevation
WY	water year

Executive Summary

The Owens Valley Groundwater Authority has prepared this annual report for water year 2022 (October 1 through September 30) for the Owens Valley and Fish Slough groundwater subbasins. It includes analysis of data, by management area, that have been collected since the GSP was submitted to DWR in January 2022.

Total water use in the Basins during WY 2022 was estimated to be 129,200 acre-feet (AF). Reported groundwater extractions for the Basins totaled 98,326 AF. Total surface water use in the Basins was estimated to be 30,874 AF. Total change in groundwater in storage for both subbasins over WY 2022 was estimated to be -4,575 AF. The estimated change in storage over WY 2022 was -17 AF for the Fish Slough subbasin and -7,162 AF for Tri-Valley. LADWP reported a change in groundwater in storage of +2,604 AF for their lands within Owens Valley.

The OVGA is working towards its sustainability goals through GSP management actions outlined in the GSP. A well registration and groundwater extraction program has been developed, and OVGA staff is now working with Inyo County Department of Environmental Health in reviewing well permits. The OVGA continues to gather data from its monitoring network that are imported periodically into its public-facing data management system. These easily accessible data and this annual report serve to keep the interested parties informed through GSP implementation.

1. Introduction

The Owens Valley and Fish Slough groundwater subbasins (the Basins) are designated low priority status by the California Department of Water Resources (DWR) and therefore are not required to be managed by a Groundwater Sustainability Agency (GSA). Groundwater management in the context of the Sustainable Groundwater Management Act (SGMA) is performed voluntarily by the Owens Valley Groundwater Authority (OVGA) for portions of the Basins within Inyo County, and by a combination of the Tri-Valley Groundwater Management District (TVGMD) and Mono County for portions of the Basins within Mono County. The Owens Valley Groundwater Authority (OVGA) submitted a Groundwater Sustainability Plan (GSP) for the Basins on January 26, 2022. After the GSP was submitted, the TVGMD and Mono county withdrew from the OVGA and petitioned DWR to become the GSAs for the portions of the Basins within Mono County. While the OVGA is not required to submit GSP annual reports to DWR since it is a low-priority basin, this GSP annual

report was voluntarily prepared to document groundwater conditions in the Basins for water year (WY) 2022.

This annual report provides a summary of hydrologic conditions and water use in the Basins (Figure 1) using observed data from monitoring networks and/or estimated using best available methods. It includes a summary of water use and changes in groundwater storage during the period from October 1, 2021, to September 30, 2022 (i.e., WY 2022), and provides context for conditions relative to the sustainable management criteria (SMC) developed for the Basins. Conditions are reported for each of the three management areas defined in the GSP: Tri-Valley & Fish Slough, Owens Valley, and Owens Lake (Figure 1). Analysis of Mono County portions of the basin (Tri-Valley & Fish Slough management area) and lands owned by the Los Angeles Department of Water and Power (LADWP) managed under the Long Term Water Agreement (LTWA) are included for completeness, but the OVGA has no management authority over these areas. This report has been prepared in accordance with the requirements for GSP annual reports as identified in the Sustainable Groundwater Management Act (SGMA, 23 CCR 356.2).

Owens Valley is the ninth largest groundwater subbasin in California in terms of total area and spans approximately 125 miles from north to south, the longest distance of any California subbasin. Ground surface elevations in the Basins range from a low of 3,529 ft above mean sea level (amsl) at Owens Lake[1] to a high of 11,219 ft amsl near Mt. Perkins, a span of 7,690 ft. This results in practical challenges displaying information on figures such as water level contours or labels. Symbology and font sizes would need to be impractically small or figures could only present data for a portion of a given management area. To reduce the number of figures and potential confusion from a lack of geographic context, the most detailed information that could be displayed without making a figure illegible is presented.

Approximately 35% of the land area and the majority of water rights in the Basins are owned by LADWP. Because of the importance of surface water and groundwater supplied from Owens Valley to Los Angeles, LADWP has developed extensive facilities and monitoring for land management, water storage and export, groundwater production, groundwater recharge, surface water and groundwater monitoring, and dust control. Land and water management in the Tri-Valley portion of the Owens Valley Subbasin is primarily conducted by private landowners and is less well studied and monitored.

[1] The term "Owens Lake" is used in this report for consistency with the OVGA GSP but the term is intended to be synonymous with "Owens lakebed".

The main agencies or programs conducting groundwater monitoring and management in the Basins include: the City of Los Angeles (subject to the LTWA), Inyo County Water Department, TVGMD, the California Statewide Groundwater Elevation Monitoring Program (CASEGM), the Groundwater Ambient Monitoring and Assessment Program (GAMA), local water providers (privately-owned public water systems, mutual water companies, community service districts or the City of Bishop), and the Owens Lake Groundwater Development Program (OLGDP). These agencies or programs monitor groundwater levels, water quality and/or extraction in areas throughout the Basins. In addition, LADWP is required to continue water deliveries for irrigation, mitigation, and for dust control, and conducts recharge operations in the Basin. Monitoring associated with these activities is routinely reported by LADWP.

For additional clarification or more detailed information on the basin plan area, monitoring network, or conditions, please refer to the Owens Valley Groundwater Basin GSP, the OVGA Database Management System, or the numerous documents and reports prepared by or in cooperation with the Inyo County Water Department. As acknowledged by the Department of Water Resources, it is important to note that there are still many data gaps and missing information as the OVGA continues to gather information for better analysis and informed decision making.

2. Groundwater Elevations

Groundwater elevations and changes from the beginning to the end of the water year for each management area (Figure 1) are provided below. Contour maps of each principal aquifer within each management area are also provided. These maps depict the seasonal high (spring) and low (fall) water level elevations for each principal aquifer within the respective management area. Note that due to infiltration of snowmelt runoff from the Eastern Sierras and LADWP operations (e.g., ditch conveyance, surface water spreading, lease agreements, etc.) during the summer months, the typical spring high and fall low trend is often reversed for the portion of Owens Valley Management Area between Big Pine and Independence. In this area, observed seasonal highs in average and wet years can occur during the summer and early fall. Spring and fall water level elevations are defined as observations within a 180-day period centered on April 1 or October 1. If a well has multiple observations within this period, then the value collected nearest to April 1st or October 1st is used. Hydrographs for representative monitoring points (RMPs) in the Basin are shown in **Appendix A**. The Rio Tinto well is not included despite it being listed as a potential RMP in the GSP as there are no historical data and a field inspection revealed water level measurements

could not be collected without significant modifications to the well. It will be removed from the RMP list in the GSP 5-year update.

2.1 Fish Slough and Tri-Valley

Observed spring groundwater elevations for the Fish Slough and Tri-Valley management area ranged from 4,159.42 to 5,312.60 ft above mean sea level (amsl), with an average elevation of 4,442.73 ft amsl (Figure 2). Fall groundwater elevations (Figure 3) ranged from 4,158.81 to 5,304.39 ft amsl, with an average elevation of 4,419.96 ft amsl. Observed groundwater elevation changes from Fall 2021 to Fall 2022 ranged from -2.85 to +0.07 ft, with an average change of -0.51 ft.

Groundwater flow in both subbasins is generally from north to south. Recharge along the margins of the basin and drawdown near high-capacity irrigation wells likely influences flows locally during certain times of the year in Tri-Valley. Groundwater levels near Chalfant Valley indicate some flow from the Tri-Valley is directed westward towards the Fish Slough subbasin. This is consistent with results from a geochemical study performed by Zdon and others (2019) that showed Northeast Spring in Fish Slough was partially sourced by water from Tri-Valley. Additionally, declines in flow from Northeast Spring began at the same time as groundwater level declines in Tri-Valley. This indicates a strong hydrologic connection between Tri-Valley and Fish Slough, likely via enhanced permeability through the Bishop Tuff along the Fish Slough fault zone. Increasing the number of groundwater monitoring wells in the Hammil and Chalfant Valley areas would help provide further evidence of a hydrologic connection between Tri-Valley and Fish Slough. A joint project with California Department of Fish and Wildlife, Bureau of Land Management, United States Geological Survey and California Department of Water Resources is in progress to drill two multi-completion monitoring facilities in the southerly Hammil Valley and one in northerly Fish Slough subbasin (see Section 7.3).

2.2 Owens Valley

The Owens Valley management area contains two principal aquifers: a shallow unconfined aquifer approximately 100 ft in thickness and a deep semi-confined to confined aquifer that extends to approximately 1,000 ft below ground surface. The shallow and deep aquifers are separated by confining units that are laterally discontinuous and primarily composed of volcanic flows and clays deposited in ancient lakes. Most groundwater pumping in the Owens Valley subbasin occurs within the Owens Valley management area, and therefore monitoring wells in this area experience the greatest magnitude of observed water level fluctuations.

Observed spring groundwater elevations for the Owens Valley management area shallow aquifer (Figure 4) ranged from 3,689.31 to 4,373.41 ft amsl, with an average elevation of 3,916.39 ft amsl. Spring water levels in the deep aquifer ranged from 3,654.34 to 4,970.84 ft amsl, with an average elevation of 3,939.62 ft amsl (Figure 5). In the fall, shallow aquifer groundwater elevations ranged from 3,691.62 to 4,305.15 ft amsl (Figure 6) with an average elevation of 3,907.95, and from 3,654.29 to 4,971.59 ft amsl with an average elevation of 3,907.95 ft amsl in the deep aquifer (Figure 7). Average change in groundwater elevation in the shallow and deep aquifers from Fall 2021 to Fall 2022 was -0.14 ft and -0.20 ft, respectively.

While groundwater flow patterns between the shallow and deep aquifers are generally similar, flow direction varies widely across the Owens Valley management area. Groundwater flow near Bishop is generally to the east and changes direction to the south towards the eastern margin of the basin near Laws and some groundwater flow enters from the north from Tri-Valley. South of Bishop, the majority of recharge enters the basin from the west along Sierra creeks and their associated, coarse grained alluvial fans. Groundwater elevations and flow reflect this, with west to east flow towards the center of the basin. Along the comparatively flat valley floor in the vicinity of the Owens River, groundwater flow is from the north to the south. Localized variations from these prevailing patterns exist, notably near LADWP wellfields and/or areas with significant surface water recharge (either natural or managed). Interpolating groundwater elevation contours in the Owens Valley management area is especially challenging due to the complex basin geometry and most monitoring wells being located on the valley floor. In addition, many of the monitoring wells are located in a linear orientation parallel to the valley axis.

2.3 Owens Lake

The Owens Lake management area contains five principal aquifers named from shallowest to deepest as Aquifers 1-5 (MWH, 2011). Aquifers 1-4 generally transition from coarse sands and gravels along the margins of the management area into fine silts and clays near Owens Lake, resulting in laterally discontinuous aquifers. Aquifer 5 is more laterally continuous and is composed of silty sand with interbedded sands and occasional clays, interpreted to have formed from a flood plain or braided stream system that existed prior to the formation of Owens Lake. The Owens Lake aquifer system extends more than 1,500 ft below ground surface (bgs). Due to the closed nature of the Owens Valley in terms of both surface water and groundwater (i.e., no natural outflows except for evapotranspiration) and limited pumping in the Owens Lake management area, water levels are generally stable and most monitoring wells show less than 10 ft of natural long-term variations in water levels. Groundwater conditions for Aquifers 2 and 4 are

not included in this report because meaningful water level contour maps could not be created due to a lack of sufficient data. However, conditions for both the overlying and underlying aquifers are reported. Since groundwater extractions are relatively small in the Owens Lake management area, conditions in Aquifers 1, 3, and 5 are believed to be representative of those in Aquifers 2 and 4.

Observed spring groundwater elevations in Aquifer 1 (Figure 8) ranged from 3,577.36 to 3,643.37 ft above mean sea level (amsl), with an average elevation of 3,613.84 ft amsl. Aquifer 3 spring groundwater elevations (Figure 9) ranged from 3,585.97 to 3,653.86 ft amsl, with an average elevation of 3,625.87 ft amsl. Groundwater elevations in the spring for Aquifer 5 (Figure 10) ranged from 3,612.56 to 3,654.09 ft amsl, with an average elevation of 3,627.24 ft amsl. Fall conditions in the Owens Lake management area are generally similar to those observed in the spring. Aquifer 1 water levels in the fall (Figure 11) ranged from 3,577.42 to 3,641.91 ft amsl, with an average elevation of 3,613.65 ft amsl. Aquifer 3 spring groundwater elevations (Figure 12) ranged from 3,585.53 to 3,652.66 ft amsl, with an average elevation of 3,625.27 ft amsl. Groundwater elevations in the spring for Aquifer 5 (Figure 13) ranged from 3,612.62 to 3,653.36 ft amsl, with an average elevation of 3,627.06 ft amsl. The average change in groundwater elevations over WY 2022 for Aquifers 1, 3, and 5 was -0.27 ft, +0.05 ft, and +0.15 ft, respectively.

2.4 Groundwater SMC Status

The reporting metric "SMC Status" was developed to better compare groundwater elevations observed at RMPs in the context of their unique SMC. This metric describes groundwater elevations relative to the "sustainability range" of the well and allows for normalized reporting of groundwater elevations at RMPs. The sustainability range is defined as the elevation range between the measurable objective (MO) and minimum threshold (MT) for each RMP. SMC Status was classified into the following categories:

- Near or Above MO: Water levels equal to or greater than 75% of the sustainability range
- Between MO and MT: Water levels within 25% to 75% of the sustainability range
- Near MT: Water levels less than 25% of the sustainability range but above the MT
- At or Below MT: Water levels at or below the MT

Figure 14 shows an example of this metric applied to the hydrograph of well T001. Table 1 provides a summary of all of the water level elevation RMPs and their status in Fall 2022. The SMC status of some RMPs could not be determined for a variety of reasons (monitoring point was

destroyed, collecting entity was unresponsive to data requests, etc.), but of the 44 wells that had sufficient data 70% were above or near the MO, 27% had water level elevations in the middle of the sustainability range, and only a single well (T480) was at or below the MT. T480 is located at the south end of the Bishop Cone well field operated by LADWP and had a water level elevation of 3392.79 ft in October 2022, which was 0.21 ft below the MT. Although outside the reporting period of this annual report, T480 recovered above the MO by April 2023[2].

3. Groundwater Extractions

The subsections below discuss estimated or measured groundwater extractions for each management area. High-capacity extraction wells are not metered in Tri-Valley but are in the Owens Lake and Owens Valley management areas. While the majority of metered pumping comes from LADWP wells that are reported to the OVGA, additional pumping occurs from public or private entities (e.g., City of Bishop, mutual water companies, Crystal Geyser). The OVGA has initiated a well registration program that requires all groundwater pumpers in the portions of the Basins over which the OVGA has authority (excluding de minimus users, who are encouraged to voluntarily register their wells) to report their groundwater use (see Section 8). The deadline for submitting well registration and reporting forms is April 1, 2024, and therefore this report does not quantify all known groundwater extractions in the Owens Valley and Owens Lake management areas. The currently unreported volumes in the Owens Valley and Owens Lake management areas are likely small relative to the reported volumes. Reported groundwater extractions for the Basins in WY 2022 totaled 98,326 AF (Table 2).

3.1 Fish Slough and Tri-Valley

Groundwater extractions in the Fish Slough and Tri-Valley management area were estimated using OpenET since pumping is not metered. OpenET is an online platform for mapping evapotranspiration (ET) at the scale of individual fields. Several different ET estimation methodologies are available, and the Satellite Irrigation Management Support (SIMS) model was used. It must be noted that underestimation of ET for small agricultural operations in very arid areas is currently a known limitation of OpenET due to the limited number of cropland in-situ flux stations located in these types of environments. Further complicating matters, surface water is applied to some fields in Tri-Valley. This means that groundwater extraction estimates in this report are likely overestimated, but the degree to which is currently unknown. All groundwater

[2] Water year 2023 was a historic wet year.

pumping occurs in the Tri-Valley with the exception of one known active domestic well located near the boundary between the Owens Valley and Fish Slough subbasins.

Estimated groundwater extractions in Tri-Valley for WY 2022 are shown in Table 2. Total groundwater use was estimated to be 13,147 AF, with irrigated agriculture accounting for 100% of total quantified extractions. Not included in Table 1 are extractions from Chalfant Valley West Mutual Water Company (CVWMWC), which services a population of approximately 45 people (15 connections). Pumping data from CVWMWV were unavailable at the time this report was prepared. It was assumed the remainder of the Tri-Valley population are de minimis users served by domestic wells and therefore exempt from SGMA regulations.

The spatial distribution of estimated groundwater pumping aggregated within each public land survey (PLSS) section (1 mi^2) in the Fish Slough and Tri-Valley management area is shown in Figure 15. Pumping was assumed to occur within the same section an irrigated agricultural field was located within. If a field overlay more than one section, then pumping was assigned to the section with the largest overlap. Most groundwater pumping in the Fish Slough and Tri-Valley management area appears to be located near the center of Tri-Valley in Hammil Valley.

3.2 Owens Valley

Extraction volumes for each water use sector were provided to the OVGA by LADWP since contributions to each sector from specific wells are not tracked. In other words, LADWP quantifies how much groundwater is applied to each water use sector as part of their operations, but generally does not track which wells the water is sourced from. In some instances, wells are dedicated to a specific purpose so their contributions to a specific water use sector can be tracked. For example, wells W357 and W384 are used as the municipal supply for Independence so groundwater extractions from them were assigned to the municipal water use sector. Although the volumes reported for each water use sector in Table 1 for the Owens Valley management area could not be independently verified, total groundwater extraction volume reported by LADWP[3] was consistent with the total calculated using pumping data provided to the OVGA. The volume of groundwater used for each sector was calculated by multiplying the total water use for the sector by the ratio of total groundwater extractions to total water use reported by LADWP. For WY 2022 about 77% of total water use reported by LADWP was sourced from groundwater.

[3] LADWP owned lands in Owens Valley are considered adjudicated under SGMA. Reports are required to be submitted annually for adjudicated areas: Inyo County Basins Annual Report.

Total groundwater extractions in the Owens Valley management area, including those on LADWP lands that are exempt from being covered under a SGMA GSP (see Footnote 3), summed 82,785 AF (Table 2). Agricultural irrigation accounted for approximately 46% of total extractions. Managed wetlands and native vegetation were about 33% of total extractions, while domestic and municipal uses made up about 14%. The remaining 7% of groundwater extractions were for Tribal uses or unspecified LADWP operations. Due to the commingling of pumped groundwater with surface water in ditches and canals that reach the Los Angeles Aqueduct, the amount of groundwater that was exported was not quantified. The spatial distribution of Owens Valley management area groundwater extractions in shown in Figure 16. The majority of groundwater is pumped by LADWP on lands that are not subject to SGMA.

3.3 Owens Lake

A total of 2,394 AF of groundwater was extracted from the Owens Lake management area (Table 2). This is a relatively small volume of water compared to the other two management areas. Pumping occurs along the margins of the playa (Figure 17) where water quality is generally better. Note that groundwater extraction volumes from the Crystal Geyser Roxane bottling plant and agricultural uses south of Owens Lake were unavailable at the time this report was prepared and therefore total groundwater extractions in the Owens Lake management area are likely greater than reported here. The OVGA Well Registration and Reporting Program aims to fill these data gaps (see Section 7.1).

4. Surface Water Supply

The subsections below describe surface water used in the Basins. Total surface water use in the Basins was estimated to be 30,874 AF.

4.1 Fish Slough and Tri-Valley

Surface water use in the Fish Slough and Tri-Valley management area was estimated using data reported to the State Water Resources Control Board (SWRCB) Electronic Water Rights Information Management System (eWRIMS). Approximately 8,844 AF of surface water was used in the Fish Slough and Tri-Valley management area (Table 3), with approximately 7,282 AF (82%) used for agriculture and about 1,562 AF (18%) used for various other purposes (e.g., domestic, power generation, in-stream dedications).

4.2 Owens Valley and Owens Lake

Nearly all surface water rights in the Owens Valley and Owens Lake management areas are owned by the City of Los Angeles. Smaller holders of water rights exist but the sum of private water rights as a portion of the runoff into the management areas is negligible compared to LADWP water rights. LADWP does not currently differentiate between surface water used in different areas of the basin, but instead provides total water use for each sector. This precluded reporting surface water volumes used within each management area so instead they are presented jointly here.

The volume of surface water used for each sector was calculated by multiplying the total water use for the sector by the ratio of total surface water use to total water use reported by LADWP. For WY 2022 about 22,030 AF was sourced from surface water in the Owens Valley and Owens Lake management areas (Table 3).

4.3 Surface Water SMC Status

SW3208 measures discharge from the Fish Slough Northeast Spring and is the only surface-water RMP in the Basins. The SMC Status (see Section 2.4 for explanation) for SW3208 in Fall 2022 was below the minimum threshold of 0.1 cfs of average daily flow (Table 4). No flow at Northeast Spring was recorded from July 2022 through October 2022. The only other recorded time Northeast Spring went dry was September 2021. Discharge from Northeast Spring has consistently declined since the early 1990s. Although outside the reporting period of this annual report, SW3208 flow was above the MT by March 2023[4].

5. Total Water Use

Total water use in the Basin grouped by management area, water use sector, and measurement method is shown in Table 3. Total water volume used in the Basin during WY 2022 was estimated to be 129,200 AF.

6. Change of Groundwater in Storage

The subsections below discuss the estimated change of groundwater in storage for the Basins. Total groundwater in storage change for both subbasins over WY 2022 was estimated to be -

[4] Water year 2023 was a historic wet year.

4,575 AF (Figure 17). Cumulative change in groundwater in storage for both subbasins relative to Fall 2019 conditions is estimated to be -150,901 AF (see Section 6.2 below).

6.1 Fish Slough and Tri-Valley

Change in groundwater in storage for both the Fish Slough subbasin and the Tri-Valley portion of Owens Valley subbasin was estimated using the equation:

$$\Delta S = \Delta b_{avg} * A * \phi \qquad (6.1)$$

where ΔS = change in storage (AF)

Δb_{avg} = mean change in observed water levels (feet)

A = subbasin area (acres)

ϕ = mean effective aquifer porosity (-)

Mean change in water levels from Fall 2021 to Fall 2022 was -0.05 ft in the Fish Slough subbasin and -0.69 ft in Tri-Valley. The Fish Slough subbasin covers 2,944 acres and the Tri-Valley portion of the Owens Valley subbasin covers 72,100 acres. Assuming a 10% effective aquifer porosity for both areas, estimated change in storage over WY 2022 was -17 AF for the Fish Slough subbasin and -7,162 AF for Tri-Valley. Total combined change in groundwater in storage for the Fish Slough and Tri-Valley management area was -7,179 AF. Although this is the best method currently available for estimating change in groundwater in storage, these values have a very high degree of uncertainty associated with them due to limited data availability and spatial coverage. TVGMD plans to develop a numerical groundwater flow model for the Fish Slough and Tri-Valley portions of the Owens Valley groundwater basin in Mono County which will be available in the future for estimating change in storage (see Section 7.4).

6.2 Owens Valley and Owens Lake

As part of their SGMA reporting requirements for adjudicated basins (CA Water Code Section 10720.8), LADWP reports water use and estimated change in storage values for each water year to DWR (WY2022 Inyo County Basins Annual Report). Figure 18 shows both estimated annual and cumulative change in storage relative to Fall 2019 for the Basins, as the first year LADWP began SGMA reporting was 2020. The reported value is calculated according to a relatively complex set of equations outlined in Section IV Subsection C of the Green Book, the technical appendix to the Inyo/Los Angeles Long Term Water Agreement.

LADWP reported a change in groundwater in storage of +2,604 AF for WY 2022. Since nearly all groundwater pumping and monitoring in the Inyo County portion of the Owens Valley subbasin occurs on LADWP lands, this is the best estimate available for the Owens Valley and Owens Lake management areas. It is assumed that most of this change in storage occurred in the Owens Valley management area since water levels in the Owens Lake management area are generally stable due to limited extractions.

7. Progress Towards GSP Implementation

The Owens Valley Groundwater Basin GSP identified four Projects or Management Actions that the OVGA Board of Directors would implement or consider implementing to facilitate the maintenance of sustainable conditions in the Basins (see Section 4 of the GSP). Below is a description of activities related to each project that occurred during WY 2022. The OVGA has focused its attention on Projects #1 and #2 since the GSP was submitted to DWR, while the TVGMD and Mono County have made progress on Projects #3 and #4. Updates on projects in the portions of the Basins in Mono County that the OVGA is involved with but not leading are also included.

7.1 Project and Management Action #1 - Well Registration and Reporting Ordinance

In August 2022, the OVGA passed Ordinance No. 2022-01 which requires owners and users of groundwater extraction facilities located within the revised OVGA boundary[5] to register their wells with the OVGA and report groundwater extractions annually. This Well Registration Program is voluntary, but encouraged, for de minimus users which is defined as "a person who extracts, for domestic purposes, two acre-feet or less (of groundwater) per year." The initial registration deadline was set for April 1, 2023, and later extended to April 1, 2024, to provide stakeholders with additional time to submit.

[5] After the GSP was submitted to DWR on January 26, 2022, the TVGMD and Mono County withdrew from the OVGA and petitioned DWR to become the GSAs for the portions of the Basins within Mono County. The TVGMD and Mono County were approved to be the GSAs for Mono County portions of the Owens Valley and Fish Slough groundwater subbasins on August 2, 2022.

7.2 Project and Management Action #2 - Well Permit Review Ordinance

The Inyo County Department of Environmental Health is the permitting entity that issues well permits within the Inyo County portion of the Basins. Staff to the OVGA is working with the County to review applications for well permits within the Basins.

7.3 Project and Management Action #3 - Increase Groundwater Level Monitoring Network

The TVGMD is currently exploring options for expanding the groundwater monitoring network in Tri-Valley utilizing existing wells, but no final decisions have been made. Inyo County Water Department installed pressure transducers and dataloggers in three monitoring wells located in the Fish Slough subbasin on May 11, 2023, in cooperation with the Bureau of Land Management (BLM) Bishop Field Office.

The California Department of Fish and Wildlife (CDFW), DWR, and United States Geologic Survey (USGS), in cooperation with the BLM Bishop Field Office propose to install two multi-completion groundwater monitoring facilities (i.e., well) in southern Hammil Valley in the Fish Slough and Tri-Valley management Area. A third multi-completion groundwater monitoring facility is planned to be installed on LADWP owned land in the Fish Slough subbasin. The monitoring well construction is scheduled to begin in 2024. The proposed project includes provision to equip the monitoring facilities with pressure transducers and dataloggers. The proposed project is a continued effort to assess groundwater conditions and movement in the Tri-Valley and Fish Slough management area.

7.4 Project and Management Action #4 - Tri-Valley Groundwater Model Development

In June 2022, a project proposal for developing a groundwater model of the Fish Slough and Tri-Valley portions of the Basins was approved by the Inyo-Mono Integrated Regional Water Management Program (IRWMP) to be put forward for funding by DWR. The requested project included an optional additive component for an isotope study. A description of the proposed scope of work and budget can be found in the July 13, 2022, TVGMD board meeting minutes. The project is currently in the planning phase, and model development activities are anticipated to begin when a consultant is awarded the contract in 2024.

7.5 Additional OVGA Activities

The OVGA continues to update and refine its Database Management System. Water-level and streamflow data for the GSP Representative Monitoring Points (RMPs) have also been uploaded to the SGMA Portal through September 2022 to align with the WY 2022 reporting period of this annual report.

7.6 GSP Amendments

No amendments to the GSP were necessary for the WY 2022 reporting period of this annual report.

8. References

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Table 1. Groundwater Representative Monitoring Points SMC Status.

Representative Monitoring Point	Management Area	Water Level Elevation (ft amsl)	Date	MT (ft amsl)	MO (ft amsl)	SMC Status Fall 2022
BT-MW1	Fish Slough and Tri-Valley	5,303.55	2022-10-31	5,301	5,309	Middle of MO and MT
CH-MW2	Fish Slough and Tri-Valley	4,208.49	2022-10-31	4,204	4,211	Middle of MO and MT
DELTA W(3)_10[1]	Owens Lake			3,562	3,563	Undetermined
DVF North MW	Owens Lake	3,645.13	2022-10-01	3,643	3,645	Near or Above MO
DVF South Lower	Owens Lake	3,642.22	2022-10-01	3,640	3,643	Middle of MO and MT
DVF South Middle	Owens Lake	3,642.23	2022-10-01	3,639	3,643	Near or Above MO
DVF South Upper	Owens Lake	3,640.21	2022-10-01	3,636	3,641	Near or Above MO
FS-2	Fish Slough and Tri-Valley	4,215.29	2022-09-21	4,214	4,217	Middle of MO and MT
FS-3D[2]	Fish Slough and Tri-Valley	4,180.22	2022-10-01	4,179		Undetermined
Fault Test T3	Owens Lake	3,624.02	2022-10-01	3,620	3,623	Near or Above MO
Fault Test T5	Owens Lake	3,625.00	2022-10-01	3,617	3,623	Near or Above MO
Hammil 2[2]	Fish Slough and Tri-Valley	4,412.80	2022-10-23	4,401		Undetermined
I10(7)_4[3]	Owens Lake			3,568	3,570	Undetermined
ICWCSD 4[3]	Owens Valley			4,249	4,254	Undetermined
KCSD[3]	Owens Lake			3,612	3,613	Undetermined
Keeler-Swansea Lower	Owens Lake	3,619.56	2022-10-01	3,618	3,618	Near or Above MO
O6(5)_4[1]	Owens Lake			3,567	3,569	Undetermined
OL92-2	Owens Lake	3,607.25	2022-10-01	3,605	3,607	Near or Above MO
River Production Lower[4]	Owens Lake	3,631.34	2022-10-01			Undetermined
River Site Lower	Owens Lake	3,634.00	2022-10-01	3,594	3,633	Near or Above MO
SFIP MW	Owens Lake	3,618.66	2022-10-01	3,511	3,613	Near or Above MO
T001	Owens Valley	3,880.49	2022-10-31	3,867	3,880	Near or Above MO
T348	Owens Lake	3,632.50	2022-10-01	3,630	3,633	Near or Above MO

Representative Monitoring Point	Management Area	Water Level Elevation (ft amsl)	Date	MT (ft amsl)	MO (ft amsl)	SMC Status Fall 2022
T362	Owens Valley	4,068.05	2022-09-21	4,047	4,072	Near or Above MO
T364	Owens Valley	3,899.29	2022-10-13	3,898	3,903	Middle of MO and MT
T384	Owens Valley	4,168.38	2022-10-20	4,165	4,168	Near or Above MO
T389	Owens Valley	4,229.61	2022-10-01	4,216	4,224	Near or Above MO
T391	Owens Valley	4,305.15	2022-10-06	4,296	4,303	Near or Above MO
T397	Fish Slough and Tri-Valley	4,200.37	2022-10-01	4,199	4,201	Middle of MO and MT
T480	Owens Valley	3,993.79	2022-10-20	3,994	3,995	At or Below MT
T513	Owens Valley	4,117.48	2022-10-20	4,113	4,117	Near or Above MO
T574	Owens Valley	4,069.17	2022-09-19	4,067	4,071	Middle of MO and MT
T588	Owens Lake	3,693.48	2022-10-11	3,685	3,693	Near or Above MO
T750[3]	Owens Valley			4,357	4,360	Undetermined
T751[3]	Owens Valley			4,373	4,379	Undetermined
T808	Owens Valley	3,839.90	2022-09-19	3,834	3,846	Middle of MO and MT
T809	Owens Valley	3,827.25	2022-09-19	3,823	3,829	Middle of MO and MT
T858	Owens Lake	3,668.70	2022-10-11	3,666	3,670	Middle of MO and MT
T860	Owens Lake	3,712.77	2022-10-11	3,708	3,711	Near or Above MO
T869	Owens Valley	3,986.00	2022-10-05	3,983	3,985	Near or Above MO
T871	Owens Valley	3,856.51	2022-09-20	3,850	3,852	Near or Above MO
T872	Owens Valley	3,950.10	2022-10-04	3,946	3,955	Middle of MO and MT
T873	Owens Valley	4,971.59	2022-10-04	4,954	4,963	Near or Above MO
T899	Owens Lake	3,617.49	2022-09-14	3,617	3,618	Middle of MO and MT
T901	Owens Lake	3,610.41	2022-09-14	3,607	3,610	Near or Above MO
T902	Owens Lake	3,633.17	2022-10-01	3,631	3,632	Near or Above MO
T904	Owens Lake	3,628.98	2022-10-01	3,626	3,629	Near or Above MO

Representative Monitoring Point	Management Area	Water Level Elevation (ft amsl)	Date	MT (ft amsl)	MO (ft amsl)	SMC Status Fall 2022
T908	Owens Lake	3,627.29	2022-10-01	3,625	3,627	Near or Above MO
T910	Owens Lake	3,609.33	2022-10-01	3,607	3,608	Near or Above MO
T916[5]	Owens Lake	3,653.36	2022-10-11	3,704	3,704	Undetermined
T917[5]	Owens Lake	3,652.66	2022-10-11	3,704	3,705	Undetermined
T920	Owens Lake	3,601.52	2022-09-26	3,600	3,601	Near or Above MO
T922[4]	Owens Lake	3,579.37	2022-10-01			Undetermined
T924	Owens Lake	3,592.45	2022-09-26	3,590	3,592	Near or Above MO
T925[4]	Owens Lake	3,621.10	2022-10-01			Undetermined
T929[4]	Owens Lake	3,623.47	2022-10-01			Undetermined
V016GB	Owens Valley	3,883.07	2022-10-21	3,880	3,882	Near or Above MO
V151	Owens Valley	3,832.58	2022-07-21	3,827	3,834	Near or Above MO
V299	Owens Valley	3,926.35	2022-10-21	3,909	3,914	Near or Above MO
WCCSD 2[3]	Owens Valley			6,020	6,023	Undetermined
WCCSD 4[3]	Owens Valley			6,263	6,274	Undetermined

Notes:
1. Reported destroyed by LADWP.
2. Newly established representative monitoring point or data not currently available. MO will be established in GSP 5-yr update.
3. Fall 2022 data unavailable.
4. Newly established representative monitoring point or data not currently available. SMCs will be established in GSP 5-yr update.
5. MT and MO values based on incorrect water level elevations that were recently corrected. MT and MO will be amended in GSP 5-yr update.

Table 2. Groundwater Extractions

Management Area	Sector	Method	GW Extraction Volume (AF)	Accuracy (%)	Range (AF)
Fish Slough and Tri-Valley	Agricultural	OpenET	13,147	± 20	10,518 - 15,776
	Municipal and Industrial	Totalizer	0	± 5	0 - 0
Fish Slough and Tri-Valley Subtotal			13,147		10,518 - 15,776
Owens Valley	Agricultural	Totalizer	37,713	± 5	35,827 - 39,599
	Domestic	Totalizer	732	± 5	695 - 769
	Managed Recharge	Totalizer	0	± 5	0 - 0
	Managed Wetlands	Totalizer	19,467	± 5	18,494 - 20,440
	Municipal and Industrial	Totalizer	10,726	± 5	10,190 - 11,262
	Native Vegetation	Totalizer	8,030	± 5	7,628 - 8,432
	Other	Totalizer	2,260	± 5	2,147 - 2,373
	Tribes	Totalizer	3,857	± 5	3,664 - 4,050
Owens Valley Subtotal			82,785		78,645 - 86,925
Owens Lake	Agricultural	Totalizer	0	± 5	0 - 0
	Municipal and Industrial	Totalizer	2,394	± 5	2,274 - 2,514
Owens Lake Subtotal			2,394		2,274 - 2,514
Total			**98,326**		**91,437 - 105,215**

Table 3. Surface Water Use

Management Area	Surface Water Source	Sector	Method	Annual Volume Used (AF)	Accuracy (%)	Range (AF)
Fish Slough and Tri-Valley	Local Supplies	Agricultural	Totalizer	1,969	± 5	1,871 - 2,067
			Unknown	2,163	± 33	1,449 - 2,877
			Weir	3,150	± 5	2,992 - 3,308
		Other	Totalizer	667	± 5	634 - 700
			Weir	895	± 5	850 - 940
Fish Slough and Tri-Valley Subtotal				8,844		7,796 - 9,892
Owens Valley and Owens Lake	Local Supplies	Agricultural	Weirs and Flumes	11,530	± 5	10,954 - 12,106
		Domestic	Weirs and Flumes	224	± 5	213 - 235
		Managed Recharge	Weirs and Flumes	0	± 5	0 - 0
		Managed Wetlands	Weirs and Flumes	5,951	± 5	5,653 - 6,249
		Native Vegetation	Weirs and Flumes	2,455	± 5	2,332 - 2,578
		Other	Weirs and Flumes	691	± 5	656 - 726
		Tribes	Weirs and Flumes	1,179	± 5	1,120 - 1,238
Owens Valley and Owens Lake Subtotal				22,030		20,928 - 23,132
Total				**30,874**		**28,724 - 33,024**

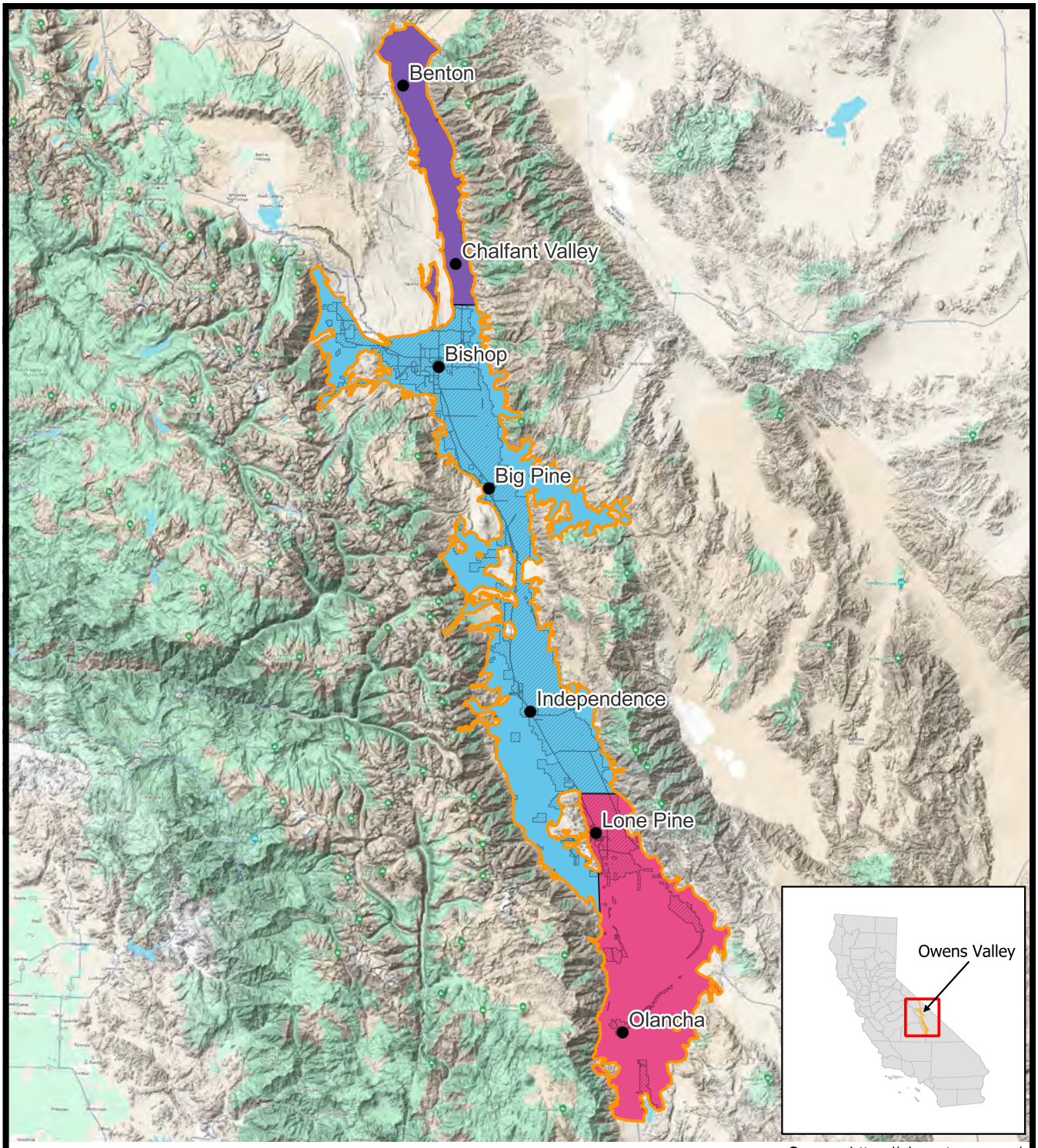
Table 4. Groundwater Representative Monitoring Points SMC Status

Representative Monitoring Point	Management Area	Average Daily Flow Rate (cfs)[1]	Month	MT (cfs)	MO (cfs)	SMC Status Fall 2022
SW3208	Fish Slough and Tri-Valley	0	September 2022	0.1	0.5	At or Below MT

Notes:
1. LADWP reports total flow volume in AF for the month, which is multiplied by a factor of 0.016563 to convert to average daily flow rate in cfs.

Table 5. Total Water Use

Management Area	Sector	Method	Total Annual Volume (AF)	Accuracy (%)	Range (AF)
Fish Slough and Tri-Valley	Agricultural	OpenET	13,147	± 20	10,518 - 15,776
	Agricultural	Totalizer	1,969	± 5	1,871 - 2,067
	Agricultural	Unknown	2,163	± 33	1,449 - 2,877
	Agricultural	Weir	3,150	± 5	2,992 - 3,308
	Municipal and Industrial	Totalizer	0	± 5	0 - 0
	Other	Totalizer	667	± 5	634 - 700
	Other	Weir	895	± 5	850 - 940
Fish Slough and Tri-Valley Subtotal			21,991	-	18,314 - 25,668
Owens Valley	Agricultural	Totalizer	37,713	± 5	35,827 - 39,599
	Domestic	Totalizer	732	± 5	695 - 769
	Managed Recharge	Totalizer	0	± 5	0 - 0
	Managed Wetlands	Totalizer	19,467	± 5	18,494 - 20,440
	Municipal and Industrial	Totalizer	10,726	± 5	10,190 - 11,262
	Native Vegetation	Totalizer	8,030	± 5	7,628 - 8,432
	Other	Totalizer	2,260	± 5	2,147 - 2,373
	Tribes	Totalizer	3,857	± 5	3,664 - 4,050
Owens Valley Subtotal			82,785	-	78,645 - 86,925
Owens Lake	Agricultural	Totalizer	0	± 5	0 - 0
	Municipal and Industrial	Totalizer	2,394	± 5	2,274 - 2,514
Owens Lake Subtotal			2,394	-	2,274 - 2,514
Owens Valley and Owens Lake	Agricultural	Weirs and Flumes	11,530	± 5	10,954 - 12,106
	Domestic	Weirs and Flumes	224	± 5	213 - 235
	Managed Recharge	Weirs and Flumes	0	± 5	0 - 0
	Managed Wetlands	Weirs and Flumes	5,951	± 5	5,653 - 6,249
	Native Vegetation	Weirs and Flumes	2,455	± 5	2,332 - 2,578
	Other	Weirs and Flumes	691	± 5	656 - 726
	Tribes	Weirs and Flumes	1,179	± 5	1,120 - 1,238
Owens Valley and Owens Lake Subtotal			22,030	-	20,928 - 23,132
Total			**129,200**		**120,161 - 138,239**



Source: https://gis.water.ca.gov/

Explanation

Management Areas
- Fish Slough and Tri-Valley
- Owens Valley
- Owens Lake

- SGMA Exempt Lands
- Groundwater Basin Boundary
- City or Town

0 5 10 mi

N

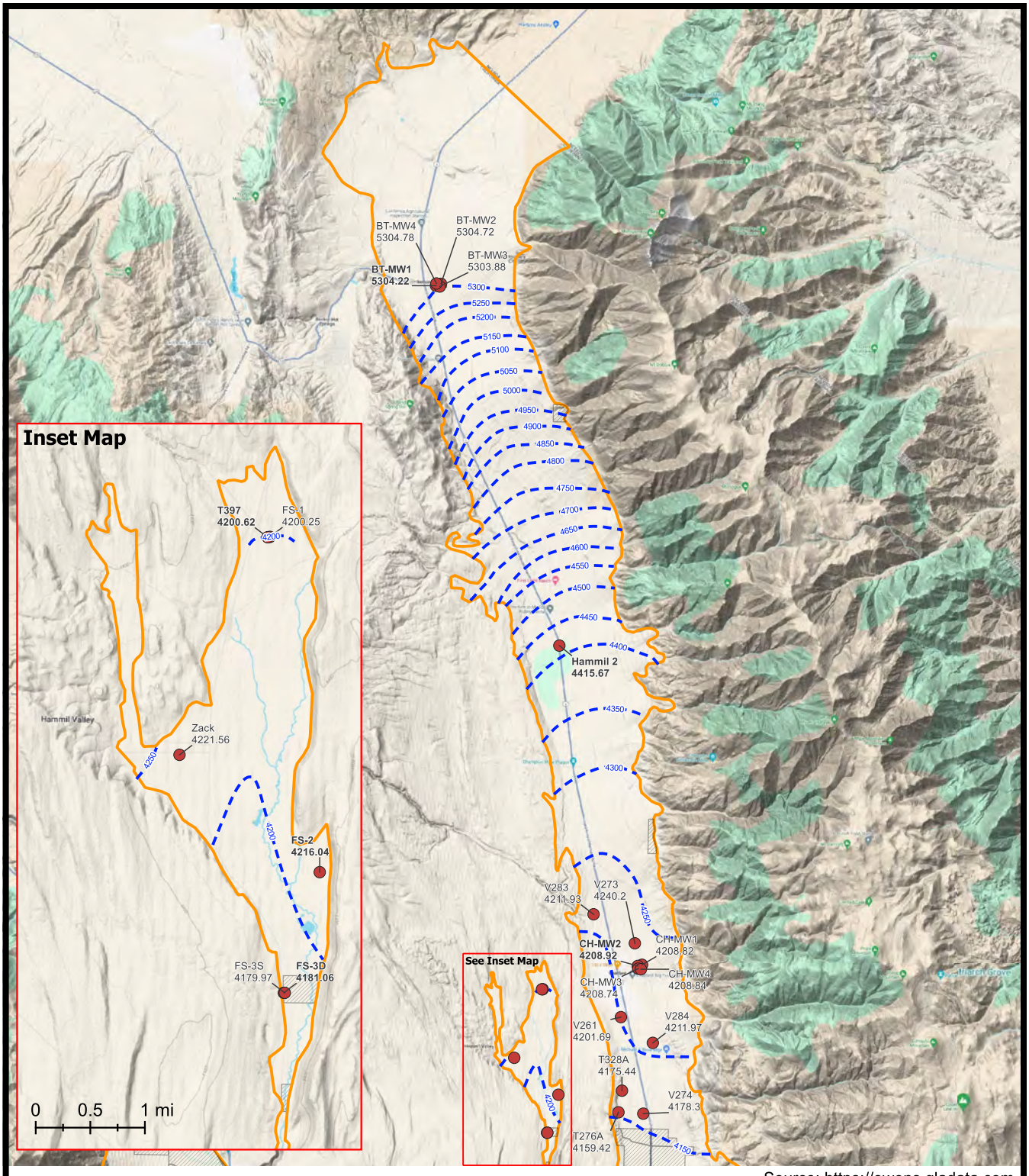
OWENS VALLEY GROUNDWATER AUTHORITY

OWENS VALLEY GSP ANNUAL REPORT WY 2022
Location Map and Groundwater Basin Boundary

01/22/2024

Figure 1

DB23.1300.00 C:\Users\500\Documents\Local_Project_Files\DB23.1300.00 OVGA WY2023 Annual Reports\Docs\WY2022\GIS\QGZs\Owens Valley Annual Report WY2022.qgz



Source: https://owens.gladata.com

Explanation

- Well Name
  Water Level Elevation (ft amsl)
- Water Level Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

Notes:
1. Bold labels indicate RMPs.

0 2 4 mi

N

OWENS VALLEY GROUNDWATER AUTHORITY

OWENS VALLEY GSP ANNUAL REPORT WY 2022
Spring Groundwater Elevations
Fish Slough and Tri-Valley Management Area

03/04/2024

Figure 2

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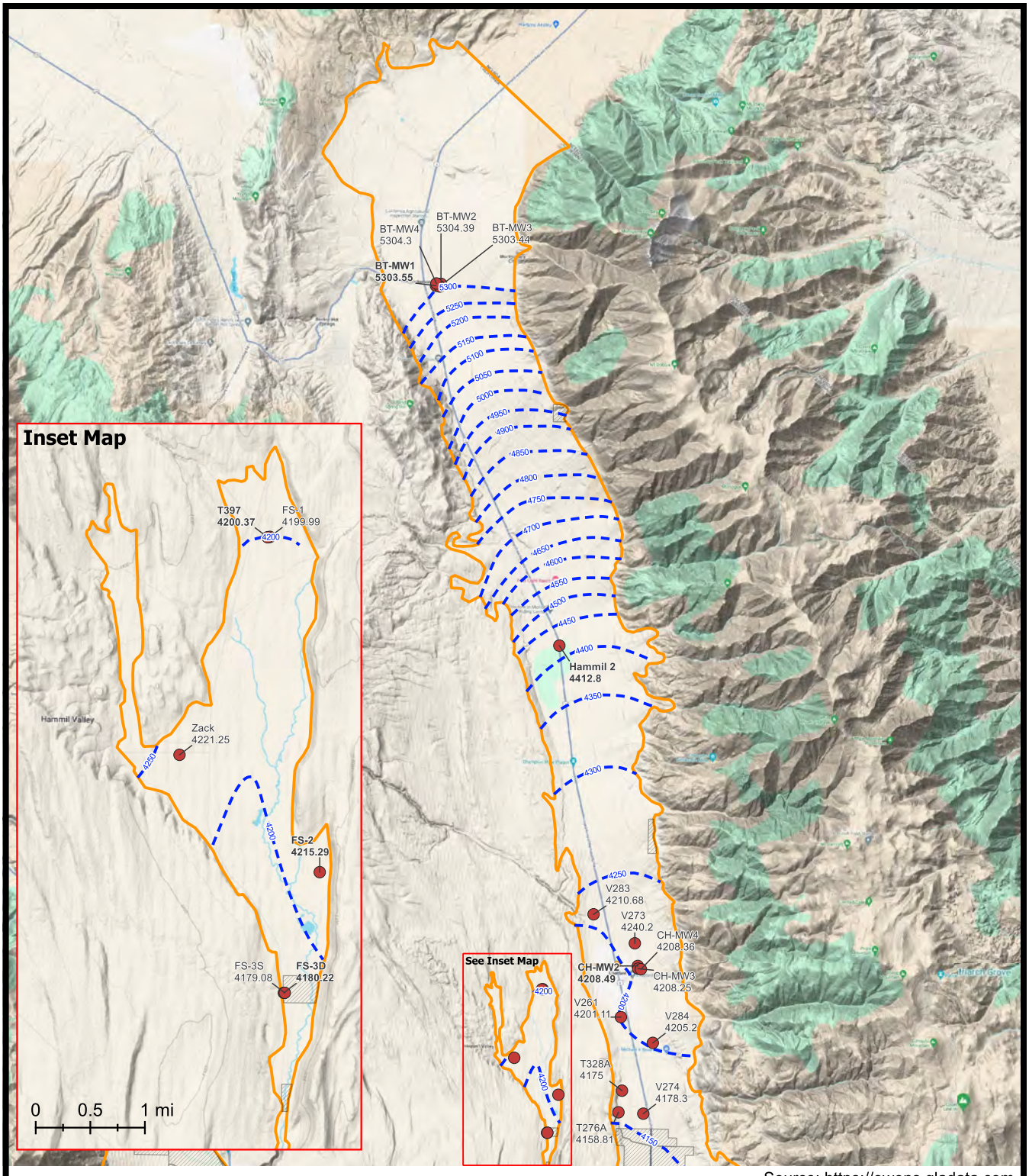

Source: https://owens.gladata.com

Explanation

- Well Name
  Water Level Elevation (ft amsl)
- Water Level Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

Notes:
1. Bold labels indicate RMPs.

0 2 4 mi

N

OWENS VALLEY GROUNDWATER AUTHORITY

OWENS VALLEY GSP ANNUAL REPORT WY 2022
Fall Groundwater Elevations
Fish Slough and Tri-Valley Management Area

03/04/2024

Figure 3

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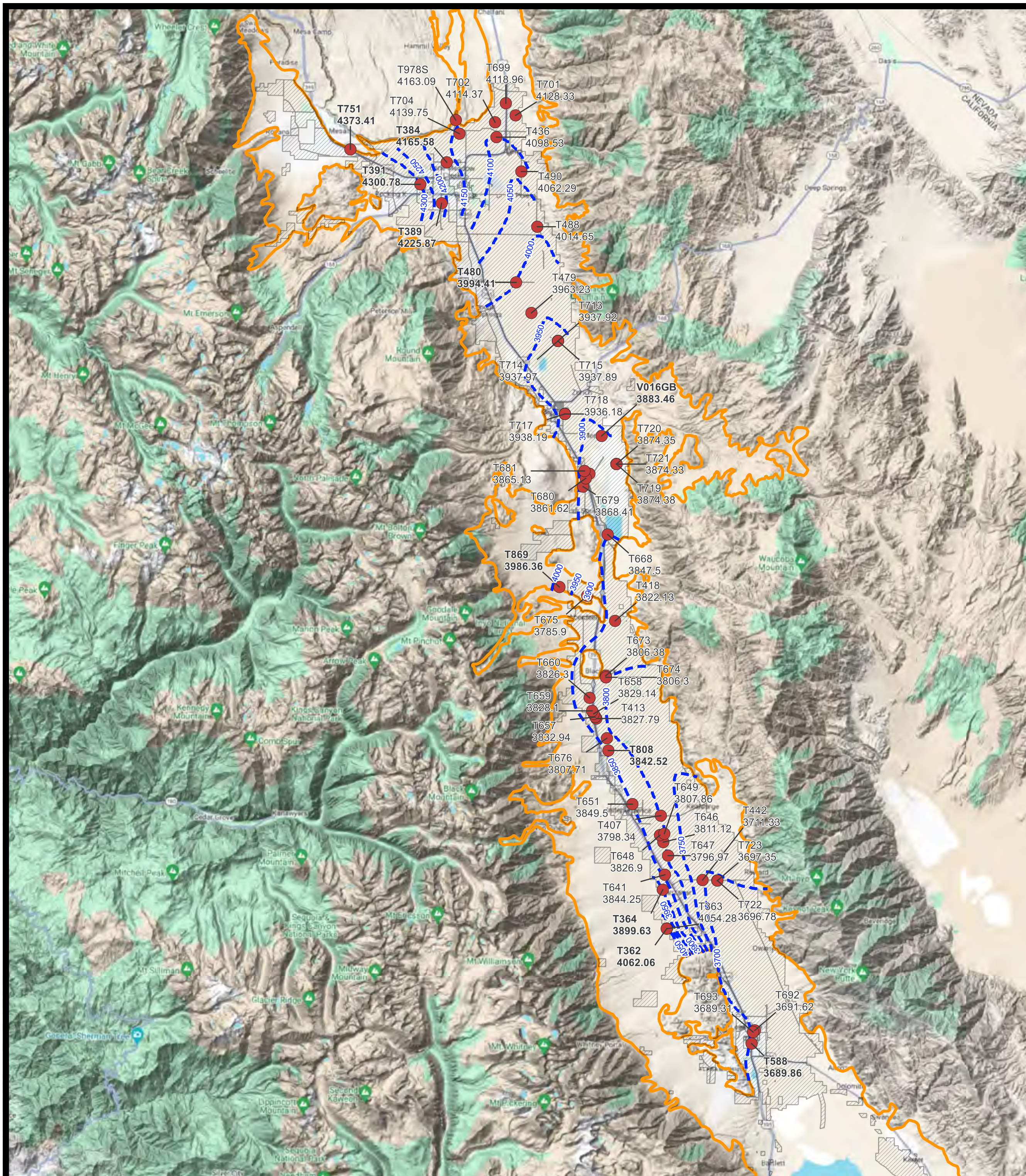


Explanation

Source: https://owens.gladata.com/

- ● Well Name Water Level Elevation (ft amsl)
- Water Level Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

Notes:
1. Bold labels indicate RMP.
2. Not all labels shown.

0 5 10 mi

N

OWENS VALLEY GSP ANNUAL REPORT WY 2022

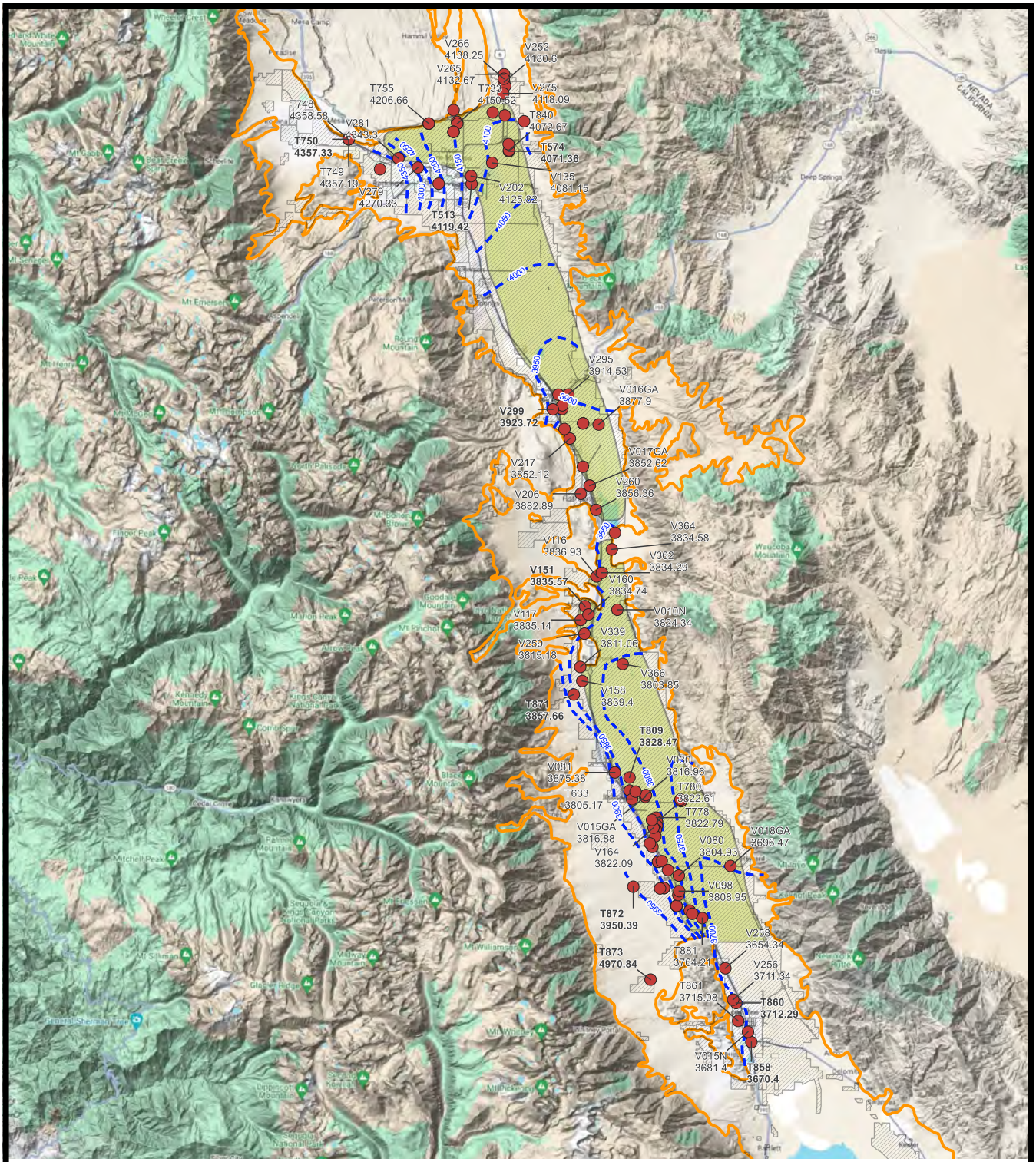
Spring Groundwater Elevations

Owens Valley Management Area - Shallow Aquifer

OWENS VALLEY GROUNDWATER AUTHORITY

03/04/2024

Figure 4



Explanation

Sources: Danskin (1998); https://owens.gladata.com/

- Well Name
  Water Level Elevation (ft amsl)
- Water Level Contour (ft amsl)
- SGMA Exempt Lands
- Approximate Area of Confinement
- Groundwater Basin Boundary

Notes:
1. Bold labels indicate RMPs.
2. Not all labels shown.

0 5 10 mi

N

OWENS VALLEY GROUNDWATER AUTHORITY

OWENS VALLEY GSP ANNUAL REPORT WY 2022

Spring Groundwater Elevations

Owens Valley Management Area - Deep Aquifer

03/04/2024

Figure 5

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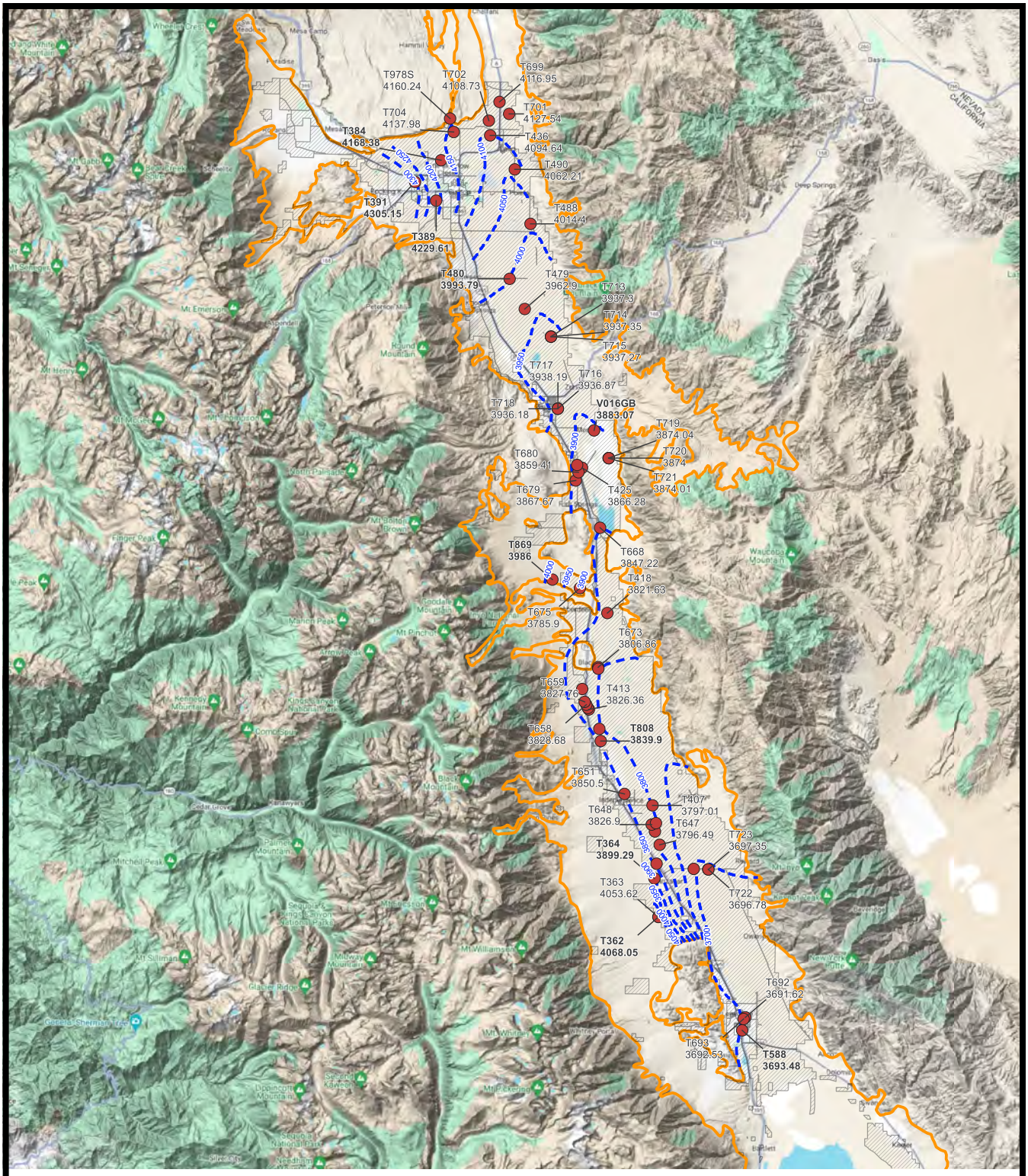

Explanation

Source: https://owens.gladata.com/

- Well Name
  Water Level Elevation (ft amsl)
- Water Level Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

Notes:
1. Bold labels indicate RMPs.
2. Not all labels shown.

0 5 10 mi

N

OWENS VALLEY GROUNDWATER AUTHORITY

OWENS VALLEY GSP ANNUAL REPORT WY 2022

Fall Groundwater Elevations

Owens Valley Management Area - Shallow Aquifer

03/04/2024

Figure 6

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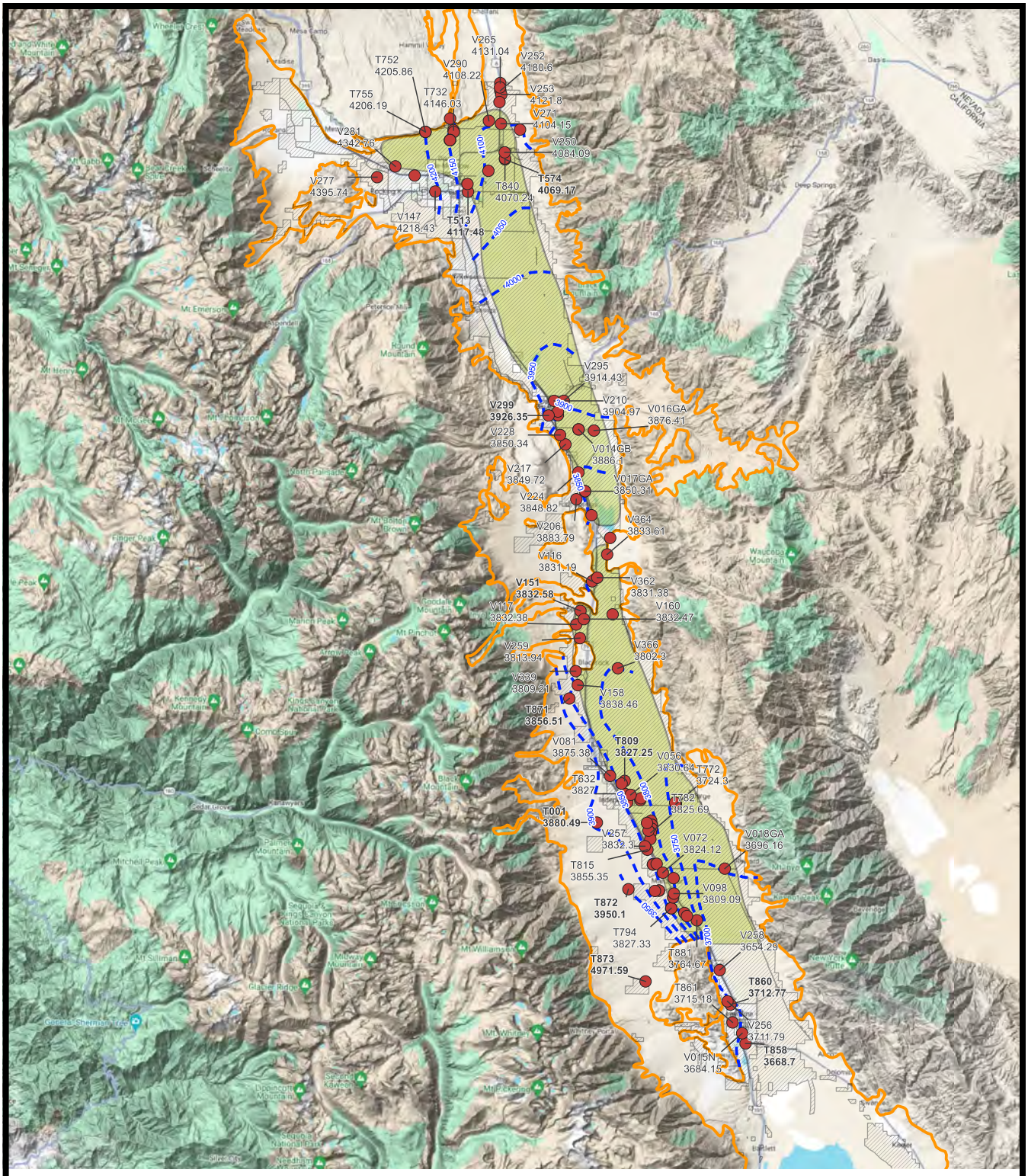

Explanation

- Well Name
  Water Level Elevation (ft amsl)
- Water Level Contour (ft amsl)
- SGMA Exempt Lands
- Approximate Area of Confinement
- Groundwater Basin Boundary

Sources: Danskin (1998); https://owens.gladata.com/

Notes:
1. Bold labels indicate RMPs.
2. Not all labels shown.

0 5 10 mi

N

OWENS VALLEY GROUNDWATER AUTHORITY

OWENS VALLEY GSP ANNUAL REPORT WY 2022

Fall Groundwater Elevations
Owens Valley Management Area - Deep Aquifer

03/04/2024

Figure 7

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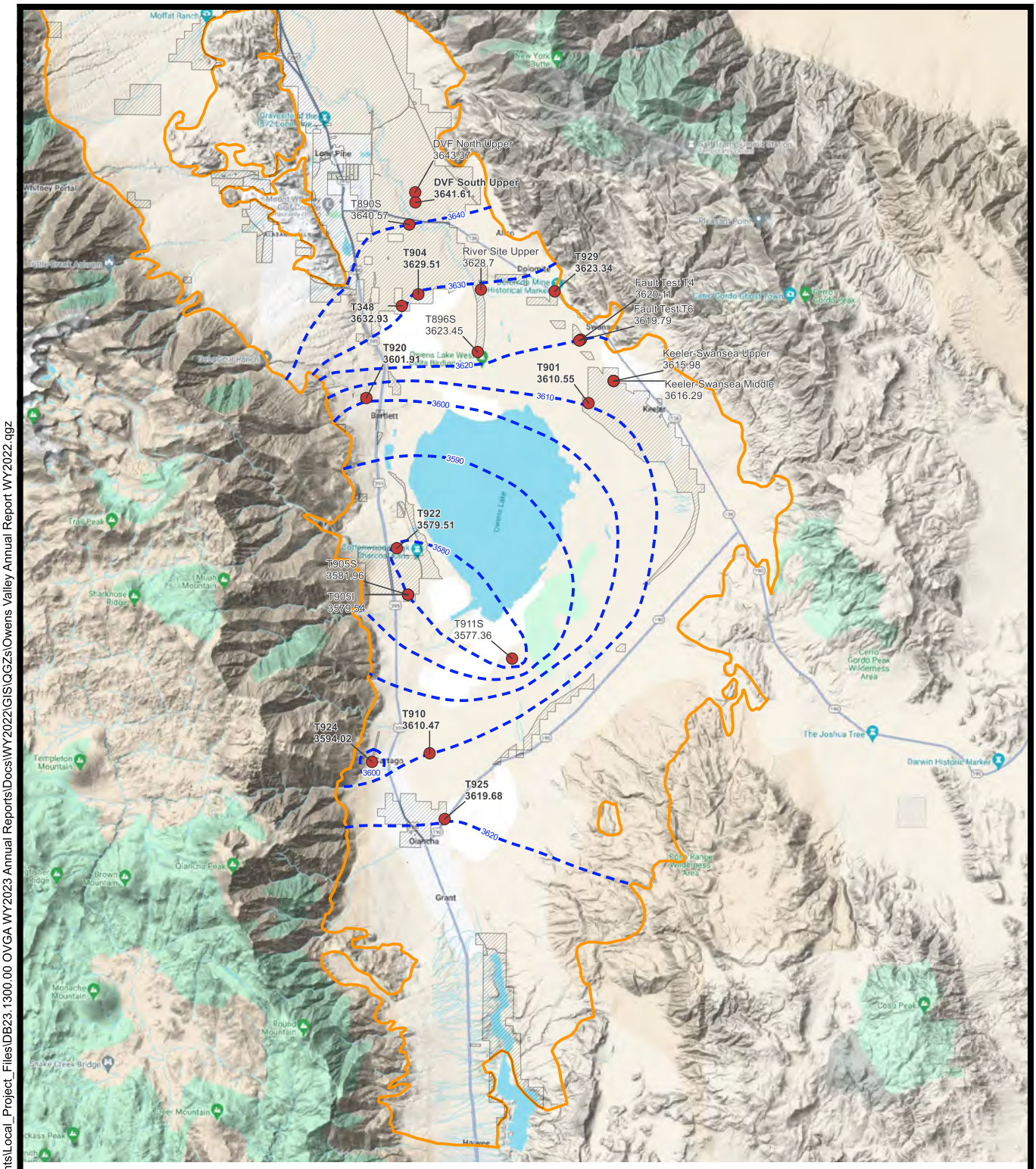


Explanation

Source: https://owens.gladata.com/

- Well Name
  Water Level Elevation (ft amsl)
- Water Level Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

Notes:
1. Bold labels indicate RMPs.

0 2 4 mi

N

OWENS VALLEY GROUNDWATER AUTHORITY

OWENS VALLEY GSP ANNUAL REPORT WY 2022

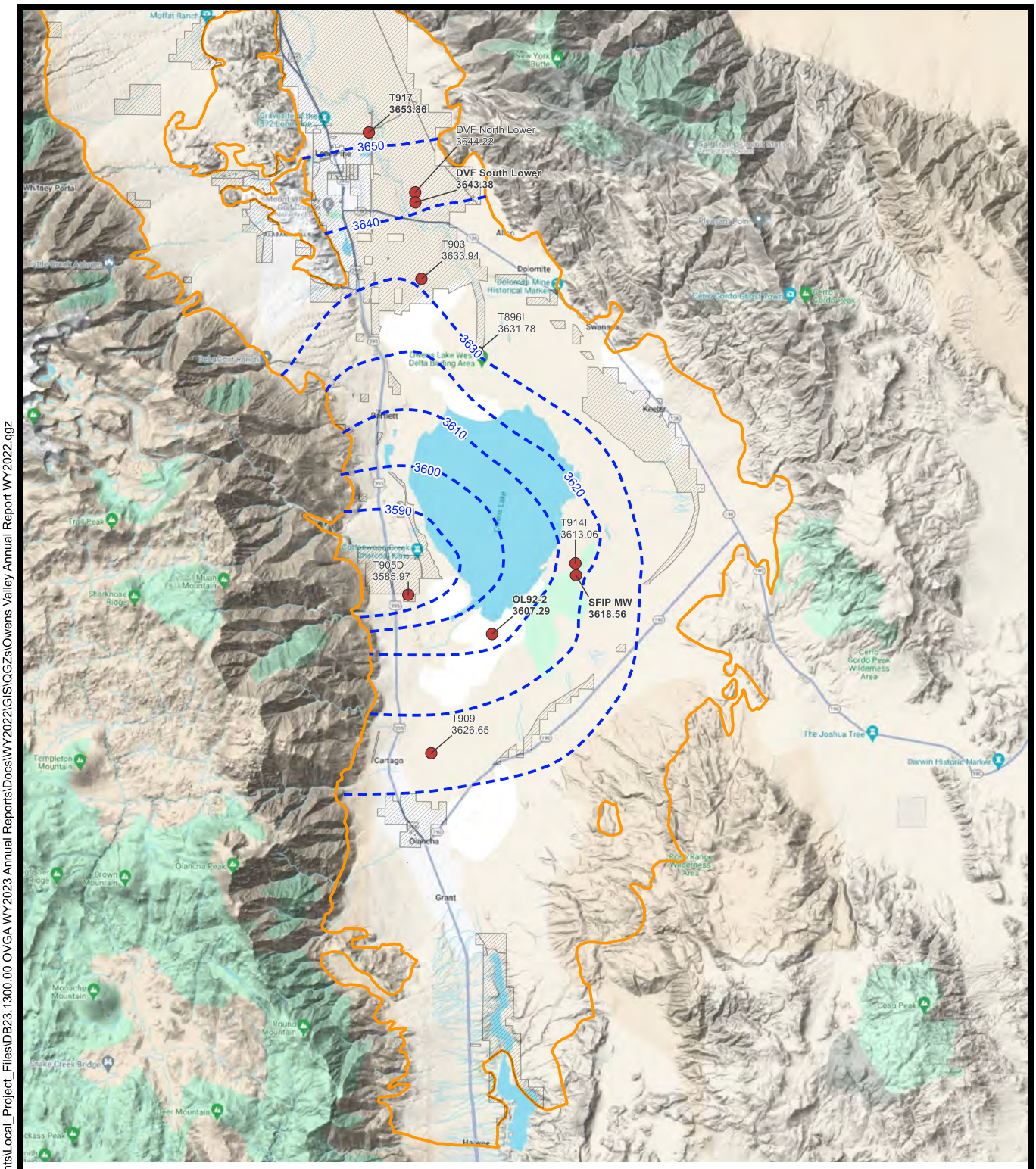
Spring Groundwater Elevations

Owens Lake Management Area - Aquifer 1

03/04/2024

Figure 8

DB23.1300.00 C:\Users\500\Documents\Local_Project_Files\DB23.1300.00 OVGA WY2023 Annual Reports\Docs\WY2022\GIS\QGZs\Owens Valley Annual Report WY2022.qgz



Source: https://owens.gladata.com/

Explanation

- Well Name
  Water Level Elevation (ft amsl)
- Water Level Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

Notes:
1. Labels indicate RMPs.

0 2 4 mi

N

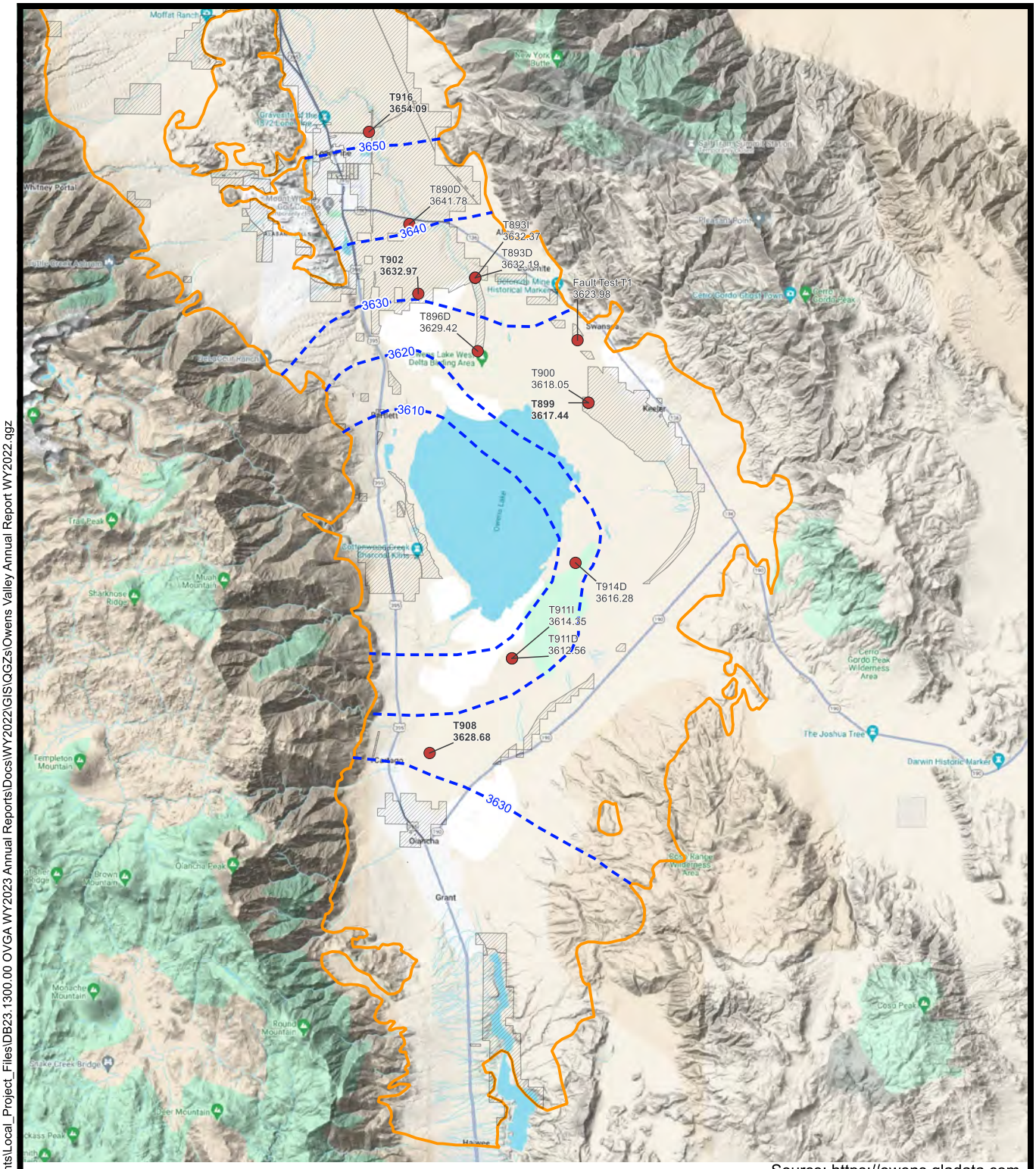
OWENS VALLEY GROUNDWATER AUTHORITY

OWENS VALLEY GSP ANNUAL REPORT WY22
Spring Groundwater Elevations
Owens Lake Management Area - Aquifer 3

03/04/2024

Figure 9

DB23.1300.00 C:\Users\500\Documents\Local_Project_Files\DB23.1300.00 OVGA WY2023 Annual Reports\Docs\WY2022\GIS\QGZs\Owens Valley Annual Report WY2022.qgz



Source: https://owens.gladata.com

Explanation

- Well Name
  Water Level Elevation (ft amsl)
- Water Level Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

Notes:
1. Bold labels indicate RMPs.

0 2 4 mi

N

OWENS VALLEY GROUNDWATER AUTHORITY

OWENS VALLEY GSP ANNUAL REPORT WY 2022

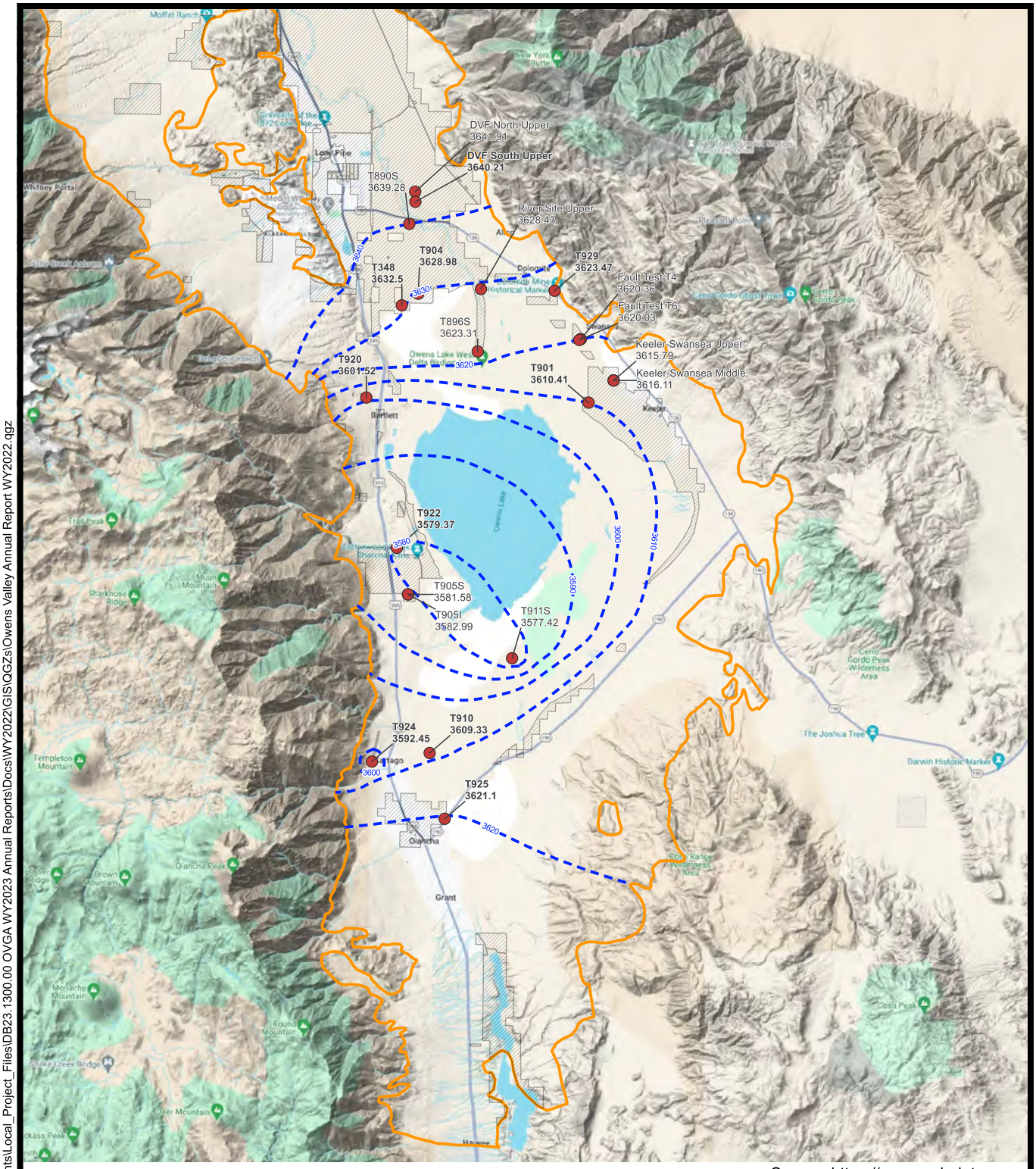
Spring Groundwater Elevations

Owens Lake Management Area - Aquifer 5

03/04/2024

Figure 10

DB23.1300.00 C:\Users\500\Documents\Local_Project_Files\DB23.1300.00 OVGA WY2023 Annual Reports\Docs\WY2022\GIS\QGZs\Owens Valley Annual Report WY2022.qgz



Source: https://owens.gladata.com

Explanation

- Well Name
  Water Level Elevation (ft amsl)
- Water Level Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

Notes:
1. Bold labels indicate RMPs.

0 2 4 mi

N

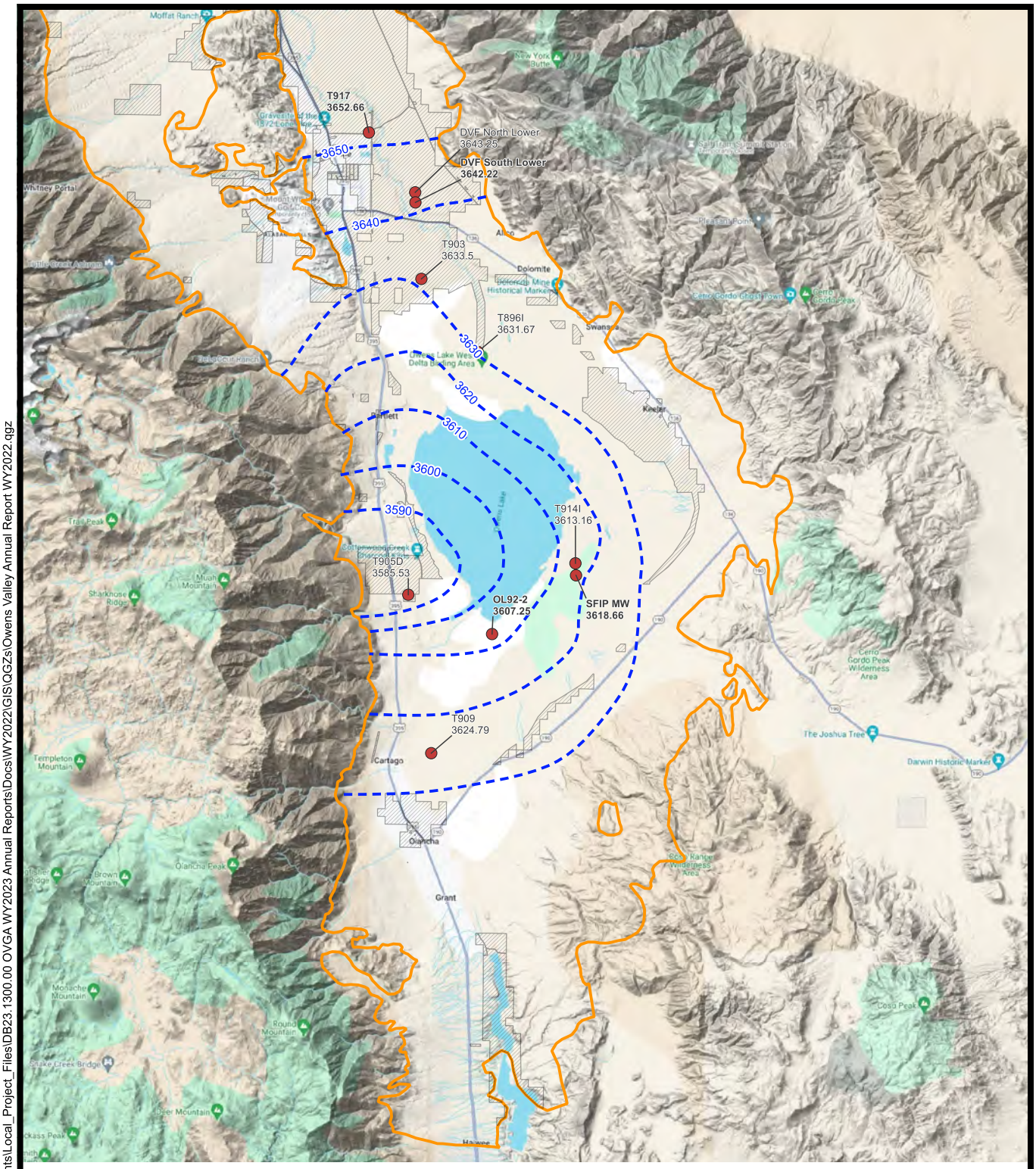
OWENS VALLEY GROUNDWATER AUTHORITY

OWENS VALLEY GSP ANNUAL REPORT WY 2022
Fall Groundwater Elevations
Owens Lake Management Area - Aquifer 1

03/04/2024

Figure 11

DB23.1300.00 C:\Users\500\Documents\Local_Project_Files\DB23.1300.00 OVGA WY2023 Annual Reports\Docs\WY2022\GIS\QGZs\Owens Valley Annual Report WY2022.qgz



Source: https://owens.gladata.com

Explanation

- Well Name
  Water Level Elevation (ft amsl)
- Water Level Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

Notes:
1. Bold labels indicate RMPs.

0 2 4 mi

N

OWENS VALLEY GROUNDWATER AUTHORITY

OWENS VALLEY GSP ANNUAL REPORT WY 2022

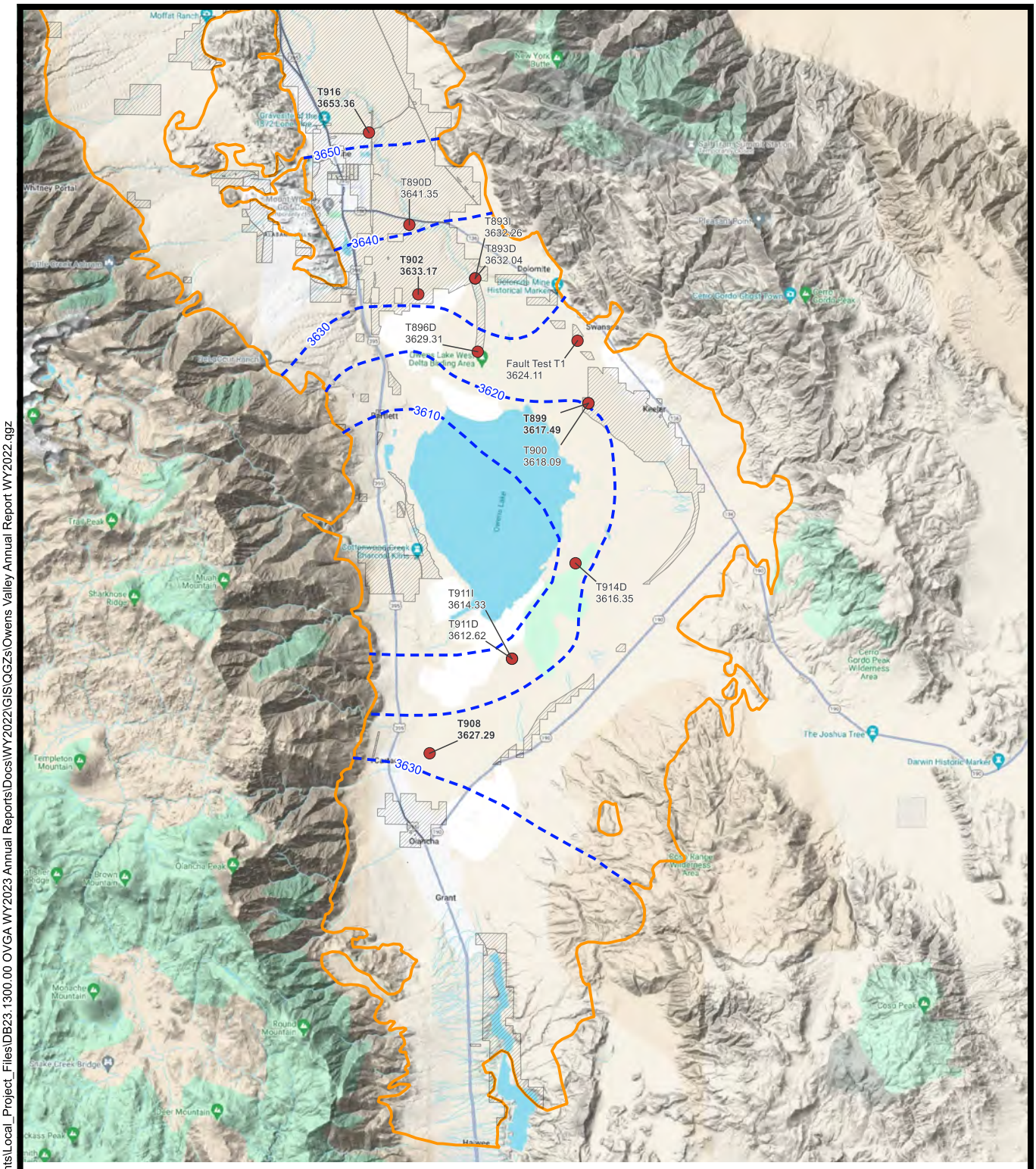
Fall Groundwater Elevations

Owens Lake Management Area - Aquifer 3

03/04/2024

Figure 12

DB23.1300.00 C:\Users\500\Documents\Local_Project_Files\DB23.1300.00 OVGA WY2023 Annual Reports\Docs\WY2022\GIS\QGZs\Owens Valley Annual Report WY2022.qgz



Explanation

- Well Name
  Water Level Elevation (ft amsl)
- Water Level Contour (ft amsl)
- SGMA Exempt Lands
- Groundwater Basin Boundary

Source: https://owens.gladata.com

Notes:
1. Bold labels indicate RMPs.

OWENS VALLEY GSP ANNUAL REPORT WY 2022

Fall Groundwater Elevations

Owens Lake Management Area - Aquifer 5

0 2 4 mi

N

OWENS VALLEY GROUNDWATER AUTHORITY

03/04/2024

Figure 13

DB23.1300.00 C:\Users\500\Documents\Local_Project_Files\DB23.1300.00 OVGA WY2023 Annual Reports\Docs\WY2022\GIS\QGZs\Owens Valley Annual Report WY2022.qgz

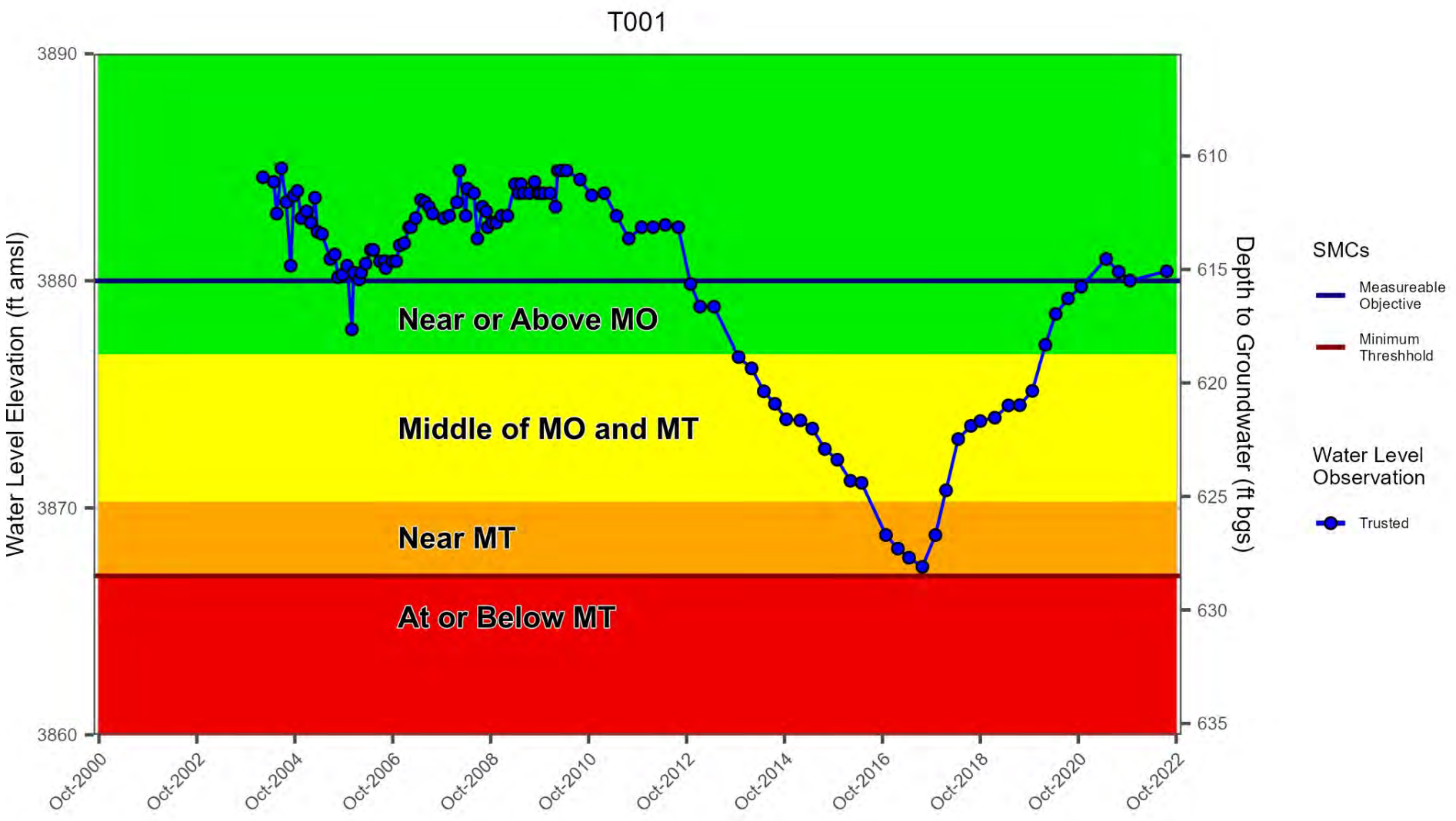


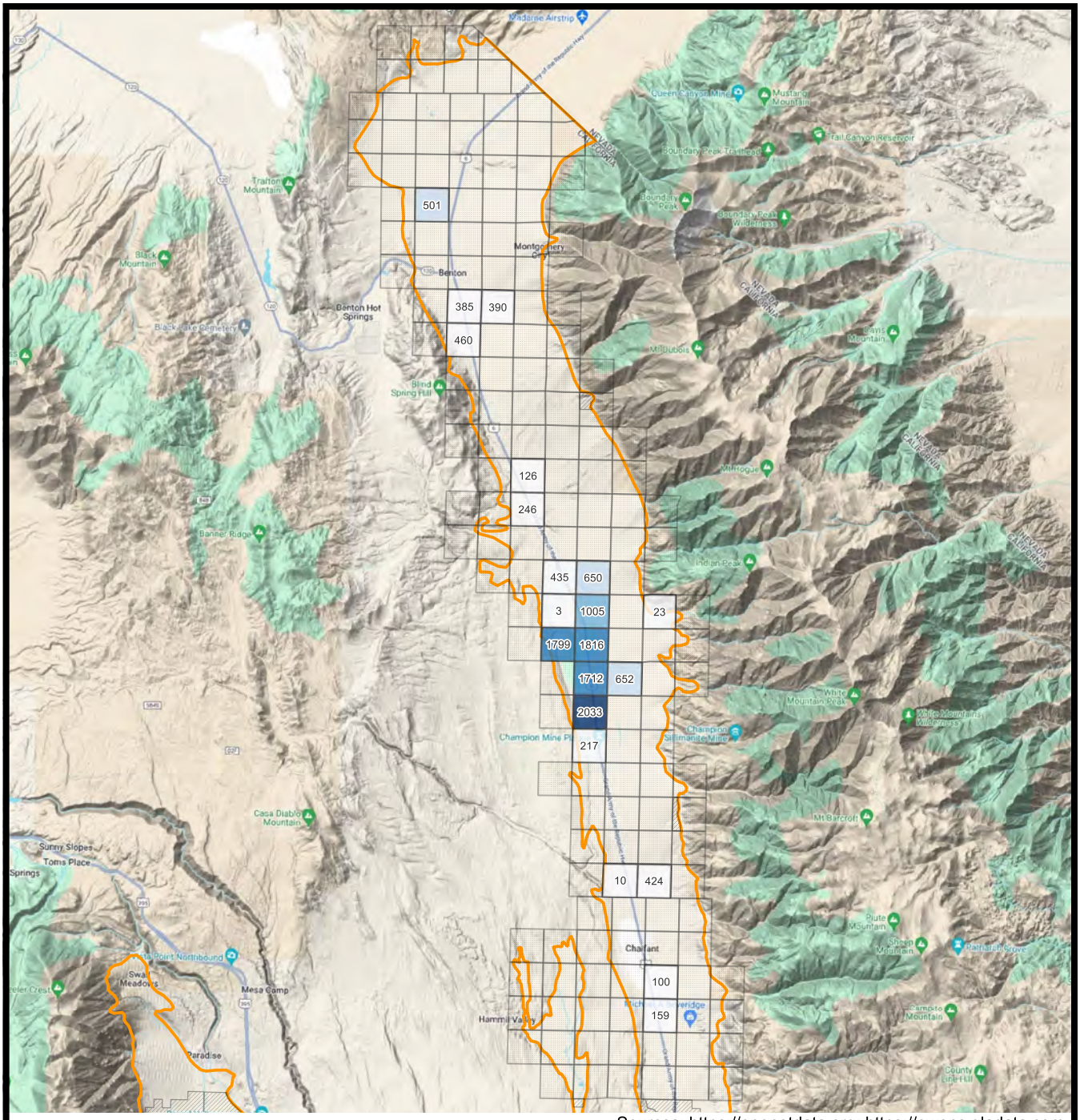
Figure 14

OWENS VALLEY GSP ANNUAL REPORT WY 2022

Example SMC Status Categories

OWENS VALLEY GROUNDWATER AUTHORITY

03/04/2024



Sources: https://openetdata.org; https://owens.gladata.com

Explanation

Extraction Volume (AF)

- No Extractions
- 0 - 500
- 500 - 1,000
- 1,000 - 1,500
- 1,500 - 2,000
- 2,000 - 2,500
- SGMA Exempt Lands
- Groundwater Basin Boundary

Notes:

1. No extraction data available. Volumes and locations estimated from Open ET and are assumed to represent agricultural uses.
2. Reported groundwater extractions likely overestimated due to unknown application volume of surface water on some fields.
3. Pumping from Chalfant Valley West MWC not included.
4. Estimated extraction volumes aggregated by public land survey system (PLSS) section.
5. Labels indicate estimated extraction volume in acre-ft (AF).

0 2 4 mi

N

OWENS VALLEY GROUNDWATER AUTHORITY

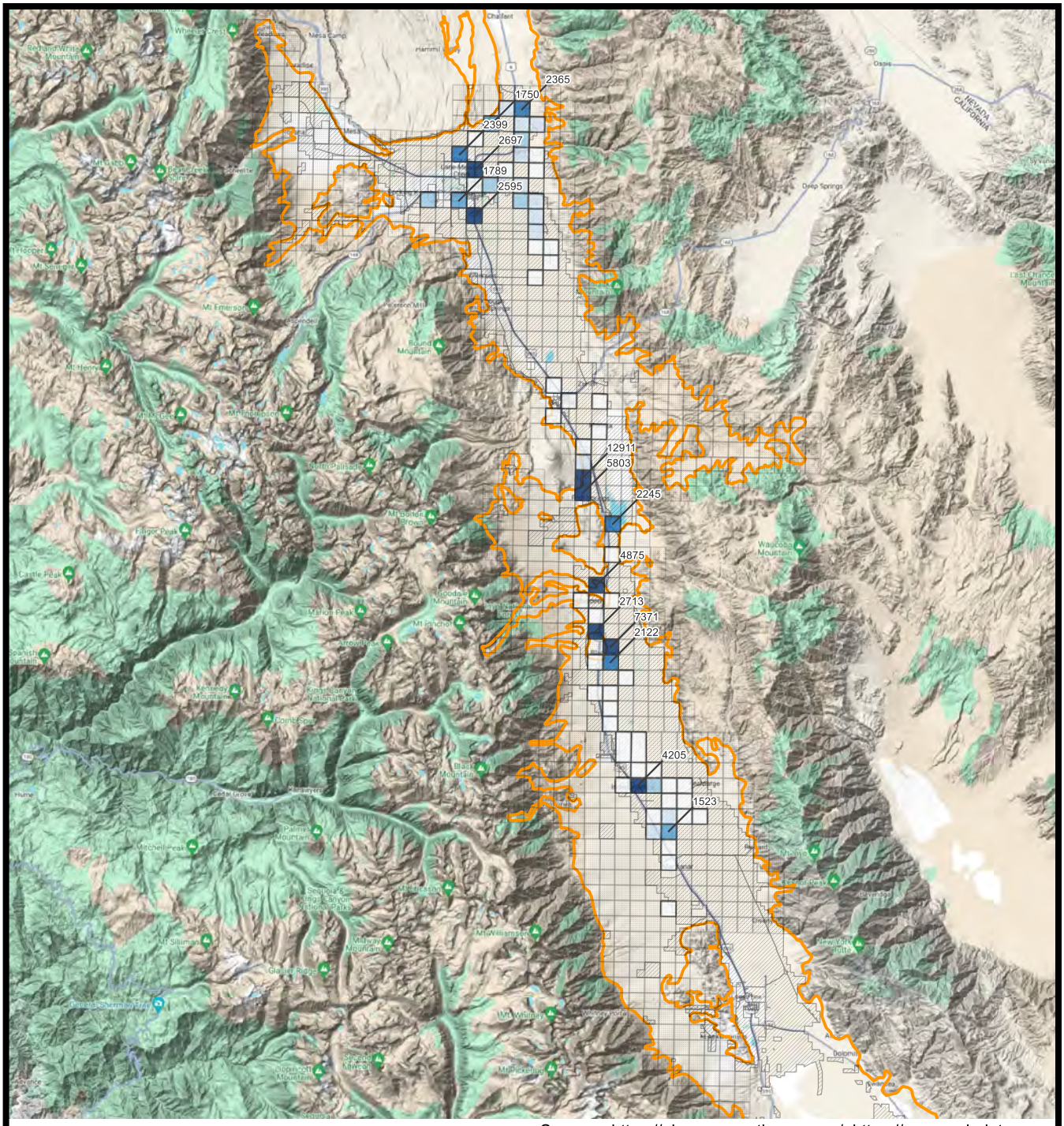
OWENS VALLEY GSP ANNUAL REPORT WY 2022

Estimated Groundwater Extractions
Fish Slough and Tri-Valley Management Area

02/27/2024

Figure 15

DB23.1300.00 C:\Users\500\Documents\Local_Project_Files\DB23.1300.00 OVGA WY2023 Annual Reports\Docs\WY2022\GIS\QGZs\Owens Valley Annual Report WY2022.qgz



Explanation

Extraction Volume (AF)

- No Extractions
- < 500
- 500 - 1,000
- 1,000 - 1,500
- 1,500 - 2,000
- 2,000 - 2,500
- > 2,500
- SGMA Exempt Lands
- Groundwater Basin Boundary

0 5 10 mi

N

Sources: https://gis.conservation.ca.gov/; https://owens.gladata.com

Notes:

1. LADWP extracts the majority of groundwater in the Owens Valley under the Long-Term Water Agreement. Well-specific contributions to each water-use sector reported in Table 1 are not measured by LADWP.
2. Estimated extraction volumes aggregated by public land survey system (PLSS) section.
3. Labels indicate estimated extraction volume in acre-ft (AF). Only labels for sections with more than 1,500 AF of extraction shown for readibility.

OWENS VALLEY GSP ANNUAL REPORT WY 2022

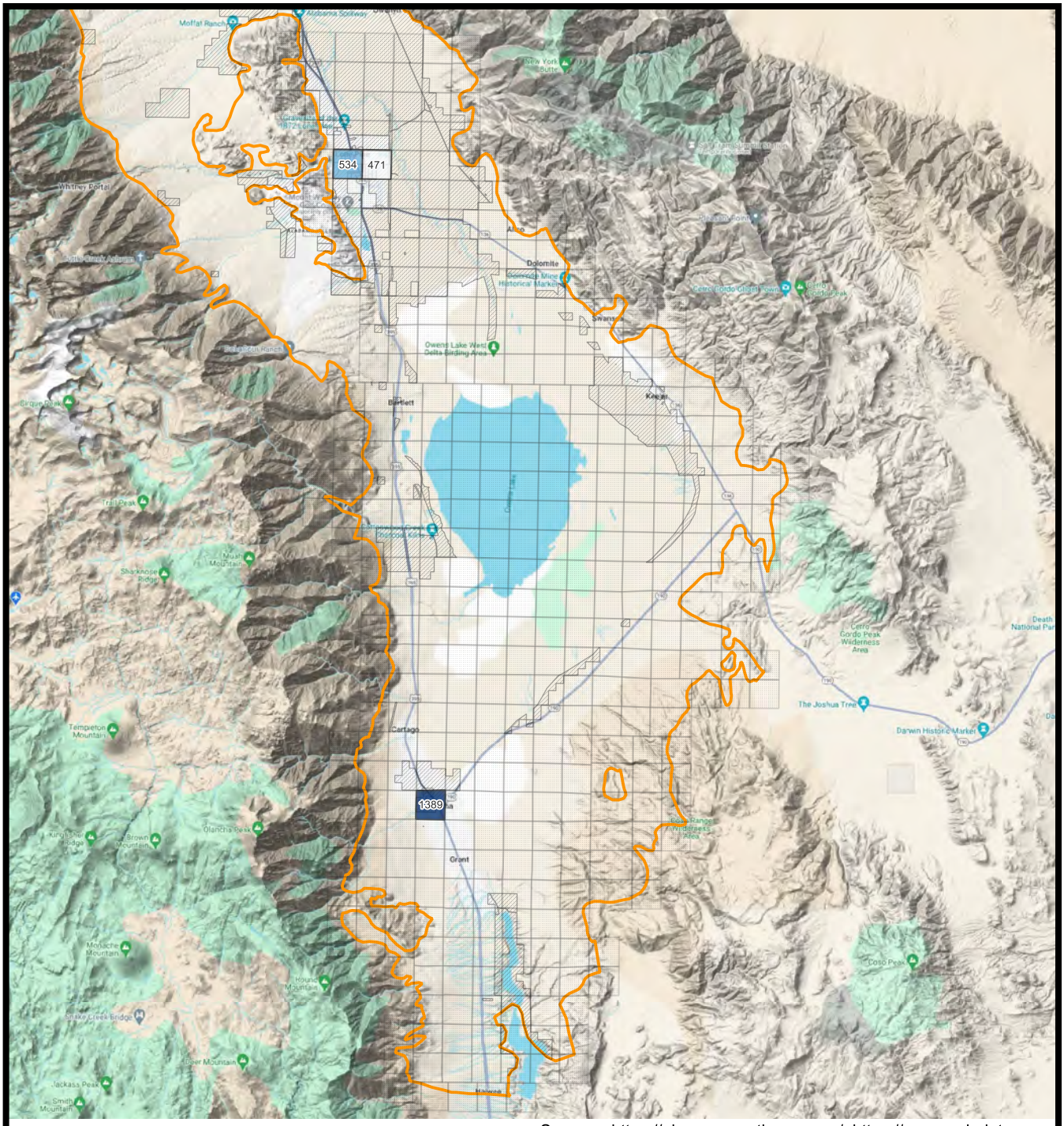
Measured Groundwater Extractions
Owens Valley Management Area

OWENS VALLEY GROUNDWATER AUTHORITY

02/27/2024

Figure 16

DB23.1300.00 C:\Users\500\Documents\Local_Project_Files\DB23.1300.00 OVGA WY2023 Annual Reports\Docs\WY2022\GIS\QGZs\Owens Valley Annual Report WY2022.qgz



Sources: https://gis.conservation.ca.gov/; https://owens.gladata.com

Explanation

Extraction Volume (AF)

- No Extractions
- 0 - 500
- 500 - 1,000
- 1,000 - 1,500

SGMA Exempt Lands

Groundwater Basin Boundary

N

0 2 4 mi

Notes:

1. LADWP extracts the majority of groundwater in the Owens Lake management area under the Long-Term Water Agreement. Well-specific contributions to each water-use sector reported in Table 1 are not measured by LADWP.
2. Estimated extraction volumes aggregated by public land survey system (PLSS) section.
3. Labels indicate estimated extraction volume in acre-ft (AF).

OWENS VALLEY GSP ANNUAL REPORT WY 2022

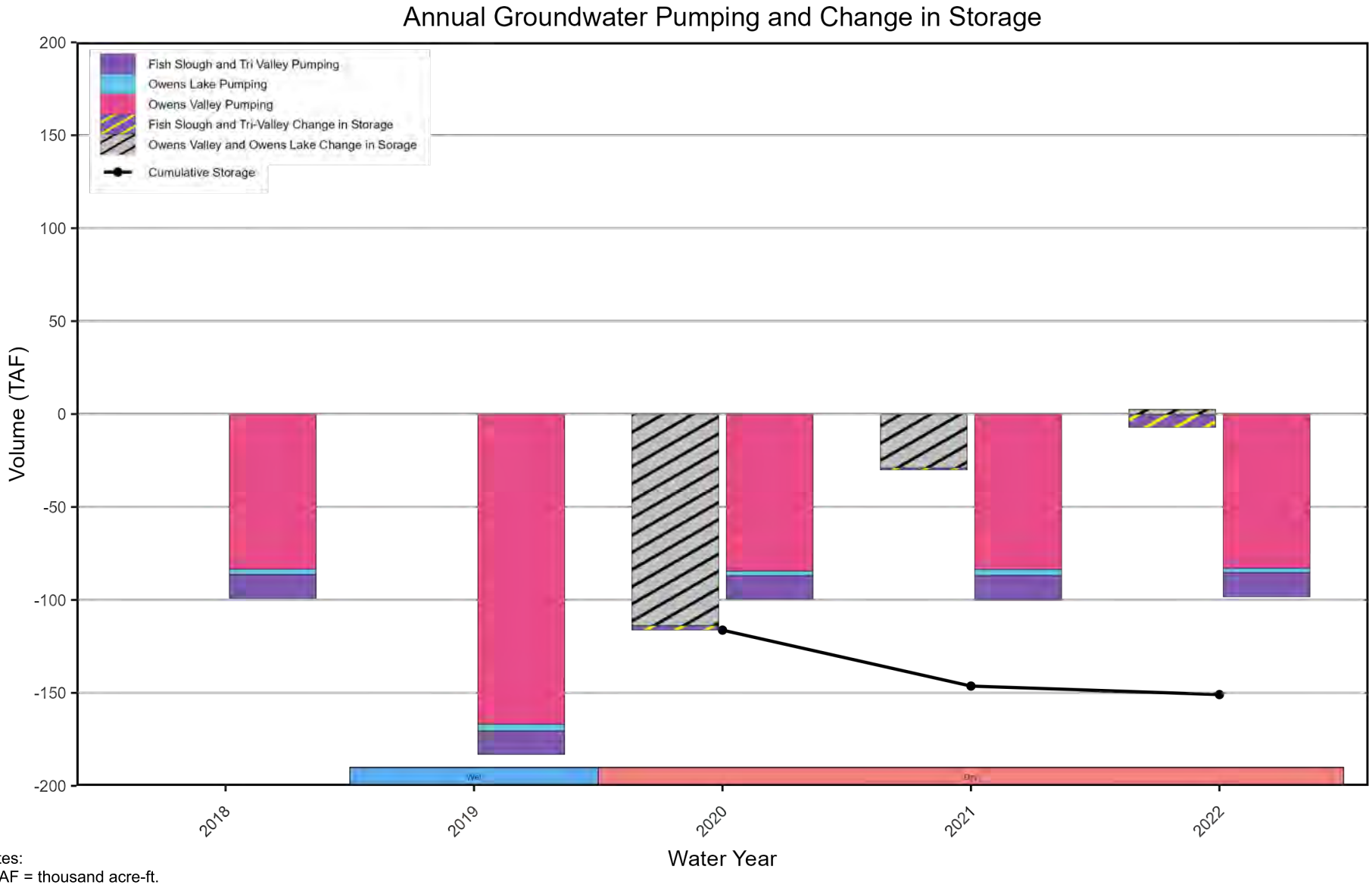
Measured Groundwater Extractions
Owens Lake Management Area

OWENS VALLEY GROUNDWATER AUTHORITY

02/27/2024

Figure 17

DB23.1300.00 C:\Users\500\Documents\Local_Project_Files\DB23.1300.00 OVGA WY2023 Annual Reports\Docs\WY2022\GIS\QGZs\Owens Valley Annual Report WY2022.qgz



Notes:
1.TAF = thousand acre-ft.
2. Negative GW pumping values indicate extractions from groundwater aquifer.
3. Positive storage values indicate increasing groundwater levels.
4. Cumulative storage is relative to Fall 2019 conditions since WY 2020 was the first year it was reported by LADWP.

Figure 18

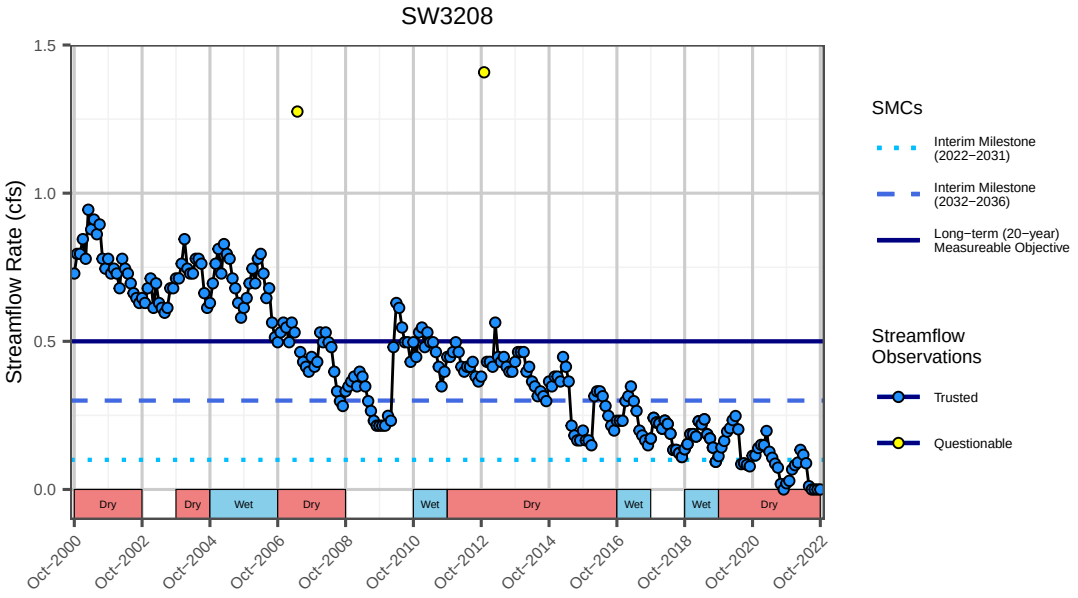
OWENS VALLEY GSP ANNUAL REPORT WY 2022
Groundwater Pumping and Change in Storage
WY 2018-2022

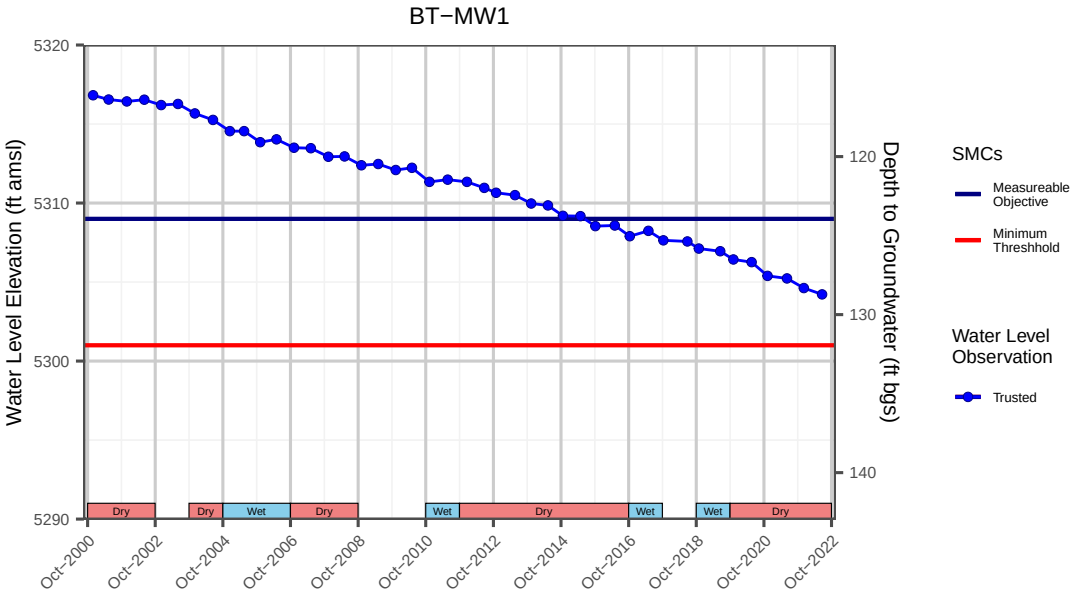
OWENS VALLEY GROUNDWATER AUTHORITY

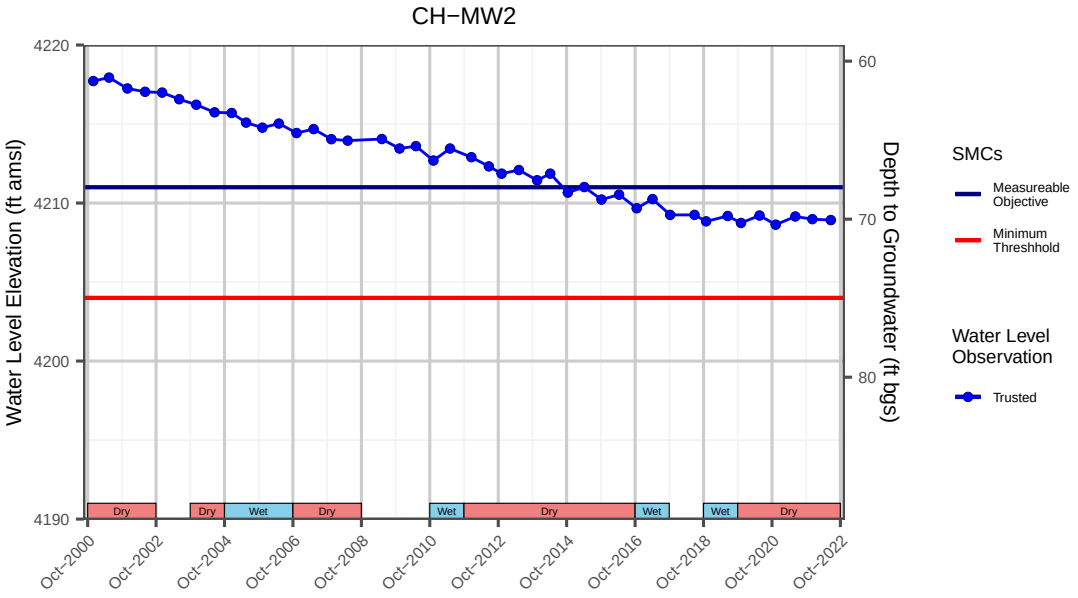
02/27/2024

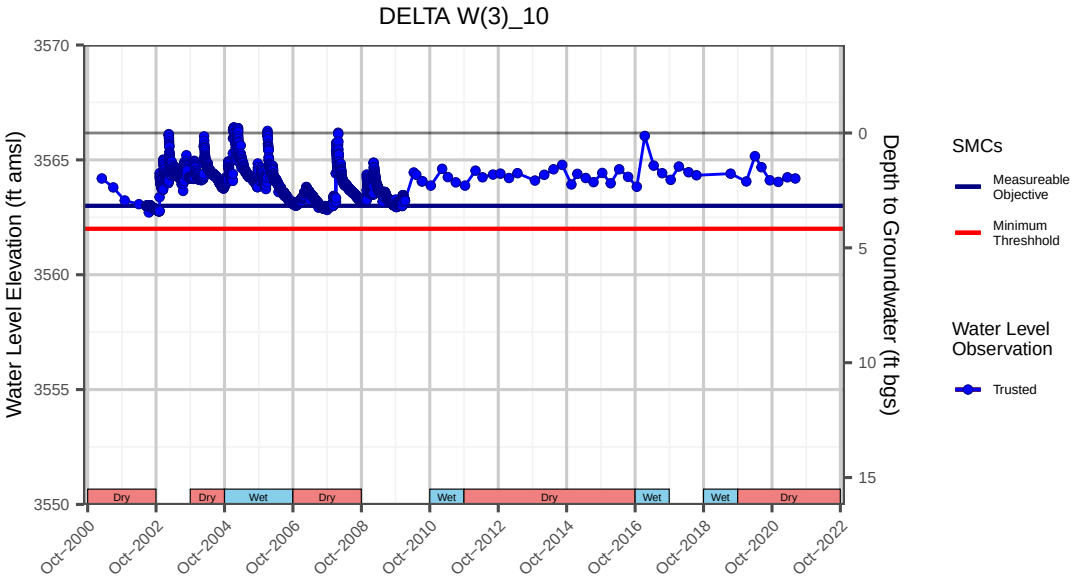
Appendix A

Representative Monitoring Point Hydrographs

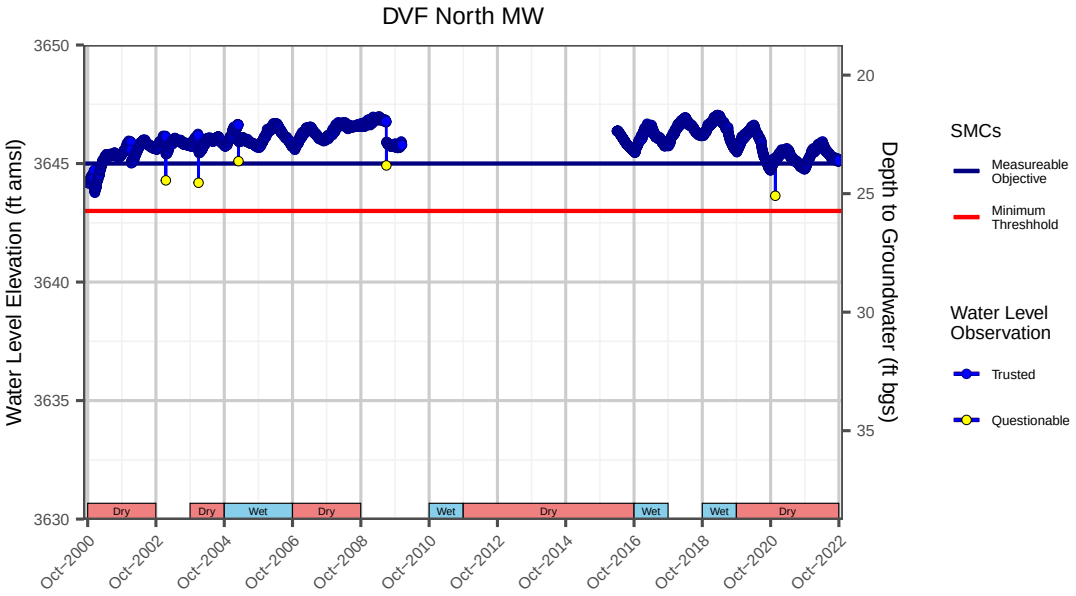

SW3208
Streamflow Rate (cfs)
1.5
1.0
0.5
0.0
Dry
Wet
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Interim Milestone (2022−2031)
Interim Milestone (2032−2036)
Long−term (20−year) Measureable Objective
Streamflow Observations
Trusted
Questionable

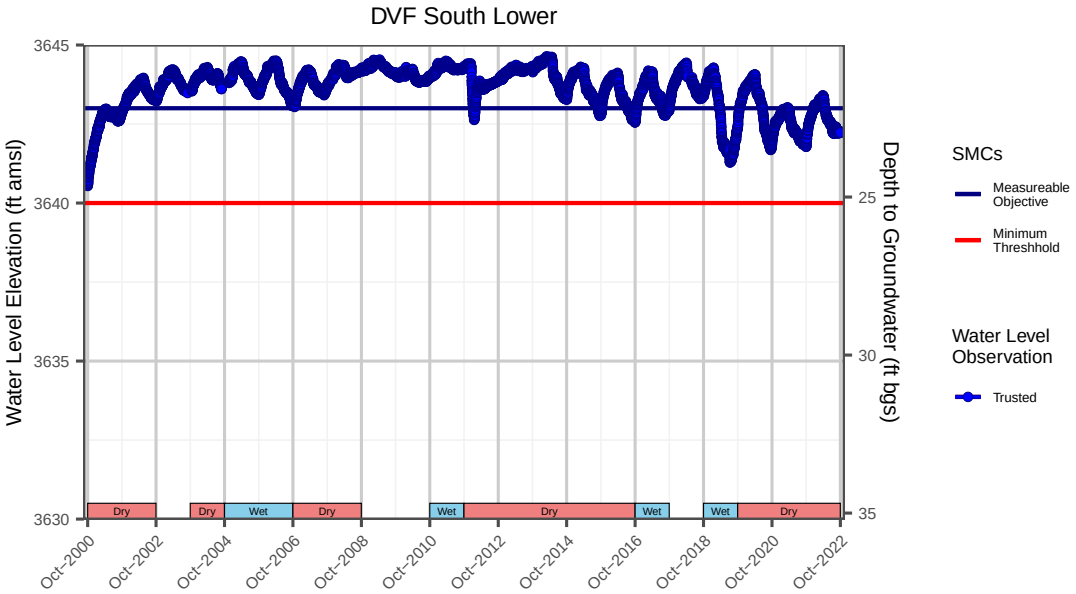

BT−MW1
Water Level Elevation (ft amsl)
5320
5310
5300
5290
Depth to Groundwater (ft bgs)
120
130
140
Dry
Wet
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

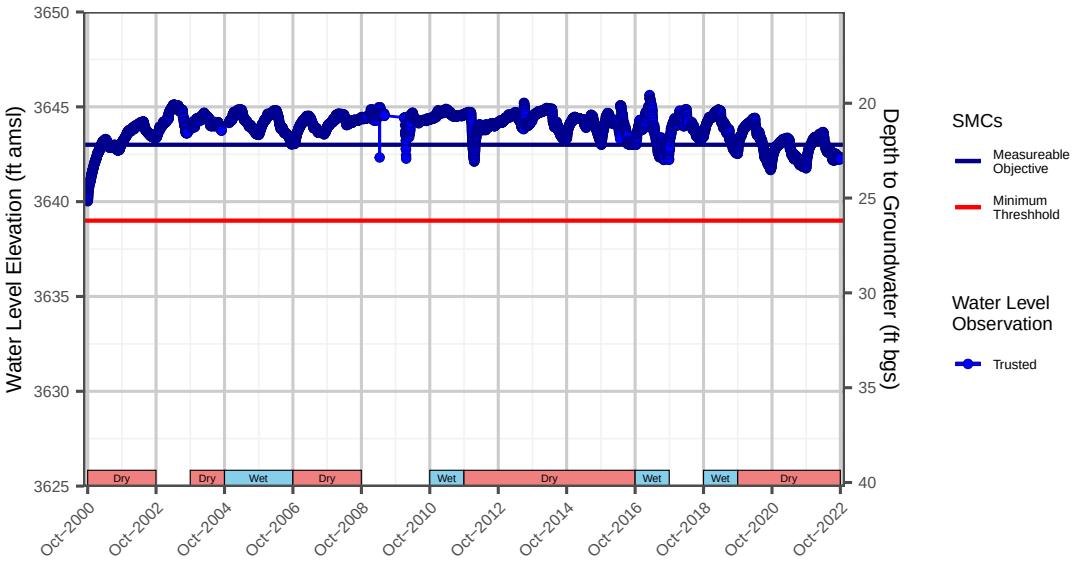

CH−MW2
Water Level Elevation (ft amsl)
4220
4210
4200
4190
Depth to Groundwater (ft bgs)
60
70
80
Dry
Wet
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

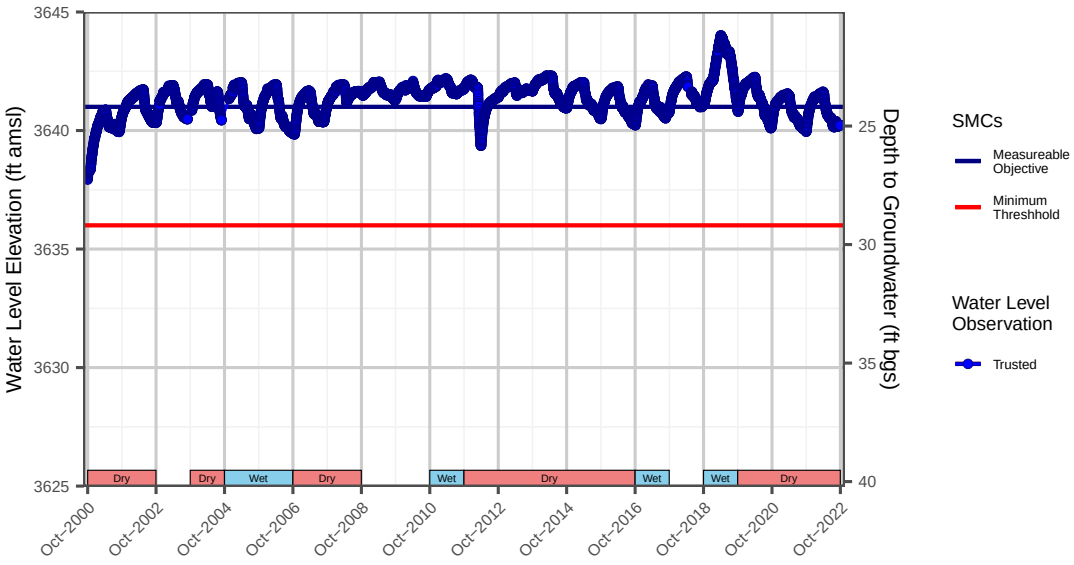


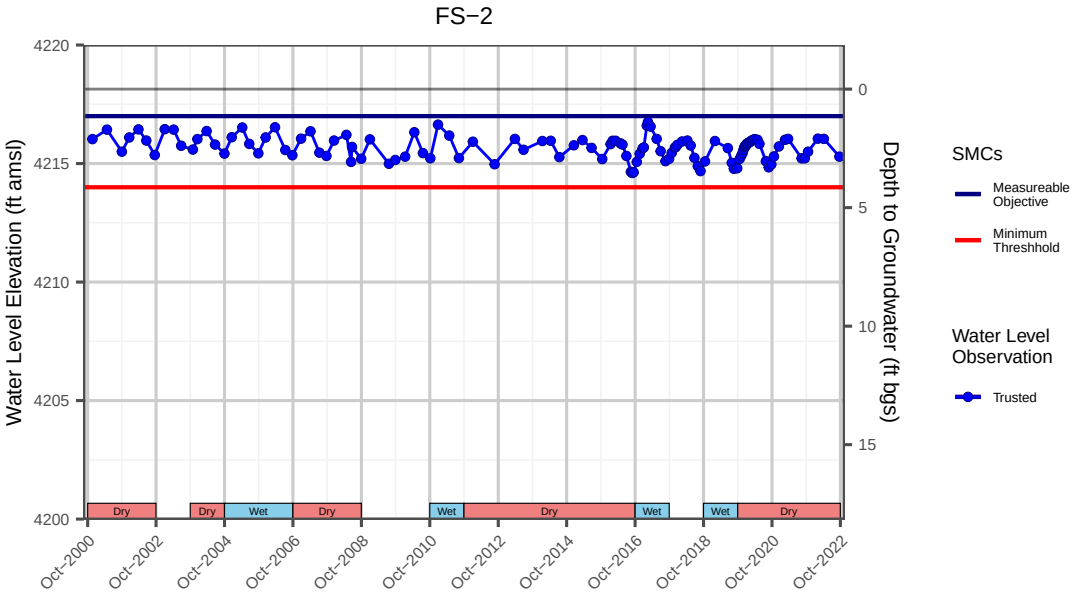
Notes: Reported destroyed by LADWP.

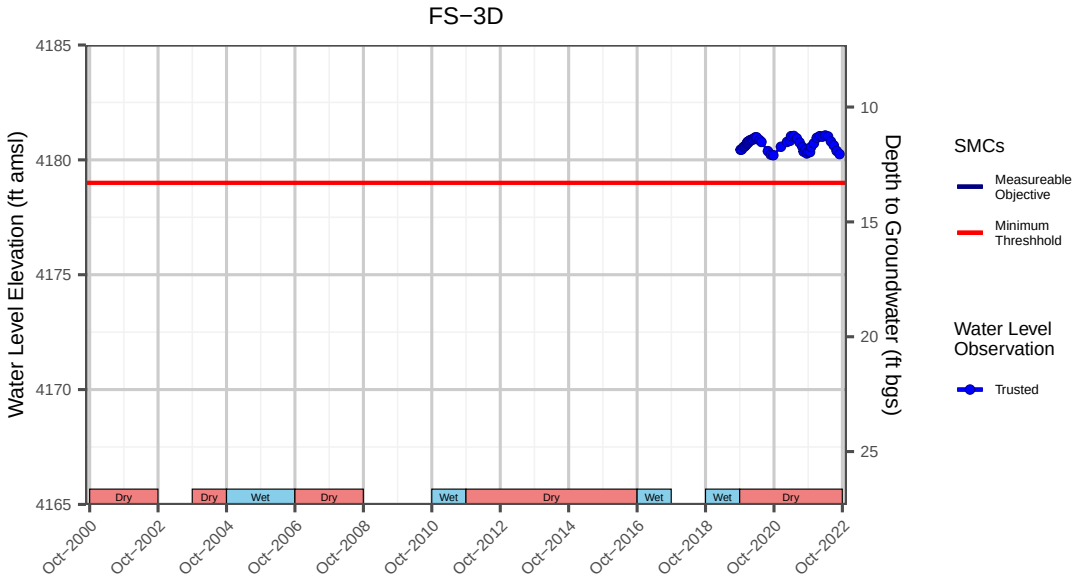




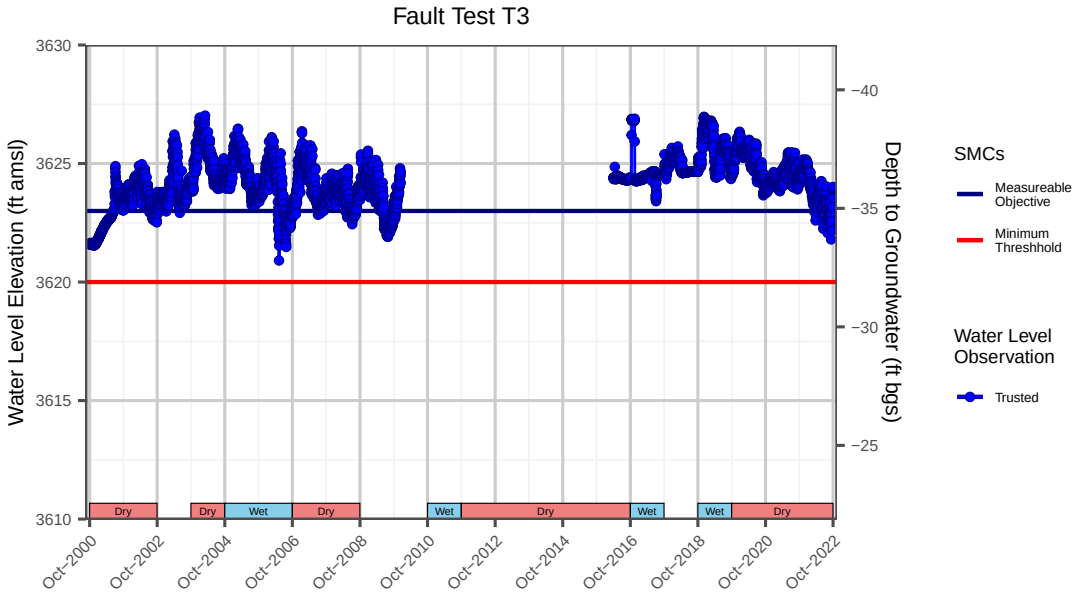

DVF South Middle
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3650
3645
3640
3635
3630
3625
20
25
30
35
40
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

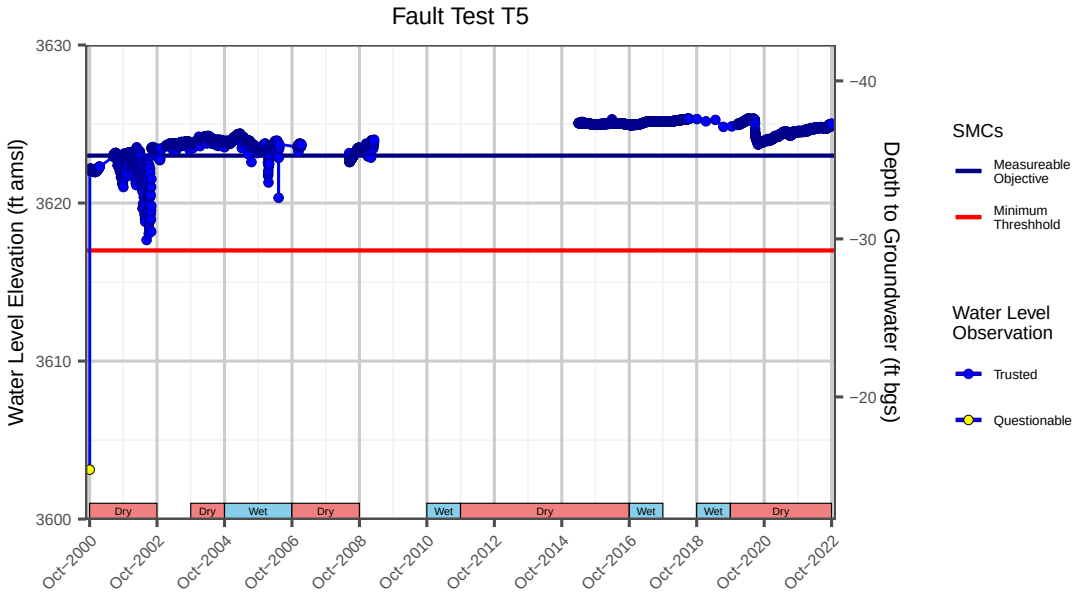

DVF South Upper
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3645
3640
3635
3630
3625
25
30
35
40
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

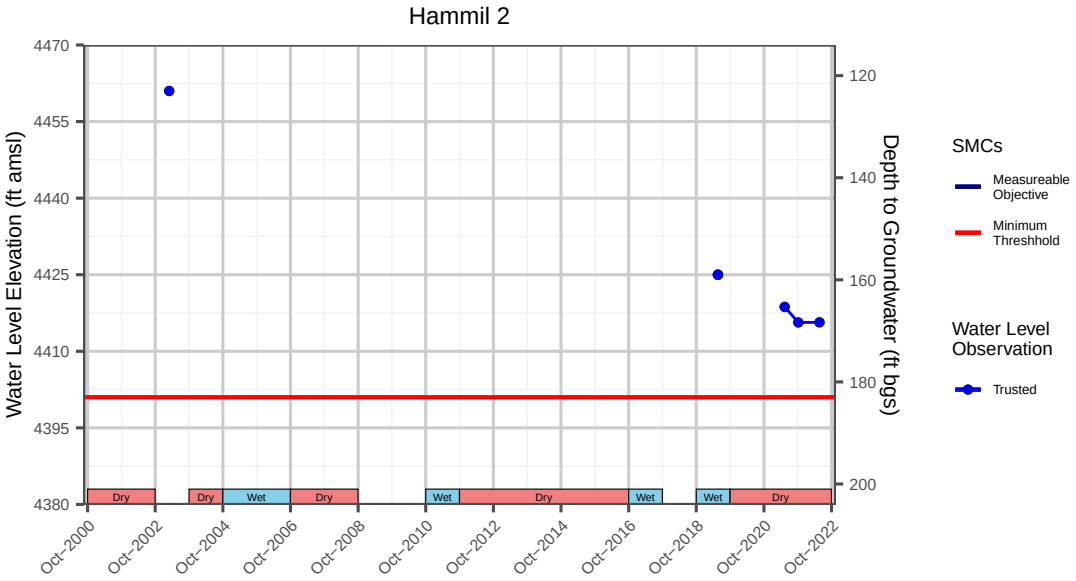

FS−2
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
4220
4215
4210
4205
4200
0
5
10
15
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted



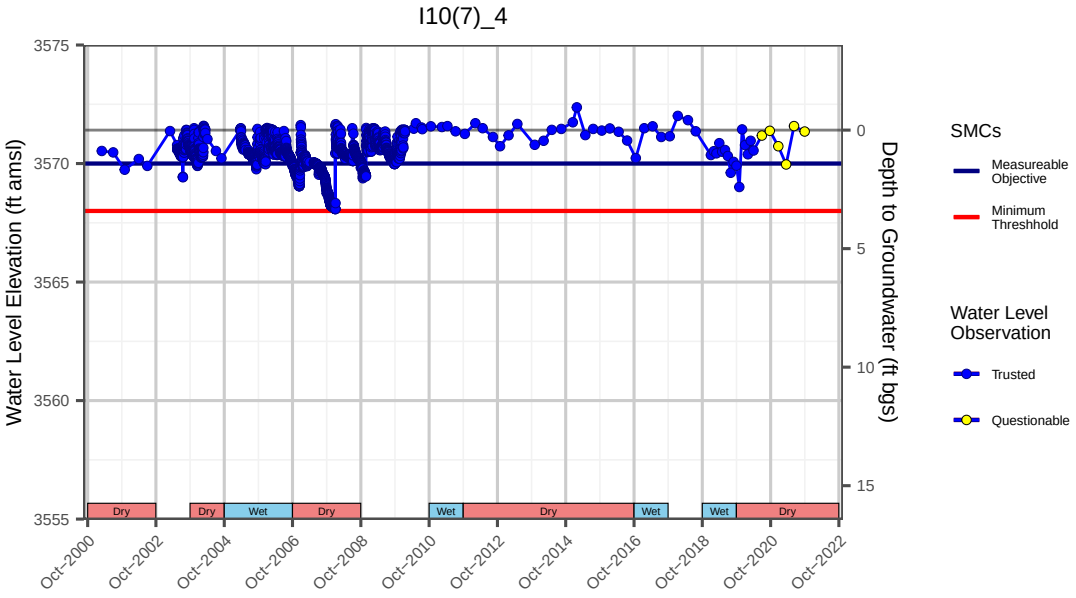
Notes: Newly established representative monitoring point or data not currently available. MO will be established in future GSP updates.

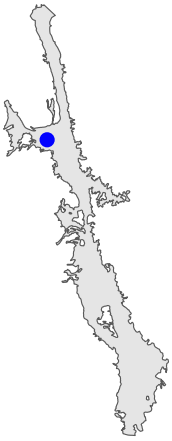


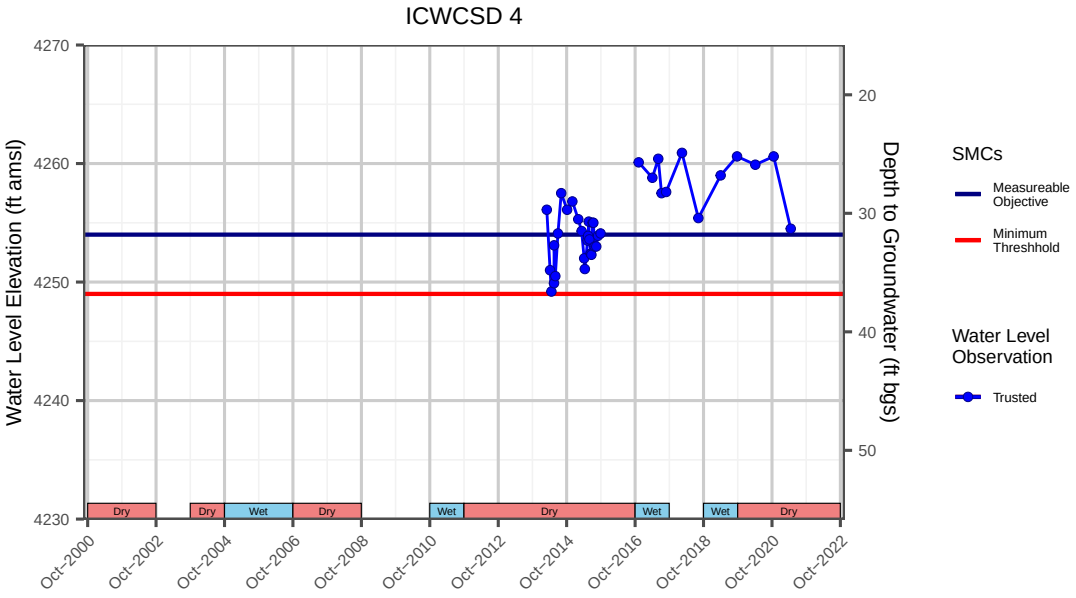


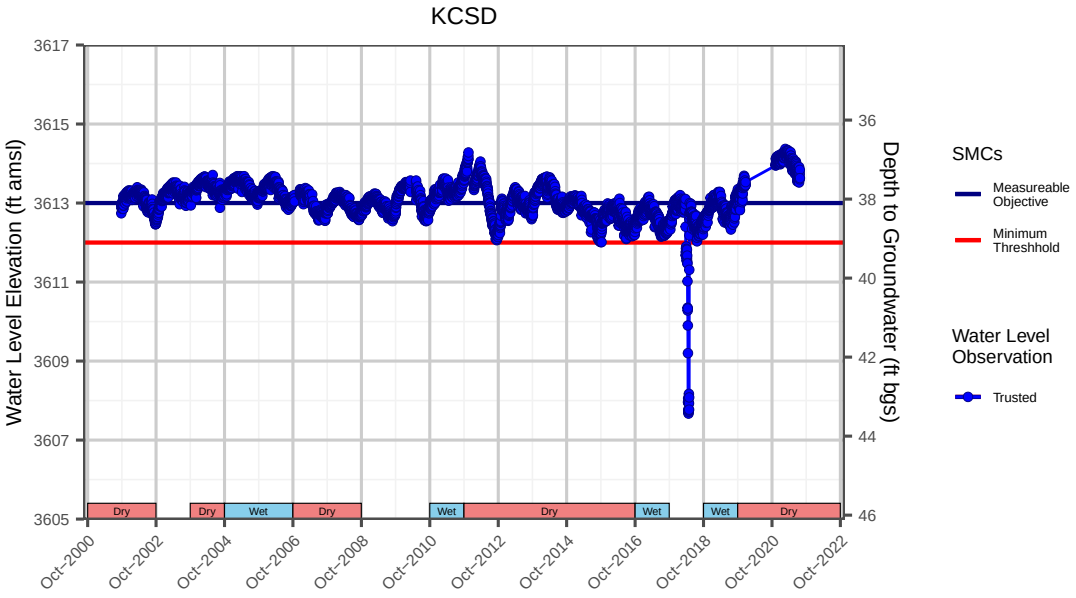


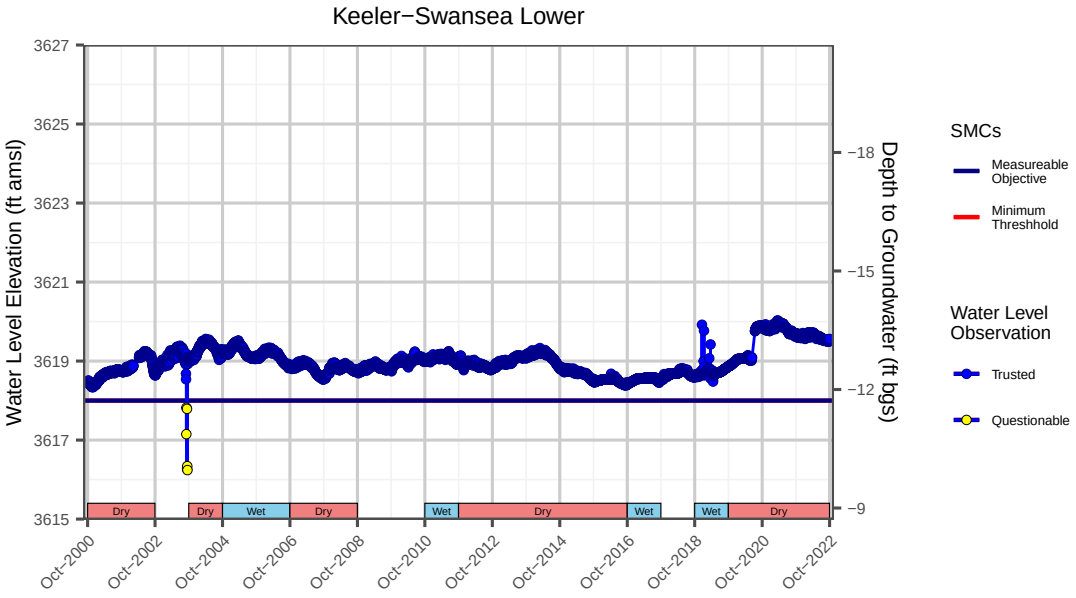
Notes: Newly established representative monitoring point or data not currently available. MO will be established in future GSP updates.

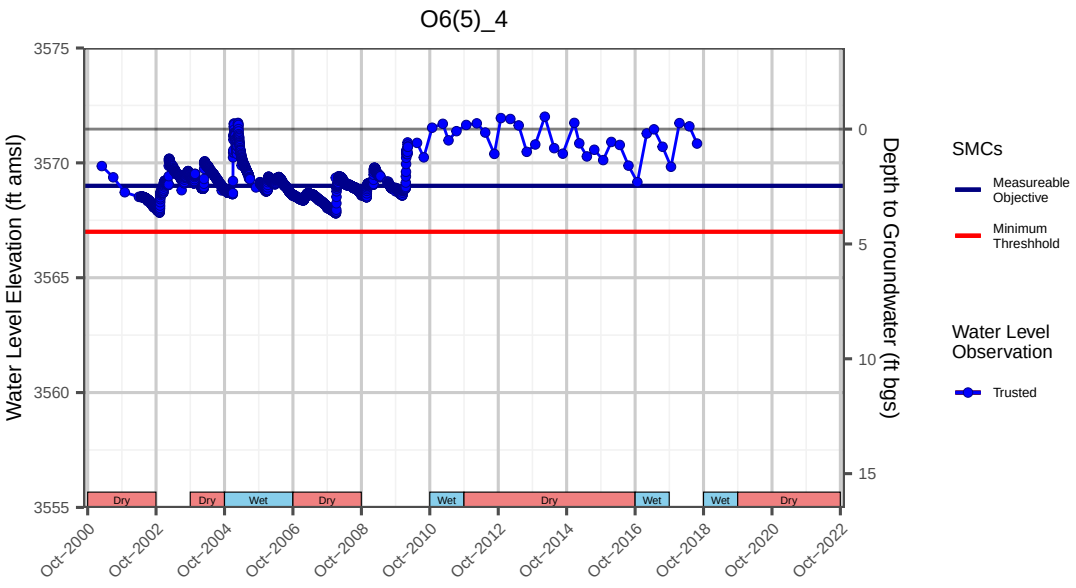




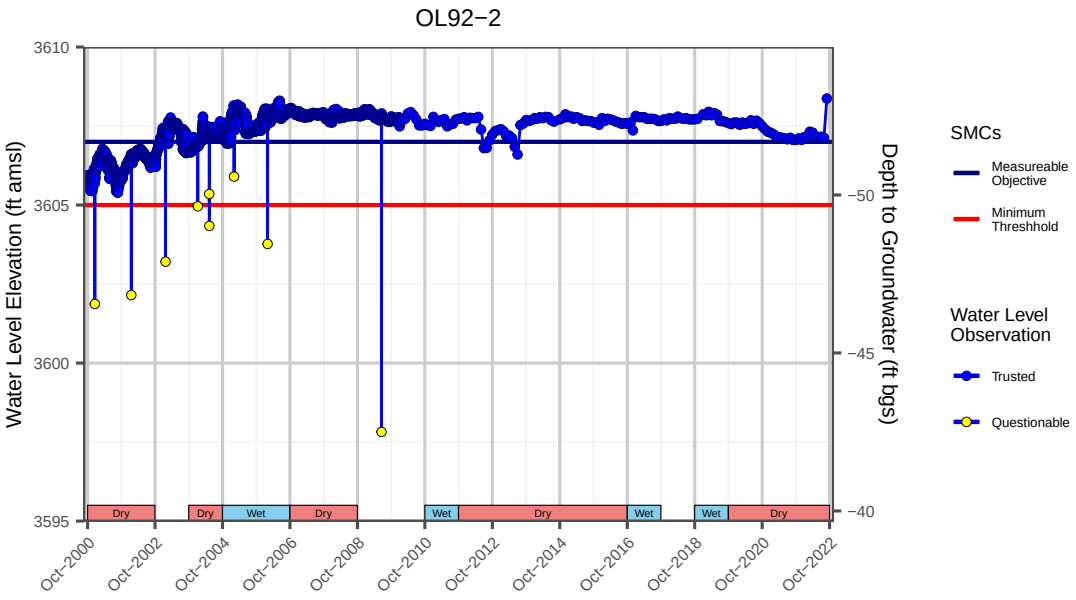


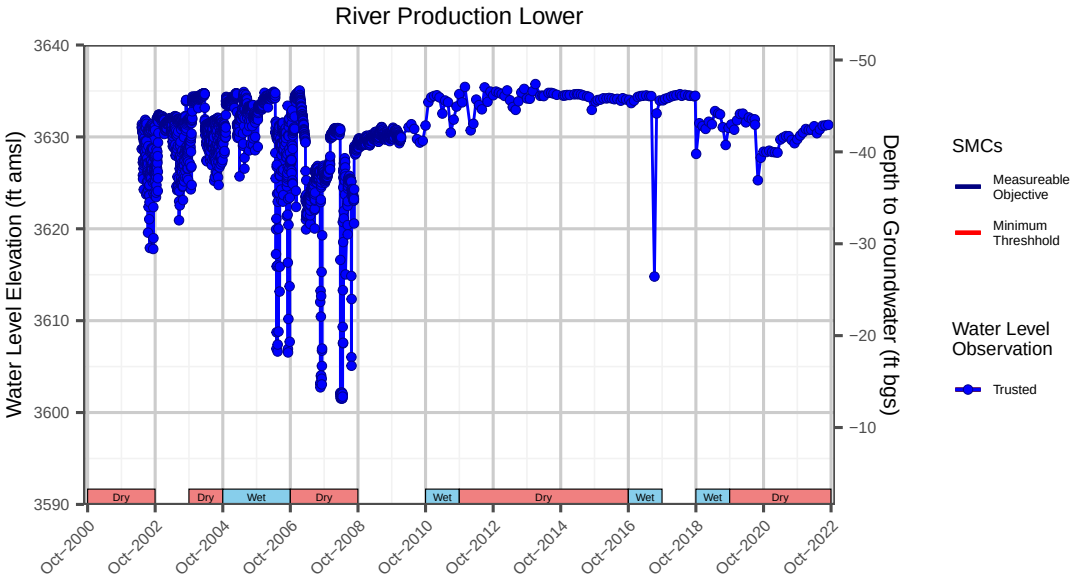




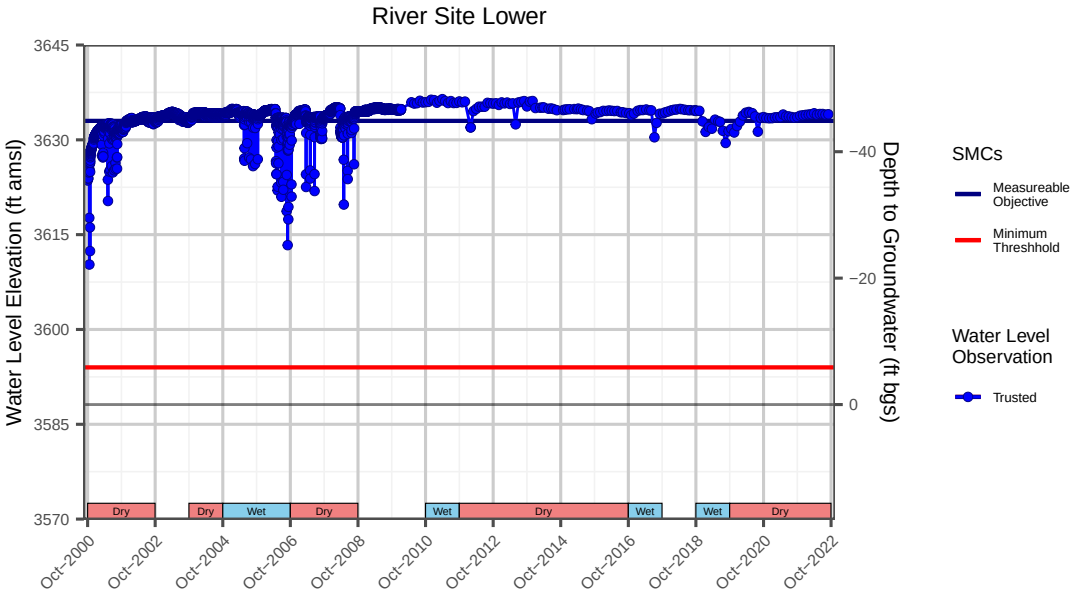


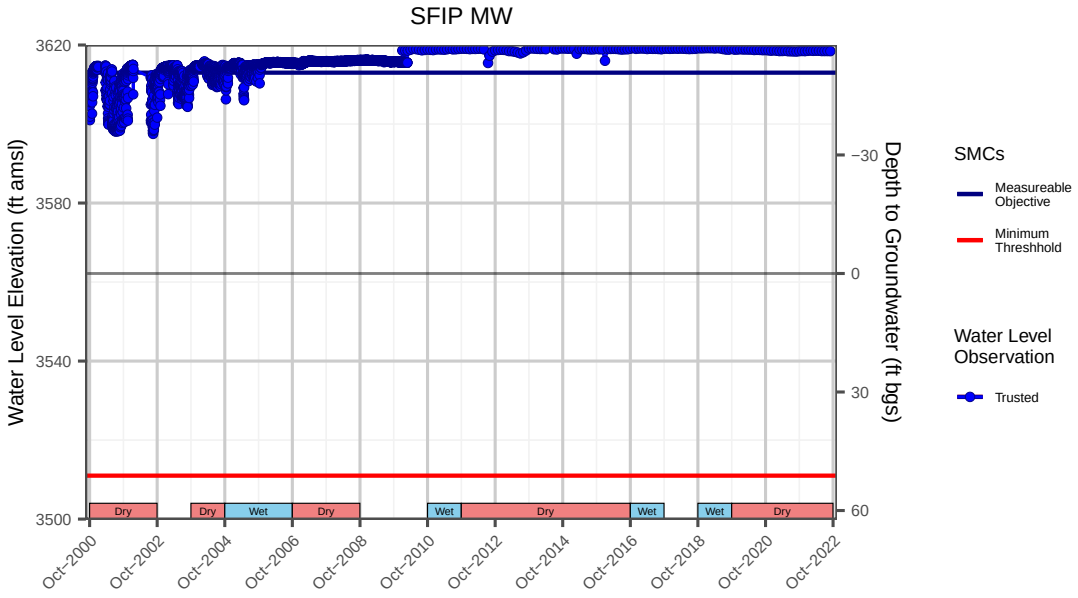
Notes: Reported destroyed by LADWP.

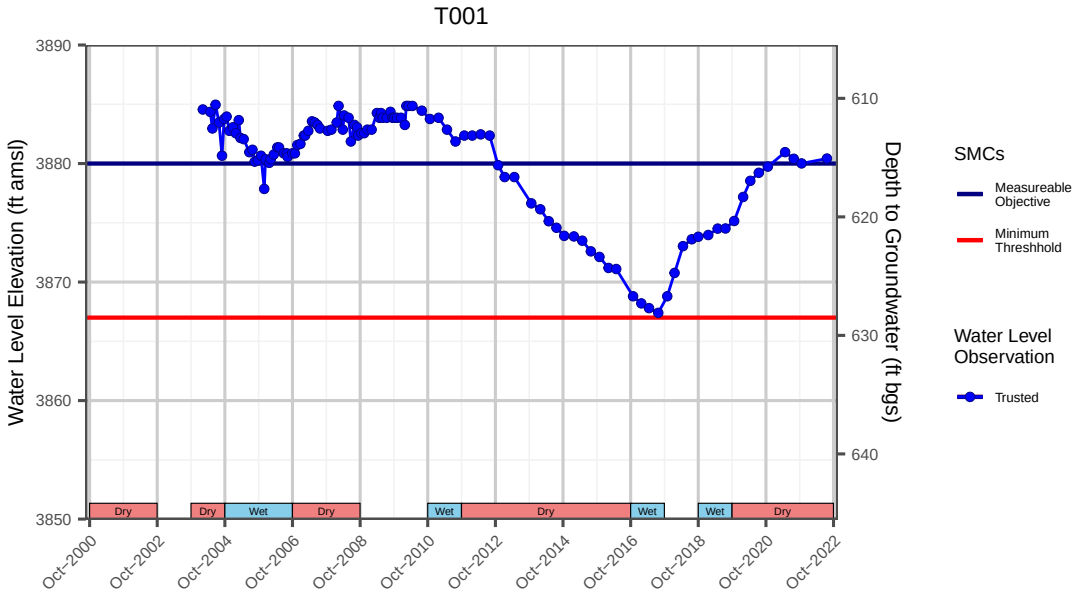


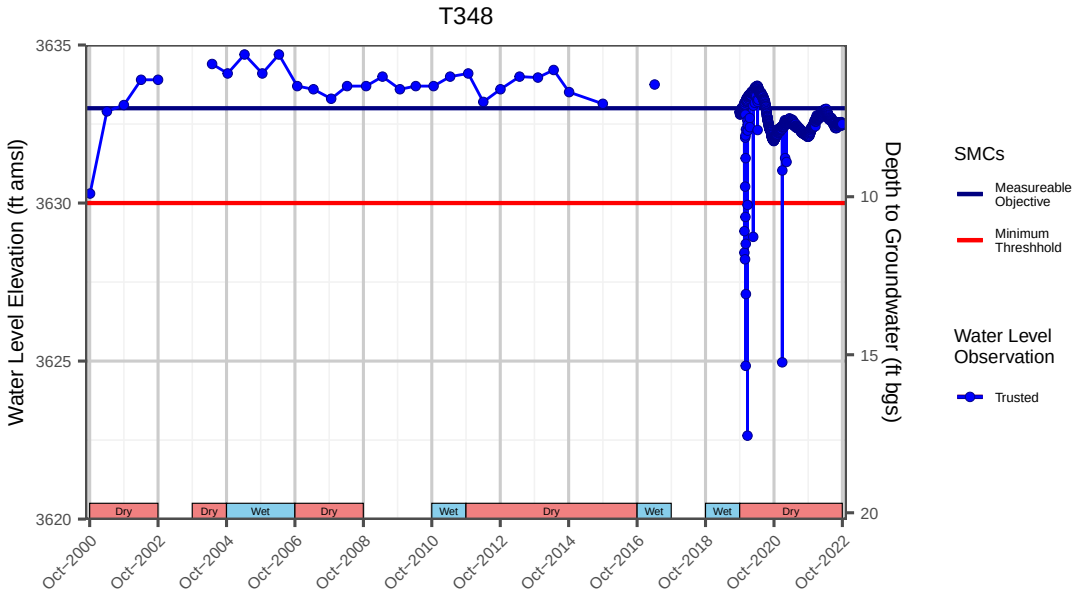


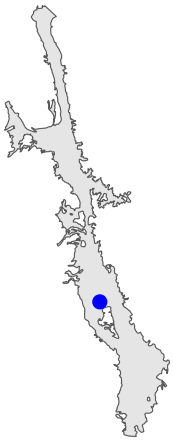
Notes: Newly established representative monitoring point or data not currently available. MT and MO will be established in future GSP updates.

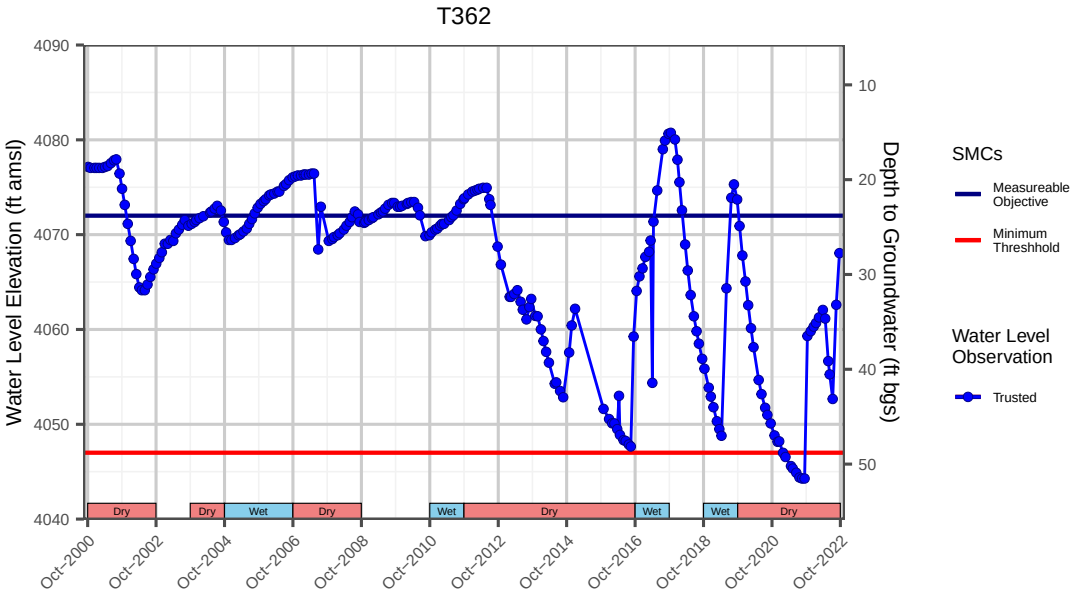


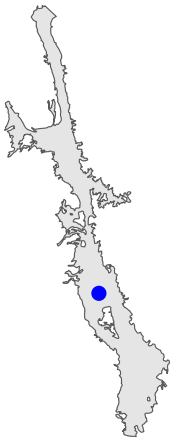

SFIP MW
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3620
3580
3540
3500
−30
0
30
60
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

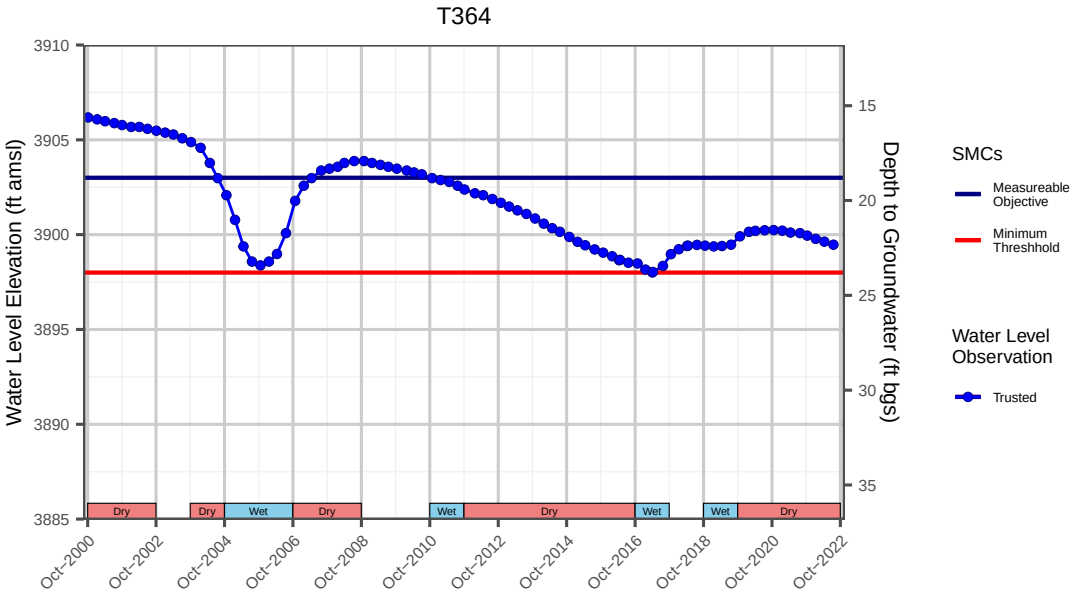

T001
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3890
3880
3870
3860
3850
610
620
630
640
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

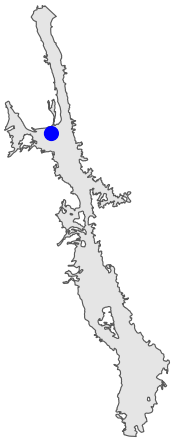

T348
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3635
3630
3625
3620
10
15
20
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

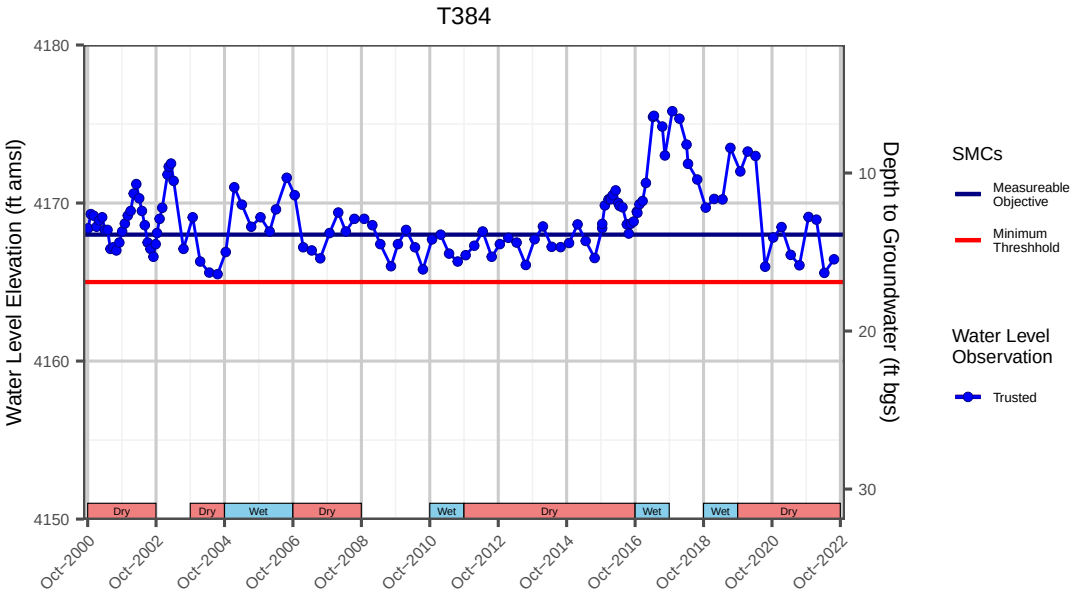


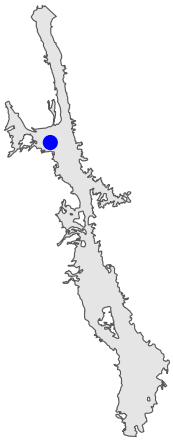

T362
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
4090
4080
4070
4060
4050
4040
10
20
30
40
50
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

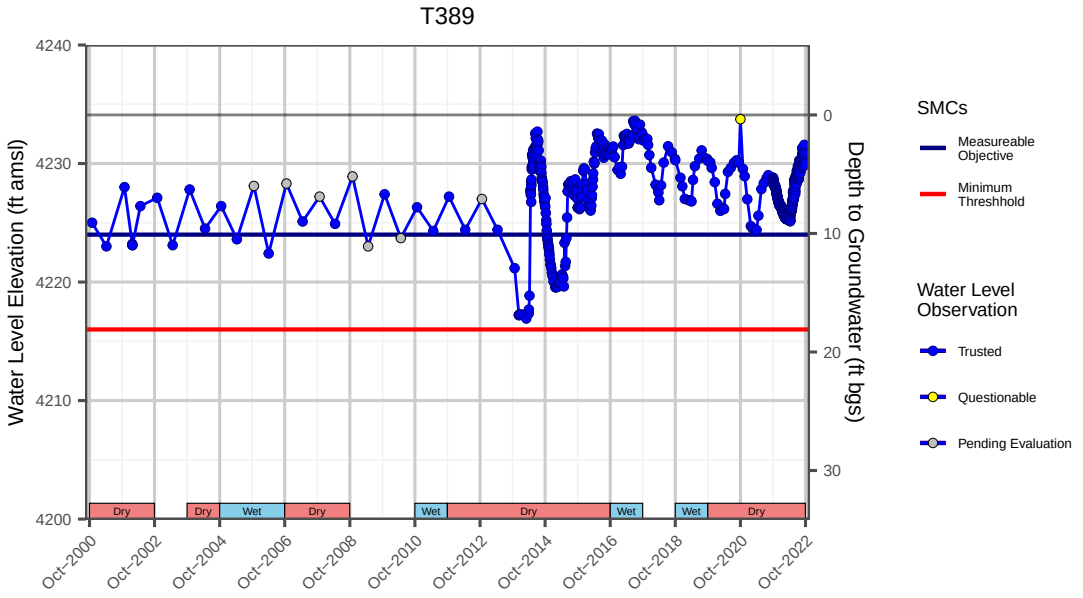


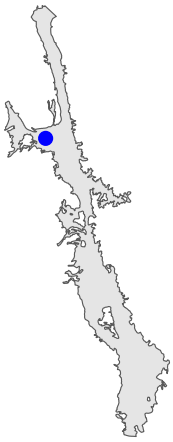

T364
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3910
3905
3900
3895
3890
3885
15
20
25
30
35
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

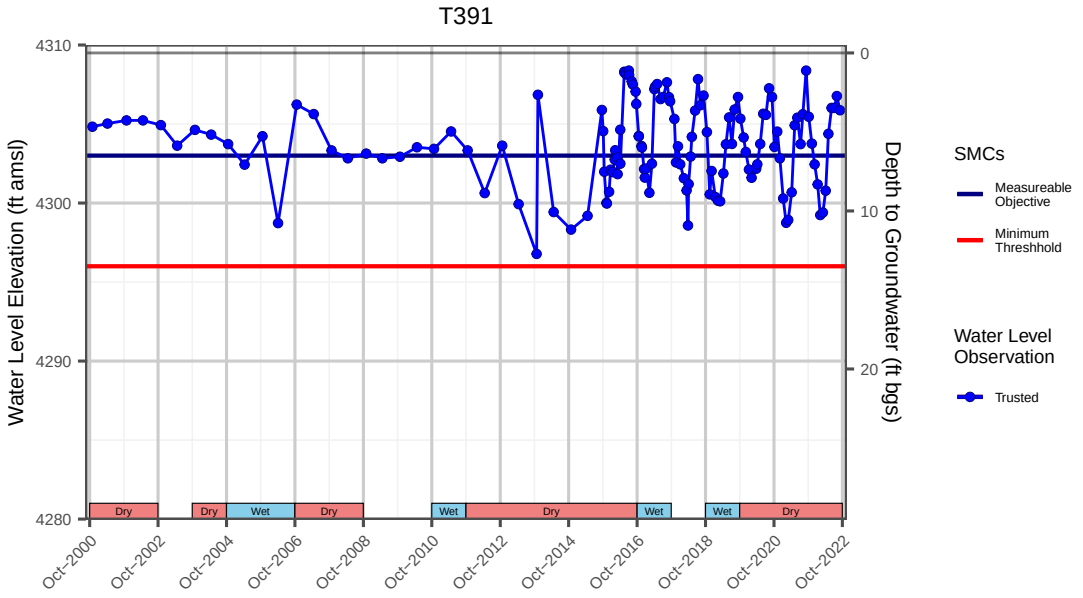


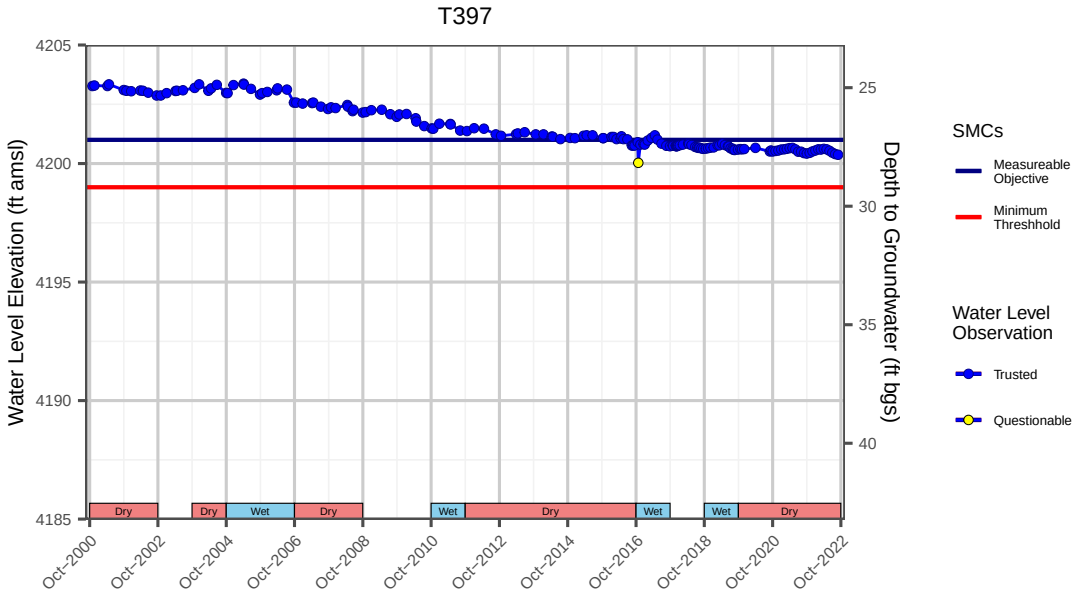

T384
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
4180
4170
4160
4150
10
20
30
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

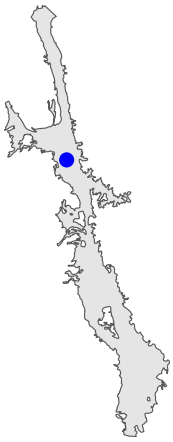


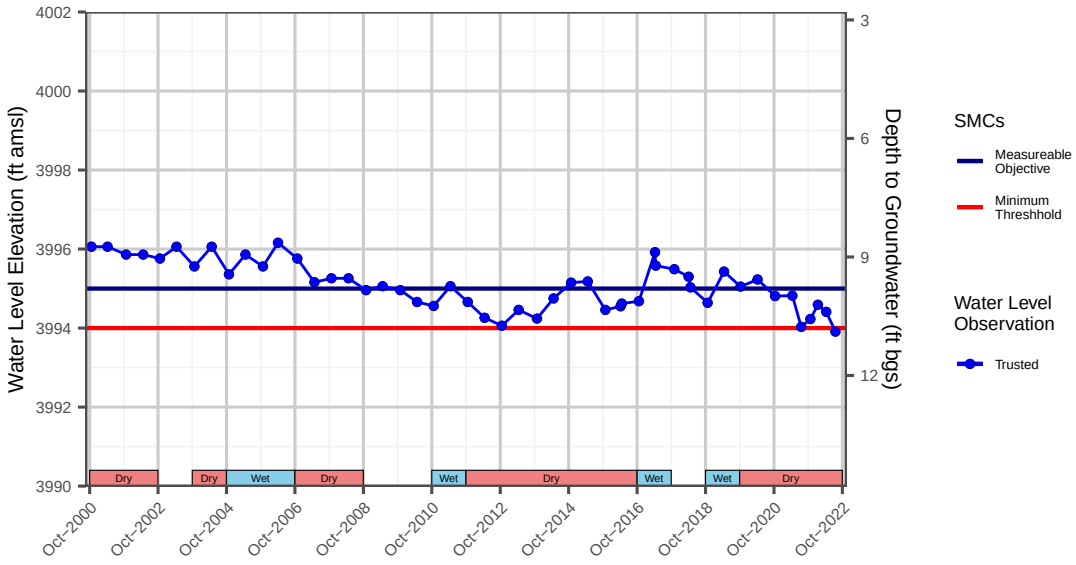

T389
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
4240
4230
4220
4210
4200
0
10
20
30
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct-2000
Oct-2002
Oct-2004
Oct-2006
Oct-2008
Oct-2010
Oct-2012
Oct-2014
Oct-2016
Oct-2018
Oct-2020
Oct-2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted
Questionable
Pending Evaluation

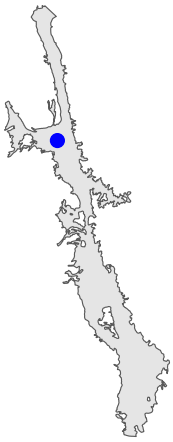


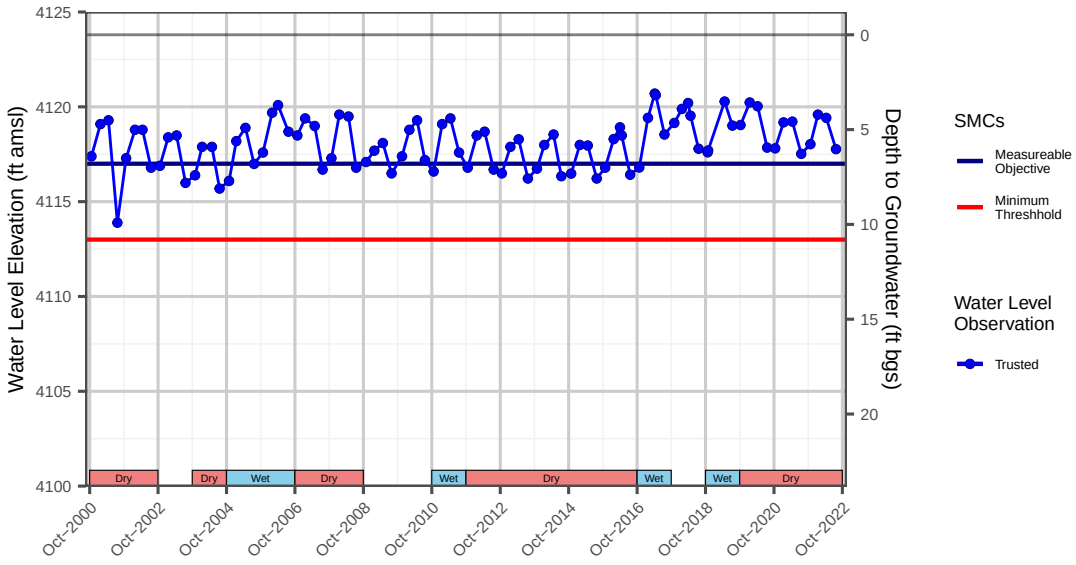

T391
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
4310
4300
4290
4280
0
10
20
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct-2000
Oct-2002
Oct-2004
Oct-2006
Oct-2008
Oct-2010
Oct-2012
Oct-2014
Oct-2016
Oct-2018
Oct-2020
Oct-2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

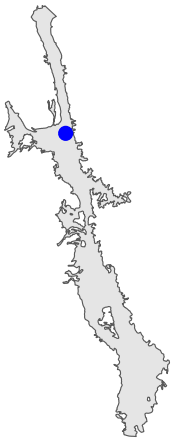

T397
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
4205
4200
4195
4190
4185
25
30
35
40
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct-2000
Oct-2002
Oct-2004
Oct-2006
Oct-2008
Oct-2010
Oct-2012
Oct-2014
Oct-2016
Oct-2018
Oct-2020
Oct-2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted
Questionable

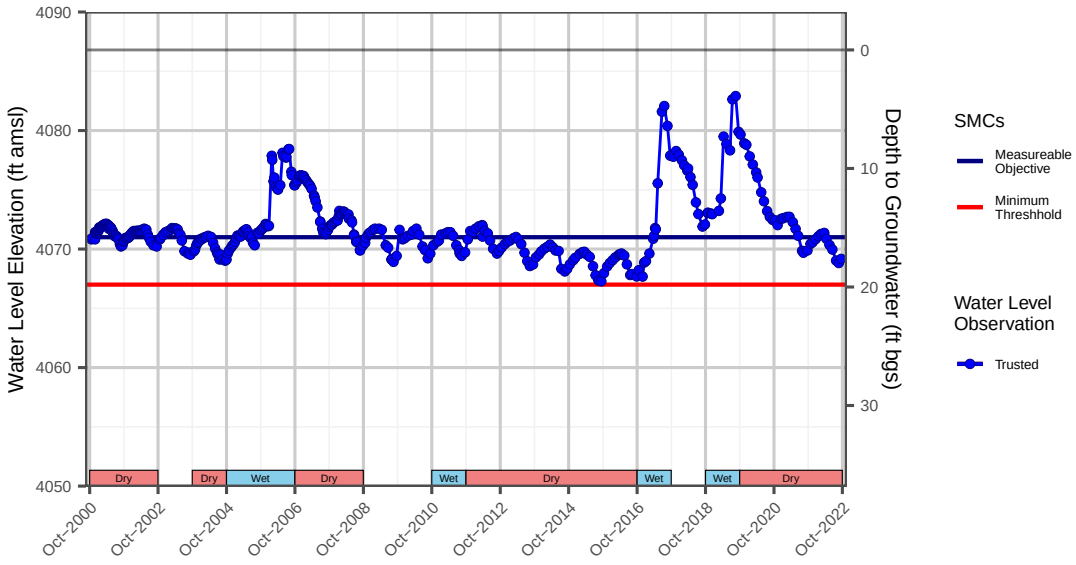


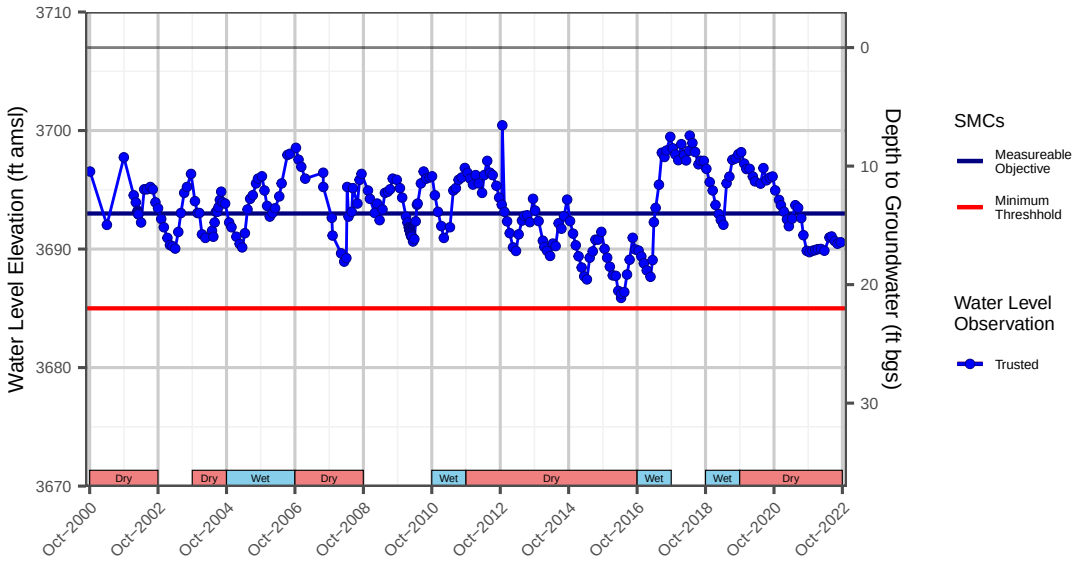

T480
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
4002
4000
3998
3996
3994
3992
3990
3
6
9
12
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

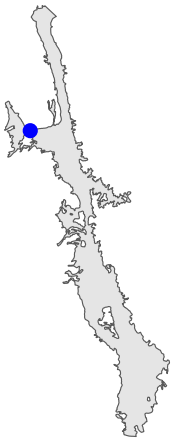


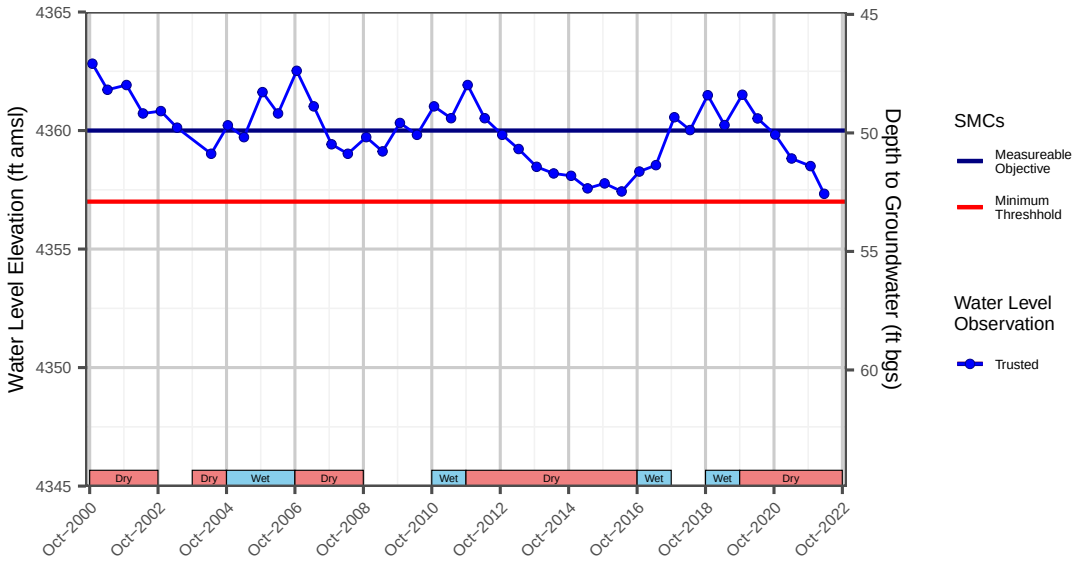

T513
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
4125
4120
4115
4110
4105
4100
0
5
10
15
20
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

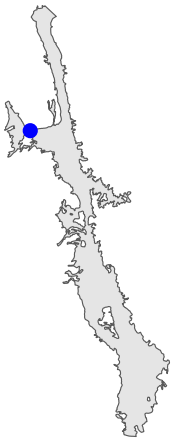


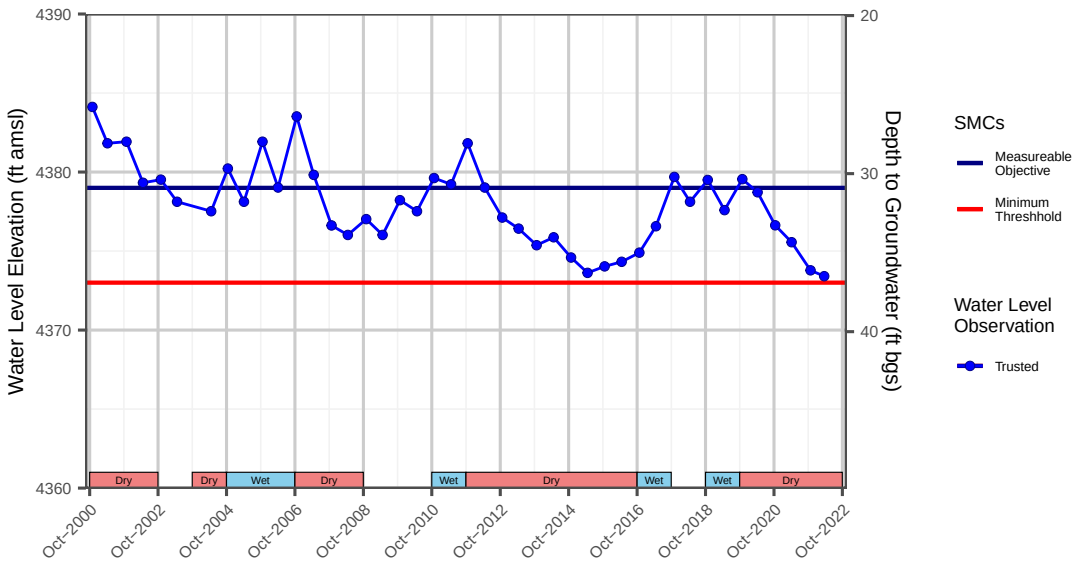

T574
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
4090
4080
4070
4060
4050
0
10
20
30
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

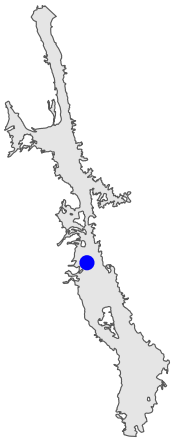

T588
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3710
3700
3690
3680
3670
0
10
20
30
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

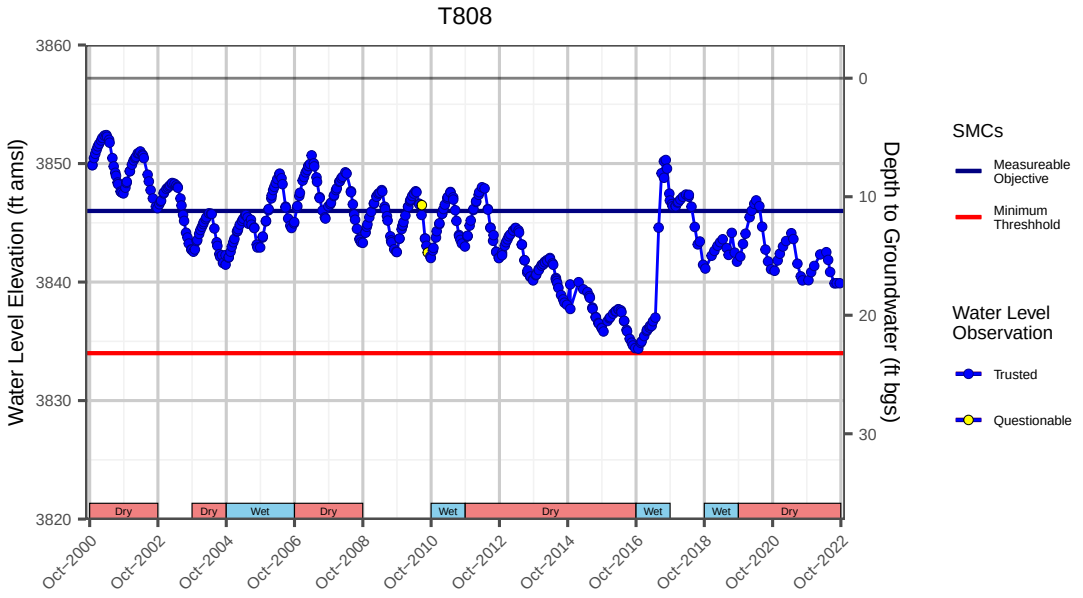


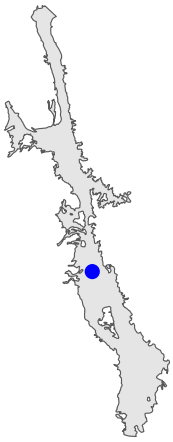

T750
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
4365
4360
4355
4350
4345
45
50
55
60
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

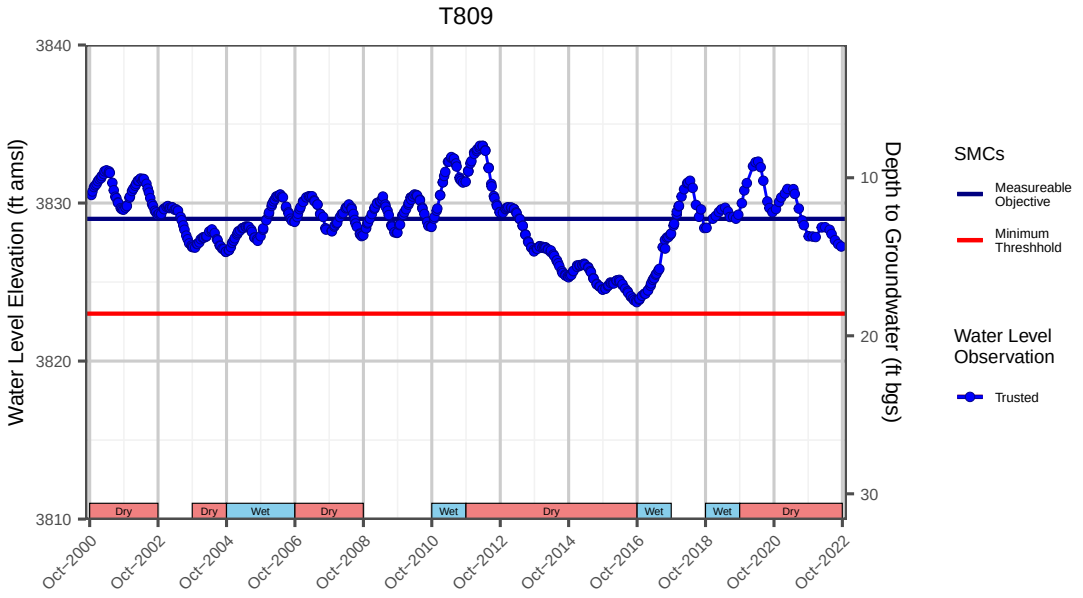


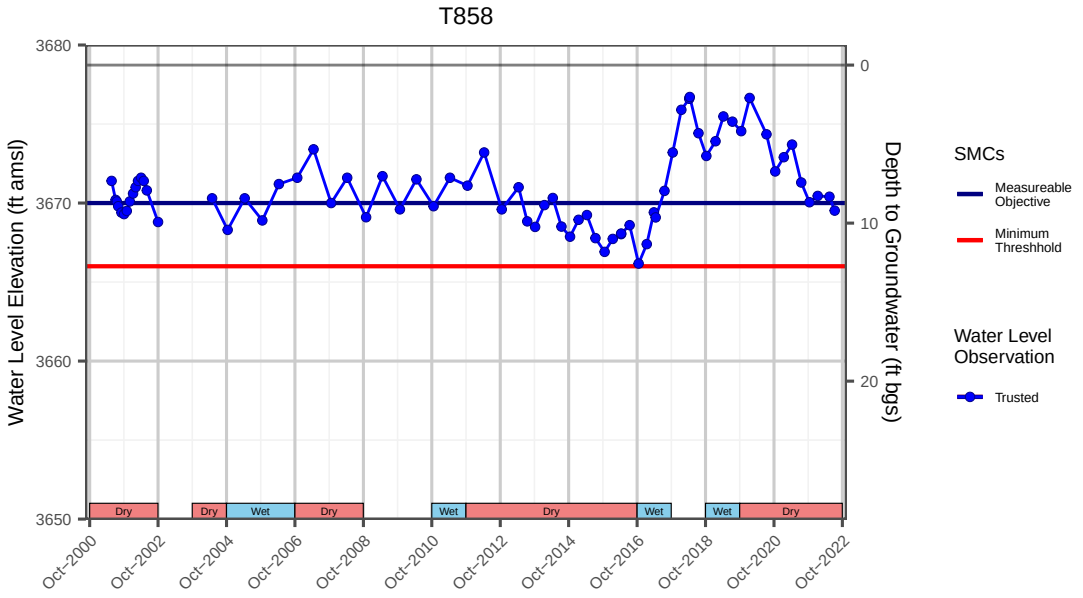

T751
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
4390
4380
4370
4360
20
30
40
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted



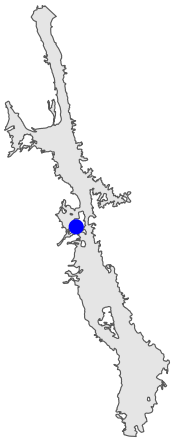

T808
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3860
3850
3840
3830
3820
0
10
20
30
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted
Questionable

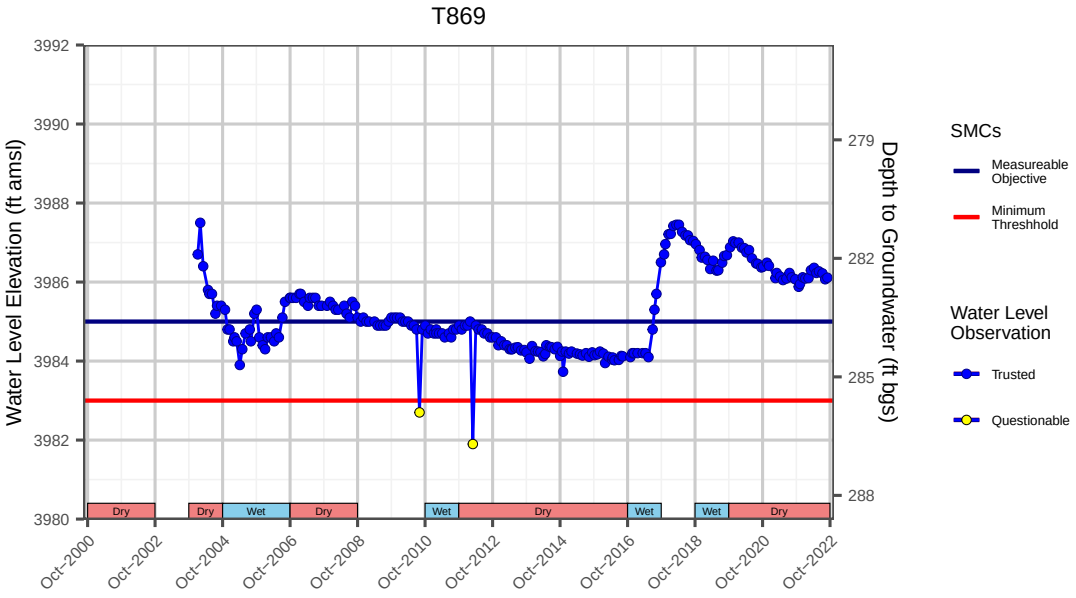


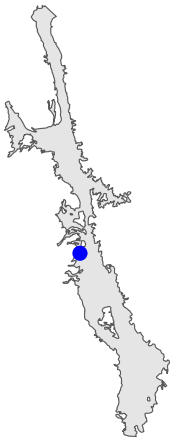

T809
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3840
3830
3820
3810
10
20
30
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

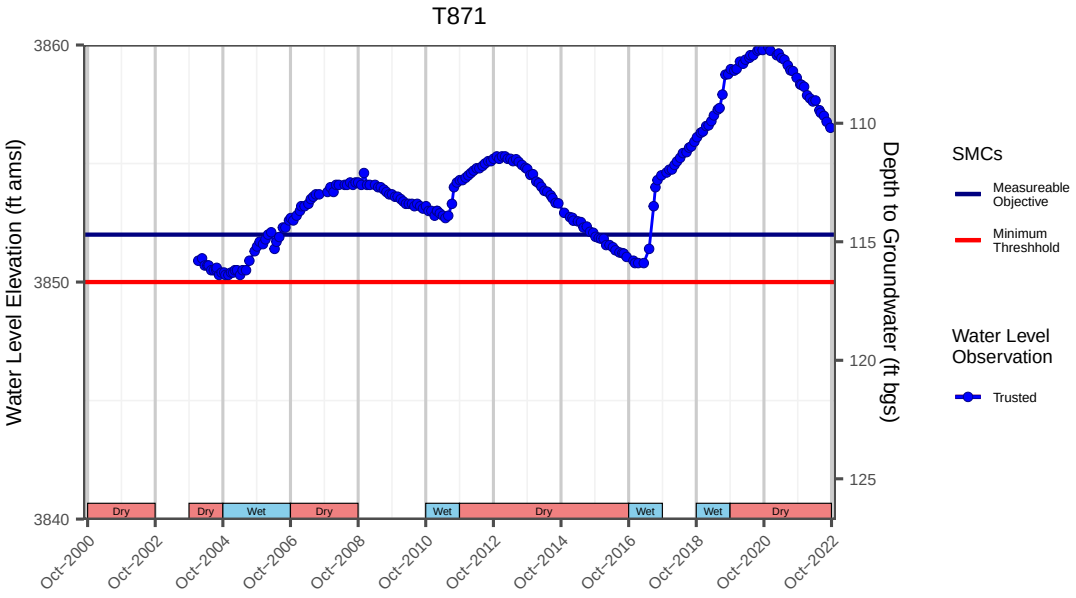

T858
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3680
3670
3660
3650
0
10
20
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

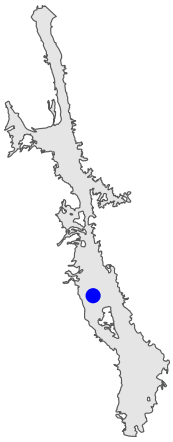

T860
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3720
3715
3710
3705
3700
3695
20
25
30
35
40
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct-2000
Oct-2002
Oct-2004
Oct-2006
Oct-2008
Oct-2010
Oct-2012
Oct-2014
Oct-2016
Oct-2018
Oct-2020
Oct-2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

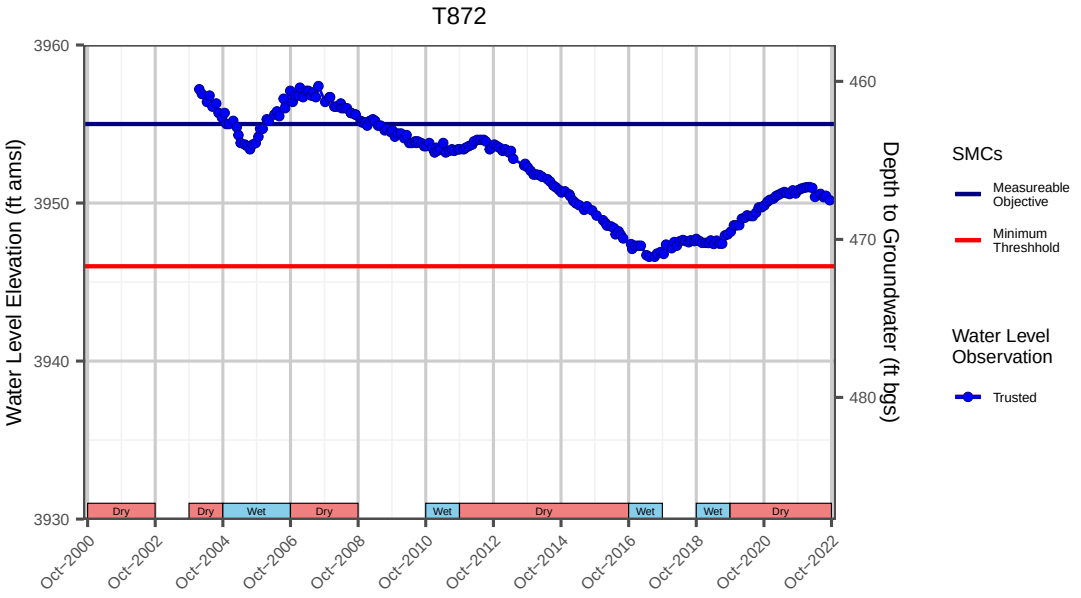


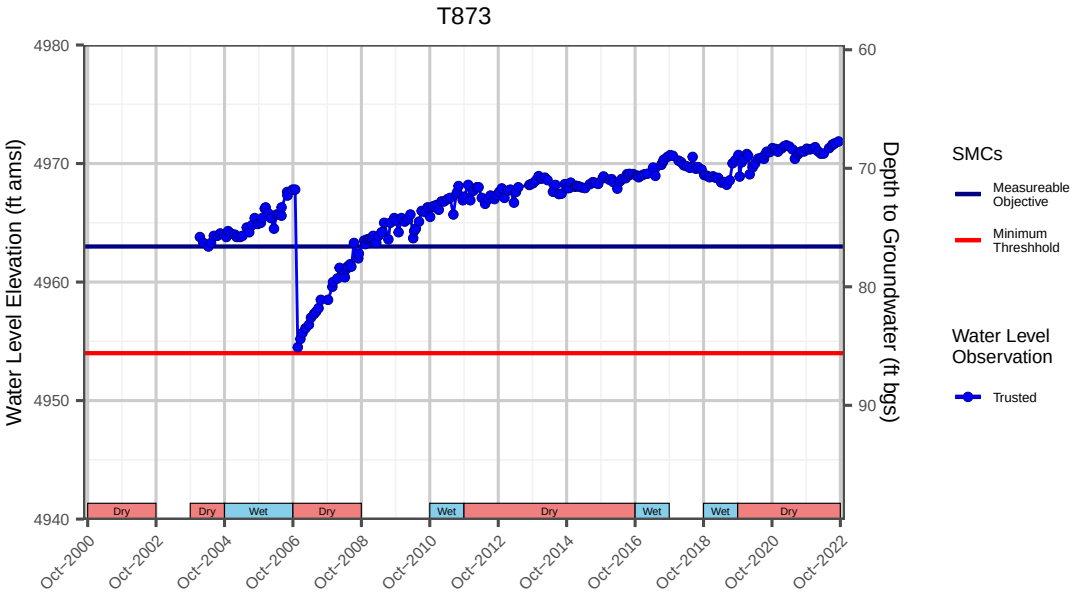

T869
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3992
3990
3988
3986
3984
3982
3980
279
282
285
288
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct-2000
Oct-2002
Oct-2004
Oct-2006
Oct-2008
Oct-2010
Oct-2012
Oct-2014
Oct-2016
Oct-2018
Oct-2020
Oct-2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted
Questionable

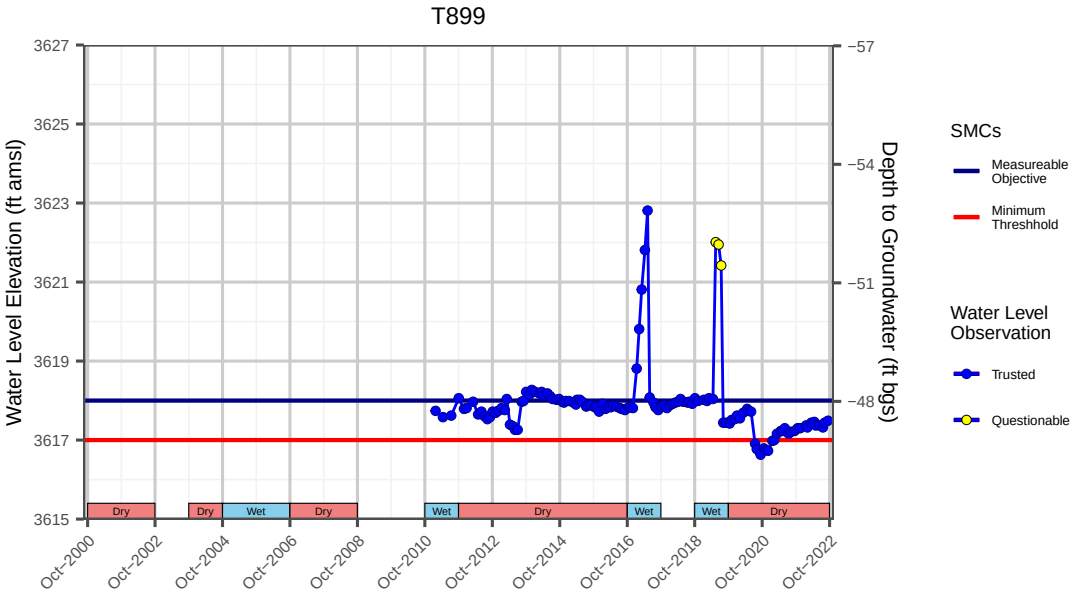


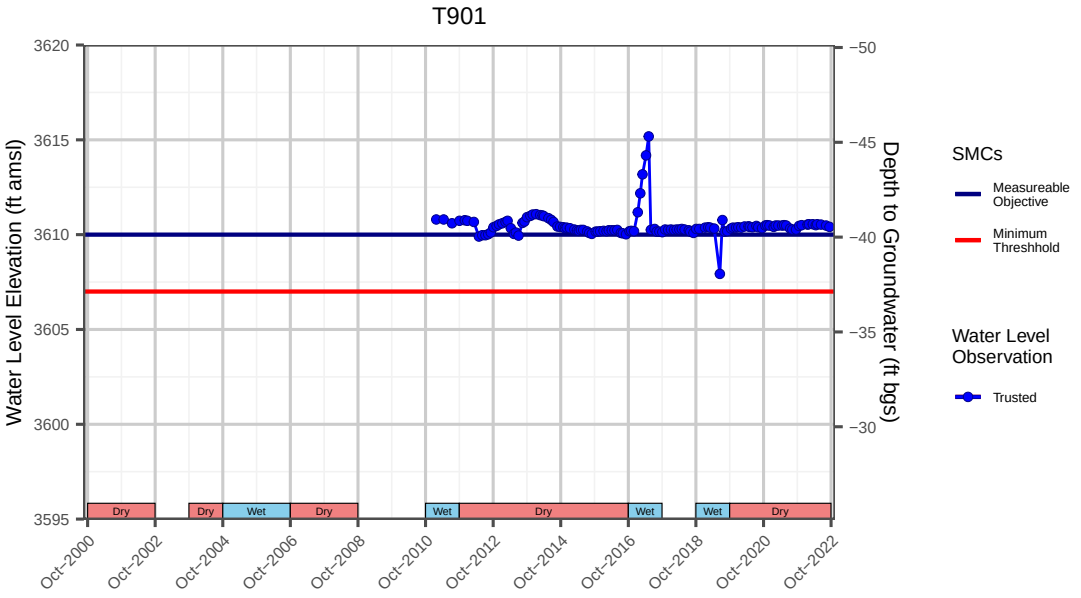

T871
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3860
3850
3840
110
115
120
125
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct-2000
Oct-2002
Oct-2004
Oct-2006
Oct-2008
Oct-2010
Oct-2012
Oct-2014
Oct-2016
Oct-2018
Oct-2020
Oct-2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

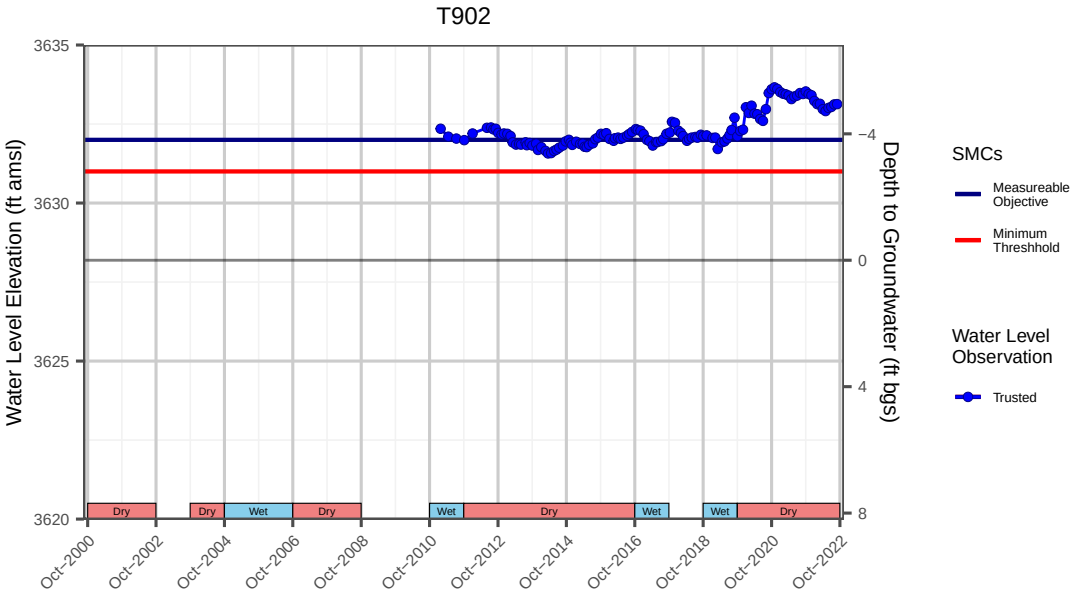


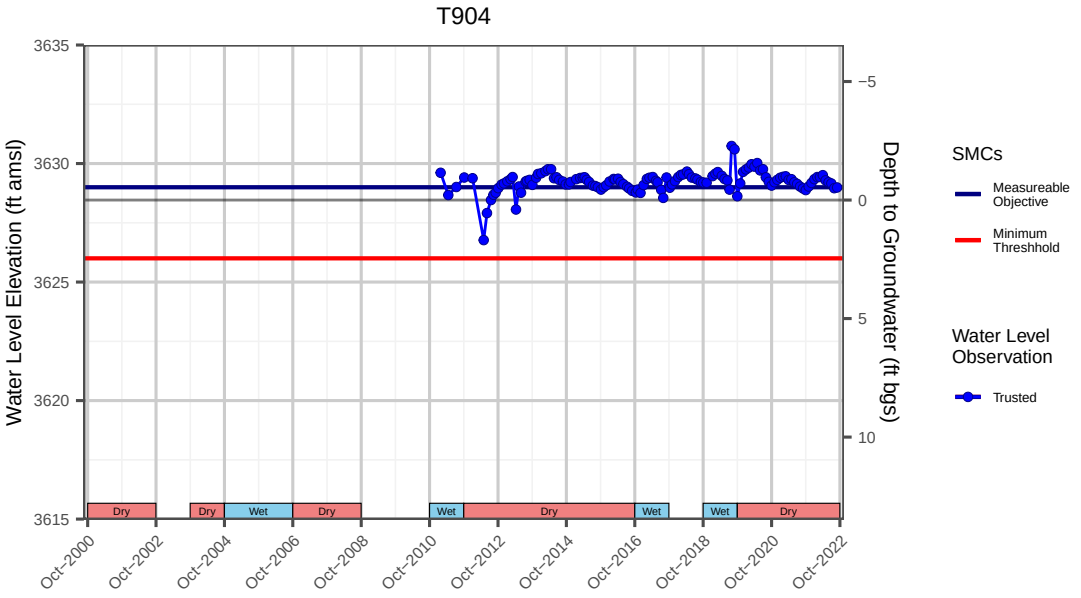

T872
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3960
3950
3940
3930
460
470
480
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

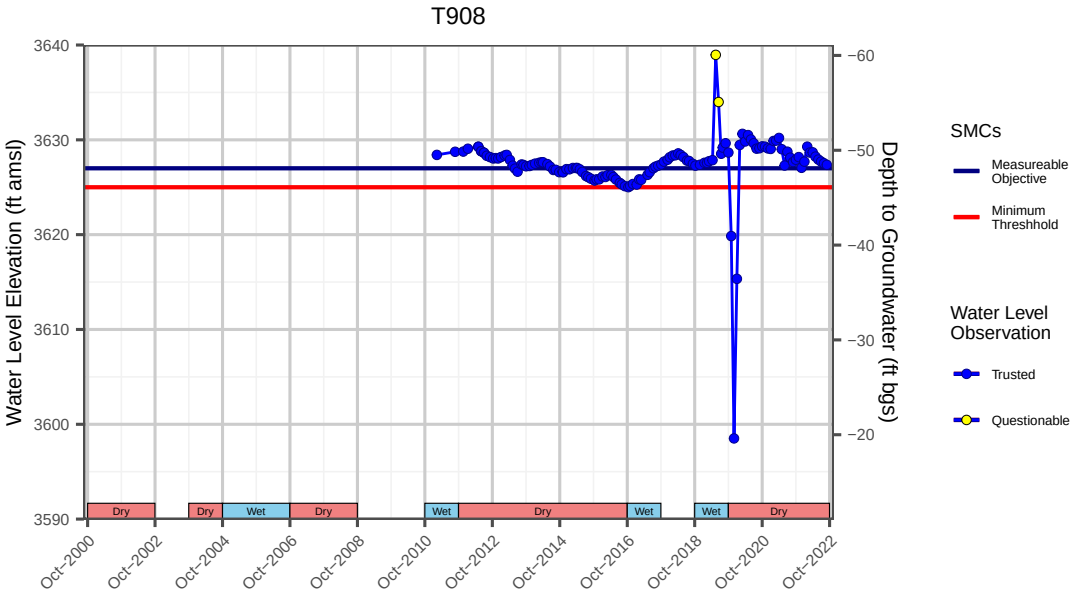

T873
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
4980
4970
4960
4950
4940
60
70
80
90
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

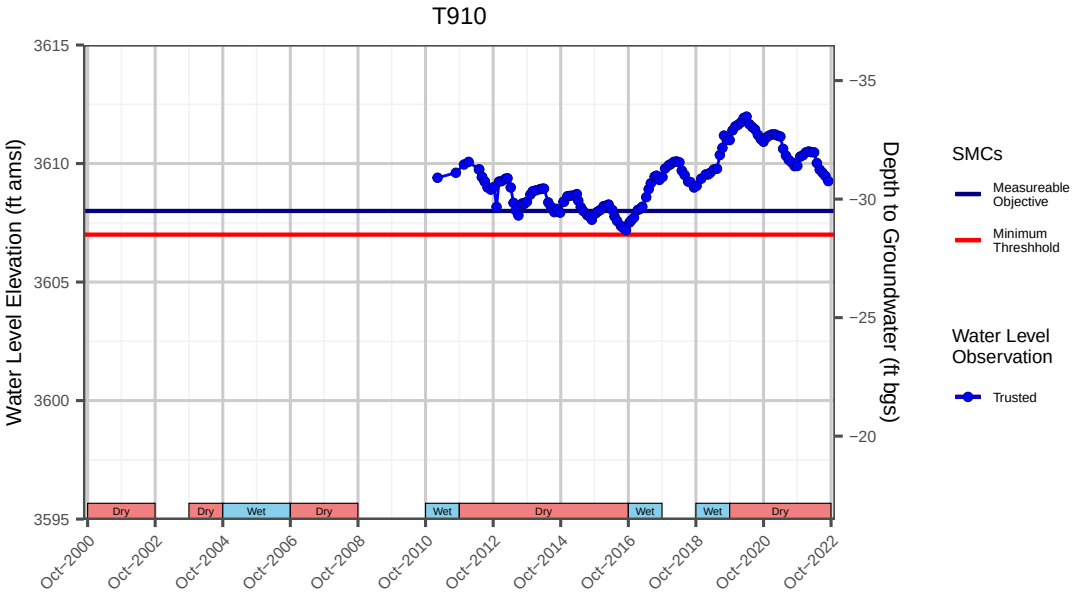

T899
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3627
3625
3623
3621
3619
3617
3615
−57
−54
−51
−48
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted
Questionable

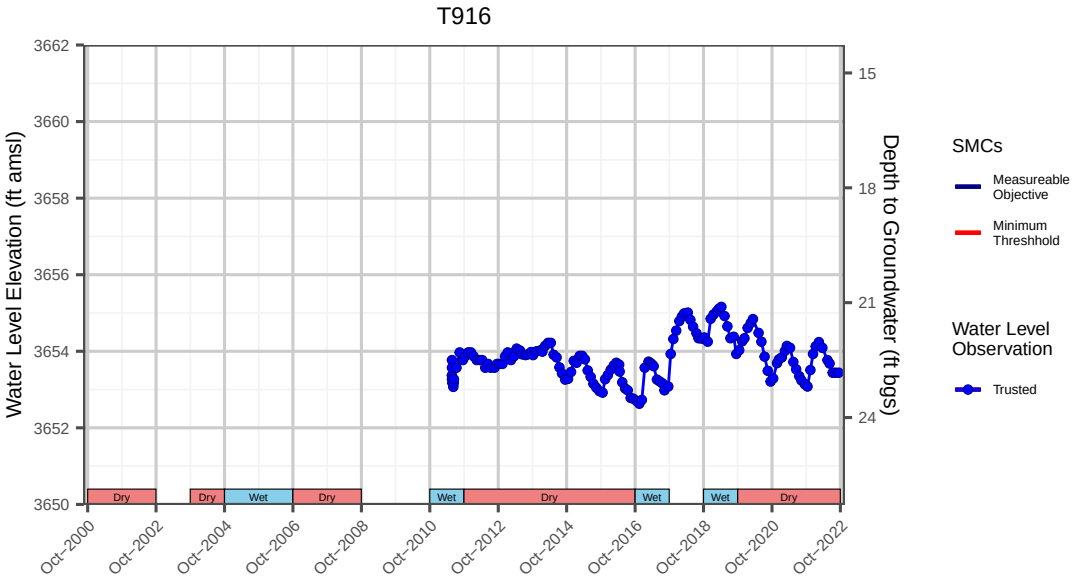

T901
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3620
3615
3610
3605
3600
3595
−50
−45
−40
−35
−30
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted


T902
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3635
3630
3625
3620
−4
0
4
8
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted

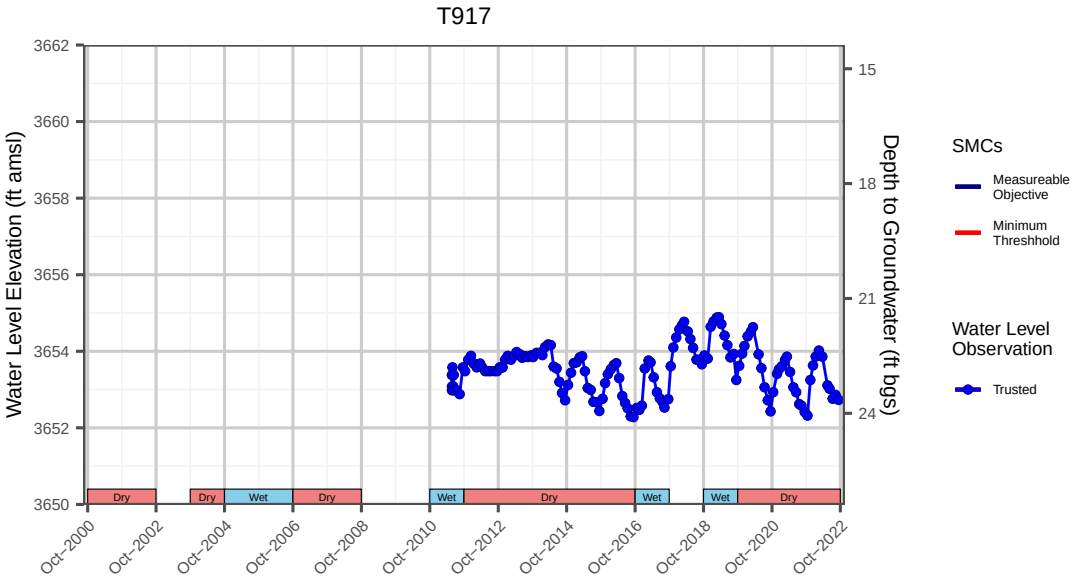

T904
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3635
3630
3625
3620
3615
−5
0
5
10
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted



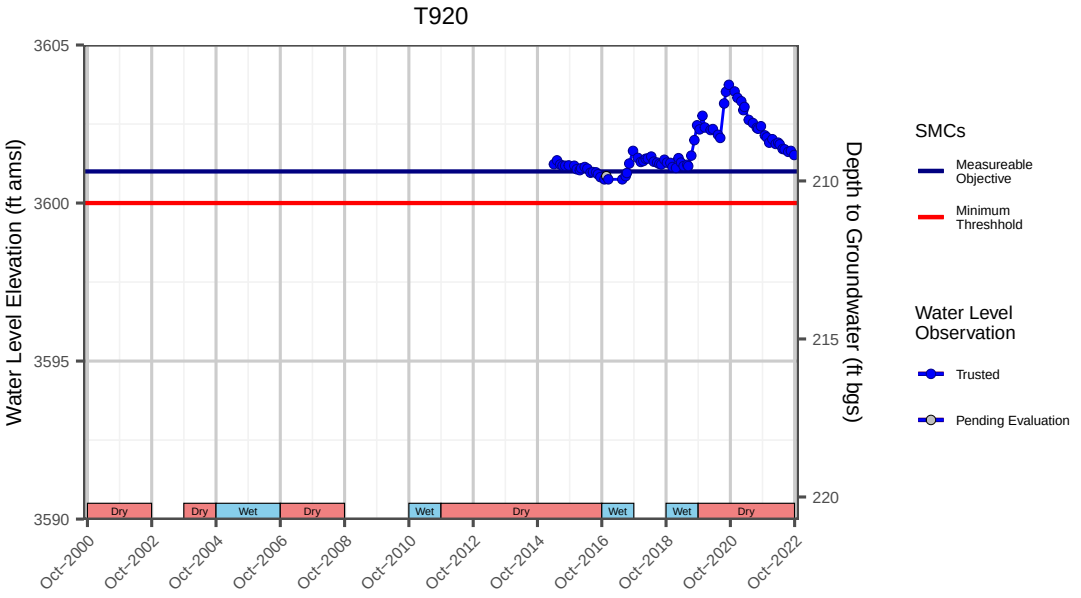


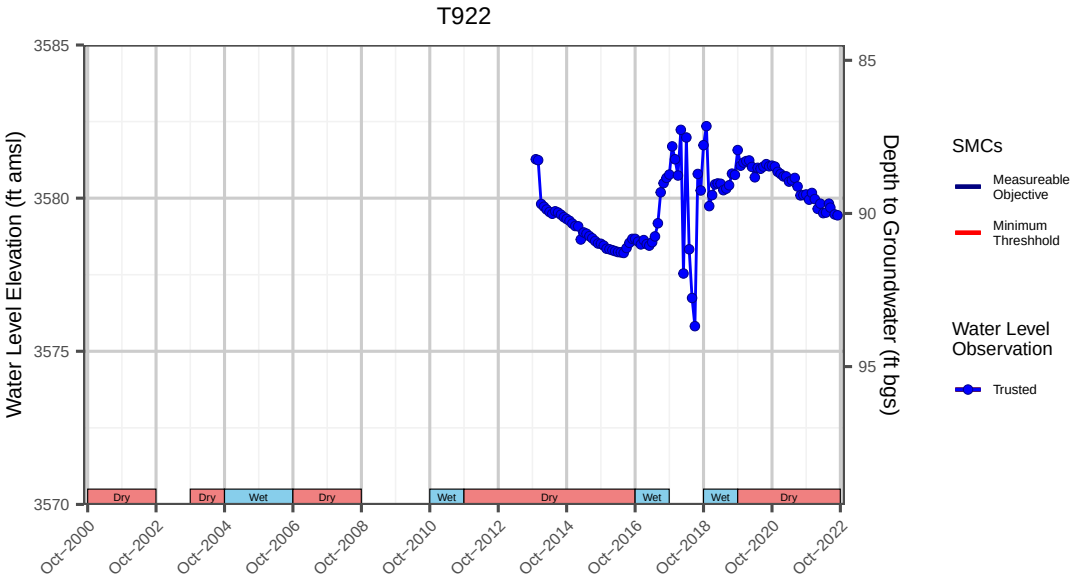


Notes: MT and MO values based on incorrect water level elevations that were recently corrected. MT and MO will be amended in the GSP 5−yr update

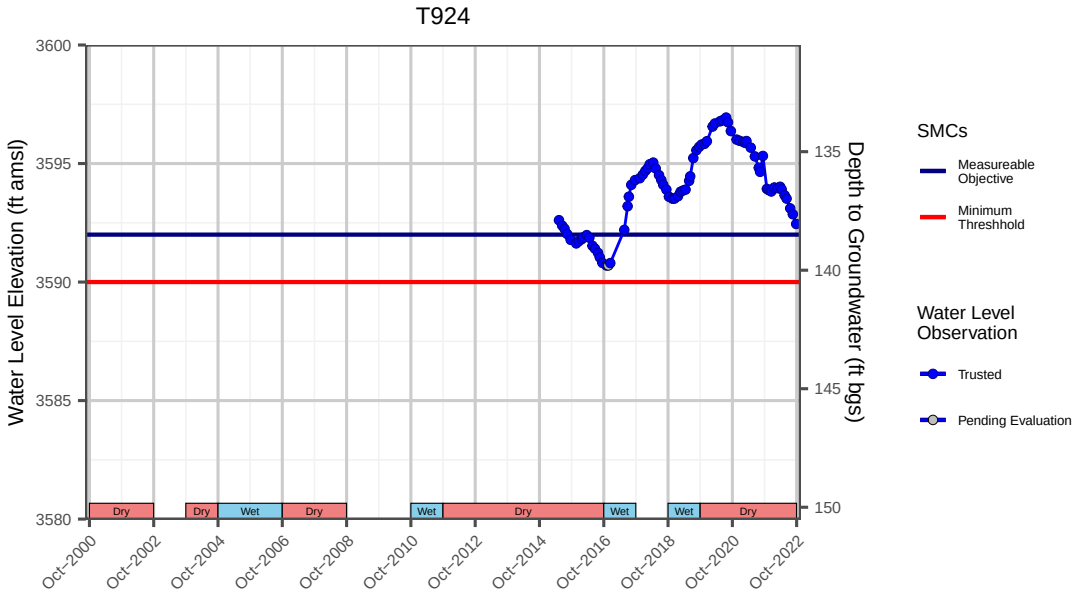


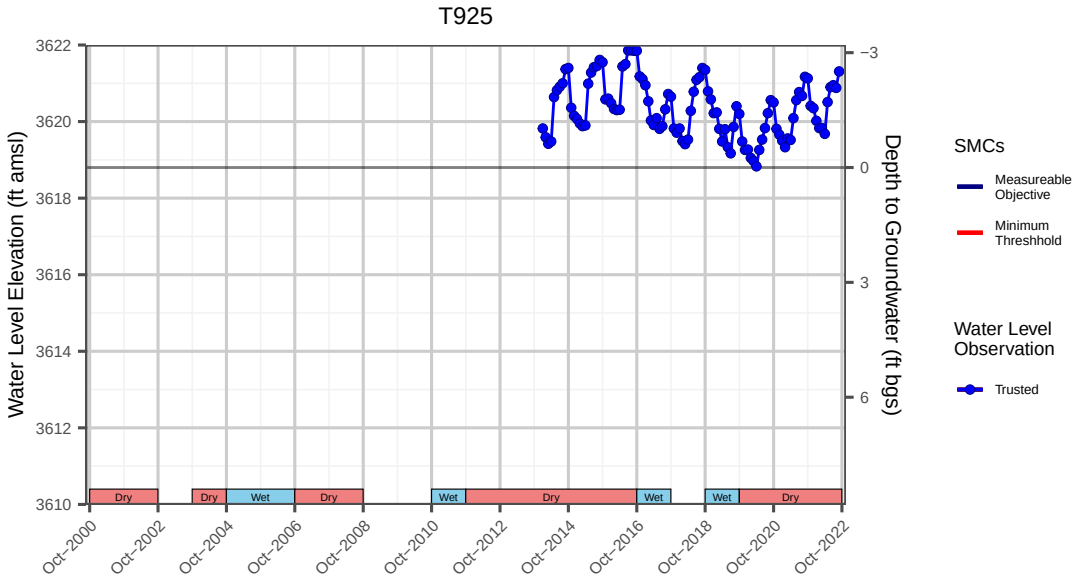
Notes: MT and MO values based on incorrect water level elevations that were recently corrected. MT and MO will be amended in the GSP 5−yr update



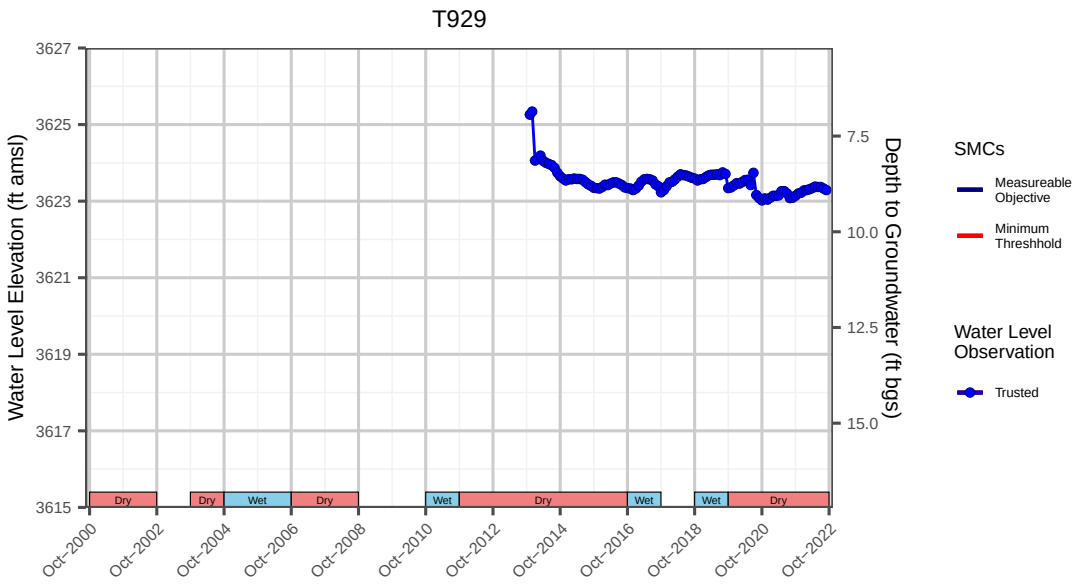


Notes: Newly established representative monitoring point or data not currently available. SMCs will be established in future GSP updates.

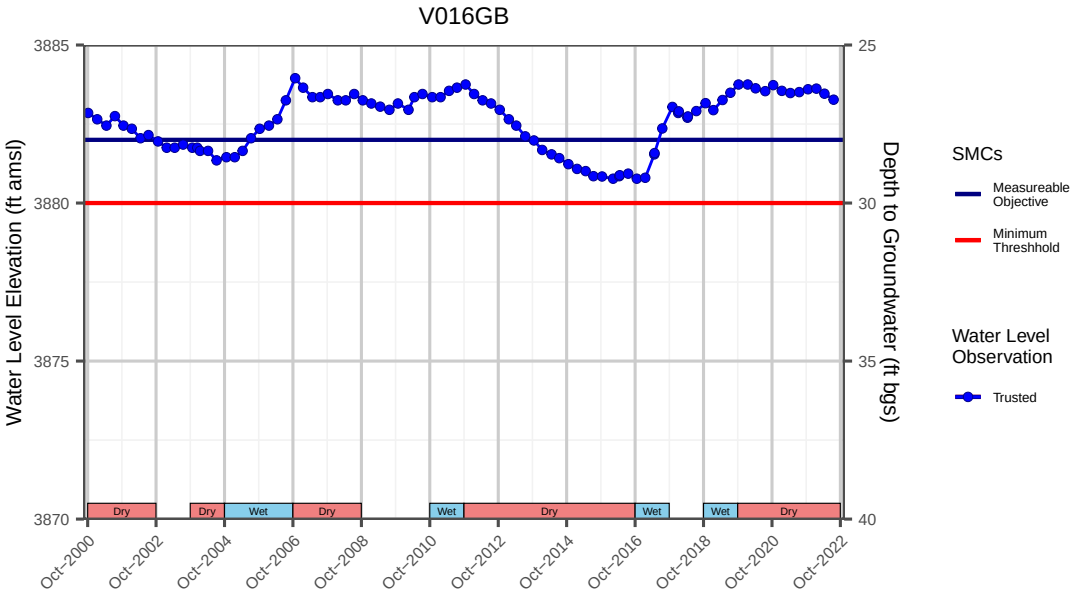


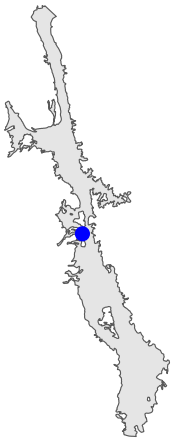


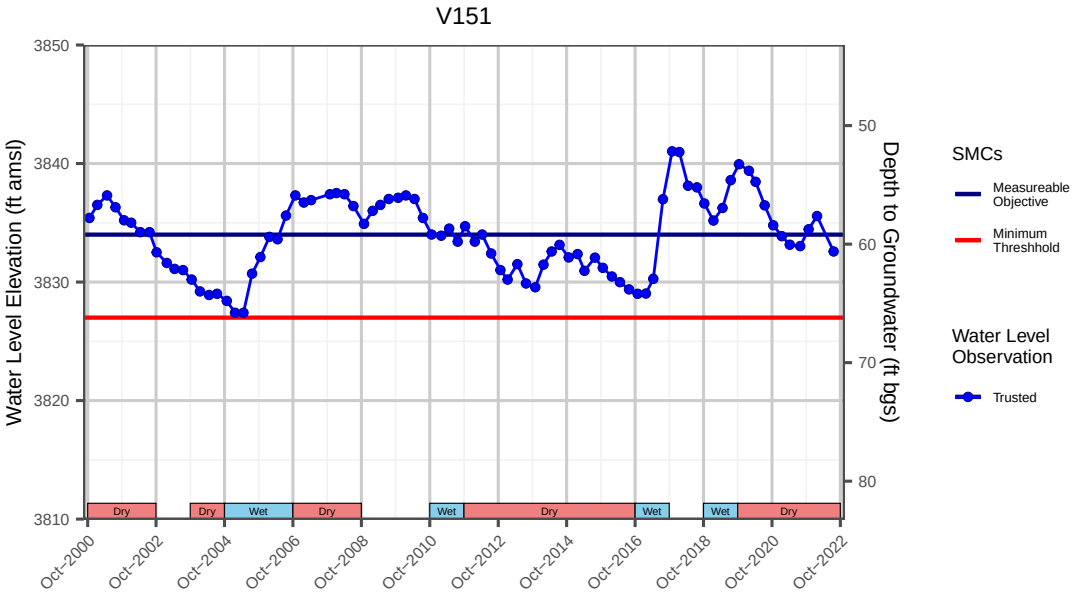
Notes: Newly established representative monitoring point or data not currently available. SMCs will be established in future GSP updates.

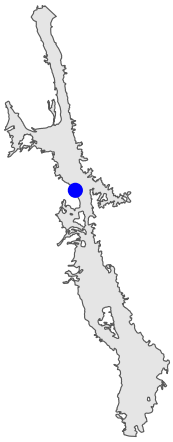


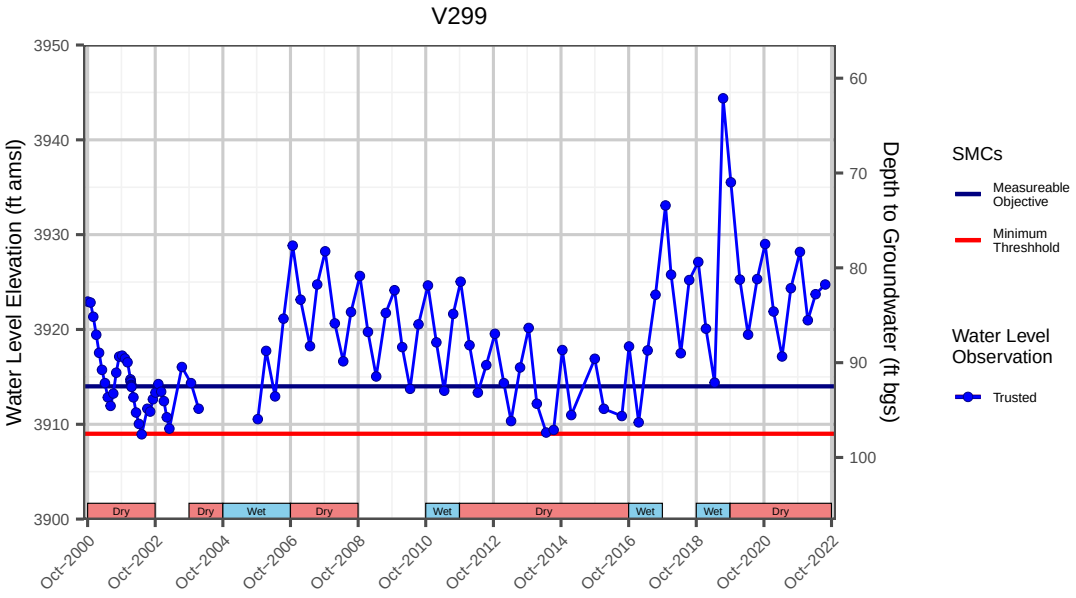
Notes: Newly established representative monitoring point or data not currently available. SMCs will be established in future GSP updates.

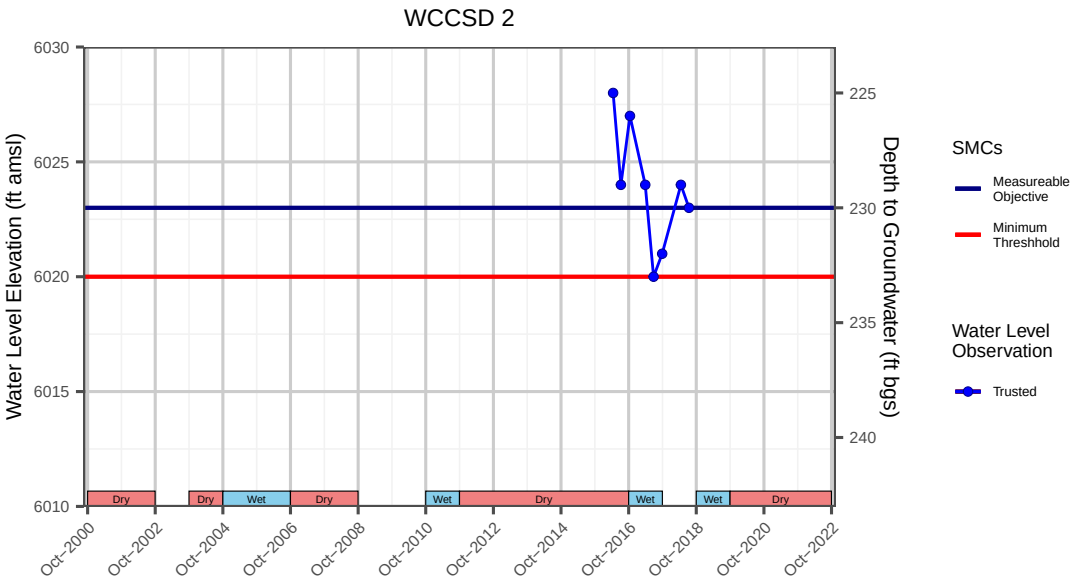

V016GB
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3885
3880
3875
3870
25
30
35
40
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted



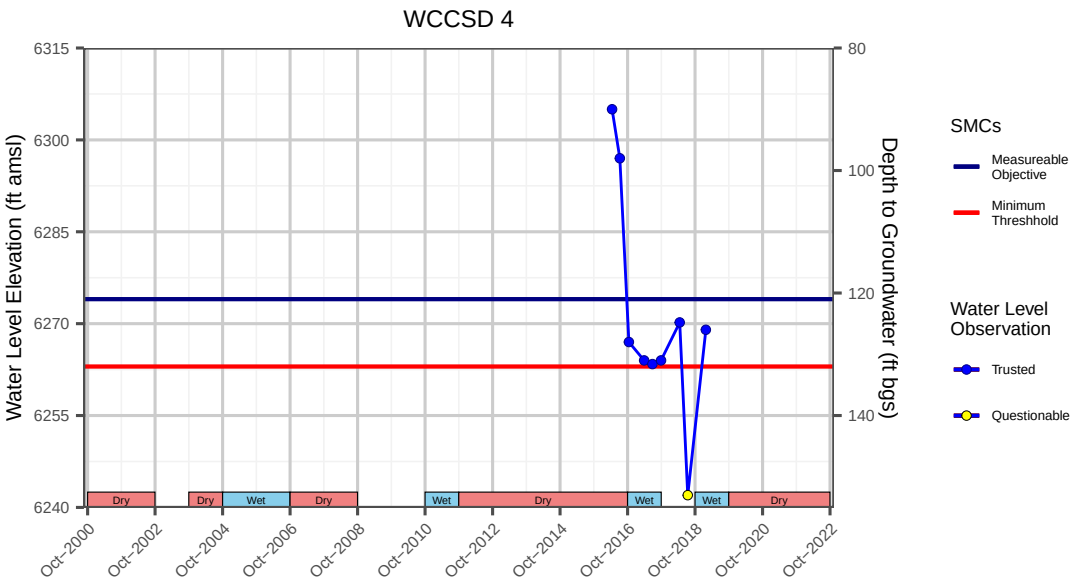

V151
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3850
3840
3830
3820
3810
50
60
70
80
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted




V299
Water Level Elevation (ft amsl)
Depth to Groundwater (ft bgs)
3950
3940
3930
3920
3910
3900
60
70
80
90
100
Dry
Dry
Wet
Dry
Wet
Dry
Wet
Wet
Dry
Oct−2000
Oct−2002
Oct−2004
Oct−2006
Oct−2008
Oct−2010
Oct−2012
Oct−2014
Oct−2016
Oct−2018
Oct−2020
Oct−2022
SMCs
Measureable Objective
Minimum Threshhold
Water Level Observation
Trusted



Notes: Wheeler Crest CSD (within Mono County and outside the revised OVGA boundary) has not responded to data requests.



Notes: Wheeler Crest CSD (within Mono County and outside the revised OVGA boundary) has not responded to data requests.

Appendix B: Owens Valley Groundwater Authority Response to Public Comments

Tri-Valley Groundwater Management District (Board of Directors)

Comment 1 – Director Josh Rhodes

For the Tri-Valley basin I have concerns with the amount of estimated data. I do understand the need for the estimation due to lack of monitoring points and flow data. However I would like to see surface water also estimated for the creeks that are used for agriculture irrigation. There are five creeks used for irrigation purposes in Hammil Valley. Those creeks are Montgomery creek, Marble creek, Pellesier creek, Birch creek, Millner creek.

Response:

Thank you for your comment. We will consider this when preparing the OVGA WY 2023 Annual Report.

Comment 2a – Director Donald Moss

Section 4.1 there was an incorrect reference to Table 2 for Surface Water used in the Tri-Valley and Fish Slough area. It should be Table 3.

Response:

We have corrected the WY 2022 Annual Report to read Table 3.

Comment 2b – Director Donald Moss

In Section 3.1 it should be emphasized to a greater degree that the extraction estimates for the Tri-Valley area are likely overestimated due to the use of surface water.

Response:

The WY 2022 Annual Report includes the text, *"… surface water is applied to some fields in Tri-Valley. This means that groundwater extraction estimates in this report are likely overestimated, but the degree to which is currently unknown."* We will emphasize the likely overestimation of pumping to a greater degree when preparing the OVGA WY 2023 Annual Report.

Comment 3a – Director Carol Ann Mithcell

The District withdrew from OVGA because our comments on the OVGA plan for the Tri-Valley Groundwater Management District were not taken into account by the Owens Valley Groundwater Authority Board of Directors before submittal to DWR.

Response:

Thank you for your comment. The comments of the TVGMD Board to the GSP were considered and responded to by the GSP authors.

Comment 3b – Director Carol Ann Mithcell

An assumption is made in the Annual Report on the Zdon Report in 2019 is proof that pumping in Hammil Valley is a direct cause of Northeast Spring flows. It sounds as if it has been empirically proven that Hammil Valley pumping is affecting Fish Slough Northwest spring. That is not the case. The District has attempted to further study this assumption through approval of a groundwater model coming later in 2024-2025. Also, an isotope test was to be part of the Groundwater Model project to prove if Hammil Valley water is connected to Fish Slough. At this time, the isotope test may be taken out of the Groundwater Model project as the contractor says there is not adequate funding as approved.

Response:

We welcome any additional relevant documentation you are able to share that may aid in further investigation. The WY 2022 Annual Report includes the text, *"Groundwater levels near Chalfant Valley indicate some flow from the Tri-Valley is directed westward towards the Fish Slough subbasin. This is consistent with results from a geochemical study performed by Zdon and others (2019) that showed Northeast Spring in Fish Slough was partially sourced by water from Tri-Valley."* The WY2022 Annual Report language is not meant to imply that the Zdon et al. (2019) paper is proof that pumping in Hammil Valley is a direct cause of Northeast Spring flows but that there is evidence of hydrologic connection between Hammil Valley and Northeast Spring.

The isotope study is being included in the Request for Proposals for the groundwater modeling project. Moving forward with the study will depend on the proposals received by prospective consultants as well as cost estimates. As the Project Manager indicated, the isotope study may not provide definitive evidence of a connection between Tri-Valley groundwater and Fish Slough spring discharge.

Friends of the Inyo (Wendy Schneider, Executive Director)

Comment 1 – Public Accessibility

Thank you for the opportunity to submit these comments about the Owens Valley and Fish Slough Subbasins GSP Annual Report for Water Year 2022. Friends of the Inyo (FOI) is a grassroots non-profit organization based in the Owens Valley that represents over 1,000 members. Our mission is to protect and care for the land and water of the Eastern Sierra. Over our 38-year history, we have cared for this valley that suffers the effects of water extraction by the Los Angeles Department of Water and Power (LADWP). We applaud the work of the Owens Valley Groundwater Authority (OVGA) in putting together this Annual Report. **Moving forward, we hope to encourage the OVGA to improve public accessibility for these reports.**

Response:

Thank you for your comment. The WY2022 annual report was made available to the OVGA Board and the public ahead of its being considered by the OVGA Board at its March 14, 2024, regular meeting. Following that meeting, the annual report was posted on the OVGA website along with the opening of a 30-day public comment period. If there are further suggestions about improving public accessibility, please contact the Executive Manager.

Comment 2 – General Comment

First, we want to acknowledge the significant work that the Inyo County Water Department (ICWD) has dedicated to putting together this report. This report helps us to quantify and better understand the valley's groundwater and its movements over WY 2022. **We appreciate the time investment and expertise of the ICWD in creating this study.**

Response:

Thank you for your comment.

Comment 3 – Public Accessibility and Lack of Interpretation

This study walks the reader through extensive data about the groundwater basins of our area. However, **we ask that the OVGA make this report more accessible for the regular citizens of Owens Valley**. First, this report is quite dense with information, which makes it challenging to read as a layperson. We request that the OVGA add further context to each section and perhaps highlight the main ideas, so that any member of the public could understand this report. Second, the report lacks a clear statement of significance about the data that it presents. Why do these findings matter? How do they fit into the broader ecosystem goals that the OVGA tracks? These sorts of statements would make a notable difference in public engagement in the OVGA.

Response:

The WY 22 Annual Report contains an Executive Summary that provides information about the activities of the prior year and progress towards GSP implementation. This section may grow over time. The significance of the data is included in the discussion of Sustainable Management Criteria and related measurable objectives and minimum thresholds (Sections 2.4 and 4.3). In addition to providing relevant information to the public and OVGA Board on Owens Valley basin conditions with respect to progress towards sustainability, the report was prepared to satisfy the requirements for GSP annual reports as identified in the Sustainable Groundwater Management Act (SGMA, 23 CCR 356.2).

Comment 4 – OVGA Annual Report Due Date

Also, we understand that the ICWD has a lot on its plate, and that the GSP is not necessary for the low-priority basins that the OVGA oversees. However, we urge the ICWD to prioritize completing these reports on time. The deadline for the 2023 report may have already passed. Regardless, we believe that the voluntary work of the OVGA will only be effective and educational for the people of Owens Valley if these reports and data are actually generated in a timely manner. **Going forward, we hope to see the ICWD complete these reports by the agreed-upon deadline in order to facilitate meaningful public engagement.**

Response:

Thank you for your comment. The goal is to submit these reports in the future by the DWR deadline of April 1. We expect it will be another 2-3 years before we are able to meet this annual deadline.

Lone Pine Paiute-Shoshone Reservation (Mary L. Wuester, Tribal Chairperson)

Comment 1 – General Comment

The Lone Pine Paiute-Shoshone Reservation (LPPSR) appreciates the opportunity to comment on the Owens Valley Groundwater Authority Annual Report for Water Year 2022. The first general comment is that several areas in the document include Owens Lake when it should be referenced as Owens lakebed. Both LPPSR and Great Basin Unified Air Pollution Control District (GBUAPCD) has made this point, successfully, to LADWP many years ago for the Master Project documents. LPPSR feels that the OVGA follow this terminology as well given that the "lake" at the site is a briny flood and not a restoration project.

Response:

The following footnote has been added to the WY 2022 Annual Report on page 2: *"[1]The term "Owens Lake" is used in this report for consistency with the OVGA GSP but it is intended to be synonymous with "Owens lakebed".*

Comment 2 – Suggested Report Text Edit

- Page 12, section 2.4 **Groundwater SMC Status**

  "*... which was 0.21 ft below the MT. It should be noted that T480 completely recovered above the MO by April 2023."*

Delete this comment as well as a similar comment in section 4.3, Surface Water SMC Status. It should not be noted. 2023 was the highest water year on record - nearly 300% of normal. It is inappropriate to selectively use this anomaly of a future annual report to suggest these groundwater losses are readily recoverable.

Response:

The word *"completely"* was removed from the last sentence in Section 2.4 of the WY 2022 Annual Report text. The sentence has been edited to read, *"Although outside the reporting period of this annual report, T480 recovered above the MO by April 2023[2]."* The footnote, "Water year 2023 was a historic wet year" was also added. One of the purposes of GSP annual reports is to report on SMC status. For WY 2022, there were two OVGA RMPs that fell below their respective MTs. The reader's natural question would likely be, did they recover in 2023? So, the report authors thought it informative to include this information even though the Annual Report was for WY2022 since the draft was completed after WY2023 data became available.

Comment 3 – Suggested Report Text Edit

- Page 12, section 3 **Groundwater Extractions**

  "*The currently unreported volumes in the Owens Valley and Owens Lake management areas are likely very small relative to the reported volumes, so their inclusion in future GSP annual reports is expected to have minimal impacts."*

This comment should be deleted. It is not based on data, but based on limited knowledge of the stand-off between this environment and the LADWP. The fact that Crystal Geyser and agricultural data are not included in the reporting shows this statement to be incorrect. It is contradicted in page 14, section 3.3 **Owens Lake**. Additionally, if the authors made themselves aware of LADWP's OLGDP they would see the "future" plans are expected to have major impacts. Owens Lake Management Area is the only non-exempted geography in the valley which can still be monitored and regulated by the OVGA. To retain this authority, the annual reports should highlight the

potential for abuse before it occurs and assert authority provided by State of California.

Response:

The sentence in the report text was edited to read, *"The currently unreported volumes in the Owens Valley and Owens Lake management areas are likely small relative to the reported volumes."* As described in the report, the OVGA has initiated a well registration and groundwater extraction reporting program to attempt to gather these pumping data if they exist. Additionally, Crystal Geyser Cabin Bar Ranch wells and associated available pumping production records have been acquired in digital format since the writing of this Draft WY2022 Annual Report and will be included in the OVGA Data Management System for use in the preparation of the WY2023 Annual Report. The annual reports provide information on activities from the previous water year and are not meant to address potential future actions or impacts.

Comment 4 – General Comment

- Page 13, section 3.2 **Owens Lake**

  "Although the volumes reported for each water use sector in Table 1 for the Owens Valley management area could not be independently verified, total groundwater extraction volume reported by LADWP was consistent with the total calculated using pumping data provided to the OVGA."

This only verifies that LADWP provides numbers that confirm LADWP's numbers. This entire report could be replaced with LADWP's Annual Owens Valley Report which is made public and is more comprehensive.

Response:

GSP annual reports are a SGMA requirement. The OVGA WY 2022 Annual Report was prepared to satisfy the requirements identified in the Sustainable Groundwater Management Act (SGMA, 23 CCR 356.2).

Comment 5 – Request for Clarification

- Page 14, section 3.2 **Owens Valley**

  "Agricultural irrigation accounted for approximately 46% of total extractions. Managed wetlands and native vegetation were about 33% of total extractions, while domestic and municipal uses made up about 14%. The remaining 7% of groundwater extractions were for Tribal uses or unspecified LAD WP operations. Due to the commingling of pumped groundwater with surface water in ditches and canals that reach the Los Angeles Aqueduct, the amount of groundwater that was exported was not quantified."

These in-valley uses add to 100% of "total extractions". From these numbers, the conclusion has

to be "groundwater that was exported" would be 0%. Is there a confusion in which are total extractions and which are percentages from the 0.77 of total extractions used within Owens Valley? Please clarify. "*For WY 2022 about 77% of total water use in the basin reported by LADWP was sourced from groundwater.*"

LADWP also mingles water from Long Valley and Mono Basin into LAA flows. Exports include these sources as well. If exports are to be reported here, those sources will need to be quantified.

Response:

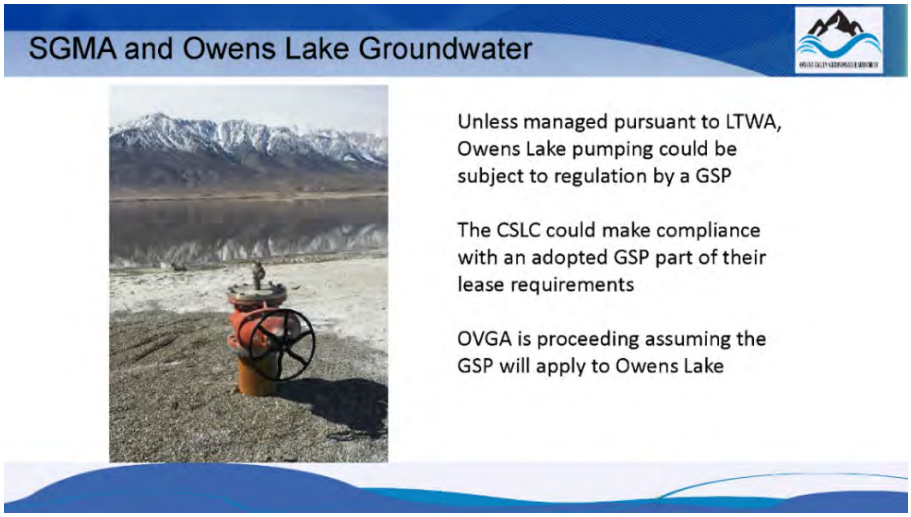
Thank you for your comment. The 77% referenced in your comment is LADWP total reported groundwater pumping in Owens Valley (https://sgma.water.ca.gov/adjudbasins/report/preview/248) less pumping from V404 and V405 located in the Owens Lake management area. The phrase, *"in the basin"* has been removed from the report text sentence. As is stated later in the same report section, *"Due to the commingling of pumped groundwater with surface water in ditches and canals that reach the Los Angeles Aqueduct, the amount of groundwater that was exported was not quantified."*

Comment 6 – Suggested Report Text Edit

- Page 14, section 3.3 **Owens Lake**

  "A total of 2,394 AF of groundwater was extracted from the Owens Lake management area (Table 2). This is a relatively small volume of water compared to the other two management areas, primarily due to very poor water quality."

Please delete the statement, " ..., *primarily due to very poor water quality.*" LADWP continues to plan on large pumping operations on and around the Owens lakebed. The comment only reflects the authors' ignorance of this decades-long project plan. An extract from page 5 of February, 2021 of Inyo County Water Department presentation to the Owens Valley Groundwater Workgroup is shown here:



There is a blatant conflict of interest where Inyo County continues to insist the LTWA applies to the lakebed pumping (which would make the region exempt from OVGA regulations), lobby DWR to exempt LTWA lands and, at the same time, assumes voting majority on the OVGA Board of Directors.

This annual report dismisses Owens Lake Management Area as unimportant. In fact, this management area is the only location in the basin where OVGA can make a difference in future abuses by LADWP's extraction and unregulated groundwater banking. Proposed groundwater banking on LADWP-owned land contiguous to Lone Pine Paiute-Shoshone Reservation is a genuine concern. Regulating banking and extraction must be a priority for OVGA.

Crystal Geyer pumping records have been collected and reported to ICWD since 2018. Why is this important data not included in the report?

Response:

Thank you for your comment. The requested statement, "*... primarily due to very poor water quality*" was removed from the report text. As mentioned in our response to your Comment 3, Crystal Geyser Cabin Bar Ranch wells and associated available pumping records will be included in the OVGA Data Management System for use in the preparation of the WY 2023 Annual Report.

Comment 7 – OVGA Well Registration Program de minimus Pumping

- Page 17, section 7.1, **Project and Management Action #1 - Well Registration and Reporting Ordinance**

  "This Well Registration Program is voluntary, but encouraged, for de minimus users which s defined as "a person who extracts, for domestic purposes, two acre-feet or less (of groundwater) per year."

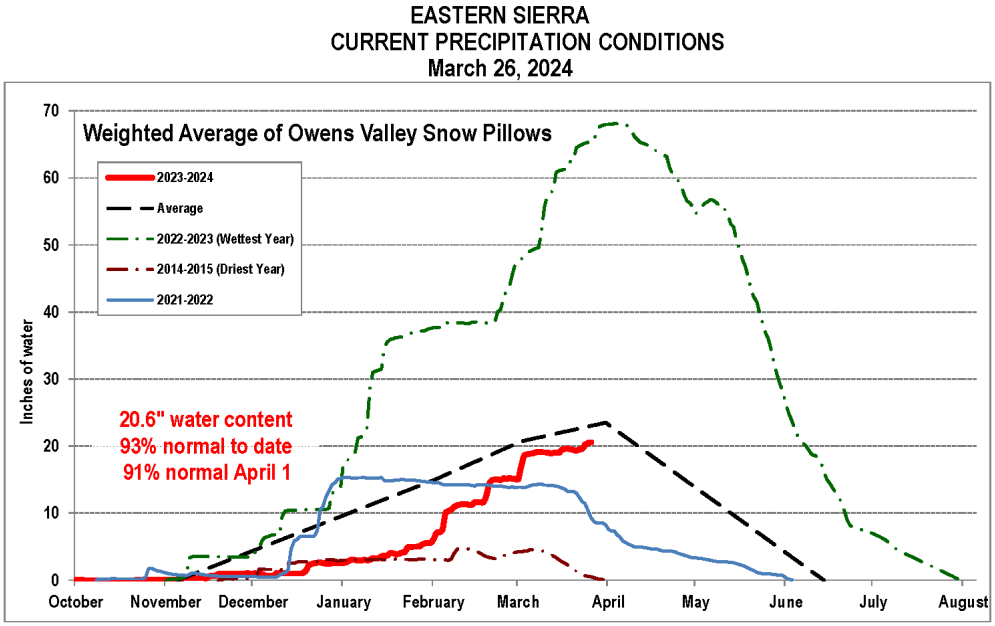
If "de minimus" is self-determined, how does Inyo County know who is and who is not required to register? If not metered, how is de minimus verified?

Response:

Thank you for your comment. The OVGA Board will consider these comments as the Well Registration and Reporting Ordinance is implemented.

Comment 8 – Report References to Data Outside of WY 2022

In conclusion, any reference to groundwater well recovery in the spring of 2023 does not belong in this report. Contractors used selective data to suggest a lack of concern in two areas. Using 2023 runoff was not described as the anomaly it is. Groundwater recoveries, just as surface water flooding, this last year should not be mentioned in this report unless it is comprehensive and in proper context. (as seen in this graph).



Response:

As mentioned in the response to your Comment 2, for WY 2022, there were two OVGA RMPs that fell below their respective MTs. These are the only two references to WY 2023 data in the WY 2022 Annual Report. The reader's natural question would likely be, did they recover in 2023? So, the report authors thought it informative to include this information even though the Annual Report was for WY2022 since the draft was completed after WY 2023 data became available. The footnote, "Water year 2023 was a historic wet year" was added where these two references to WY 2023 data appear in the report text.