Borrego Water District Board of Directors
Regular Board Meeting
October 24, 2023 @ 9:00 a.m.
806 Palm Canyon Drive
Borrego Springs, CA 92004

The Borrego Water District Board of Directors meeting as scheduled will be conducted in person and in an electronic format please note BWD is providing remote attendance options solely as a matter of convenience to the public. BWD will not stop or suspend its in-person public meeting should a technological interruption occur with respect to the GoTo meeting or call-in line listed on the agenda. We encourage members of the public to attend BWD meetings in-person at the address printed on page 1 of this agenda. Anyone who wants to listen to or participate inthe meeting remotely is encouraged to observe the GO TO MEETING at:
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I. OPENING PROCEDURES -

A. Call to Order
B. Pledge of Allegiance
C. Directors' Roll Call: President Dice, Vice President Baker, Directors ***Duncan**, Johnson & Moran
**1. Director Duncan Remote Address: 3153 Club Circle W., Borrego Springs Ca 92004*
D. Approval of Agenda
E. Comments from the Public & Requests for Future Agenda Items (may be limited to 3 min)
F. Comments from Directors
G. Correspondence Received from the Public - None

II. ITEMS FOR BOARD CONSIDERATION AND POSSIBLE ACTION -

A. Legislative Update – Best/Best/Krieger and Syrus Deevers
B. Groundwater Quality Memorandum – T Driscoll, Intera Engineers
C. Reserve Fund Policy Changes and Recommended Fund Balance – J Clabaugh
D. Borrego Springs Subbasin Watermaster Board – VERBAL D Duncan/K Dice/T Driscoll
1. Update on Board Activities
2. Update on Technical Advisory Committee Activities
3. Borrego Basin AEM Helicopter Survey Update

III. BOARD COMMITTEE REPORTS, IF NEEDED

STANDING:
A. Operations and Infrastructure: Duncan/Baker
B. Budget and Audit: Dice/Moran
C. ACWA/JPIA Insurance: Dice/Johnson

AD HOC:
A. Prop 68 Implementation: Baker/Johnson
B. Public Outreach: Dice/Johnson
C. Grants: Dice/Johnson
AD HOC – CONT.:
D. Cyber Security/Risk Management: Baker
E. Developer's Agreement: Baker/Duncan

F. Finance: Baker/Moran
H. Borrego Springs Basin Water Quality: Moran/Johnson

IV. STAFF REPORTS – VERBAL

A. Monthly Water Production and Operations Report: A Asche
B. Monthly Wastewater Production Report: R Martinez
C. Monthly Financial Report: J Clabaugh
    1. Quarterly Budget Review
D. Administration: D Del Bono
E. Legal Counsel: S Anderson
F. General Manager: G Poole

V. CLOSED SESSION:

A. Conference with Legal Counsel - Potential Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 54956.9: (Two (2) potential case)
B. Conference with Legal Counsel – Existing Litigation (Borrego Water District v. All Persons (Groundwater), Orange County Superior Court Case No. 37-2020-00005776
C. Conference with Legal Counsel – Existing Litigation Re: Aqueous Film-Forming Foams Products Liability Litigation, Settlement Agreement Between Public Water Agencies and DuPont and 3M
D. Conference with Real Property Negotiators (Gov. Code §Section 54956.8) APN: 140-303-0900 & 140-303-1100 Agency Negotiator: Geoff Poole, BWD General Manager Negotiating Parties: BWD and US Gypsum Corp as potential buyer Price and Terms of Payment

VI. CLOSING PROCEDURE: The next Board Meeting is scheduled for 9:00 AM November 14, 2023, to be available online and in person at 806 Palm Canyon Drive. See Board Agenda at BorregoWD.org for details, Agenda information available at least 72 hours before the meeting.

BORREGO WATER DISTRICT
BOARD OF DIRECTORS MEETING
OCTOBER 24, 2023
AGENDA ITEM II.A

October 18, 2023

TO: Board of Directors

FROM: Geoffrey Poole, General Manager

SUBJECT: Legislative Update – Best/Best/Krieger and Syrus Deevers

RECOMMENDED ACTION:
Receive Report from Legislative Advocates in Washington DC and Sacramento

ITEM EXPLANATION:
BWD utilizes the services of Legislative Advocates at both the Federal and State levels. The use of these services has directly led to millions in funding from the Federal government thru a Direct Congressional Spend as well as numerous grants.

NEXT STEPS
1. TBD

FISCAL IMPACT
1. TBD

ATTACHMENTS
1. None

BORREGO WATER DISTRICT
BOARD OF DIRECTORS MEETING
OCTOBER 24, 2023
AGENDA ITEM II.B

TO: Board of Directors

FROM: Geoffrey Poole, General Manager

SUBJECT: Groundwater Quality Memorandum – T Driscoll, Intera Engineers

RECOMMENDED ACTION:
Groundwater Quality Memorandum – T Driscoll, Intera Engineers

ITEM EXPLANATION:
Trey will provide an overview and answer any questions on the Attached WQ Memo.

NEXT STEPS
1. TBD

FISCAL IMPACT
1. TBD

ATTACHMENTS
1. T Driscoll WQ Memo

INTERA Incorporated
3838 W. Carson Street, #380
Torrance, California 90503 USA
424.275.4055

WORKING DRAFT MEMORANDUM

To:	Geoff Poole, Borrego Water District
From:	Trey Driscoll, PG, CHG, Mackenzie Dughi
Subject:	Groundwater Quality Risk Assessment Update
Date:	October 17, 2023
Att:	Figures 1-9
cc:	Jessica Clabaugh, Alan Ashe, BWD Board of Directors

Executive Summary

The Borrego Springs Groundwater Subbasin (Subbasin) of the Borrego Valley Groundwater Basin (BVGB) has been determined to be in "overdraft"[1, 2]. Recent studies estimate that water users within the Borrego Springs Groundwater Subbasin of the BVGB currently withdraw approximately 13,064 acre-feet per year[3] (AFY) and that the "sustainable yield" of the Borrego Springs Groundwater Subbasin is 5,700 AFY[4]. Thus, the current estimated "overdraft" rate is approximately 7,364 AFY. The Sustainable Groundwater Management Act (SGMA) mandates that the Subbasin achieve a long-term withdrawal rate less than or equal to the sustainable yield by the end of the prescribed 20-year water reduction period, in this case, by the year 2040[5].

This Technical Memorandum (TM) has been prepared to assess the potential risk associated with temporal changes in groundwater quality that may result in exceedances of California drinking water maximum contaminant levels (MCLs) in Borrego Water District (BWD) production wells. This risk is attributed to the long-standing critical overdraft and implementation of the Physical Solution, which includes the rampdown of pumping to achieve a balanced water budget by 2040. Thus, this TM assesses current and historical groundwater quality data and their inter-relationship with groundwater levels and groundwater production. Based on our current understanding of groundwater quality conditions, the main constituents of concern (COCs) are arsenic, nitrate, sulfate, fluoride, and total dissolved solids (TDS). In addition, the BWD is in the process of conducting Per- and polyfluoroalkyl substances (PFAS) sampling, as required by the State Water Resources Control Board (SWRCB), to evaluate whether these emerging constituents

1 The overdraft of the BVGB was definitively established by the U.S. Geological Survey (USGS) work conducted in 1982 for San Diego County.

2 The Department of Water Resources approved BWD's request for a scientific internal modification of the BVGB into the Borrego Springs Subbasin (7-024.01) and Ocotillo Wells Subbasin (7-024.02) in October 2016.

3 Water Year 2022 Annual Report for the Borrego Springs Subbasin Prepared for the Borrego Springs Watermaster. Prepared by West Yost. March 10, 2023.

4 Draft Final Groundwater Management Plan for the Borrego Springs Subbasin. January 2020.

5 The 20-year water reduction period is promulgated in CWC Section 10727.2(b).

of concern are detected within the aquifer. Of primary concern is the potential for water quality degradation and the relative risk that the groundwater supply will exceed drinking water MCLs.

The U.S. Geological Survey (USGS), in cooperation with the BWD, published Scientific Investigation Report 2015–5150 that evaluated available groundwater quality data in Borrego Springs and Ocotillo Wells Groundwater Subbasins of the BVGB (Faunt et al. 2015). The USGS found that concentrations of TDS and nitrate exceed their respective water quality standard thresholds in portions of the upper aquifer of the Subbasin (for reference regarding depth, the Borrego Springs Groundwater Subbasin is comprised of three aquifers: upper, middle, and lower). The highest concentrations of both constituents were generally found in the northern portion of the Subbasin, with TDS concentration increasing as groundwater levels decline. Sulfate, another COC, was also found to increase in concentration as groundwater levels decline. In addition to nitrate, TDS, and sulfate, other potential COCs in the BVGB include arsenic and gross alpha radiation, though the latter appears to be confined to the Ocotillo Wells Groundwater Subbasin.

The Groundwater Management Plan (GMP) for the Borrego Springs Groundwater Subbasin[6] reports that the most extensive water quality monitoring data within the Subbasin comes from reporting by public water supply systems to the SWRCB Division of Drinking Water to ensure adequate drinking water quality. As of spring of 2023, there are 29 wells in the current groundwater-quality monitoring network[7]. BWD routinely monitors approximately nine active production wells to test groundwater for general minerals, aggregate properties, solids, metals, and nutrients at least every 3 years. In addition to historical water quality data available within the Subbasin, Table 1 shows the wells included in the monitoring network for groundwater quality. Constituents to be monitored have been selected based on the results of prior monitoring activities in the Subbasin conducted primarily by DWR, USGS, and BWD. These monitoring activities along with USGS publications (USGS 2014, 2015) have summarized groundwater quality conditions in sufficient detail to identify arsenic, nitrate, sulfate, fluoride, and TDS as the Subbasin's main COCs. Radionuclides were not explored in this Groundwater Quality Risk Assessment Update because available radionuclide data indicates that gross alpha and gross beta results are below MCLs and not a current COC for the Subbasin.

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6 The Groundwater Management Plan for the Borrego Springs Subbasin is provided as Exhibit 1 to the Stipulated Judgment.

7 Groundwater Monitoring Plan for the Borrego Springs Subbasin Prepared for the Borrego Springs Watermaster. April 11, 2023.

Table 1. Wells in the Current Groundwater-Quality Monitoring Network

Well Name	Well Owner	Well Use	Well Status	Well Depth (ft-bgs)	Screened Interval (ft-bgs)	Principal Aquifer(s) Screened	Monitoring Entity
North Management Area							
ID4-18	BWD	MUN	Active	570	240 - 560	Upper/Middle	BWD
ID4-9	BWD	MUN	Active	916	460 - 800	Middle/Lower	BWD
MW-1	BWD	OBS	-	900	800 - 890	Middle/Lower	Watermaster
Horse Camp	CA Dept of Parks and Rec	DeMIN	Active	350	150 - 350	Upper	Watermaster
Auxiliary 2	CA Dept of Parks and Rec	MUN	Active	490	no data	Lower	Watermaster
Central Management Area							
BSR Well 6	Borrego Nazareth L	IRR	Active	no data	no data	no data	Watermaster
County Yard (SD DOT)	County of San Diego	DeMIN	Active	280	no data	Upper/Middle	Watermaster
ID1-10	BWD	MUN	Active	392	162 - 372	Middle/Lower	BWD
ID1-12	BWD	MUN	Active	580	248 - 568	Middle/Lower	BWD
ID1-16	BWD	MUN	Active	705	160 - 540	Upper/Middle/Lower	BWD
ID4-11	BWD	MUN	Active	770	450 - 750	Middle/Lower	BWD
ID5-5	BWD	OBS	-	700	400 - 700	Middle/Lower	BWD
MW-4	BWD	OBS	-	390	85 - 390	Upper/Middle	Watermaster
Terry Well	Private	DeMIN	Active	920	450 - 620	Lower	Watermaster
ID4-20 (Wilcox)	BWD	MUN	Active	502	252 - 502	Upper/Middle/Lower	BWD
South Management Area							
Air Ranch Well 4	Borrego Air Ranch	MUN	Active	380	120 - 300	Middle/Lower	Watermaster

Table 1. Wells in the Current Groundwater-Quality Monitoring Network

Well Name	Well Owner	Well Use	Well Status	Well Depth (ft-bgs)	Screened Interval (ft-bgs)	Principal Aquifer(s) Screened	Monitoring Entity
Army Well	Unknown	OBS	-	690	no data	Lower	Watermaster
ID1-8	BWD	MUN	Active	850	72 - 830	Upper/Middle/Lower	BWD
La Casa	CWC Casa del Zorro	IRR	Active	500	no data	no data	Watermaster
MW-3	BWD	OBS	-	325	175 - 325	Middle/Lower	Watermaster
MW-5A (East-Lower)	BWD	OBS	-	345	45 - 155	Middle	Watermaster
MW-5B (West-Upper)	BWD	OBS	-	160	200 - 340	Upper	Watermaster
RH-1 (ID1-1)	T2 Borrego	IRR	Active	600	180 - 580	Middle/Lower	Watermaster
RH-2 (ID1-2)	T2 Borrego	IRR	Active	740	120 - 720	Upper/Middle/Lower	Watermaster
RH-3	T2 Borrego	IRR	Active	890	295 - 885	Middle/Lower	Watermaster
RH-4	T2 Borrego	IRR	Active	675	280 - 420	Middle/Lower	Watermaster
RH-5	T2 Borrego	IRR	Active	815	270 - 480	Lower	Watermaster
RH-6	T2 Borrego	IRR	Active	948	238 - 938	Middle/Lower	Watermaster
WWTP-1	BWD	OBS	-	100	60 - 100	Upper/Middle	Watermaster

Notes: BWD = Borrego Water District, DeMIN = de minimis, IRR = irrigation, MUN = municipal, OBS = observation

Since the compilation of available groundwater quality data for the GMP, the BWD has collected additional data for its 15 active production and monitoring wells, and the Borrego Springs Watermaster has gathered data for an additional 14 wells included in the monitoring network. These recent data indicate that arsenic concentrations exceed the California drinking water MCL of 10 micrograms per liter (µg/L) in portions of the lower aquifer in the South Management Area (SMA). Additionally, a review of historical arsenic data for wells located in the SMA indicates an increasing arsenic trend in wells RH-2 (ID1-2) and RH-5. A linear regression analysis was conducted for all wells located in the SMA. A positive correlation was found between arsenic concentrations and declining groundwater levels at RH-5, but this correlation was not observed for the remaining wells in the SMA. Information regarding the timing of sampling was not available, causing variability among the analytical results. Arsenic concentrations cannot be predicted solely based on a linear regression approach using annual groundwater production and declining groundwater levels. Due to limited groundwater quality data for the Subbasin, further data collection (including the timing of sampling) and evaluation are required to predict exceedances of arsenic drinking water standards in ID1-8 and arsenic or other COC drinking water standards for other wells in the Subbasin.

In August 2023, BWD began to monitor several non-potable irrigation wells located in the NMA associated with the acquisition of Baseline Pumping Allocation (BPA) and property from William Bauer. Preliminary results of sampling four wells on the Bauer Farms properties indicate elevated levels of nitrate and TDS detected in the wells. One of the four Bauer wells has a nitrate concentration above the drinking water standard. One of the four Bauer wells was sampled for PFAS substances with no detections above the laboratory reporting limits.

Introduction

The Subbasin is in the northeastern part of San Diego County (Figure 1). The boundary of the Subbasin is generally defined by the contact of unconsolidated deposits with plutonic and metamorphic basement deposits. The trace of the Coyote Creek fault, which trends northwest-southeast to the north and east of the Subbasin, and the San Felipe Wash to the south, which is approximately co-located with a basement high known as the Yaqui Ridge/San Felipe anticline and San Felipe fault, are recognized barriers to flow that form additional boundaries of the subbasin (Figure 1).

Groundwater pumped from the Subbasin is the sole source of supply to meet agricultural, municipal, and recreational water demands for the community of Borrego Springs. Since the 1950s when intensive groundwater pumping began[8], extraction has exceeded recharge. Approximately 555,646 acre-feet of groundwater has been permanently removed from groundwater storage, and groundwater levels have dropped by more than 100 feet in portions of the Subbasin (Faunt et al. 2015, West Yost 2022). Today, groundwater extraction continues to exceed recharge. Water users within the Subbasin currently withdraw approximately 13,064 AFY of groundwater, and the "sustainable yield" is 5,700 AFY. Thus, the current estimated overdraft is 7,364 AFY. Approximately a 56% pumping reduction would be required to balance extraction with long-term average recharge.

The SGMA was passed in September 2014 as a means of regulating groundwater use throughout the State of California. On April 8, 2021, the honorable Judge Peter Wilson of the California Superior Court for the County of Orange granted the motion for entry of the Stipulated

8 Agricultural expansion of the Subbasin proceeded rapidly after World War II. On October 19, 1945, DiGiorgio switched on the first electric well pump—the same day that San Diego Gas & Electric established electricity in the Borrego Valley (Brigandi 1959).

Judgment[9]. As stated in Section II.F of the Judgment, the Court found that the Physical Solution for the Basin, which is comprised of the Judgment and GMP, is consistent with California Water Code (CWC) Section 10737.8 and is a prudent, legal, and durable means to achieve sustainable groundwater management within the Subbasin as intended by SGMA.

In addition to developing a water quantity path to sustainability, it is essential to evaluate groundwater quality to ensure the availability of suitable water quality for domestic, municipal and irrigation supply. This TM has been prepared to perform an updated assessment of the potential risk associated with temporal and spatial changes in groundwater quality that may result in exceedances of California drinking water MCLs in BWD production wells due to the long-standing critical overdraft of the Subbasin. To date, the BWD has been able to supply customers with groundwater without the need for any additional treatment other than disinfection by chlorination as required by the SWRCB's Division of Drinking Water (DDW). The potable groundwater served by the BWD currently meets all drinking water standards, and no water quality violations have been identified in active BWD wells.

Degradation of water quality is of concern for the Subbasin from both anthropogenic and naturally occurring COCs. Potential anthropogenic sources include agricultural return flows, septic tank treatment and disposal systems, and percolation of treated wastewater from the Rams Hill Wastewater Treatment Facility. For domestic and municipal wells, this TM evaluates water quality results in relation to potable drinking water standards specified in Title 17 and Title 22 of the California Code of Regulations (CCR). For irrigation wells, water quality should be suitable for agricultural use, which depending on the crop type, soil conditions on other factors may be sensitive to a particular water quality constituent (e.g., elevated salts in the root zone may affect plant health). While this TM focuses on potable water quality of for BWD active production wells, additional data is evaluated for irrigation wells and monitoring wells to identify areas of poor water quality in the Subbasin.

Stratigraphy and Hydrogeologic Conceptual Model

The groundwater system is generally subdivided by the USGS into three aquifers denoted as the upper, middle, and lower.[10] The upper aquifer is comprised of coarse sediments sourced from the Coyote Creek watershed. The thickness of the upper aquifer thins from a maximum thickness of about 643 feet, where Coyote Creek enters the basin, to about 50 feet near the Borrego Sink (Faunt et al. 2015) and becomes mostly unsaturated south of the Desert Lodge anticline near

9 Borrego Water District v. All Persons and Legal Entities Who Claim a Right to Extract Groundwater from the Borrego Valley Groundwater Subbasin No. 7.024-01 Whether Based on Appropriation, Overlying Right, or Other Basis of Right, and/or Who Claim a Right To Use of Storage Space in the Subbasin; et al., (Orange County Super Ct. Apr. 8, 2021).

10 The upper, middle, and lower aquifers represent a generalized description of the Borrego Springs Subbasin stratigraphy based on work performed by Moyle (1982) and described in detail in Faunt et al. (2015). The aquifers are not separated by distinct confining layers. Aquifer testing and review of long-term groundwater level data, lithologic logs and geophysical logs indicate that confining downward conditions are present in much of the Subbasin. In addition, many wells are screened over multiple aquifers providing a direct pathway for vertical migration of water among the three aquifers in many locations of the Subbasin.

Rams Hill. The upper aquifer yields as much as 2,000 gallons per minute and has been extensively dewatered. The middle aquifer contains finer sediments thought to originate from lower energy sediment sources prior to the initiation of slip along the Coyote Creek fault (Faunt et al. 2015). The middle aquifer like the upper aquifer thins from the northeast to southwest and varies in thickness from about 1,000 feet to 50 feet. "The middle aquifer yields moderate quantities of water to wells, but is considered a non-viable source of water south of San Felipe Creek because of its diminished thickness" (Mitten 1988). The lower aquifer is comprised of partly consolidated continental sediments up to 3,831 feet thick and is thickest in the eastern part of the basin near the Borrego Airport. The lower aquifer yields smaller quantities of water to wells than the upper and middle aquifers. Understanding the spatial distribution of the upper, middle, and lower aquifers, as well as faulting and folding in the basin, is important to evaluate groundwater quality.

Production wells in the Subbasin are generally screened in the upper, middle, or lower aquifers or cross-screened in multiple aquifers. Due to the variable thickness of the individual aquifers (i.e., thickness of aquifers generally thin to the south), BWD production wells are predominantly cross-screened in the upper, middle, and lower aquifers in the northern part of the subbasin; cross-screened in the middle and lower aquifers in the central part of the subbasin; and cross-screened in the middle and lower aquifers in the southern part of the subbasin (see Figures 2, 3, and 4).

Three management areas were adopted in the GMP to better support groundwater management within the subbasin: the north management area (NMA), central management area (CMA), and south management area (SMA)[11]. The boundaries of these areas are based on the distribution of the three aquifers, geologic controls on groundwater movement, and differences in overlying land uses and associated groundwater pumping depressions (GMP 2020). The two primary geologic features that define the boundaries between the management areas are the West Salton detachment fault (between the NMA and the CMA) and the Desert Lodge anticline (between the CMA and the SMA). These features appear to have influenced deposition of sediments in the Subbasin, faulting and folding of sediments, and hydrologic communication between the northern, central, and southern parts of the Subbasin. Due to the variable thickness of the individual aquifers, extraction wells are predominantly cross-screened in the upper, middle, and lower aquifers in the NMA, and cross-screened in the middle and lower aquifers in the CMA and SMA.

The NMA is dominated by agricultural land use but also includes domestic uses, with groundwater production occurring from primarily the upper and middle aquifers. Subsequently, the NMA has the greatest overall groundwater level declines when compared to the CMA and SMA. The primary land uses in the CMA are municipal and recreational (golf courses) but also include substantial undeveloped areas. The CMA is the primary production area for municipal

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11 "Management area" refers to an area within a basin for which the Plan may identify different minimum thresholds, measurable objectives, monitoring, or projects and management actions based on differences in water use sector, water source type, geology, aquifer characteristics, or other factors (CCR Title 23, Division 2, Chapter 1.5. subchapter 2, Article 2, Section 351).

supply with groundwater production from the upper, middle, and lower aquifers. Like the NMA, water quality is generally good, and historical groundwater level declines are high. The SMA is compartmentalized effectively from the CMA by the Desert Lodge anticline. Land use in the SMA is undeveloped open space, except for the Rams Hill Country Club and Air Ranch. The SMA includes limited municipal and domestic pumping and is currently dominated by pumping for recreational use that only occurs in the middle and lower aquifers. Unlike the NMA and CMA, arsenic exceeds the MCL in groundwater and several wells that tap the lower semi-confined groundwater aquifer[12] and is the primary COC in the SMA.

General Regulatory Drinking Water Requirements

As a public water system, the BWD is regulated by the SWRCB's DDW. California regulations related to drinking water can be found in the CCR Title 17 and Title 22. California drinking water MCLs that shall not be exceeded in the water supplied to the public are listed in CCR Title 22 Chapter 15. The BWD samples groundwater quality from water wells at intervals required by the DDW. While bacteriological sampling of the water system occurs frequently, sampling for general minerals, aggregate properties, solids, metals, and nutrients occurs every 3 years[13]. The BWD groundwater quality data reviewed for the analysis includes data through the 2022 DDW's regulatory sampling event and the spring 2023 Watermaster semi-annual monitoring event. The period of record of available water quality is unique to each well depending on the date of construction or when the well was first monitored. Sampling of the BWD water wells for general minerals, aggregate properties, solids, metals, and nutrients is not required again until 2025. In addition, the Borrego Springs Watermaster in coordination with BWD samples BWD wells semi-annually for COCs as part of the Borrego Springs Groundwater Monitoring Network[14].

DDW Ongoing MCL Review

Health and Safety Code Section 116365(g) requires the SWRCB review its MCLs at least once every five years. In the review, the SWRCB's MCLs are to be consistent with criteria of Health and Safety Code Section 116365(a) and (b). Those criteria state that the MCLs cannot be less stringent than federal MCLs and must be as close as is technically and economically feasible to the Public Health Goals (PHGs)[15] established by Office of Environmental Health Hazard Assessment (OEHHA). Consistent with those criteria, the SWRCB is to amend any standard if any of the following occur: (1) Changes in technology or treatment techniques that permit a materially greater protection of public health or attainment of the PHG, or (2) New scientific evidence

12 Review of lithologic logs, geophysical logs, long-term water level hydrographs and aquifer testing for multiple wells completed in the SMA indicate semi-confined and confining downwards conditions.

13 The BWD water quality data set also includes non-regulatory samples that are periodically collected by BWD and researchers to evaluate water quality trends.

14 Groundwater Monitoring Plan Borrego Springs Subbasin Prepared for Borrego Springs Watermaster. Prepared by West Yost. March 2023.

15 Public health goals (PHGs) are concentrations of drinking water contaminants that pose no significant health risk if consumed for a lifetime, based on current risk assessment principles, practices, and methods. OEHHA establishes PHGs pursuant to Health & Safety Code Section 116365(c) for contaminants with MCLs, and for those for which MCLs will be adopted.

indicates that the substance may present a materially different risk to public health than was previously determined. The SWRCB is required to identify each MCL it intends to review for that year by March 1st of that same year.

Arsenic

The California arsenic MCL is 0.010 milligrams per liter (mg/L) (equivalent to 10 micrograms per liter [µg/L]) and became effective on November 28, 2008, while the federal MCL for arsenic of 10 µg/L has been in effect since January 2006. Previous California and federal MCLs for arsenic were 50 µg/L. The California PHG for arsenic is 4 parts per trillion based on lung and bladder cancer in studies of hundreds of thousands of people in communities in Taiwan, Chile, and Argentina associated with arsenic-contaminated drinking water. Exposure to the PHG level in drinking water results in a risk of less than one additional case of these forms of cancer in a population of one million people drinking two liters daily of the water for 70 years. While the PHG is based primarily on data from cancer studies, no other adverse health effects are expected to arise from arsenic at the level of the PHG (OEHHA 2004).

The SWRCB's DDW is currently investigating the technological and economic feasibility of lowering the MCL below the current MCL and closer to the PHG as part of ongoing Regulatory Proposal SWRCB-DDW-23-002 Arsenic MCL. The DDW held a pre-rulemaking workshop to lower the detection limits for purposes of reporting (DLR)[16] for several metals, including arsenic on November 3, 2022. To adequately evaluate health risk and technological feasibility in consideration of a revised MCL, a DLR should, where feasible, be set at concentrations at or below the corresponding public health goals. The current DLR for arsenic is 0.002 mg/L compared to the PHG of 0.000004 mg/L. SWRCB staff have developed a draft proposal for revisions to the metal DLRs in two phases. Phase II would lower the DLR for arsenic with a three-year compliance schedule to provide time for the laboratories to procure equipment and develop sufficient analytical capacity. The proposed DLR for arsenic is 0.0005 mg/L (SWRCB 2022). The SWRCB has not provided a long-term schedule for Regulatory Proposal SWRCB-DDW-23-002 Arsenic MCL; however, based on the need to lower the DLR to collect additional data to better evaluate health risk and technological feasibility, it is speculated that it will take more than 5 years to develop a revised MCL for arsenic.

Nitrate

The MCL for nitrate is 10 mg/L as nitrate-nitrogen (NO_3-N). This concentration is approximately equivalent to the World Health Organization (WHO) guideline of 50 mg/L as NO_3 or 11.3 mg/L NO_3-N (multiply NO_3 mg/L by 0.2258). The PHG for nitrate from the State of California Office of Environmental Health Hazard Assessment (OEHHA) is also 10 mg/L NO_3-N. The nitrate MCL was

[16] A detection limits for purposes of reporting (DLR) is the designated minimum levels at or above which an analytical finding of a contaminant in drinking water must be reported.

set to protect against infant methemoglobinemia (blue baby syndrome)[17]; however, other health effects including cancer and adverse reproductive outcomes were not considered.

A review of available studies to date by Ward (2018), documented the strongest evidence for a relationship between drinking water nitrate ingestion and adverse health outcomes (besides methemoglobinemia) is for colorectal cancer, thyroid disease, and neural tube defects. Four of the five published studies of colorectal cancer found evidence of an increased risk of colorectal cancer or colon cancer associated with water nitrate levels that were mostly below the respective regulatory limits.

The Ward (2018) study concluded that the number of well-designed studies of individual health outcomes is still too few to draw firm conclusions about risk from drinking water nitrate ingestion. Significant research and health risk assessment are needed to further evaluate other health effects including cancer and adverse reproductive outcomes from drinking water with elevated nitrate levels. It is unlikely that the MCL will be revised downward in the next decade, but it is possible if new scientific evidence indicates that the nitrate may present a materially different risk (i.e. cancer and reproductive harm) to public health than was previously determined solely for blue baby syndrome.

The last MCL review for nitrate occurred in 2018 and concluded that the MCL is at or below the PHG, and that a revision of the MCL will not offer any additional health benefit since the PHG represents a contaminant level that poses no significant health risks. The next MCL review is scheduled for 2023 and there is no current information to suggest that the PHG for nitrate will be revised in 2023.

Groundwater Quality

General Minerals

"General minerals" refer to the eight dominant anions and cations found in most groundwater. Anions are negatively charged ions, while cations are positively charged ions. The four main cations are calcium (Ca+2), sodium (Na+), magnesium (Mg+2), and potassium (K+), and the four main anions are sulfate (SO4-2), chloride (Cl-), carbonate (CO3-2), and bicarbonate (HCO3-).

These ions play a significant role in the chemistry of groundwater and can be used to analyze variations in water chemistry spatially and temporally across the Subbasin. General minerals are formed through the dissolution of rocks and minerals, making them valuable indicators of

[17] Ingested nitrate is reduced to nitrite by bacteria in the mouth and in the infant stomach, which is less acidic than adults. Nitrite binds to hemoglobin to form methemoglobin, which interferes with the oxygen carrying capacity of the blood. Methemoglobinemia is a life-threatening condition that occurs when methemoglobin levels exceed about 10%. Risk factors for infant methemoglobinemia include formula made with water containing high nitrate levels and foods and medications that have high nitrate levels. Methemoglobinemia related to high nitrate levels in drinking water used to make infant formula was first reported in 1945. The U.S. EPA limit of 10 mg/L NO_3-N was set as about one-half the level at which there were no observed cases.

minerals like sulfates and carbonates present in the subsurface or in water recharged into the aquifer system.

As part of the GMP, a water quality review and assessment was conducted for the BWD water supply wells (Environmental Navigation Services 2019). The analysis uses graphical methods like Stiff Diagrams and Trilinear or Piper Diagrams are used to visualize the composition of multiple anions and cations (Piper 1944, Stiff 1951). These diagrams help in understanding the distribution and relationships between various ions in groundwater samples and the distribution and genesis of principal groundwater types in the Subbasin. Exhibit 1 identifies the water quality types that can be identified from the anions and cations and can be used to better understand the hydrochemical facies present in the aquifer.

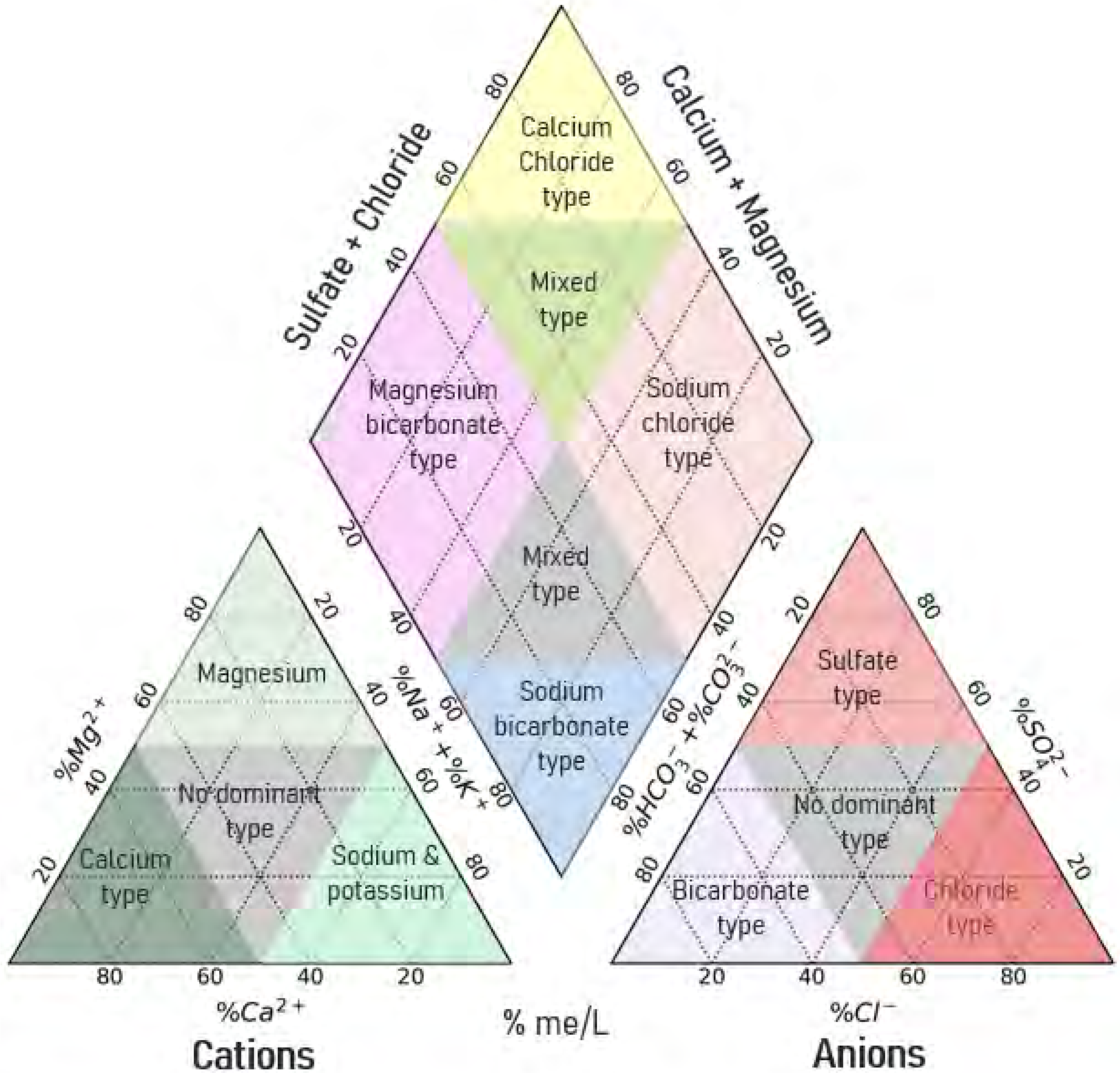

Exhibit 1. Piper diagram components – bottom left is a ternary plot of the cations, bottom right is a ternary plot of the anions, and top is a diamond plot of a project from the other two plots.

Overall, the assessment revealed systematic variations in natural water chemistry across the Subbasin. Water samples from BWD water supply wells indicated dominant cations as sodium and calcium, while bicarbonate, sulfate, and chloride were the dominant anions. In the NMA wells, calcium sulfate-type water was found, whereas SMA wells exhibited sodium bicarbonate-type water. The study also highlighted temporal variability, with around 70 percent of wells experiencing changes in water chemistry attributed to long-term overdraft.

The observed differences in water quality within the Subbasin are influenced by various factors, including the source of recharge waters (e.g. Coyote Creek versus San Felipe Creek), proximity to irrigated lands impacting nitrate levels, aquifer lithology with potential arsenic-bearing clays, aquifer depth affecting TDS, and location within the Subbasin relative to the Borrego Sink with enhanced evaporation of surface water.

Constituents of Concern

There are both anthropogenic and natural sources of the COCs in the Subbasin. Anthropogenic sources that may contribute to the degradation of the current water quality in the basin include agricultural use of pesticides and fertilizers, salt accumulation resulting from agricultural irrigation practices, and household septic system return flows. Natural sources of COCs in the BVGB include the rocks and minerals that comprise the aquifer matrix material. These naturally occurring COCs include evaporite minerals, which can dissolve and increase TDS concentration in the aquifer; silicate minerals, which can contribute arsenic to the groundwater; and sulfate minerals, which as their name suggests can contribute sulfate to the groundwater. All are found in differing amounts in the upper, middle, and lower aquifers. In the GMP's water quality review and assessment, multiple aquifers were represented in data due to the construction of wells, making it challenging to differentiate the water quality based on the three-layer aquifer system. However, it is assumed that differences in the mineralogical composition of the aquifers can result in groundwater quality differences between the aquifers.

Arsenic

Naturally occurring arsenic concentrations in groundwater are highly variable, though naturally occurring concentrations that exceed the California drinking water primary MCL of 0.010 mg/L (equivalent to 10 µg/L) are common in semi-arid and arid groundwater basins in the western United States (Welch et al. 2000, Anning et al. 2012). In these basins, groundwater recharge is limited due to low precipitation and the residence time of the groundwater in the basin is high. The long residence time of the groundwater in the basin allows for more interaction between the groundwater and the minerals that comprise the aquifer matrix material. With time, arsenic desorbs from sediments and enters the groundwater. This process is more efficient in groundwater with higher pH. The groundwater in the Subbasin has a pH of 7.5 to 9.0, a range that is conducive to this transfer of arsenic from the sediment to the water. In addition, a study conducted in the San Joaquin Valley of California identified a correlation between overpumping and increasing arsenic concentrations (Smith et al. 2018).

Fluoride

Fluoride is a naturally occurring element in groundwater resulting from the dissolution of fluoride-bearing minerals from the aquifer sediments and surrounding bedrock. Brown staining or mottling of teeth and resistance to tooth decay as a result of drinking water with high concentrations of fluoride has been known since the 1930s. While drinking fluoridated water at low concentrations (i.e., 0.7 ppm) is beneficial to prevent tooth decay, excessive exposure to fluoride can result in dental and skeletal fluorosis. The California drinking water primary MCL for fluoride is 2 milligrams per liter (mg/L).

Nitrate

Sources of nitrate in groundwater are typically associated with specific land use but it can also occur naturally. Fertilizers and septic tanks are common anthropogenic sources of nitrate detected in groundwater. Potential natural sources of nitrate in groundwater may result from leaching of soil nitrate, which occurs by atmospheric deposition, and dissolution of evaporative minerals, igneous rocks, and deep geothermal fluids. In desert groundwater basins, the largest source of naturally occurring nitrates in groundwater is due to incomplete utilization of nitrate by sparse vegetation. This nitrate accumulates in the unsaturated zone and may become mobile when surficial recharge percolates through the unsaturated zone (Walvoord et al. 2003). In arid environments, nitrate stored in the unsaturated zone may become mobilized by artificial recharge from irrigation return flow, septic effluent, and infiltration basins. The Subbasin lacks appreciable evaporitic deposits, and anthropogenic sources or mobilization as a result of artificial recharge is likely the main contributor of nitrates to the Subbasin. The California drinking water primary MCL for nitrate is 10 mg/L as nitrogen (N), which is equivalent to 45 mg/L as nitrate (NO_3).

Sulfate

Natural sulfate sources include atmospheric deposition, sulfate mineral dissolution, and sulfide mineral oxidation of sulfur. Gypsum is an important source near localized deposits such as in the Ocotillo Wells Subbasin near Fish Creek Mountains in Imperial County. Fertilizers can also be a source of sulfate in groundwater but typically do not result in exceedance of drinking water standards. The California drinking water secondary MCL for sulfate is recommended at 250 mg/L, with upper and short-term limits of 500 mg/L and 600 mg/L, respectively.

Total Dissolved Solids

TDS is a measure of all dissolved solids in water including organic and suspended particles. Sources of TDS in groundwater include an interaction of groundwater with the minerals that comprise the aquifer matrix material. Over time, TDS will increase as more minerals in contact with groundwater dissolve. In desert basins, evaporative enrichment near dry lake beds (playas) is known to naturally increase TDS in groundwater such as that observed at the Borrego Sink. This process also occurs in plants, both in agriculture and natural systems. Anthropogenic sources include synthetic fertilizers, manure, wastewater treatment facilities, and septic effluent. The California drinking water secondary MCL for TDS is recommended at 500 mg/L with upper and short-term limits of 1,000 mg/L and 1,500 mg/L, respectively.

Historical Groundwater Quality

This analysis evaluates historical groundwater quality for BWD wells and all additional wells in the Borrego Springs Monitoring Network. Data for groundwater quality constituents are provided in Table 2 and displayed graphically in Figures 5-8 and Exhibits 6 through 30.

The groundwater quality data are presented in the figures relative to the MCL for each of the COCs. Concentrations that lie between half of the MCL and the MCL are noted. While the concentrations are below the MCL for most of these points, increasing concentrations of many of the COCs are being observed with ongoing groundwater level decline so the upper range concentration data are highlighted in this risk assessment.

Groundwater Quality Concentration Trend Statistical Analysis

Historical groundwater quality data that extends through early 2023 was evaluated to determine groundwater concentration trends for COCs (arsenic, fluoride, nitrate, sulfate, and TDS). The period of record of available water quality is unique to each well depending on the date of construction or when the well was first monitored.

The Mann-Kendall test, an industry standard for non-parametric trend detection, was applied to assess trends in groundwater quality (Helsel, 2012; Helsel et al., 2020). The Mann-Kendall test does not require regularly spaced sample intervals, is unaffected by missing time periods, avoids substitution for data that contain non-detects, and does not assume a pre-determined data distribution. The Mann-Kendall test assesses whether or not a dataset exhibits a monotonic trend (increasing or decreasing) within a selected significance level. A significance level of 0.05 (i.e., a confidence level of 95%) was selected for this analysis. The results of the Mann-Kendall test are listed in Table 2.

Table 2. Mann-Kendall Trend Analysis

Well ID	Arsenic (mg/L)	Fluoride (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TDS (mg/L)
North Management Area Wells					
Auxiliary 2	*Insufficient data*	no trend	no trend	**increasing**	**increasing**
Fortiner #1 (Allegre 1)	**No data**	no trend	no trend	no trend	no trend
Horse Camp	*Insufficient data*	no trend	decreasing	no trend	decreasing
ID4-18	*Insufficient data*	no trend	**increasing**	no trend	no trend
ID4-9	no trend	no trend	no trend	no trend	no trend
MW-1	no trend	no trend	*Insufficient data*	no trend	no trend
MW-6D	*Insufficient data*	*Insufficient data*	*Insufficient data*	*Insufficient data*	*Insufficient data*
MW-6S	*Insufficient data*	*Insufficient data*	*Insufficient data*	*Insufficient data*	*Insufficient data*
Orchard Well (T2)	**No data**	*Insufficient data*	*Insufficient data*	*Insufficient data*	*Insufficient data*
Central Management Area Wells					
BSR Well 6	no trend	no trend	no trend	no trend	no trend
County Yard (SD DOT)	no trend	**increasing**	no trend	no trend	decreasing
High School	**No data**	*Insufficient data*	*Insufficient data*	*Insufficient data*	*Insufficient data*
ID1-10	no trend	decreasing	no trend	no trend	no trend
ID1-12	no trend	decreasing	no trend	decreasing	no trend

Table 2. Mann-Kendall Trend Analysis

Well ID	Arsenic (mg/L)	Fluoride (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TDS (mg/L)
ID1-16	no trend	decreasing	no trend	no trend	no trend
ID4-11	no trend	no trend	no trend	decreasing	decreasing
ID4-20 (Wilcox)	no trend	no trend	no trend	no trend	no trend
ID5-5	no trend	no trend	no trend	no trend	no trend
MW-4	no trend	no trend	no trend	no trend	decreasing
Terry Well	*Insufficient data*	*Insufficient data*	**No data**	*Insufficient data*	*Insufficient data*
South Management Area Wells					
Air Ranch Well 4	no trend	no trend	no trend	no trend	no trend
Army Well	no trend	no trend	no trend	no trend	no trend
ID1-8	no trend	no trend	no trend	no trend	no trend
JC Well	no trend	decreasing	**increasing**	**increasing**	**increasing**
La Casa	no trend	no trend	no trend	no trend	no trend
MW-3	no trend	no trend	no trend	decreasing	decreasing
MW-5A (East-Lower)	no trend	no trend	no trend	decreasing	decreasing
MW-5B (West-Upper)	no trend	no trend	no trend	no trend	no trend
RH-1 (ID1-1)	no trend	no trend	no trend	no trend	no trend
RH-2 (ID1-2)	**increasing**	no trend	no trend	decreasing	no trend
RH-3	no trend	no trend	no trend	no trend	no trend
RH-4	no trend	decreasing	**increasing**	**increasing**	**increasing**
RH-5	**increasing**	no trend	no trend	decreasing	no trend
RH-6	no trend	no trend	no trend	**increasing**	**increasing**
WWTP-1	**increasing**	no trend	decreasing	no trend	decreasing

Increasing groundwater concentration trends were exhibited for:

- Arsenic in wells RH-2 (ID1-2), RH-5, and WWTP-1;
- Fluoride in the County Yard (SD DOT);
- Nitrate in wells ID4-18, JC Well, and RH-4;
- Sulfate and TDS in wells JC Well, RH-4, RH-6, and Auxiliary 2.

Decreasing groundwater concentration trends were exhibited for:

- Fluoride in wells ID1-10, ID1-12, ID1-16, JC Well, and RH-4;
- Nitrate in wells Horse Camp and WWTP-1;
- Sulfate in wells ID1-12, RH-2 (ID1-2), ID4-11, MW-3, MW-5A (East-Lower), and RH-5; and

- TDS in wells County Yard (SD DOT), Horse Camp, ID4-11, MW-3, MW-4, MW-5A (East-Lower), and WWTP-1.

A minimum of four data points are required to calculate the trend. "Insufficient data" indicates wells where no trend was established because less than four data points were present. "No data" indicates that either the COC was not sampled or was less than the laboratory reporting limit.

Arsenic

Arsenic concentrations have been detected above laboratory reporting limits at several wells in the Borrego Springs Subbasin since the 1980s[18]. Arsenic has been detected up to 22 µg/L in the Rams Hill Golf Course well RH-4. The California drinking water MCL for arsenic is 10 µg/L. Lowering of this MCL could have a substantial impact on BWD operations. California's revised arsenic MCL of 0.010 mg/L (equivalent to 10 µg/L) became effective on November 28, 2008 (previous California and federal MCLs were 50 µg/L). As of August 2023, the DDW is currently investigating the technological and economic feasibility of lowering the current MCL closer to the PHG (0.004 µg/L)[19] as previously described.

The most recent arsenic wellhead concentrations for the Borrego Springs Subbasin are shown in Figure 5. In 2023, 30 of the 34 wells in the monitoring network were sampled for arsenic while the remaining four wells were sampled in 2020 (High School Well), 2021 (Army Well), and 2022 (JC Well and RH-5). Arsenic concentrations for wells located in the NMA were less than half the MCL (< 5 µg/L) for wells screened in the upper, middle, and lower aquifers. NMA well information including elevation, well depth, groundwater level, pump information, screen interval, casing diameter, and production rate is provided in Figure 7.

Arsenic concentrations from the most recent samples for wells located in the CMA were less than half the MCL (< 5 µg/L) for wells screened in the upper, middle, and lower aquifers except for ID4-20 (Wilcox) which had a concentration of 0.0056 mg/L (below the MCL 10 µg/L). CMA well information including elevation, well depth, groundwater level, pump information, screen interval, casing diameter, and production rate is provided in Figure 3.

For wells located in the SMA, the most recent arsenic concentrations ranged from less than half the MCL (< 5 µg/L) to greater than the MCL (>10 µg/L). Rams Hill Golf Course irrigation wells 3, 4, 5, and 6 exceeded the California drinking water MCL. The screen intervals of wells in the SMA predominantly intercept the lower aquifer though most wells are also partially screened in the middle aquifer. No recent wellhead sample is available for the upper aquifer overlying the SMA as this portion of the aquifer is currently unsaturated. SMA well information including elevation,

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18 Prior to the 1980s, laboratory detection limits for arsenic were often established at 10 µg/L or 50 µg/L and results were reported as below the laboratory detection limit.

19 Information and updates regarding this pre-rulemaking action can be found on the State Water Resources Control Board website, SWRCB-DDW-23-002 Arsenic MCL (SWRCB-DDW-23-002 Arsenic MCL | California State Water Resources Control Board.

well depth, groundwater level, pump information, screen interval, casing diameter, and production rate is provided in Figure 4.

Historical arsenic data for wells located in the NMA were reviewed to determine trends (Figures 10 through 12). NMA wells have arsenic concentrations less than the California drinking water MCL. These wells displayed no trend, had insufficient data to establish a trend, or were not sampled for arsenic (Fortiner #1 and Orchard Well).

Historical arsenic data for wells located in the CMA were also reviewed to determine trends (Figures 17 through 23). These wells have arsenic concentrations less than the California drinking water MCL, except for one non-compliance sample collected from ID1-10 in 2014 by M.H. Rezaie-Boroon et al. (2014). Subsequent compliance sampling completed by BWD in 2023 indicates that ID1-10 arsenic concentration is below the MCL at a 4.2 µg/L concentration. Except for the High School Well which was not sampled for arsenic, the CMA wells display no trend as many of the arsenic results are below laboratory reporting limits.

Historical arsenic data for wells located in the SMA were reviewed to determine trends (Figures 24 through 28). ID1-8 is the only potable BWD production well located in the SMA. While the majority of arsenic concentrations at ID1-8 have been below the California drinking water MCL, this well had three non-compliance samples – 14 µg/L in 1988, 11 µg/L in 1991, and 11 µg/L in 2022. Subsequent compliance sampling completed by BWD in 2023 indicates that the arsenic concentration at ID1-8 is below the MCL at a concentration of 6.4 µg/L. Exhibit 20a shows the ID1-8 arsenic concentration fluctuates over time. Additionally, the Rams Hill Golf Course wells RH-3, 4, 5, and 6 in Exhibits 26a through 29a historically show arsenic concentrations exceeding the California drinking water MCL. Wells located in the SMA do not indicate arsenic concentration trends except for RH-2 (ID1-2), RH-5, and WWTP-1 which indicate an increasing trend.

Overall, arsenic concentrations above the MCL have been detected in the SMA, specifically the Rams Hill Golf Course wells, and show an increasing trend. While the majority of wells are screened across multiple aquifers, the Rams Hill Golf Course wells exceeding the MCL provide evidence that arsenic concentrations increase with depth. Arsenic tends to be bound in clay layers and as production increases in the SMA, water in the clay layers is expelled, causing arsenic bound in the clay layers to leach into the aquifer.

Fluoride

Historical fluoride data for wells located in the NMA were reviewed to determine trends. Fluoride concentrations for wells in the NMA were below one-half the California drinking water MCL (2 mg/L) except for Orchard Well (T2) and MW-6D. Fluoride concentrations for both Orchard Well (T2) and MW-6D were below the California drinking water MCL, 1.2 mg/L and 1.8 mg/L, respectively. No trend for fluoride is indicated for any of the NMA wells.

Historical fluoride data for wells located in the CMA were also reviewed to determine trends. Fluoride concentrations are typically below one-half the California drinking water MCL except for BSR Well 6 and ID5-5. Fluoride concentrations in well ID5-5 are below the California drinking water MCL. One sample tested above the California drinking water standard in the BSR Well 6 at a concentration of 8 mg/L in 2018 but is considered an outlier. The rest of the historical data for this well is below one-half the MCL and no trend is indicated for fluoride. A decreasing trend for fluoride is indicated for wells ID1-10, ID1-12, and ID1-16 while the remaining wells indicate no trend except for County Yard (SD DOT). This well indicates an increasing trend for fluoride, but historical concentrations are still below one-half the California drinking water standard and range from 0.32 to 0.41 mg/L.

Historical fluoride data for wells located in the SMA were reviewed to determine trends. Fluoride concentrations for wells in the SMA are typically below one-half the California drinking water MCL except for MW-5B (West-Upper), RH-3, RH-5, and RH-6 which are below the MCL. No trend for fluoride is indicated for all wells in the SMA except for JC Well and RH-4 which show a decreasing trend.

Nitrate

The California drinking water primary MCL for nitrate as N is 10 mg/L. The MCL has also been historically expressed as 45 mg/L nitrate as nitrate [as NO_3], and a careful review of historical data is required to verify reporting units[20]. The most recent nitrate as N wellhead concentrations for the Borrego Springs Subbasin are shown in Figure 6. Three out of the 38 wells sampled in 2023 had nitrate concentrations that exceeded the MCL – Fortiner #1 (Allegre 1), MW-6S and 904 DiGiorgio Road.

Historical nitrate data for wells located in the NMA were reviewed for trends. These wells are located on the fringe of current and historical agricultural production in both the upper and middle aquifers. A decreasing nitrate as N concentration trend is observed at Horse Camp while an increasing trend is observed at ID4-18. The remaining wells indicate no trend or there is insufficient data to determine a trend as many of the nitrate as N results are below the laboratory reporting limits. In addition, the vertical distribution of nitrate is the NMA is now documented at the multi-depth cluster well, MW-6 recently completed as part of a California Department of Water Resources (DWR) Technical Support Services (TSS) program. The monitoring well cluster was completed at two intervals: 390 to 490 feet below ground surface (bgs) and 640 to 740 feet bgs. The nitrate concentration in the shallow completion exceeds the MCL at 11 mg/L whereas the deeper completion was only 0.27 mg/L. It is interpolated that the shallow completion is screened across the upper aquifer and upper portion of the middle aquifer, and the deeper completion is screened in the deepest 100 feet of the middle aquifer.

Historical nitrate data for wells located in the CMA were also reviewed for trends. These wells are located in or near the primary area of municipal groundwater production in the Subbasin. Golf courses and septic return flow with limited areas of agriculture are the probable

[20] The Division of Drinking Water recently made revisions to California drinking water standards for nitrate in California Code of Regulations Sections 64431 (MCL), 64432 (DLR), and 64482 (Health Information). The revisions specify that nitrate laboratory results must be expressed as nitrate as nitrogen. As a result, the MCL for nitrate is now expressed as "10 mg/L (as nitrogen)" instead of "45 mg/L (as nitrate)".

anthropogenic sources of nitrate to wells in the CMA. Except for the High School well which had insufficient data, all wells in the CMA indicate no trend in concentration for nitrate as N.

Historical nitrate data was also reviewed for trends for wells located in the SMA. JC Well and RH-4 display an increasing nitrate as N concentration trend. WWTP-1 displays a decreasing nitrate as N concentration trend. No trend is observed for the remaining wells located in the SMA. The Rams Hill golf course is a potential anthropogenic source of nitrates in the SMA in addition to the percolation ponds at the wastewater treatment plant. Concentrations for SMA wells are below one-half the California drinking water MCL (Figure 6).

Nitrate predominantly originates from fertilizers present in irrigation return flow and from septic systems (GMP 2020). Nitrate concentrations were generally found highest in wells that are screened in the upper aquifer and in the NMA where agricultural activities occur. A comprehensive assessment of historical effects and the continuing vulnerability of the aquifer to nitrate concentrations necessitate an examination of past, present, and future land usage within a spatial framework. (GMP 2020).

Sulfate

The secondary California drinking water standard for sulfate is 500 mg/L[21]. The most recent sulfate wellhead concentrations for the Subbasin are shown in Figure 7. Similar to arsenic, 30 of the 34 wells in the monitoring network were sampled for sulfate in 2023, while the remaining four wells were sampled in 2020 (High School Well), 2021 (Army Well), and 2022 (JC Well and RH-5). The most recent concentrations for sulfate generally show that concentrations are below one-half the secondary MCL. Exceedances were observed in the SMA and the NMA for wells RH-1 (ID1-1), JC Well, MW-5B, and Fortiner #1 and ranged from 530 mg/L (Fortiner #1, NMA) to 750 mg/L (RH-1 (ID1-1), SMA).

Historical sulfate data for wells located in the NMA were reviewed for trends. Auxiliary 2 displays an increasing trend for sulfate concentrations. MW-6S/D and Orchard Well had insufficient data and the remaining wells displayed no trend for sulfate.

Historical sulfate data for wells located in the CMA were also reviewed for trends. These wells display stable sulfate concentrations for the period of record monitored in each well (Figure 7). However, a decreasing trend for sulfate was indicated in wells ID1-12 and ID4-20. All wells indicate concentrations below the California drinking water secondary recommended MCL of 250 mg/L, except MW-4 at a concentration of 260 mg/L.

Historical sulfate data for wells located in the SMA were also reviewed to determine trends. An increasing trend in sulfate concentrations was observed at wells JC Well, RH-4, and RH-6. A decreasing trend in sulfate concentrations was indicated at wells MW-3, MW-5A, RH-2 (ID1-2), and RH-5. RH-1 (ID1-1) and MW-5B have historically exhibited concentrations above the secondary MCL. No trend was indicated for the remaining wells located in the SMA.

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21 The recommended, upper, and short-term California drinking water secondary MCLs for sulfate are 250 mg/L, 500 mg/L, and 600 mg/L, respectively.

Piper diagram analyses were performed as part of a water quality review and assessment for the Borrego Springs GMP. The analysis indicated that sulfate is the general mineral most commonly observed to be increasing in groundwater (according to the Piper diagrams) and that groundwater quality systematically varies with distance along the valley, with water in the SMA being noticeably different (GMP 2020, Appendix D2). Water quality gradually changes from north to south, consistent with pre-development groundwater water flow patterns. The NMA wells tend to be sulfate dominant while the SMA wells tend to have either no dominant anion or become bicarbonate dominant. Updated Piper diagrams are discussed further in the Summary of Water Quality by District Well section.

TDS

The secondary California drinking water standard for TDS is 500 mg/L[22]. The most recent TDS wellhead concentrations for the Borrego Springs Subbasin are shown in Figure 8. Like arsenic and sulfate, 30 of the 34 wells in the monitoring network were sampled for TDS in 2023, while the remaining four wells were sampled in 2020 (High School Well), 2021 (Army Well), and 2022(JC Well and RH-5). The most recent concentrations for TDS generally show that concentrations are below one-half the secondary MCL for wells located in the CMA. Exceedances were observed in the SMA and the NMA for wells RH-1 (ID1-1), JC Well, MW-5A/B, Fortiner #1, and MW-6S and ranged from 1,000 mg/L (MW-5A, SMA) to 1,600 mg/L (RH-1 (ID1-1), SMA).

Historical TDS data for wells located in the NMA were reviewed for trends. Auxiliary 2 displays an increasing trend while Horse Camp Well indicates a decreasing trend for TDS concentrations. MW-6S/D and Orchard Well had insufficient data and the remaining wells displayed no trend for TDS.

Historical TDS data for wells located in the CMA were also reviewed for trends. These wells display stable TDS concentrations for the period of record monitored in each well (Figure 8). However, a decreasing trend for TDS was indicated in wells ID1-12 and ID4-20. All wells indicate concentrations below the California drinking water secondary recommended MCL of 250 mg/L, except MW-4 at a concentration of 260 mg/L.

Historical sulfate data for wells located in the SMA were also reviewed to determine trends. An increasing trend in sulfate concentrations was observed at wells JC Well, RH-4, and RH-6. A decreasing trend in sulfate concentrations was indicated at wells County Yard (SD DOT), ID4-11, and MW-4. The High School well had insufficient data to establish a trend in TDS concentrations. No trend was indicated for the remaining wells located in the SMA.

Per- and Polyfluorinated Alkyl Substances

Per- and Polyfluorinated Alkyl Substances (PFAS) are a class of synthetic fluorinated chemicals used in many industrial and consumer products, including non-stick cookware, food packaging, waterproof clothing, fabric stain protectors, lubricants, paints, and firefighting foams such as

[22] The recommended, upper, and short-term California drinking water secondary MCLs for sulfate are 500 mg/L, 1,000 mg/L, and 1,500 mg/L, respectively.

aqueous film forming foam (AFFF). These group of chemicals have garnered significant attention due to their widespread presence in the environment and potential adverse health effects. Moreover, the persistence of PFAS in the environment has raised concerns, as they do not easily break down and can accumulate in soil, water, and biota over time. Their presence in drinking water sources and the detection of PFAS in human blood samples have led to growing health concerns. Consequently, the management and regulation of PFAS have become a critical environmental and public health priority, with ongoing efforts to understand their behavior, mitigate contamination, and establish stringent safety guidelines. On March 14, 2023, EPA announced the proposed National Primary Drinking Water Regulation (NPDWR) for six PFAS including perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), perfluorononanoic acid (PFNA), hexafluoropropylene oxide dimer acid (HFPO-DA, commonly known as GenX Chemicals), perfluorohexane sulfonic acid (PFHxS), and perfluorobutane sulfonic acid (PFBS)[23]. EPA anticipates finalizing the regulation by the end of 2023 and the proposed PFAS NPDWR does not require any actions until it is finalized.

As of March 2023, PFAS MCLs in California have not yet been established[24]. The development of standards for PFOA, PFOS, and other PFAS is a priority for the DDW, and it has established notification and response levels for PFOA, PFOS, PFBS, and PFHxS (Table 3). Below is a timeline of key developments related to these PFAS notification and response levels.

- In July 2018, DDW established an interim notification level of 14 ppt for PFOA and 13 ppt for PFOS and a single response level of 70 ppt for the combined concentrations of PFOA and PFOS.
- In August 2019, DDW revised the notification levels to 6.5 ppt for PFOS and 5.1 ppt for PFOA. The single health advisory level (for the combined values of PFOS and PFOA) remained at 70 ppt.
- On February 6, 2020, DDW issued updated drinking water response levels of 10 ppt for PFOA and 40 ppt for PFOS based on a running four-quarter average.
- On March 5, 2021, DDW issued a drinking water notification level and response level of 0.5 parts per billion (ppb) and 5 ppb, respectively for perfluorobutane sulfonic acid (PFBS).
- On October 31, 2022, DDW issued a drinking water notification level and response level of 3 parts per trillion (ppt) and 20 ppt, respectively for perfluorohexane sulfonic acid (PFHxS).

[23] EPA is proposing a NPDWR to establish legally enforceable MCLs for six PFAS substances in drinking water. A summary of the proposed MCLs can be found on the EPAs website: https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas

[24] Any updates to the upcoming rulemaking process for PFOA and PFOS in California will be posted at the PFOS and PFOA MCL rulemaking record website: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/swrcb-ddw-24-001.html

Table 3. PFAS Notification and Response Levels

Chemical	Notification Level (ppt)	Response Level (ppt)
PFOA	5.1	10
PFOS	6.5	40
PFBS	500	5000
PFHxS	3	20

Notes: ppt = parts per trillion

Evaluation

South Management Area Wells

As previously described, the SMA wells are hydraulically isolated from the CMA by the Desert Lodge anticline and screen intervals of wells in the SMA predominantly intercept the lower aquifer though most wells are also partially screened in the middle aquifer. Because arsenic concentrations have been documented to exceed the MCL in irrigation wells in the SMA, the BWD's only production well, ID1-8, which is screened in saturated portions of the upper, middle, and lower aquifers is susceptible to groundwater quality degradation because of groundwater withdraw. As such, linear regression analysis was performed to evaluate if there is an identifiable correlation between increasing arsenic concentrations and groundwater production.

Well RH-2 (ID1-2)

As indicated by the Mann-Kendall trend analysis, arsenic concentrations in Well RH-2 (ID1-2) have a statistically increasing trend. Annual groundwater production at RH-2 (ID1-2) and the combined annual production of the SMA wells were compared with available arsenic concentration data as shown in Exhibit 2.

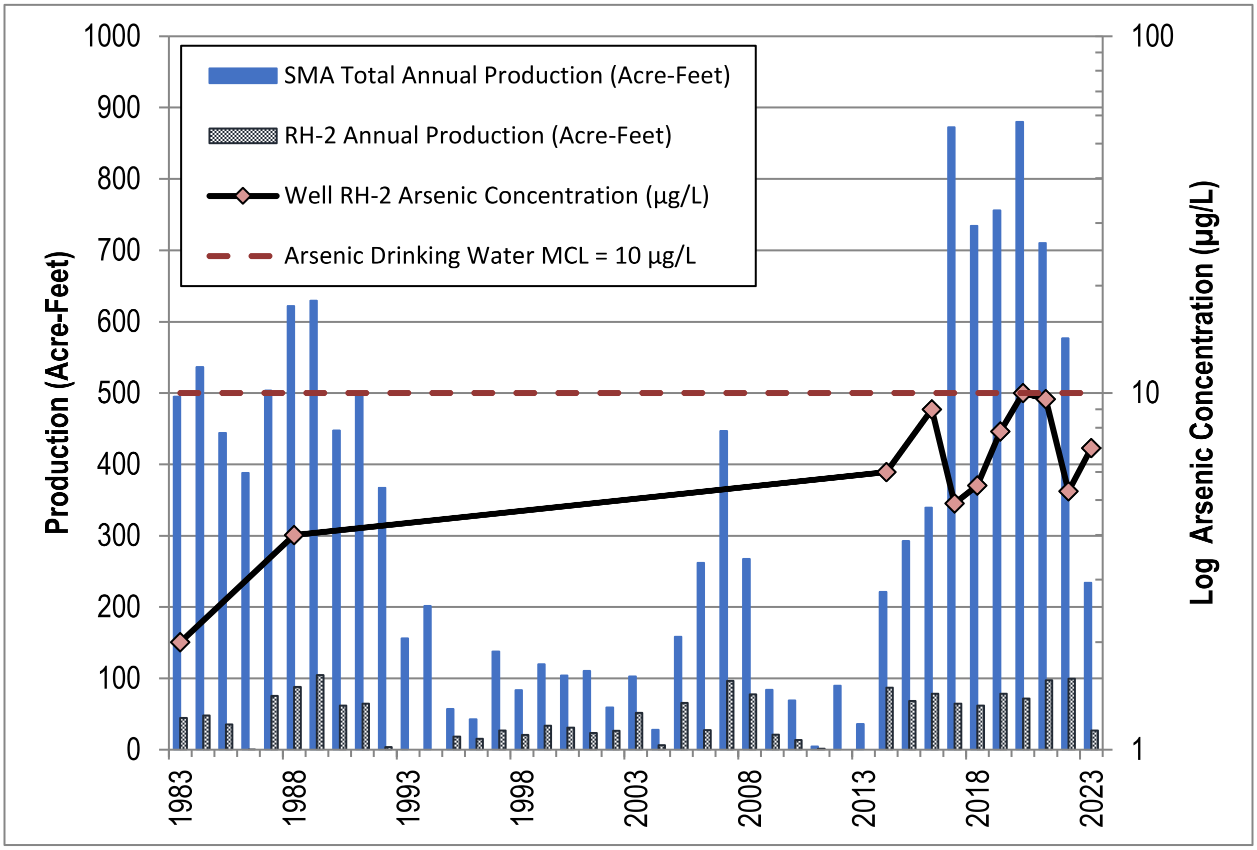


Exhibit 2. Well RH-2 (ID1-2) in SMA – Groundwater Production and Arsenic Data.

A linear regression analysis of the dependent variable, arsenic concentration, was plotted against the independent variable, annual groundwater production for RH-2. The goodness of fit for well RH-2 linear regression was poor (R-squared value = 0.07). Similarly, the arsenic concentration was plotted against the combined annual groundwater production for SMA wells. The goodness of fit was also poor (R-squared value = 0.02).

A linear regression analysis of the dependent variable, arsenic concentration, was also plotted against the independent variable, groundwater level data for RH-2. The goodness of fit for RH-2 linear regression (R-squared value = 0.52) was better than fitting the production data, but only 52% of the increasing arsenic concentrations can be explained by changes in groundwater levels (Exhibit 3).

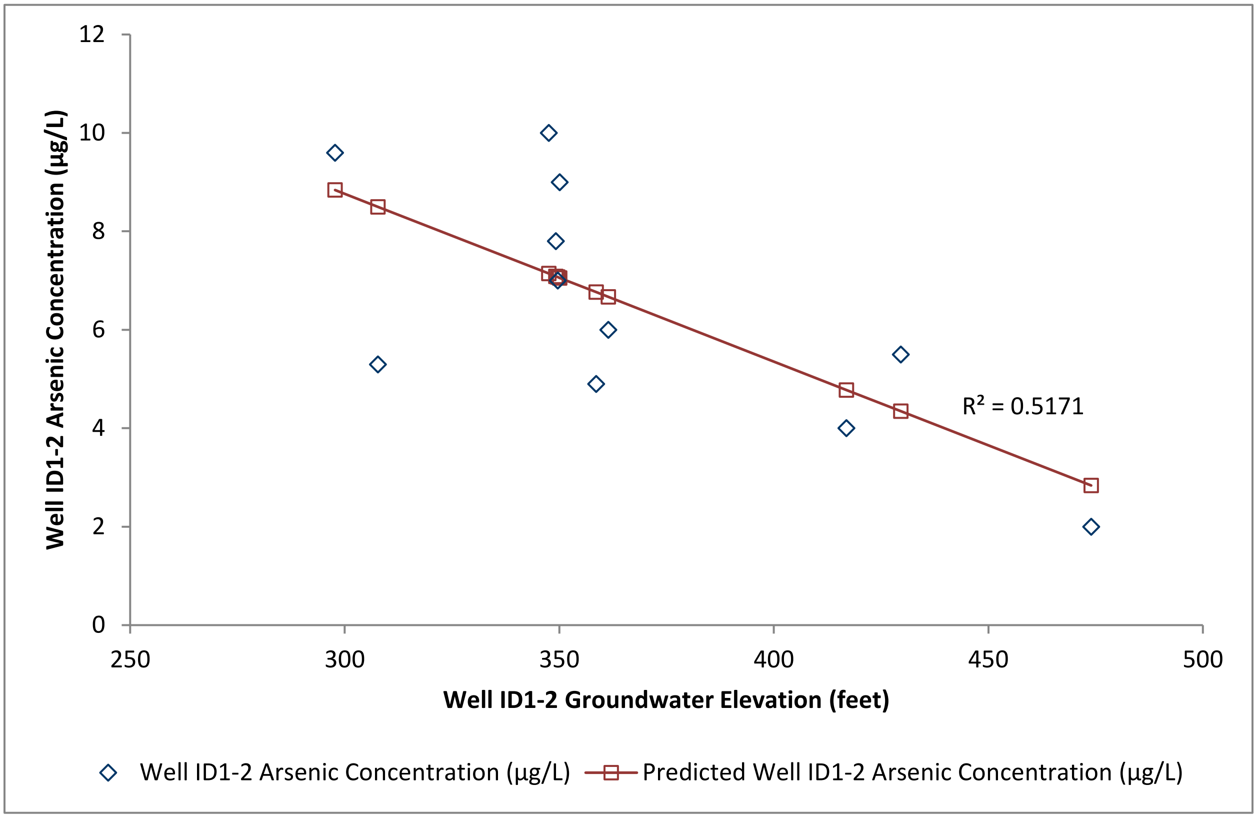


Exhibit 3. Well RH-2 (ID1-2) in SMA – One-way Linear Regression.

Well ID1-8

As indicated by the Mann-Kendall trend analysis, arsenic concentrations in well ID1-8 have no statistically determined trend. Visual review of the data shown in Exhibit 4 suggests that arsenic concentrations initially dropped, stabilized, and rose again in recent years. Currently, the arsenic concentration is below the California drinking water MCL. However, since arsenic concentrations can vary with depth, further review of the data was conducted with respect to independent production rates, combined production rates for SMA wells, and groundwater levels.

Annual groundwater production at Well ID1-8 and the combined annual production for SMA wells was compared with available arsenic concentration data as shown in Exhibit 4.

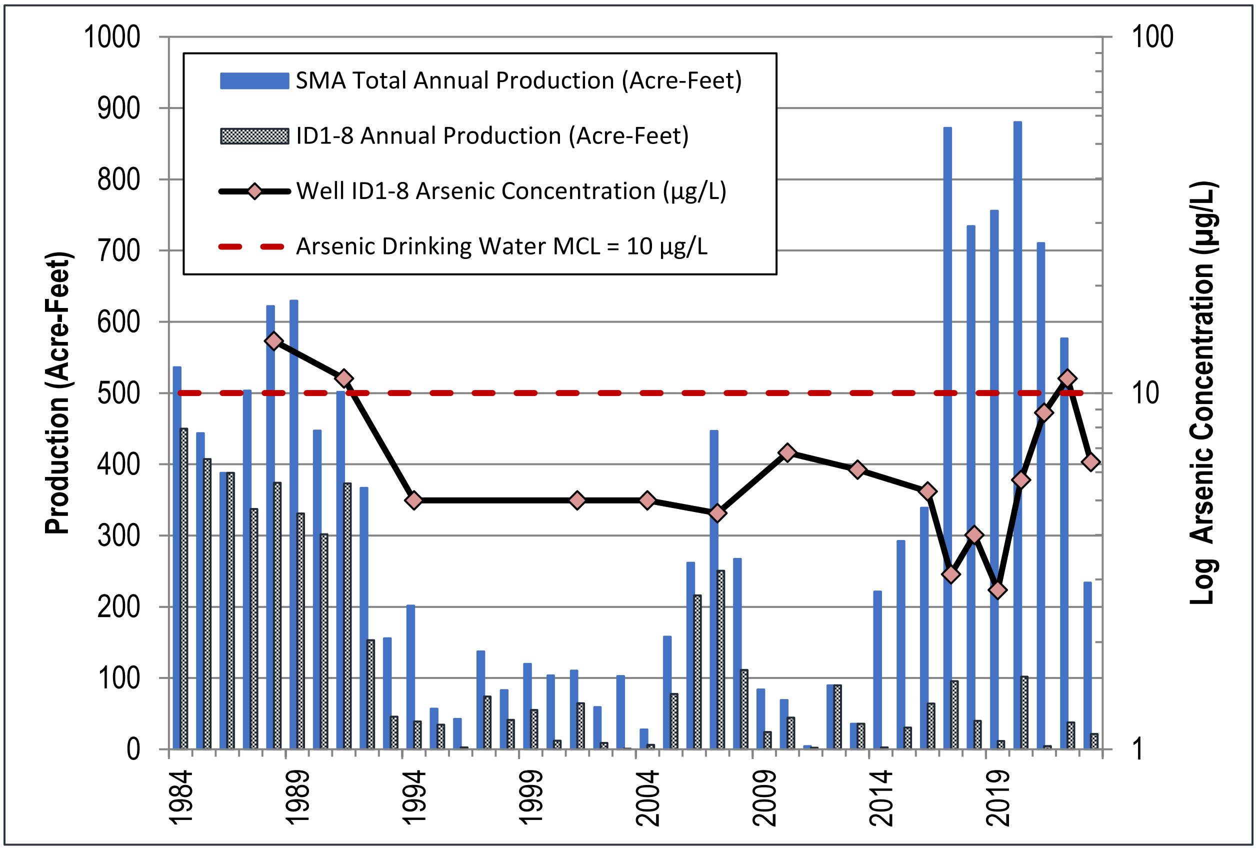


Exhibit 4. Well ID1-8 in SMA – Groundwater Production and Arsenic Data.

A linear regression analysis of the dependent variable, arsenic concentration was plotted against the independent variable, annual groundwater production for ID1-8. The goodness of fit for ID1-8 linear regression was poor (R-squared value = 0.35). Similarly, the arsenic concentration was plotted against the combined annual groundwater production for SMA wells and did not yield a better fit (R-squared value = 0.003).

As there appears to be about a 2-year lag in increased arsenic concentration in relation to pumping, an alternative linear regression was performed, incorporating a 2-year lag correction into the data. A linear regression analysis of the dependent variable, arsenic concentration was plotted against the independent variable, annual groundwater production with a 2-year lag applied for ID1-8. The goodness of fit for ID1-8 linear regression with a 2-year lag (R-squared value = 0.51) was better than annual production alone, but only about 50% of the increasing arsenic concentrations can be explained by annual production using the 2-year lag (Exhibit 5).

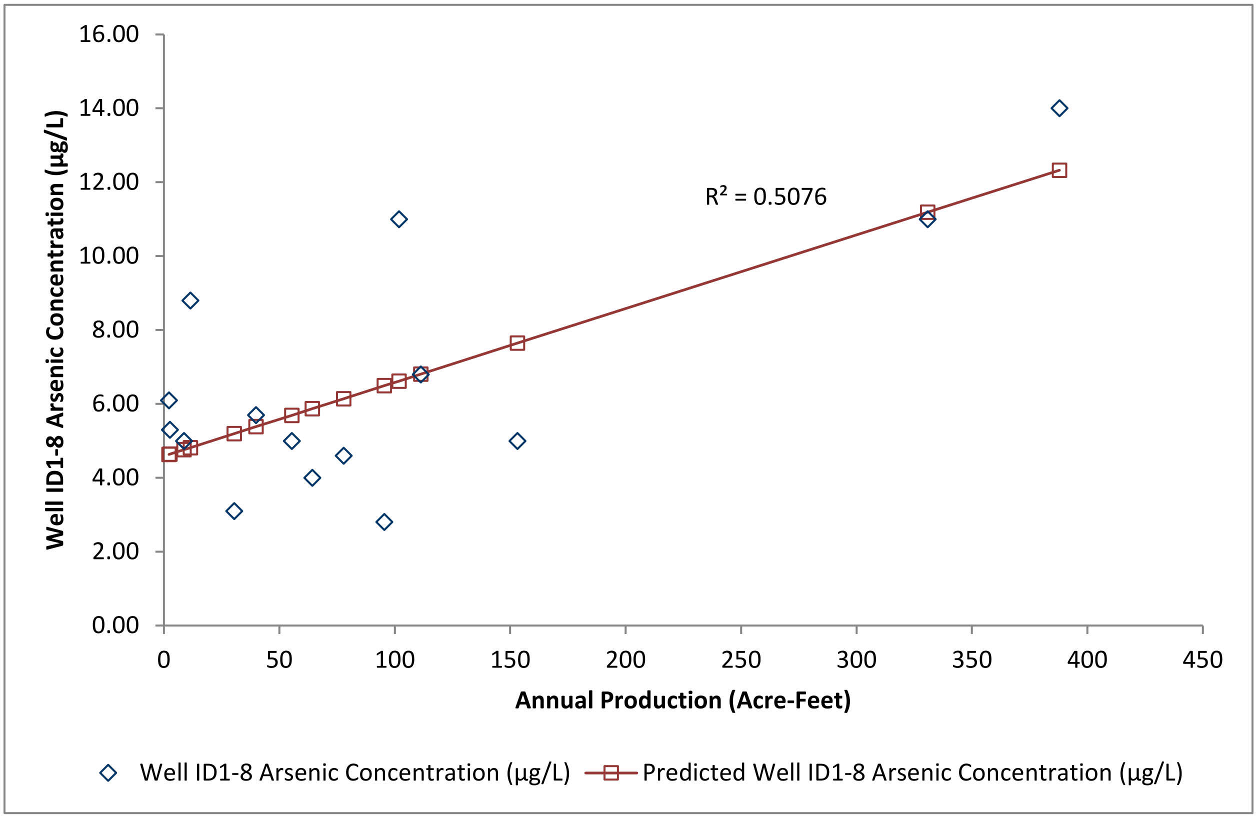


Exhibit 5. Well ID1-8 in SMA – One-way Linear Regression with a 2-year lag.

Rams Hill Wells: RH-3, RH-4, RH-5, and RH-6

Linear regression analyses were carried out for the remaining production wells located in the SMA – RH-3, RH-4, RH-5, and RH-6. As described above for RH-2 and ID1-8, the combined SMA annual production, a 2-year lag on combined annual production, and groundwater levels, and a 2-year lag on the well's singular annual production were favored as the independent variables. Table 4 summarizes the results where bold R-squared values indicate the independent variable with the best fit.

While the R-squared value for RH-5 had the best fit with the groundwater level data as the independent variable, the mixed result for the remaining SMA wells indicates that multiple factors appear to be influencing the arsenic concentration by well and these relationships are likely non-linear. Information regarding the timing of sampling and whether the well has been actively pumping for minutes or days at each location has not been considered in this analysis and could be a root cause of the variability in analytical results. Arsenic concentrations cannot be explained solely by declining groundwater levels and increased production for SMA wells (excluding RH-5).

Table 4. Linear Regression Results for Rams Hill Wells.

Well Location	Combined SMA Annual Production	2-year Lag of Combined SMA Annual Production	Water Levels	2-year Lag of Annual Production
	R-Squared Values			
ID1-8	0.003	0.100	0.182	**0.510**
RH-1 (ID1-1)	0.007	0.039	0.001	**0.574**
RH-2 (ID1-2)	0.016	0.123	**0.517**	0.234
RH-3	0.010	0.441	0.008	**0.687**
RH-4	0.024	0.079	0.104	**0.208**
RH-5	0.397	0.780	**0.889**	0.716
RH-6	0.004	**0.472**	0.403	0.294

Summary of Water Quality for District Wells and Monitoring Wells

North Management Area Wells

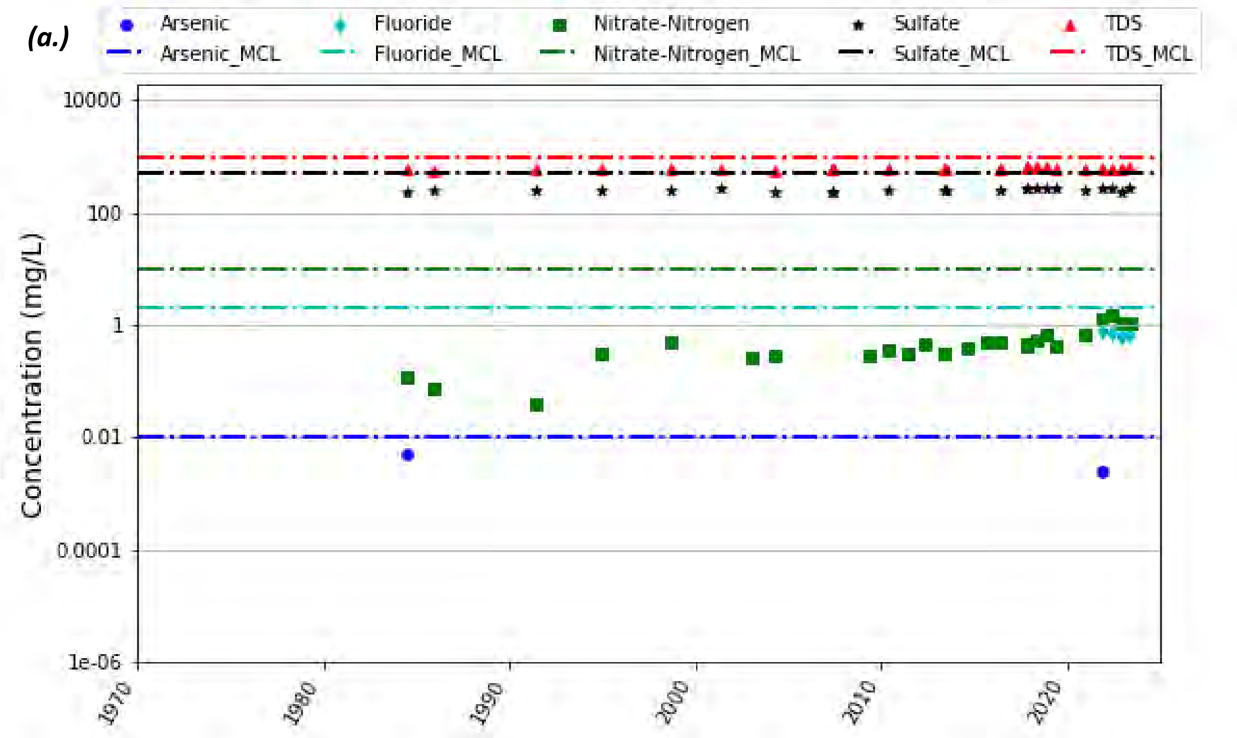
The NMA wells are generally located to the west and upgradient of the irrigated agricultural areas.

ID4-18

The Mann-Kendall analysis (Table 2) indicates an increasing trend for nitrate concentrations at ID4-18. The water quality times series plot (Exhibit 6a) shows that nitrate has steadily increased since 1991 but has remained less than half the California drinking water MCL (10 mg/L). TDS is between the recommended and secondary upper MCL (most recent sample at 630 mg/L). Similarly, sulfate is between the recommended and secondary upper MCL at 280 mg/L. Neither constituent indicates a trend in concentration. Arsenic has mostly been non-detect at this well – the last detection was reported in 2021 at 2.5 µg/L.

The Piper diagram depicted in Exhibit 6b shows that ID4-18 water quality has remained relatively stable over time. The cation ternary plot shows that ID4-18 has shifted slightly from non-dominant to more sodium and potassium-dominant water. The anion ternary plot shows sulfate-dominant water. And the combination depicts that ID4-18 is sodium chloride-type water.

(a.)



(b.)

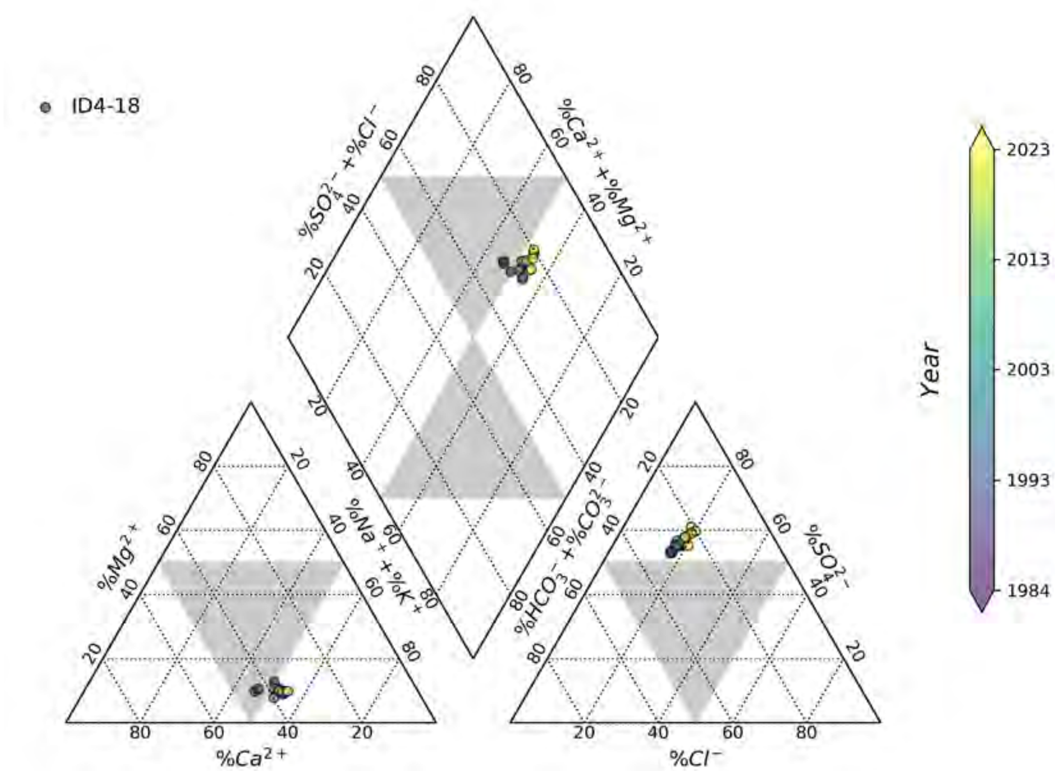


Exhibit 6. (a.) Time series and (b.) Piper diagram of water quality parameters at ID4-18.

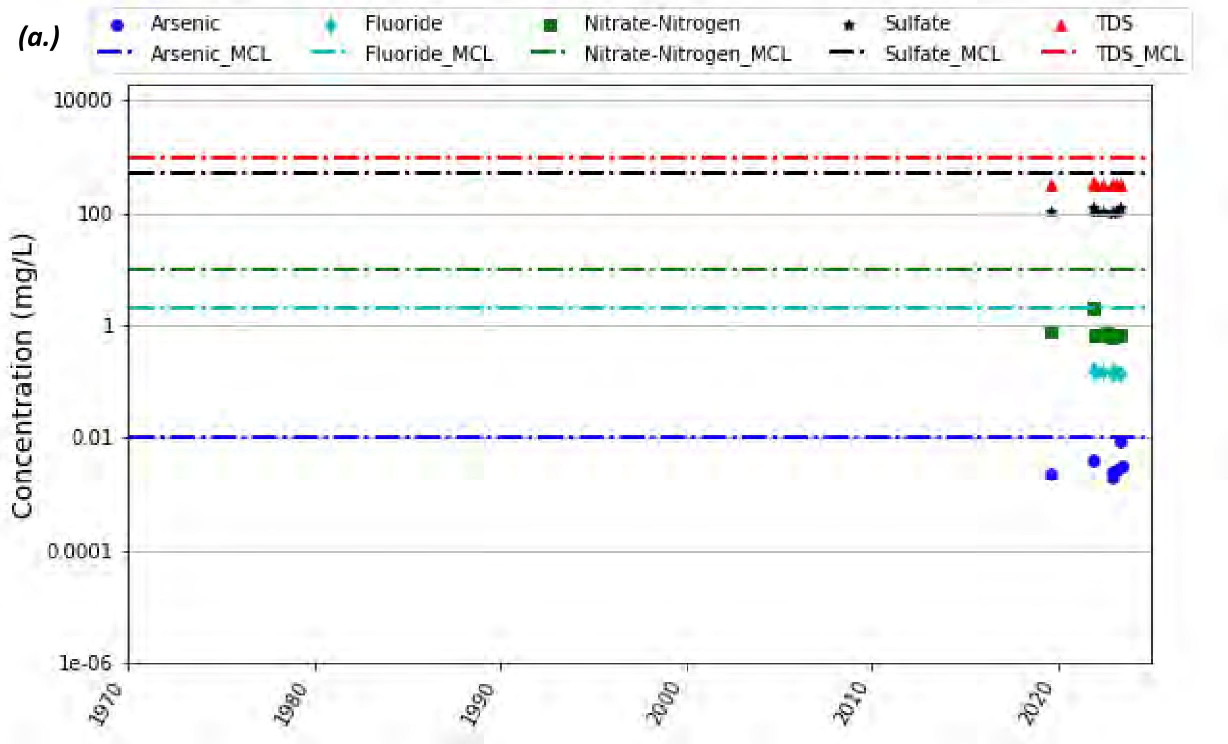
ID4-9

The Mann-Kendall analysis (Table 2) does not indicate a trend for any of the COCs at ID4-9. As a newly installed well, the water quality data set spans 2019 through 2023. The water quality times series plot (Exhibit 7a) shows that there was one sample for arsenic in 2023 that nearly reached the California drinking water MCL (10 µg/L) but has since dropped to 3.2 µg/L[25]. The remaining constituents remain below the associated MCL.

The piper diagram in Exhibit 7b shows relatively stable water quality at ID4-9 over time. ID4-9 is classified as a sodium chloride type water with sodium and potassium dominant cations with no dominant anions.

[25] The variability in arsenic concentration for ID4-9 and other wells sampled may be due to differences in the duration in pumping prior to sample collection. It is recommended that the duration and volume of pumping prior to sample collection be documented for BWD wells.

(a.)



(b.)

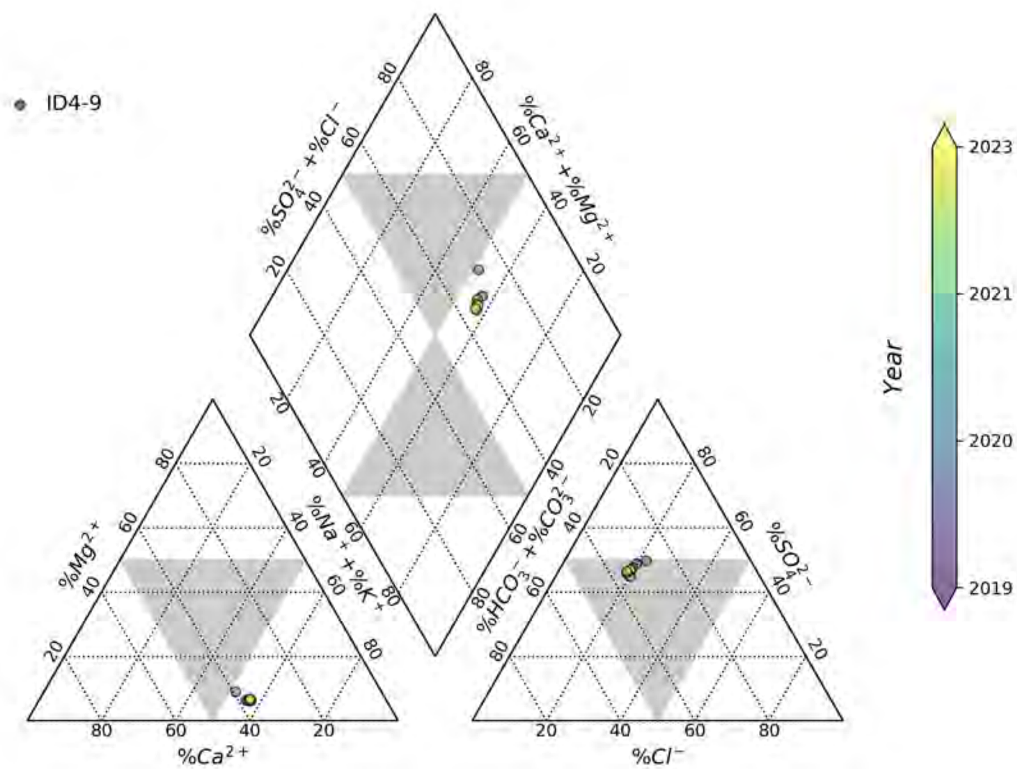


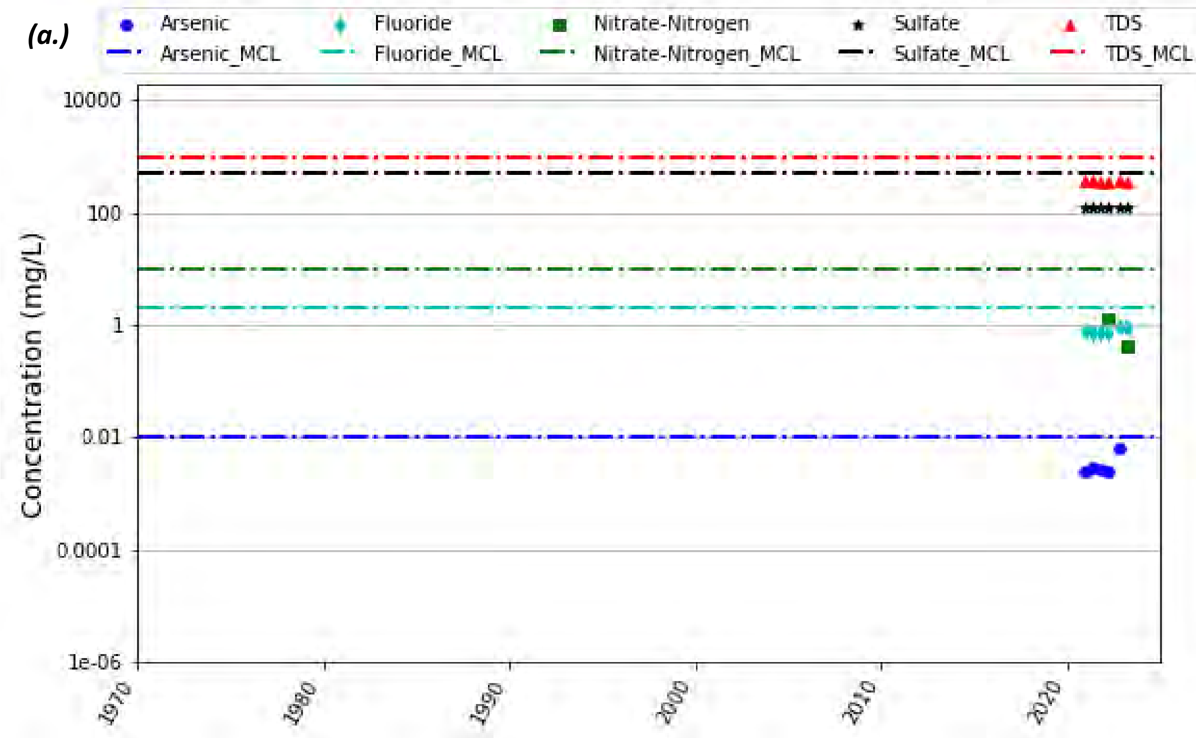
Exhibit 7. (a.) Time series and (b.) Piper diagram of water quality parameters at ID4-9.

MW-1

The Mann-Kendall analysis (Table 2) does not indicate a trend for the COCs of interest at MW-1 and had insufficient data for nitrate. The water quality data set for MW-1 spans 2020 through 2023. The water quality times series plot (Exhibit 8a) shows that arsenic samples have been below the California drinking water MCL (10 µg/L) with the most recent sample being non-detect. The remaining constituents remain below the associated MCL.

The piper diagram in Exhibit 8b shows relatively stable water quality at MW-1 over time. The piper diagram indicates that MW-1 is sodium chloride type water with sodium and potassium dominant cations and no dominant anions.

(a.)



(b.)

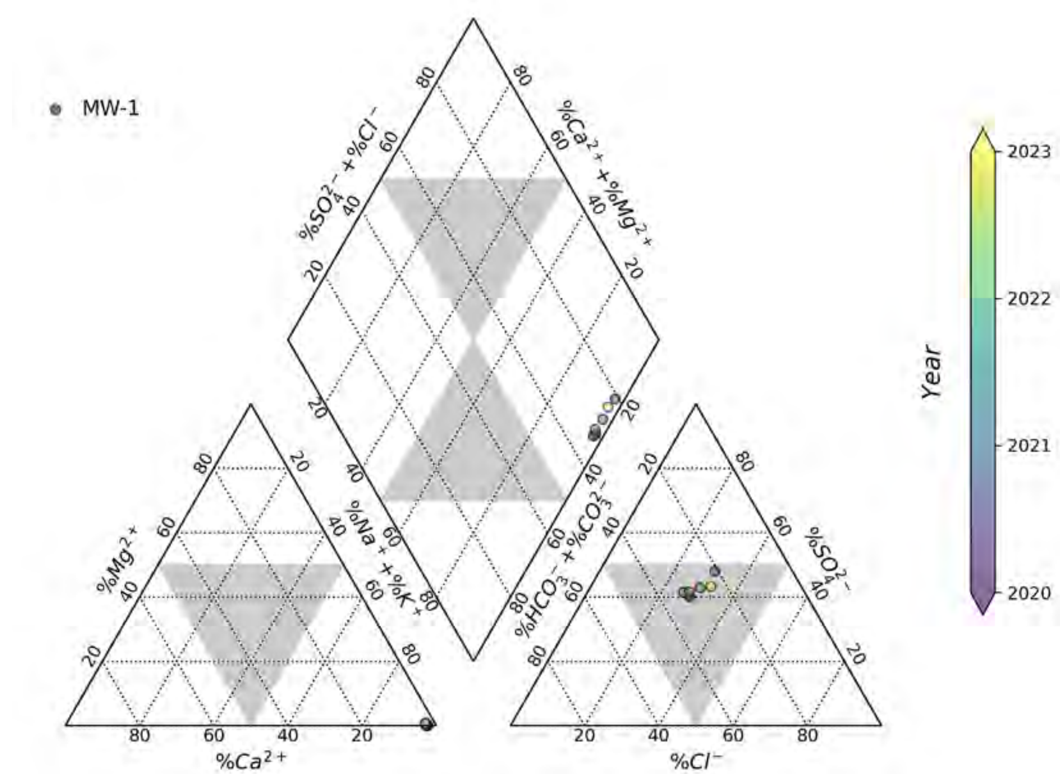


Exhibit 8. (a.) Time series and (b.) Piper diagram of water quality parameters at MW-1.

Bauer Non-Potable Irrigation Wells

The BWD recently executed Agreements for the acquisition of baseline pumping allocation (BPA) from agricultural lands in the NMA. BWD staff sampled four wells located at 282 DiGiorgio Road, 705 DiGiorgio Road, 808 DiGiorgio Road and 904 DiGiorgio Road. The water quality results for the Bauer non-potable irrigation wells provides additional information for the NMA that fills previously identified data gaps. Results are provided by well for each of the Bauer wells:

282 DiGiorgio Road

The BWD has executed Agreements for the acquisition of BPA and property owned by Bauer D & J Family Trust. The 137-acre parcel is located at 282 DiGiorgio Road on assessor's parcel number (APN) 140-010-11-00. Currently there is approximately 128.03 acres of citrus on the site.

The 282 DiGiorgio Road well was sampled in August 2023 for arsenic, nitrate, PFAS substances, total dissolved solids, and pathogens (total coliform and E. coli). Results for the sample collected in August 2023 are summarized in Table 5.

Table 5. 282 DiGiorgio Road Water Quality

Analyte	Result	Units	RDL	EPA Method
Arsenic	ND	ug/L	2.0	EPA 200.8
Nitrate	2.8	mg/L	0.20	EPA 300.0
TDS	960	mg/L	10	SM 2540C
Total Coliform	Absent	--	1.1	SM 9223B
E. coli	Absent	--	1.1	SM 9223B
PFAS substances (25 PFAS chemicals)	ND	ng/L	varies	EPA 533

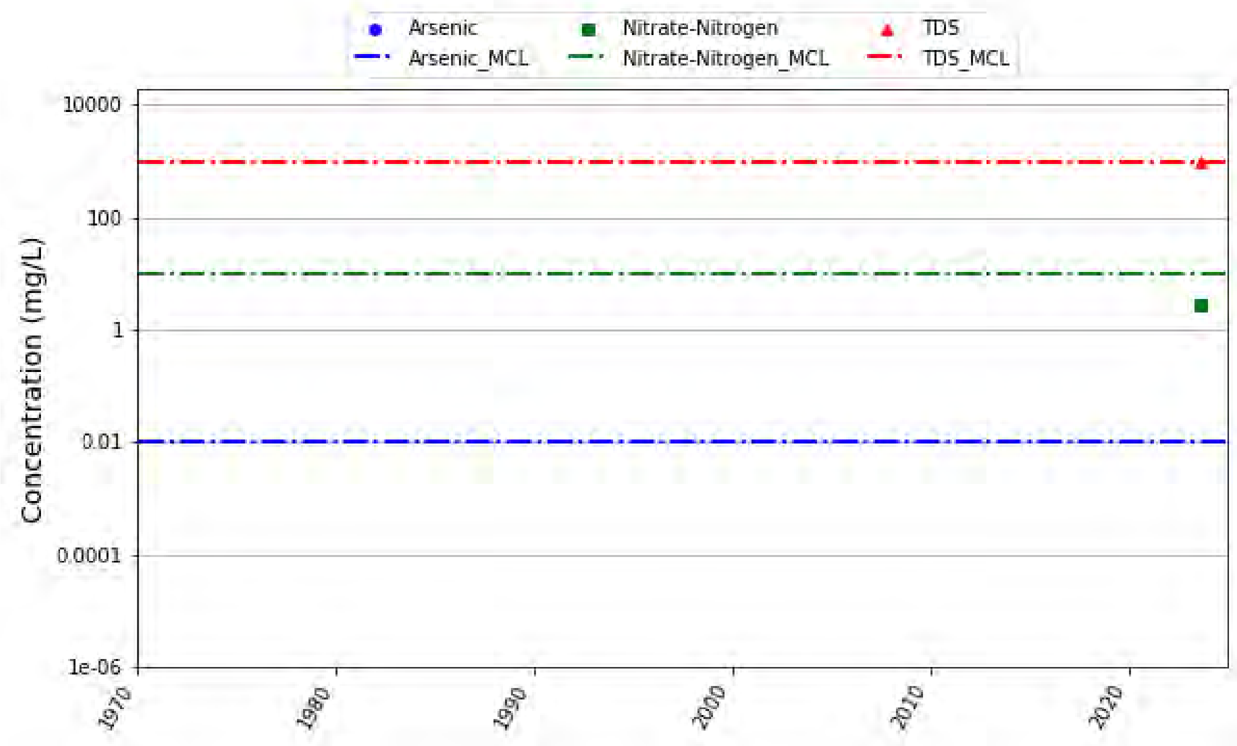


Exhibit 9. Time series of water quality parameters at 282 DiGiorgio Road.

705 DiGiorgio Road

The BWD has executed Agreements for the acquisition of BPA and property owned by Bauer D & J Family Trust. The site is located at 705 DiGiorgio Road on APN 140-070-17-00 (40 acres) and APN 140-070-18-00 (38.56 acres). Currently there is approximately 35.82 acres of citrus on APN 140-070-17-00 and 35.85 acres on APN 140-070-17-00.

The 705 DiGiorgio Road well was sampled in August 2023 for arsenic, nitrate, total dissolved solids, and pathogens (total coliform and E. coli). Results for the sample collected in August 2023 are summarized in Table 6.

Table 6. 705 DiGiorgio Road Water Quality

Analyte	Result	Units	RDL	EPA Method
Arsenic	3.7	ug/L	2.0	EPA 200.8
Nitrate	7.9	mg/L	0.20	EPA 300.0
TDS	970	mg/L	10	SM 2540C
Total Coliform	Absent	--	1.1	SM 9223B
E. coli	Absent	--	1.1	SM 9223B

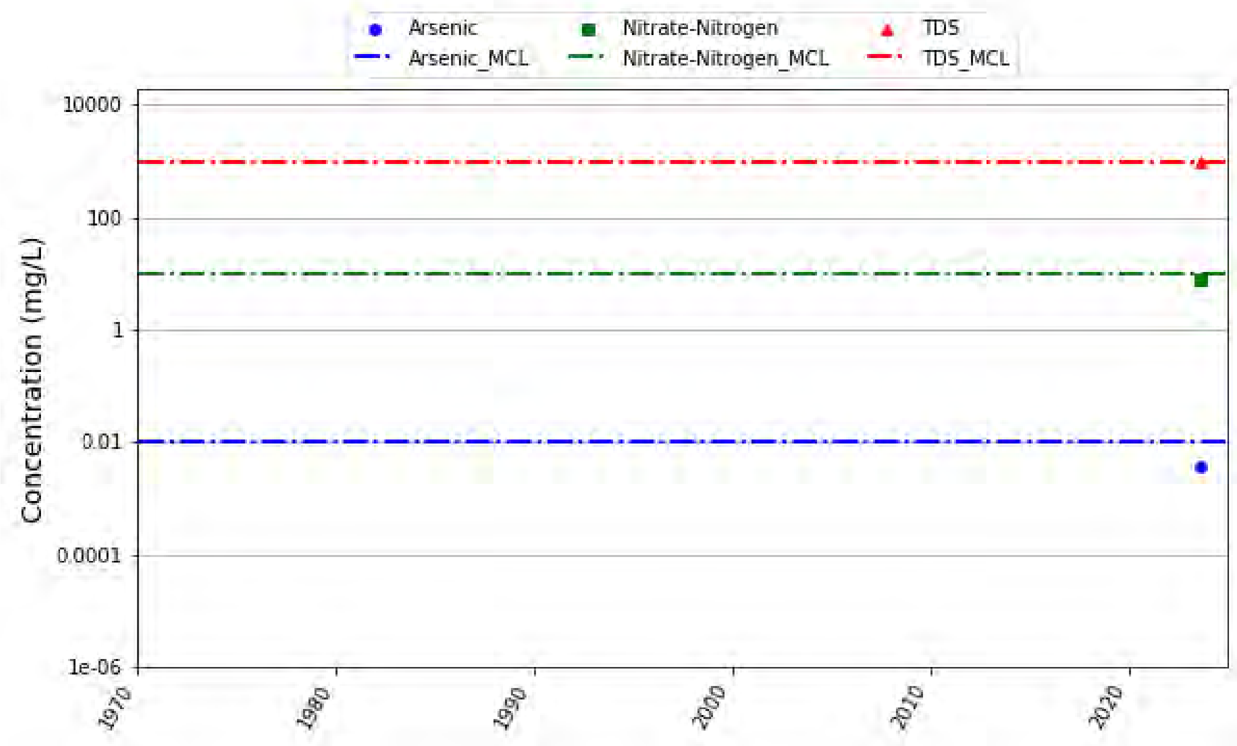


Exhibit 10. Time series of water quality parameters at 705 DiGiorgio Road.

808 DiGiorgio Road

The BWD has executed Agreements for the acquisition of BPA and property owned by Bauer D & J Family Trust. The site is located at 808 DiGiorgio Road on APN 140-070-27-00 (20 acres). Currently there is approximately 17.18 acres of citrus on the site.

The 808 DiGiorgio Road well was sampled in August 2023 for arsenic, nitrate, total dissolved solids, and pathogens (total coliform and E. coli). Results for the sample collected in August 2023 are summarized in Table 7.

Table 7. 808 DiGiorgio Road Water Quality

Analyte	Result	Units	RDL	EPA Method
Arsenic	ND	ug/L	2.0	EPA 200.8
Nitrate	1.9	mg/L	0.20	EPA 300.0
TDS	780	mg/L	10	SM 2540C
Total Coliform	Present	--	1.1	SM 9223B
E. coli	Absent	--	1.1	SM 9223B

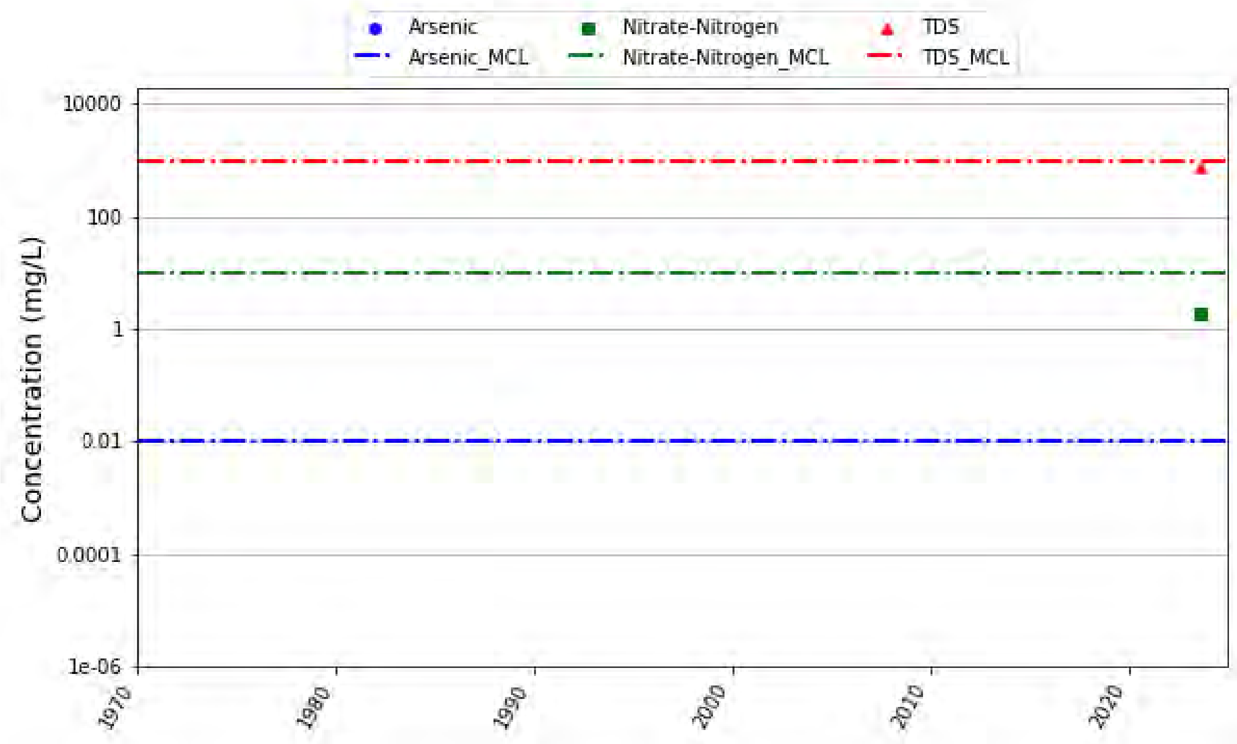


Exhibit 11. Time series of water quality parameters at 808 DiGiorgio Road.

904 DiGiorgio Road

The BWD has executed Agreements for the acquisition of BPA and property owned by Bauer D & J Family Trust. The site is located at 904 DiGiorgio Road on APN 140-110-14-00 (74.5 acres). Currently there is approximately 73.36 acres of citrus on the site.

The 904 DiGiorgio Road well was sampled in August 2023 for arsenic, nitrate, total dissolved solids, and pathogens (total coliform and E. coli). Results for the sample collected in August 2023 are summarized in Table 8.

Table 8. 904 DiGiorgio Road Water Quality

Analyte	Result	Units	RDL	EPA Method
Arsenic	2.4	ug/L	2.0	EPA 200.8
Nitrate	15	mg/L	0.20	EPA 300.0
TDS	910	mg/L	10	SM 2540C
Total Coliform	Absent	--	1.1	SM 9223B
E. coli	Absent	--	1.1	SM 9223B

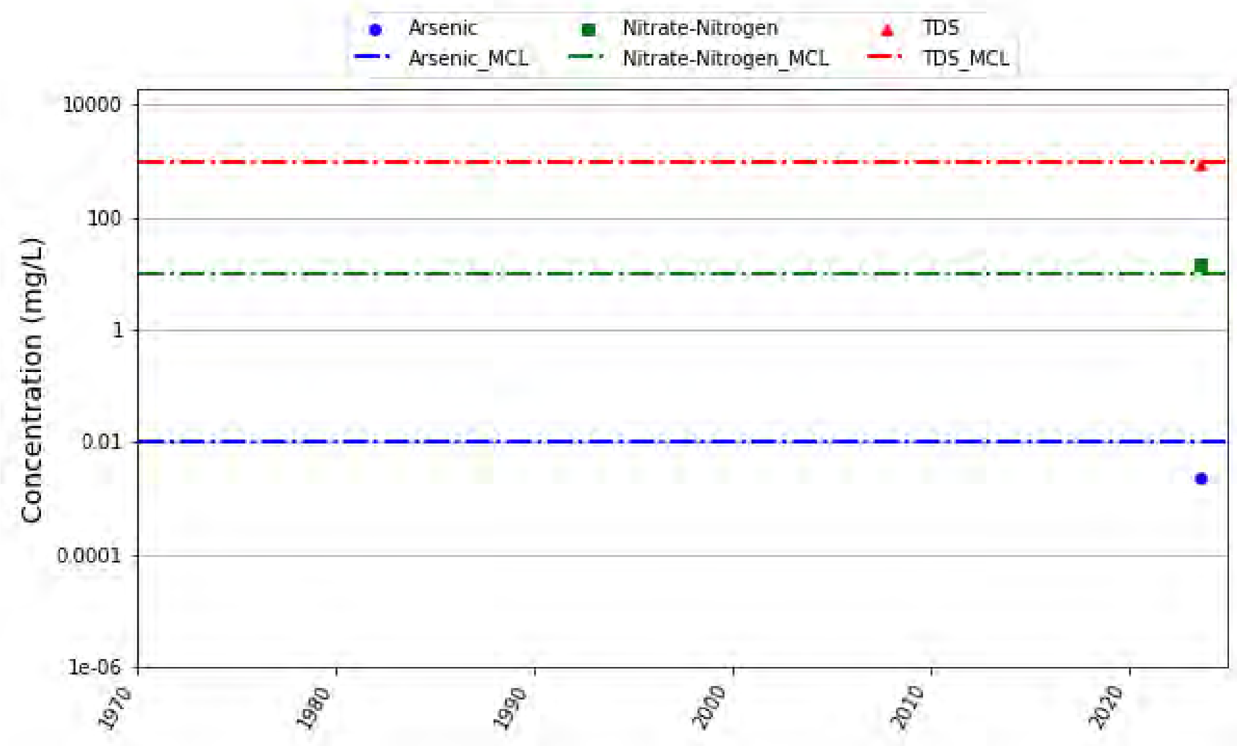


Exhibit 12. Time series of water quality parameters at 904 DiGiorgio Road.

Central Management Area Wells

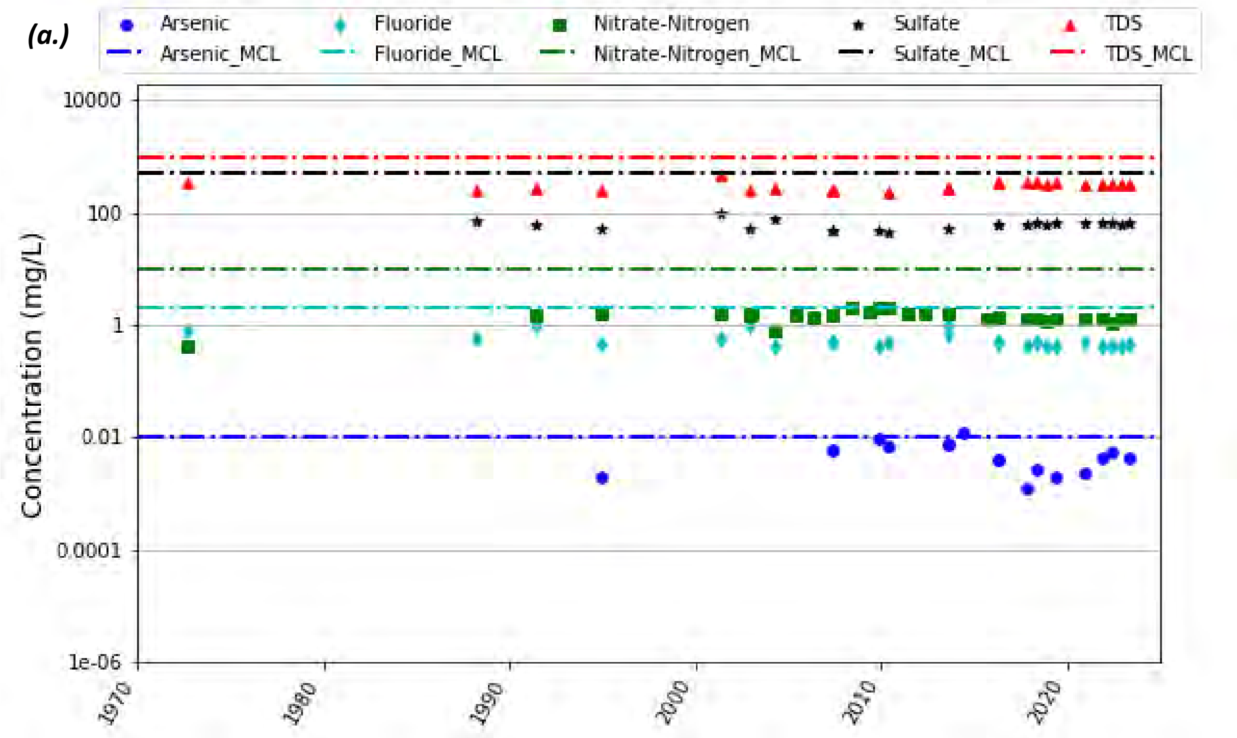
The CMA wells are generally located near the community of Borrego Springs and are considered a transitional water quality type between the north and south management areas. Primary production in the CMA is utilized for municipal supply.

ID1-10

The Mann-Kendall analysis (Table 2) indicates a decreasing trend for fluoride and no trend for the remaining COCs at ID1-10. The water quality times series plot (Exhibit 13a) shows that arsenic has fluctuated over time with exceedance of the MCL (10 µg/L) in 2014 at 12.2 µg/L for a non-regulatory sample. Arsenic concentrations have mostly stabilized with the most recent sample recorded in 2023 as 4.2 µg/L. The remaining constituents remain below the associated MCL.

The piper diagram in Exhibit 13b shows water quality at ID1-10 has gradually changed over time but appears to be stabilizing. The piper diagram indicates that ID1-10 is sodium chloride type water with sodium and potassium dominant cations and no dominant anions.

(a.)



(b.)

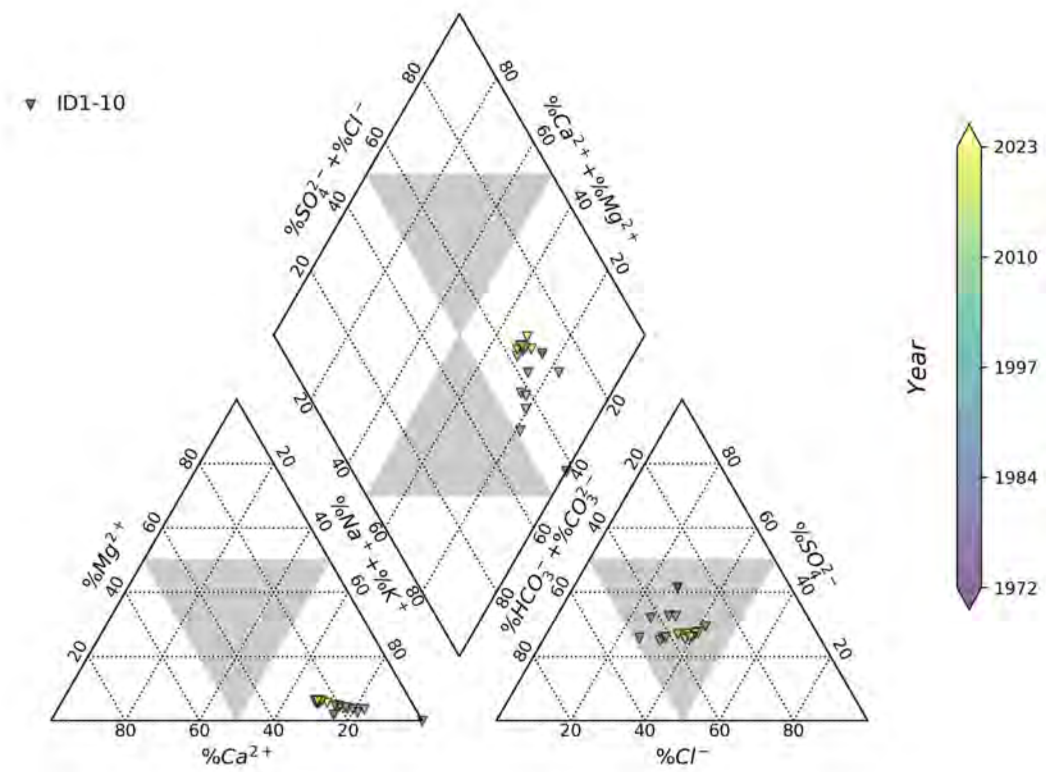


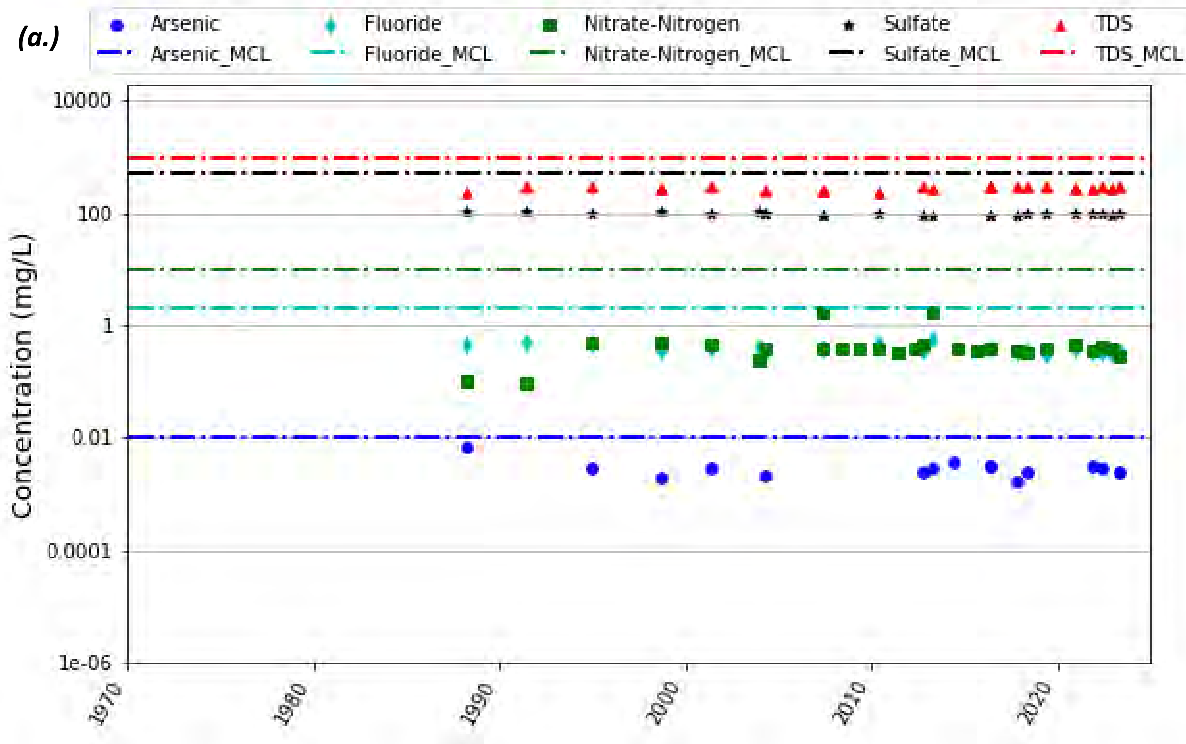
Exhibit 13. (a.) Time series and (b.) Piper diagram of water quality parameters at ID1-10.

ID1-12 (BWD Production Well)

The Mann-Kendall analysis (Table 2) indicates a decreasing trend for fluoride and sulfate. No trend was indicated for the remaining COCs at ID1-12. The water quality times series plot (Exhibit 14a) shows that all COCs have remained relatively stable and have not exceeded the California drinking water standards.

The piper diagram in Exhibit 14b shows water quality at ID1-12 has remained relatively stable over time. The piper diagram indicates that ID1-12 is sodium chloride type water with sodium and potassium dominant cations and no dominant anions.

(a.)



(b.)

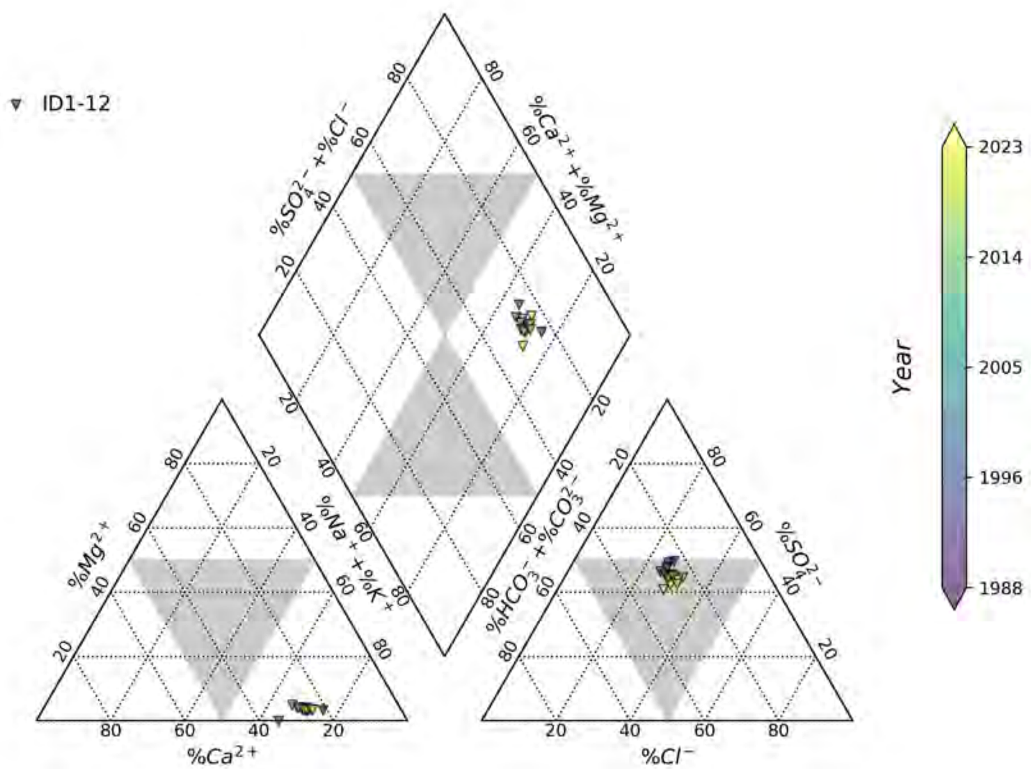


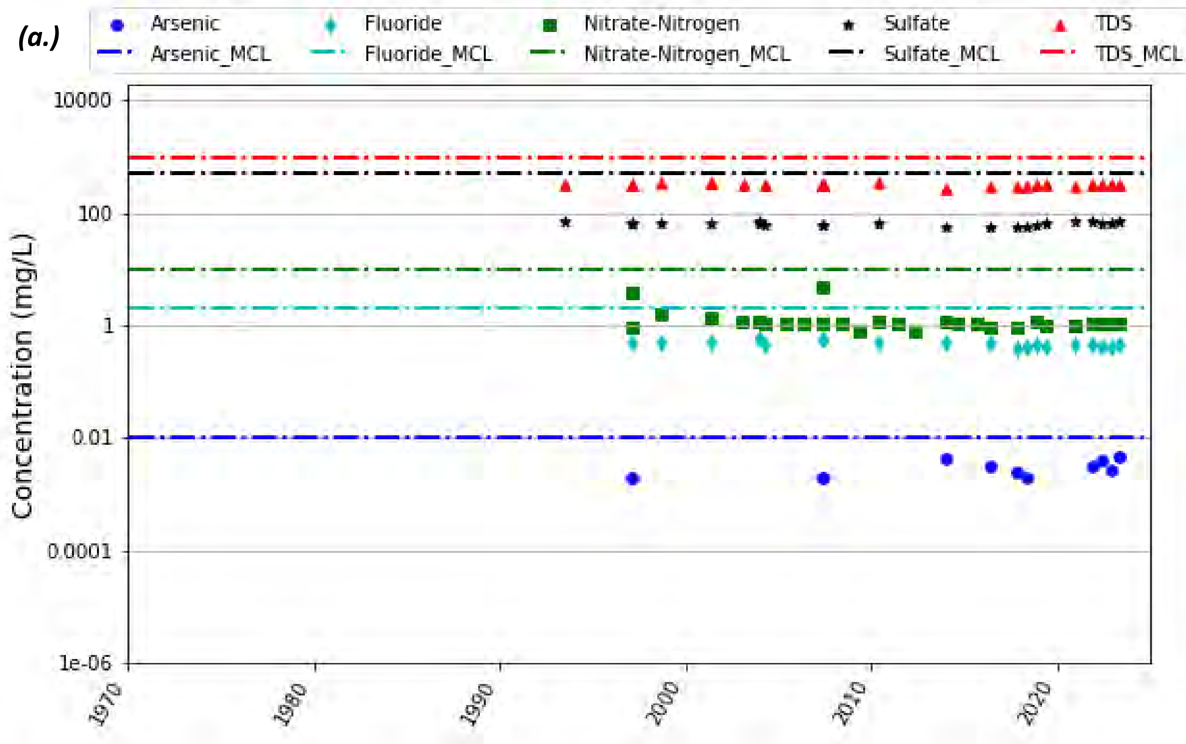
Exhibit 14. (a.) Time series and (b.) Piper diagram of water quality parameters at ID1-12.

ID1-16 (BWD Production Well)

The Mann-Kendall analysis (Table 2) indicates a decreasing trend for fluoride and no trend for the remaining COCs at ID1-16. The water quality times series plot (Exhibit 15a) shows that all COCs have remained relatively stable and have not exceeded the California drinking water standards.

The piper diagram in Exhibit 15b shows water quality at ID1-16 has remained relatively stable over time. The piper diagram indicates that ID1-16 is sodium chloride type water with sodium and potassium dominant cations and no dominant anions.

(a.)



(b.)

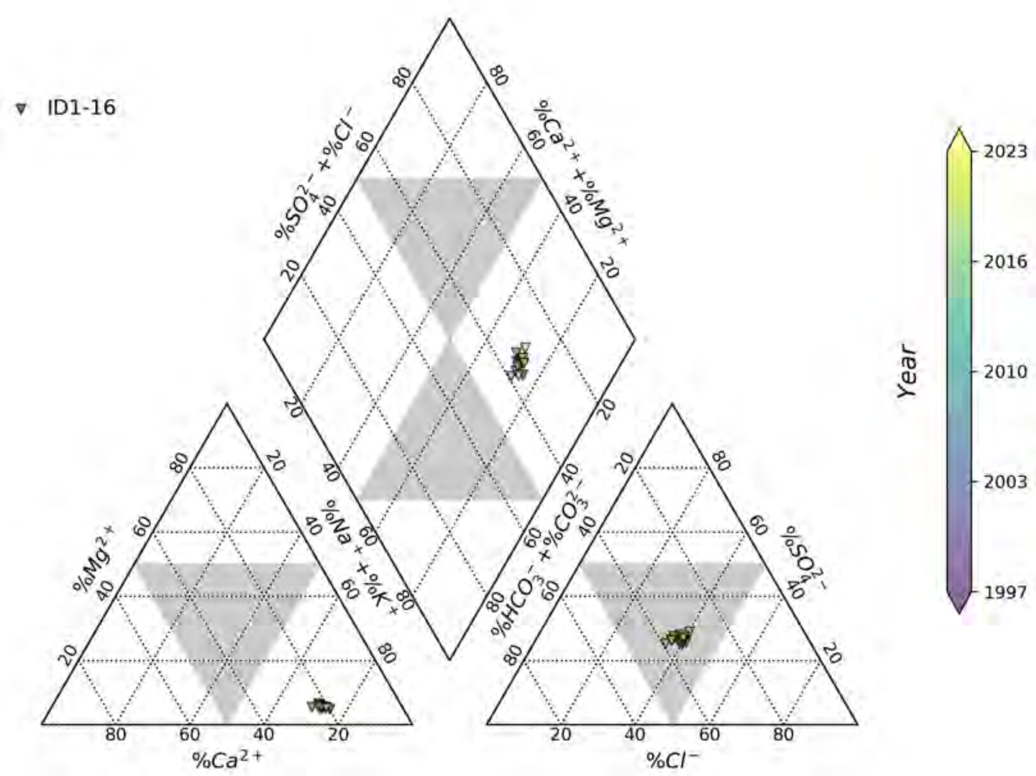


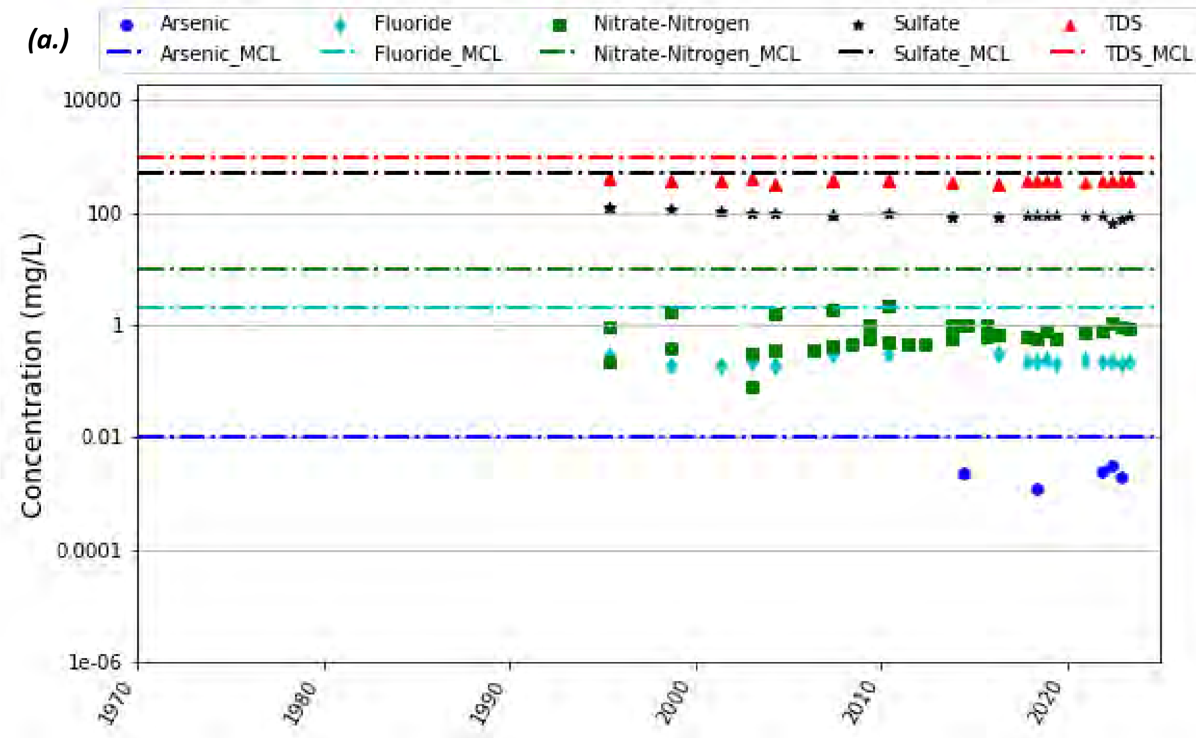
Exhibit 15. (a.) Time series and (b.) Piper diagram of water quality parameters at ID1-16.

ID4-11 (BWD Production Well)

The Mann-Kendall analysis (Table 2) indicates a decreasing trend for sulfate and TDS. No trend was indicated for the remaining COCs at ID4-11. The water quality times series plot (Exhibit 16a) shows that all COCs have remained relatively stable (with the exception of nitrate fluctuating) and have not exceeded the California drinking water standards.

The piper diagram in Exhibit 16b shows water quality at ID4-11 has remained relatively stable over time. The piper diagram indicates that ID4-11 is mixed type water with no dominant cations or anions.

(a.)



(b.)

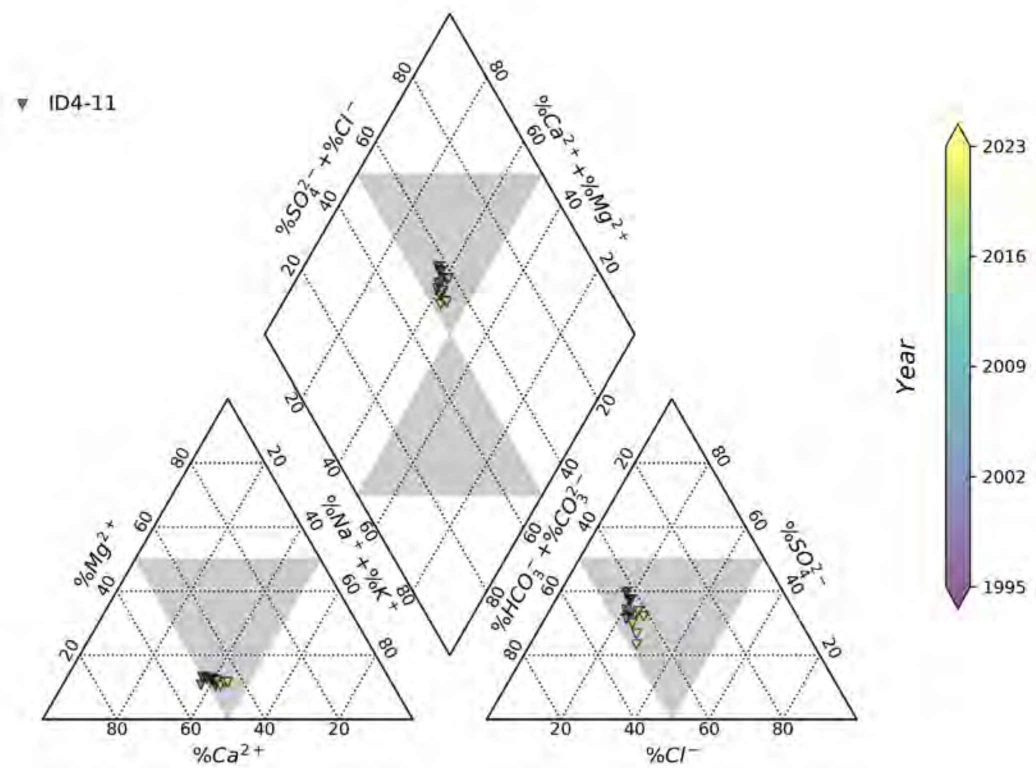


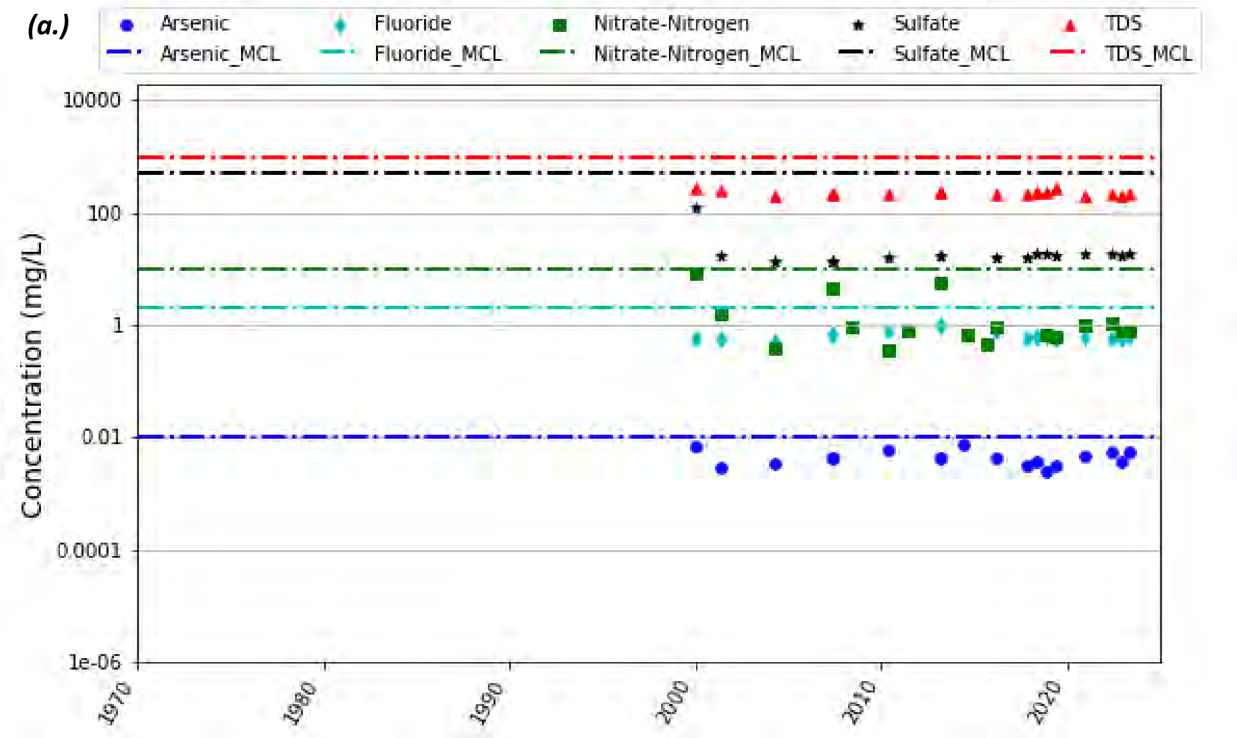
Exhibit 16. (a.) Time series and (b.) Piper diagram of water quality parameters at ID4-11.

ID4-20 (Wilcox) (BWD Production Well)

The Mann-Kendall analysis (Table 2) does not indicate a trend for any of the COCs of interest at ID4-20. The water quality times series plot (Exhibit 17a) shows that all COCs have remained relatively stable (apart from nitrate fluctuating) and have not exceeded the California drinking water standards. The earliest sample in 2000 appears to be an outlier with elevated sulfate (127 mg/L) and chloride (69.3 mg/L) concentrations but has since stabilized.

The piper diagram in Exhibit 17b shows water quality at ID4-20 has remained relatively stable over time. The piper diagram indicates that ID4-20 is mixed type water with sodium and potassium dominant cations and bicarbonate dominant anions.

(a.)



(b.)

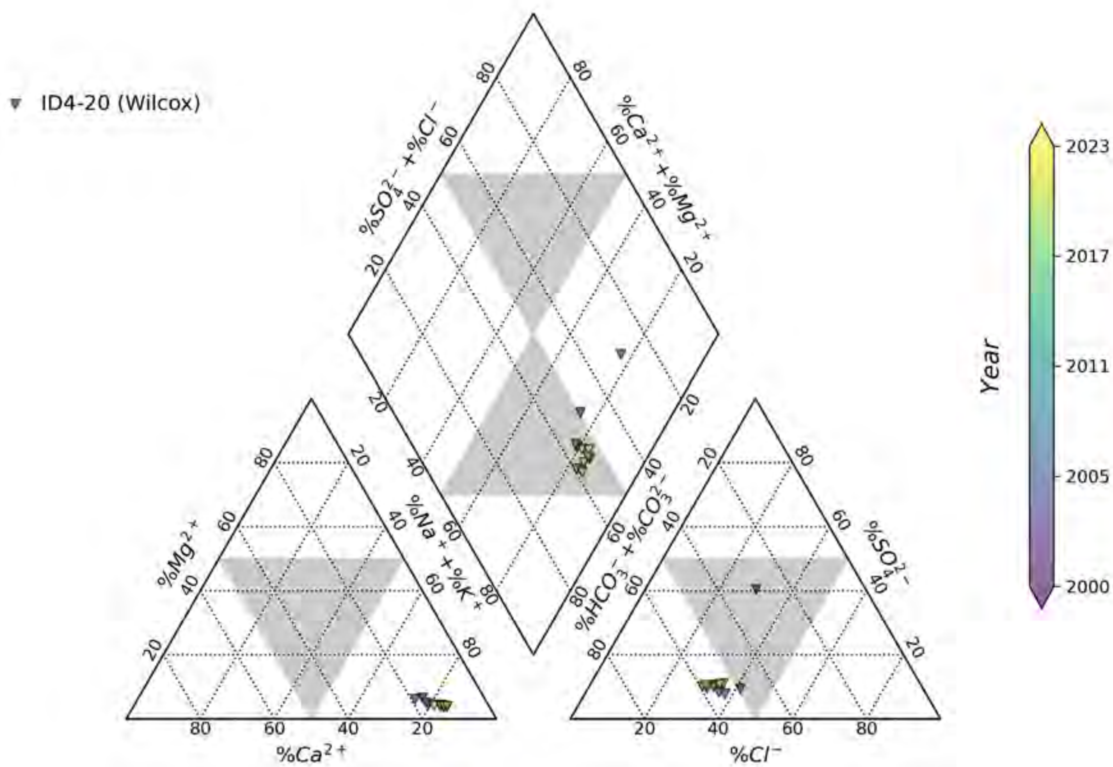


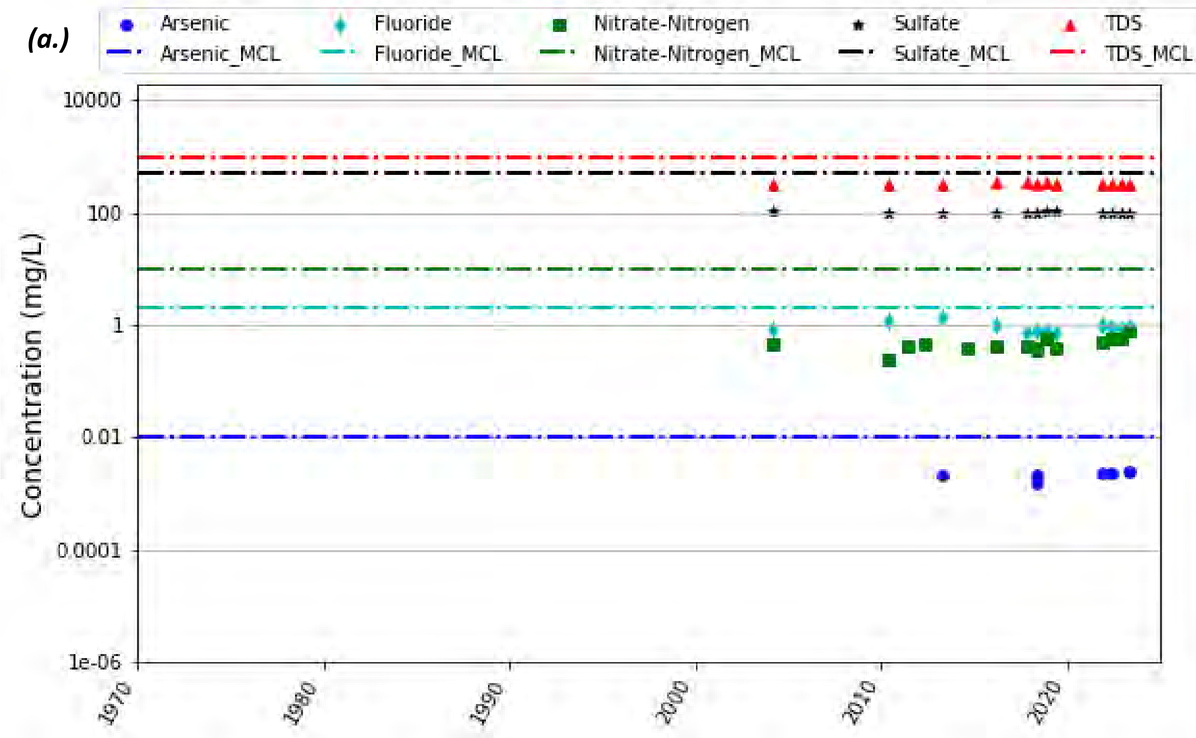
Exhibit 17. (a.) Time series and (b.) Piper diagram of water quality parameters at ID4-20 (Wilcox).

ID5-5 (BWD Production Well)

The Mann-Kendall analysis (Table 2) does not indicate a trend for any of the COCs of interest at ID5-5. The water quality times series plot (Exhibit 18a) shows that all COCs have remained relatively stable and have not exceeded the California drinking water standards.

The piper diagram in Exhibit 18b shows water quality at ID5-5 has remained stable over time. The piper diagram indicates that ID5-5 is sodium chloride type water with sodium and potassium dominant cations and no dominant anions.

(a.)



(b.)

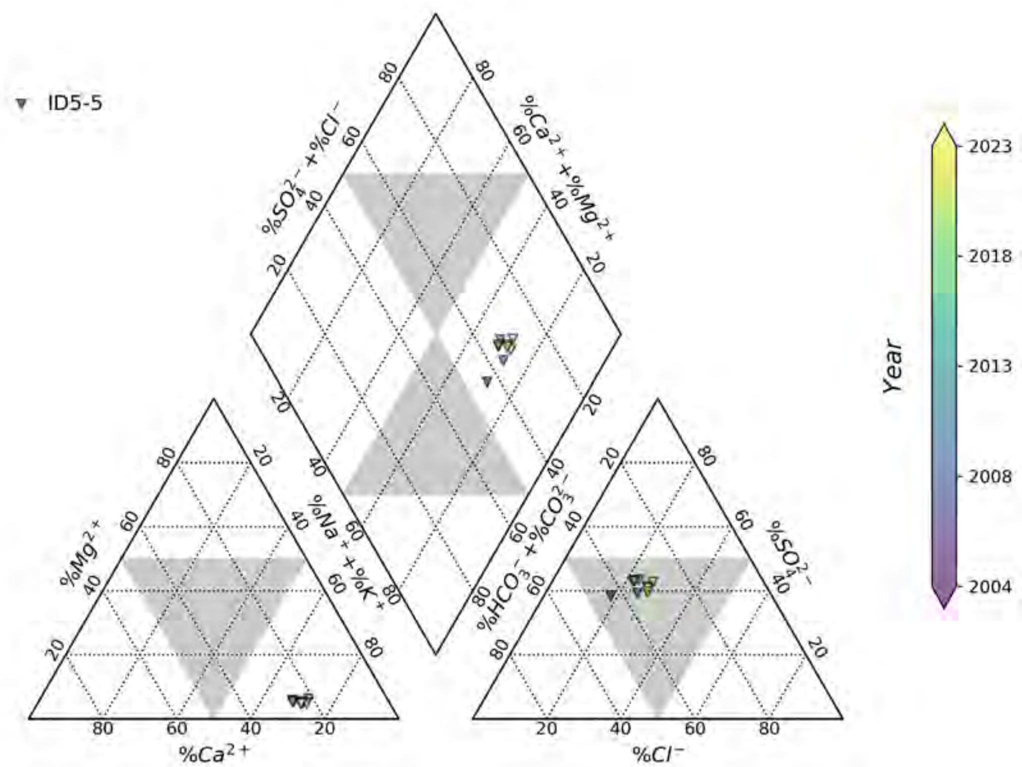


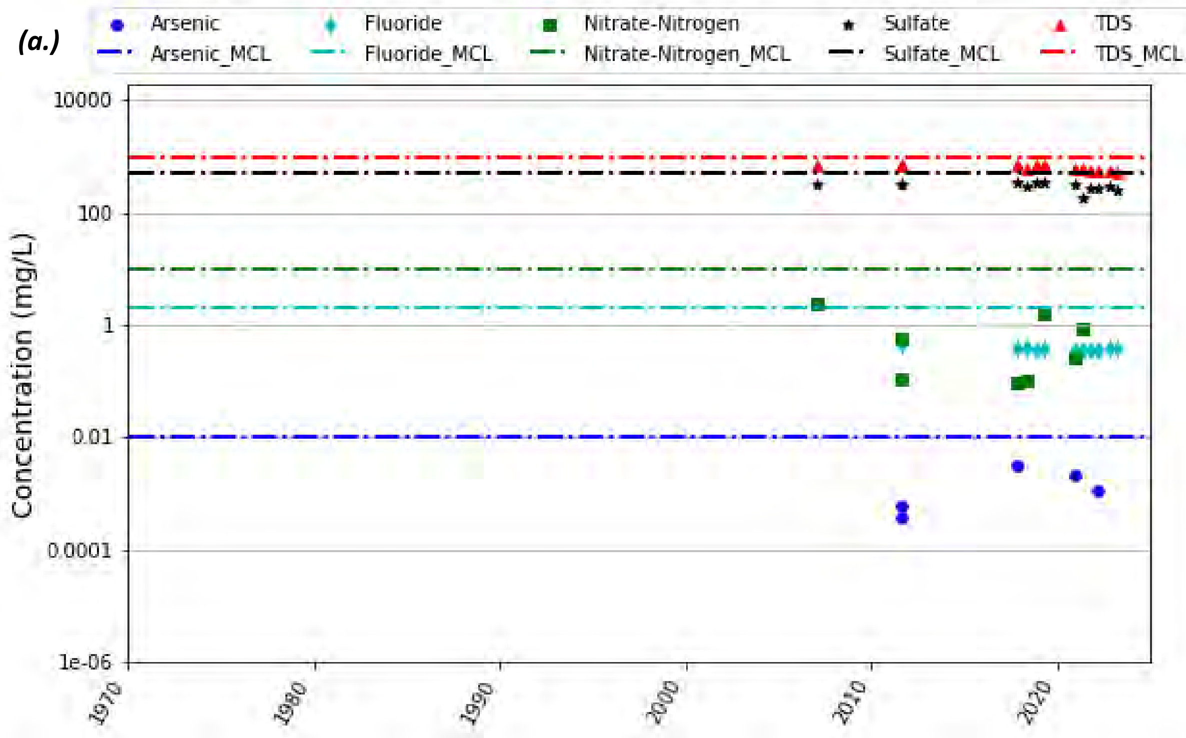
Exhibit 18. (a.) Time series and (b.) Piper diagram of water quality parameters at ID5-5.

MW-4 (Monitoring Well)

The Mann-Kendall analysis (Table 2) indicates a decreasing trend for sulfate and no trend indicated for the remaining COCs at MW-4. The water quality times series plot (Exhibit 19a) shows that while nitrate has fluctuated over time, the remaining COCs have remained relatively stable. None of the COCs have not exceeded the California drinking water standards.

The piper diagram in Exhibit 19b shows water quality at MW-4 has gradually fluctuated over time. Overall, the piper diagram indicates that MW-4 is sodium chloride type water with sodium and potassium dominant cations and sulfate dominant anions.

(a.)



(b.)

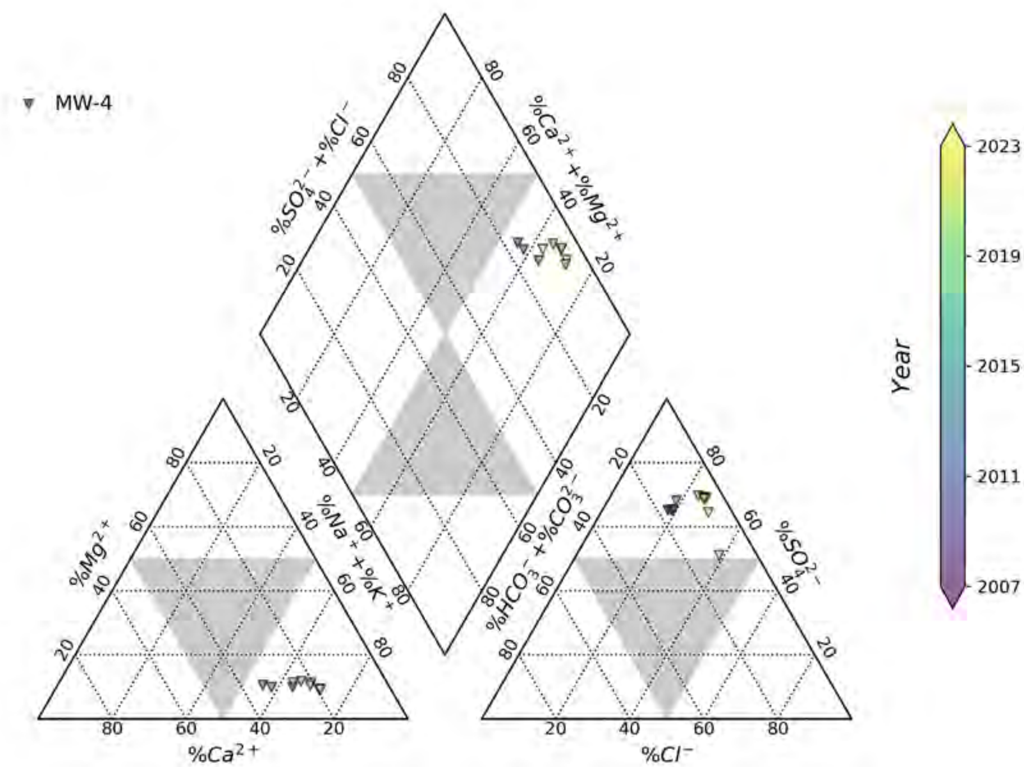


Exhibit 19. (a.) Time series and (b.) Piper diagram of water quality parameters at MW-4.

South Management Area Wells

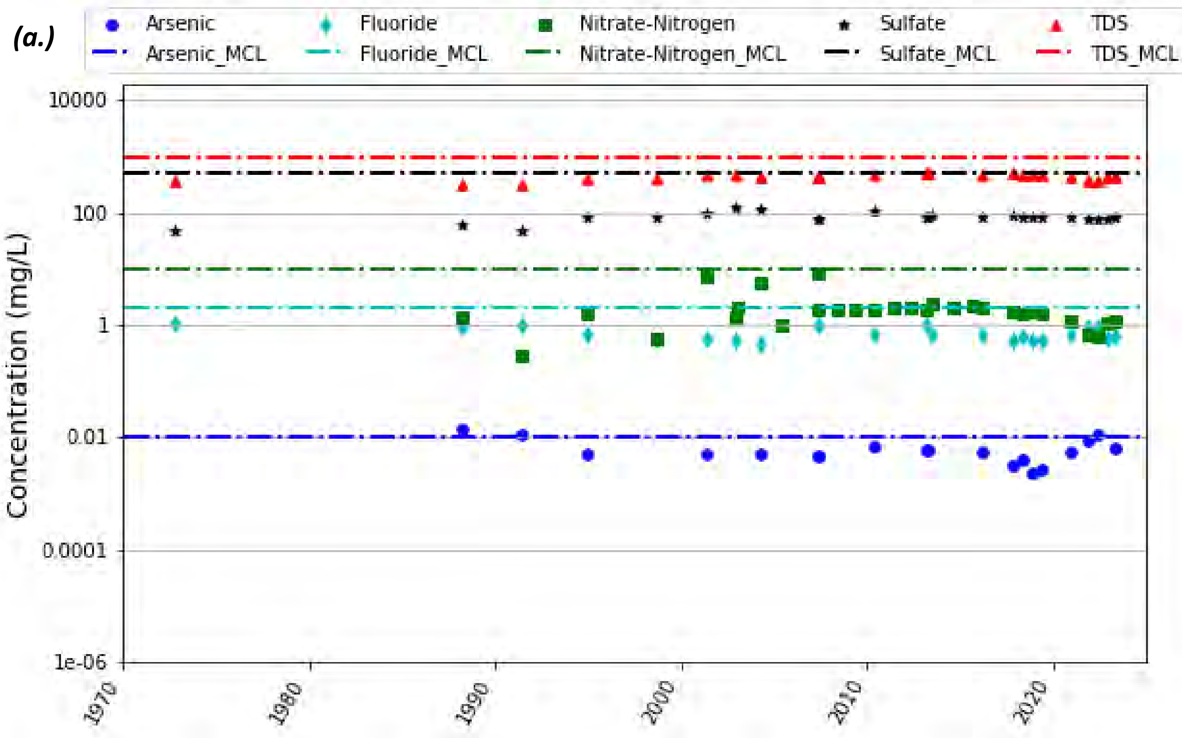
The SMA wells are generally located northeast of the Rams Hill Golf Course. Production in the SMA includes some municipal and domestic pumping but is currently dominated by pumping for recreational use.

ID1-8 (BWD Production Well)

The Mann-Kendall analysis (Table 2) does not indicate a trend for any of the COCs of interest at ID1-8. The water quality times series plot (Exhibit 20a) shows that ID1-8 has exceeded the arsenic California drinking MCL (10 µg/L) in 1988, 1991, and most recently in 2022 at 11 µg/L for non-regulatory samples. The most recent sample taken in 2023 is below the MCL at 6.4 µg/L. The remaining COCs are relatively stable and have not exceeded the California drinking water standards.

The piper diagram in Exhibit 20b shows water quality at ID1-8 has significantly changed over time. Overall, the piper diagram indicates that ID1-8 has moved from mixed type water to sodium chloride type water with sodium and potassium dominant cations and no dominant anions.

(a.)



(b.)

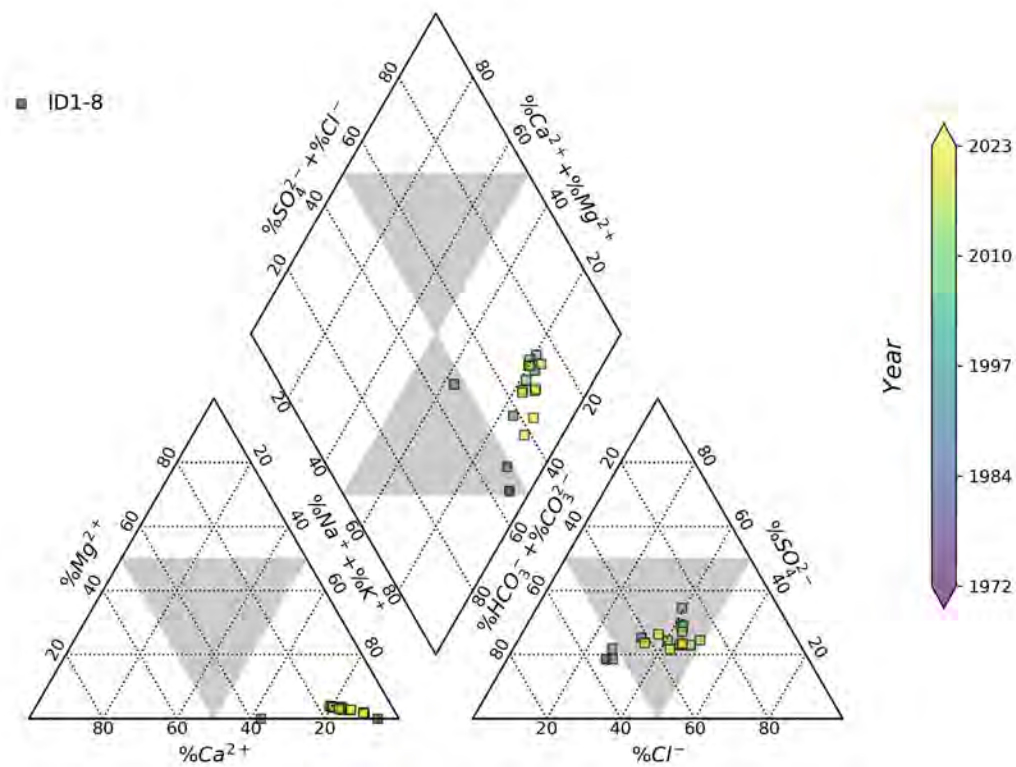


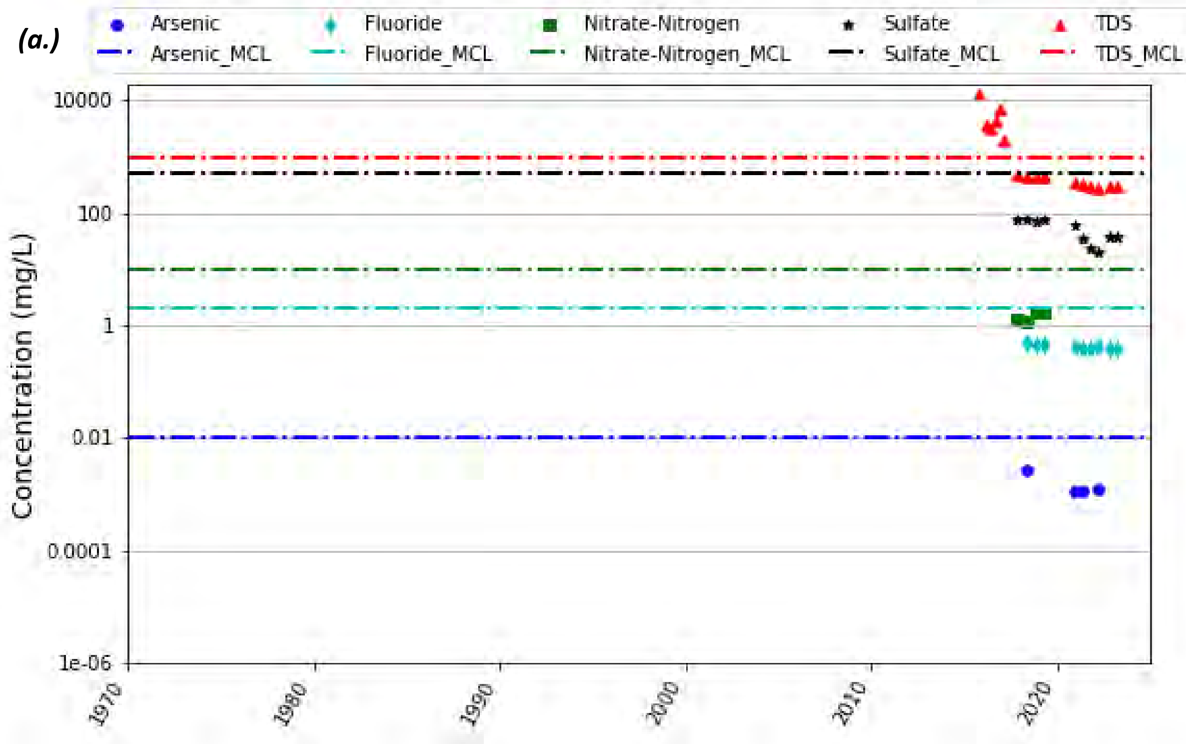
Exhibit 20. (a.) Time series and (b.) Piper diagram of water quality parameters at ID1-8.

MW-3 (Monitoring Well)

The Mann-Kendall analysis (Table 2) indicates a decreasing trend for sulfate and TDS. No trend was indicated for the remaining COCs at MW-3. The water quality times series plot (Exhibit 21a) shows that TDS exceeded the California drinking water secondary upper MCL (1,000 mg/L) from 2015 through 2017. TDS has stabilized and the most recent sample is below the secondary MCL at 500 mg/L. The remaining COCs have not exceeded the California drinking water standards.

The piper diagram in Exhibit 21b shows water quality at MW-3 has fluctuated over time. Overall, the piper diagram indicates that MW-3 is sodium chloride type water with sodium and potassium dominant cations and no dominant anions.

(a.)



(b.)

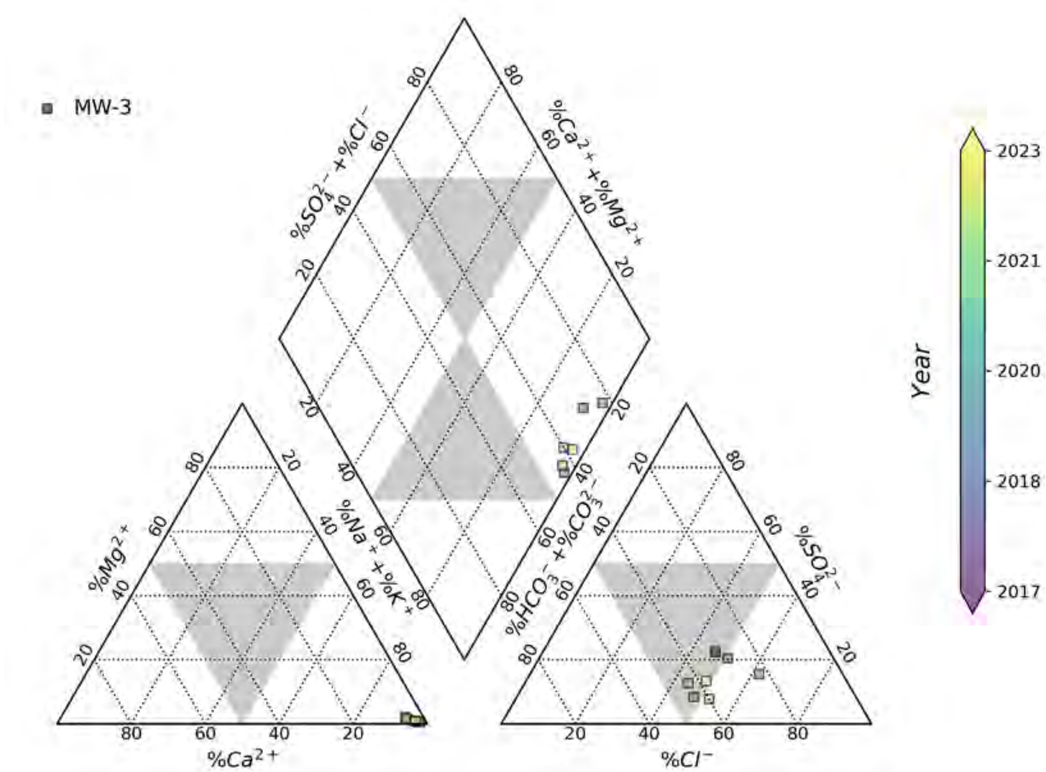


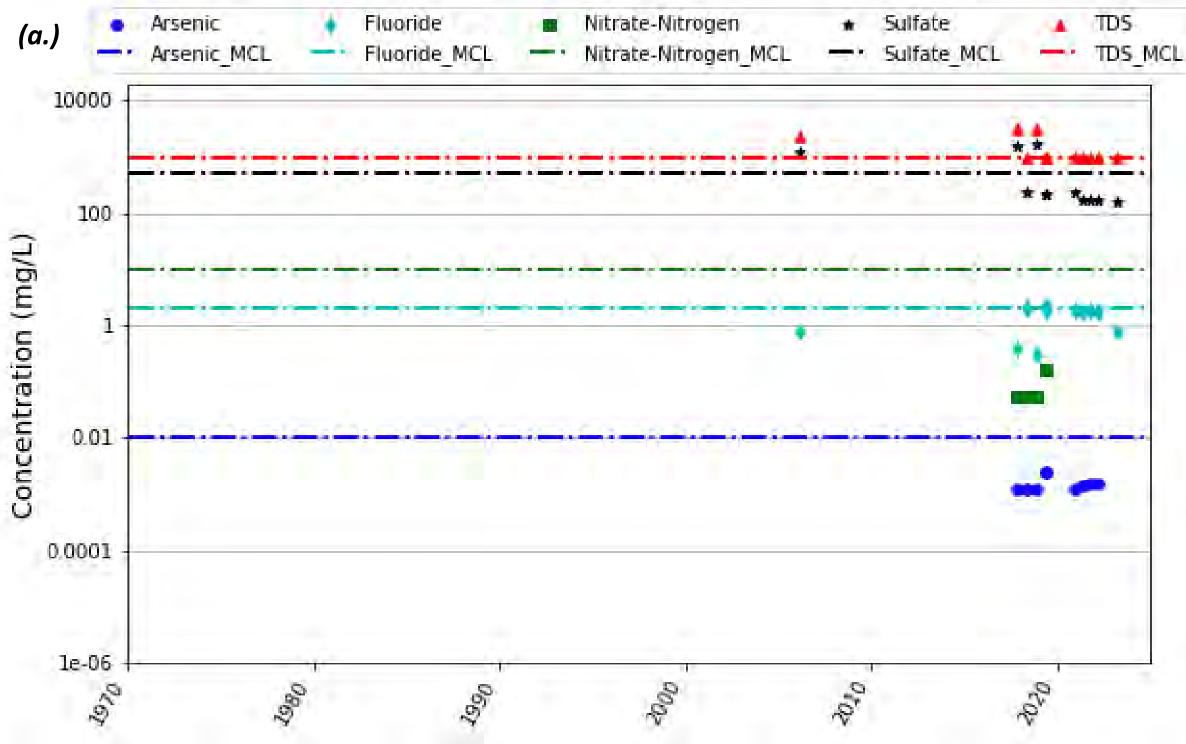
Exhibit 21. (a.) Time series and (b.) Piper diagram of water quality parameters at MW-3.

MW-5A (Monitoring Well)

The Mann-Kendall analysis (Table 2) indicates a decreasing trend for sulfate and TDS. No trend was indicated for the remaining COCs at MW-5A. The water quality times series plot (Exhibit 22a) shows that TDS exceeds the California drinking water secondary upper MCL (1,000 mg/L) in 2006, 2017, and 2018. The remaining data for TDS has at or slightly below the secondary upper MCL with the most recent sample in 2023 at 1,000 mg/L. Similarly, sulfate exceeds the California drinking water secondary upper MCL (500 mg/L) in these same years. Sulfate concentrations have since stabilized and remain below the secondary upper MCL with the most recent sample in 2023 at 160 mg/L. The water quality times series plot also shows that fluoride exceeds the California drinking water MCL (2mg/L) in 2018 (2.1 mg/L) and 2019 (2.2 mg/L). The most recent sample taken in 2023 is below the MCL at 0.8 mg/L. The remaining COCs have not exceeded the California drinking water standards.

The piper diagram in Exhibit 22b shows water quality at MW-5A has fluctuated over time. The outliers reflect the high TDS and sulfate concentrations noted above. Overall, the piper diagram indicates that MW-5A is sodium chloride type water with sodium and potassium dominant cations and no dominant anions.

(a.)



(b.)

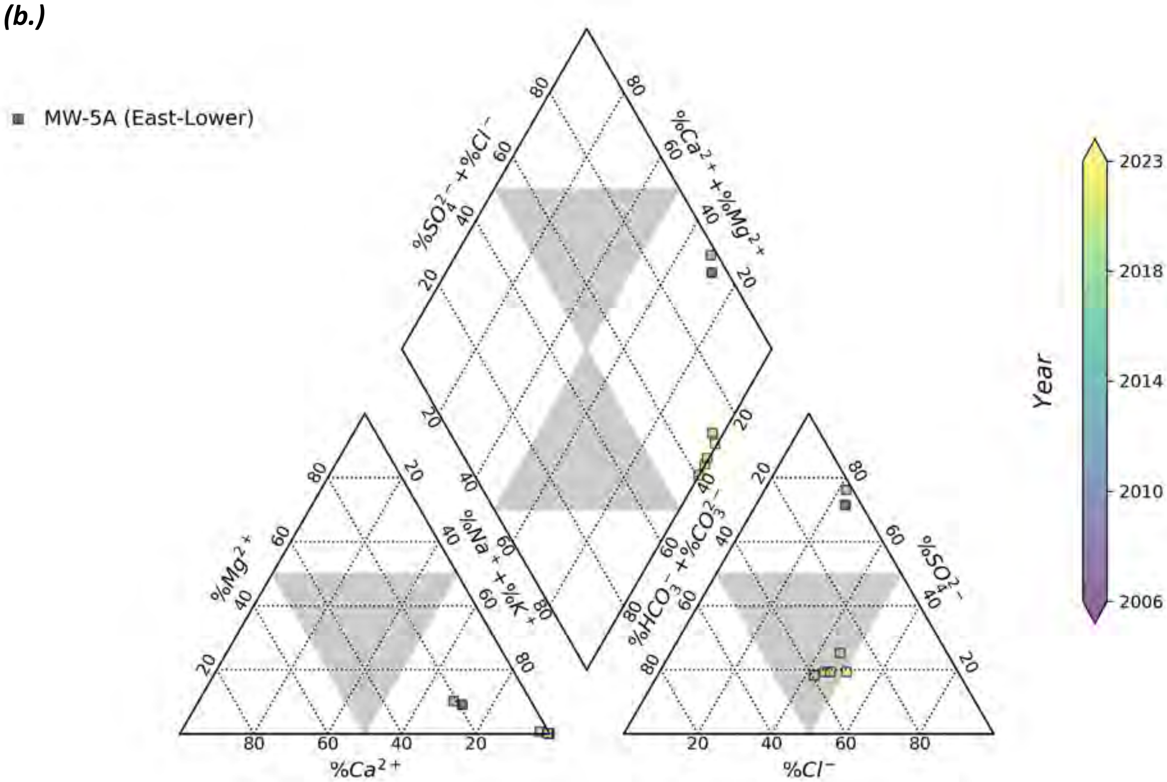


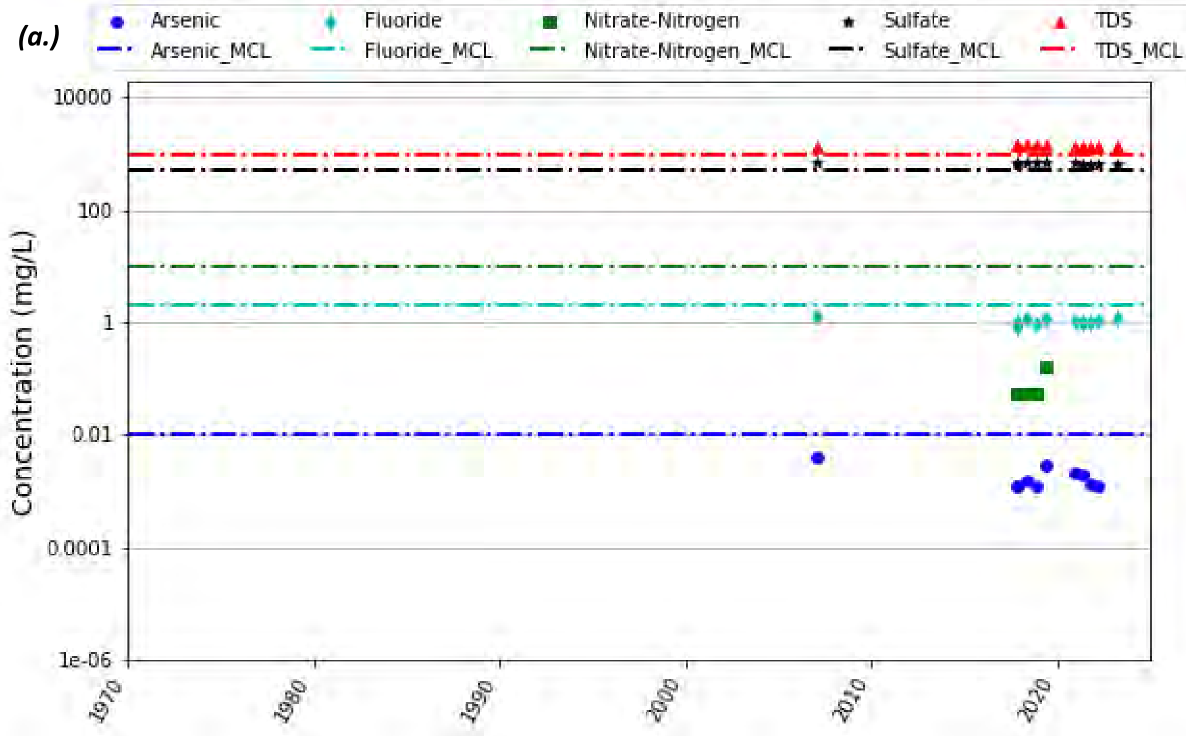
Exhibit 22. (a.) Time series and (b.) Piper diagram of water quality parameters at MW-5A.

MW-5B (Monitoring Well)

The Mann-Kendall analysis (Table 2) does not indicate a trend for any of the COCs of interest at MW-5B. The water quality times series plot (Exhibit 23a) shows that TDS exceeds the California drinking water secondary upper MCL (1,000 mg/L) for the entire record. The most recent TDS concentration at MW-5B in 2023 was 1,300 mg/L. Similarly, sulfate concentrations also exceed the California drinking water secondary upper MCL (500 mg/L) for the entire record. The most recent sulfate concentration in 2023 was 630 mg/L. The remaining COCs have not exceeded the California drinking water standards.

The piper diagram in Exhibit 23b shows water quality at MW-5A has remained stable over time. Overall, the piper diagram indicates that MW-5A is sodium chloride type water with sodium and potassium dominant cations and sulfate dominant anions.

(a.)



(b.)

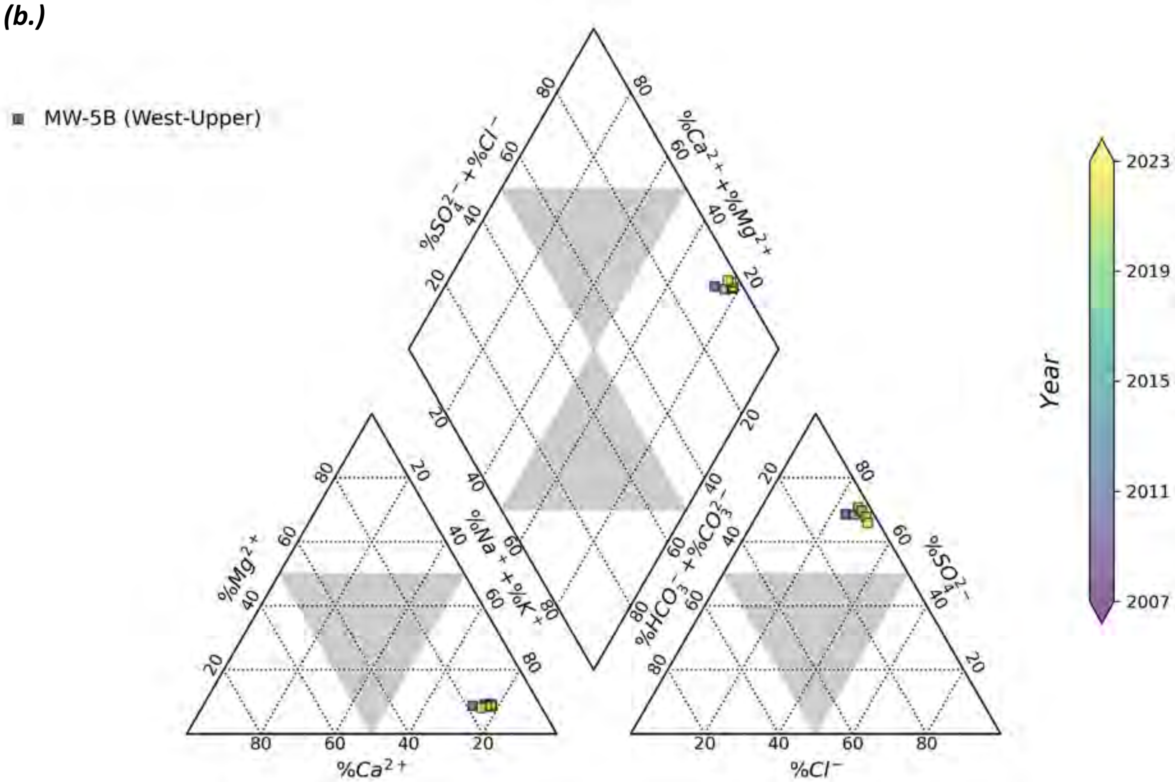


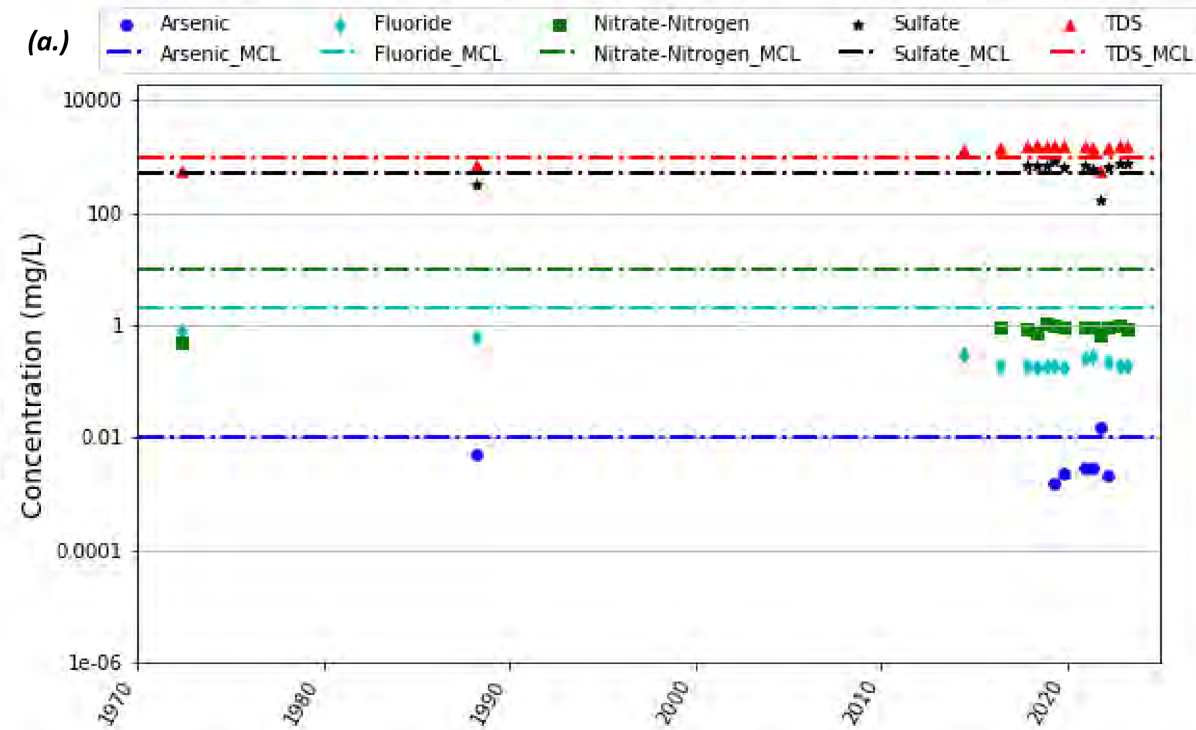
Exhibit 23. (a.) Time series and (b.) Piper diagram of water quality parameters at MW-5B.

RH-1 (ID1-1) (Irrigation Well)

The Mann-Kendall analysis (Table 2) does not indicate a trend for any of the COCs of interest at RH-1 (ID1-1). The water quality times series plot (Exhibit 24a) shows that TDS exceeds the California drinking water secondary upper MCL (1,000 mg/L) for the majority of the record. The most recent TDS concentration in at RH-1 (ID1-1) in 2023 was 1,600 mg/L. Similarly, sulfate concentrations also exceed the California drinking water secondary upper MCL (500 mg/L) for the majority of the record. The most recent sulfate concentration in 2023 was 750 mg/L. The water quality times series plot also shows that RH-1 (ID1-1) has exceeded the arsenic California drinking MCL (10 µg/L) in 2021 at 16 µg/L. The most recent sample taken in 2023 was non-detect. The remaining COCs have not exceeded the California drinking water standards.

The piper diagram in Exhibit 24b shows water quality at RH-1 (ID1-1) has fluctuated over time. Overall, the piper diagram indicates that RH-1 (ID1-1) is borderline between mixed type and sodium chloride type water. RH1 (ID1-1) has sodium and potassium dominant cations (on borderline with no dominant type) and mostly sulfate dominant anions.

(a.)



(b.)

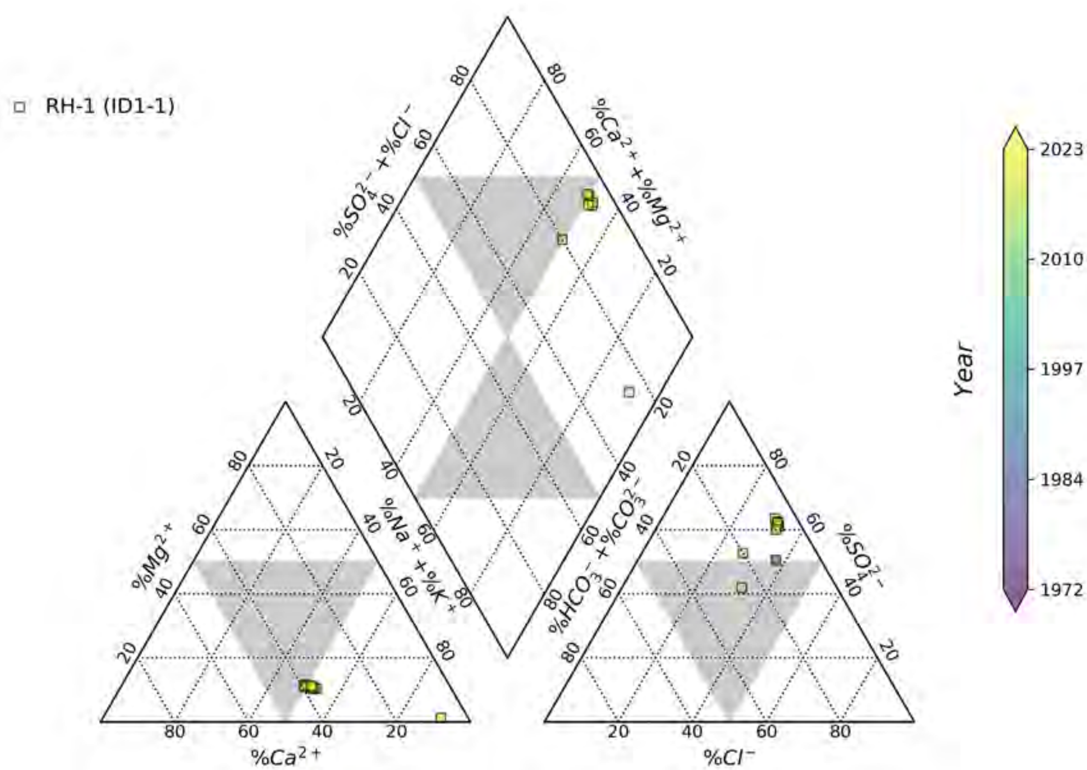


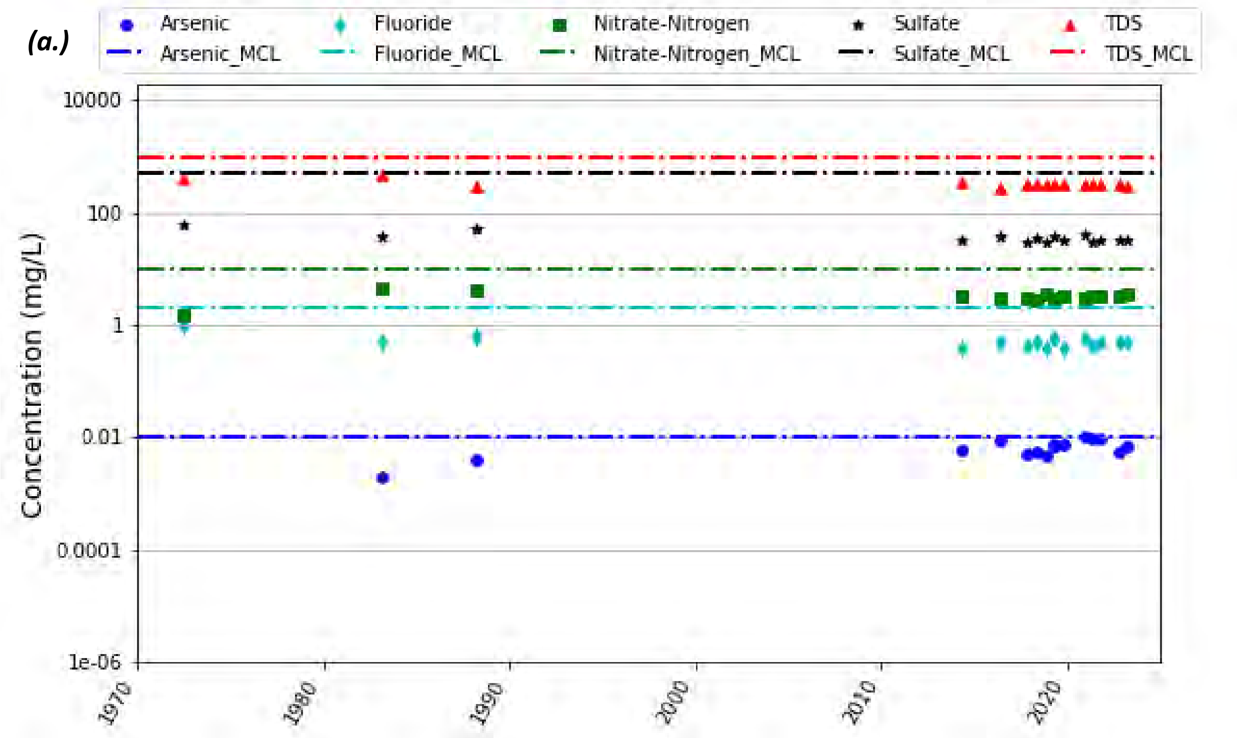
Exhibit 24. (a.) Time series and (b.) Piper diagram of water quality parameters at RH-1 (ID1-1).

RH-2 (ID1-2) (Irrigation Well)

The Mann-Kendall analysis (Table 2) indicates a decreasing trend for sulfate, an increasing trend for arsenic, and no trend indicated for the remaining COCs at RH-2 (ID1-2). The water quality times series plot (Exhibit 25a) shows that arsenic does not exceed the California drinking water MCL (10 µg/L) for the entire record, but trending towards the limit. The most recent sample taken in 2023 was 7 µg/L. The remaining COCs have not exceeded the California drinking water standards.

The piper diagram in Exhibit 25b shows water quality at RH-2 (ID1-2) has changed over time. Overall, the piper diagram indicates that RH-2 (ID1-2) is sodium bicarbonate type water and has sodium and potassium dominant cations and moved from no dominant anions to bicarbonate dominant anions.

(a.)



(b.)

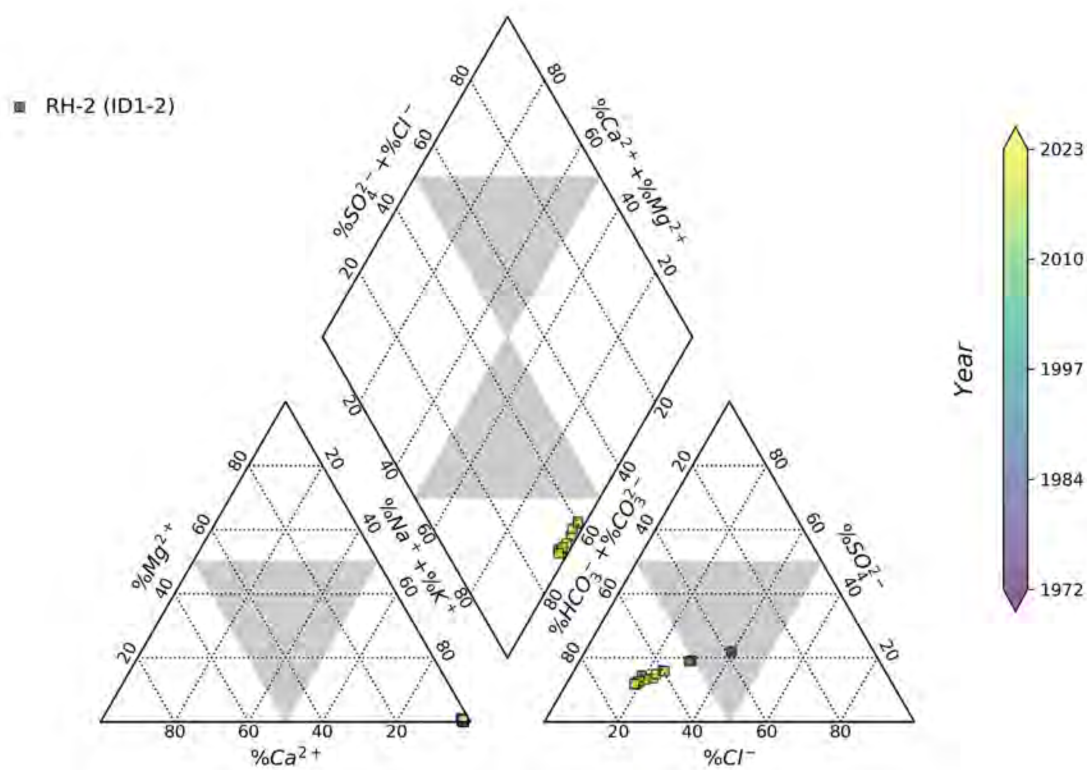


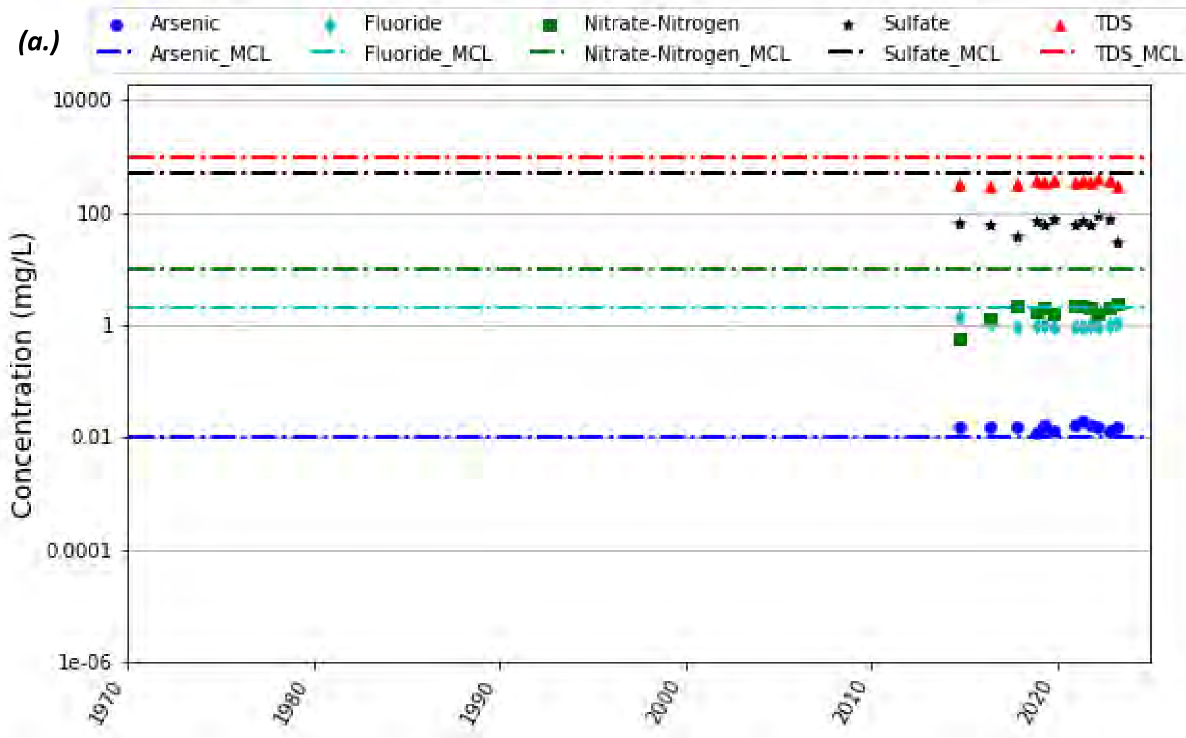
Exhibit 25. (a.) Time series and (b.) Piper diagram of water quality parameters at RH-2 (ID1-2).

RH-3 (Irrigation Well)

The Mann-Kendall analysis (Table 2) does not indicate a trend for any of the COCs of interest at RH-3. The water quality times series plot (Exhibit 26a) shows that arsenic exceeds the California drinking water MCL (10 µg/L) for the entire record. The most recent arsenic concentration in at RH-3 in 2023 was 16 µg/L. The remaining COCs have not exceeded the California drinking water standards.

The piper diagram in Exhibit 26b shows water quality at RH-3 has significantly fluctuated over time. Overall, the piper diagram indicates that RH-3 has fluctuated between sodium chloride type water and sodium bicarbonate type water. Similarly, RH-3 has fluctuated between having no dominant anions and bicarbonate dominant anions. Sodium and potassium have remained the dominant cations over time.

(a.)



(b.)

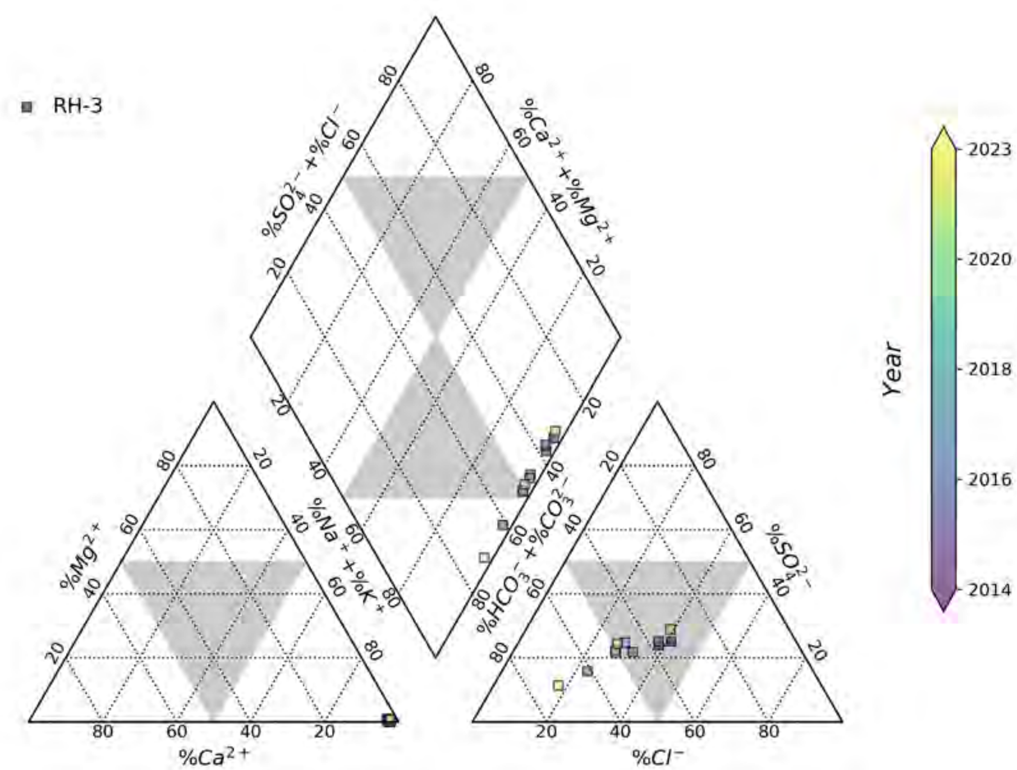


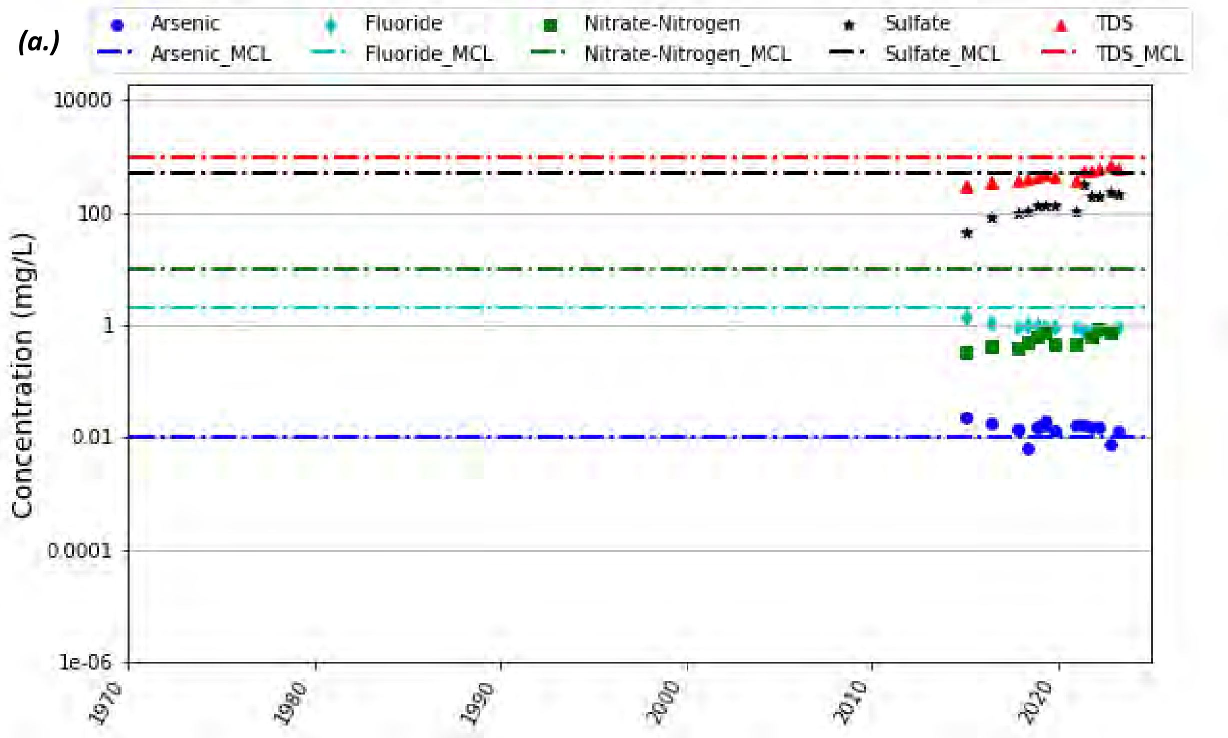
Exhibit 26. (a.) Time series and (b.) Piper diagram of water quality parameters at RH-3.

RH-4 (Irrigation Well)

The Mann-Kendall analysis (Table 2) indicates an increasing trend for nitrate, sulfate, and TDS, a decreasing trend for fluoride, and no trend for arsenic at RH-4. The water quality times series plot (Exhibit 27a) shows that arsenic exceeds the California drinking water MCL (10 µg/L) for the majority of record. The most recent arsenic concentration in at RH-4 in 2023 was 13 µg/L. The remaining COCs have not exceeded the California drinking water standards.

The piper diagram in Exhibit 27b shows water quality at RH-4 has fluctuated over time. Overall, the piper diagram indicates that RH-4 has sodium chloride type water with sodium and potassium dominant cations and no dominant anions.

(a.)



(b.)

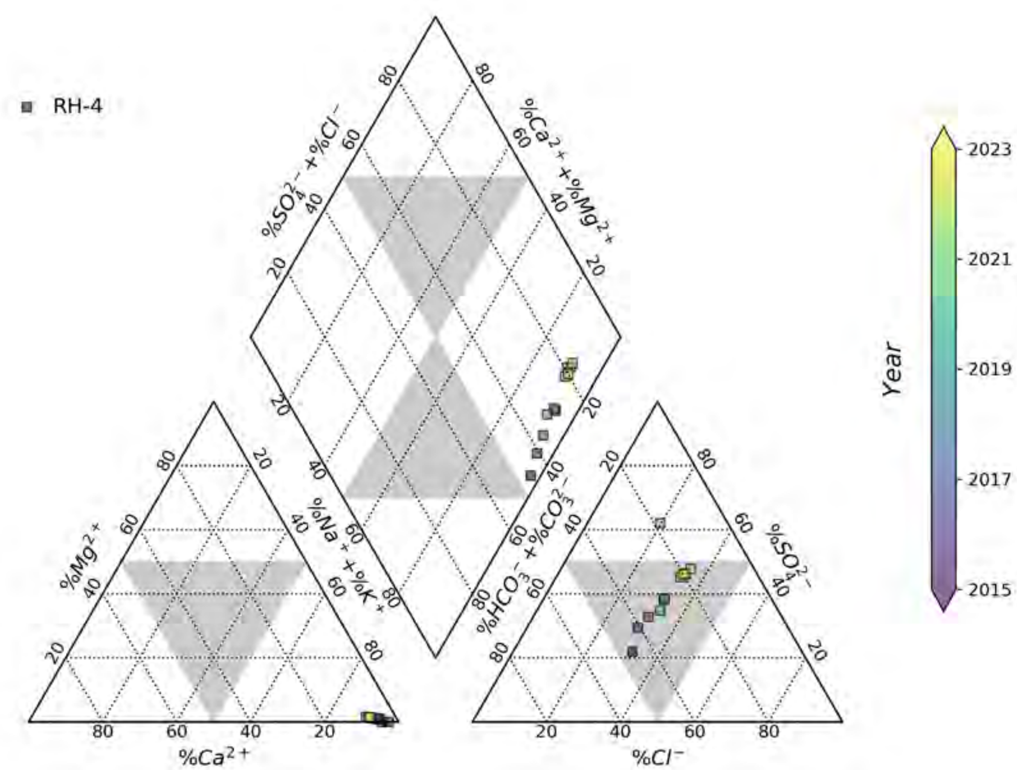


Exhibit 27. (a.) Time series and (b.) Piper diagram of water quality parameters at RH-4.

RH-5 (Irrigation Well)

The Mann-Kendall analysis (Table 2) indicates a decreasing trend for sulfate, an increasing trend for arsenic, and no trend indicated for the remaining COCs at RH-5. The water quality times series plot (Exhibit 28a) shows that arsenic exceeds the California drinking water MCL (10 µg/L) for the majority of the record. The most recent arsenic concentration at RH-5 in 2022 was 25 µg/L. The remaining COCs have not exceeded the California drinking water standards.

The piper diagram in Exhibit 28b shows water quality at RH-5 has fluctuated over time. Overall, the piper diagram indicates that RH-5 has sodium chloride type water with sodium and potassium dominant cations and no dominant anions.

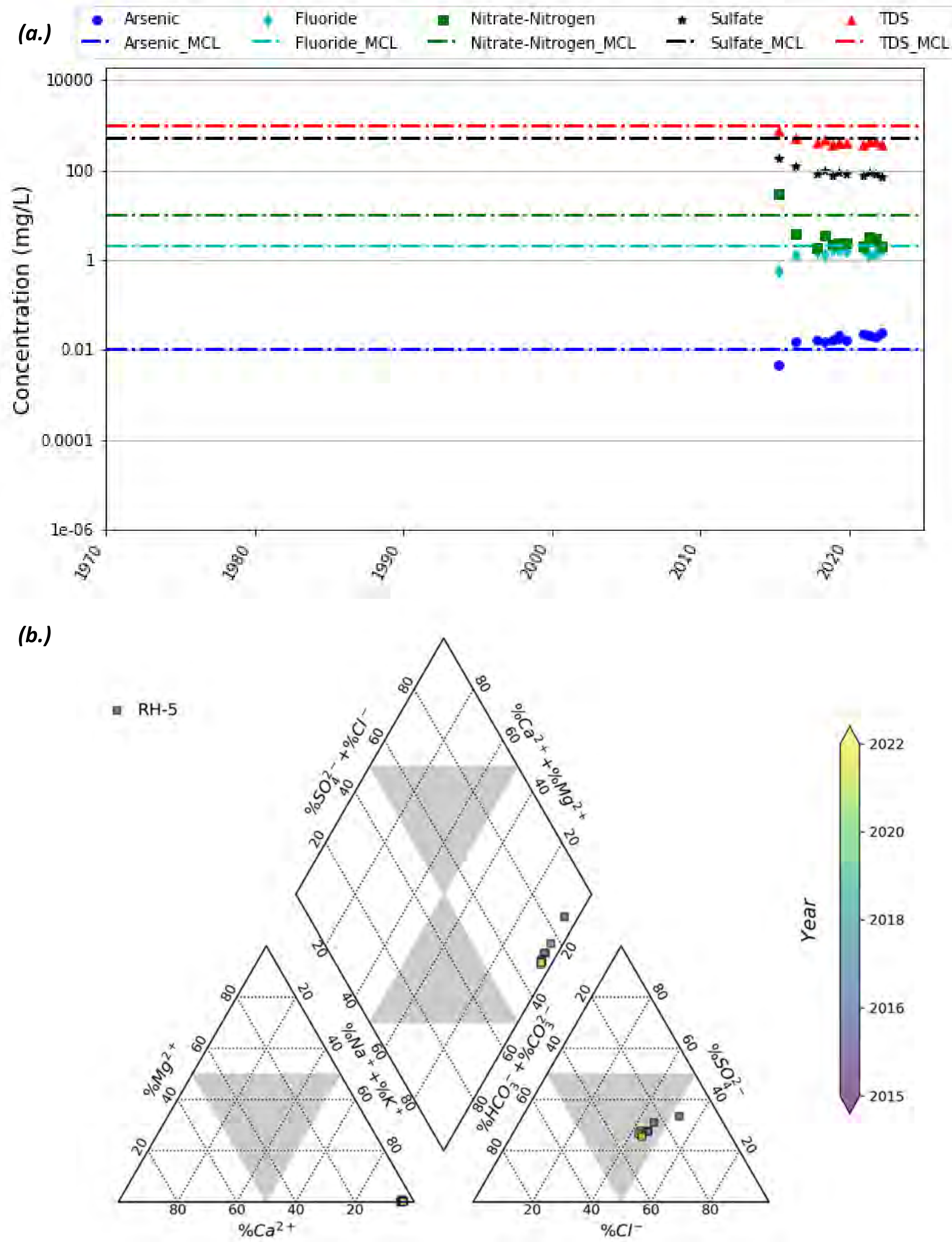


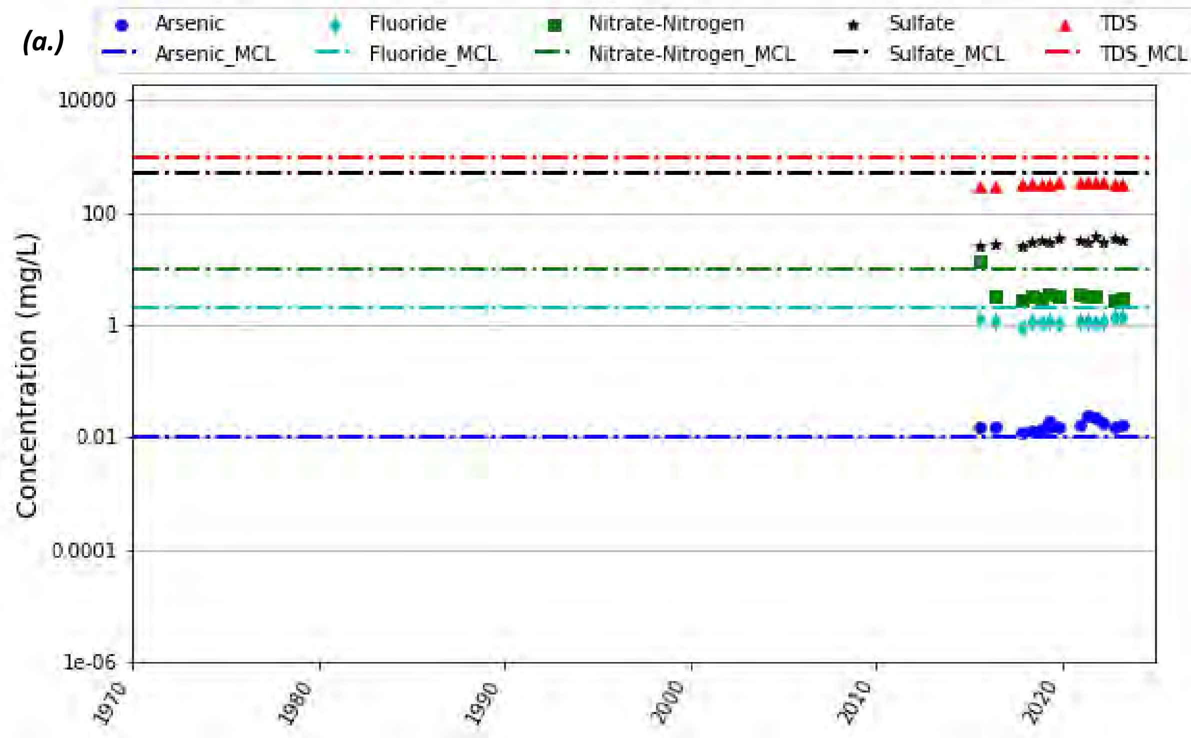
Exhibit 28. (a.) Time series and (b.) Piper diagram of water quality parameters at RH-5.

RH-6 (Irrigation Well)

The Mann-Kendall analysis (Table 2) indicates an increasing trend for sulfate and TDS, and no trend is indicated for the remaining COCs at RH-6. The water quality times series plot (Exhibit 29a) shows that arsenic exceeds the California drinking water MCL (10 µg/L) for the entire record. The most recent arsenic concentration at RH-6 in 2023 was 17 µg/L. The water quality times series plot also shows that RH-6 exceeded the nitrate California drinking MCL (10 mg/L) in 2015 at 14 mg/L. Since then, the nitrate concentration has remained below the MCL and the most recent sample taken in 2023 was 3.1 mg/L. The remaining COCs have not exceeded the California drinking water standards.

The piper diagram in Exhibit 29b shows water quality at RH-6 has fluctuated over time. Overall, the piper diagram indicates that RH-6 has sodium bicarbonate type water with sodium and potassium dominant cations and bicarbonate dominant anions.

(a.)



(b.)

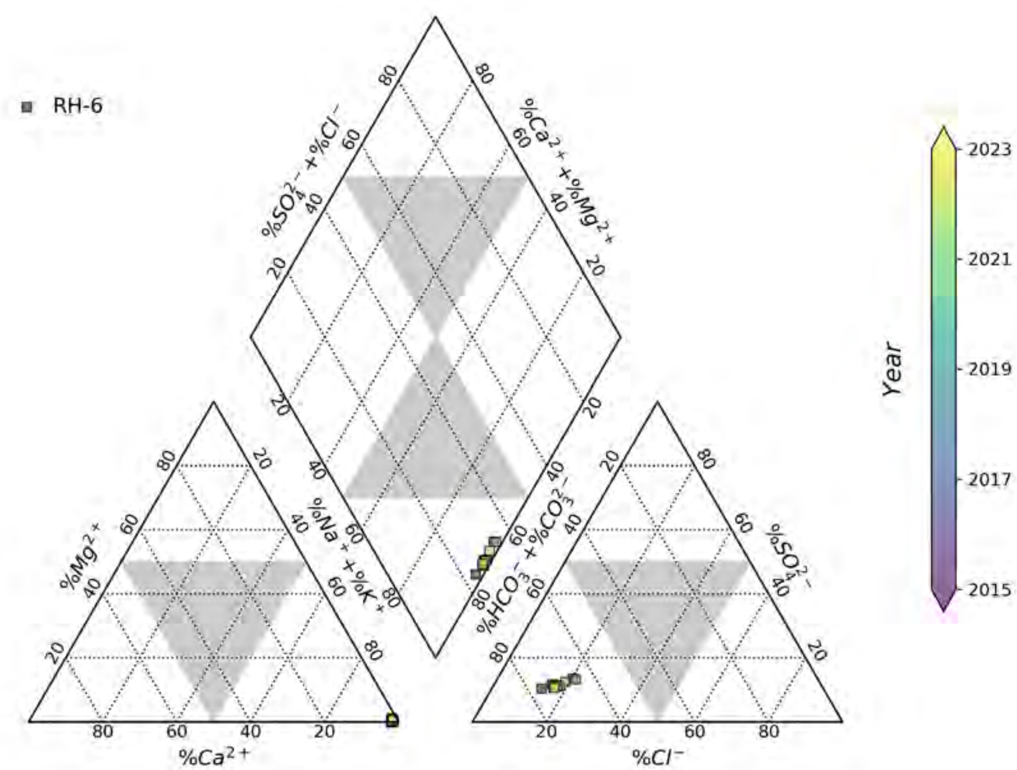


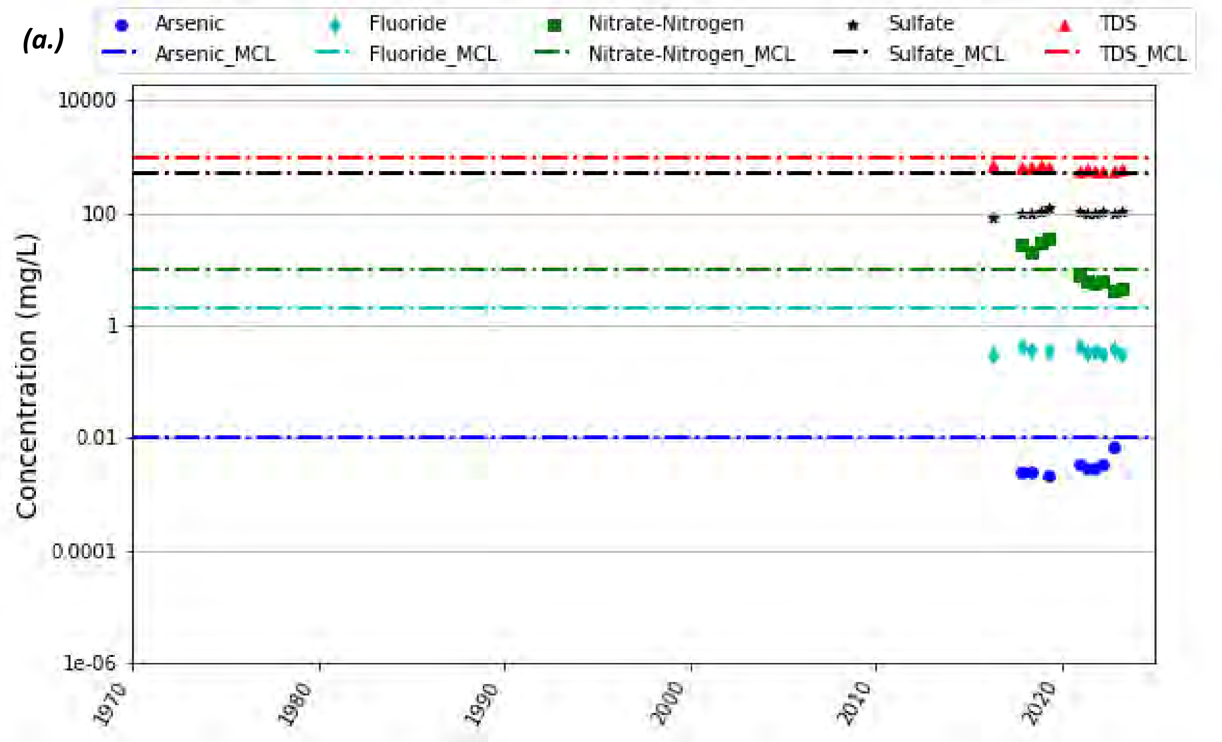
Exhibit 29. (a.) Time series and (b.) Piper diagram of water quality parameters at RH-6.

WWTP-1 (Monitoring Well)

The Mann-Kendall analysis (Table 2) indicates a decreasing trend for sulfate and TDS, and an increasing trend for arsenic. No trend was indicated for the remaining COCs at WWTP-1. The water quality times series plot (Exhibit 30a) shows that nitrate exceeded the California drinking water MCL (10 mg/L) from 2017 through 2019 but has since stabilized and below the MCL. The most recent nitrate concentration at WWTP-1 in 2023 was 4.6 mg/L. The remaining COCs have not exceeded the California drinking water standards.

The piper diagram in Exhibit 30b shows water quality at WWTP-1 has gradually changed over time. Overall, the piper diagram indicates that WWTP-1 is sodium chloride type water with sodium and potassium dominant cations and no dominant anions.

(a.)



(b.)

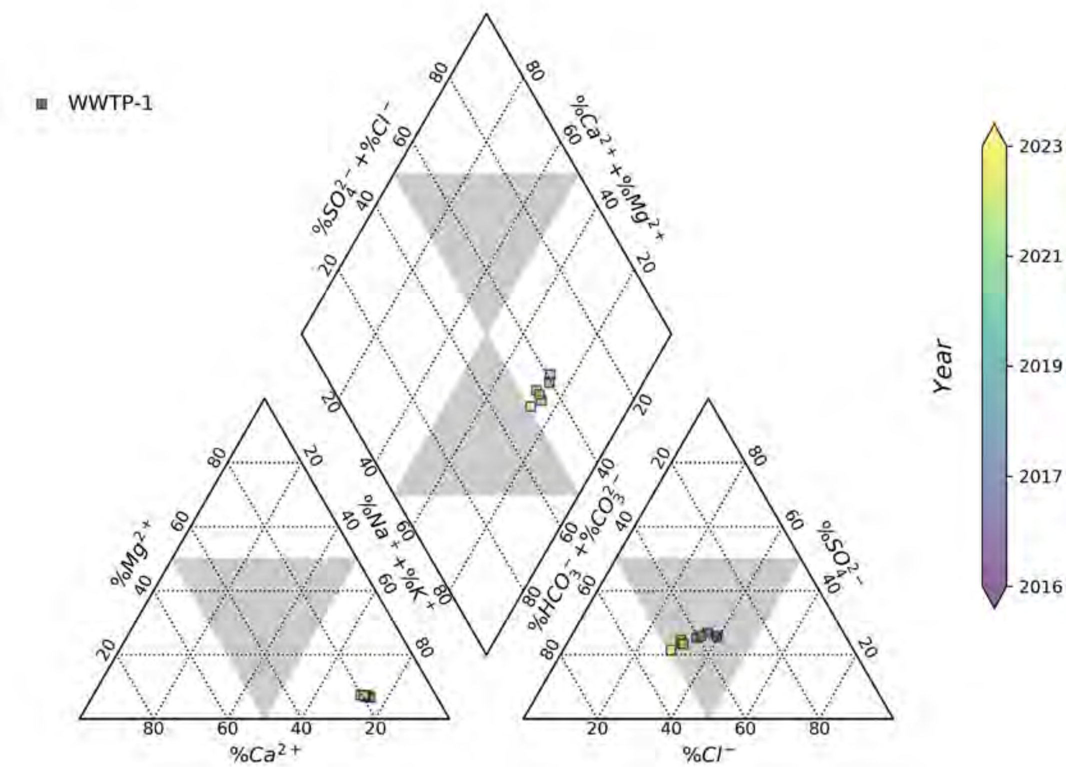


Exhibit 30. (a.) Time series and (b.) Piper diagram of water quality parameters at WWTP-1.

Summary of Preliminary PFAS Sampling

With the increasing concern for PFAS regulation standards for drinking water, BWD is in the process of conducting extensive PFAS sampling in the basin. Preliminary PFAS sampling has taken place in the locations displayed in Figure 9. PFAS has not been detected in the 282 DiGiorgio Road Well, ID4-9, ID4-11, ID4-18, or the landfill wells.

Non-treatment and Treatment Alternatives

While none of the BWD's wells currently exceed California drinking water MCLs, treatment alternatives for COCs are discussed herein to explore options in the event that groundwater quality were to become impaired. Non-treatment and treatment options to meet drinking water standards typically include blending, wellhead treatment, or supplementing the impaired source of supply. In brief, the options include the following.

Switch Sources. As indicated in this TM, the BWD is supplied from several wells located in the NMA, CMA, and SMA of the Borrego Springs Subbasin. If a BWD well were to exceed a drinking water standard, the likely most cost-effective option would be to switch supply to an existing water well(s). Additional evaluation is required to determine if these other sources can meet peak hour demand, maximum day demand and fire flow requirements.

Procurement of a New Source. If additional quantity of groundwater meeting California drinking water MCLs was required by the BWD, then acquiring existing wells or drilling new water wells in the basin may be a cost-effective option. The BWD has already initiated preliminary review of potential new sources of supply in the Subbasin and should further identify strategic sources of supply that meet Title 22 potable drinking water quality requirements.

Blending. If a system has supply sources with low and high concentrations of COCs, blending is a practical option if the source of supply with a low concentration of the COCs is reliable and the sources can be brought together for mixing at a common header (i.e., blending location which may occur within a pipeline). To allow for a safety margin, target concentration of the blended stream is typically set 20% below the respective MCL. It should be noted that the DDW no longer considers blending a viable long-term option to meet drinking water standards for municipal supply.

Sidestream Treatment. If COCs were to exceed a respective MCL by a small margin, then sidestream treatment could be a viable option for some COCs such as arsenic. Sidestream treatment involves splitting flow, treating one stream, and blending it with the untreated stream prior to distribution.

Wellhead Treatment. If the typically more cost-effective options above were exhausted, then wellhead treatment would be evaluated in the event that COCs were to exceed drinking water standards. The U.S. Environmental Protection Agency (EPA) identifies several best available technologies for arsenic removal, which are discussed in further detail in a previous Dudek study, *Water Replacement and Treatment Cost Analysis for the Borrego Valley Groundwater Basin* (Dudek 2015).

Conclusions and Recommendations

Based on the findings of this Groundwater Quality Risk Assessment Update, INTERA concludes and recommends the following:

- All active BWD production wells continue to meet drinking water standards without the need for treatment other than chlorination as required by the SWRCB's DDW.

- Increased groundwater production and declining groundwater levels over the last decade in the SMA combined with an observed increase in arsenic concentrations is several irrigation and monitoring wells and shifts in the water quality type as shown on the Piper diagrams is of concern and presents a water quality risk to BWD production well ID1-8. As such, BWD should make plans to switch supply to other existing BWD water wells if water quality begins to exceed drinking water standards for arsenic.

- DDW is currently investigating the technological and economic feasibility of lowering the current arsenic MCL of 0.010 mg/L (equivalent to 10 µg/L) closer to the PHG (0.004 µg/L). Lowering of this MCL could have a substantial impact on BWD operations; however, based upon available information described herein, it is speculated that the arsenic MCL will not be revised for at least 5 years. BWD should closely follow review of the arsenic MCL. Regulatory updates to the arsenic MCL is likely the greatest potential financial impact to the BWD ratepayers.

- As stated in the GMP, "Degradation of groundwater quality in the upper aquifer has occurred as recharge to the aquifer has mobilized natural and anthropogenic sources of nitrate. The groundwater impacted by nitrate has the potential to migrate laterally as a result of pumping. One strategy successfully implemented to produce potable water in several areas of the Subbasin is to only screen the deeper sediments of the middle and lower aquifer to avoid nitrate that is likely concentrated in the upper aquifer. It should be noted that abandoned wells have the potential to provide a migration pathway of nitrate contaminants from the upper aquifer to the middle and lower aquifers. Hence, the Watermaster's proactive cooperation with San Diego County in the enforcement of the County's ordinance governing abandonment of inactive wells will be considered by the Watermaster in order to preserve the existing potable water quality, especially where poor water quality has been identified." As documented by recent data collected from MW-6S, 904 DiGiorgio Road and the Fortiner Well, elevated nitrate concentrations have been detected above the MCL in the upper aquifer and the upper portion of the middle aquifer of the NMA. As such, it is recommended that a formal recommendation be provided to the County of San Diego Department of Environmental Health regarding water well standards documenting the need to require appropriate annular seals for wells that extend through multiple aquifers with variable water quality. In addition, INTERA recommends an updated well canvas to identify inactive wells in the Subbasin that require proper abandonment in accordance with County and State standards.

- BWD should develop educational materials for pumpers and regulators regarding water quality degradation that is documented to occur within the Subbasin. The location of de minimis domestic wells in the Subbasin should be identified and outreach conducted to those well owners to document groundwater quality and water levels.

- Additional well head data from existing wells in the NMA and CMA are needed to better characterize the spatial variability of groundwater quality. In addition, depth discrete water quality is required to better characterize the groundwater quality by depth. INTERA recommends identifying wells with elevated nitrate in the NMA that would be candidates to perform dynamic flow and chemistry profiling in order to characterize water quality by depth.

- BWD should acquire data semi-annually from the Borrego Springs Watermaster to complete an independent evaluation of water quality results consisting of quality assurance/quality control of the data and flagging of anomalous results not consistent with historical data. On an annual basis statistical trend analysis of available data should be performed to evaluate trends and proactively identify potential water quality risks.

References

Anning, D.W., A.P. Paul, T.S. McKinney, J.M. Huntington, L.M. Bexfield, and S.A. Thiros. 2012. *Predicted Nitrate and Arsenic Concentrations in Basin-Fill Aquifers of the Southwestern United States.* U.S. Geological Survey Scientific Investigations Report 2012–5065.

Brigandi, Phil, 1959. Borrego Beginnings – Early Days in the Borrego Valley 1910-1960. 1st ed.

DDW (Division of Drinking Water). 2016. Electronic Data Transfer Library. http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/EDTlibrary.shtml.

Dudek. 2015. *Water Replacement and Treatment Cost Analysis for the Borrego Valley Groundwater Basin*. December 2015.

Dudek. 2016. "Technical Memorandum: Borrego Valley Groundwater Basin (7-24) Boundary Modification." March 21, 2016.

DWR (Department of Water Resources). 2016. Final List of 2016 Basin Boundary Modifications. October 2016.

Environmental Navigation Services, Inc. 2019. SDAC Impact/Vulnerability Analysis (Task 2 Reports). Prepared for the Borrego Water District. April 15, 2029.

Faunt, C.C., C.L. Stamos, L.E. Flint, M.T. Wright, M.K. Burgess, M. Sneed, J. Brandt, P. Martin, and A.L. Coes. 2015. *Hydrogeology, Hydrologic Effects of Development, and Simulation of Groundwater Flow in the Borrego Valley, San Diego County, California*. U.S. Geological Survey Scientific Investigations Report 2015–5150. http://dx.doi.org/
10.3133/sir20155150.

Helsel, D. (2012). Statistics for Censored Environmental Data Using Minitab (2nd Edition). John Wiley & Sons, Inc.

Helsel, D. R., Hirsch, R. M., Ryberg, K. R., Archfield, S. A., & Gilroy, E. J. (2020). Statistical methods in water resources. U.S. Geological Survey Techniques and Methods, 2020(4-A3), 1–484. https://doi.org/10.3133/tm4a3

Mitten, H.T., G.C. Lines, C. Berenbrock, and T.J. Durbin. 1988. *Water Resources of Borrego Valley and Vicinity, California, San Diego County, California; Phase 2, Development of a Groundwater Flow Model.* U.S. Geological Survey Water-Resources Investigation Report 87–4199.

Moyle, W.R. 1982. *Water Resources of Borrego Valley and Vicinity, California; Phase 1 –Definition of Geologic and Hydrologic Characteristics of Basin.* U.S. Geological Survey Open-File Report 82-855. Prepared in Cooperation with the County of San Diego.

OEHHA (Office of Environmental Health Hazard Assessment). 2004. Arsenic Fact Sheet Public Health Goal for Arsenic. April 2004.

Piper, A.M., 1944. A graphic procedure in the geochemical interpretation of water-analyses. Eos, Transactions American Geophysical Union, 25(6), pp.914–928.

Rezaie-Boroon, M.H., J. Chaney, and B. Bowers. 2014. "The Source of Arsenic and Nitrate in Borrego Valley Groundwater Aquifer." *Journal of Water Resource and Protection* 6: 1589-1602. http://dx.doi.org/10.4236/jwarp.2014.617145.

Smith, R., Knight, R. & Fendorf, S. Overpumping leads to California groundwater arsenic threat. Nat Commun 9, 2089 (2018). https://doi.org/10.1038/s41467-018-04475-3.

Stiff, H.A., Jr., 1951, The interpretation of chemical water analysis by means of patterns: Journal of Petroleum Technology, v. 3. No. 10, section 1: p15,16 and section 2: p3.

SWRCB (State Water Resources Control Board). 2022. Notice of Public Workshops and Opportunity for Public Comment Metal Detection Limits for Purposes of Reporting (DLR). October 19, 2022. https://www.waterboards.ca.gov/public_notices/comments/docs/2022/notice-ddw-101922.pdf

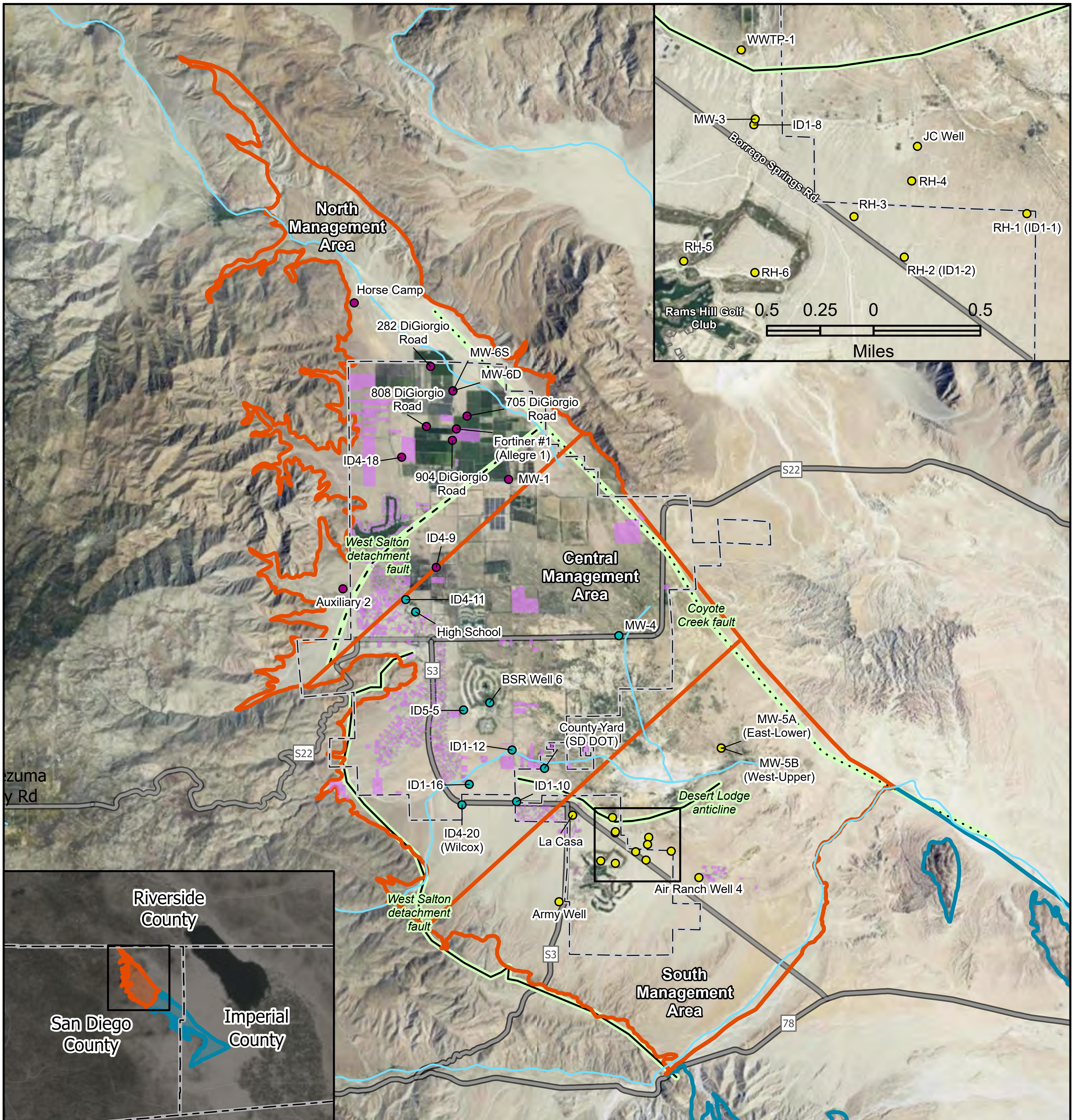
Walvoord, M.A., F.M. Phillips, D.A. Stonestrom, R.D. Evans, P.C. Hartsough, B.D. Newman, and R.G. Strieg. 2003. “A Reservoir of Nitrate Beneath Desert Soils.” *Science* 302(5647):1021–1024.

Ward MH, Jones RR, Brender JD, de Kok TM, Weyer PJ, Nolan BT, Villanueva CM, van Breda SG. Drinking Water Nitrate and Human Health: An Updated Review. Int J Environ Res Public Health. 2018 Jul 23;15(7):1557. doi: 10.3390/ijerph15071557. PMID: 30041450; PMCID: PMC6068531.

Welch, A.H., D.B. Westhohn, D.R. Helsel, and R.B. Wanty. 2000. “Arsenic in Groundwater of the United States—Occurrence and Geochemistry.” *Groundwater* 38(4):589–604.

West Yost. 2022. Technical Memorandum Extension of the Borrego Valley Hydrologic Model through Water Year 2021. Prepared for the Technical Advisory Committee Borrego Springs Watermaster. July 29, 2022.

West Yost. 2023. Groundwater Monitoring Plan for the Borrego Springs Subbasin. Prepared for the Borrego Springs Watermaster. April 11, 2023.



Management Area Wells
- North
- Central
- South

Faults and Folds
- Certain
- Concealed
- Un-Certain

- Borrego Water District
- Borrego Springs Groundwater Subbasin (7-024.01)
- Ocotillo Wells Groundwater Subbasin (7-024.02)
- Residential Sewer Septic Parcels
- Rivers and Streams

N

2 1 0 2

Miles

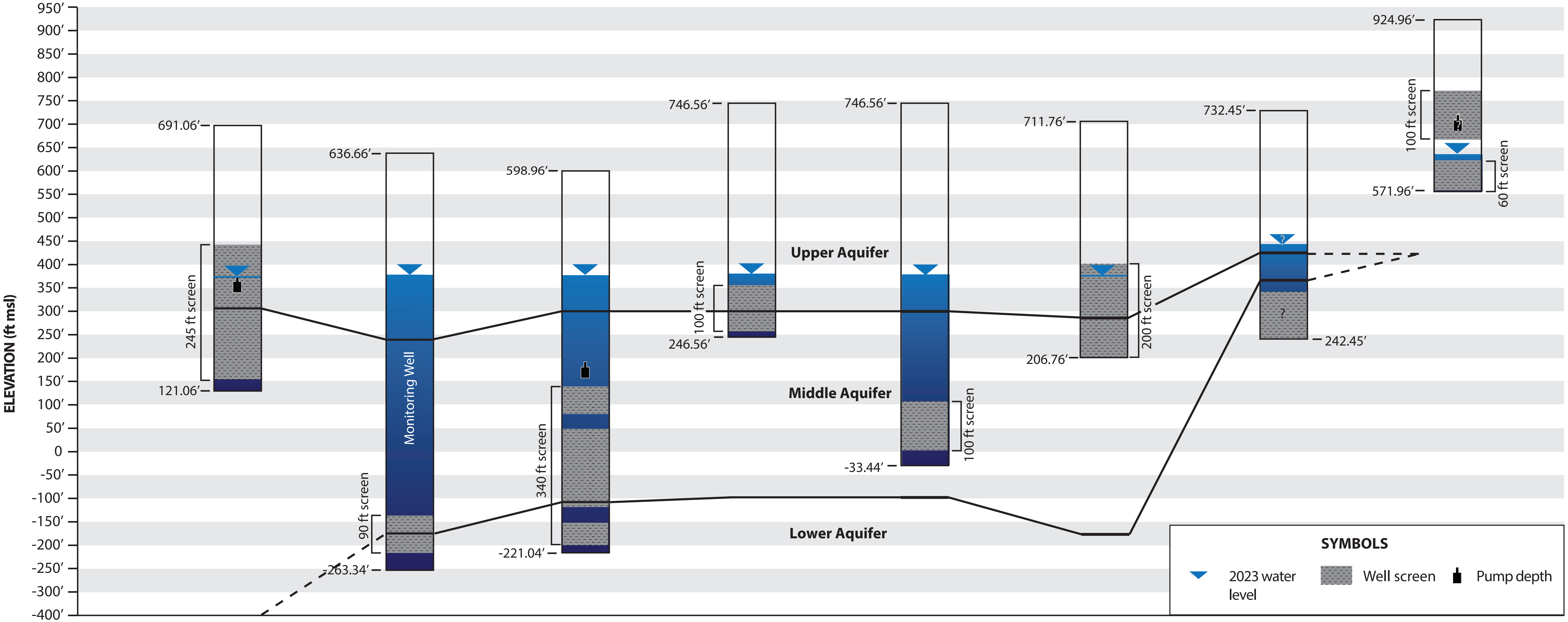
INTERA

Source(s): BWD 2023, Watermaster 2023

Figure 1
Well Location Map
Borrego Springs Subbasin
Groundwater Quality Risk
Assessment Update

FILE: C:\Users\mdughi\OneDrive - INTERA Inc\Desktop\ArcGIS\BWD\MCL Maps\MCL maps.aprx Layout: Overview Layout Date: 9/29/2023

Well ID	ID4-18	MW-1	ID4-9	MW-6S	MW-6D	Fortiner	Auxiliary 2	Horse Camp
Current gpm	Q=220gpm	Monitoring Well	Q=321gpm	Monitoring Well	Monitoring Well	Q=N/A	Q=Unknown	Q=Unknown
Original gpm*	Q=1,200gpm*	N/A	Q=1,600gpm*	N/A	N/A	Q=770gpm*	Q=Unknown	Q=Unknown
Year Drilled	(1982)	(2004)	(2019)	(2023)	(2023)	(1945)	(1954)	(2005)
Original Static	465.06 ft msl	403.66 ft msl	385.75 ft msl	370.77 ft msl	385.89 ft msl	469.46 ft msl	N/A	454.23 ft msl



	ID4-18	MW-1	ID4-9	MW-6S	MW-6D	Fortiner	Auxiliary 2	Horse Camp
Casing Diameter:	14" ID	16" ID	16" ID	4" ID	4" ID	16" ID	N/A	17.5" ID
Well Depth:	570 ft bls	700 ft bls	820 ft bls	500 ft bls	780 ft bls	505 ft bls	490 ft bls	350 ft bls
Borehole Depth:	699 ft bls	708 ft bls	916 ft bls	520 ft bls	783 ft bls	505 ft bls	505 ft bls	410 ft bls
Pump Size:	160 HP	200 HP	N/A	N/A	N/A	200 HP	N/A	N/A
Pump Depth:	N/A	316 ft msl	N/A	N/A	N/A	219 ft mls	N/A	N/A
Specific Capacity:	N/A	N/A	33.0 gpm/ft	N/A	N/A	31.0 gpm/ft	N/A	N/A
Current Production Rate:	1,166 gpm	1,000 gpm	965 gpm	Monitoring Well	Monitoring Well	723 gpm	N/A	N/A
Casing Type:	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	N/A	Mild Steel
Drop Pipe:	N/A	10"	N/A	N/A	N/A	8"	4"	6"

*Indicates original tested production rate when drilled.

INTERA

SOURCE: DWD, BWD 2023, DWR Well Completion Reports, Elevation data reported in NAVD88 from BVHM

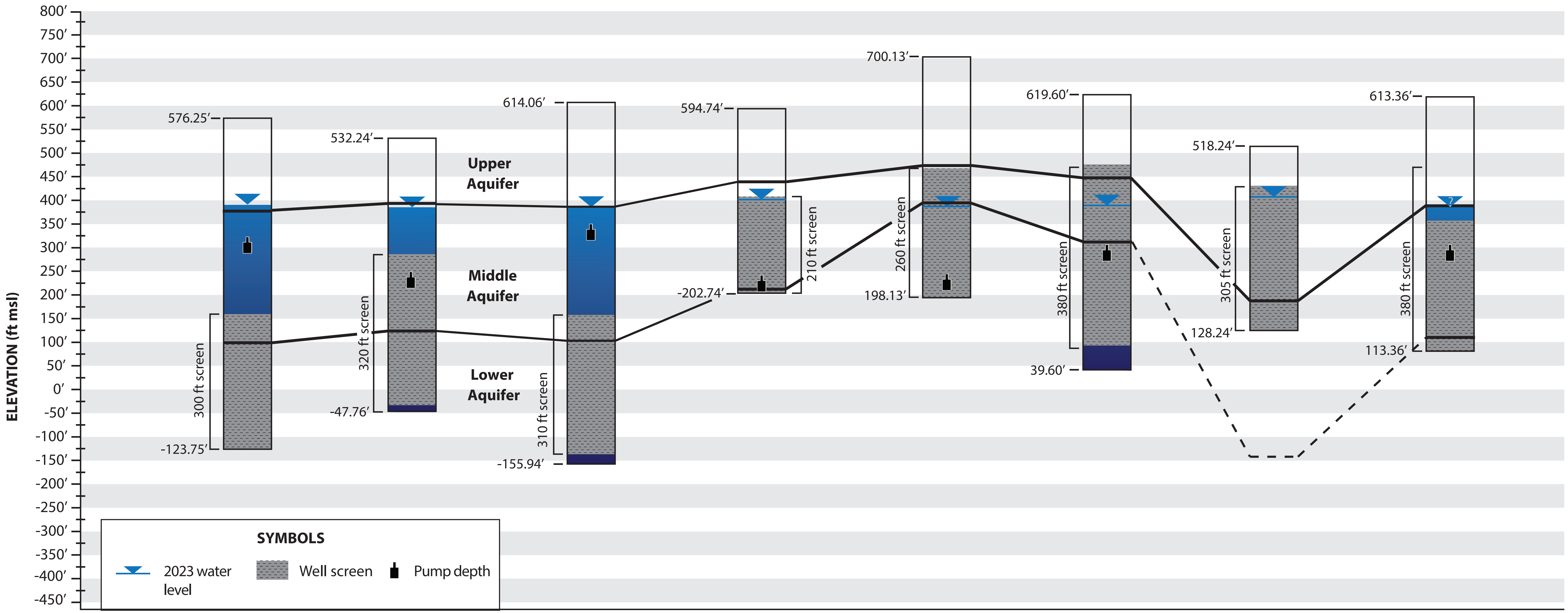
FIGURE 2

DRAFT: North Management Area Wells

October 2023

Borrego Valley Groundwater Basin - Groundwater Quality Risk Assessment Update

Well ID	ID5-5	ID1-12	ID4-11	ID1-10	ID4-20 (Wilcox)	ID1-16	MW-4	High School
Current gpm	1,000 gpm	965	1,100 gpm	500? gpm	175 gpm	750 gpm	Monitoring Well	600
Original gpm*	3,000 gpm*	2,000	2,000 gpm*	1,110 gpm*	900 gpm*	2,500 gpm*	N/A	3,000
Year Drilled	(2000)	1984	(1995)	(1972)	(1981)	(1989)	(2006)	(2019)
Original Static	376.25 ft msl	449.74 ft msl	452.06 ft msl	464.74 ft msl	454.23 ft msl	447.60 ft msl	424.24 ft msl	378.36 ft msl



Casing Diameter:	16" ID	14.75" ID	14" ID	12.75" ID	12.75" ID	16" ID	12" ID	10.25" ID
Well Depth:	700 ft bls	580 ft bls	770 ft bls	392 ft bls	502 ft bls	550 ft bls	390 ft bls	500 ft bls
Borehole Depth:	708 ft bls	726 ft bls	800 ft bls	816 ft bls	502 ft bls	705 ft bls	930 ft bls	500 ft bls
Pump Size:	200 HP	200 HP	200 HP	150 HP	80 HP	200 HP	N/A	N/A
Pump Depth:	316 ft msl	242 ft msl	269 ft msl	204 ft msl	225 ft msl	219 ft msl	N/A	N/A
Specific Capacity:	N/A	75.4 gpm/ft	86.95 gpm/ft	20.3 gpm/ft	26.4 gpm/ft	31.0 gpm/ft	N/A	N/A
Current Production Rate:	1,000 gpm	965 gpm	1,100 gpm	500? gpm	350? gpm	723 gpm	N/A	N/A
Casing Type:	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel
Drop Pipe Diameter:	10"	8"		8"	6"	8"	N/A	N/A

*Indicates original tested production rate when drilled.

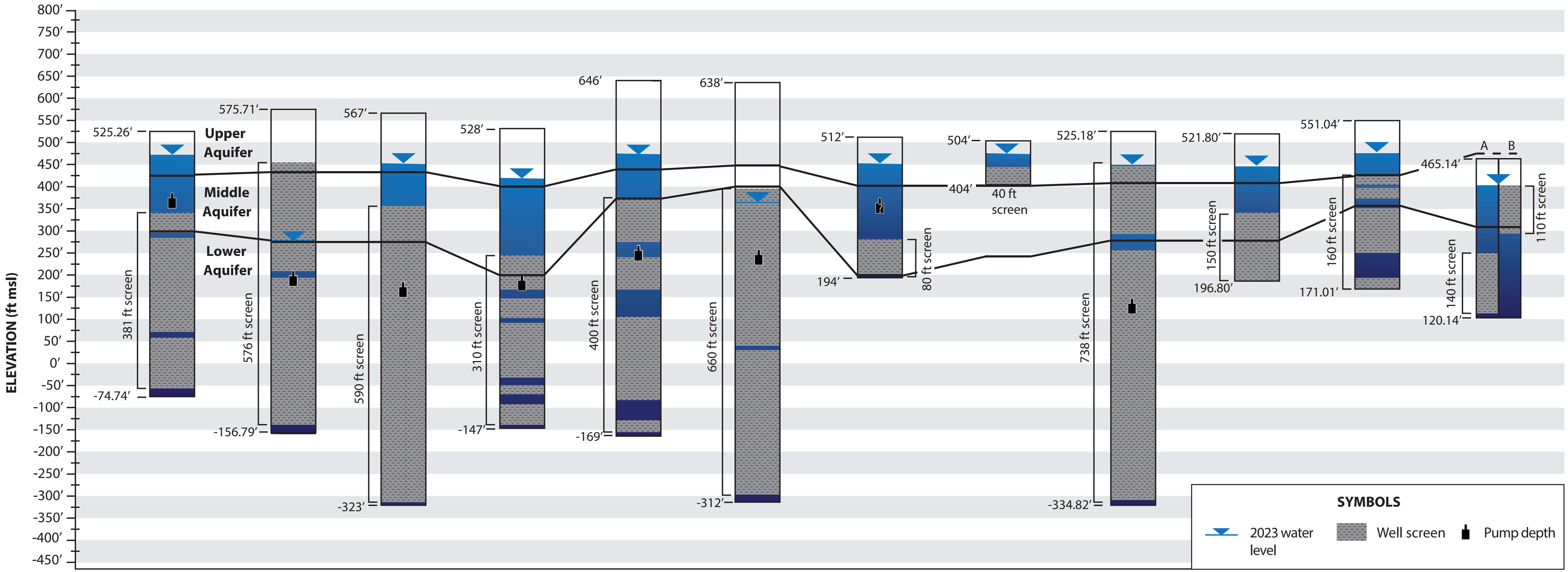
INTERA

SOURCE: DWD, BWD 2023, DWR Well Completion Reports, Elevation data reported in NAVD88 from BVHM

FIGURE 3

DRAFT: Central Management Area Wells

Well ID	RH-1 (ID1-1)	RH-2 (ID1-2)	RH-3	RH-4	RH-5	RH-6	JC Well	WWTP-1	ID1-8	MW-3	Air Ranch Well 4	MW-5A/B
Current gpm	Q=200 gpm	Q=200 gpm	Q=230 gpm	Q=260 gpm	Q=350 gpm	Q=350 gpm	Q=10 gpm	Monitoring Well	Q=300 gpm (2013)	Monitoring Well	Q=Unknown	Monitoring Well
Original gpm*	Q=300 gpm*	Q=295 gpm*	Q=250 gpm*	Q=342 gpm*	Q=360 gpm*	Q=500 gpm*	Q=50 gpm*	N/A	Q=1,100 gpm*	N/A	Q=Unknown	N/A
Year Drilled	(1972)	(1972)	(2014)	(2014)	(2015)	(2015)	(2004)	(2009)	(1972)	(2005)	(1993)	(2006)
Original Static	472.26 ft msl	483.71 ft msl	465.00 ft msl	468.00 ft msl	468.00 ft msl	496.00 ft msl	Unknown	476.00 ft msl	474.18 ft msl	459.80 ft msl	462.04 ft msl	403.14 ft msl



Casing Diameter:	12.75″ ID	12.75″ ID	12.75″ ID	10.75″ID	40.75″ ID	10.75″ ID	4.5″ ID	4.5″ ID	12.75″ ID	4.5″ ID	8″ ID	4″ ID
Well Depth:	600 ft bls	732 ft bls	890 ft bls	675 ft bls	815 ft bls	900 ft bls	318 ft bls	100 ft bls	850 ft bls	325 ft bls	380 ft bls	345 ft bls
Borehole Depth	609 ft bls	740 ft bls	998 ft bls	844 ft bls	830 ft bls	1,000 ft bls	318 ft bls	100 ft bls	938 ft bls	344 ft bls	380 ft bls	480 ft bls
Pump Size:	40 HP	40 HP	40 HP	40 HP	40 HP	40 HP	Unknown	N/A	100 HP	N/A	N/A	N/A
Pump Depth:	357 ft msl	188 ft msl	187 ft msl	168 ft msl	246 ft msl	238 ft msl	N/A	N/A	135 ft msl	N/A	N/A	N/A
Specific Capacity:	3.25 gpm/ft	1.45 gpm/ft	1.24 gpm/ft	1.69 gpm/ft	7.0 gpm/ft	5.9 gpm/ft	Unknown	N/A	8.7 gpm/ft	N/A	N/A	N/A
Current Production Rate:	200 gpm	200 gpm	230 gpm	260 gpm	350 gpm	350 gpm	10 gpm	N/A	350 gpm (2013)	N/A	N/A	N/A
Casing Type:	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	Mild Steel	PVC	PVC	Mild Steel	Mild Steel	PVC	Mild Steel

*Indicates original tested production rate when drilled.

INTERA

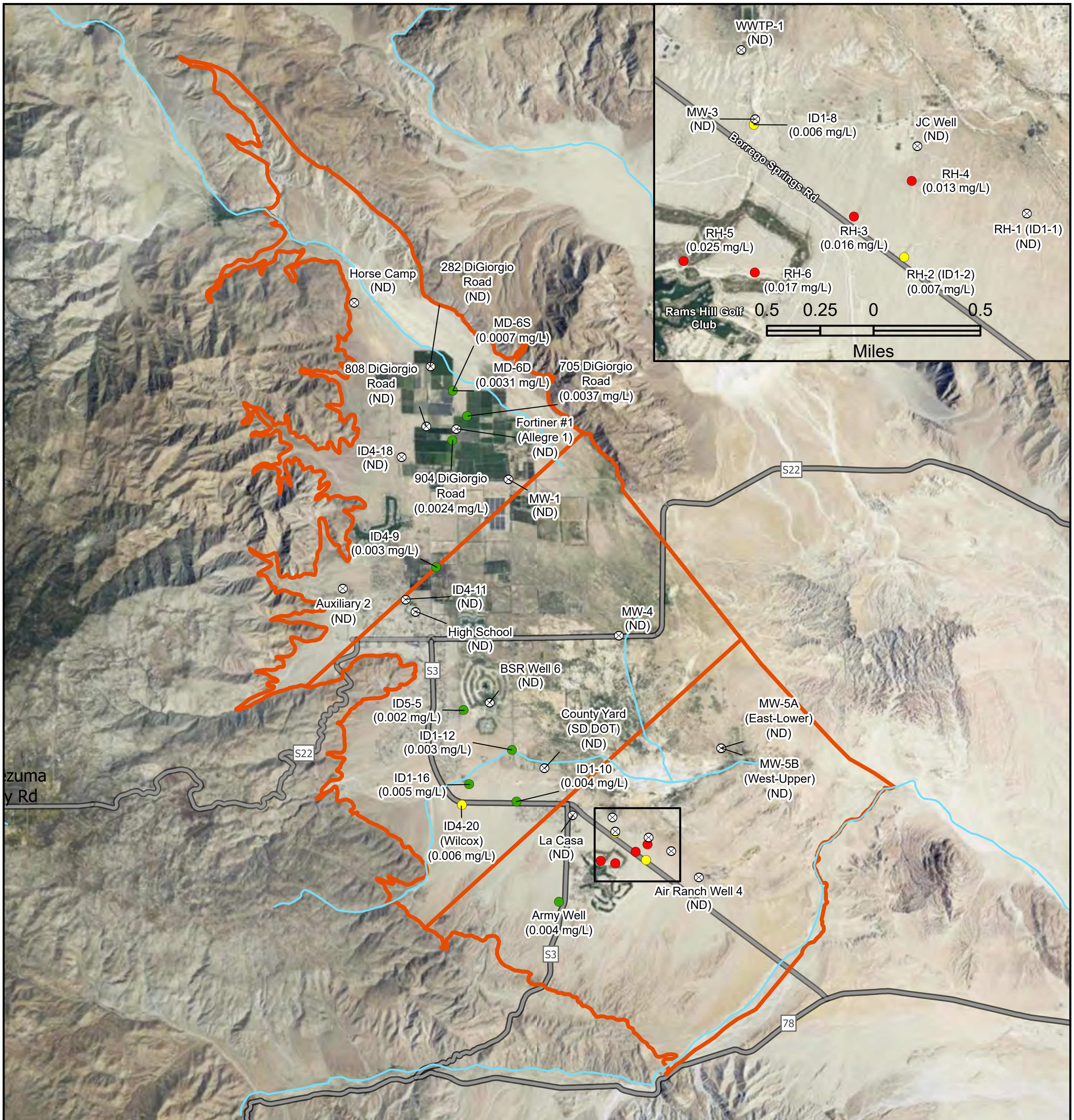
SOURCE: DWD, BWD 2023, DWR Well Completion Reports, Elevation data reported in NAVD88 from BVHM

FIGURE 4

DRAFT: South Management Area Wells

October 2023

Borrego Valley Groundwater Basin - Groundwater Quality Risk Assessment Update



Arsenic Concentrations

- Below 0.005 mg/L
- Between 0.005 and 0.01 mg/L
- Above 0.01 mg/L
- Non-detect

Rivers and Streams

Borrego Springs Subbasin

N

2 1 0 2

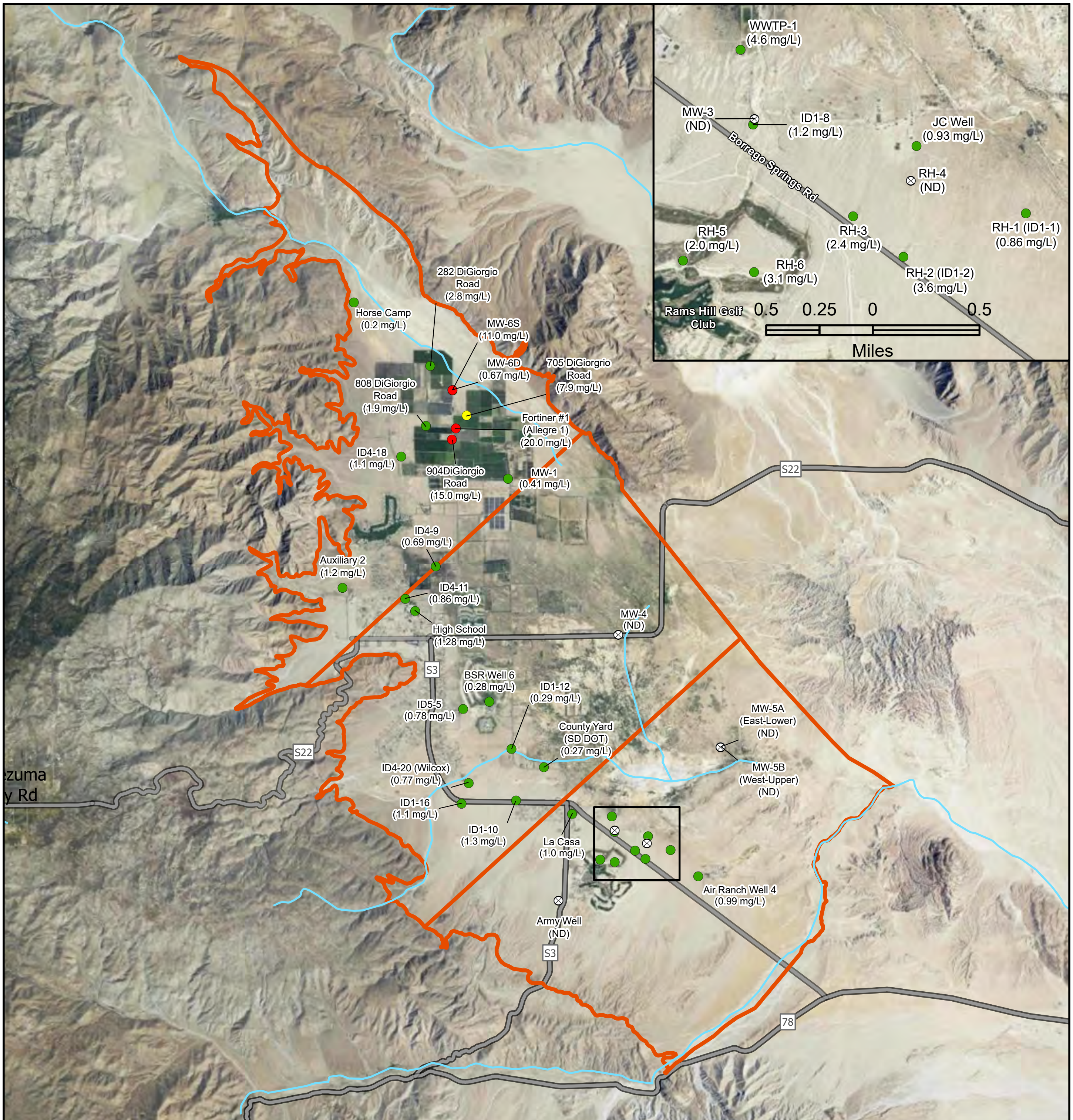
Miles

Figure 5
Current Arsenic Wellhead Concentrations
Borrego Springs Subbasin Groundwater Quality Risk Assessment Update

INTERA

Source(s): BWD 2023, Watermaster 2023

Note(s): Sample results from 2023; if data lacking, most current results used.



Nitrate Concentrations

- Below 5 mg/L
- Between 5 and 10 mg/L
- Above 10 mg/L
- Non-detect

Rivers and Streams

Borrego Springs Subbasin

tl_2019_06_prisecroads selection

N

2 1 0 2

Miles

Figure 6
Current Nitrate Wellhead Concentrations
Borrego Springs Subbasin Groundwater Quality Risk Assessment Update

INTERA

Source(s): BWD 2023, Watermaster 2023

Note(s): Sample results from 2023; if data lacking, most current results used.

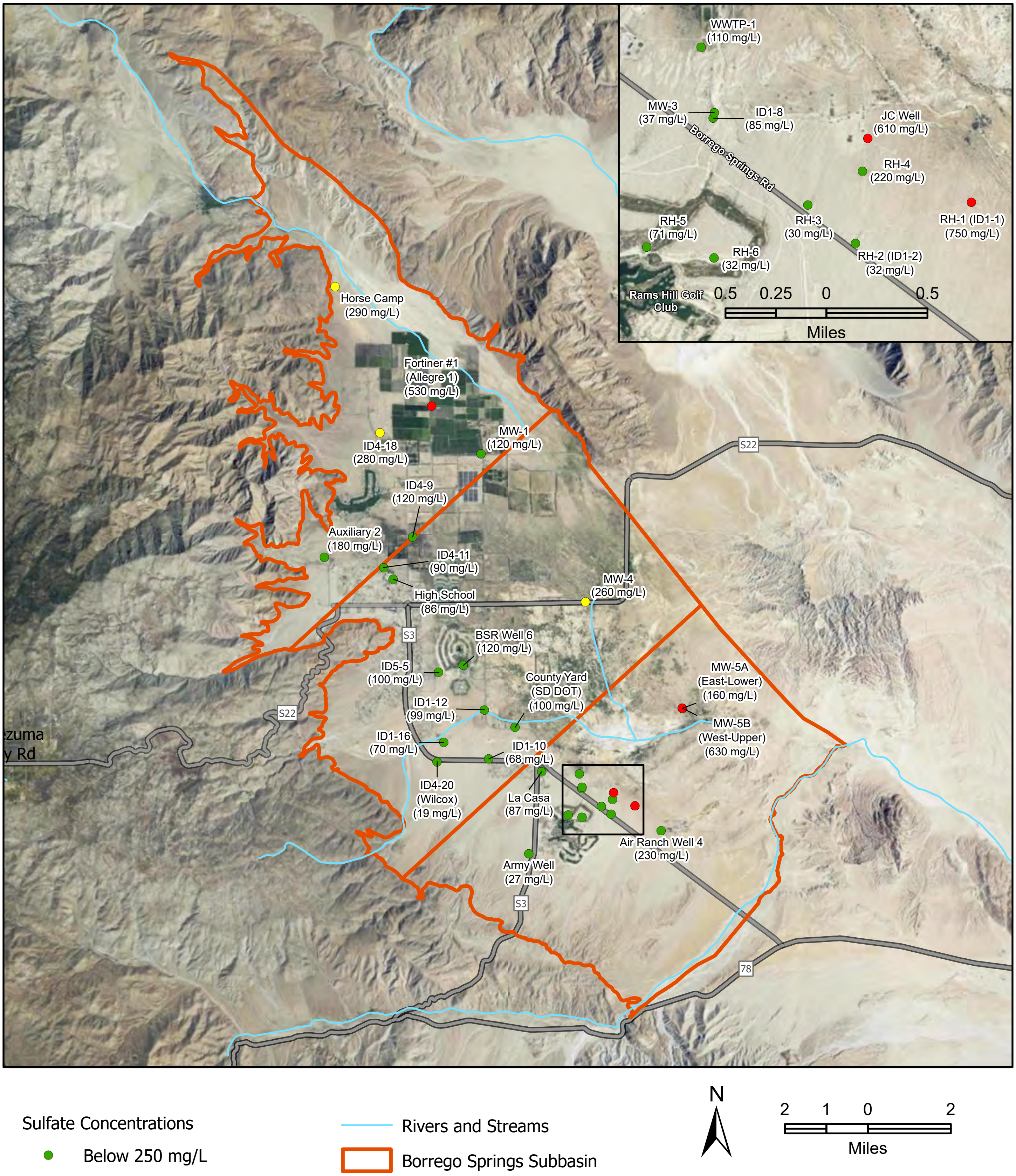
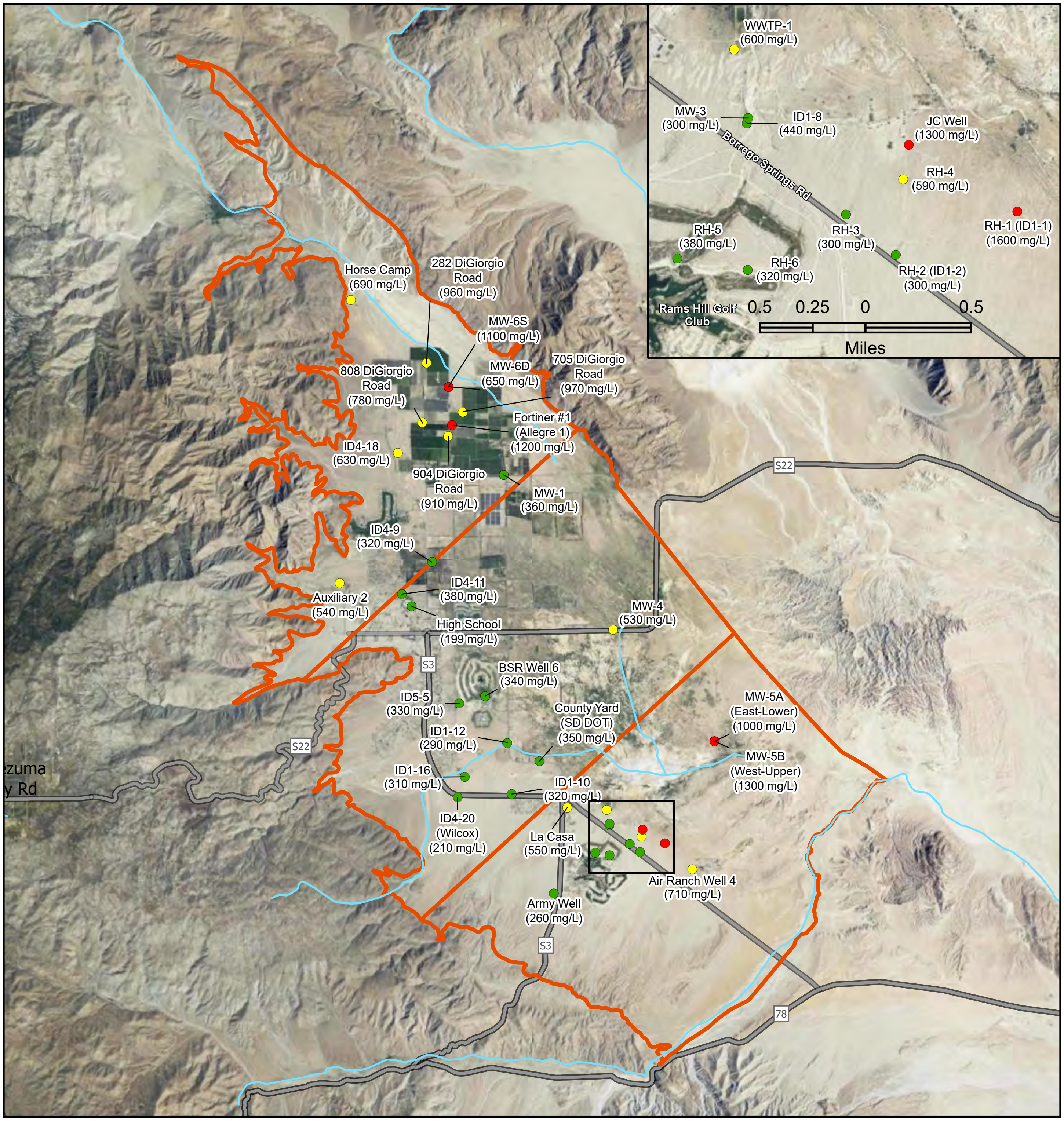


Figure 7
Current Sulfate Wellhead Concentrations
Borrego Springs Subbasin
Groundwater Quality Risk
Assessment Update

INTERA

Source(s): BWD 2023, Watermaster 2023
Note(s): Sample results from 2023; if data lacking, most current results used.

FILE: C:\Users\mdughi\OneDrive - INTERA Inc\Desktop\ArcGIS\BWD\MCL Maps\MCL maps.aprx Layout: Sulfate Layout Date: 10/5/2023



TDS Concentrations

- Below 500 mg/L
- Between 500 and 1000 mg/L
- Above 1000 mg/L
- Non-detect

Rivers and Streams

Borrego Springs Subbasin

N

2 1 0 2

Miles

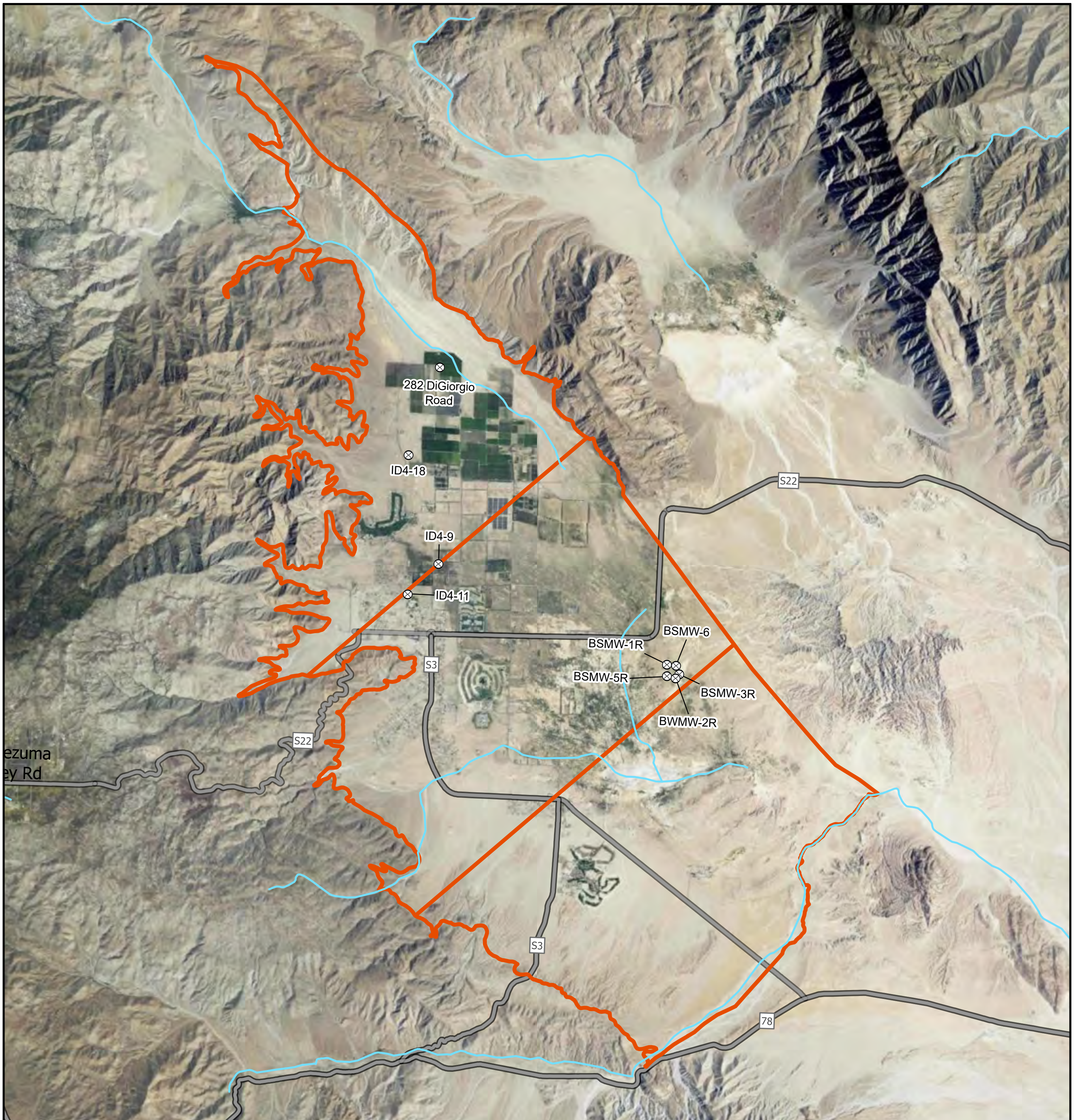
Figure 8
Curent TDS Wellhead Concentrations
Borrego Springs Subbasin
Groundwater Quality Risk
Assessment Update

INTERA

Source(s): BWD 2023, Watermaster 2023

Note(s): Sample results from 2023; if data lacking, most current results used.

FILE: C:\Users\mdughi\OneDrive - INTERA Inc\Desktop\ArcGIS\BWD\MCL Maps\MCL maps.aprx Layout: TDS Layout Date: 10/5/2023



PFAS Concentrations

⊗ Non-detect

Rivers and Streams

Borrego Springs Groundwater Subbasin (7-024.01)

N

2 1 0 2

Miles

Figure 9
Current PFAS Wellhead Concentrations
Borrego Springs Subbasin Groundwater Quality Risk Assessment Update

INTERA

Source(s): BWD 2023, Watermaster 2023, GeoTracker
Note(s): Sample results from 2023; landfill well data from 2019

FILE: C:\Users\mdughi\OneDrive - INTERA Inc\Desktop\ArcGIS\BWD\MCL Maps\MCL maps.aprx Layout: PFAS Layout Date: 10/5/2023

BORREGO WATER DISTRICT
BOARD OF DIRECTORS MEETING
OCTOBER 24, 2023
AGENDA ITEM II.C

October 18, 2023

TO: Board of Directors

FROM: Geoffrey Poole, General Manager

SUBJECT: Reserve Fund Policy Changes and Recommended Fund Balance – J Clabaugh

RECOMMENDED ACTION: Receive reports and direct staff as deemed appropriate.

ITEM EXPLANATION: Jessica has developed the attached revised reserve funds policy as well as recommendations regarding reserve fund balances and that is attached. Jessica will review the information and answer any questions at the meeting.

NEXT STEPS
1. TBD

FISCAL IMPACT
1. N/A

ATTACHMENTS:

1. Borrego Water District Policy Statement Cash Reserves Policy
2. Reserve Funds Details

BORREGO WATER DISTRICT
POLICY STATEMENT

SUBJECT: CASH RESERVES POLICY

NO: 2011-05-01

ADOPTED: 2011-05-25	**AMENDED: 2019-05-28**
AMENDED: 2015-05-27	**AMENDED: 2020-06-09**
AMENDED: 2016-05-25	**AMENDED: 2021-06-08**
AMENDED: 2017-05-24	**AMENDED: 2023-xx-xx**
AMENDED: 2018-06-19	

I. BACKGROUND AND INTRODUCTION

Reserves are needed because of financial risk.[1] Water and sewer operations are inherently risky, given the potential costs associated with repairing and replacing infrastructure necessary for maintaining 24x7 operations for supplying potable water and sewer and wastewater treatment services to the homes and businesses of Borrego Springs. In addition, water operations have risk associated with the volatility of revenue due to weather conditions that alter expectations of the amount of water sold. Reserves also assist in reducing rate shocks. Without them a water utility is exposed to rate instability. Rate instability increases the cost of borrowing, which drives up rates. In addition, reserves help the District improve its credit rating, which translates into lower interest rates on debt and thus lower rates for the District's customers. Also, bond or loan covenants often require a debt reserve or recommend a rate stabilization reserve.

Some utilities operate in a state of revenue deficiency, which means they either rely on existing reserves, skimp on funding reserves, or defer economically prudent repair and replacement (R&R) of capital infrastructure to the future where higher costs will be borne by future ratepayers to repair or replace infrastructure that may have failed catastrophically. Catastrophic failure is sometimes many times more expensive than prudent R&R before failure occurs. Becoming revenue sufficient means that a utility can count on receiving adequate revenues to fully fund utility operations, including debt service obligations, and some portion of capital improvements from rate revenues and reserves. Reserve accounts are a vital part of water and sewer and wastewater treatment system's financial health that lead to lower rates for the District's customers.

This Board believes that operating with revenue sufficiency is required, not only to remain creditworthy for future capital borrowing, but also to replace depleted reserves necessary to operate most economically. For these reasons, the District will maintain reserve funds so as to provide working capital for operations; funds required by law, ordinance and bond covenants; and necessary cash for the scheduled and

[1] *Financial Risk* is defined as the sum(probability of an event occurring) x (the potential financial cost if that event occurs).

unscheduled R&R of capital infrastructure; as well as funds set aside for meeting water supply requirements under the Sustainable Groundwater Management Act (SGMA) and the Borrego Springs Subbasin Adjudicated Judgement.

Reserves are also necessary for the District to stabilize rates due to normal revenue and cost uncertainties due to a variety of circumstances beyond the District's control, and to provide a prudent amount of insurance against economic downturns and a wide range of potential emergencies. The efficient and discrete management of these cash reserves, when combined with their appropriate replacement as they are drawn down from time-to-time add additional assurance that the current levels of service reliability and quality that the District's ratepayers have grown to expect will continue into the future.

This reserve policy is based on prudent financial management practices and those amounts required by legal, legislative, and contractual obligations that are critical to the financial health of the District. This policy defines required fund types for segregation purposes and funding levels that are based upon this District's unique operating, capital investment and financial plans. Both Restricted Reserves and Board designated Discretionary Reserves for the water enterprise and the sewer and wastewater enterprise will be funded by rates specific to those enterprises so as to meet California Proposition 218 requirements. That is, reserves specific to the needs of the District's water enterprise will be accumulated from water rates. Reserves specific to the needs of the District's sewer and wastewater enterprise will be funded from sewer and wastewater treatment rates.

II. RESTRICTED RESERVES. Restricted Reserves are established and utilized for narrowly defined purposes and are protected by law or covenant. The District's Restricted Reserves for its water and sewer and wastewater treatment enterprises are the following:

Debt Reserves. Reserves equal to the annual principal and interest (P&I) for the respective debt obligations of the District shall be formally transferred and restricted in accordance with all legal requirements.

System Growth Reserves. These reserves generated from development charges for new water and sewer service as specified by the District's Policy for Water and Sewer Service to New Developments in effect, as amended from time to time, are used to offset capital projects or debt service related to new development in the District so that new development pays for itself rather than requiring a subsidy from existing ratepayers.

III. BOARD DISCRETIONARY RESERVES

Operating or Working Capital Reserves. The purpose of an operating reserve is to have cash on hand for the continued day-to-day operations of the utility. The Operating Reserve may be used for cash flow purposes to fund necessary expenses without the need to wait for billed revenue to come in as well as any unexpected increases in operating expenses. The amount of the Operating Reserve is commonly pegged to a certain percentage of the utility's total operating expenses. The set percentage is usually dictated by the utility's bill frequency; if customers are billed on a monthly basis, then revenue continuously comes in and the need to have a significant amount of funds within the Operating Reserve may not be necessary. Based on industry standards, the Operating Reserve, in the case of monthly billing, should equal around 90 days of expenses (3 months). If the billing frequency is less frequent or there are revenue receipt delays due to other contingencies, the Operating Reserve may be increased to account for the time delay of receiving cash on hand. The Operating or Working Capital Reserve shall be a minimum reserve of no less than 90 days of Operating and Maintenance (O&M) annual expenses, with an ideal Operating Reserve target of 120-days of annual O&M expenses.

Rate Covenant Stabilization Funds. These reserves include the Sewer Enterprise Rate Covenant Stabilization Fund and the Water Enterprise Rate Covenant Stabilization Fund. The purpose of these reserves are used to stabilize water and sewer revenues in order to maintain adequate debt coverage ratios required by the District's lenders. These reserve funds shall be maintained at level of twenty-five (25%) of the current years' debt service payments.

Contingency Reserves. The purpose of this reserve is to accommodate unexpected operational changes, legislative impacts or other economic events that may affect the District's enterprise operations, which could not have been reasonably anticipated at the time the budget was prepared. The target level for this reserve is a minimum of five percent (5%) and a maximum of ten percent (10%) of the District's total enterprise-wide operating expenses. Generally, the level will be increased as the level of economic uncertainty increases.

Capital Repair and Replacement Reserve (Capital Reserve). A Capital Repair and Replacement Reserve is used primarily to meet and ensure the timely construction of necessary capital improvements without any delays due to cash flow concerns. Capital expenses can fluctuate quite a bit from year-to-year and the Capital Reserve may be leveraged to smooth out significant changes in expenses and; thereby, avoiding any unduly rate shocks to District customers. It may also serve as collateral and reassurance when awarding a construction contract. The Capital Reserve shall have a target equal to the greater of (i) $1,000,000 and (ii) the budgeted pay-go needs in the following fiscal year for the water infrastructure repair and replacement (R&R) and sewer and wastewater infrastructure repair and replacement (R&R).

Water Supply Purchase Reserve (Supply Reserve). The District will need to purchase

Baseline Pumping Allocation (BPA) from Subbasin pumpers to meet its supply requirements established under SGMA and the Borrego Springs Subbasin California Superior Court Adjudicated Judgment. The District hopes to use grants and/or bank debt to accomplish these purchases. However, BPA may become available in the market on the sellers' timeframe, not necessarily the District's. It would also potentially be financially imprudent for the District to wait until the last moment to purchase BPA before penalties are assessed by the Watermaster for exceeding the District's annual pumping allocation limit. For these reasons, the Board shall dictate the requirements of any Water Supply Purchase Reserve as it sees fit. In 2023, the Borrego Water District acquired 670 BPA thru the purchased the William Bauer Farm and entered into a multi-year agreement to accrue an additional 1,820 BPA thru the purchase of the David Bauer farm. It is estimated that this purchase will maintain sufficient Water Supply thru the year 2035 when the District will need to rely on carryover amounts to meet existing demands.

Emergency Reserve – Catastrophic events may occur that require substantial investments to replace damaged assets. Some examples of catastrophic events include earthquakes, wind storms, floods, ransomware exploits or hacking that impacts the District's digital networks, health emergencies such as the current COVID-19 emergency, etc. Some of these catastrophic events may allow the utility to recover the cost of damages from FEMA or existing insurance policies. However, FEMA or insurance policy coverage reimbursements may take between 6 months to 2 or more years to recover. The utility should ensure adequate cash reserves exist to replace the assets in a timely fashion and to arrange short term financing options. The minimum reserve levels are sometimes combined with emergency funding from banks or bonding agencies. The percent of the minimum cash reserves are dependent on the replacement cost of capital assets in service and the level of risk of catastrophic type events. The Emergency Reserve policy target level will equal 2% of the replacement cost of the District's capital assets, which is approximately $87,590,000 in 2021 dollars as developed by its District engineer.

IV. OTHER RESERVE FUNDS. The District's Board may establish other cash reserve funds for specific needs that are over and above the reserves noted above as may be necessary from time to time.

Borrego Water District
Low Reserves Fund Detail Analysis

TARGET BALANCE	CURRENT BALANCE	RESERVE TYPE	RESERVE DESCRIPTION
$643,841	$0	Non-218 Reserve	Reserves from Non-Rate Revenue. Should be about $640k, but can be allocated wherever.
$979,000	$503,971	Debt Reserve	Reserve equal to current years' Debt Service Payments. FY24 amount is $979k. ($883,845 paid 10/01, $95,000 remains)
$0	$0	Water Supply Reserve	TBD
$0	$0	System Growth Reserves	Development charges for new meters. Used to offset capital projects and new development related debt expenses
$88,279	$88,279	*TCS Expansion Reserve*	A System Growth Reserve. Accumulated EDU Sales and Expansion Fees since 2015. EDU Sales($24,320); Expansion Fees($53,959)
$907,000	$907,000	Operating/Working Capital Reserve	90 to 120 days O&M. FY24 Operating Budget is $3.68M. 90 days is $907k
$244,750	$244,750	Rate Covenant Stabilization Funds	Policy: 25% of Current Years' Debt Service Payments Due
$184,000	$184,000	Contingency Reserves	For unexpected operational/legislative expenses 5-10% of O&M. Using 5% for FY2024.
$1,000,000	$1,000,000	Capital R&R Reserve	Greater of $1M or budgeted next years' cash CIP. FY25 CIP = $979,361
$1,250,000	$650,000	Risk Management (Emergency) Reserves	$1.25M. 15% allocated to sewer.
$0	$0	Other Reserves	None at the present time.

Green = Unrestricted Reserves
Red = Contractually Required Reserves
Orange = Reserves set by Board Policy

TOTAL	TOTAL Balance @ 09/30/23
$5,296,870	$3,578,000

BORREGO WATER DISTRICT
BOARD OF DIRECTORS MEETING
OCTOBER 24, 2023
AGENDA ITEM II.D

October 18, 2023

TO: Board of Directors

FROM: Geoffrey Poole, General Manager

SUBJECT: Borrego Springs Subbasin Watermaster Board – VERBAL D Duncan/K Dice/T Driscoll
1. Update on Board Activities
2. Update on Technical Advisory Committee Activities
3. Borrego Basin AEM Helicopter Survey Update

RECOMMENDED ACTION:
Receive verbal report from Watermaster delegates and Consultants on upcoming issues.

ITEM EXPLANATION:
BWD Representatives on the Watermaster Board and Consultants will update the Board and answer any questions.

NEXT STEPS
1. TBD

FISCAL IMPACT
1. TBD

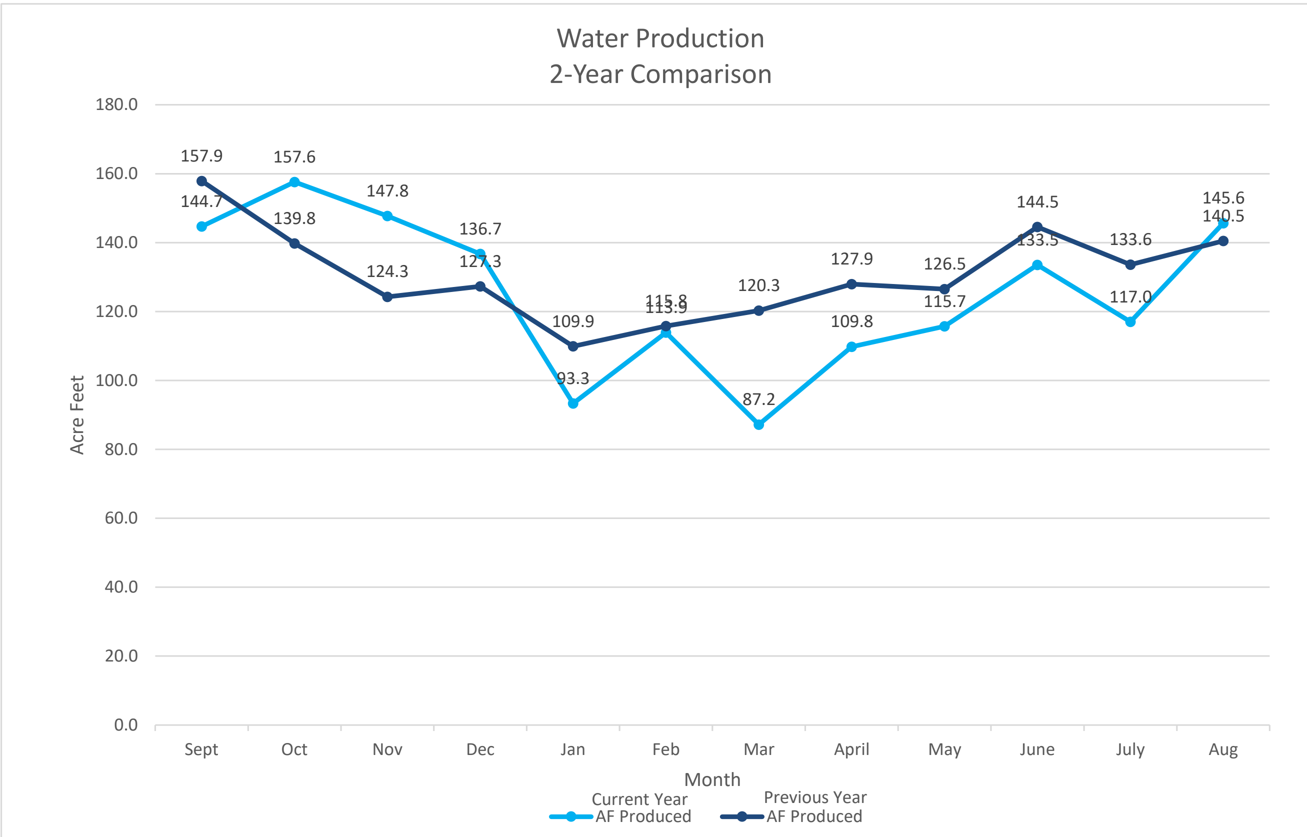
ATTACHMENTS
1. None

IVA

WATER PRODUCTION / USE RECORDS

WATER PRODUCTION SUMMARY

Aug 2023



Past 12 months Production vs. Sales

	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23
AF Used	132.1	147.6	139.3	117.9	101.1	121.6	95.1	115.7	128.4	128.4	128.4	128.4
AF Produced	144.7	157.6	147.8	136.7	93.3	113.9	87.2	109.8	115.7	133.5	117.0	145.6
% Non Rev.	8.7%	6.3%	5.7%	13.8%	-8.4%	-6.8%	-9.1%	-5.4%	-11.0%	3.8%	-9.7%	11.8%

Previous 12 Months Production vs. Sales

	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22
AF Used	138.0	139.0	110.1	132.8	117.8	136.1	125.3	123.8	108.8	124.8	116.5	126.5
AF Produced	157.9	139.8	124.3	127.3	109.9	115.8	120.3	127.9	126.5	144.5	133.6	140.5
% Non Rev.	12.6%	0.6%	11.4%	-4.3%	-7.2%	-17.5%	-4.2%	3.2%	14.0%	13.6%	12.8%	10.0%

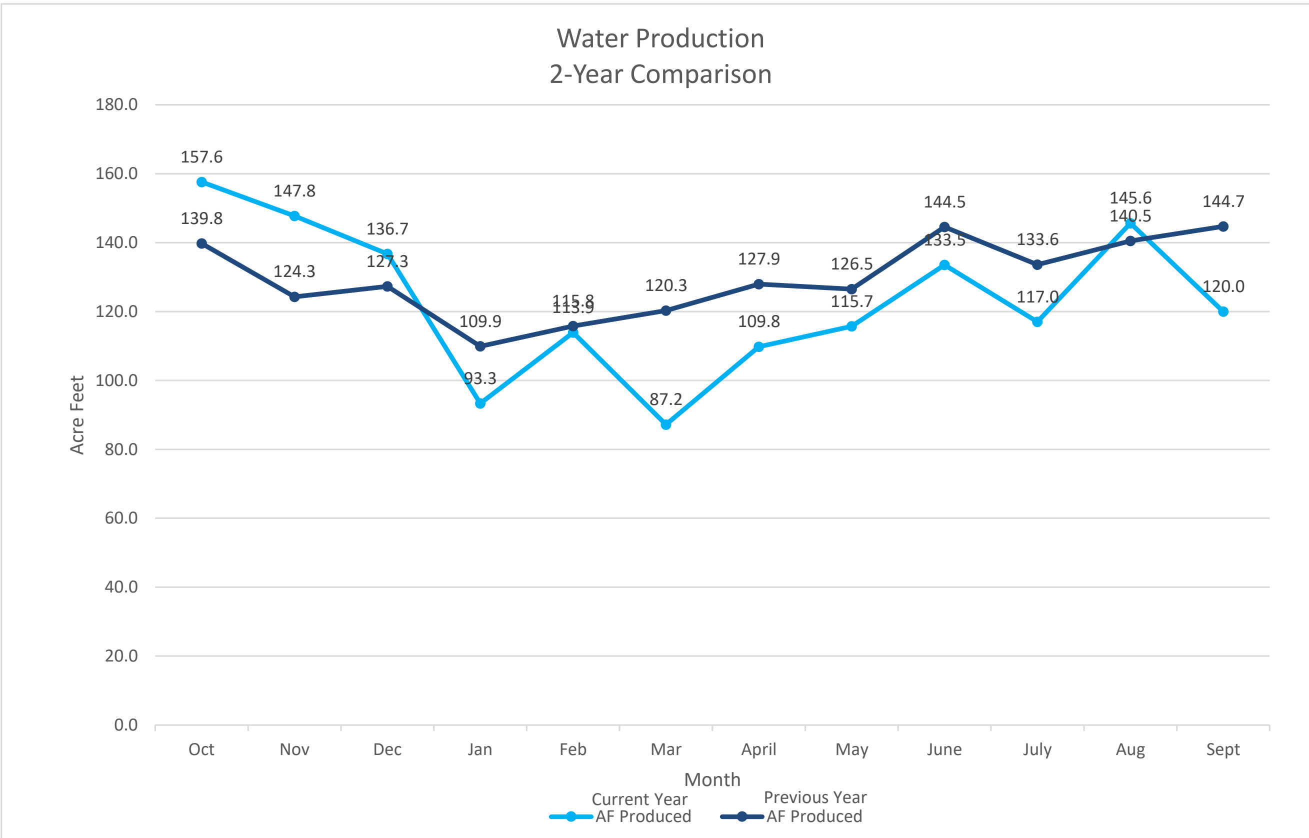
Non Revenue Water Summary

Aug-23	11.8%
Avg. Past 12 Mos.	0.0%
Avg. Past 24 Mos.	1.9%

BORREGO WATER DISTRICT

WATER PRODUCTION SUMMARY

Sept 2023



Past 12 months Production vs. Sales

	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
AF Used	147.6	139.3	117.9	101.1	121.6	95.1	115.7	128.4	128.4	128.4	128.4	95.0
AF Produced	157.6	147.8	136.7	93.3	113.9	87.2	109.8	115.7	133.5	117.0	145.6	120.0
% Non Rev.	6.3%	5.7%	13.8%	-8.4%	-6.8%	-9.1%	-5.4%	-11.0%	3.8%	-9.7%	11.8%	20.8%

Previous 12 Months Production vs. Sales

	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22
AF Used	139.0	110.1	132.8	117.8	136.1	125.3	123.8	108.8	124.8	116.5	126.5	132.1
AF Produced	139.8	124.3	127.3	109.9	115.8	120.3	127.9	126.5	144.5	133.6	140.5	144.7
% Non Rev.	0.6%	11.4%	-4.3%	-7.2%	-17.5%	-4.2%	3.2%	14.0%	13.6%	12.8%	10.0%	8.7%

Non Revenue Water Summary

Sep-23	20.8%
Avg. Past 12 Mos.	1.0%
Avg. Past 24 Mos.	2.2%

IVC

FINANCE

TREASURER'S REPORT
September 2024

	Bank Balance	Carrying Value	Fair Value	% of Portfolio Current Actual	Rate of Interest	Maturity	Valuation Source
Cash and Cash Equivalents:							
Demand Accounts at CVB/LAIF							
General Account/Petty Cash	$ 2,234,845	$ 1,235,653	$ 1,235,653	34.53%	1.08%	N/A	CVB/WF
Payroll Account	$ 85,368	$ 62,902	$ 62,902	1.76%	1.08%	N/A	WF
Grant Fund Account	$ 99,885	$ 99,885	$ 99,885	2.79%	0.00%	N/A	WF
2021 Bond Funds	$ 58,231	$ 58,231	$ 58,231	1.63%	1.08%	N/A	WF
LAIF	$ 2,121,465	$ 2,121,465	$ 2,121,465	59.29%	3.59%	N/A	LAIF
Total Cash and Cash Equivalents	**$ 4,599,793**	**$ 3,578,135**	**$ 3,578,135**	**100.00%**			

Cash and investments conform to the District's Investment Policy statement filed with the Board of Directors on June 09, 2020

Cash, investments and future cash flows are sufficient to meet the needs of the District for the next six months.

Sources of valuations are CVB Bank, LAIF and US Trust Bank.

Jessica Clabaugh, Finance Officer

Borrego Water District
Operating Budget Analysis
09/01/2023 to 09/30/2023

	Budgeted FY2024	Actual Sept FY2024	*Projected Sept FY2024*	Year to Date FY2024	% of Annual Budget TD
INCOME					
RATE REVENUE					
Water Rates Revenues					
Commodity Rates					
Residential	*1,592,136*	133,399	*175,006*	431,729	27%
Commercial	*777,162*	53,463	*85,425*	167,667	22%
Irrigation	*355,047*	31,929	*39,026*	99,554	28%
Total Commodity	*2,724,345*	218,791	*299,460*	698,950	26%
Non-Commodity Charges				-	
Base Meter Charges	*1,468,598*	120,314	*122,383*	361,053	25%
Meter Install/Repair	*35,000*	317	*2,917*	342	1%
New Water Supply Connection Fee	*24,880*	-	*2,073*	18,533	74%
Backflow Testing/Install	*5,700*	-		-	0%
Bulk Water Sales	*6,500*	1,506	*542*	5,427	83%
Total Non-Commodity	*1,540,678*	122,136	*127,915*	385,356	25%
				-	
Total Water Rate Revenues	*4,265,023*	340,928	*427,375*	1,084,306	25%
Sewer Rates					
TCS Holder Fees (SA2)	*163,973*	13,947	*13,664*	41,841	26%
TCS User Fees (SA2)	*130,436*	11,649	*10,870*	34,947	27%
RH Sewer User Fees (ID1)	*164,786*	13,686	*13,732*	41,057	25%
Sewer Standby/Capacity Fees	-	-		-	
Sewer User Fees (ID5)	*186,528*	15,493	*15,544*	46,481	25%
Total Sewer Rates	*645,723*	54,775	*53,810*	164,326	25%
Availability Charges Collected thru Tax Roll			*0*		
ID1 - Water/Sewer/Flood Standby	*105,000*	112	*1,182*	112	0%
ID3/ID4 - Water Standby	*117,000*	907	*1,317*	1,023	1%
Pest Control Standby	*17,150*	95	*193*	106	1%
Total Availability (Tax Roll)	*239,150*	1,113	*2,693*	1,241	1%
TOTAL RATE REVENUE	***5,149,896***	**396,816**	***483,878***	**1,249,873**	24%
OTHER INCOME					
Penalties & Fees	*50,000*	7,862	*5,000*	22,162	44%
BSUSD Well Agreement	*35,000*	-	*8,750*	-	0%
1% Property Assessments	*70,000*	593	*788*	1,876	3%
Interest Income	*35,000*	136	*2,917*	2,228	6%
WM Meter Reading Income	*3,333*	1,689	*550*	*1,689*	51%
TOTAL OTHER INCOME	***193,333***	**10,671**	***18,005***	**28,345**	15%
				-	
GROSS INCOME	***5,343,229***	**407,487**	***501,882***	**1,278,218**	24%

Borrego Water District
Operating Budget Analysis
09/01/2023 to 09/30/2023

	Budgeted FY2024	Actual Sept FY2024	Projected Sept FY2024	Year to Date FY2024	% of Annual Budget TD
EXPENSES					
OPERATING EXPENSES					
Operations & Maintenance Expense					
R&M Water	272,201	30,108	22,683	57,658	21%
R&M WWTF	130,656	6,079	10,888	11,540	9%
Telemetry	5,444	-	454	-	0%
Trash Removal	6,533	532	544	1,597	24%
Vehicle Expense	24,219	1,190	2,018	3,560	15%
Fuel & Oil	53,703	6,180	4,475	15,092	28%
Lab/Testing	37,664	2,626	3,139	6,944	18%
Permit Fees	39,741	-	3,312	3,596	9%
Pumping Electricity	500,000	45,987	41,667	135,483	27%
Total Operations & Maintenance Expense	1,070,161	92,703	89,180	235,470	22%
Professional Services					
Accounting (Tax & Debt Filings)	4,682	-		822	18%
Air Quality Study	36,341	-	3,028	-	0%
Payroll Services	3,375	287	281	287	9%
Audit Fees	30,000	-	2,500	-	0%
IT & Cyber Security	42,120	3,833	3,510	9,447	22%
Financial Consulting	87,104	-	7,259	-	0%
Engineering (Dudek)	50,000	-	4,167	5,645	11%
Legal Services - General	78,491	11,433	6,541	30,123	38%
Legal Services Reimbursible		(3,564)		(8,788)	
Advocacy	65,328	5,000	5,444	15,000	23%
Total Professional Services	397,441	16,990	32,730	52,536	13%
Insurance Expense					
ACWA/JPIA Program Insurance	83,490	-		63,862	76%
ACWA/JPIA Workers Comp	23,437	-	5,859	-	0%
Total Insurance Expense	106,927	-	5,859	63,862	60%
Personnel Expense					
Board Meeting Expense	25,042	1,650	2,087	12,612	50%
Salaries & Wages	1,323,529	102,455	110,294	315,020	24%
Contra Account - Salaries & Wages	(60,000)	(5,118)	(5,000)	(15,525)	26%
Contract Labor/Consulting	10,888	-	907	-	0%
Payroll Taxes	36,190	1,941	3,016	5,167	14%
Benefits - Medical	295,171	20,883	24,598	64,481	22%
Benefits - CalPERS	271,422	11,443	16,666	103,631	38%
Trainings & Conferences	19,598	576	1,633	3,263	17%
Uniforms	7,622	556	635	1,568	21%
Safety Compliance & Emergency Prep	5,444	482	454	907	17%
Total Personnel Expense	1,934,906	134,869	155,290	491,125	25%

Borrego Water District
Operating Budget Analysis
09/01/2023 to 09/30/2023

OPERATING EXPENSES (Con't)	*Budgeted FY2024*	Actual Sept FY2024	*Projected Sept FY2024*	Year to Date FY2024	% of Annual Budget TD
Office Expense					
Office Supplies	*26,131*	889	*2,178*	2,697	10%
Office Equipment	*54,440*	642	*4,537*	4,868	9%
Postage & Freight	*16,332*	2,810	*1,361*	5,806	36%
Property Tax	*3,266*	-		-	0%
Telephone Expense	*30,000*	1,743	*2,500*	11,692	39%
Dues & Subscriptions (ACWA/AWWA)	*25,042*	77	*2,087*	631	3%
Printing & Publication	*5,444*	160	*454*	625	11%
Office/Shop utilities	*10,000*	2,404	*833*	6,506	65%
Total Office Expense	*170,655*	8,725	*13,949*	32,825	19%
TOTAL OPERATING EXPENSES	***3,680,090***	**253,286**	**297,008**	**875,817**	24%
Debt Expense					
BBVA Bank Note 2018A/B - Principal	*341,189*	341,189		341,189	100%
BBVA Bank Note 2018A/B - Interest	*49,821*	28,049		28,049	56%
2021 Bond Cap One - Principal	*427,960*	-		-	0%
2021 Bond Cap One - Interest	*159,759*	-		-	0%
Total Debt Expense	*978,729*	369,238	-	369,238	38%
GROUNDWATER MANAGEMENT EXPENSES (*see GWM Detail*)					
Pumping Fees	*100,000*	-		-	0%
GWM Expense	*76,407*	-	*6,367*	13,635	18%
Legal Expense	*100,000*	2,245	*8,333*	8,731	9%
Engineering/TAC Expense (Intera)	*135,000*	16,228	*11,250*	32,074	24%
GW Quality Risk Assessment (Intera)	*28,430*		*2,369*	20,748	73%
TOTAL GROUNDWATER MGMT EXPENSES	*439,837*	18,473	*28,320*	75,187	17%
TOTAL EXPENSES	***5,098,656***	**640,997**	**325,328**	**1,320,242**	26%
NET INCOME	***244,573***	**(233,510)**		**(42,024)**	

Borrego Water District
Cash CIP Budget Analysis
09/01/2023 to 09/30/2023

	Budgeted FY2024	Actual Sept FY2024	Year to Date FY2024
CAPITAL IMPROVEMENT PROJECTS (CIP)			
CASH FUNDED CIP			
Water Projects			
Office Imp.(*FY22 Cameras, FY23 Paint, Lighting*)	*50,000*	-	-
ID5-5 Replacement VFD	*200,000*	-	-
BPA Acquisition	*851,125*	992	766,455
Congressional Appropriations Cash Funded Poriton	*850,167*		-
Total Water Projects	*1,951,292*	992	766,455
Sewer Projects			
Manhole Refurbishments	*49,778*	-	-
Palm Canyon Sewer Line Inspection	*150,000*	82,018	82,018
Total Sewer Projects	*199,778*	82,018	82,018
Short Lived Asset Replacements			
Backup Generator Office & Shop	*100,000*	-	-
ID1-8 Our of Service Life	*60,000*	-	-
ID4-18 Inspection	*10,000*	-	-
Reservoir Cleaning/Video Inspection	*37,000*	-	-
Clarifier Rehab	*50,000*	-	-
Emergency Repairs	*60,000*	-	-
Total Short Lived Assets	*317,000*	-	-
CASH FUNDED CIP TOTAL	***2,468,070***	**83,010**	**848,473**
2021 Bond Funded CIP			
Bond Funded Water Projects			
ID5-15 Well Completion(Project Total = $2,045,961.02)		2,403	
ID4-10 Inspection/Repairs		-	
Pipeline Replacements			
BOND FUNDED CIP TOTAL	-	2,403	-

Borrego Water District
Grant/Bond Funded CIP Budget Analysis
09/01/2023 to 09/30/2023

	Budgeted FY2024	**Actual Sept FY2024**	**Year to Date FY2024**
GRANT FUNDED CIP			
Water Projects- DWR Grant Net $2,048362 - Receivable @ 09.30.23 = $1,725,782.2			
Twin Tanks	*32,835*	55,910	59,187
Wilcox Diesel Motor	*83,333*	5,942	6,342
Indian Head Reservoir Replacement	*450,000*	57,571	58,517
Rams Hill Tank #2	*450,000*	8,619	12,782
Total Water Projects - Water Reservoirs Grant	*1,016,168*	128,042	136,828
Prop 68 Grant - Receivable @ 09.30.23 = $326,796			
AMI	*455,000*	2,507	3,395
WWTP Monitoring Wells	*60,000*	1,600	7,650
Admin/Acquisiton Costs(Total since 2021 = $121,268)	*100,000*	824	2,801
Total Prop 68 Grant Projects	*615,000*	4,931	13,846
2023 Appropriations Bill			
BSR Pipeline	*912,406*	-	-
Sungold Pipeline	*2,488,260*		-
2023 Appropriations Bill Total	*3,400,666*	-	-
TOTAL GRANT FUNDED CIP	***5,031,834***	**132,973**	**150,674**

Borrego Water District
Cash Flow Analysis
09/01/2023 to 09/30/2023

	Actual Aug FY2023		
Cash and Reserves at Beginning of Period			**$ 4,526,895**
Cash Flows from Operating Activities			
Income Provided by Operating Activities	*143,530*		
Decrease in Accounts Receivable	*79,365*		
Decrease in Accounts Payable	*(634,311)*		
Increase in Inventory	*(2,551)*		
Net Cash Provided by Operating Activities	**$**	**(413,968)**	
Cash Flows from Groundwater Management Activities			
Net Cash Paid for Groundwater Management Activities	**$**	**(16,784)**	
Cash Flows from Non-Operating Activities			
Other Income Received	*8,982*		
Debt Service Disbursement	*(369,238)*		
Net Cash Provided by Other Income	**$**	**(360,256)**	
Cash Flows from Capital Improvement Activities			
All CIP/BPA Purchase Activities (Cash + Grant)	*(215,983)*		
Net Cash Paid for Capital Improvements	**$**	**(215,983)**	
Net Change in Cash	**$**	**(1,006,990)**	
Cash and Reserves at End of Period			**$ 3,519,905**
2021 Bond Funds Balance at Beginning of Period			**$ 58,231**
Net Change in Bond Funds	**$**	**-**	
2021 Bond Funds Balance at End of Period			**$ 58,231**

ASSETS

	BALANCE SHEET September 30, 2023 (unaudited)	BALANCE SHEET August 31, 2023 (unaudited)	MONTHLY CHANGE (unaudited)
CURRENT ASSETS			
Cash and cash equivalents	$ 4,337,212.58	$ 5,368,329.56	$ (1,031,116.98)
Accounts receivable from water sales and sewer charges	$ 623,986.06	$ 639,478.98	$ (15,492.92)
Inventory	$ 197,584.10	$ 196,726.61	$ 857.49
TOTAL CURRENT ASSETS	**$ 5,356,366.84**	**$ 6,401,261.76**	$ (1,044,894.92)
RESTRICTED ASSETS			
Debt Service:			
Unamortized bond issue costs	$ 125,185.22	$ 125,185.22	$ -
Viking Ranch Refinance issue costs	$ (79,919.39)	$ (79,919.39)	$ -
Deferred Outflow of Resources-CalPERS	$ 201,290.00	$ 201,290.00	$ -
Total Debt service	$ 246,555.83	$ 246,555.83	$ -
Trust/Bond funds:			
Investments with fiscal agent -CFD 2017-1	$ 743,272.87	$ 743,272.87	$ -
Total Trust/Bond funds	$ 743,272.87	$ 743,272.87	$ -
TOTAL RESTRICTED ASSETS	**$ 989,828.70**	**$ 989,828.70**	
UTILITY PLANT IN SERVICE			
Land	$ 2,027,613.81	$ 2,027,613.81	$ -
Flood Control Facilities	$ 4,287,340.00	$ 4,287,340.00	$ -
Capital Improvement Projects	$ 8,287,195.26	$ 7,682,116.72	$ 605,078.54
Sewer Facilities	$ 6,207,414.11	$ 6,207,414.11	$ -
Water facilities	$ 16,778,661.00	$ 16,778,661.00	$ -
General facilities	$ 1,006,881.07	$ 1,006,881.07	$ -
Equipment and furniture	$ 1,040,865.02	$ 1,040,865.02	$ -
Vehicles	$ 687,296.74	$ 687,296.74	$ -
Accumulated depreciation	$ (14,832,075.00)	$ (14,832,075.00)	$ -
NET UTILITY PLANT IN SERVICE	**$ 25,491,192.01**	**$ 24,886,113.47**	$ 605,078.54
OTHER ASSETS			
Water rights -ID4	$ 185,000.00	$ 185,000.00	$ -
TOTAL OTHER ASSETS	**$ 185,000.00**	**$ 185,000.00**	
TOTAL ASSETS	**$ 32,022,387.55**	**$ 32,462,203.93**	$ (439,816.38)

Balance sheet continued

LIABILITIES

	BALANCE SHEET September 30, 2023 (unaudited)	BALANCE SHEET August 31, 2023 (unaudited)	MONTHLY CHANGE (unaudited)
CURRENT LIABILITIES PAYABLE FROM CURRENT ASSETS			
Accounts Payable	$ (96,421.63)	$ 122,650.73	$ (219,072.36)
Accrued expenses	$ 197,601.42	$ 197,601.42	$ -
Deposits	$ 8,108.81	$ 8,108.81	$ -
TOTAL CURRENT LIABILITIES PAYABLE FROM CURRENT ASSETS	**$ 109,288.60**	**$ 328,360.96**	$ (219,072.36)
CURRENT LIABILITIES PAYABLE FOM RESTRICTED ASSETS			
Debt Service:			
Accounts Payable to CFD 2017-1	$ 743,272.87	$ 743,272.87	$ -
TOTAL CURRENT LIABILITIES PAYABLE FROM RESTRICTED ASSETS	**$ 743,272.87**	**$ 743,272.87**	$ -
LONG TERM LIABILITIES			
2018A & 2018B Refinance ID4/Viking Ranch	$ 1,264,860.00	$ 1,606,049.03	$ (341,189.03)
2021 Installment Purchase Agreement	$ 7,080,970.00	$ 7,080,970.00	$ -
Net Pension Liability-CalPERS	$ 303,531.00	$ 303,531.00	$ -
Deferred Inflow of Resources-CalPERS	$ 281,931.00	$ 281,931.00	$ -
TOTAL LONG TERM LIABILITIES	**$ 8,931,292.00**	**$ 9,272,481.03**	$ (341,189.03)
TOTAL LIABILITIES	**$ 9,783,853.47**	**$ 10,344,114.86**	$ (560,261.39)
FUND EQUITY			
Contributed equity	$ 9,611,814.35	$ 9,611,814.35	$ -
Retained Earnings:	$ 12,626,719.73	$ 12,506,274.72	$ 120,445.01
TOTAL FUND EQUITY	**$ 22,238,534.08**	**$ 22,118,089.07**	$ 120,445.01
TOTAL LIABILITIES AND FUND EQUITY	**$ 32,022,387.55**	**$ 32,462,203.93**	$ (439,816.38)

To: BWD Board of Directors
From: Jessica Clabaugh
Subject: Consideration of the Disbursements and Claims Paid
Month Ending September 30, 2023

Vendor disbursements paid during this period: $ 1,501,181.55

Significant items:			
Babcock	Lab Services	$	1,468.64
PNC Bank	Debt Service Payment	$	369,238.03
Capital One Public Financing	Debt Service Payment	$	514,606.62
CalPERS	Employee Retirement Benefits	$	11,442.55
Employee Health Benefits	Medical JPIA & AFLAC	$	19,280.14
Ramona Disposal	Garbage Collection	$	4,514.19
SC Fuels	Fuel For District Vehicles	$	3,297.61
SDGE	Payment on Aug Use	$	48,391.44
Capital Projects/Fixed Asset Outlays:			
Brax Company	Booster 3 - Generator Transfer Switch	$	22,079.16
Empire Southwest	AC Repair on Skid Steer	$	2,990.96
McCalls Meters	ID1-8 Replacement Meter	$	1,608.71
Pacific Pipeline Supply, Inc.	Lazy Ladder/Verbena Valve Repair	$	7,166.47
Pacific Pipeline Supply, Inc.	Parts for Inventory	$	3,545.94
Superior Tank Company Inc	GRANT - Tank & Motor Replacement	$	282,386.29
Total Professional Services for this Period:			
BBK	General - August Invoices	$	12,407.30
BBK	Water Right Acquisition	$	103.80
BBK	Watermaster	$	3,336.60
BBK	Advocacy	$	5,000.00
Dudek	Wildlife Conservation Board Grant App	$	2,980.00
Fidelity National Title	Title Reports for Twin Tank(s) Parcels	$	3,000.00
Interra Inc.	GWM Technical Support August	$	20,197.50
Leaf & Cole, LLP	Audit Progress Billing	$	3,650.00
Travis Parker	IT Support & Board Room Improvements	$	10,628.14

Payroll for this Period:

Gross Payroll	$	102,455.45
Employer Payroll Taxes and ADP Fee	$	2,228.85
Total	$	104,684.30

SEPTEMBER 2023

40779	1109	ABILITY ANSWERING/PAGING SER	09/12/2023	253.92
40792	1266	AFLAC	09/27/2023	1,370.32
40808	9524	AIR POLLUTION CONTROL DISTRICT, SAN DIEGO COUNTY	10/03/2023	4,661.00
40809	1001	AMERICAN LINEN INC.	10/03/2023	556.08
40848	61	AT&T MOBILITY	10/18/2023	906.76
40810	9529	AT&T-CALNET 3	10/03/2023	582.60
40820	9255	BABCOCK LABORATORIES	10/11/2023	3,225.21
40821	10884	BEST BEST & KRIEGER ATTORNEYS AT LAW	10/11/2023	22,773.10
40849	10900	BORREGO AUTO PARTS & SUPPLY CO	10/18/2023	1,573.33
40822	11140	BORREGO SPRINGS HARDWARE	10/11/2023	97.19
40793	1037	BORREGO SUN	09/27/2023	80.00
40823	1037	BORREGO SUN	10/11/2023	80.00
40780	1196	CASH	09/12/2023	400.00
40824	1135	CENTER MARKET	10/11/2023	30.87
40850	9417	CORRPRO COMPANIES	10/18/2023	960.00
40825	1066	DE ANZA READY MIX	10/11/2023	406.70
40782	1222	DEBBIE MORETTI	09/12/2023	140.00
40794	11065	DIAMOND MMP, INC	09/27/2023	975.91
40851	96	DISH	10/18/2023	76.79
40826	9474	DOWNSTREAM SERVICES, INC.	10/11/2023	82,018.00
40797	11153	EDDIE LOPEZ	09/27/2023	200.00
40803	11159	EDUARDO VILCHIS	09/27/2023	254.38
40795	1094	EMPIRE SOUTHWEST, LLC	09/27/2023	2,990.96
40827	1094	EMPIRE SOUTHWEST, LLC	10/11/2023	1,165.59
40798	11071	ESMERALDA LOPEZ-GARCIA	09/27/2023	160.52
40807	11160	FIDELITY NATIONAL TITLE	09/28/2023	3,000.00
40829	1136	HOME DEPOT CREDIT SERVICES	10/11/2023	719.85
40852	11137	INTERA INCORPORATED	10/18/2023	16,227.50
40828	11161	ISSAC FREDERICKS	10/11/2023	2,360.00
40811	11121	LABOR COMPLIANCE CONSULTANTS OF SO. CALIFORNIA LLC	10/03/2023	6,400.00
40796	9378	LANDMARK CONSULTANTS, INC.	09/27/2023	576.00
40830	11090	LUPE'S GARDENING MAINTENANCE INC.	10/11/2023	585.00
40781	9771	MANUEL MARIN	09/12/2023	227.29
40799	1216	McCALLS METERS,INC	09/27/2023	1,608.71
40791	1000	MEDICAL ACWA-JPIA	09/27/2023	22,117.54
40812	11114	OCEANUS BOTTLED WATER, INC	10/03/2023	76.75
40831	1208	PACIFIC PIPELINE SUPPLY INC	10/11/2023	4,547.89
40800	11126	PNC BANK, N.A.	09/27/2023	369,238.03
40832	11028	POOL & ELECTRICAL PRODUCTS	10/11/2023	420.00
40813	11083	QUADIENT FINANCE USA, INC.	10/03/2023	2,000.00
40814	11095	QUADIENT INC	10/03/2023	809.53
40815	9633	RAMONA DISPOSAL SERVICE	10/03/2023	4,514.19
40801	1065	SAN DIEGO GAS & ELECTRIC	09/27/2023	48,391.44
40783	11067	SC FUELS	09/12/2023	1,934.25
40802	11067	SC FUELS	09/27/2023	1,363.36
40833	10877	SUPERIOR TANK COMPANY INC.	10/11/2023	113,784.92
40853	9273	T.T. TECHNOLOGIES	10/18/2023	4,245.95
40816	9581	TRAVIS PARKER	10/03/2023	2,393.39
40817	1023	UNDERGROUND SERVICE ALERT	10/03/2023	17.00
40804	74	WESTERN PUMP, INC	09/27/2023	2,882.70
40854	92	XEROX FINANCIAL SERVICES	10/18/2023	365.28
40834	11050	ZITO MEDIA	10/11/2023	276.77
		Report Total (52 checks):		737,022.57

To: BWD Board of Directors
From: Jessica Clabaugh
Subject: Consideration of Watermaster related Income and Expenses for FY24

Net Expenses during this Period $ 18,472.60

Date	Name	Description	Income	Expense	Year To Date
7/31/2023	BBK	Stipulation/Groundwater Rights		$ 2,941.00	$ (2,941.00)
7/31/2023	BBK	Watermaster Activities		$ 207.60	$ (3,148.60)
7/31/2023	Intera	T2: TAC Meetings		$ 3,180.00	$ (6,328.60)
7/31/2023	Intera	T3: Annual Report Review		$ 2,165.00	$ (8,493.60)
7/31/2023	Intera	T4: SY Review		$ 3,955.00	$ (12,448.60)
7/31/2023	Intera	T5: Land Use Sub Comm. - Existing Well Review		$ 6,227.50	$ (18,676.10)
7/31/2023	Intera	Groundwater Quality Risk Assessment Update		$ 13,635.00	$ (32,311.10)
8/30/2023	BBK	Stipulation/Groundwater Rights		$ 553.60	$ (32,864.70)
8/30/2023	BBK	Watermaster Activities		$ 2,783.00	$ (35,647.70)
8/30/2023	BWD	Record Staff Time		$ 318.16	$ (35,965.86)
8/30/2023	Intera	T2: TAC Meetings		$ 2,122.50	$ (38,088.36)
8/30/2023	Intera	T3: Annual Report Review		$ 8,345.00	$ (46,433.36)
8/30/2023	Intera	T4: SY Review		$ 100.00	$ (46,533.36)
8/30/2023	Intera	T5: Land Use Sub Comm. - Existing Well Review		$ 2,517.50	$ (49,050.86)
8/30/2023	Intera	Groundwater Quality Risk Assessment Update		$ 7,112.50	$ (56,163.36)
9/30/2023	BBK	Stipulation/Groundwater Rights		$ 69.20	$ (56,232.56)
9/30/2023	BBK	Watermaster Activities		$ 2,175.90	$ (58,408.46)
9/30/2023	Intera	T1: Watermaster Board Meetings		$ 795.00	$ (59,203.46)
9/30/2023	Intera	T2: TAC Meetings		$ 11,167.50	$ (70,370.96)
9/30/2023	Intera	T3: Annual Report Review		$ 1,400.00	$ (71,770.96)
9/30/2023	Intera	T4: SY Review		$ 2,865.00	$ (74,635.96)
9/30/2023	BWD	Income - Meter Reading Services July & Sept 23	$ 1,688.68		$ (72,947.28)

STAFF REPORT – 10/24/2023

From: Jessica Clabaugh, Finance Officer

Subject: Quarterly Budget Review of Debt Service Ratio

Last June, the Board adopted the FY24 Budget with the condition that income and expenses be reviewed quarterly to monitor the District's net position, with careful attention paid to the District's Debt Service Ratio(DSR). To recap, the FY24 Budget results in a 1.25 DSR which is the minimum allowed under existing Bond Covenants.

The Debt Service Ratio is the proportion of net income to annual debt service payments due, meaning that the District's fiscal year net operating income must be 125% of annual debt service payments which are budgeted at $978,729 for FY24. To meet this covenant, the District's net income for the year must be at least $1,223,411. Net income thru the 1st Quarter was $327,214, or 26.7% of the annual requirement.

Finance recommends to the Board to continue quarterly monitoring throughout the remainder of the Fiscal Year.

Below is a summary of the Year-To-Date Income, Expenses and Net Income thru September 30, 2023.

Description	Annual Budget	Q1 Actual	% of Budget
Commodity Water Rates	2,724,345	698,950	26%
Non-Commodity Water Rates	1,540,678	385,356	25%
Sewer Rates	645,723	164,326	25%
Gross Income	**5,343,229**	**1,278,218**	**24%**
O&M Expense	1,070,161	235,470	22%
Professional Services Expense	397,441	52,536	13%
Personnel Expense	1,934,906	491,125	25%
Office Expense	170,655	32,825	19%
Total Operating Expenses	3,680,090	875,817	24%
Groundwater Management Expense	439,837	75,187	17%
Total Expenses	**4,119,927**	**951,004**	**23%**
Net Income (before Debt Service)	**1,223,302**	**327,214**	**27%**