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Seaside Groundwater Basin
2025 Seawater Intrusion Analysis Report

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ACRONYMS & ABBREVIATIONS

amsl	above mean sea level
ASR	aquifer storage and recovery
bgs	below ground surface
Ca	calcium
CAWC	California American Water Company
Cl	chloride
CO_3	carbonate
CPT	Cone Penetration Testing
FO	Fort Ord
GSP	Groundwater Sustainability Plan
HCO_3	bicarbonate
K	potassium
MCWD GSA	Marina Coast Water District Groundwater Sustainability Agency
MCWRA	Monterey County Water Resources Agency
Mg	magnesium
mg/L	milligrams per liter
MPWMD	Monterey Peninsula Water Management District
MSC	Monterey Sand Company
Na	sodium
PCA	Pacific Cement Aggregates
PVWMA	Pajaro Valley Water Management Agency
PWM	Pure Water Monterey
SIAR	Seawater Intrusion Analysis Report
SIRP	Seawater Intrusion Response Plan
SNG	Security National Guaranty
SO_4	sulfate
TDS	total dissolved solids
µmhos/cm	micromhos per centimeter
WY	Water Year

EXECUTIVE SUMMARY

This report fulfills part of the annual reporting requirements contained in the Seaside Groundwater Basin Adjudication (California American Water v. City of Seaside, Monterey County Superior Court, Case Number M66343). The annual report addresses the potential for, and extent of, seawater intrusion in the Seaside Groundwater Basin.

Seawater intrusion may occur under basic hydrogeologic conditions as a wedge beneath fresh groundwater or in more complex hydrogeology with various intrusion interfaces among the different aquifers. Continued pumping in excess of recharge and freshwater inflows, coastal groundwater levels well below sea level, and ongoing seawater intrusion in the nearby Salinas Valley all suggest that seawater intrusion could occur in the Seaside Basin.

Seawater intrusion is typically identified through regular chemical analyses of groundwater that can identify geochemical changes in response to seawater intrusion. No single analysis definitively identifies seawater intrusion, however by examining various analyses it is possible to determine when fresh groundwater mixes with seawater. At low chloride concentrations, it is often difficult to identify incipient seawater intrusion. This is due to the natural variation in freshwater chemistry at chloride concentrations below 1,000 milligrams per liter (mg/L). Mixing trends between groundwater and seawater are more easily defined when chloride concentrations exceed 1,000 mg/L. Common geochemical indicators of seawater intrusion are cation and anion ratios, chloride trends, sodium/chloride ratios, and electric induction logging.

Groundwater levels below sea level, the cumulative effect of pumping in excess of recharge and freshwater inflows, and ongoing seawater intrusion in the nearby Salinas Valley all suggest that seawater intrusion has the potential to occur in the Seaside Groundwater Basin.

Data collected in Water Year (WY) 2025 from monitoring and production wells do not indicate seawater intrusion is occurring within the Seaside Groundwater Basin. However, induction logging shows continued incremental increases in conductivity over time in Sentinel wells SBWM-1, 2, and 4 within zones of the Upper Paso Robles Formation (shallow aquifer) that are not screened within nearby monitoring wells. Continual increases in conductivity may be a precursor to seawater intrusion.

Based on the findings of this report, the following ongoing detrimental groundwater conditions pose a direct threat of seawater intrusion:

- All aquifers in the Seaside Groundwater Basin are susceptible to seawater intrusion. The shallow aquifer is in direct hydrogeologic connection with Monterey Bay, and seawater will eventually flow into it if inland groundwater levels continue to be below sea level. It is uncertain whether the deep aquifer is in direct connection with Monterey Bay. If it is not in direct connection, then seawater intrusion will take longer as seawater in the shallow aquifer would need to move down through the clay rich deposits overlying the Purisima and Santa Margarita aquifers before entering the deep aquifer itself and making its way into deep aquifer production wells. It is not if, but when, seawater intrusion into these aquifers will occur if protective water elevations are not achieved.

- Sentinel wells SBWM-1 and SBWM-2, located north of the Seaside Basin, and SBWM-4, located in the Northern Coastal subarea where most of the Seaside Basin's groundwater extraction occurs, exhibit sustained increases in conductivity over time within the shallow aquifer's Upper Paso Robles Formation. It is believed the increased conductivity in the shallow portions of SBWM-1 and SBWM-2 are associated with the mapped extent of seawater intrusion emanating from the Salinas Valley Basin shown on Figure 20. Since SBWM-3 does not have increasing conductivity in the Paso Robles Formation like the other three Sentinel wells, the cause of increasing conductivity in SBWM-4 may be different than SBWM-1 and SBWM-2 to the north. Evaluation of SBWM-4 conductivity data collected prior to 2019 indicates conductivity has been increasing within this zone from at least 2007 when induction logging started. An estimate of the total dissolved solids (TDS) increase associated with the logged change in conductivity in SBWM-4 since 2007 is approximately 1,000 mg/L. The Secondary Drinking Water limit is 500 mg/L. This indicates a significant salinity increase in the Paso Robles Formation. Induction logging conducted at monitoring well Pacific Cement Aggregates (PCA)-West Deep—located 780 feet southwest of SBWM-4—to verify increasing conductivity in this area does indicate high salinity within the Upper Paso Robles Formation. However, several years of induction logs are needed to compare against the first baseline before it can be determined if conductivity is increasing at that well too.
- While most groundwater samples for WY 2025 from depth-discreet monitoring wells generally plot in a single cluster on Piper diagrams with no water chemistry changes toward seawater, there are three monitoring wells—PCA-West Shallow (Appendix C, Figure C-1), PCA-East Deep (Appendix C, Figure C-4), Ord Terrace Shallow (Appendix C, Figure C-5)—that have trends indicating groundwater may be mixing with seawater.
- Groundwater levels in some portions of both the shallow and deep aquifers in the Northern Coastal subarea continue to be below sea level year-round. Groundwater levels below sea level create hydraulic conditions causing onshore flow. WY 2025 fourth quarter (summer/fall) groundwater levels in the deep aquifer are almost 30 feet below sea

level north of the Seaside Basin and approximately 20 feet below sea level in the southern portion of the Northern Coastal subarea. The Northern Coastal subarea pumping depression in the deep aquifer is slightly larger in horizontal extent than the previous year. The pumping depression in the shallow aquifer is about the same as last year's depression.

- Groundwater levels remain below protective elevations in all three deep aquifer protective elevation monitoring wells (Monterey Sand Company [MSC] deep, PCA-W Deep, and Sentinel well SBWM-3), and in one of the three shallow aquifer protective elevation monitoring wells (MSC Shallow). In fall of WY 2025, groundwater elevations in the deep aquifer (MSC-Deep, PCA-West Deep, and Sentinel Well 3) decreased to seasonal lows similar to those observed in WY 2016 and WY 2022. In WY 2025, seasonal high groundwater levels at all three deep aquifer monitoring wells increased slightly or were about the same as the previous year. Groundwater elevations at all three shallow aquifer protective elevation monitoring wells showed an increase in seasonal highs. Increased shallow groundwater levels in the Northern Coastal subarea is likely due to Bayonet/Blackhorse golf courses irrigation switching from locally pumped groundwater to recycled water.

The following evidence from this report demonstrates that seawater intrusion has not been detected in monitoring and production wells from which groundwater quality samples are collected:

- In some production wells, groundwater quality plots on Piper diagrams are different than groundwater quality in monitoring wells. This may be a result of mixed water quality because these wells are perforated in both the shallow and deep aquifers. None of the production wells' groundwater qualities are indicative of seawater intrusion.
- None of the Stiff diagrams for monitoring and production wells show the characteristic chloride spike that typically indicates seawater intrusion in Stiff diagrams.
- Maps of chloride concentrations for the shallow aquifer do not show chlorides increasing toward the coast. Deep aquifer chloride concentration maps show that the highest chloride concentrations are limited to coastal monitoring wells PCA-West Deep and MSC Deep, but these are not indicative of seawater intrusion since their sodium/chloride molar ratios are not less than 0.86, and they do not have increasing trends.

Other important findings from the analysis contained in this report include the following:

- It is evident from comparing the long-term groundwater level trends of PCA-West Shallow and PCA-East Shallow, both in the shallow aquifer, that golf course irrigation pumping was the cause of groundwater levels falling below protective elevations at PCA-West Shallow over the past 7 years. Using recycled water for golf course irrigation has allowed shallow groundwater levels to recover to above the protective elevations at PCA-West Shallow and they remain above protective elevations at this well.

- Due to its distance from the coast, seawater intrusion is not an issue of concern in the Laguna Seca subarea. However, groundwater levels in the eastern Laguna Seca subarea have historically declined at rates of 0.6 feet per year in the shallow aquifers, and up to 4 feet per year in the deep aquifers. These declines have occurred since 2001 despite triennial reductions in allowable pumping and California American Water Company (CAWC) ceasing pumping its Ryan Ranch and Bishop wells. The cause of the declines is the subarea's limited groundwater inflows and natural recharge compounded by the influence of wells pumping east of the Seaside Basin in the Monterey Subbasin Corral de Tierra Management Area.
- Native groundwater production in the Seaside Basin for WY 2025 was 2,112 acre-feet, which is 239 acre-feet less than WY 2024 and 888 acre-feet less than the Decision-ordered Operating Yield of 3,000 acre-feet. Though WY 2025 was a below average year for rainfall, recovery of 3,851 acre-feet of recycled water from Pure Water Monterey and use of recycled water at the Bayonet/Blackhorse golf courses helped offset pumping of native groundwater. As outlined in the Basin Management Action Plan (M&A, 2018), it is vital that the Watermaster continues to identify ways to reduce pumping native groundwater and/or to recover groundwater elevations with water that is left in the Seaside Basin and is not extracted out as water supply.

It is important to closely monitor groundwater quality at different depths through the Seaside Basin's aquifers. Although existing monitoring and production wells are not detecting seawater intrusion, it does not mean seawater intrusion is not occurring. The discovery of increasing conductivity in specific zones in the Sentinel wells that are not screened in nearby monitoring wells illustrates this fact. Using geophysical methods such as induction logging and electromagnetic surveys to identify salinity provides a more complete "scan" of the depth of the Seaside Basin than discreetly screened wells cannot provide.

Based on the findings of this report, the following recommendations should be implemented to monitor and track potential seawater intrusion:

1. **Actions Regarding Increased Conductivity Observed in Induction Logs in SBWM-1, SBWM-2, and SBWM-4**

    - Inform EKI and Marina Coast Water District Groundwater Sustainability Agency (MCWD GSA) that Sentinel wells SBWM-1 and SBWM-2 continue to show increases in conductivity from 520 to 540, 605 to 625, and 685 to 695 feet below ground surface (bgs) at SBWM-1 and 340 to 390 feet bgs at SBWM-2 in defined coarser-grained zones in the Paso Robles aquifer and the upper Purisima aquifer. These monitoring wells are located outside of the Seaside Basin and are within the Marina-Ord Management Area of the Monterey Subbasin.

- Annual induction logs in PCA-West Deep and PCA-East Deep should continue to be conducted to expand the area being monitored by geophysical methods.

2. **Verify Chloride Concentrations and Water Chemistry in the 140 – 200 foot Zone of SBWM-4**

Watermaster has been unable to find a site for a new monitoring well near SBMW-4 to verify chloride levels. However, other subsurface access options may exist. By monitoring well activity in the Basin, Watermaster could leverage opportunities to access the subsurface near SBMW-4. An upcoming example is to request permission from the SNG well owner for isolated water quality sampling during the construction of the replacement SNG well and to offer reimbursement for that additional work.

3. **Destroy the Existing Damaged SNG Well**

The privately owned Security National Guaranty (SNG) well with damaged casing is scheduled to be destroyed and replaced in WY 2026. Watermaster should provide input on recommended well construction and coordinate with the owner of the SNG well to take depth-specific samples at the SNG replacement well when it is drilled.

4. **Continue to Analyze and Report on Water Quality Annually**

Seawater intrusion is a threat to the Seaside Basin, and data must be collected and analyzed regularly to identify incipient intrusion. Maps, graphs, and analyses similar to what are found in this report should continue to be developed every year.

1 BACKGROUND AND INTRODUCTION

Historical and persistent low groundwater elevations caused by pumping in the Seaside Groundwater Basin have led to concerns that seawater intrusion may threaten the Basin's groundwater resources. This report addresses the potential for, and extent of, seawater intrusion in the Seaside Groundwater Basin. The report first reviews seawater intrusion mechanisms, analyzes historical water quality data for indications of seawater intrusion in the Seaside Groundwater Basin, and finally reaches conclusions on the extent of seawater intrusion and proposes recommendations for continued monitoring.

This report fulfills part of the annual reporting requirements contained in the Seaside Groundwater Basin Adjudication (California American Water v. City of Seaside, Monterey County Superior Court, Case Number M66343). The analyses in this report were developed by Montgomery & Associates in cooperation with members of the Watermaster Technical Advisory Committee. Staff from the Monterey County Water Resources Agency (MCWRA) and Monterey Peninsula Water Management District (MPWMD) provided invaluable assistance, data, and review during the preparation of this report.

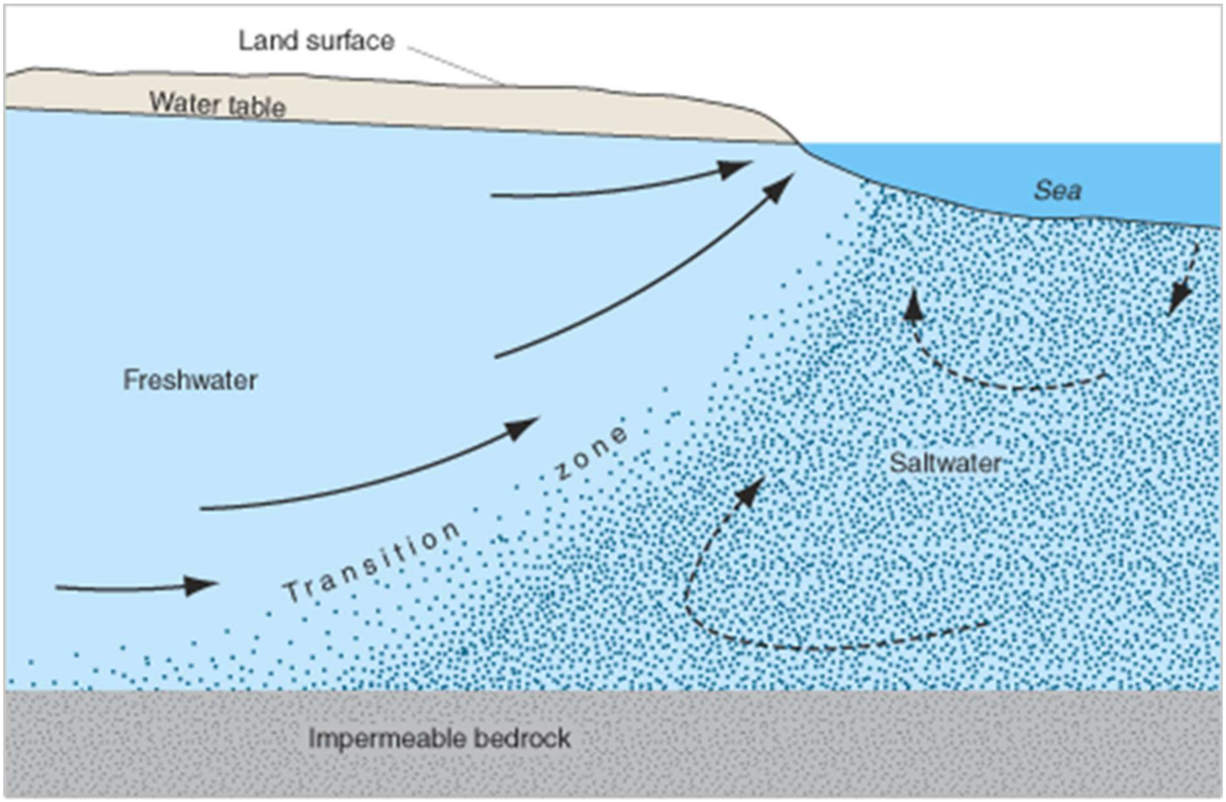
This report is the 19th in a series of Seawater Intrusion Analysis Reports (SIAR) that have been produced annually by the Watermaster since 2007. It builds on the work conducted in the preceding SIARs.

1.1 Overview of Seawater Intrusion

Seawater intrusion is a threat to many coastal groundwater basins along the California Coast. It has been observed and documented in a number of groundwater basins in both southern and central California.

In general, groundwater in coastal basins flows from recharge areas in local highlands toward discharge areas along the coast. In most undeveloped coastal groundwater basins, there is a net outflow of fresh water into the ocean. Seawater intrusion occurs when the outflow of freshwater ceases and seawater flows into the groundwater basin from the ocean.

In the simplest condition, seawater intrudes as a wedge beneath fresh groundwater (Figure 1). This wedge shape is a result of seawater being denser than freshwater.



(Source: Barlow, 2003)

Figure 1. Seawater Wedge in a Simple Coastal Aquifer

In more complex, layered groundwater systems, the location of the seawater/freshwater interface may vary among the different aquifers. Coarser-grained sediments that transmit water easily are separated by aquitards, which transmit water relatively slowly. Each aquifer has a unique rate of outflow to the ocean, and therefore a unique location of the seawater interface. In these more complex situations, the locations of the seawater/freshwater interfaces are a complex function of the horizontal groundwater gradient in each aquifer, the aquifer hydraulic conductivities, and the vertical conductivity of the inter-layer aquitards.

Under non-pumping conditions, the seawater interface in confined units can be located farther offshore than in surficial unconfined aquifers, which allows the seawater interface to exist near shore. Fresh water in the lower confined aquifers must seep out slowly through the overlying confining units. The slow seepage rates allow the fresh water to maintain pressure beneath the sea floor, pushing the seawater interface away from the coastline.

1.2 Groundwater Pumping and Seawater Intrusion

Pumping groundwater in a coastal aquifer reduces the amount of water discharging to the ocean. Sufficient pumping can eliminate ocean discharges, either locally or basin-wide, triggering seawater intrusion. The response of the seawater interface to groundwater pumping is manifested in two related ways: upconing and interface migration. Upconing refers to the ability of a pumping well to draw seawater up from below and only occurs if seawater exists directly below a pumping well. Because no seawater intrusion has been observed in the Seaside Groundwater Basin, upconing cannot occur and only seawater interface migration will be further addressed in this report.

As mentioned earlier, groundwater pumping reduces the amount of freshwater outflow to the ocean. This allows the interface to migrate shoreward. Substantial pumping can allow the interface to move onshore, potentially impacting municipal, private, and agricultural wells. The degree of interface migration depends on the amount of water pumped from a particular aquifer, as well as the amount of leakage from overlying or underlying aquifers. Groundwater extracted from a lower aquifer might be replaced by rainfall recharge, by seawater migrating shoreward, or by groundwater leaking from an overlying aquifer.

An additional issue that must be considered with seawater interface migration is the initial location of the seawater interface. An interface that starts far from the shore may take a considerable amount of time, often on the order of decades, to reach any production or monitoring well. Furthermore, the farther the interface is from the pumping well, the more area is available for fresh water to leak from overlying aquifers into the producing aquifer. This slows, or may completely stop, seawater intrusion in the pumped aquifer. Downward leakage, however, removes fresh water from overlying aquifers. This leakage may therefore exacerbate seawater intrusion in the overlying aquifer.

1.3 Indicators of Seawater Intrusion

Seawater intrusion is generally identified through chemical analyses of groundwater. Groundwater levels below or near sea level indicate an opportunity for seawater intrusion, but the actual seawater intrusion is indicated by various geochemical changes in groundwater.

No single analysis definitively identifies seawater intrusion, however by looking at various analyses we can ascertain when fresh groundwater mixes with seawater. At low chloride concentrations, it is often difficult to identify incipient seawater intrusion. This is due to the natural variation in freshwater chemistry at chloride concentrations below 1,000 milligrams per liter (mg/L) (Richter and Kreitler, 1993). Mixing trends between groundwater and seawater are more easily defined when chloride concentrations exceed 1,000 mg/L.

Common geochemical indicators of seawater intrusion are discussed and example analyses are presented in the following sections.

1.3.1 Cation/Anion Ratios

Molar ratios of cations and anions can prove distinctive for various groundwater systems. Seawater intrusion is often indicated by graphically analyzing shifts in these molar ratios. Two common graphical techniques for these analyses are Piper diagrams and Stiff diagrams.

1.3.1.1 Piper Diagrams

Example Piper diagrams are shown for data from the Pajaro Valley and Salinas Valley on Figure 2 and Figure 3, respectively. These figures are included to demonstrate the utility of Piper diagrams and show how they have been used in nearby basins. These figures are not provided for directly comparing data between basins; groundwater quality trends in the Seaside Basin will not necessarily correlate with trends in other basins.

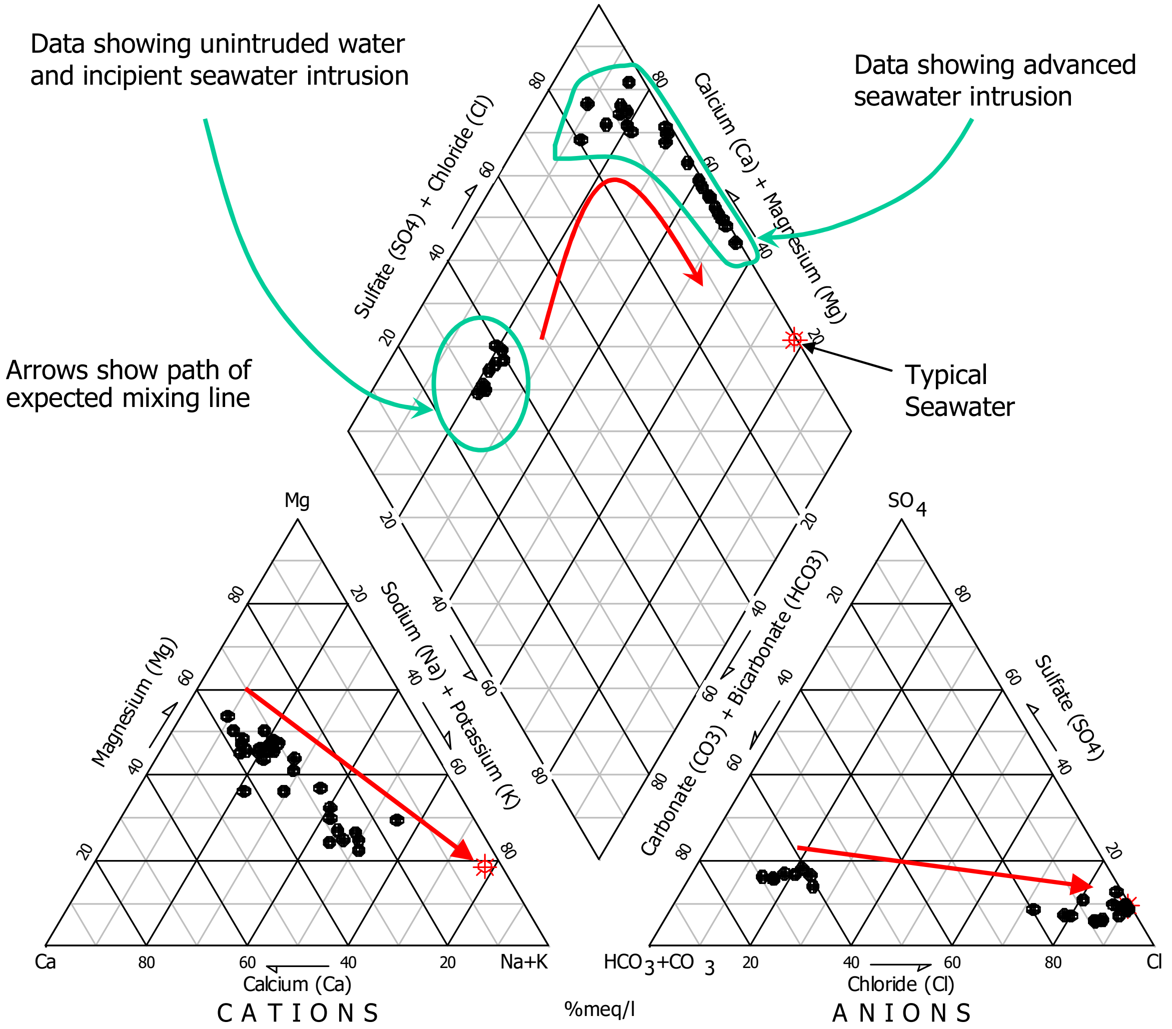
On these Piper diagrams, the relative abundances of individual cations and anions are plotted in the left and right triangles, respectively, and their combined distribution is plotted in the central diamond. Waters from similar or related sources will generally plot together. When seawater intrusion is present, the data points will generally plot along a straight line heading toward sodium (Na) in the left triangle and chloride (Cl) in the right triangle (Figure 2). Within the central diamond, the trend toward seawater intrusion plots along a curved path as shown on Figure 2. The red arrows track the evolution of water chemistry from freshwater to seawater.

1.3.1.2 Stiff Diagrams

Example Stiff diagrams from the Salinas Valley are shown on Figure 4 and Figure 5. These figures are included to demonstrate the utility of Stiff diagrams and show how they have been used in nearby basins. On Stiff diagrams, the relative abundances of individual cations are plotted on the left side of the graph and the relative abundances of anions are plotted on the right side of the graph. Waters with similar chemistries will have similarly shaped Stiff diagrams.

Figure 4 shows Stiff diagrams characteristic of the unintruded portions of the Salinas Valley Pressure 400-Foot Aquifer. By contrast, Figure 5 shows Stiff diagrams from the intruded portion of the Salinas Valley Pressure 400-Foot Aquifer. The significantly higher chloride levels in the intruded aquifer result in the noticeable spike at the upper right side of the Stiff diagrams on Figure 5. This spike is indicative of incipient seawater intrusion.

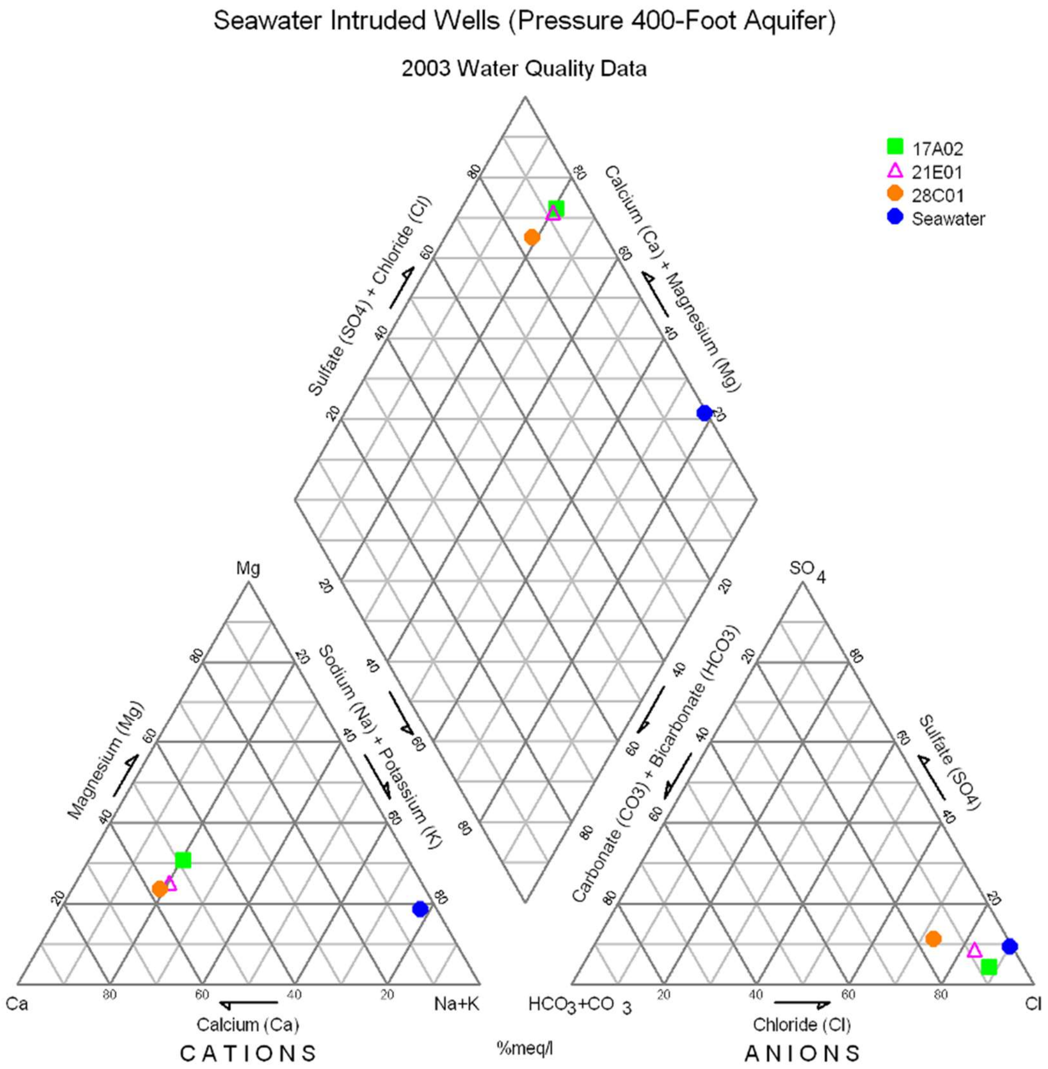
The Stiff diagrams shown on Figure 5 are from wells that have acknowledged seawater intrusion based on multiple lines of evidence. The Stiff diagrams alone are often not sufficient to identify seawater intrusion because there is no standard for Stiff diagram shapes; the diagrams are most useful as a comparative tool, showing the evolution of water chemistry over time and space. The shape of these Stiff diagrams is considered indicative of seawater intrusion in the Salinas Valley only because considerable data analyses have shown that in that location, Stiff diagrams adopt this shape as seawater encroaches.



(Data source: Pajaro Valley Water Management Agency [PVWMA])

Figure 2. Piper Diagram for Groundwater in Pajaro Valley

The Stiff diagrams of seawater intruded wells on Figure 5 show calcium concentrations greater than sodium concentrations, although sodium is the dominant cation in seawater. Incipient seawater intrusion is often characterized by increasing calcium and decreasing sodium, due to cation exchange between sodium and calcium on the aquifer material. This concept is discussed further on page 17.



(Source: Monterey County Water Resources Agency [MCWRA])

Figure 3. Piper Diagram for Groundwater in Salinas Valley

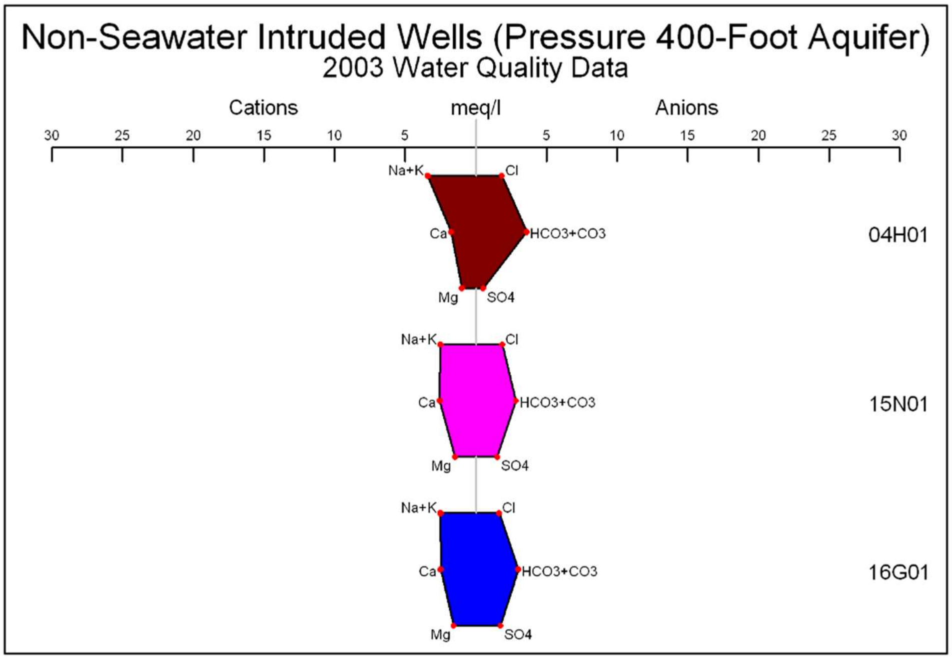
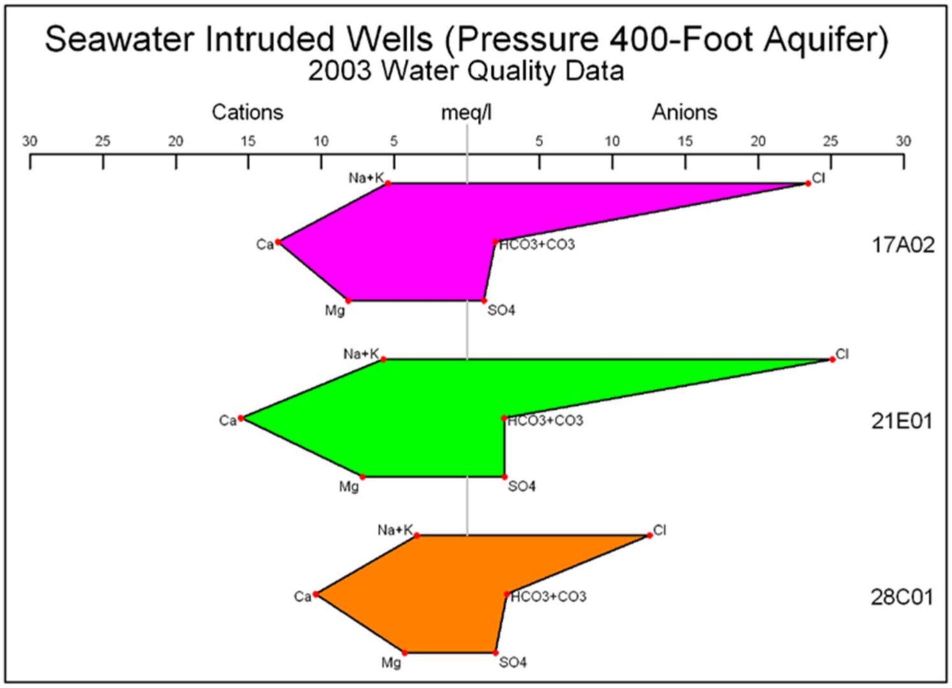


Figure 4. Stiff Diagrams from Salinas Valley Wells without Seawater Intrusion



(Source: MCWRA)

Figure 5. Stiff Diagrams from Salinas Valley Wells with Seawater Intrusion

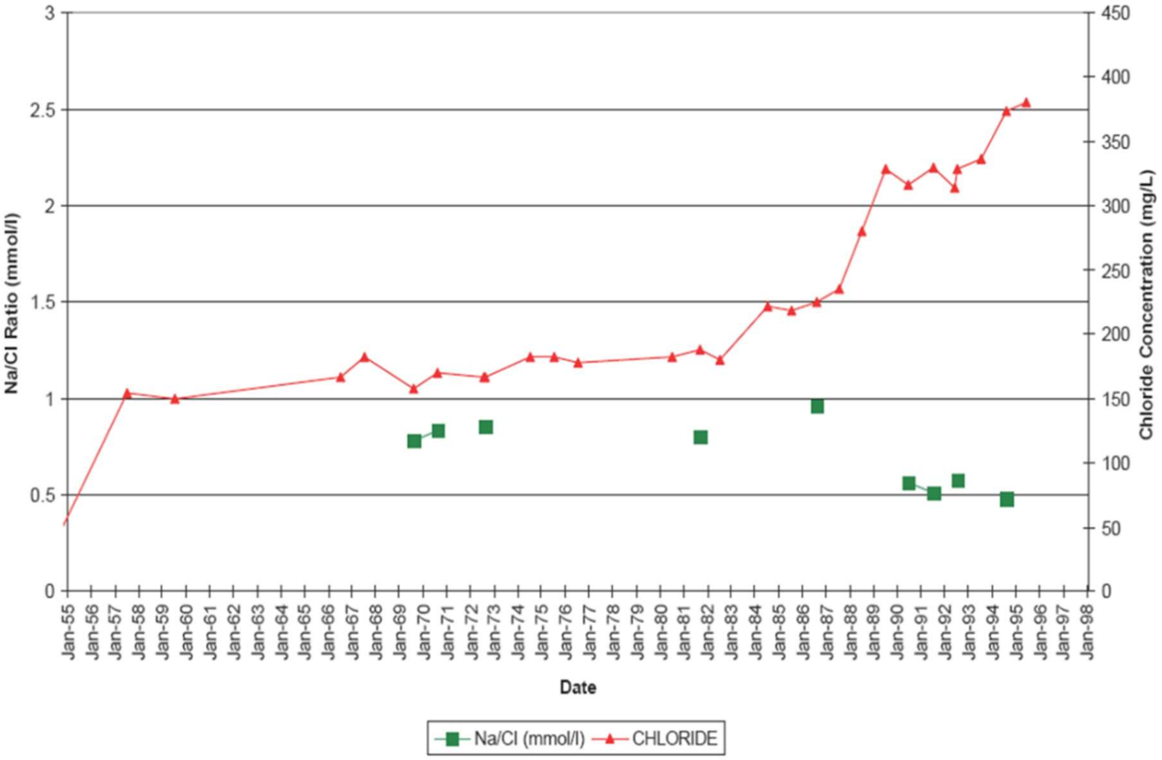
1.3.2 Increasing Chloride Concentrations

Seawater is chloride rich, whereas bicarbonate or sulfate are the dominant anions in many groundwater systems. Steadily increasing chloride concentrations over time is one of the most commonly used indicators of seawater intrusion. At low chloride concentrations, trends are often as important as absolute concentrations because of natural variations in groundwater chemistry. As an example, in 2004 the coastal shallow Pacific Cement Aggregates (PCA) West well had a chloride concentration of 46 mg/L, whereas the much more inland well 2701882-016, located in the Laguna Seca subarea, had a chloride concentration of 225 mg/L. The higher chloride concentration in well 2701882-016 is fairly consistent, showing no increasing trend, and is clearly not an indicator of seawater intrusion.

Example graphs showing historical chloride concentration increases indicative of seawater intrusion are shown on Figure 6 and Figure 7. Figure 6 graphs steadily increasing chloride concentrations in a shallow well in the Salinas Valley and Figure 7 graphs increasing chloride concentrations in a well in the Pajaro Valley. Both of these graphs show that the rise in chlorides is a lengthy and persistent process; chloride concentrations began to increase in the representative Salinas Valley well in 1982, and took six years before exceeding the Safe Drinking Water Act secondary drinking water standard of 250 mg/L. This long-term and relatively slow increase in chlorides suggests that while chloride concentrations are strongly indicative of seawater intrusion, it often takes time for the increasing chloride trend to be recognizable.

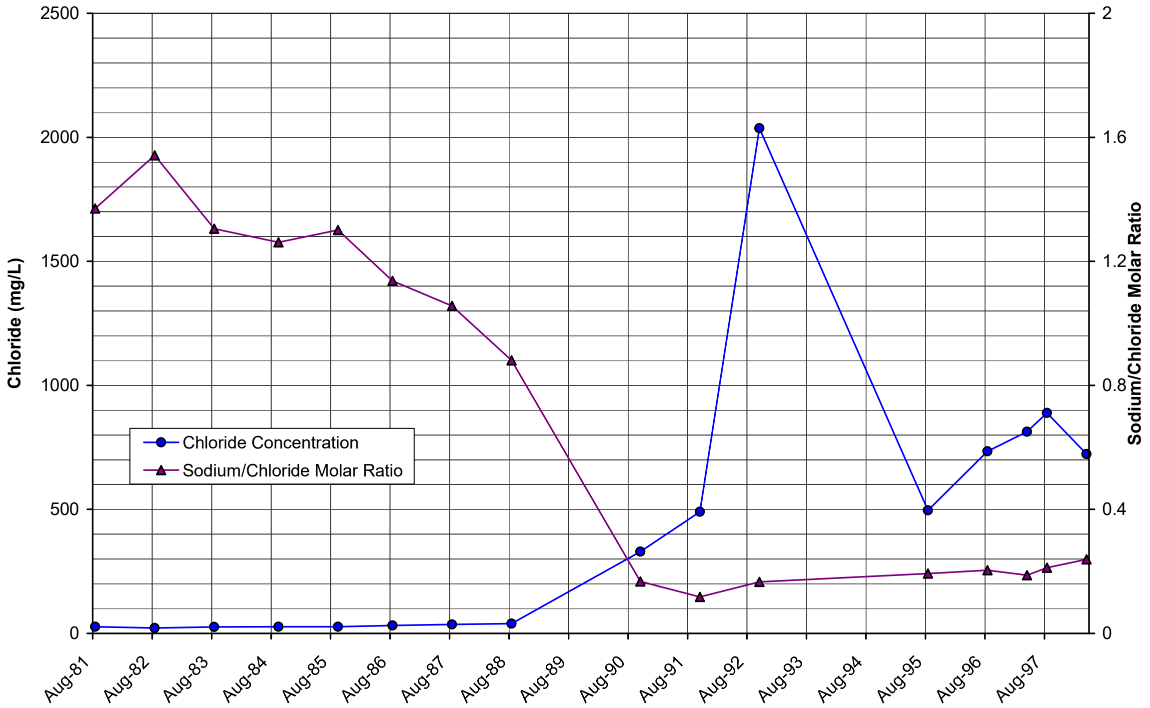
1.3.3 Sodium/Chloride Molar Ratios

As mentioned earlier in this report, sodium often replaces calcium on the aquifer matrix through ion exchange in advance of the seawater front. This effectively removes sodium from the water and sodium/chloride ratios drop in advance of the seawater front. This can sometimes be used as an early indicator of seawater intrusion. Sodium/chloride ratios can also be used to differentiate between seawater intrusion and other sources of saltwater. Jones *et al*. (1999) suggest that sodium/chloride ratios in advance of a seawater intrusion front will be below 0.86 (molar ratio). This distinguishes seawater intrusion from domestic wastewater, which typically has sodium/chloride ratios above 1.



(Data source: MCWRA)

Figure 6. Historical Chloride Concentrations and Sodium/Chloride Ratios for a Well in Salinas Valley Showing Incipient Intrusion



(Data source: PVWMA)

Figure 7. Historical Chloride Concentrations and Sodium/Chloride Ratios for a Well in Pajaro Valley Showing Incipient Intrusion

In addition to plotting increasing chloride concentrations, decreasing sodium/chloride ratios are plotted on Figure 6 and Figure 7 where the correlation between these two indicators of seawater intrusion can be observed. The potential utility of sodium/chloride ratios as an early indicator of seawater intrusion is shown on Figure 7. This figure shows that by August 1988, chloride concentrations in the Pajaro Valley well had remained relatively constant yet sodium/chloride ratios were beginning to drop, suggesting incipient seawater intrusion. By September 1990, the rising chloride levels can be clearly correlated to dropping sodium/chloride ratios; definitively associating the high chlorides with seawater intrusion.

1.3.4 Chloride-Bicarbonate Ratios

The ratio of chloride to bicarbonate-plus-carbonate contrasts the relative abundance of the dominant seawater and freshwater anions. As a ratio of concentrations expressed in mg/L, the ratio for seawater exceeds 100 and values for groundwater unaffected by seawater are generally less than 0.3. For groundwater with relatively low total dissolved solids, this ratio provides little benefit over evaluating chloride concentrations alone and therefore is not used in the current analyses.

1.3.5 Electric Induction Logs

Changes in formation salinity can be measured from within a well using electric induction logging. Induction logging within the well measures the fluid conductivity within the adjacent formation up to a distance of 3 feet from the well casing. This technique can be used in wells that are completed with PVC casings and screens.

By measuring the electrical conductivity of the formation throughout the depth of the well, this method can be a cost-effective way of detecting seawater intrusion, which could be indicated if the conductivity increases relative to the baseline value over time. One limitation of this method is that it does not provide concentrations of chloride or other ions that contribute to salinity. Therefore, the use of electric induction logs can only be used qualitatively.

Induction logging has been conducted at Watermaster's coastal Sentinel wells since their completion in 2007 and in PCA-West Deep and PCA-East Deep since 2024.

1.3.6 Other Indicators

Hem (1989) suggested several other indicators for seawater intrusion, including the concentration ratio of calcium to magnesium (approximately 0.3 in seawater and greater in fresh water); the percentage of sulfate among all ions (approximately 8% in seawater and larger in fresh water); and the concentrations of minor constituents such as iodide, bromide, boron, and barium. These other indicators are not used in the current analyses for the following reasons:

- The analyses presented in the following sections suggest seawater intrusion has not advanced onshore in the Seaside Groundwater Basin, although there is increasing salinity in the Paso Robles Formation (see Section 2.5).
- The Watermaster analyzed samples from selected coastal monitoring and production wells for iodide, bromide, boron, and barium from 2012 to 2022. Because it was felt that 10 years of barium and chloride data was sufficient for baseline purposes, analysis for these two constituents was discontinued starting in Water Year (WY) 2023.

It is not necessary to use the above two indicators because as discussed in the preceding sections, other methods are available for indicating seawater intrusion. Should the other methods start showing seawater intrusion, the minor constituents of iodide, bromide, boron, and/or barium could be included in future water quality analyses so that they can be used as supplemental indicators.

2 SEAWATER INTRUSION IN THE SEASIDE GROUNDWATER BASIN

The geochemical criteria discussed above, along with various maps showing spatial distributions of concentrations, can be used to estimate the presence or lack of seawater intrusion in the Seaside Groundwater Basin. While no single analysis is a definitive indicator of seawater intrusion, the combined weight of all analyses may be instrumental in detecting seawater intrusion.

2.1 Analysis Approach

As was used in previous Seawater Intrusion Analysis Reports, this SIAR includes multiple approaches to evaluate seawater intrusion. Results from all groundwater quality testing in WY 2025 are included in Appendix A.

Data for the second quarter of WY 2025 (sampled and measured between January and March 2025) and fourth quarter of WY 2025 (sampled and measured between July and September 2025) are analyzed and mapped to show the spatial distribution of groundwater quality and groundwater elevations. In addition to spatial mapping, historical data are graphed to assess geochemical trends over time. Data from the second quarter represent conditions during the wet time of the year; data from the fourth quarter represent conditions during the dry time of the year. In some cases when samples or measurements are not collected strictly within the second or fourth quarter, the quarter in which they were collected is provided with the data.

Where possible, analyses are separated by depth zone. Two depth zones have been chosen, following the system of Yates *et al.* (2005). Wells assigned to the shallow depth zone generally correlate to the Upper Paso Robles Formation where it exists. This shallow zone is roughly at the same depth as the Salinas Valley Pressure 400-Foot Aquifer. Wells assigned to the deep zone correlate with the Lower Paso Robles Formation, the Purisima Formation, and/or the Santa Margarita Sandstone where it exists in the Seaside Groundwater Basin. The deep zone is roughly at the same depth as the Salinas Valley Pressure Deep Aquifers (900-foot and 1,500-foot Aquifers).

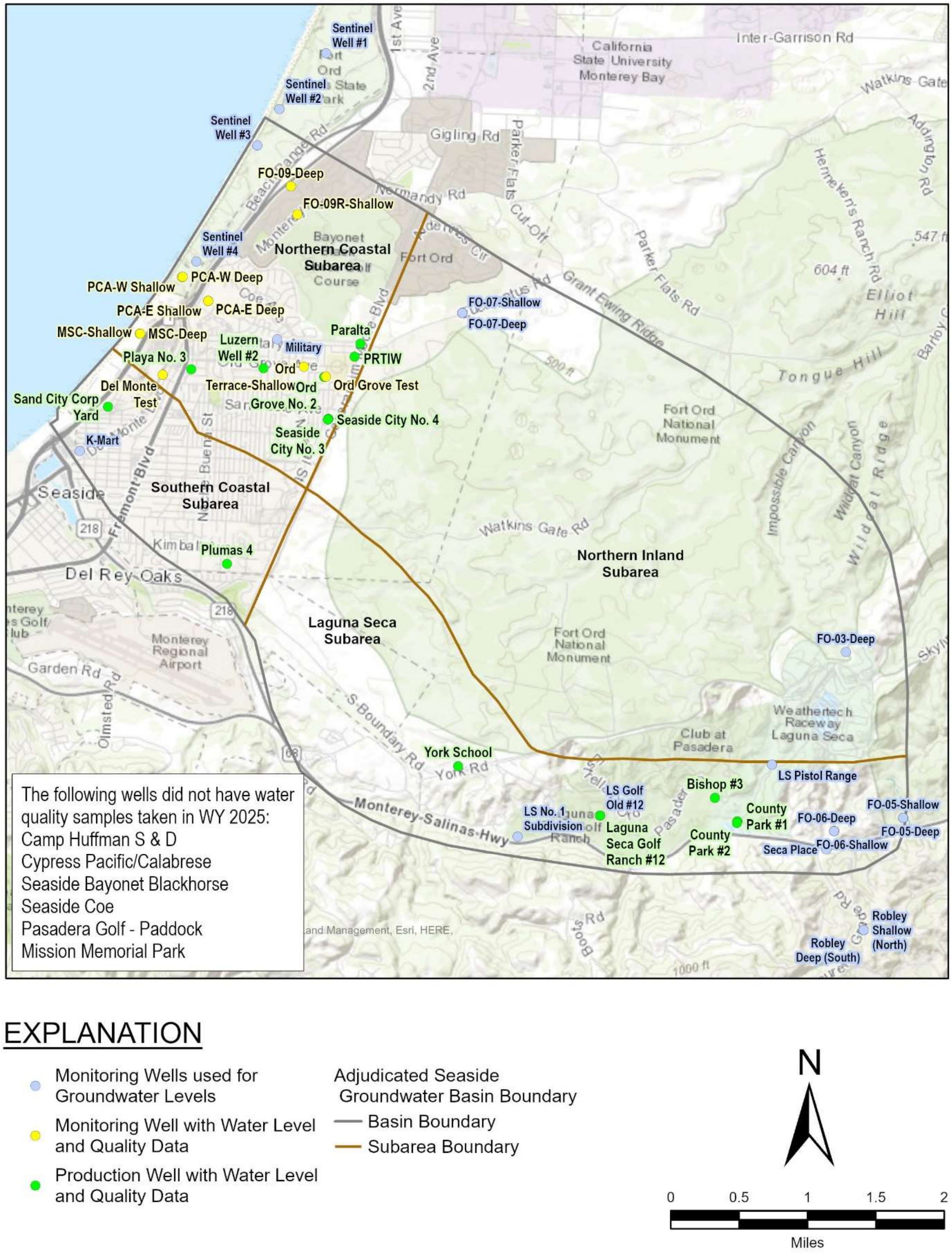
Analysis of current and historical precipitation is also included to help inform trends in groundwater elevations and production.

2.2 Cation/Anion Ratios

For the WY 2025 SIAR, 21 monitoring wells and 11 production wells are used for geochemical trend analyses. Locations of all monitoring and production wells used in the SIAR analysis are shown on Figure 8. Some of the production wells included in previous years' analysis are not included in this year's analysis because they were not pumped during the year and thus not sampled. Groundwater quality data are not collected in the Sentinel Wells for seawater intrusion analysis because it was concluded in early 2017 that groundwater samples collected using the low flow sampler were more representative of water within the well casing and not from the groundwater in the aquifer surrounding the well (HydroMetrics LLC, 2017).

Eight monitoring wells used in this analysis represent one or both well pairs from the Monterey Peninsula Water Management District (MPWMD) monitoring well network and a single non-paired monitoring well (Del Monte Test) (Figure 8). A well pair comprises two wells drilled close to one another: one perforated in the shallow aquifer and the other perforated in the deep aquifer. Each well pair is represented with a unique color and symbol on the Piper and Stiff diagrams.

Production wells included in the analysis are water purveyor wells are sampled annually for general inorganic minerals per the Seaside Basin Monitoring and Management Program (Seaside Groundwater Basin Watermaster, 2006). The current schedule includes quarterly sampling at selected coastal monitoring wells. All other monitoring and production wells are sampled annually during the fourth quarter. Where samples are not available for analysis, the text and figures indicate as such. Previous SIAR reports compared spring and fall Stiff diagrams, but after 19 years seasonal differences are not evident. It is more meaningful to compare the earliest baseline data (usually 2008) to current data (fourth quarter 2025). If groundwater quality data are not available for 2008, the next available data are used as the baseline.



The following wells did not have water quality samples taken in WY 2025:
Camp Huffman S & D
Cypress Pacific/Calabrese
Seaside Bayonet Blackhorse
Seaside Coe
Pasadera Golf - Paddock
Mission Memorial Park

Figure 8. Wells Used for Seawater Intrusion Analyses Second Quarter Water Year 2025 (January-March 2025)

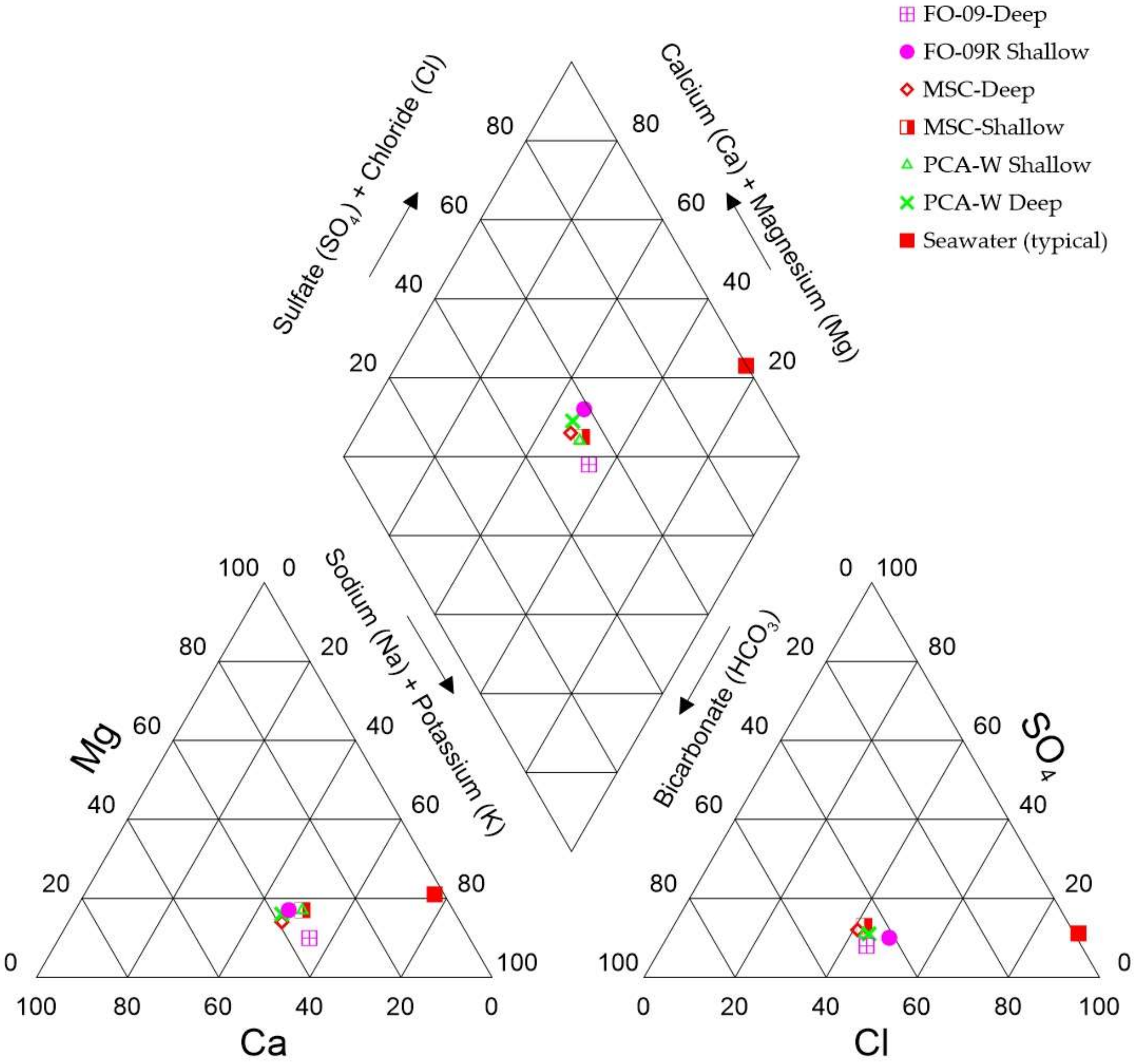
2.2.1 Second Quarter Water Year 2025 (January-March 2025)

A Piper diagram plotting 6 monitoring wells in the Northern Coastal subarea for the second quarter WY 2025 (January-March 2025) is shown on Figure 9. Analyses from only 6 wells are shown because the Sentinel Wells are only used for induction logging and are no longer sampled, and most of the monitoring well pairs are only sampled in the fourth quarter. Monitoring well FO-09 Shallow was destroyed in 2021 due to a compromised casing and was replaced by FO-09R Shallow in 2023. FO-10 Shallow and Deep are no longer sampled for reasons described below.

Previous SIARs documented issues with inconsistent groundwater quality data sampled at FO-10 Shallow and Deep. Investigations by Feeney in 2021 and 2022 identified a steel tremie pipe left in the borehole during construction. Analysis of pneumatic slug testing conducted by EKI in 2025 indicate that the three aquifer zones intersected by nested well FO-10 are hydraulically connected through the borehole (EKI, 2025). This connectivity appears to be influenced not only by the tremie pipe, but also by potential gaps within the concrete seal that could allow groundwater movement between zones of differing hydraulic head. The nested monitoring wells at the FO-10 location are scheduled to be destroyed by MPWMD and replaced by Marina Coast Water District in WY 2026.

While most groundwater samples for WY 2025 from depth-discreet monitoring wells generally plot in a single cluster on Piper diagrams, with no water chemistry changes toward seawater, there are three monitoring wells, PCA-West Shallow (Appendix C, Figure C-1), PCA-East Deep (Appendix C, Figure C-4), Ord Terrace Shallow (Appendix C, Figure C-5) that have trends indicating groundwater may be mixing with seawater. Appendix C includes individual Piper diagrams for each well to track geochemistry over time. Note that bicarbonate (HCO_3) presented on Piper and Stiff diagrams is derived from Total Alkalinity (as CaCO3).

Stiff diagrams for monitoring and production wells are now only shown for the fourth quarter in Section 2.2.2.



(Data source: Watermaster)

Figure 9. Piper Diagram for Seaside Groundwater Basin Monitoring Wells, Second Quarter Water Year 2025 (January-March 2025)

2.2.2 Fourth Quarter Water Year 2025 (July-September 2025)

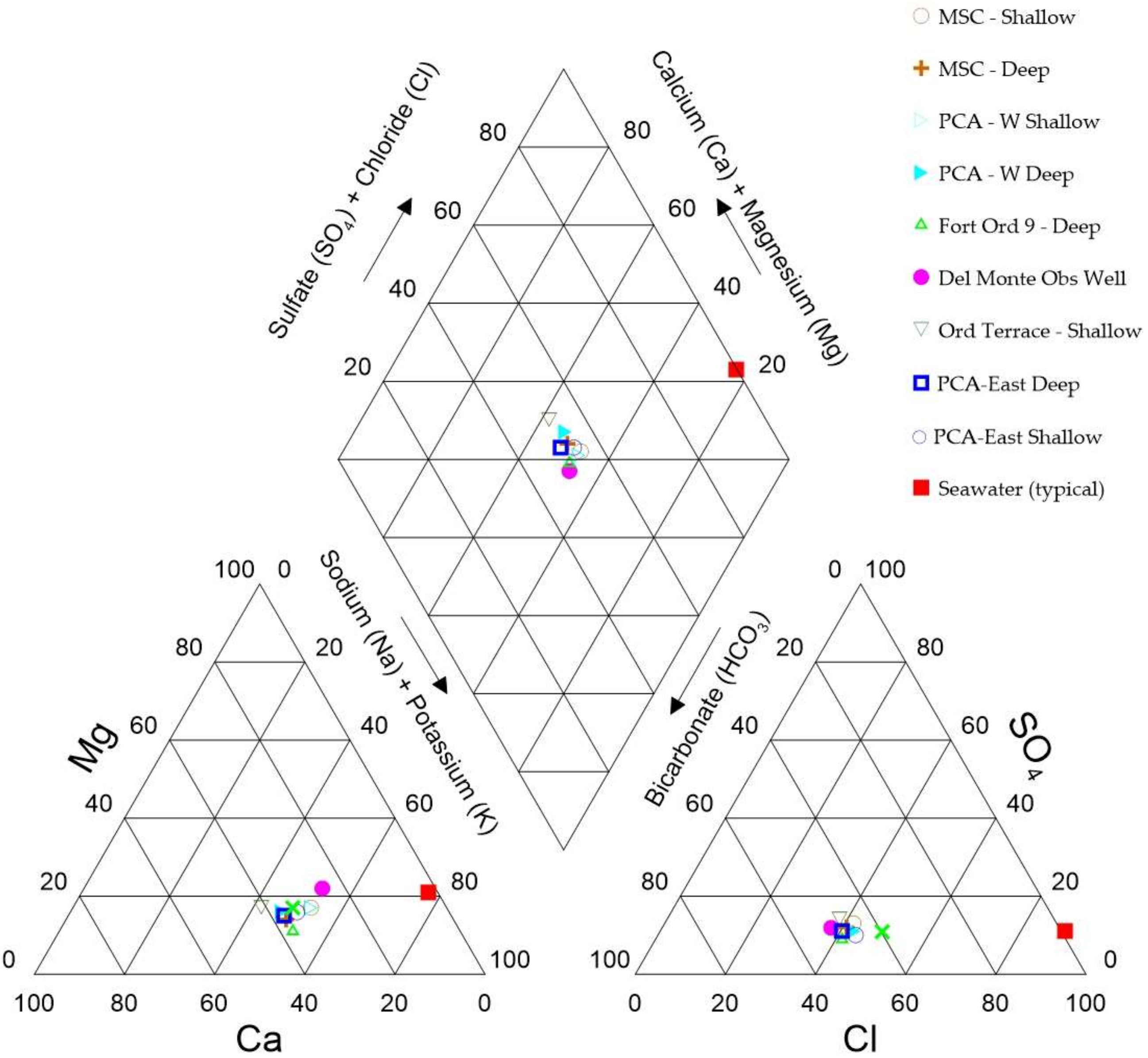
Piper diagrams displaying groundwater quality data from 9 monitoring wells and 9 production wells in the Seaside Groundwater Basin for the fourth quarter of WY 2025 (July-September 2025) are shown on Figure 10 and Figure 11, respectively. Appendix C includes individual Piper diagrams for each well to show trends over time.

The Piper diagram for monitoring wells (Figure 10) shows groundwater quality data clustering generally in a single area on the diagram. Groundwater is generally of a sodium-chloride/sodium-bicarbonate type. Figure 11 presents a Piper diagram for fourth quarter samples from production wells. The production wells are more scattered than the monitoring wells on Figure 10. The variation on the Piper diagram for production wells is due to higher sulfate and chloride anions than the monitoring wells and because many production wells are screened within both aquifers. Groundwater from these wells is characterized as sodium-sulfate-chloride type waters. In the Laguna Seca subarea, the York School well plots closest to typical seawater on this diagram; however, its inland location precludes seawater intrusion as the cause for its observed water chemistry. The Piper diagrams show no indication of seawater intrusion at any of the production wells.

Stiff diagrams for monitoring wells sampled during the fourth quarter of WY 2025 are shown in the second column of diagrams on Figure 12 through Figure 14. The Camp Huffman Well is only sampled every five years and was last sampled in 2023. Although none of the Stiff diagrams show the high chloride spike that indicates seawater intrusion shown on Figure 5, there are some changes in the ratio of anions and cations from the baseline:

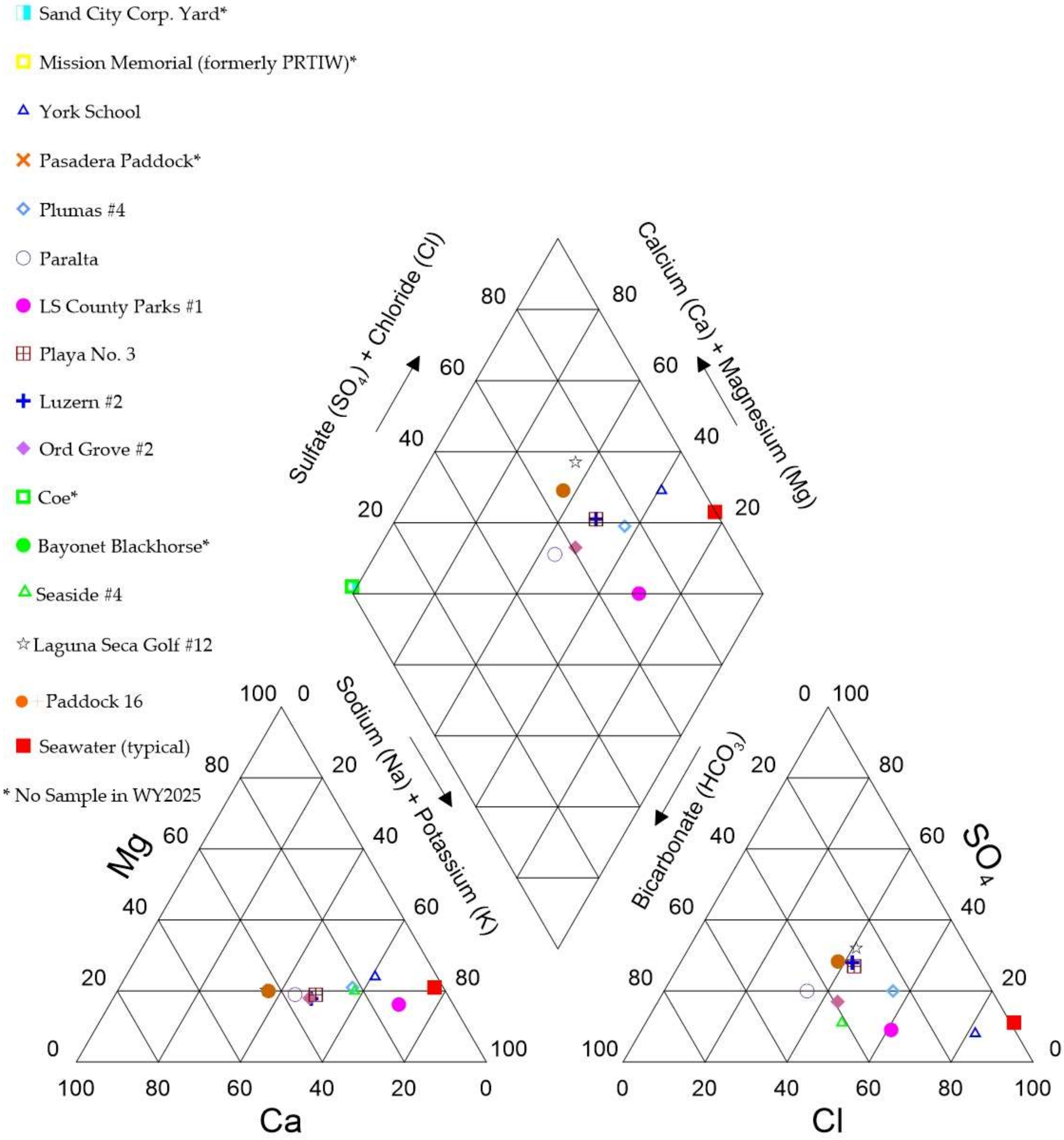
- Fort Ord 9 - Deep: increase in bicarbonate, sodium and chloride
- PCA East - Shallow: decrease in bicarbonate
- PCA East - Deep: increase in calcium, sodium, and chloride
- Del Monte Observation Well: decrease in calcium and increase in magnesium

Stiff diagrams for 11 production wells are shown on Figure 17 through Figure 16. For those wells not sampled in WY 2025, the most recent available data are plotted in the second column. Stiff diagrams for wells that did not produce water during the year are not sampled. These include the City of Seaside golf course wells (Coe and Bayonet Blackhorse) and Cypress Pacific.



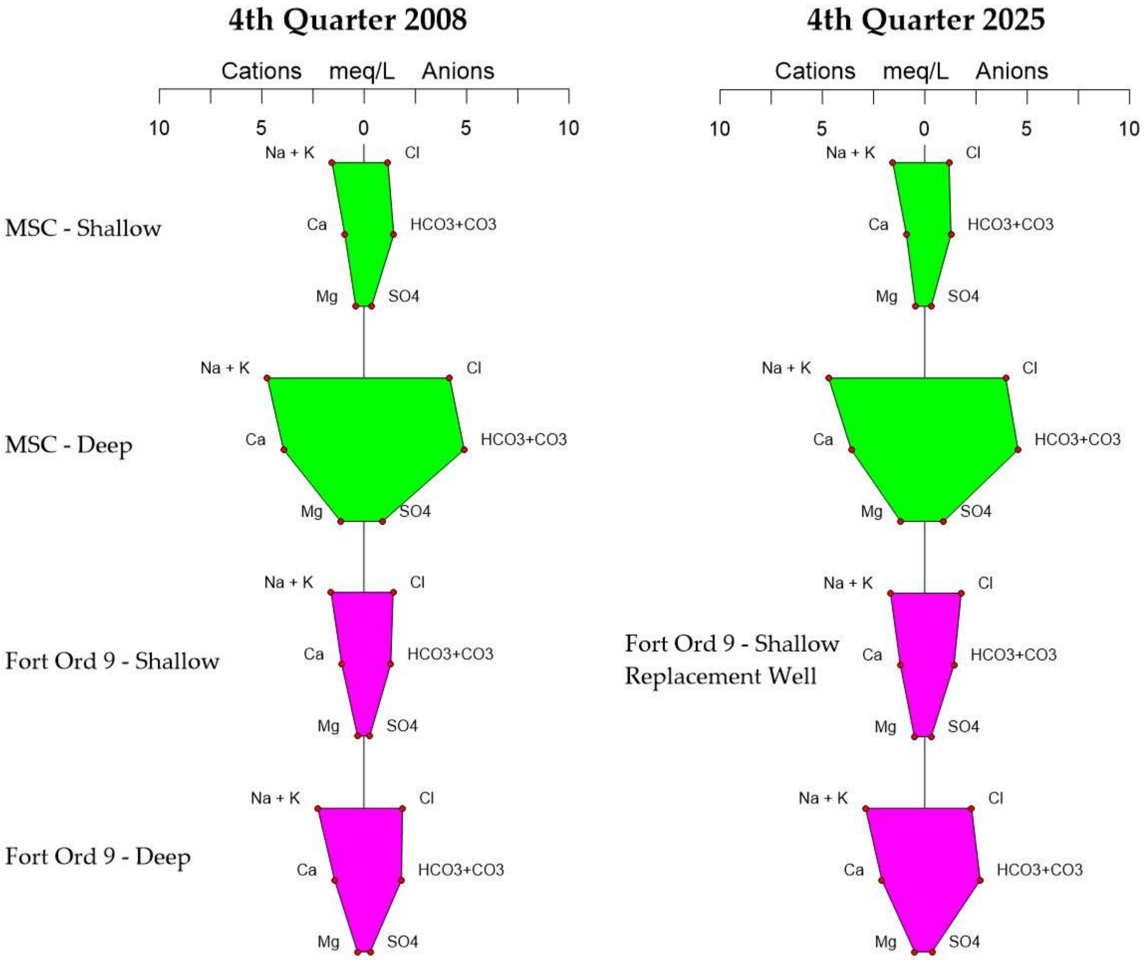
(Data source: Watermaster)

Figure 10. Piper Diagram for Seaside Groundwater Basin Monitoring Wells, Fourth Quarter Water Year 2025 (July- September 2025)



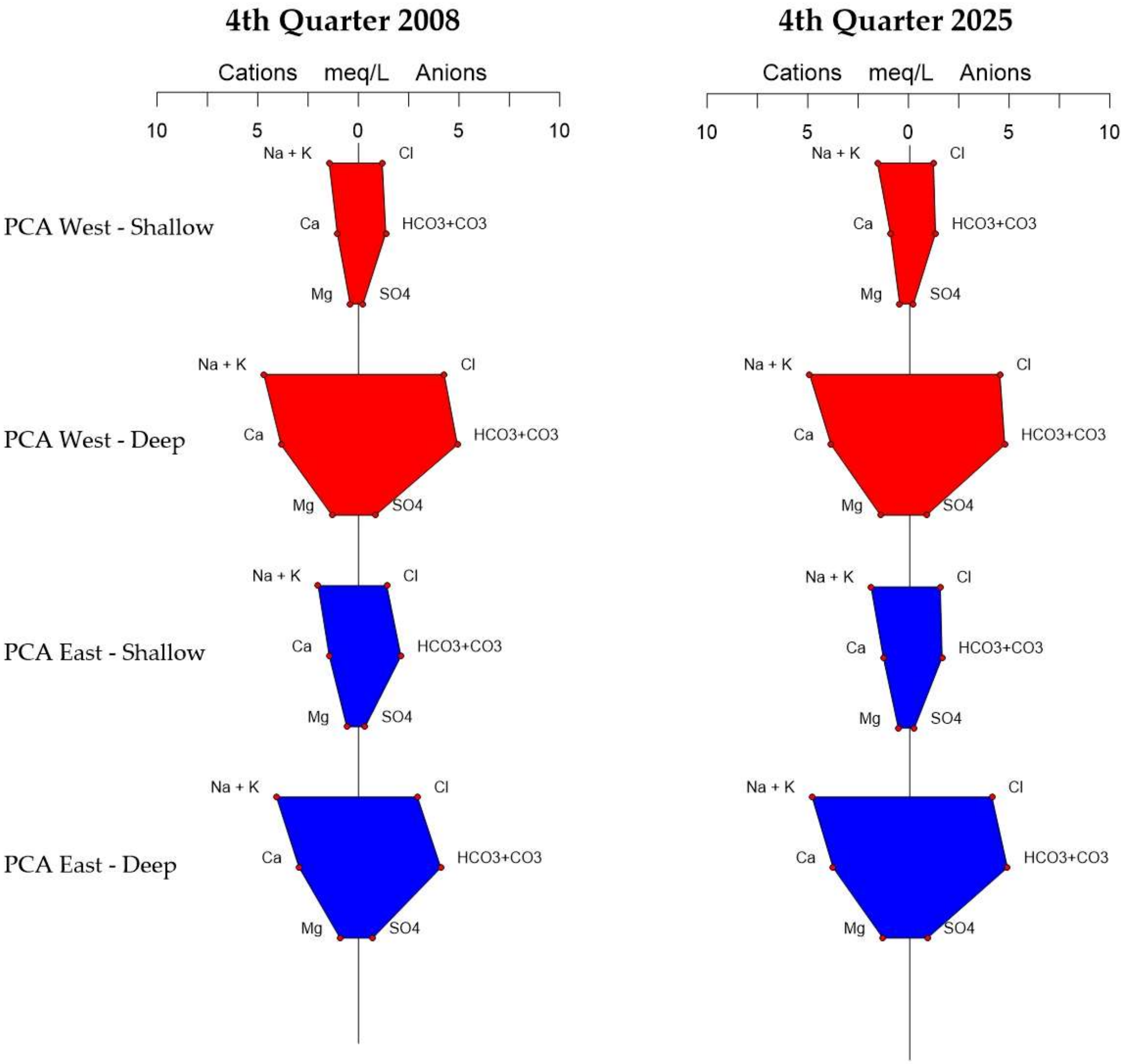
(Data source: Watermaster)

Figure 11. Piper Diagram for Seaside Groundwater Basin Production Wells, Fourth Quarter Water Year 2025 (July-September 2025)



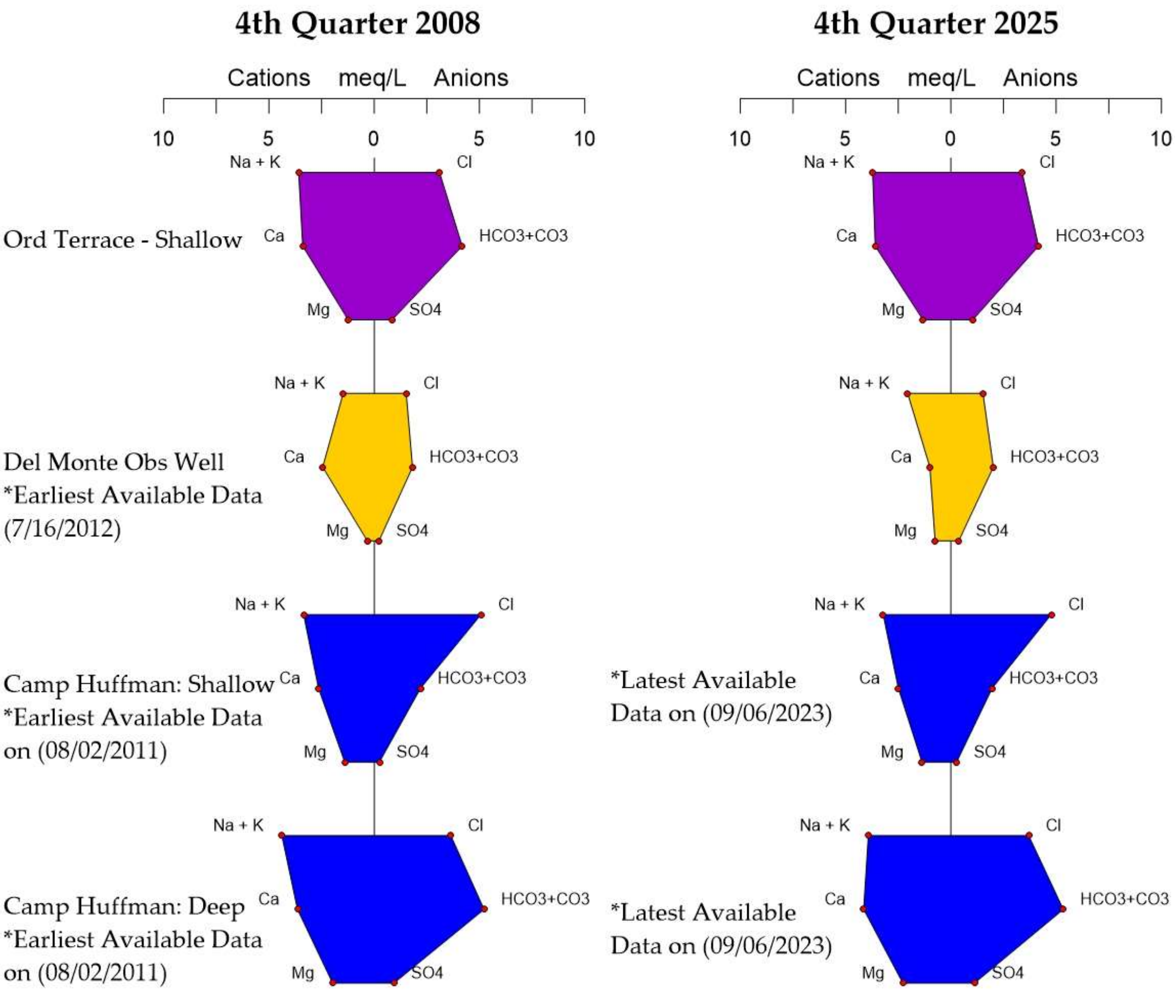
(Data source: Watermaster)

Figure 12. Stiff Diagrams for Monterey Sand Company (MSC) and Fort Ord 9 Monitoring Wells



(Data source: Watermaster)

Figure 13. Stiff Diagrams for PCA-West and PCA-East Monitoring Wells



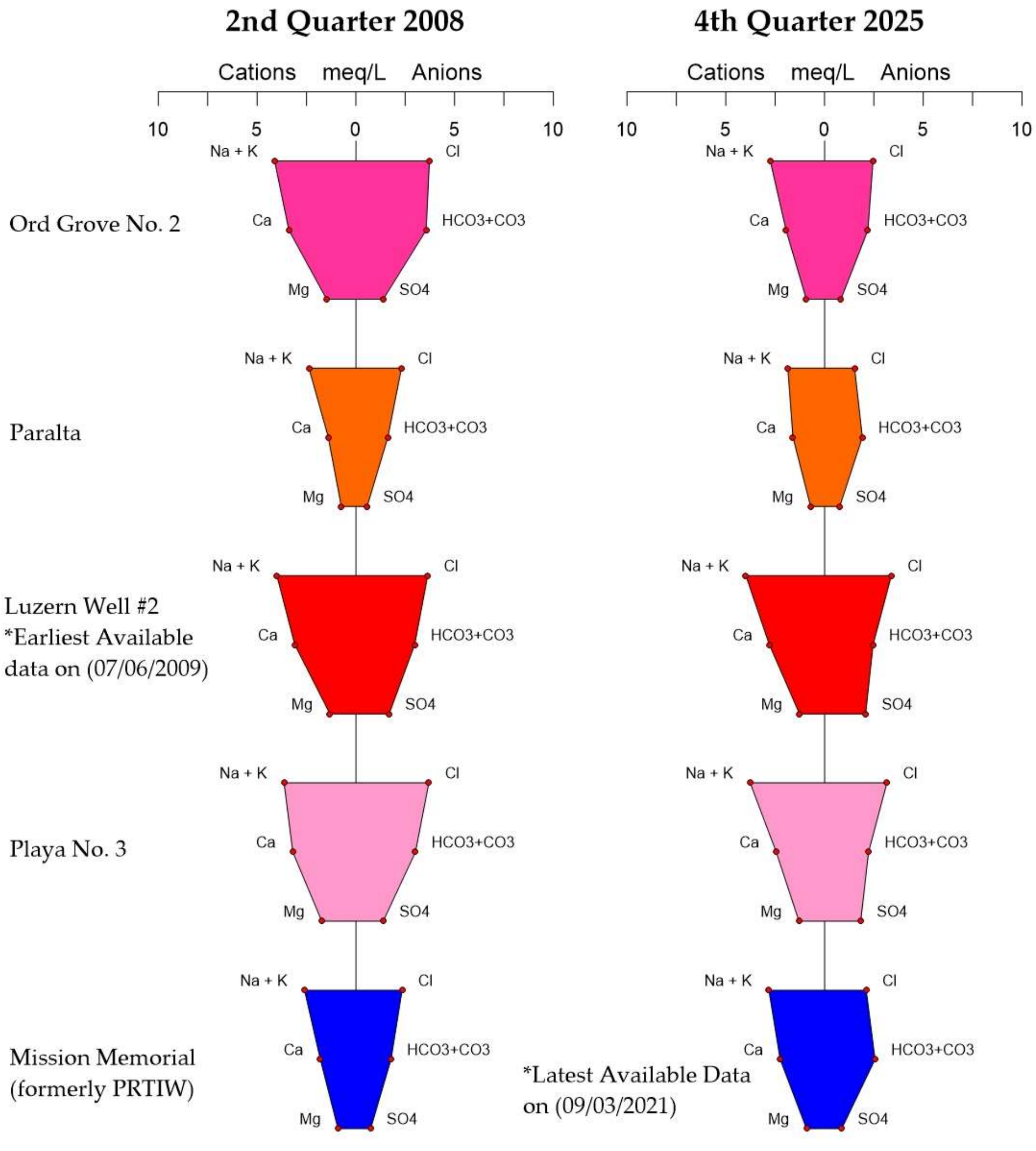
(Data source: Watermaster and MPWMD)

Figure 14. Stiff Diagrams for Ord Terrace, Del Monte, and Camp Huffman Monitoring Wells

In the Northern Coastal subarea, many of the production wells have slightly changed Stiff diagrams. Those production wells closest to injection activities, such as Ord Grove #2 and Paralta, now have less sodium and chloride than when the wells were first sampled. Luzern #2 and Playa #3, located farther away from injection activities and closer to the coast, have less chloride and bicarbonate anions and less calcium cations.

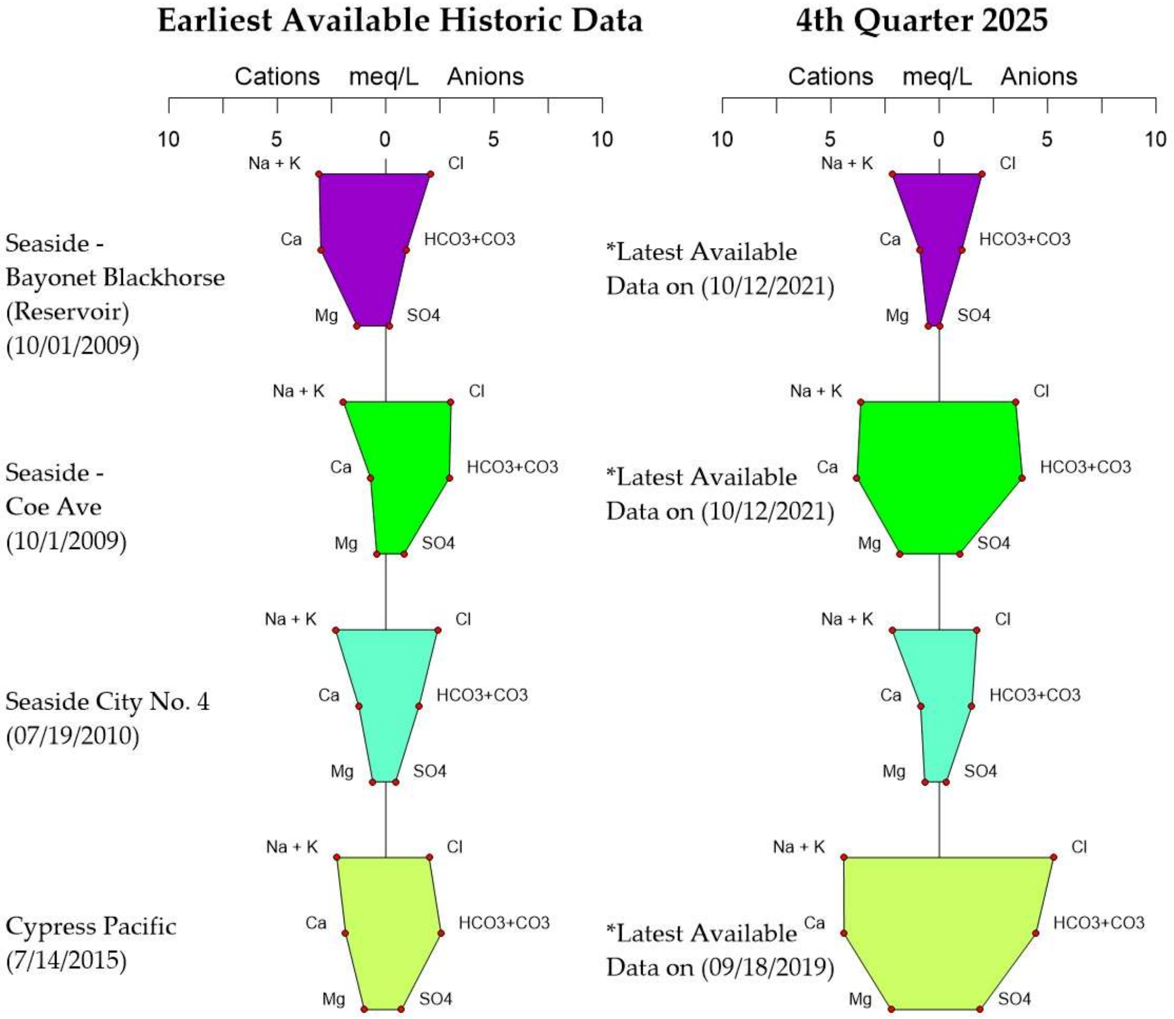
In the Laguna Seca subarea, LS County Park #1 and LS Golf #12 production wells have Stiff diagram shapes that are slightly different from the chemistry of other wells. The cause of this could be localized mineralization. The Laguna Seca subarea is known to have higher salinity groundwater than the rest of the Seaside Basin due to the underlying Monterey shale that was deposited in a marine environment. The Pasadera Paddock production well is no longer in service and was not sampled in WY 2025. The Pasadera Paddock well has been replaced by the Pasadera 16 well.

The Sand City's Public Works Corp Yard production well in the Southern Coastal subarea and the York School production well in the Laguna Seca subarea typically have Stiff diagrams quite different from most other wells' groundwater quality. However, they do not have a large chloride spike associated with seawater intrusion as shown on Figure 5. None of the production wells sampled in WY 2025 and analyzed using Stiff and Piper diagrams show an indication of seawater intrusion.



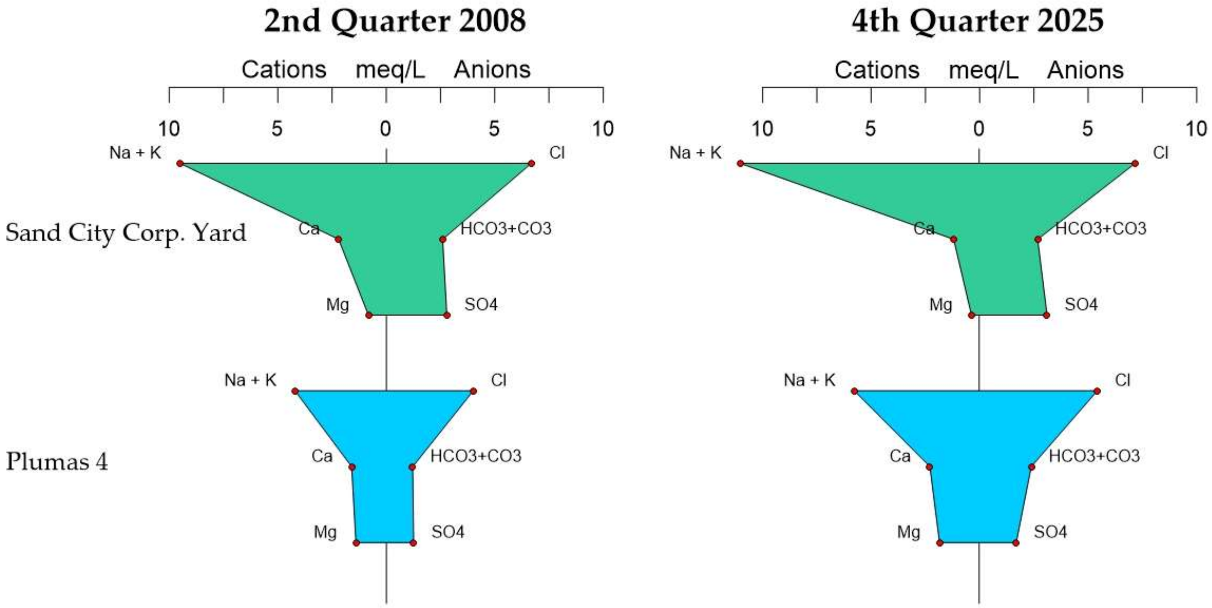
(Data source: Watermaster)

Figure 15. Stiff Diagrams for Northern Coastal Subarea CAWC and Mission Memorial Production Wells



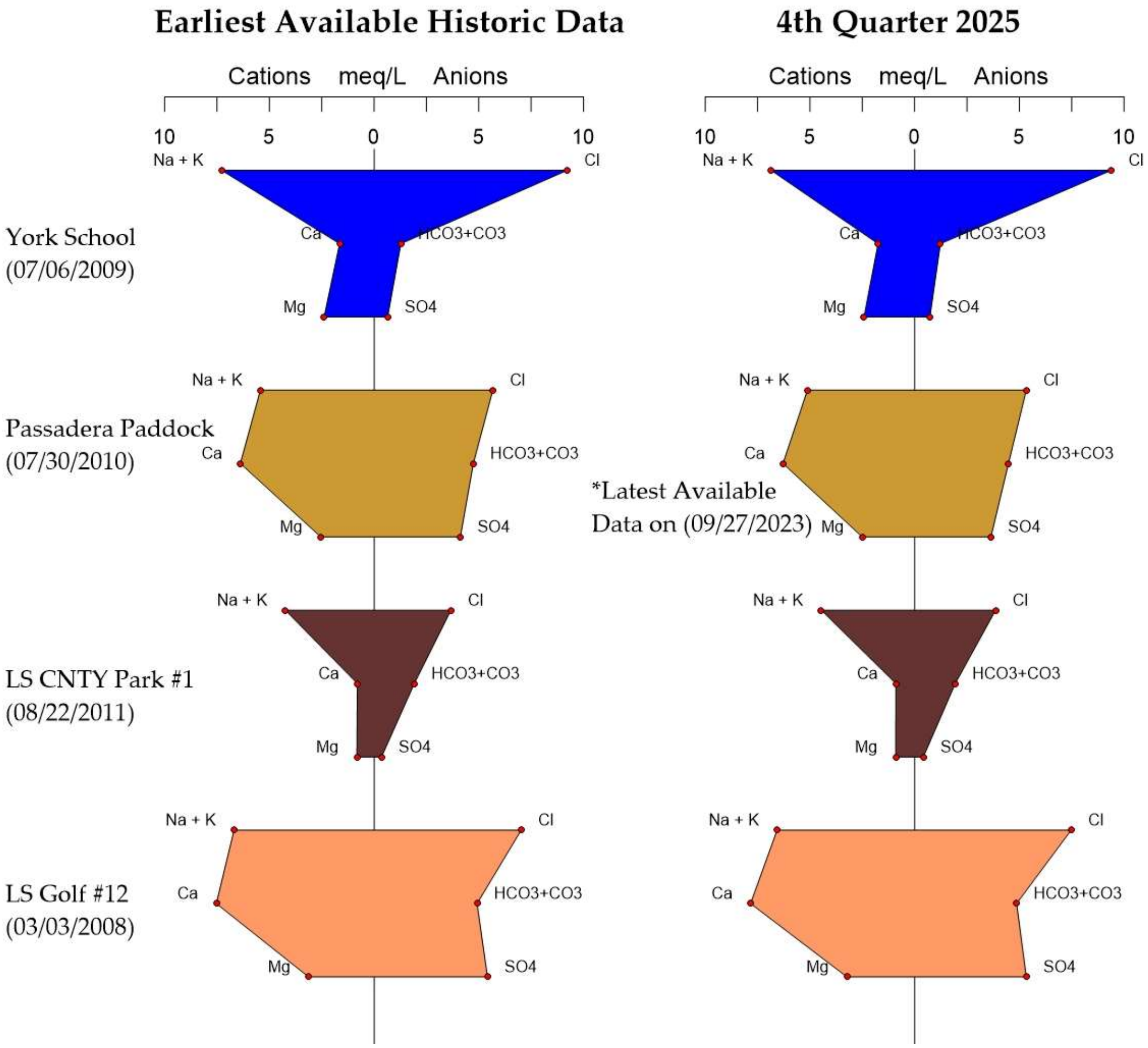
(Data source: Watermaster)

Figure 16. Stiff Diagrams for Northern Coastal Subarea City of Seaside and Cypress Pacific Production Wells



(Data source: Watermaster)

Figure 17. Stiff Diagrams for Southern Coastal Subarea Production Wells



(Data source: Watermaster)

Figure 18. Stiff Diagrams for Laguna Seca Subarea Production Wells

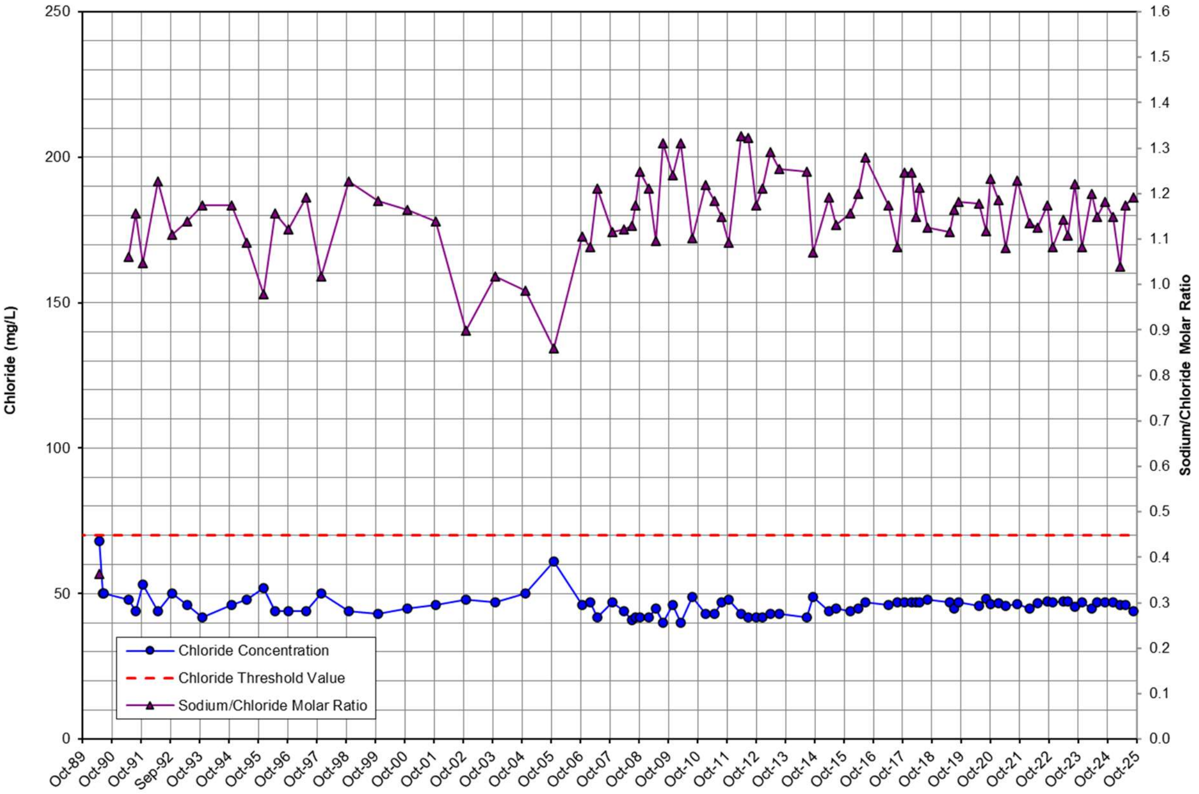
2.3 Chloride Concentrations

This section describes chloride concentration trends over time and with distance from the coast.

2.3.1 Chloride Trends

Chemographs showing chloride concentrations over time are plotted for each of the monitoring wells. An example plot displaying chloride concentrations for the shallow PCA-West Shallow monitoring well is shown on Figure 19. A complete set of chemographs is included in Appendix D.

Figure 19. Historical Chloride and Sodium/Chloride Molar Ratios, PCA-West Shallow



Chloride trends for most monitoring wells remain stable or fluctuate within a historical range. The following chloride changes over the year are observed:

- Monitoring well PCA-East Deep (Appendix D, Figure D-4) - increased by 19 mg/L. Chloride concentrations are the highest in the well's historical record starting in 1989, but remains below 150 mg/L.
- Sand City Corp Yard well (Appendix D, Figure D-13) - increased by 40 mg/L, but is still within the range of historic variability.
- Monitoring well FO-9 Deep (Appendix D, Figure D-11) - increased by 14 mg/L. Chloride concentrations are the highest in the well's historical record, except for the initial sample in 1994 and is approaching its chloride threshold value. Because the sodium/chloride molar ratio also increased, this does not appear to be a sign of incipient seawater intrusion.

2.3.2 Chloride Concentration Maps

Fourth quarter WY 2025 chloride concentrations are mapped using data from August and September 2025. Maps for the shallow and deep aquifers are included on Figure 20 and Figure 21, respectively.

The shallow aquifer fourth quarter WY 2025 chloride concentration map on Figure 20 does not show a spatial distribution that can be readily contoured because of relatively large differences in concentrations in wells near each other. The shallow aquifer chloride concentrations have not varied much from previous water years.

Figure 20 shows chloride concentrations in the northern coastal portion of the Northern Coastal subarea are typically 46 to 58 mg/L. The more inland Northern Coastal subarea wells have slightly higher chloride concentrations that may be due to depositional mineralization differences in the shallow aquifer. Within the Monterey Subbasin, north of the Seaside Basin, chloride concentrations increase in a northward direction toward the currently understood extent of seawater intrusion (Monterey Subbasin Groundwater Sustainability Plan (GSP) Figure 5-29). Figure 20 shows an area of known seawater intrusion (orange dashed line) close to the Seaside Basin boundary as mapped by the MCWRA.

Historically, Sand City's Public Works Corp Yard well in the Southern Coastal subarea has had the highest chloride concentration of all shallow coastal wells (Appendix D, Figure D-13). The Piper and Stiff diagrams and sodium/chloride molar ratio for the well suggest the source of high chloride in the well's groundwater is not seawater. It is notable that there was a significant decline in its chloride concentration of approximately 88 mg/L in WY 2023. Concentrations subsequently rose 20 mg/L in WY 2024, followed by another 40 mg/L increase in WY 2025.

The deep aquifer fourth quarter WY 2025 chloride concentration map is shown on Figure 21. Chloride concentrations for the Sentinel Wells are not shown on this map because it was found that groundwater samples collected from them are not representative of the aquifer. Deep aquifer chloride concentrations near the coast range roughly between 70 mg/L and 160 mg/L and have risen slightly in comparison to last year. Chloride concentrations in the eastern portion of the Northern Coastal subarea are generally within the 100 to 130 mg/L range of historical concentrations. Also in the Northern Coastal subarea, the Ord Grove #2 production well has experienced declines in chloride concentrations since WY 2022, decreasing from 134 mg/L in WY 2021 to 87 mg/L in WY 2025. The lowering of chloride concentrations may be related to recharge activities at the aquifer storage and recovery (ASR) wells, as Ord Grove #2 is near the area of influence of injection in the deep zone. Since the chloride data show no discernible spatial distribution with high concentrations close to low concentrations, the data cannot be readily contoured.

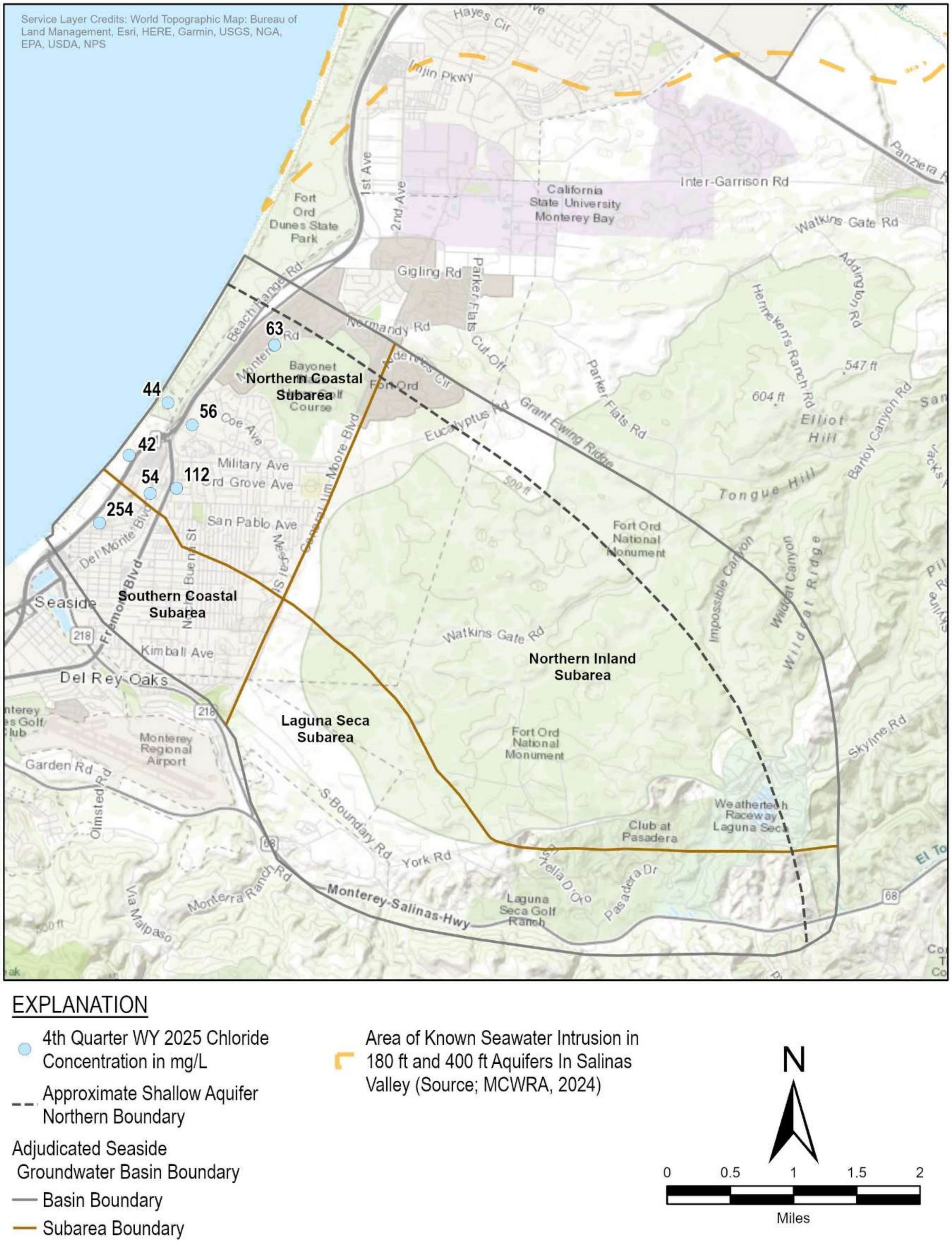


Figure 20. Shallow Aquifer Chloride Concentration Map – Fourth Quarter Water Year 2025

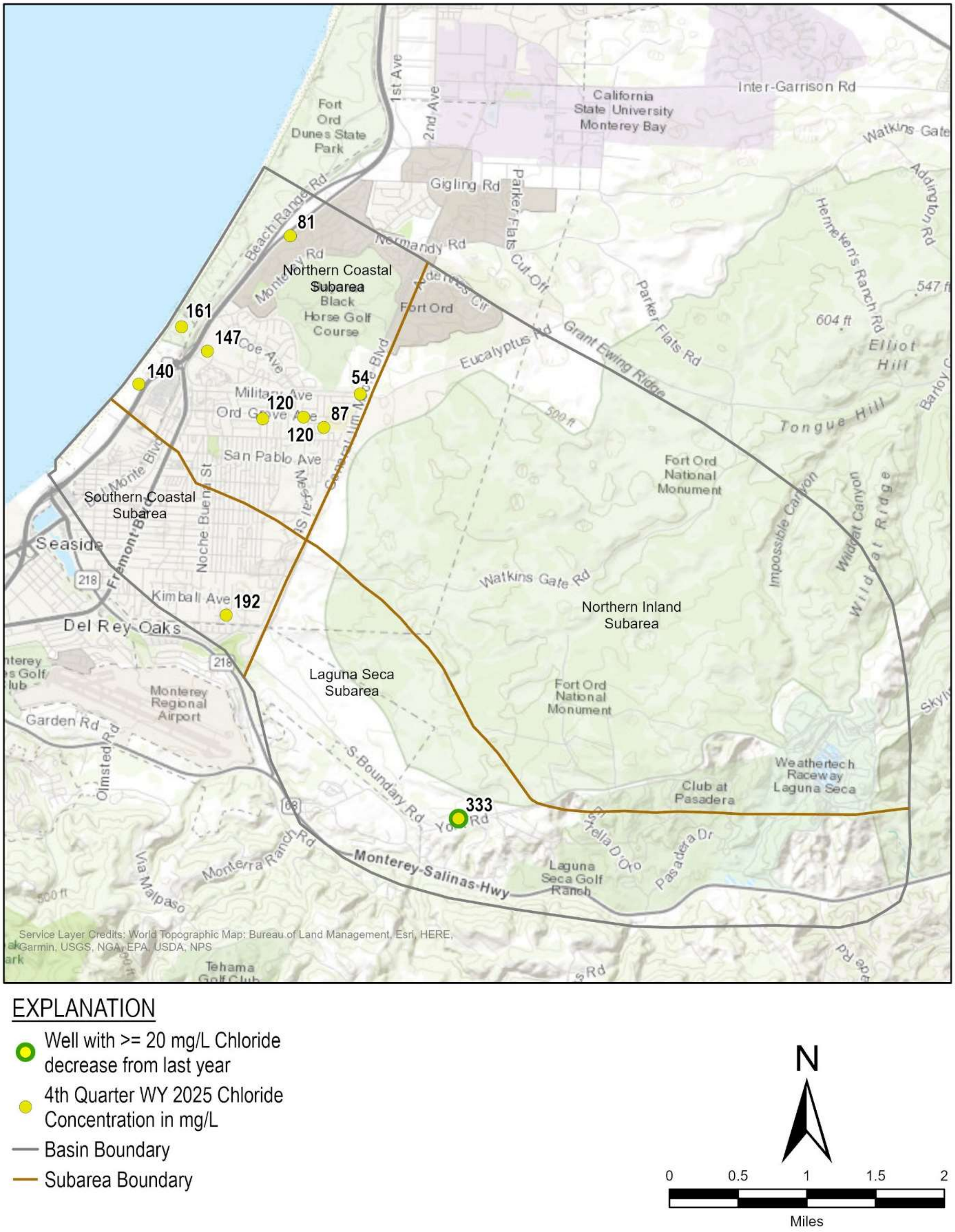


Figure 21. Deep Aquifer Chloride Concentration Map – Fourth Quarter Water Year 2025

2.4 Sodium/Chloride Molar Ratios

Chemographs showing long-term sodium/chloride molar ratios over time are plotted for 12 monitoring wells and 1 production well. An example plot displaying sodium/chloride molar ratios for the PCA-West Shallow well is shown on Figure 19. A complete set of chemographs is included in Appendix D.

Most of the sodium/chloride molar ratios in the monitoring wells remained constant or increased over the past year. A sodium/chloride ratio below 0.86 is significant because Jones *et al*. (1999) suggest that sodium/chloride ratios in advance of a seawater intrusion front will be below 0.86. There are no sodium/chloride ratios below 0.86 in the monitoring wells sampled within the Seaside Basin.

2.5 Electric Induction Logs

One induction logging event took place in the four Sentinel Wells in October 2025. Although logging took place in very early WY 2026, the data are included in this WY 2025 SIAR. Pacific Surveys conducted the logging as they have done since August 2014.

Three different induction tools have been used during the project history, and while different tools show responses that are different in terms of absolute values, each tool has had internally consistent "same-tool" responses. The current induction tool (Tool 3 LIM) displays repeatable responses and is consistent with the other two induction tools used historically on site (Feeney, 2020). Moving forward, all data presentations will be referenced to the current tool, as was done in 2014 when a tool change previously occurred.

Feeney (2007) described the original 2007 baseline induction logs for each of the wells as follows:

> *SBWM-1 — The upper 50 feet of this well shows very high conductivities. This signature is present in all of the wells and is the result of the 50-foot steel conductor casing. However, because the water table is below the conductor casing at all locations, the steel casing does not interfere with data collection within the saturated sediments below. Below the conductor casing in SBWM-1, the sediment materials are dry to a depth of approximately 115 feet. Below this depth, there is approximately 10 feet of sand containing fresh water. Below 125 feet and extending to approximately 350 – 400 feet is sand containing saline water with conductivities measuring as high as 10,000 mhos/cm. This saline water is contained within the Dune /Beach Sand Deposits and the Aromas Sand. Below this depth, conductivities are relatively low with the exception of the thick*

> *marine clay between approximately 600 -700 feet. The other conductive zones also correlate with clay zones.*
>
> *SBWM-2 — As in SBWM-1 there is a thin layer of fresh water overlying a zone of saline water to approximately 130 feet within the Beach/Dune Sands and Aromas Sand. Below this depth, the materials become increasingly clayey, complicating the interpretation. Below this depth, there are no obvious zones of anomalous conductivity; that is, the zones that are more conductive correlate with clay zones.*
>
> *SBWM-3 — In SBWM-3 saline water extends to a depth of approximately 100 feet within the Dune/Beach Sand and Aromas Deposits. Below 100 feet, the materials become clay and conductivities rapidly decline. Again, below the shallow saline water in the sand deposits, all zones of increased conductivity correlate with clay zones.*
>
> *SBWM-4 — As with the other wells, the induction log reveals a thin layer of fresh water overlying saline water with the Dune Sands/Beach Deposits to a depth of approximately 100 feet. Below this depth the materials become clay and there are no additional zones of increased conductivity uncorrelated with clay zones.*

Salinity changes shown on Figure 22 through Figure 25 for Sentinel Wells 1–4 respectively, are only relative and do not allow direct measurement of TDS or chloride concentrations in the aquifer. They do, however, provide a means to determine changes in salinity over time. Induction logging these wells has always indicated high salinity in the Dune Sands and Aromas Red Sands Formation overlying the main production aquifers. Salinity fluctuates from season to season; becoming more saline in the fall months when stresses on the aquifer are greatest.

The SBWM-1, 2, and 4 induction logs continue to show overall increases in conductivity over time within the Upper Paso Robles Formation. Zones of increasing conductivity are as follows:

- SBWM-1, 520 – 540 feet below ground surface (bgs) (-423 – -443 feet above mean sea level [amsl]); see Figure 22 and Figure 26; 605-625 feet bgs (-509 - --529 feet amsl); see Figure 22 and Figure 27; 685-695 feet bgs (-589 - -599 feet amsl); see Figure 22 and Figure 28
- SBWM-2, 340 – 390 feet bgs (-266 – - 316 feet amsl); see Figure 23 and Figure 27
- SBWM-4, 140 – 200 feet bgs (-78 – -138 feet amsl); see Figure 25 and Figure 30 to Figure 32

The SBWM-3 induction logs do not have any clear zones of increasing conductivity, although a zone from 900-1,100 feet bgs may have a subtle increase. This zone will be monitored closely.

Sentinel wells SBWM-1 and SBWM-2 are north of the Seaside Basin and within the extent of the known seawater intrusion in the Salinas Valley – Monterey Subbasin Marina-Ord Management Area. SBWM-1 has had a modest increase in conductivity since 2019, approximately 400 micromhos per centimeter (µmhos/cm) at an approximate depth of 530 feet bgs (-433 feet amsl). Of the three Sentinel wells with increasing conductivity, SBWM-2 has had the greatest Sentinel well conductivity increase since 2019, approximately 2,500 µmhos/cm at an approximate depth of 350 feet bgs (-276 feet amsl).

SBWM-2 conductivity increases are mostly incremental but there are some periods where conductivity fluctuates. Excluding localized conductivity increases in the Upper Paso Robles Formation shown on zone of interest induction logs (Figure 26 through Figure 32), the remaining parts of the induction logs plot similarly to previous years. This suggests increased conductivity is preferentially confined to coarser-grained zones in the Upper Paso Robles Formation and does not extend into the Lower Paso Robles Formation, Purisima Formation, or the Santa Margarita Sandstone. It is unclear if the increase in conductivity in SBWM-2 at a depth of approximately 350 feet bgs (-276 feet amsl) is related to a seawater intrusion front advancing from the coastline, or saline and brackish waters from the Salinas Valley – Monterey Subbasin Marina-Ord Management Area migrating laterally from north to south (Pidlisecky *et al*., 2016). There does not appear to be groundwater pumping in the vicinity of SBWM-2, so the cause of the increase in conductivity at this location is not well understood.

Evaluation of SBWM-4 conductivity data collected since 2007 indicates conductivity has been increasing within this zone annually. A rough rule of thumb is that conductivity in µmhos/cm multiplied by 0.67 approximates the concentration of TDS in mg/L. Based on this conversion factor, the TDS increase associated with the change in cumulative conductivity with three different induction tools (Figure 30 to Figure 32) of 1,480 µmhos/cm in SBWM-4 since 2007 is roughly 1,000 mg/L. This indicates a significant salinity increase in the Paso Robles Formation over the past 18 years. For reference, the Secondary Drinking Water limit is 500 mg/L. SBWM-4 is located in the central coastal portion of the Northern Coastal subarea (Figure 8) where the majority of the Seaside Basin's groundwater extraction occurs. The closest extraction well in the Paso Robles Formation to SBWM-4 is the Bayonet and Black Horse golf course's Coe Ave irrigation well approximately 0.6 miles away. All the golf course irrigation wells are screened partially in the Paso Robles Formation. Currently, groundwater is not used for golf course irrigation wells because irrigation was switched over to recycled water in February 2023. Almost all water supply wells in the Northern Coastal subarea are screened within both the shallow and deep aquifers. CAWC's closest water supply wells to SBWM-4 are Playa #3 (0.8 miles to the south) and Luzern Well #2 (0.9 miles to the southeast). Other CAWC and City of Seaside water supply wells are over 1 mile away.

The PCA-West Deep induction logs for water years 2024 and 2025 are included on Figure 33. Although the induction tool cannot be lowered the full depth of the well due an obstruction, it is able to log past the zone of interest in the Upper Paso Robles Formation. The induction logs for PCA-East Deep ,which is located 1,300 feet inland of PCA-West Deep (Figure 8), are included on Figure 34.

Based on the conductivity values for PCA-West Deep (Figure 33), there appear to be high conductivity zones in the Upper Paso Robles Formation between 75 – 130 feet in a zone of sand and 230 – 280 feet in a zone of sand and gravel; these zones are being closely monitored. In comparison, PCA-East Deep has relatively low conductivity values throughout the Paso Robles Formation but conductivity spikes in the Purisima Formation at a depth of approximately 650 to 700 feet bgs in a zone of sand (-582 to -632 feet amsl; Figure 34). WY 2025 is the second year of surveys for comparative analysis for PCA-East Deep and PCA-West Deep. Based on the two logs for each well, there are no obvious increases in conductivity. It is difficult to pick out any patterns with only two induction surveys.

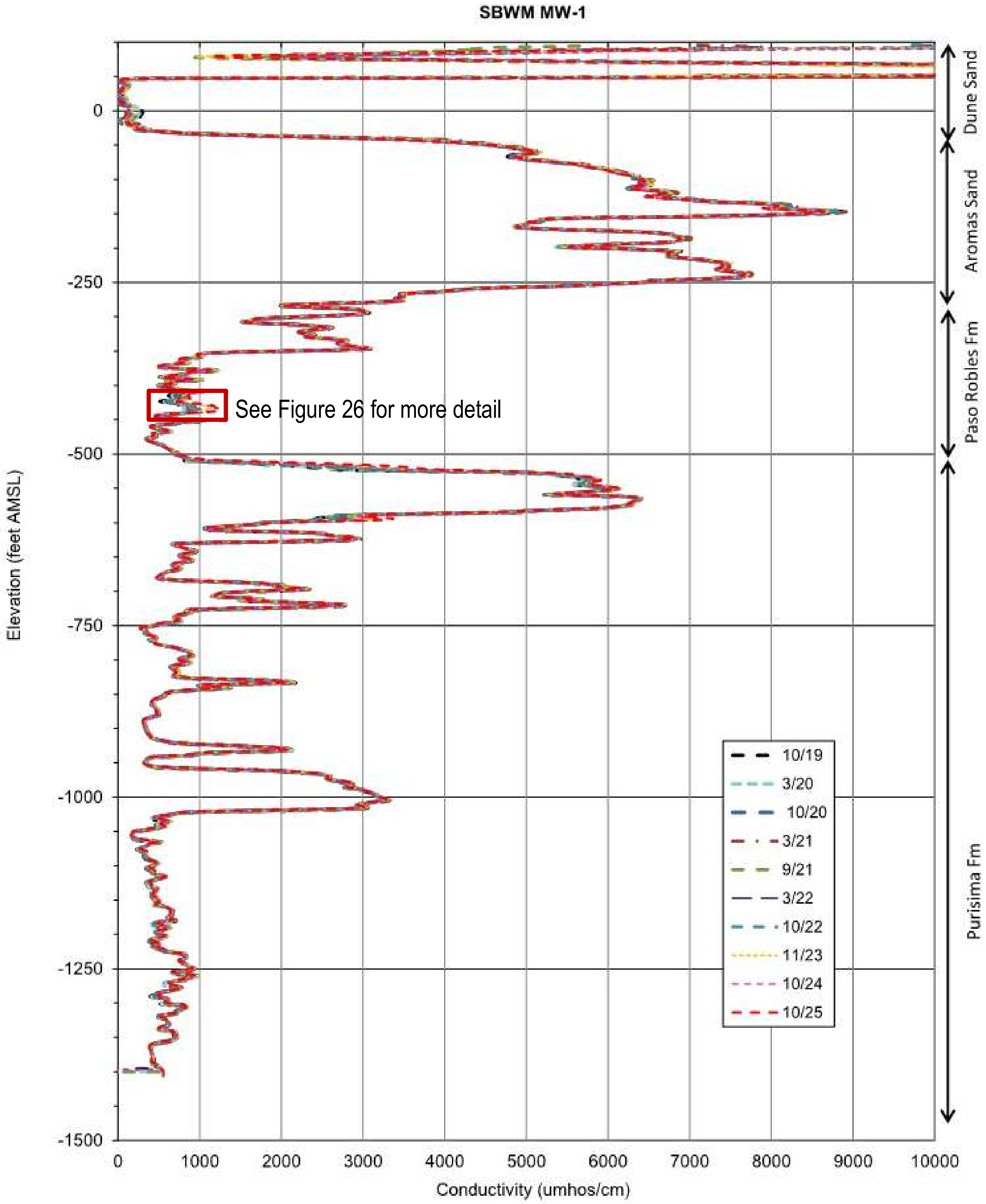
Conductivity data obtained from induction logs at PCA-West and PCA-East may inform the distance from the coast and screen depth for a new monitoring well. However, sites for a new monitoring well east of Highway 1 are limited due to permitting and approval requirements. The site where SBWM-4 is located is being re-vegetated to restore it to its pre-development condition and no new facilities could be constructed there. In WY 2026, the Watermaster should continue to look for opportunities to use existing wells and explore sites for a new monitoring well, adapting an existing well, or some other solution to verify chloride concentrations in the Paso Robles Formation near SBWM-4.

The following focused actions were taken to further assess increasing conductivity in SBWM-4:

- Add PCA-West Deep and PCA-East Deep to the induction logging program along with the Sentinel wells.
- Coordinate with Monterey County to encourage the destruction of the nearby privately owned SNG well with a leaking casing that may be allowing high salinity water to flow downward from the intruded Dune Sands into the Paso Robles Formation. The SNG well is scheduled for destruction and replacement in WY 2026.
- Conduct land-based subsurface electromagnetic geophysics in the vicinity of SBWM-4 and PCA-West Deep in 2025 to improve understanding of how extensive the zone of increasing conductivity is in the vicinity of SBWM-4.
- Consider the feasibility of using Cone Penetration Testing (CPT) drill rig to non-intrusively collect once-off groundwater quality samples at specified depths without

needing a permanent well, or some other solution to verify chloride concentrations in the Paso Robles Formation near SBWM-4. Based on local CPT contractor experience in the area, this option for sampling was not found to be feasible.

- Consider locations for a new monitoring well west of Highway 1 in the vicinity of SBWM-4 to facilitate a groundwater quality sample be taken from the current zone of interest in SBWM-4. Unfortunately, due to State Parks restrictions on infrastructure in this area, it is not possible to install a well in this area. An alternative option is for Watermaster, with technical direction from M&A, to coordinate with the owner of the SNG well to take isolated water quality samples at the SNG replacement well when it is drilled.



See Figure 26 for more detail

Figure 22. Sentinel Well SBWM-1 Induction Log

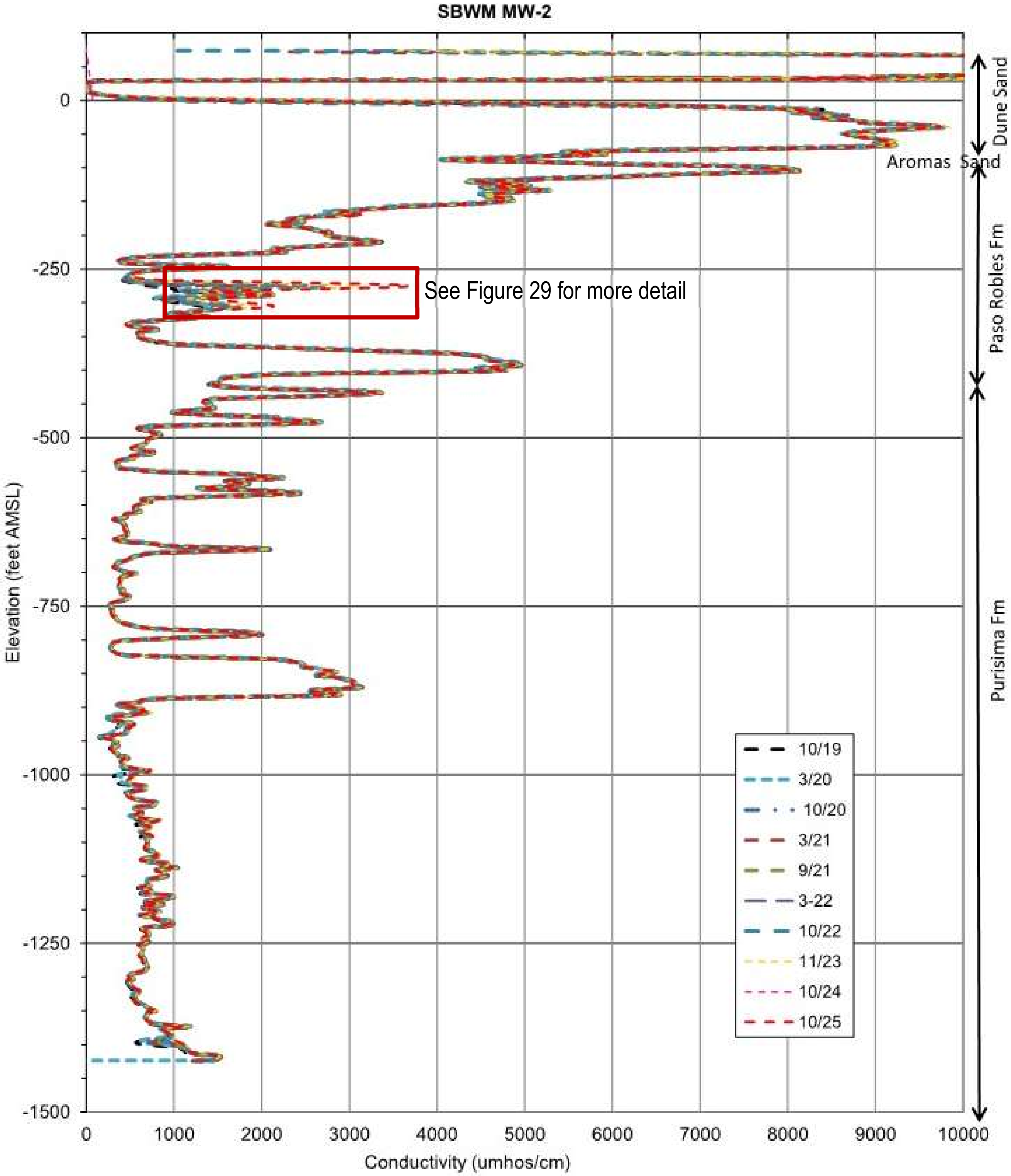
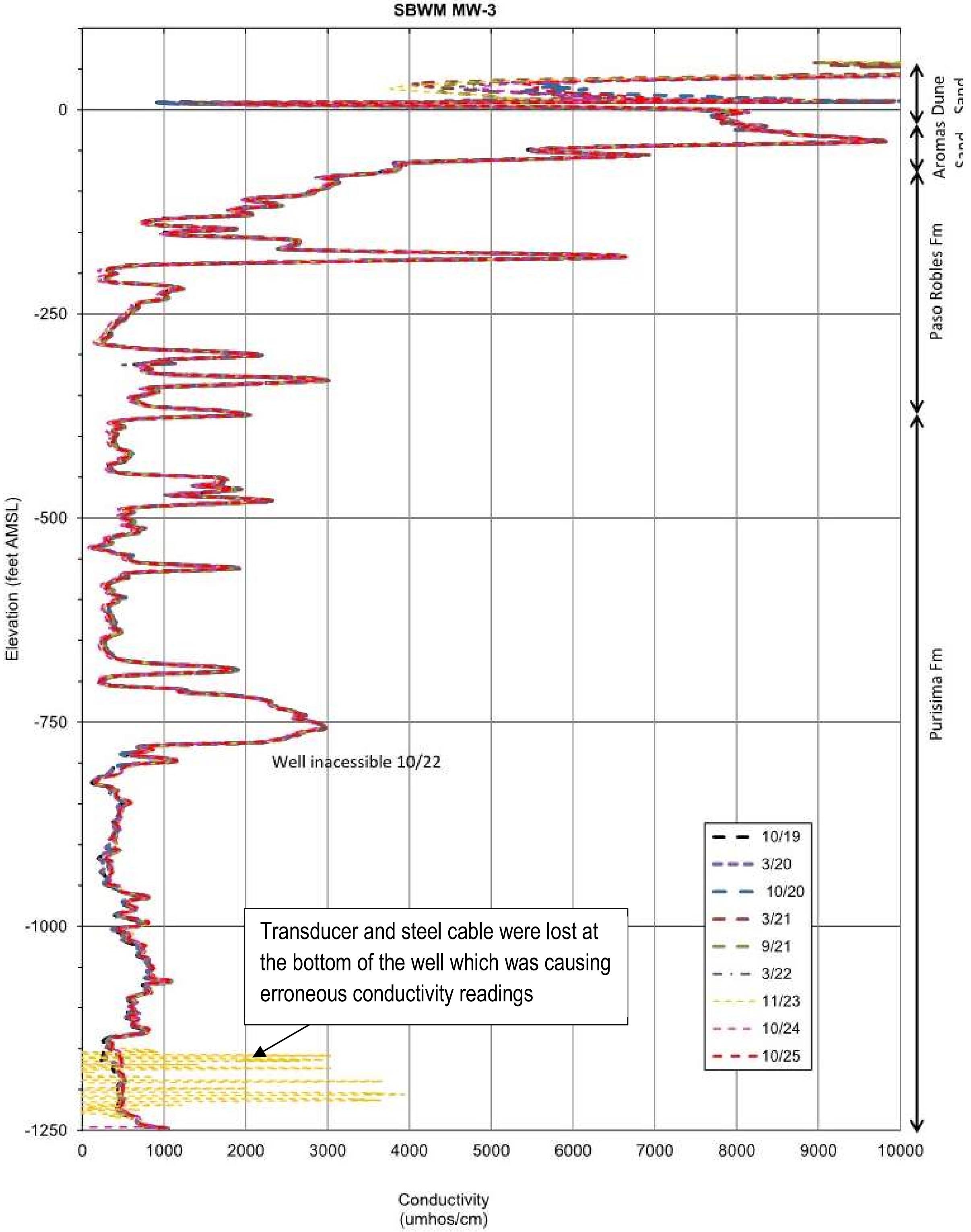
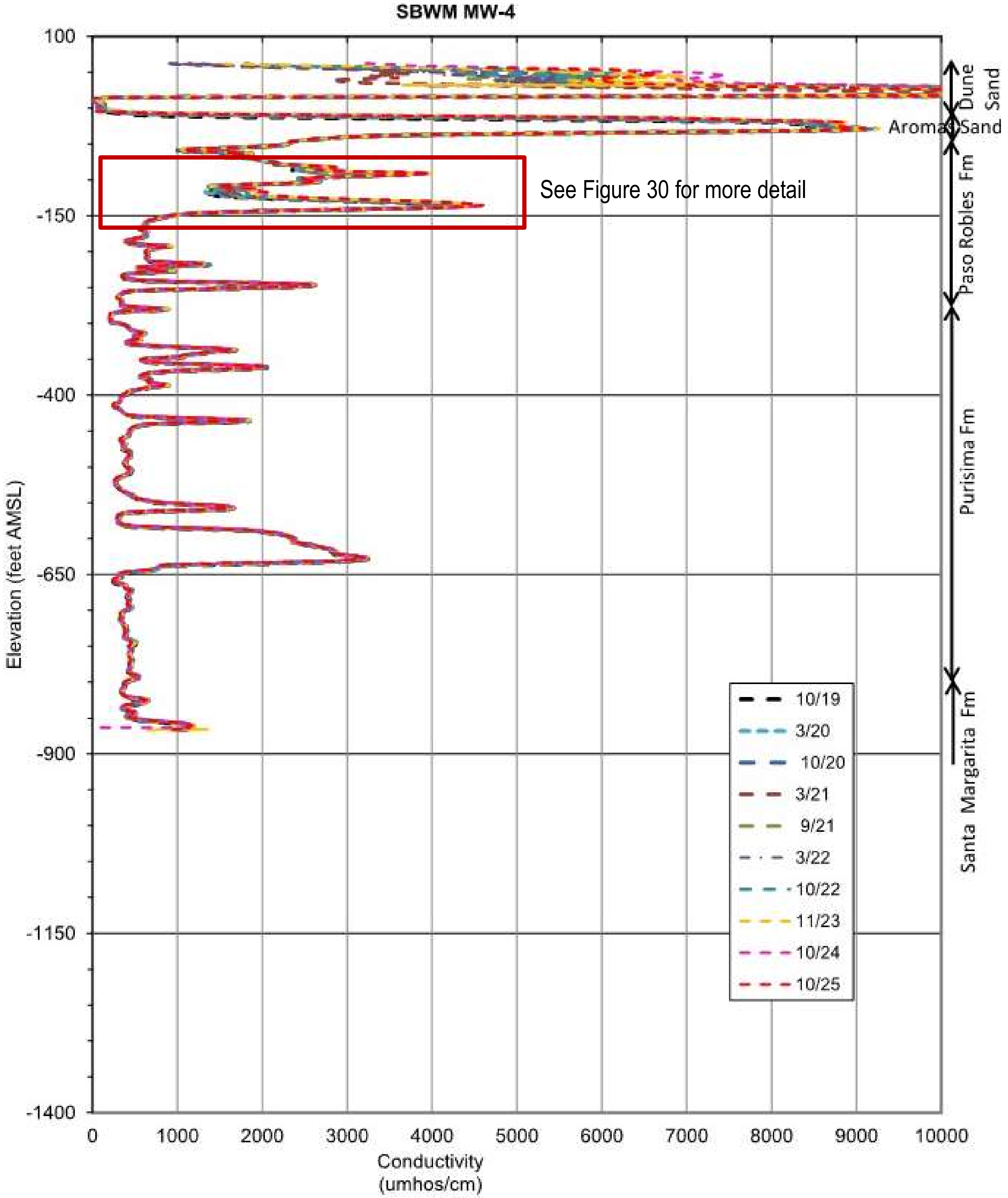


Figure 23. Sentinel Well SBWM-2 Induction Log



Transducer and steel cable were lost at the bottom of the well which was causing erroneous conductivity readings

Figure 24. Sentinel Well SBWM-3 Induction Log



See Figure 30 for more detail

Figure 25. Sentinel Well SBWM-4 Induction Log

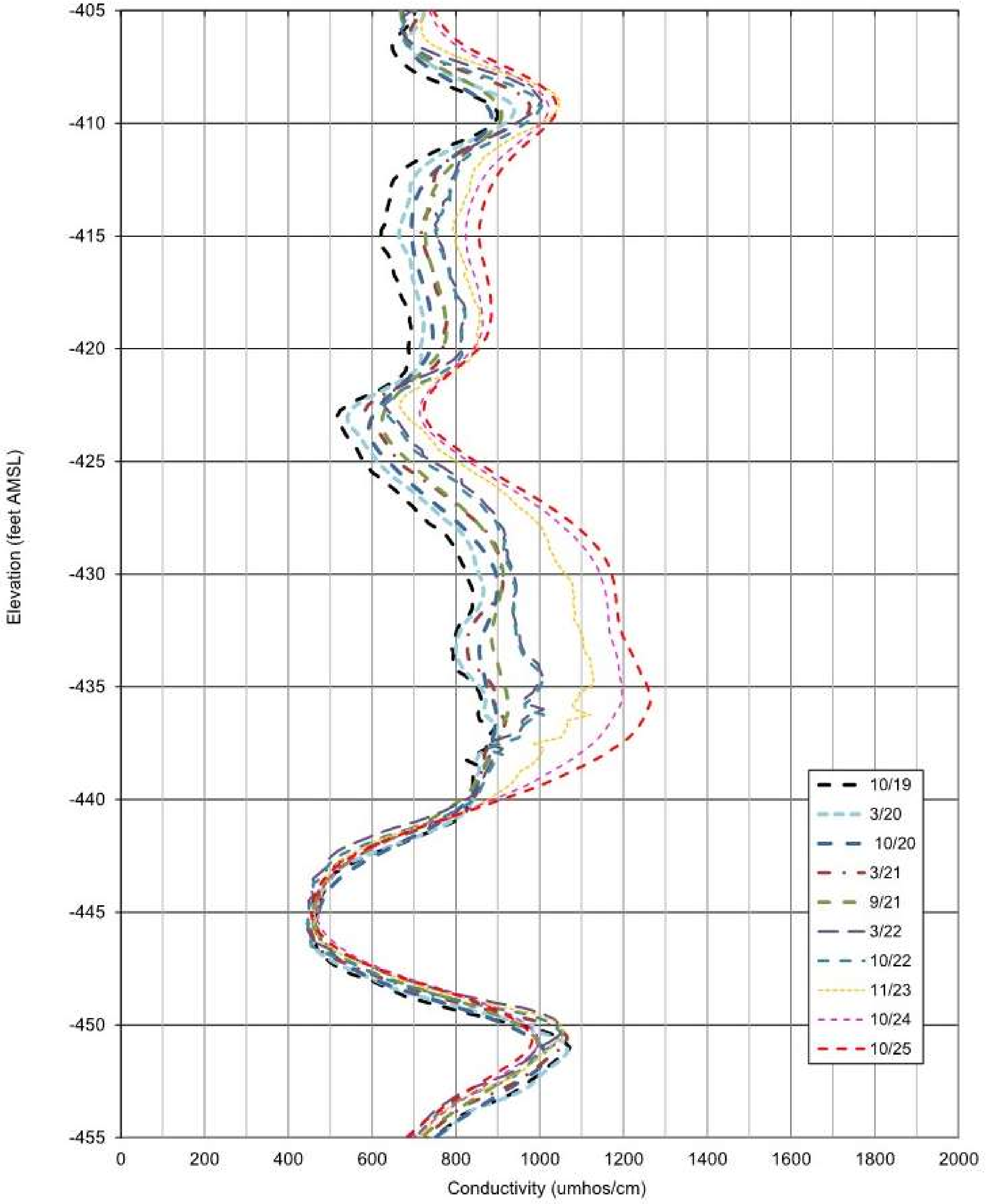


Figure 26. Sentinel Well SBWM-1 Zone of Interest #1 on Induction Log

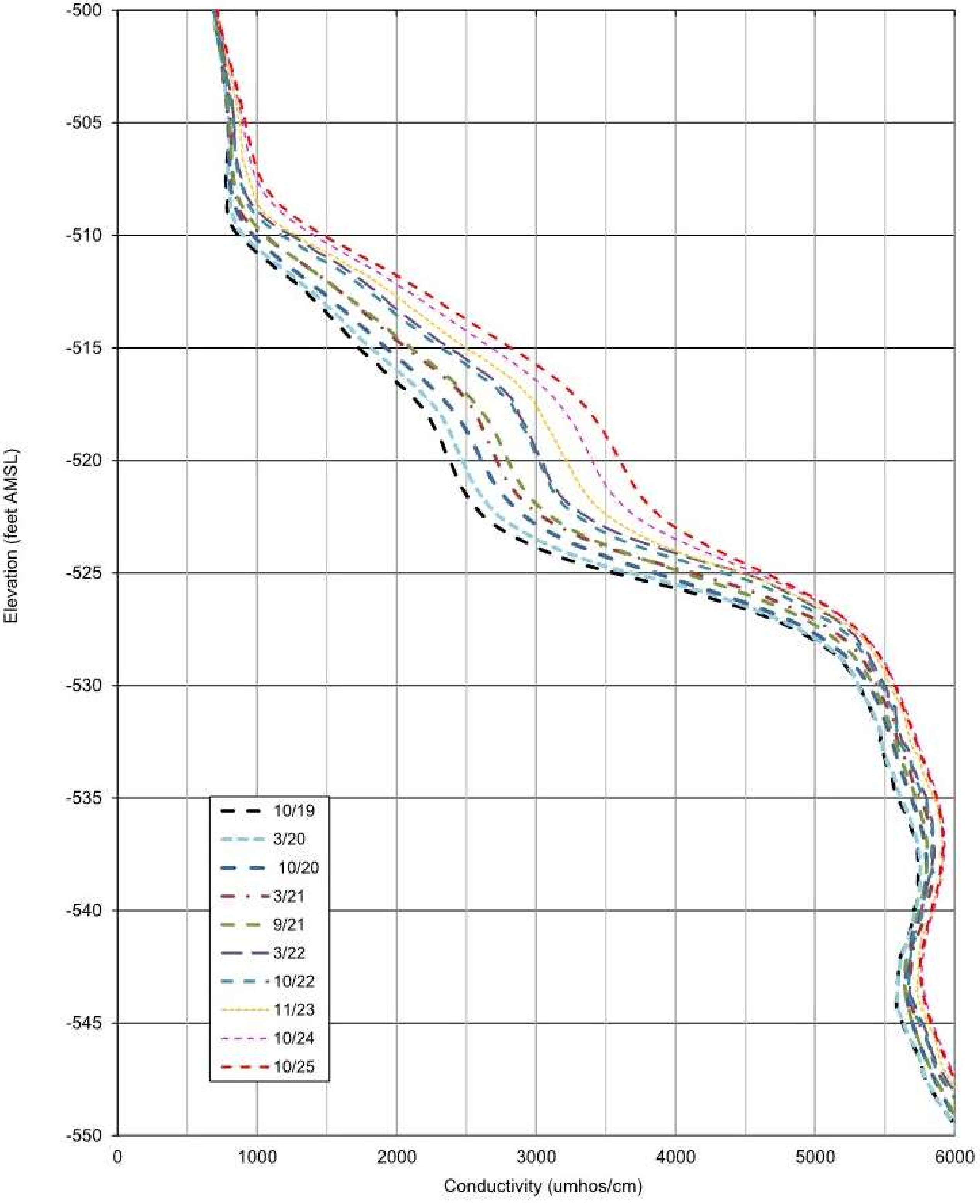


Figure 27. Sentinel Well SBWM-1 Zone of Interest #2 on Induction Log

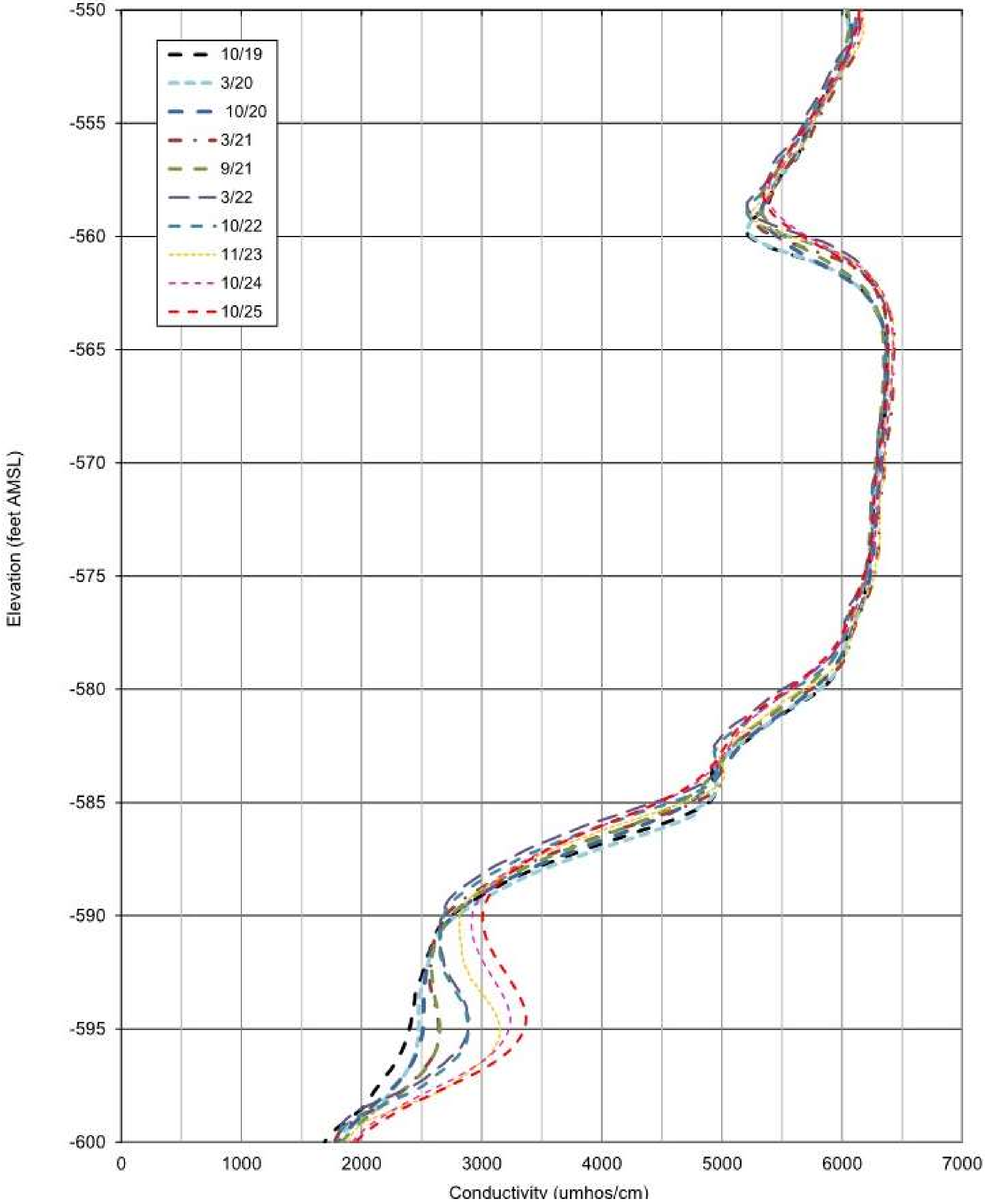


Figure 28. Sentinel Well SBWM-1 Zone of Interest #3 on Induction Log

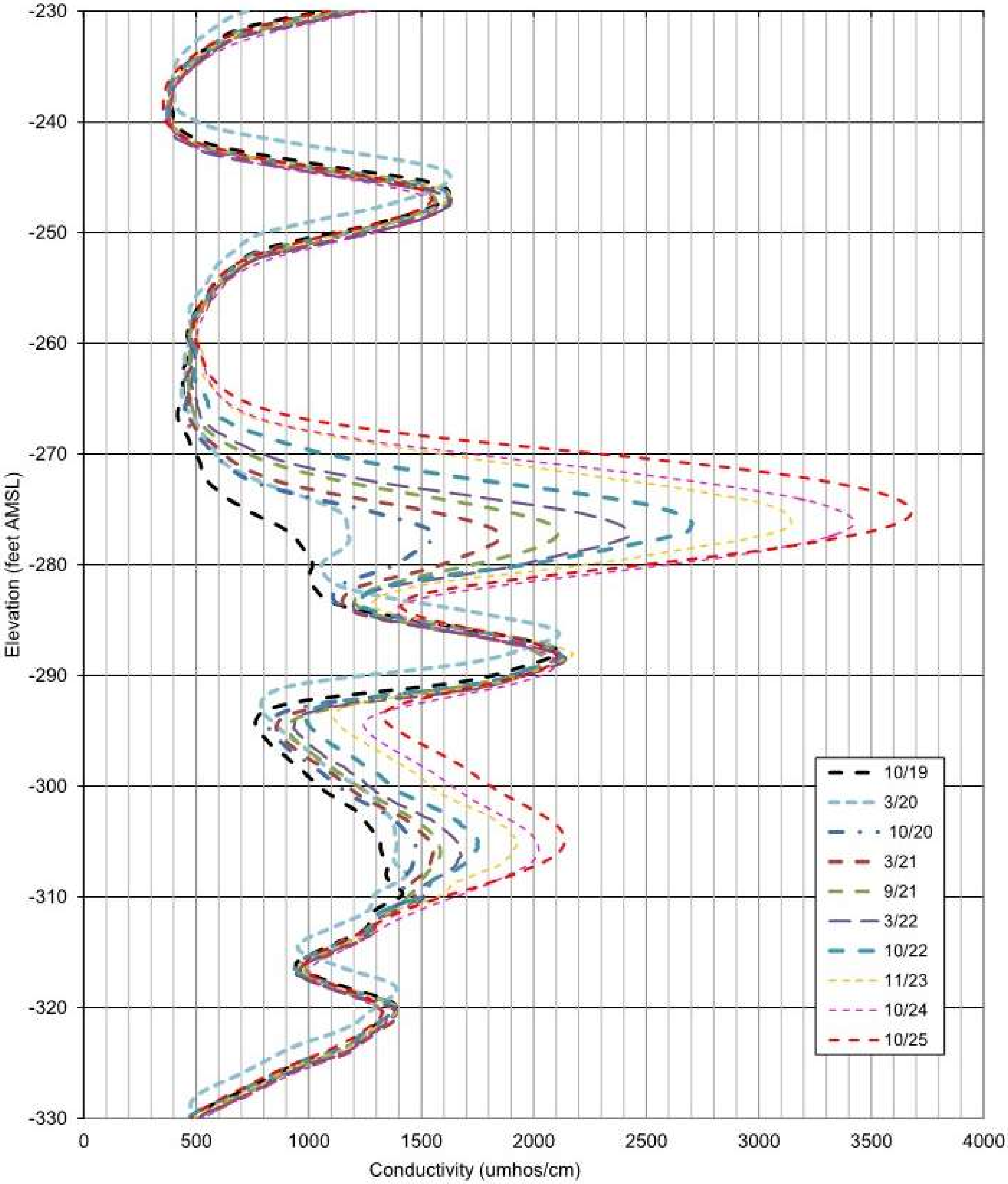


Figure 29. Sentinel Well SBWM-2 Zone of Interest on Induction Log

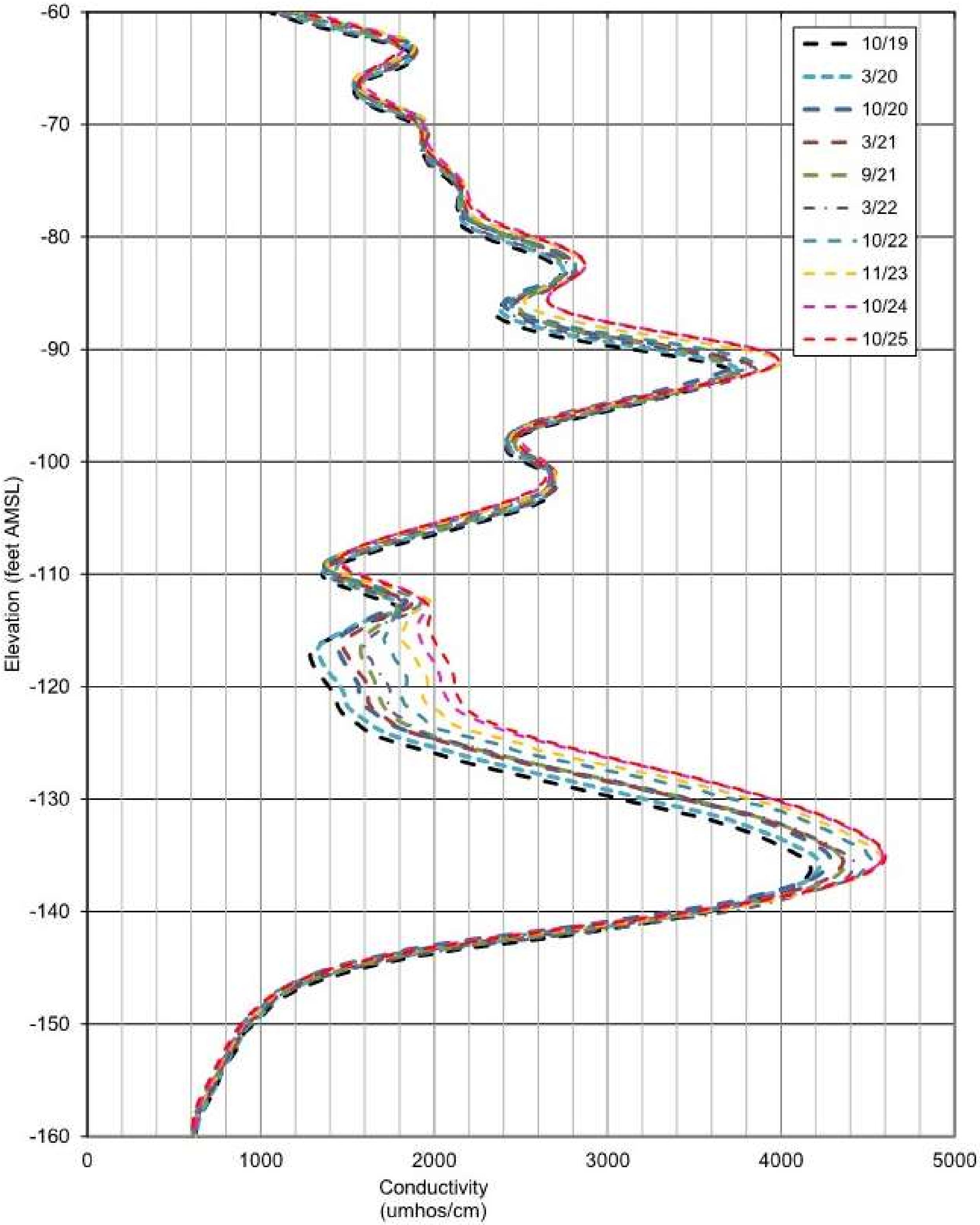


Figure 30. Sentinel Well SBWM-4 Zone of Interest on Induction Log (Induction Tool 3 from Oct 2019 to Oct 2024)

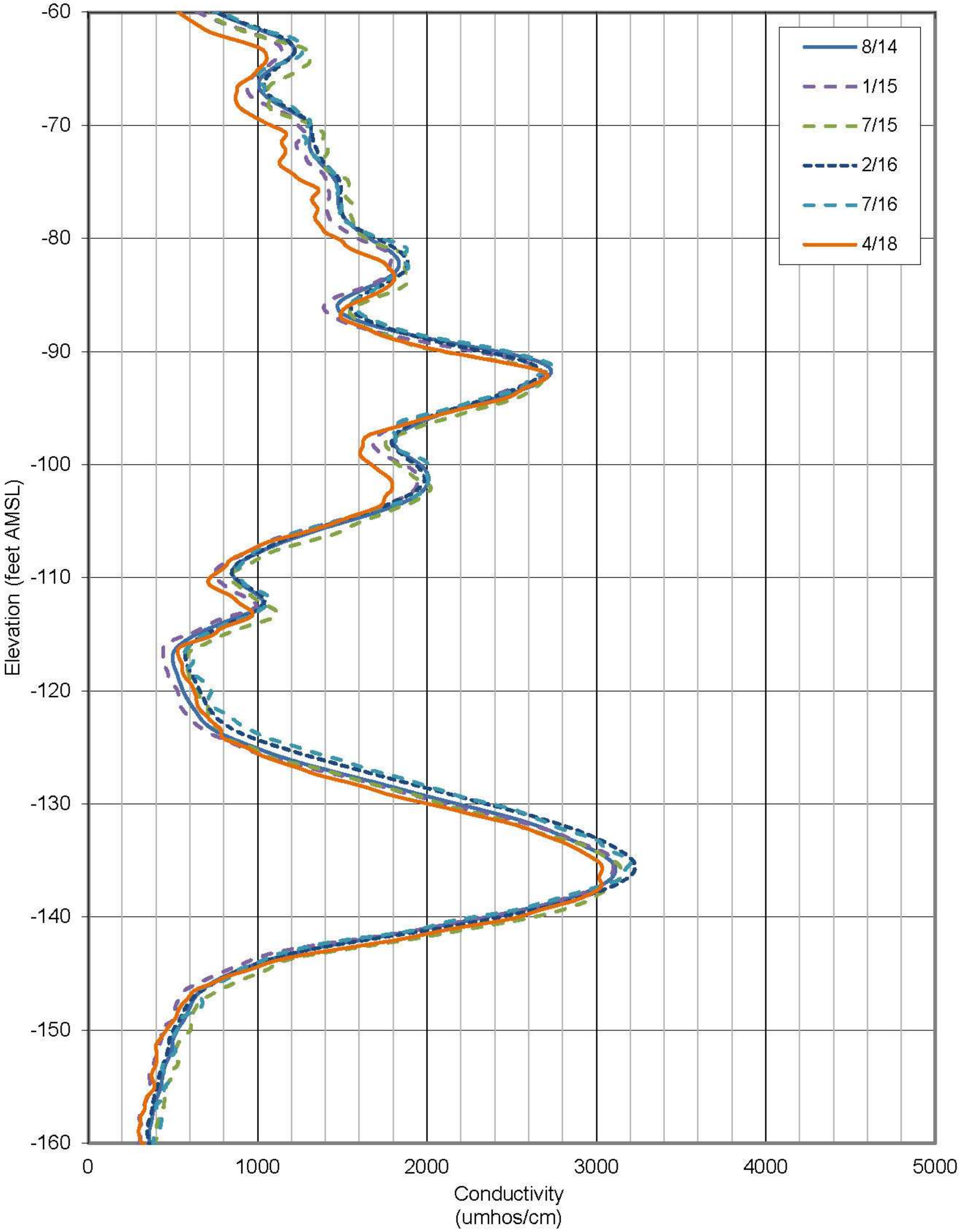


Figure 31. Sentinel Well SBWM-4 Zone of Interest on Induction Log (Induction Tool 2 from Aug 2014 to Apr 2018)

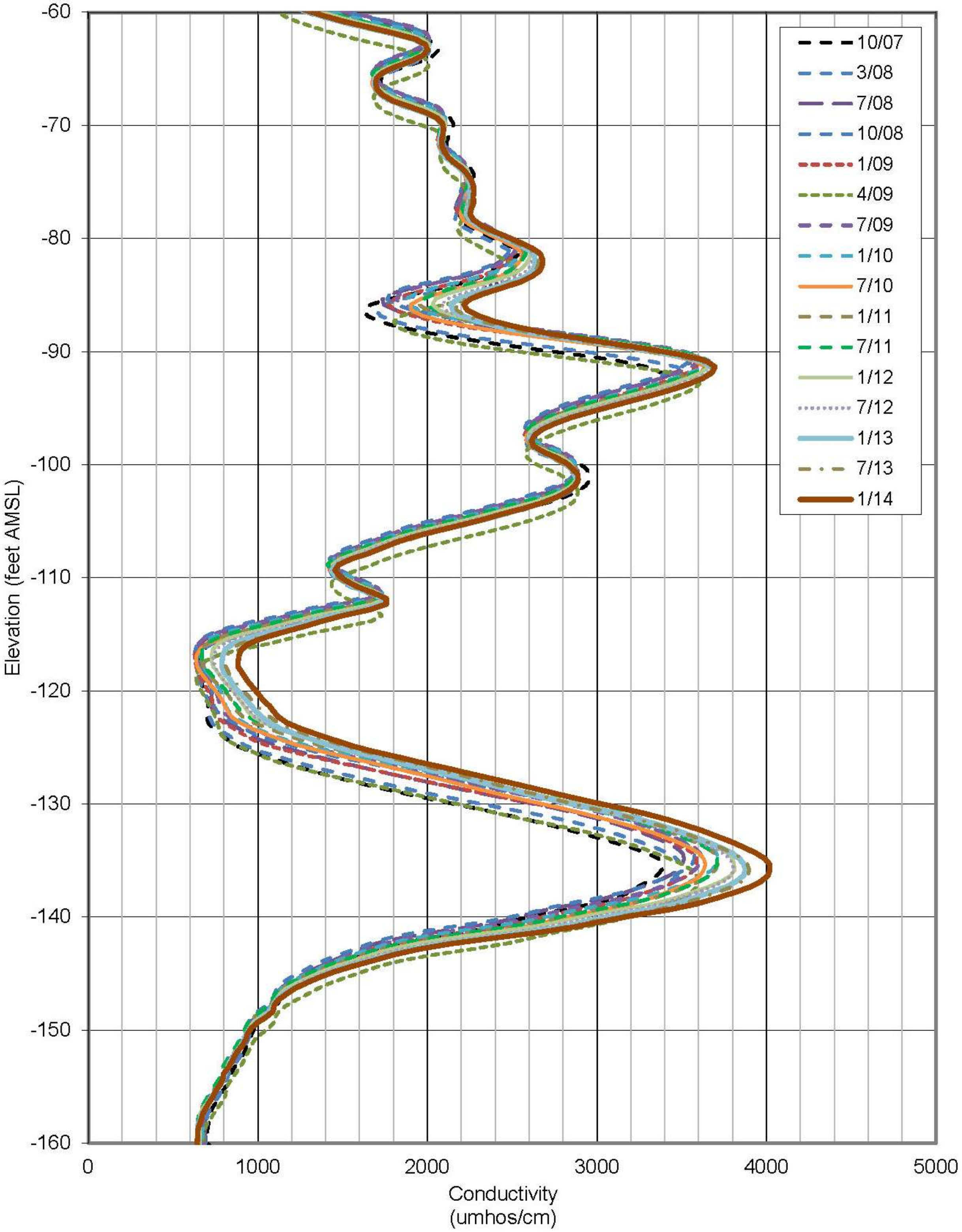


Figure 32. Sentinel Well SBWM-4 Zone of Interest on Induction Log (Induction Tool 1 from Oct 2007 to Jan 2014)

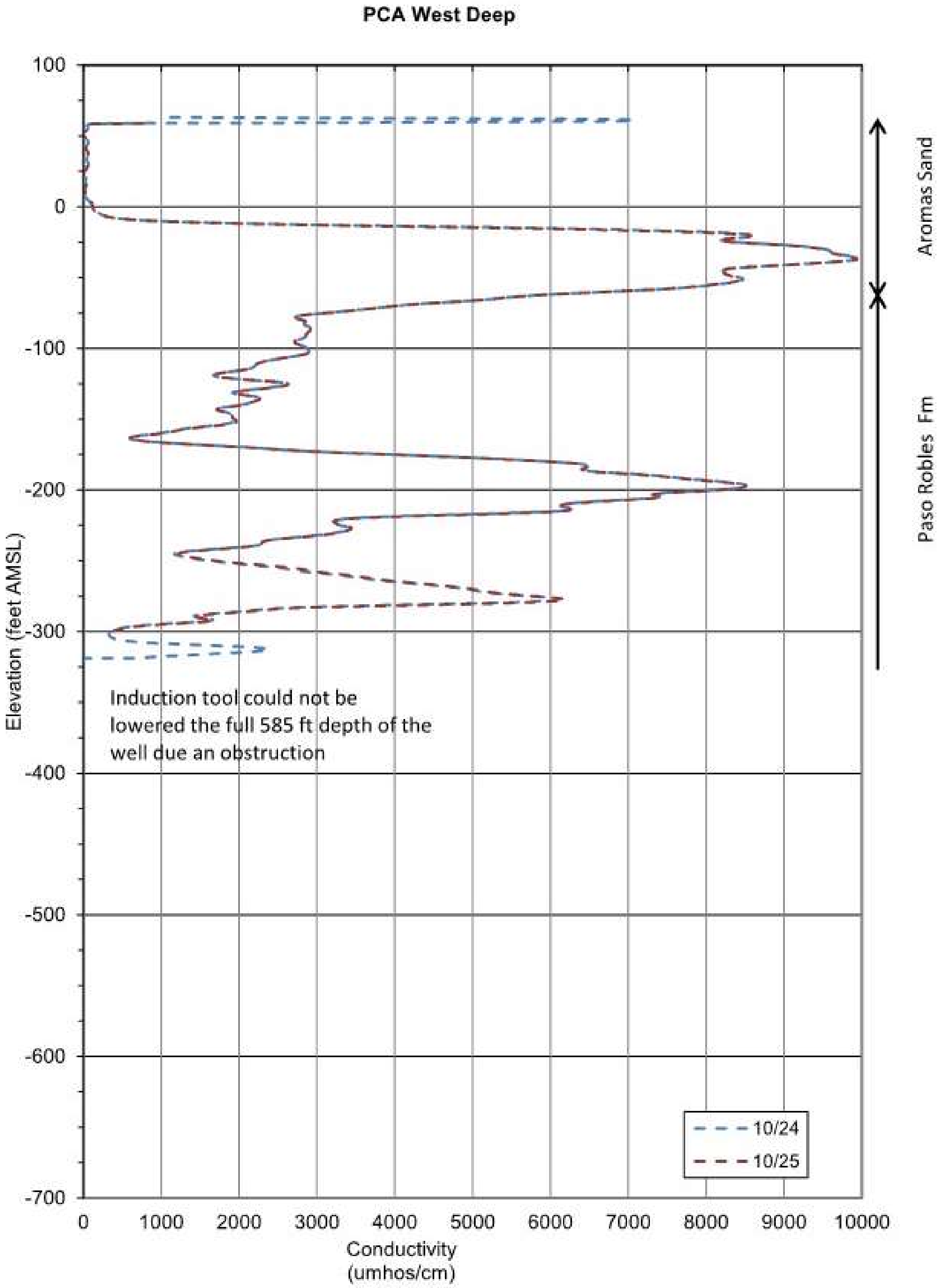


Figure 33. PCA-West Deep Induction Log

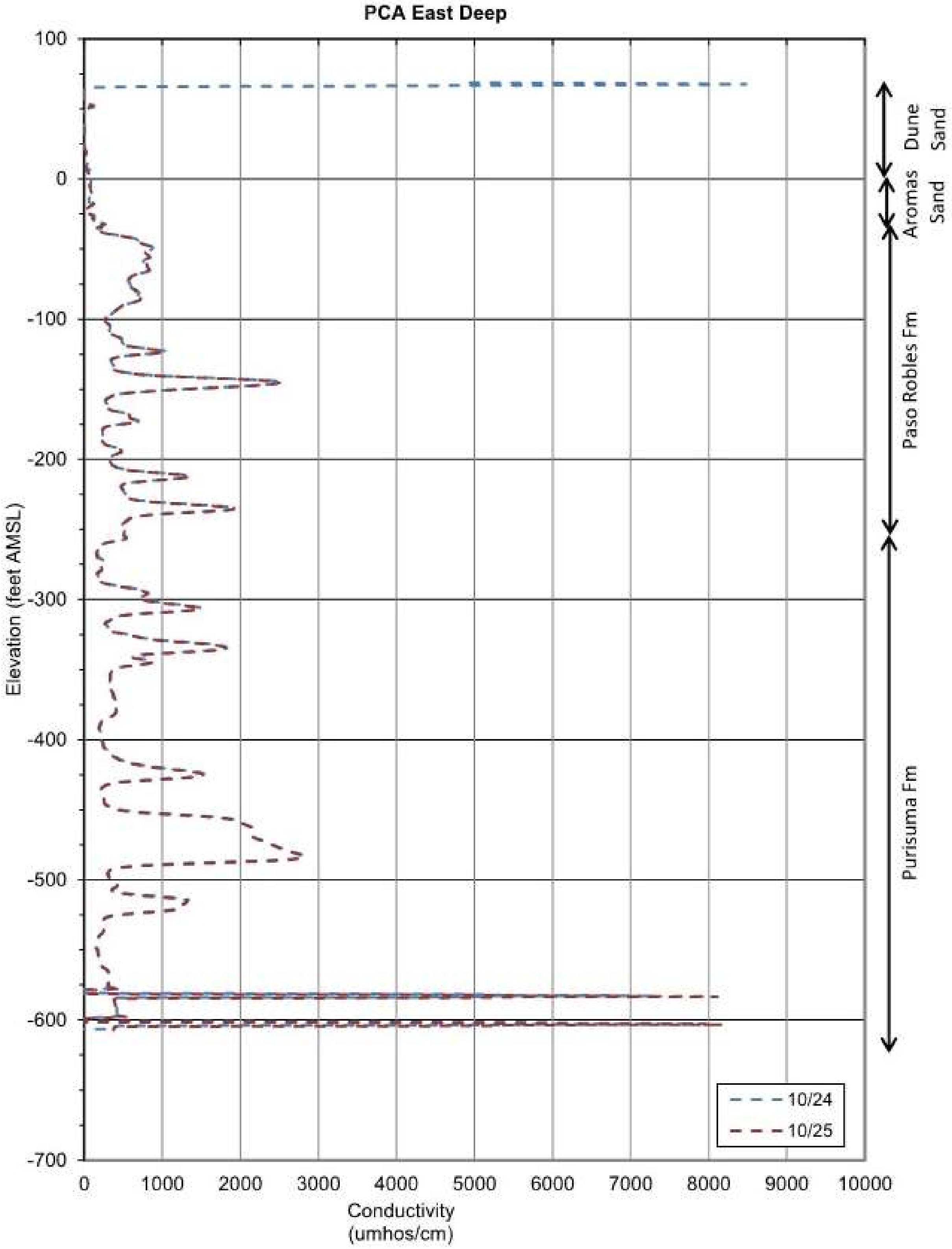


Figure 34. PCA-East Deep Induction Log

2.6 Groundwater Levels

Groundwater levels are not direct indicators of seawater intrusion but indirectly suggest opportunities for seawater intrusion. Coastal groundwater levels at or near sea level are insufficient to repel seawater intrusion and will likely allow some amount of seawater intrusion unless groundwater levels increase. All groundwater level data collected in WY 2025 are included in Appendix B.

2.6.1 Precipitation

Precipitation is described here because of its relationship to groundwater recharge, which is one of the factors influencing groundwater levels. Figure 35 displays annual precipitation averaged for two National Oceanic and Atmospheric Administration climate stations in the Seaside area: the Monterey airport station (USC00045795) and the Salinas Airport station (USW00023233). Taking the average precipitation from these two stations results in a value representative of the precipitation across the Seaside Basin.

In WY 2025, precipitation from the two stations averaged 13.0 inches, which is below the historical average of 15.7 inches. WY 2025 precipitation was slightly more than the previous below average years from WY 2020 through WY 2022 (Figure 35). WY 2025's below average rainfall will have limited groundwater recharge to the Seaside Basin. Typically, the effects of recharge are first seen in the shallow aquifer, which is unconfined by clay layers and most directly impacted. The deep aquifer exhibits more delayed recharge impacts because of its depth and confined nature.

The solid line on Figure 35 tracks cumulative departure of annual precipitation from the dashed horizontal historical average line. The cumulative departure from average annual precipitation reflects changes in typical annual precipitation patterns over time. This metric can reveal prolonged periods of drought (indicated by negative departures or downward trends) or sustained wet conditions (indicated by positive departures or upward trends). Such variations directly influence groundwater recharge and the corresponding responses in groundwater levels.

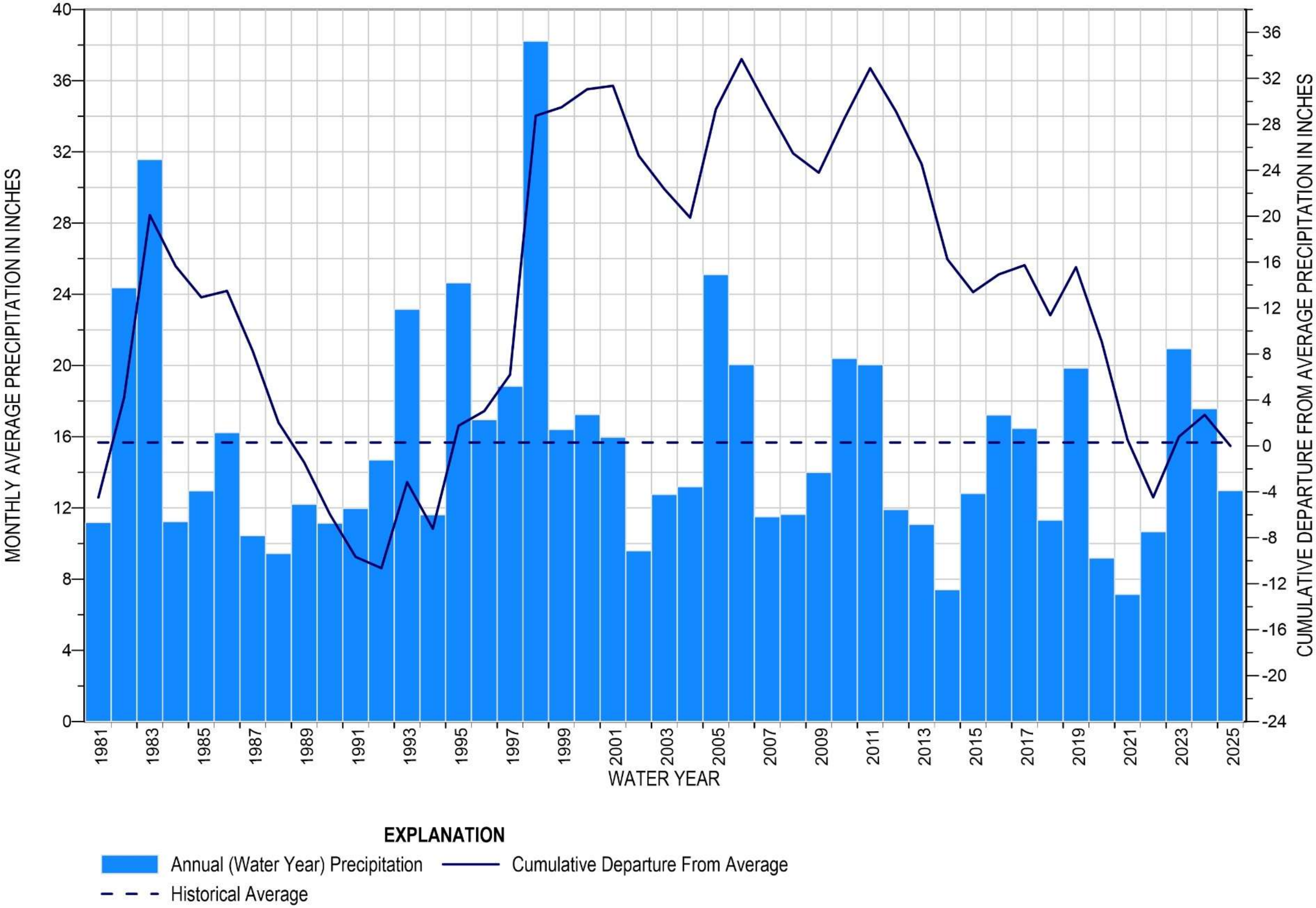


Figure 35. Seaside Basin Annual Precipitation (Average of Monterey Airport and Salinas Airport Stations)

2.6.2 Groundwater Level Trends

The subsections below describe groundwater elevation trends for the Northern Coastal, Southern Coastal, and Laguna Seca subareas. Only one well is monitored in the Northern Inland subarea.

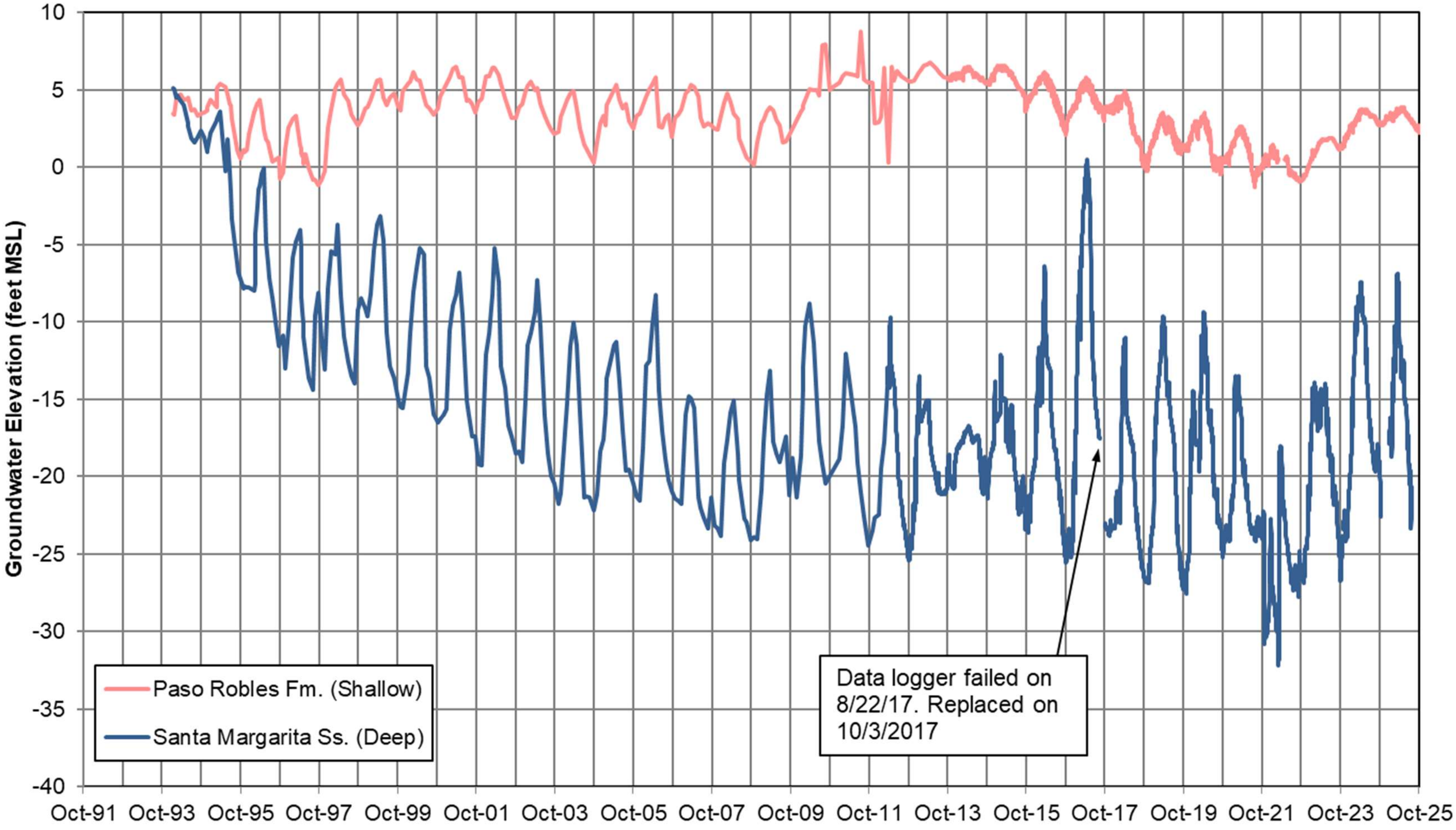
2.6.2.1 Northern Coastal Subarea

Groundwater levels measured at the PCA-East well (Figure 36) are generally representative of groundwater levels in the Northern Coastal subarea, west of nearby production wells. The hydrograph shows peaks and lows that are strongly influenced by pumping at nearby CAWC production wells which draw from the deep aquifer, and injection of Carmel River ASR water and Pure Water Monterey (PWM) highly treated recycled water at the eastern boundary of the subarea. Other influences are also recognized, such as tides that can cause up to a 1-foot fluctuation in PCA-East Deep. Because of all the possible influences on groundwater levels, it is difficult to compare the present year to the previous year directly. It is more important to look at long-term trends.

The deep aquifer has limited, if any, connection to the ocean and is highly confined by the layers above it. This means that the amount of recharge entering the deep aquifer is limited. As is the case in any aquifer, it is susceptible to depletion if more water is pumped than is being recharged.

PCA-East Deep (blue line on Figure 36) shows an overall decline in groundwater levels that started when CAWC's extraction from their shallow aquifer wells to their deep wells in 1994. After WY 2009, levels increase and then more or less stabilize over the next two years. From WY 2011 to WY 2016 levels decline, but recover slightly in WY 2017 due to slightly above average rainfall and thereafter remain fairly stable through WY 2020. Levels in WY 2022 fell to historical lows but have increased successively over the past three years potentially due to native groundwater extraction being supplemented by PWM recovered injected water.

Seasonal fluctuations are noticeable in the winter season when deep aquifer groundwater elevations are at their highest for the year. For example, the 2017 winter high in PCA-East Deep increased to a level last seen in 1995 due to ASR injection of 2,345 acre-feet of excess Carmel River water during that very wet year. WY 2025 was a drier than average year resulting in 716 AF of available Carmel River Water for ASR injection. Typically, ASR recharged water is pumped out in the same year that it was recharged, however, this year—for the second year in a row—it was not recovered. The higher than average ASR injection and 3,851 AF of PWM injection resulted in an increase in the seasonal high groundwater elevations shown on Figure 36. In WY 2025, the seasonal high groundwater elevations are higher than the previous six years; the seasonal low is about the same as the previous year, and higher than the WY 2021-2023 period.



Data logger failed on 8/22/17. Replaced on 10/3/2017

Figure 36. PCA-East Deep and Shallow Monitoring Well Hydrograph

Figure 37 displays groundwater elevations for a group of deep aquifer wells in the Northern Coastal subarea, including PCA-East. Elevations in all these wells have been below sea level since the late 1990s. The difference in groundwater elevation between wells near the center of the inland pumping depression (around Ord Grove Test) and coastal and inland wells helps illustrate the gradient of the deep aquifer's pumping depression over time, shown for WY 2025 on Figure 44 and Figure 46.

The difference in groundwater elevations at Ord Grove Test and others in the Northern Coastal Subarea tends to increase during dry periods in response to reduced recharge and increased groundwater demand; see October 2012 through October 2016 on Figure 37. Over the past seven years, the groundwater elevation difference has decreased for two reasons. First, elevations in the deeper portion of the pumping depression have risen, likely a result of ASR injection in wet years since WY 2019 and PWM injection since WY 2021 (see October 2018 through October 2024 on Figure 37). Second, groundwater elevations in some of the wells further from the pumping depression center, FO-07 Deep, FO-09 Deep, PCA-West Deep, MSC-Deep, have not increased at the same rate as Ord Grove Test. This observation indicates that although the pumping depression's depth has decreased in the past few years, its lateral extent continues to grow during dry periods. In WY 2025 the pumping depression's extent was similar to the extent WY 2024. How the shape and gradient of the deep pumping depression evolves over time should continue to be examined in these annual reports to inform projects and sustainability in the Northern Coastal subarea.

Figure 38 includes hydrographs of groundwater elevations for the four deep coastal Sentinel wells. Groundwater elevations on this chart are collected from dataloggers in each well that record levels every 30 minutes. The hydrographs plot daily average elevations, thereby smoothing out the more detailed data which are affected by tidal variations. Hydrographs for the Sentinel wells are similar to the PCA-East Deep hydrograph.

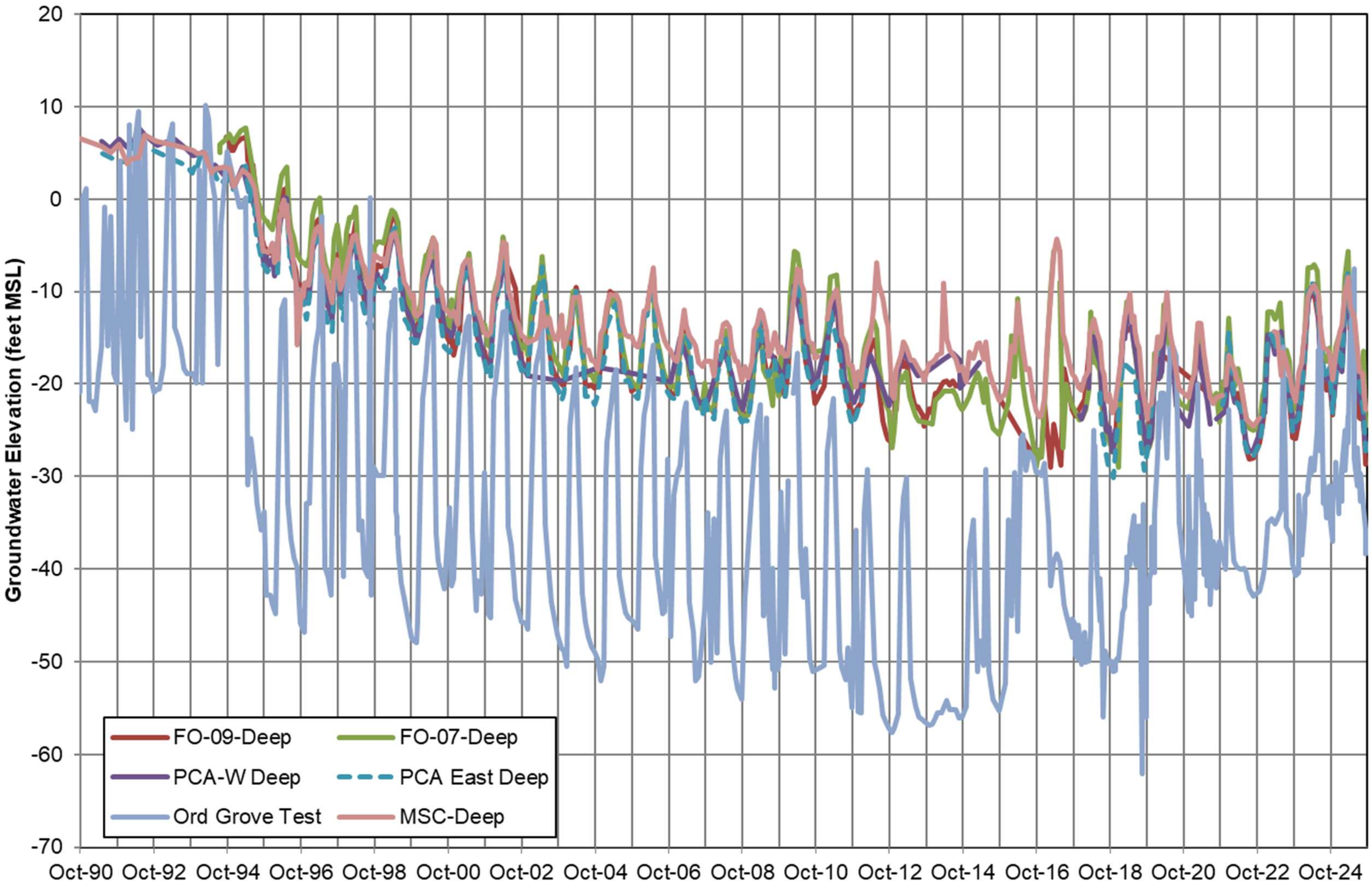
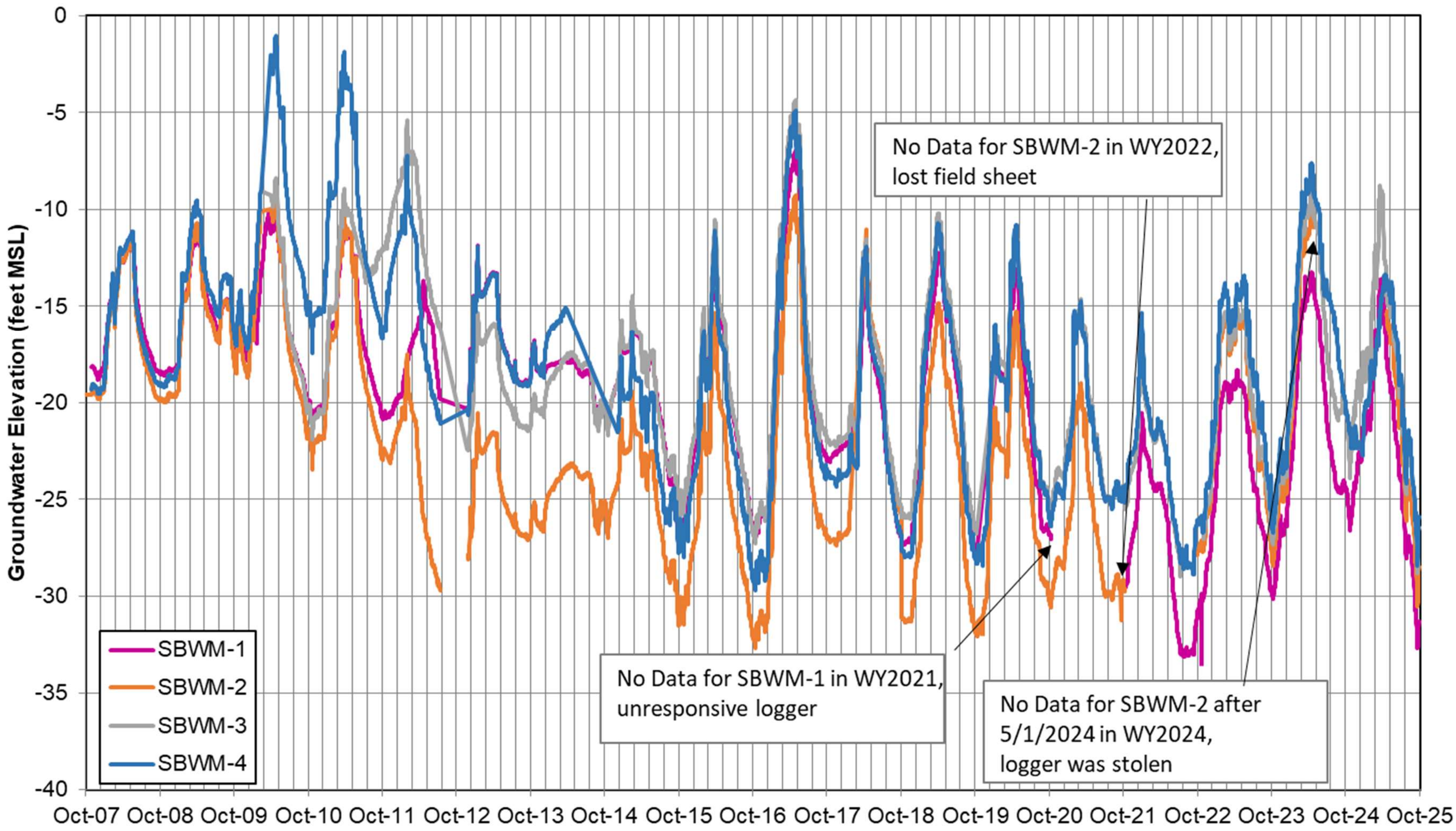


Figure 37. Deep Aquifer Northern Coastal Subarea Wells



No Data for SBWM-2 in WY2022, lost field sheet

No Data for SBWM-1 in WY2021, unresponsive logger

No Data for SBWM-2 after 5/1/2024 in WY2024, logger was stolen

Figure 38. Sentinel Well Hydrographs

In WY 2025, seasonal high groundwater elevations in the Sentinel wells are about average but slightly lower than the previous year. Seasonal low elevations are some of the lowest on record similar to historical lows in WY 2016 and WY 2022, likely a result of below normal rainfall and less available surface water to support ASR and PWM injection (Section 2.6.1; Section 2.7). Data from SBWM-2 are missing after May 1, 2024, because the transducer was stolen.

The hydrograph of shallow aquifer groundwater levels in monitoring well PCA-East Shallow (Figure 36) shows sustained periods of declining groundwater levels (WY 2002 to WY 2008 and WY 2015 to WY 2022) corresponding to when the City of Seaside's golf course wells were pumping for irrigation, and increasing trends correspond to when the golf course used groundwater pumped outside of the Seaside Basin or recycled water in lieu of pumping groundwater from within the Seaside Basin (WY 2009 to WY 2014 and WY 2023 to present). Groundwater elevations were below sea level in the summer/fall of the three years prior to recycled water use which started in February 2023. With the golf course irrigation wells not pumping, groundwater levels have increased at roughly two feet per year and are again above sea level.

Protective elevation monitoring well PCA-West Shallow directly coastward of PCA-East Shallow has similar groundwater level trends to PCA-East Shallow. Section 2.6.4 describes the protective elevation and hydrograph for PCA-West Shallow; its groundwater levels and protective elevation is shown on Figure 48. It is evident from comparing the hydrographs of these two shallow aquifer monitoring wells that golf course irrigation pumping is the cause of groundwater levels falling below protective elevations at PCA-West Shallow. Using recycled water for golf course irrigation has allowed shallow groundwater levels to recover to above the protective elevations at PCA-West Shallow in WY 2024 and remain above the protective elevation in WY 2025.

Seasonal changes in the shallow aquifer groundwater levels are usually related to reduced wintertime production and increased pumping during summer. Although the shallow aquifer seasonal fluctuations correspond with deep aquifer fluctuations, it is because seasonal pumping occurs in both aquifers, and not because the aquifers are closely connected.

2.6.2.2 Southern Coastal Subarea

In the Southern Coastal subarea, the K-Mart and CDM MW4 monitoring wells are representative of groundwater levels near the coast. Figure 39 shows groundwater elevations in WY 2025 are still above sea level, similar to the previous year. K-Mart well groundwater elevations have increased slightly over the period of record, with WY 2023 and WY 2024 being the highest levels on record. There was a slight decrease in groundwater elevations in WY 2025, but groundwater elevations remain above sea level and CDM-MW4 remains above its protective elevation.

2.6.2.3 Laguna Seca Subarea

Although the Laguna Seca subarea is far enough from the coast and is not susceptible to seawater intrusion, there is concern that since 2001 this area has experienced ongoing groundwater level declines that have not been controlled or improved by triennial pumping reductions. It is believed this is occurring due to the subarea's limited groundwater inflows and natural recharge compounded by the influence of wells pumping east of the Seaside Basin in the Monterey Subbasin Corral de Tierra Management Area (HydroMetrics WRI, 2016). Figure 8 shows the location of wells with hydrographs on Figure 40 while Figure 42 shows the location of all wells, including production wells in the eastern Laguna Seca subarea.

In the eastern portion of the subarea between 1999 and 2014, shallow aquifer groundwater levels declined at a rate of approximately 0.6 feet per year and deep aquifer groundwater levels declined up to 4 feet per year, as shown on Figure 40. The rate of decline reduced starting in WY 2014 and has since been a rate of roughly 0.5 feet per year in both the shallow and deep aquifer systems. Over the past two years, the declining trend appears to have stabilized, except for Fort Ord #5 Shallow and Fort Ord #6 Shallow which are the monitoring wells closest to the Monterey Subbasin Corral de Tierra Management Area. Stable groundwater level conditions exist in the central portion of the subarea (Figure 41), except at Bishop #3 where groundwater elevations have increased 40 feet in response to CAWC ceasing pumping in the Bishop unit. CAWC's Bishop #3 well was destroyed in May 2024.

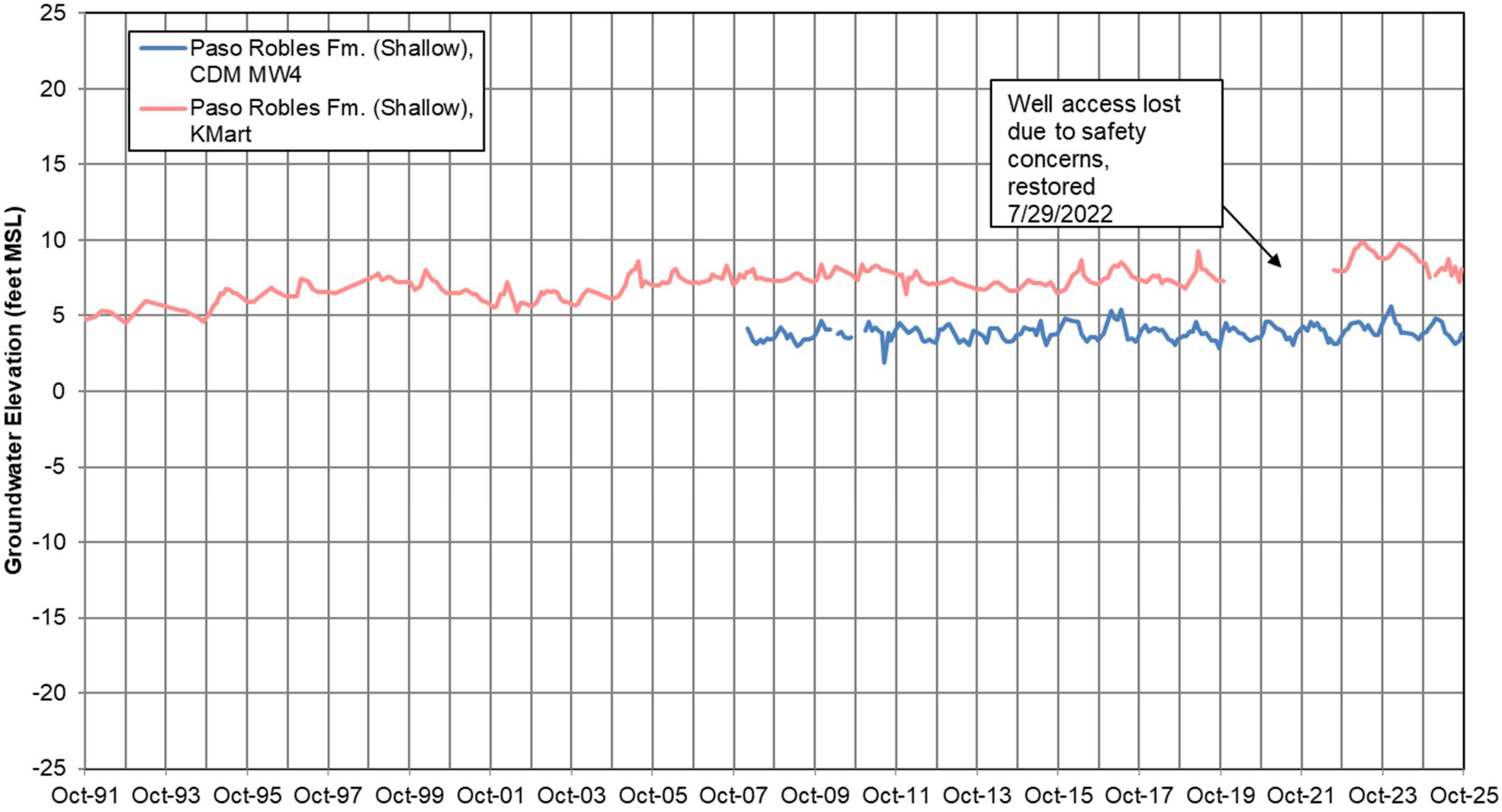


Figure 39. K-Mart and CDM MW4 Hydrographs, Southern Coastal Subarea

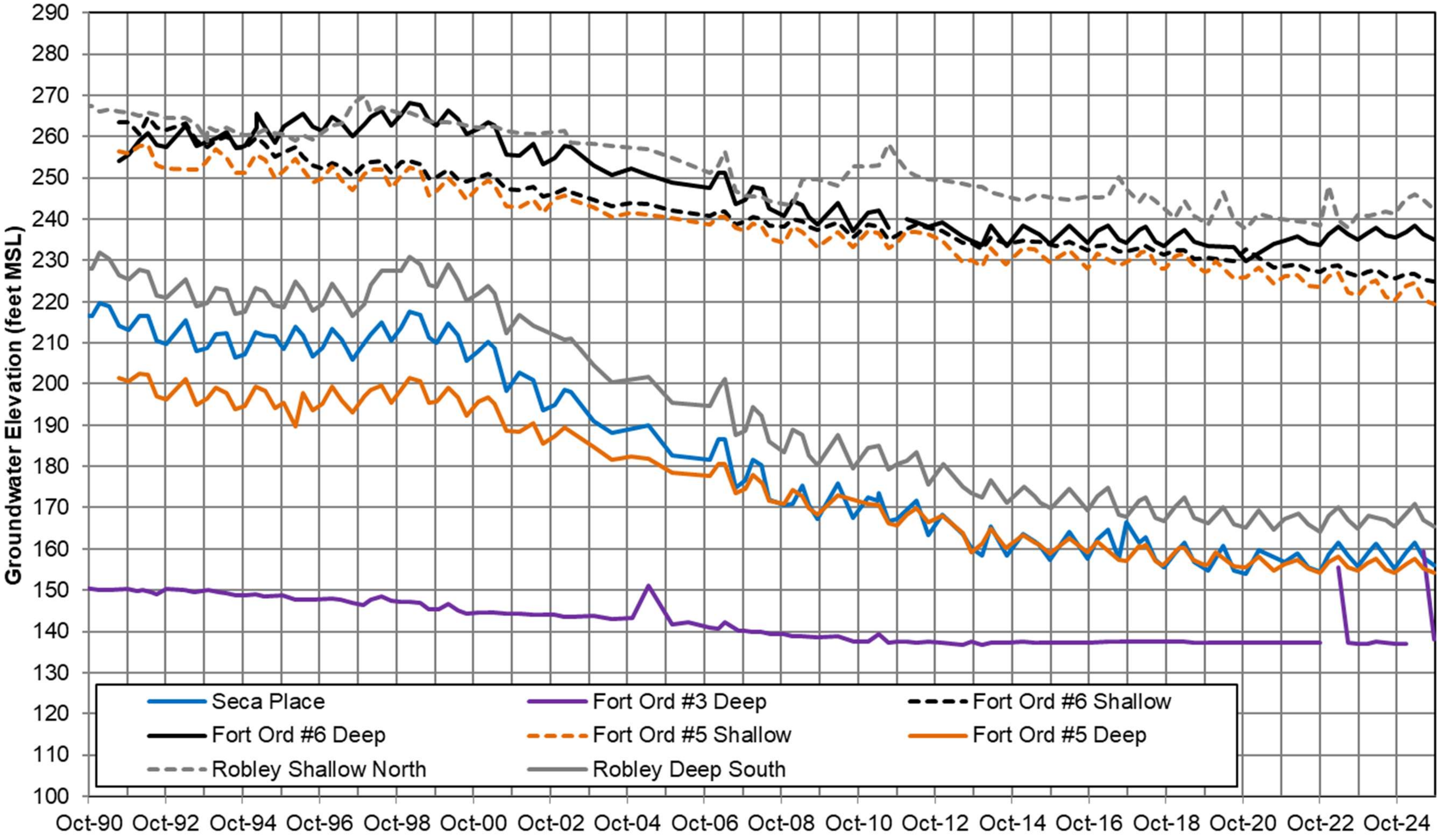


Figure 40. Eastern Laguna Seca Subarea Monitoring Well Hydrographs

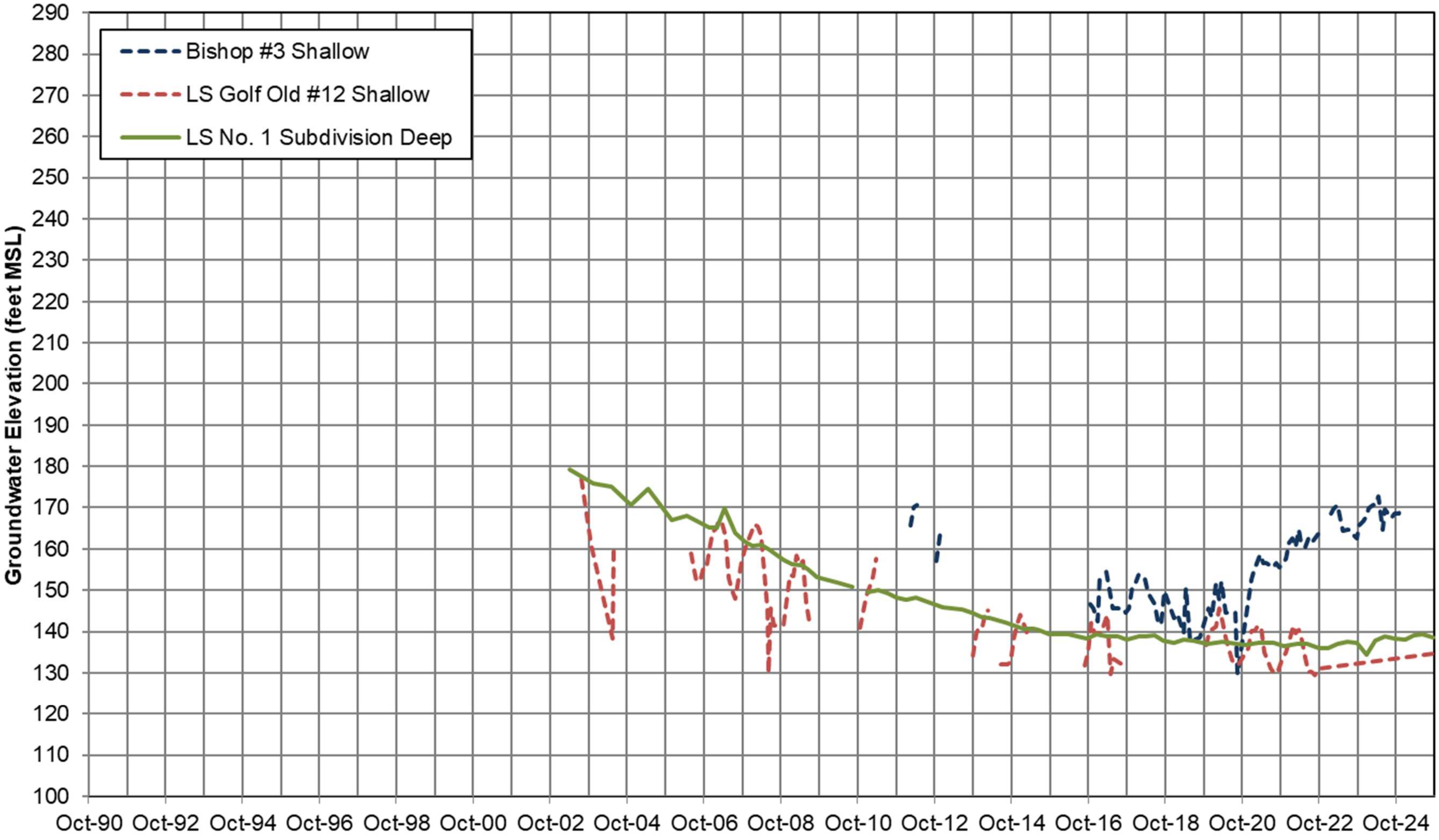


Figure 41. Eastern Laguna Seca Subarea Production Well Hydrographs

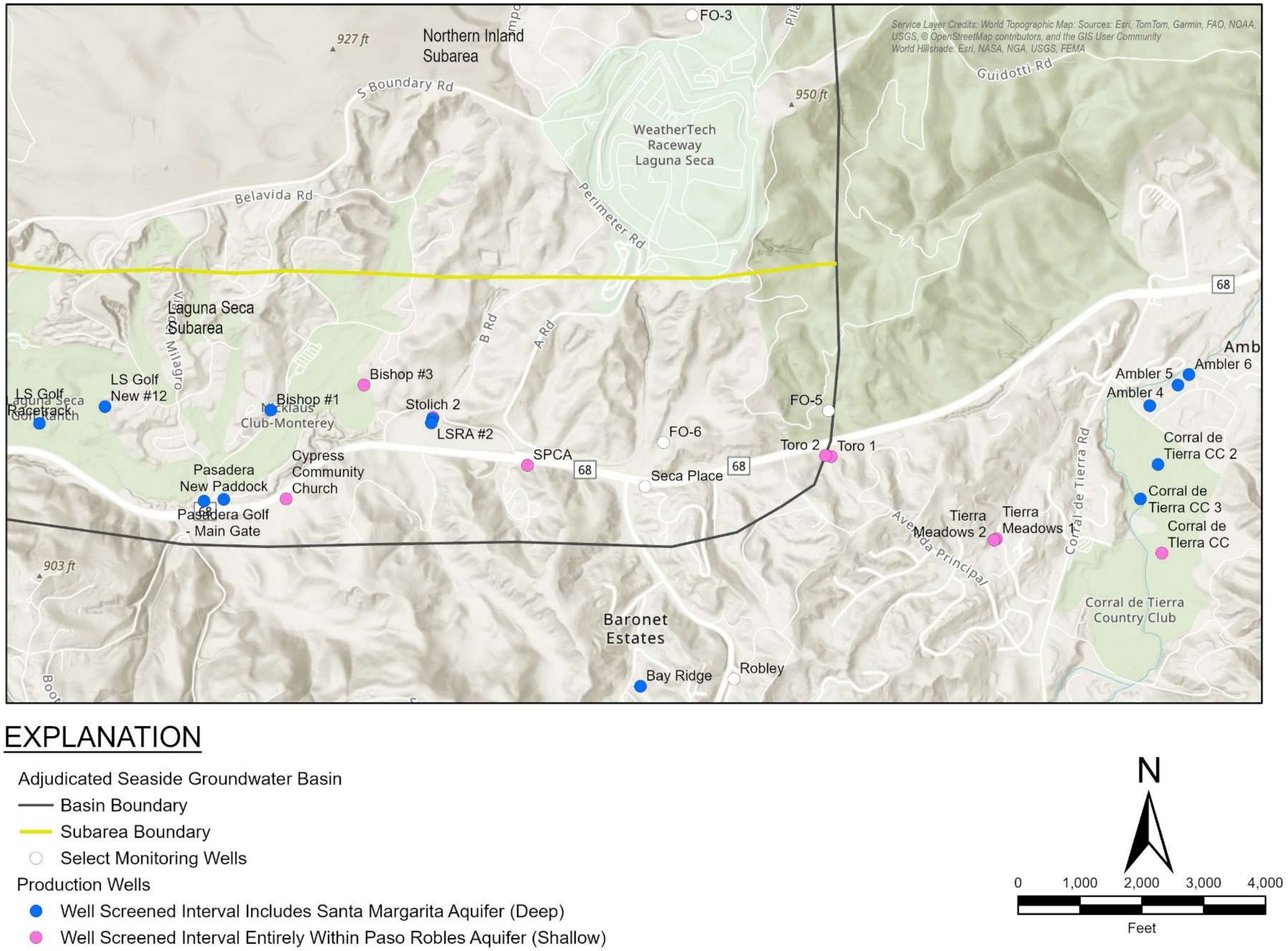


Figure 42. Eastern Laguna Seca Subarea Wells

2.6.3 Groundwater Elevation Maps

The subsections below describe groundwater elevation contours for the Seaside Basin for both the second quarter (January – March 2025) and fourth quarter (July – September 2025).

2.6.3.1 Second Quarter Water Year 2025 (January-March 2025)

Groundwater level maps for the shallow aquifer and deep aquifers for the second quarter of WY 2025 are shown on Figure 43 and Figure 44, respectively. The maps continue to feature groundwater elevations derived from ASR and PWM monitoring wells. Groundwater level data from PWM monitoring wells are only available for second quarter of 2025. The area of influence from injection is identified by an opaque blue shaded area, which approximates the influence of injection on each aquifer. Under current injection operations, the influence of PWM injection is significantly larger in the deep aquifer than the shallow aquifer.

The following are observations on the second quarter groundwater elevation contours for the shallow aquifer (Figure 43):

- Groundwater elevations near the coast in the Northern Coastal subarea and just north of the subarea (outside of the Seaside Basin), increased 1 to 2 feet indicating recharge and/or reduced pumping.
- The extent of the pumping depression in the Northern Coastal subarea was similarly constrained by PWM injection and ASR operations as in the previous year. The injection influence is more pronounced and the pumping depression is slightly smaller.
- Groundwater elevations in the Southern Coastal subarea are similar to recent years.
- The pumping depression caused by the Laguna Seca Golf Ranch wells in the central Laguna Seca subarea is slightly smaller. No groundwater elevations data were available from the Bishop #3 well, as it was destroyed in May 2024.
- Groundwater elevations in the eastern Laguna Seca subarea are similar to the previous year showing a small rise and a stable trend.
- In the eastern portion of the Northern Inland subarea, an area of the shallow aquifer is indicated to be potentially dry due to geologic structural control.

In the deep aquifer, second quarter (spring) groundwater elevations are usually higher than fourth quarter (fall) groundwater levels by up to 10 feet due to seasonal groundwater demand during the summer and early fall months. Other than in areas of active groundwater pumping, the deep aquifer does not show seasonal fluctuations to the same extent as the shallow aquifer.

The following are observations on the second quarter groundwater elevation contours for the deep aquifer (Figure 44):

- In the Northern Coastal subarea, along the coast and just north of the subarea, deep aquifer groundwater levels decreased by about 1 to 2 feet from last spring.
- The deep aquifer pumping depression in the Northern Coastal subarea has been similar in extent since WY 2022, with the -20 feet amsl contour line remaining within the Seaside Basin and not extending farther north into the Salinas Valley - Monterey Subbasin Marina-Ord Management Area.
- PWM monitoring well groundwater elevations continue to be above sea level, including MW-2AD which rose above sea level again in spring WY 2025 after falling below sea-level in the fall.
- The pumping depression associated with groundwater extraction for the Laguna Seca golf courses is similar to the previous spring.
- The eastern portion of the Laguna Seca subarea has groundwater levels similar to last year, with differences of about 1 to 2 feet.

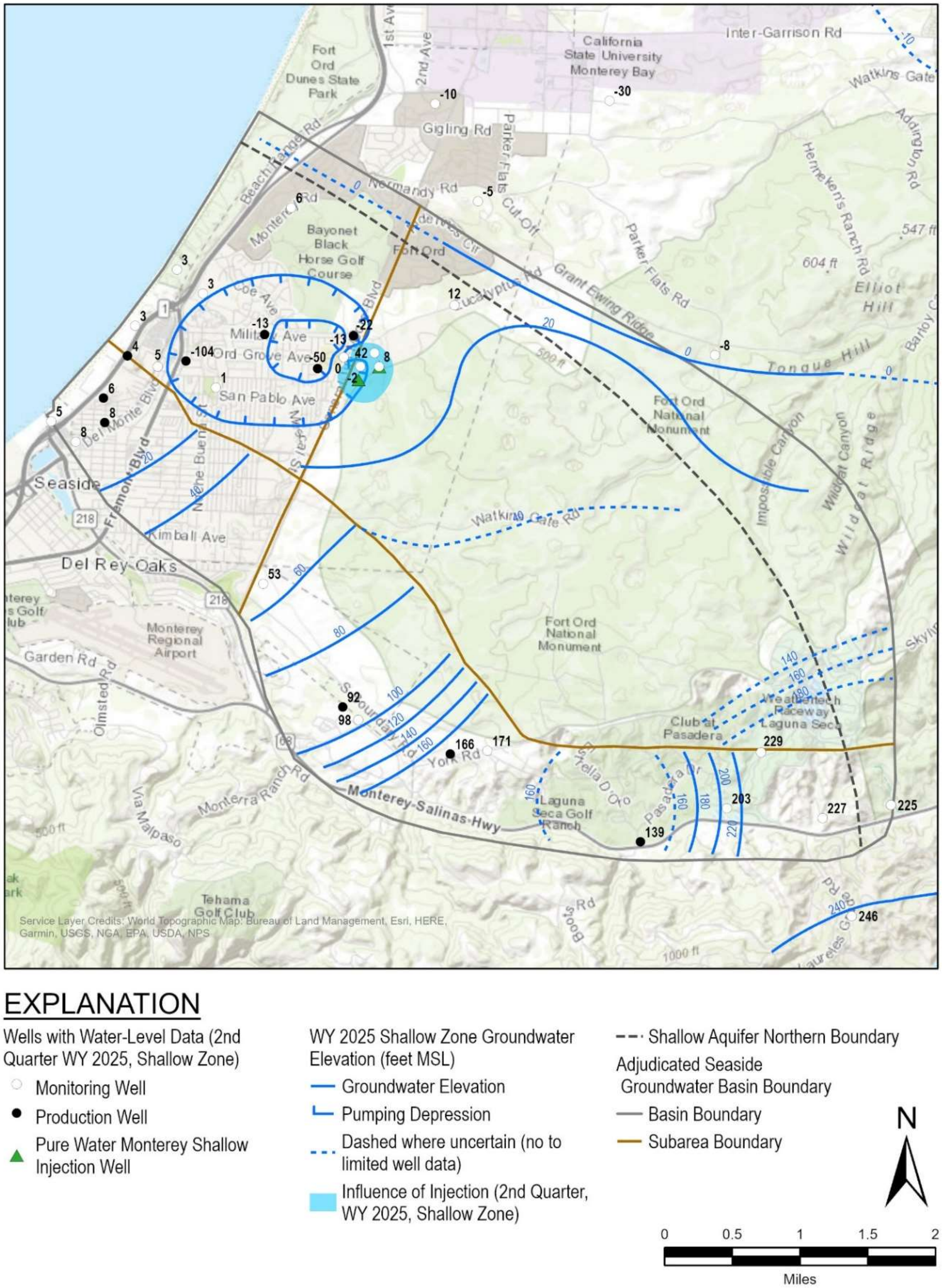


Figure 43. Shallow Aquifer Water Elevation Map – Second Quarter Water Year 2025 (January-March 2025)

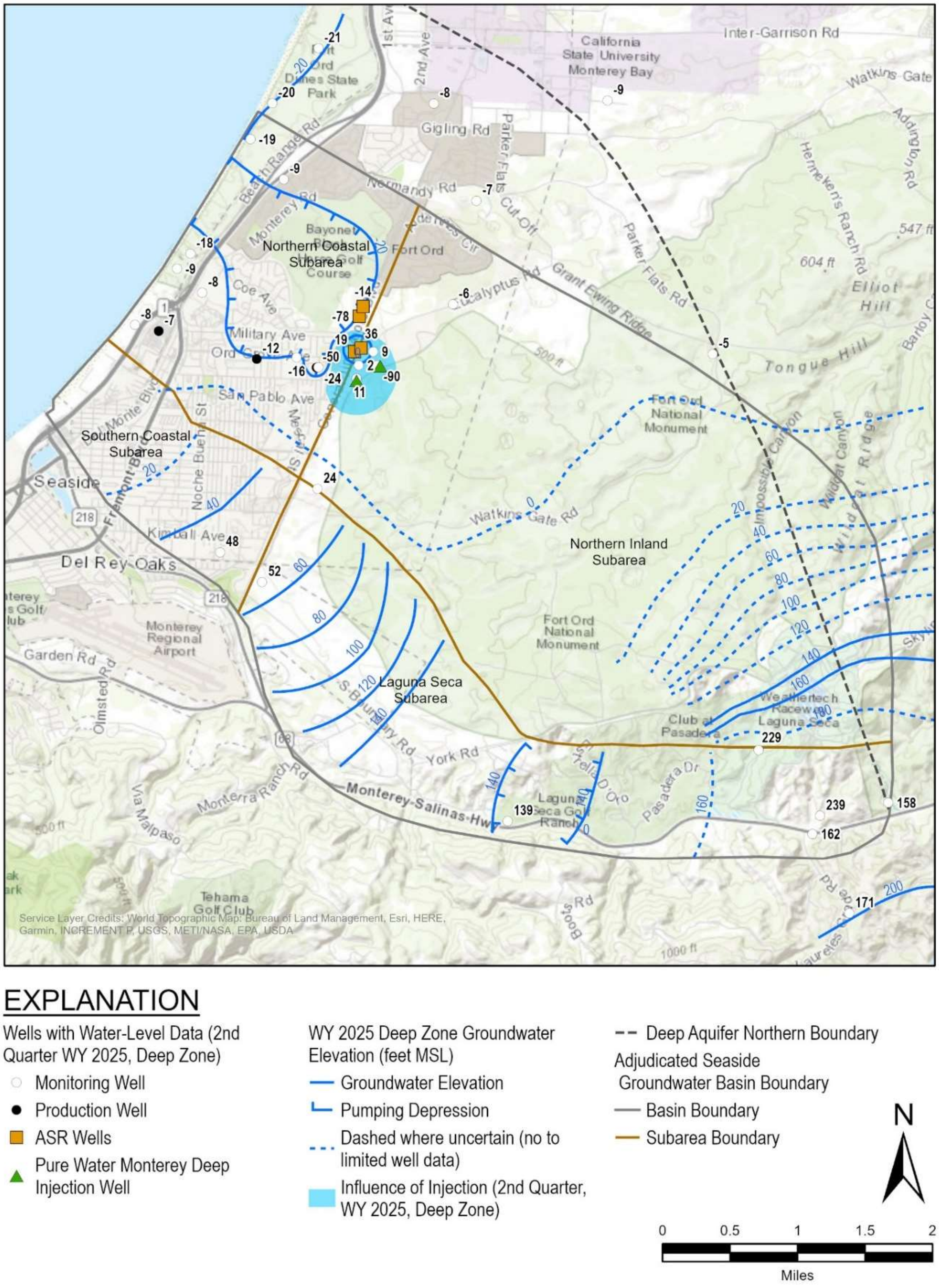


Figure 44. Deep Aquifer Water Elevation Map – Second Quarter Water Year 2025 (January-March 2025)

2.6.3.2 Fourth Quarter Water Year 2025 (July-September 2025)

Groundwater elevation maps for the shallow and deep aquifers for the fourth quarter of WY 2025 are shown on Figure 45 and Figure 46, respectively.

The following are observations on the fourth quarter groundwater elevation contours for the shallow aquifer (Figure 45):

- Northern Coastal subarea, including just outside of the northern Seaside Basin boundary groundwater elevations and groundwater elevations along the coast within the Seaside Basin Boundary remained similar to WY 2024.
- The area of the Northern Coastal subarea below sea level in the shallow aquifer slightly increased in size in WY 2025, primarily due to pumping at Playa #3.
- Southern Coastal subarea groundwater elevations remained similar to the previous year.
- Elevations in the eastern portion of the Laguna Seca subarea increased slightly from last year.

The following are observations on the fourth quarter groundwater elevation contours for the deep aquifer (Figure 46):

- North of the Northern Coastal subarea, deep aquifer groundwater elevations decreased by about 3 to 4 feet from last year. The northern 20-foot contour has grown slightly due to a 3-foot decline in groundwater elevations at monitoring well FO-08 Deep.
- At the coast, deep aquifer groundwater levels in the Northern Coastal subarea decreased 3 to 4 feet from the previous year.
- The Northern Coastal subarea deep aquifer’s pumping depression extent is the about the same as last year. The depression’s southeastern extent is strongly influenced by ASR and PWM operations where there was a combined total of 3,652 acre-feet injected and 3,851 acre-feet recovered in WY 2025. In WY 2025, more water was recovered than injected.
- The pumping depression associated with pumping at the Laguna Seca golf courses is similar to fall levels last year.
- The eastern portion of the Laguna Seca Subarea has groundwater levels similar to last year.

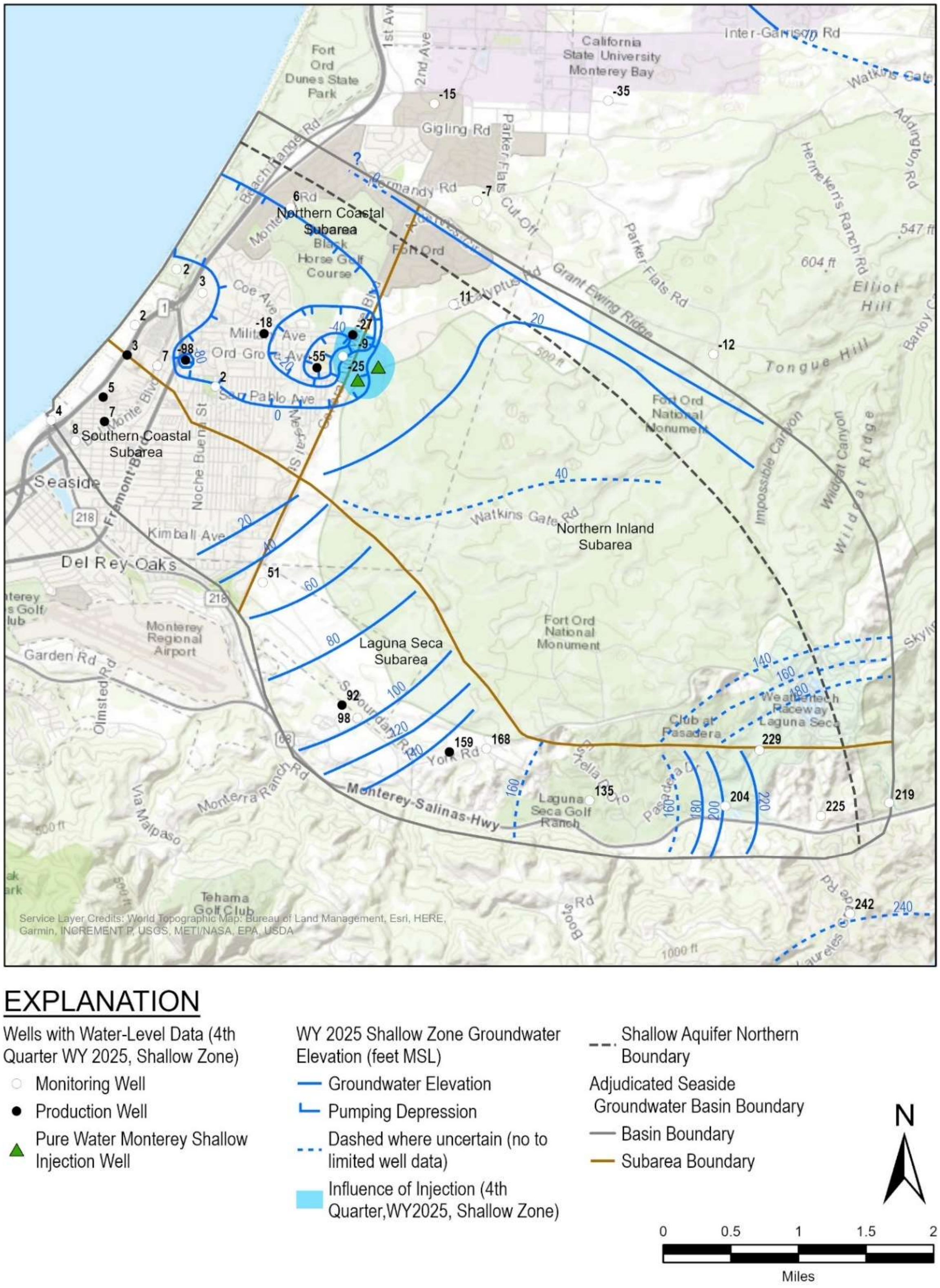


Figure 45. Shallow Aquifer Water Elevation Map – Fourth Quarter Water Year 2025 (August/September 2025)

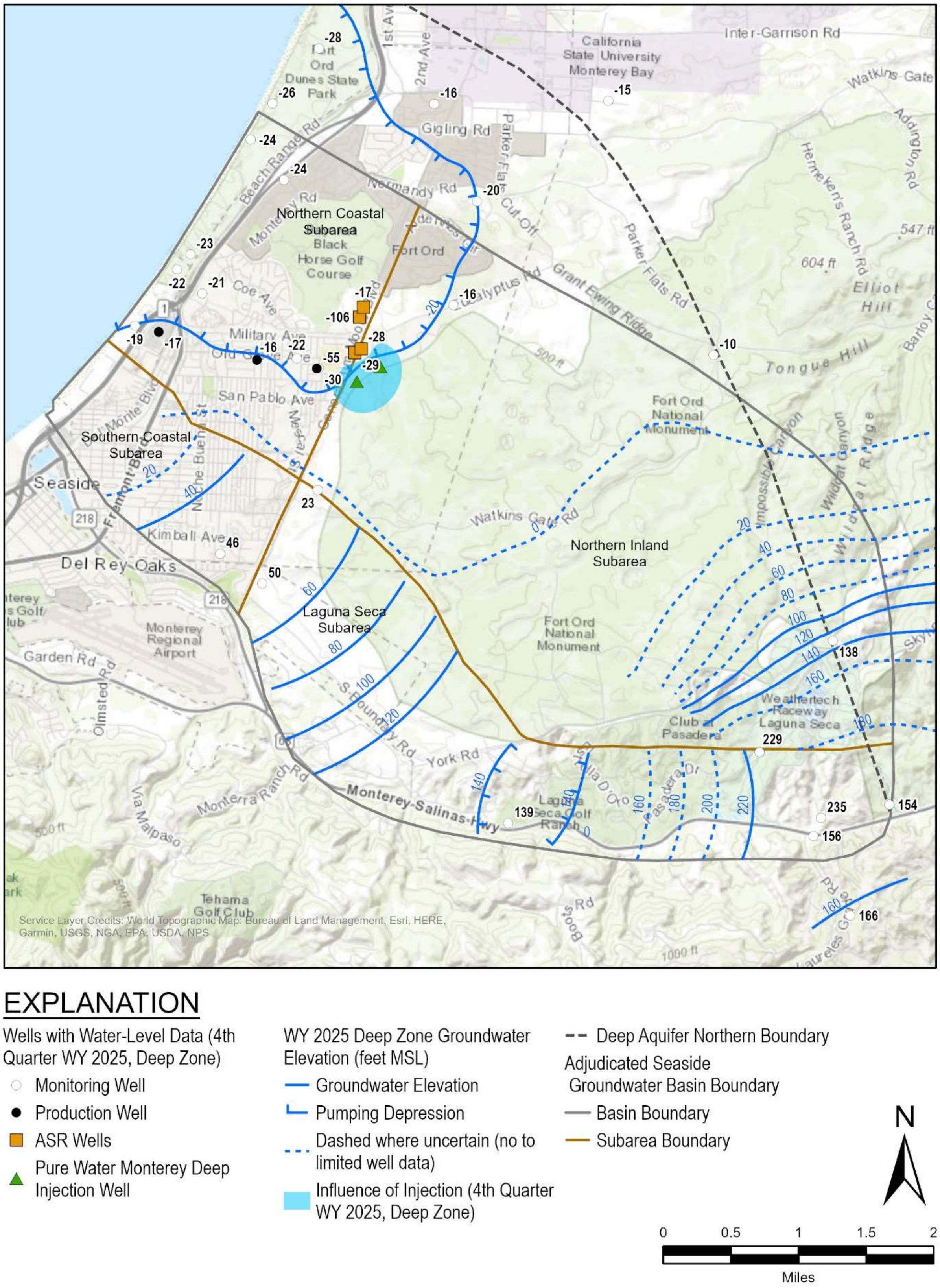


Figure 46. Deep Aquifer Water Elevation Map – Fourth Quarter Water Year 2025 (July/September 2025)

2.6.4 Protective Groundwater Elevations

Protective groundwater elevations were determined in 2009 using the Seaside Groundwater Basin groundwater flow model and cross-sectional modeling (HydroMetrics LLC, 2009). A subsequent study in 2013 to revisit and update the protective groundwater elevations concluded that the calibrated parameters in the basin-wide model do not indicate that protective elevations should be lowered (HydroMetrics WRI, 2013). Protective elevations for both the shallow and deep aquifers were established for monitoring well pairs with both a shallow and deep completion. Protective elevations for the six wells with protective elevations are shown in Table 1. Groundwater levels below protective elevations have a greater potential to cause seawater intrusion that will impact production wells.

Table 1. Summary of Protective Elevations at Coastal Monitoring Wells

Subarea	Well	Completion	Protective Elevation, Feet above sea level	Currently Above or Below Protective Elevations
Northern Coastal	MSC	Deep	17	below
		Shallow	11	below
	PCA-W	Deep	17	below
		Shallow	2	above
	Sentinel Well 3	Deep	4	below
Southern Coastal	CDM-MW4	Shallow	2	above

Figure 47 through Figure 50 show the historical groundwater elevations at each of the target protective elevation monitoring wells. Groundwater levels continue to be below protective elevations in all deep aquifer target monitoring wells (MSC deep, PCA-West Deep, and Sentinel Well 3). In fall of WY 2025, groundwater elevations in all three deep aquifer protective elevation wells decreased to historical lows similar to lows observed in WY 2016 and WY 2022. In WY 2025, seasonal high groundwater levels at all three deep aquifer wells increased slightly or were about the same as the previous year. Monitoring well CDM-MW4 and PCA-West Shallow are the only shallow aquifer wells (2 of 3 shallow wells total) with groundwater elevations above protective elevations. Groundwater elevations in the MSC Shallow monitoring well remain below its protective elevation.

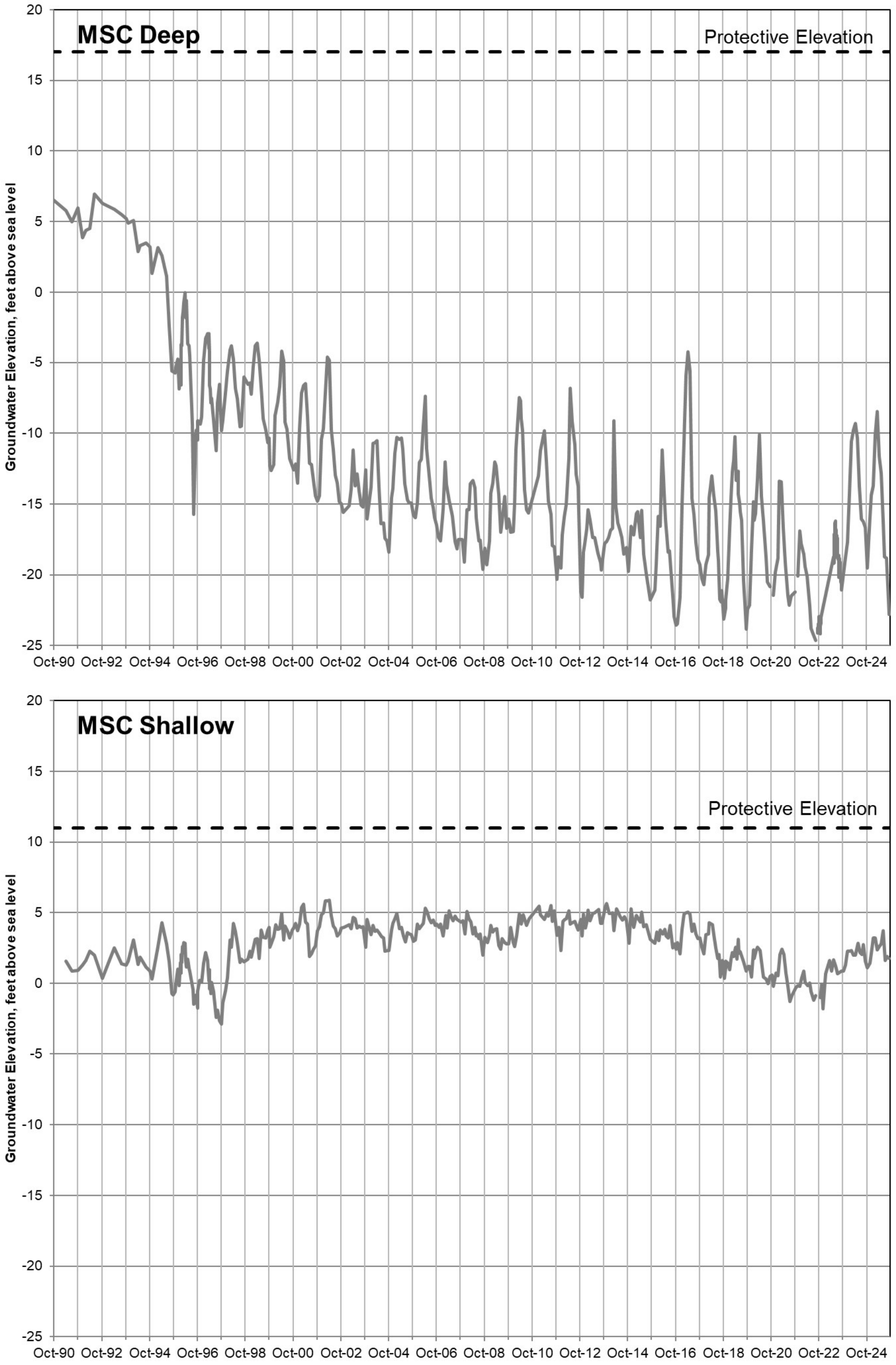


Figure 47. MSC Deep and Shallow Groundwater and Protective Elevations

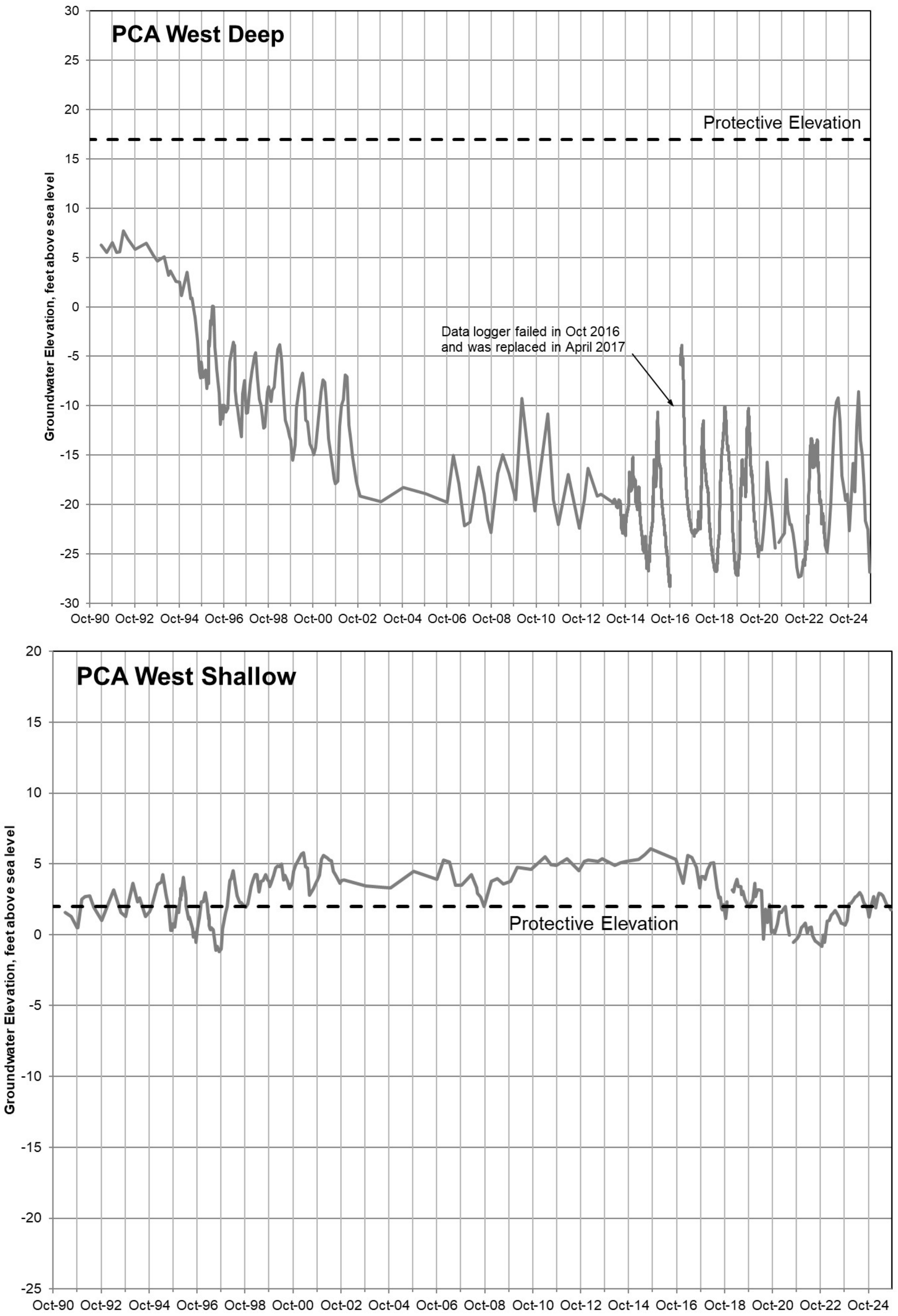


Figure 48. PCA-West Deep and Shallow Groundwater and Protective Elevations

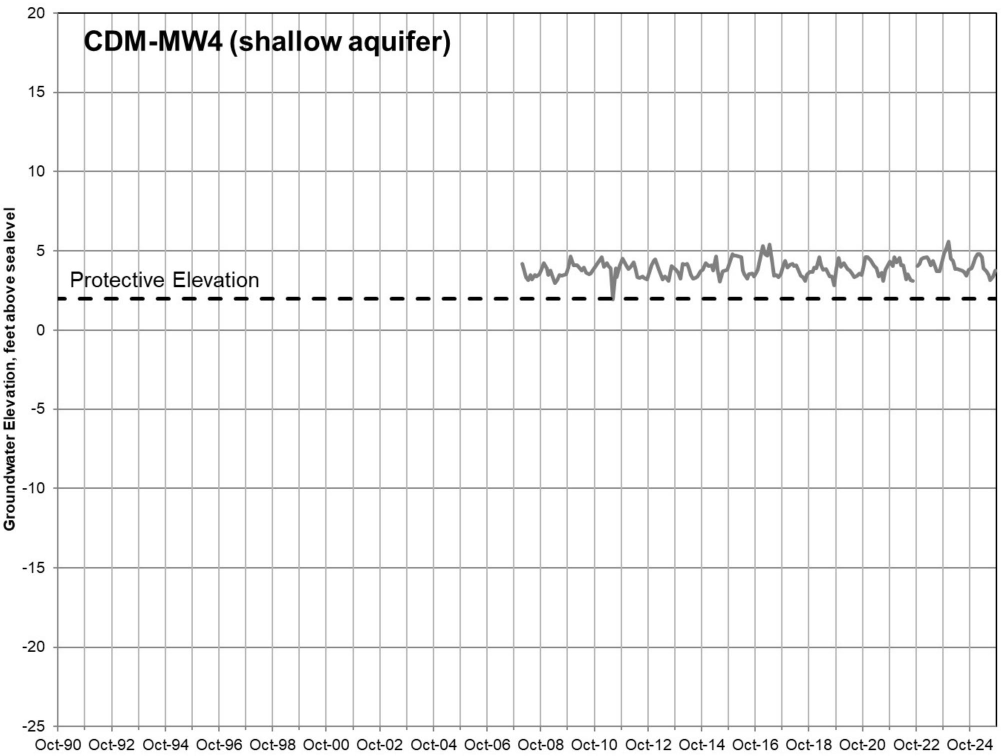


Figure 49. CDM-MW4 Groundwater and Protective Elevations

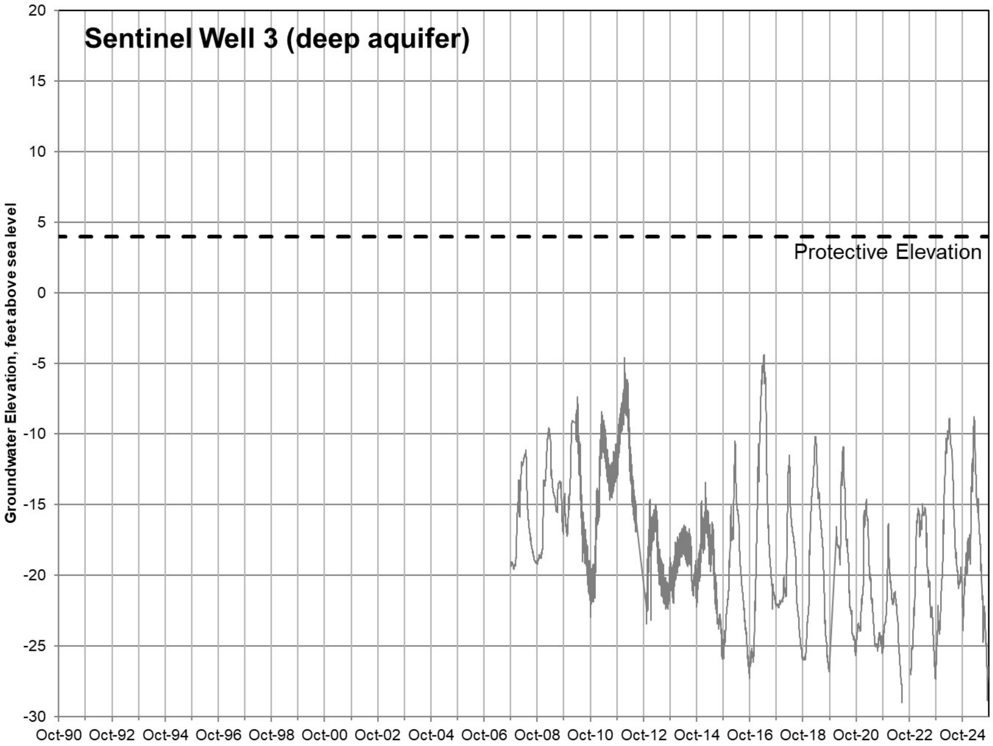


Figure 50. Sentinel Well 3 Groundwater and Protective Elevations

2.7 Groundwater Production

Groundwater pumping and subsurface outflows to adjacent basins more than freshwater recharge and subsurface inflow from adjacent areas is the primary cause of seawater intrusion. Mapping pumping volumes gives an indirect indication of the threat of seawater intrusion. Ideally, to avoid seawater intrusion, pumping should be equally distributed throughout a basin and occur inland of the coast.

Gross pumping by Watermaster producers in WY 2025 was 5,963 acre-feet, which includes 3,851 acre-feet of recovery from PWM. Net or native groundwater pumping is the amount of groundwater pumped after both ASR and PWM recovery are considered. It is possible that in years when there is water injected and recovered, more water may be pumped from CAWC's wells to recover water injected the previous operational year.

In WY 2025, ASR and PWM wells injected 716 and 2,936 acre-feet, respectively, for a total of 3,652 acre-feet of injection. There was no ASR recovery, but PWM recovered 3,851 acre-feet of its injected water (Figure 51). As reported by the Watermaster, net or native groundwater production was 2,112 acre-feet (gross pumping less recovery), which is 888 acre-feet below the Decision-ordered Operating Yield of 3,000 acre-feet (Figure 51). The net or native groundwater produced from the Seaside Basin in WY 2025 was about 239 acre-feet less than in WY 2024. The Decision-ordered Operating Yield will continue to be 3,000 acre-feet unless a revised Sustainable Yield is developed. Figure 52 shows the distribution of pumping across the Seaside Basin and the volumes pumped at each production well for the past 2 years. The blue bar charts on Figure 52 reflect the actual or gross amounts pumped from each well and the green bar charts reflect the volume of ASR or PWM injection. In WY 2025, most pumping in the Seaside Basin occurred at CAWC's Ord Grove No. 2 and Paralta production wells.

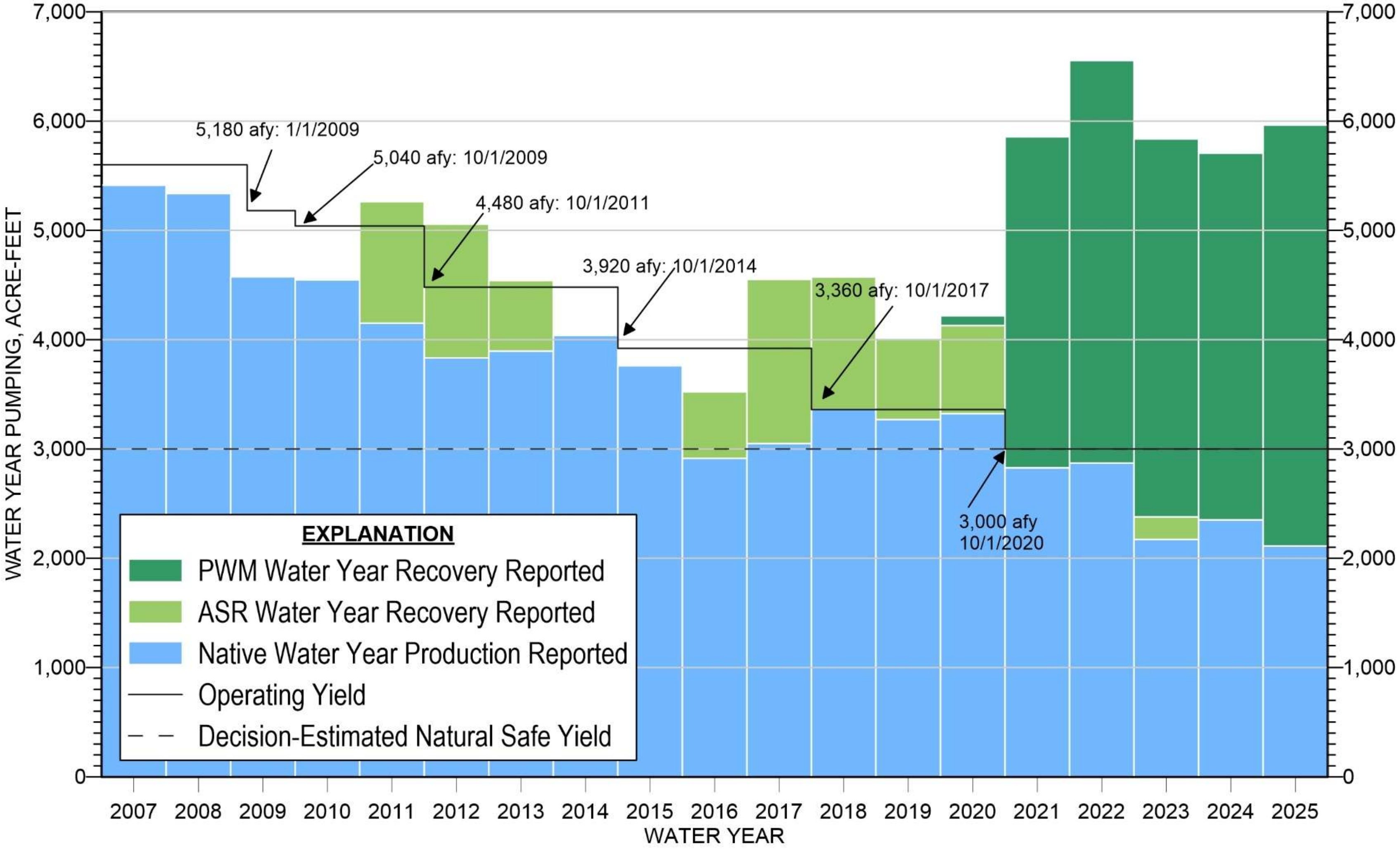


Figure 51. Annual Reported Groundwater Production and Operating Yield for Watermaster Producers

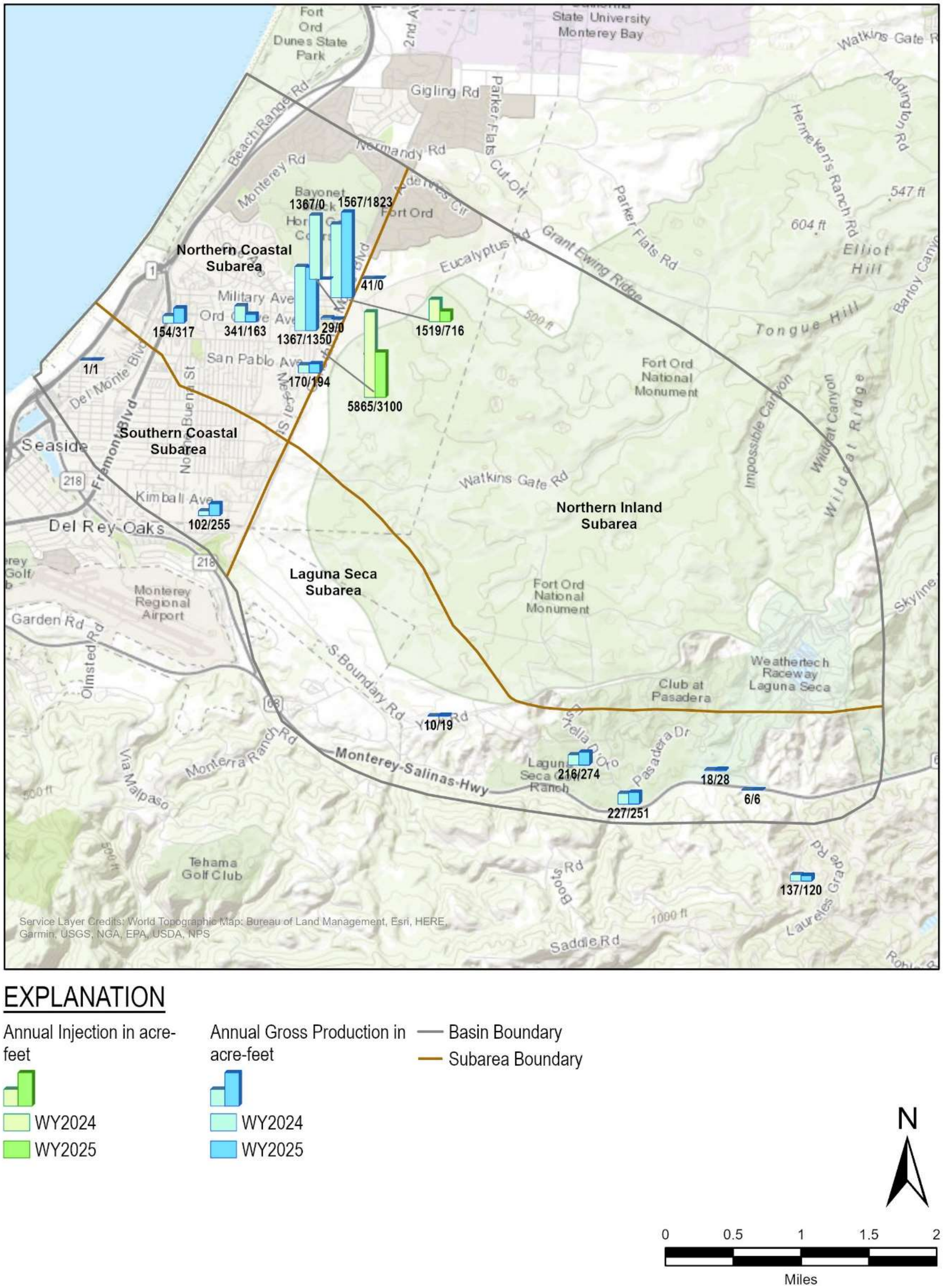


Figure 52. Watermaster Producers' Pumping Distribution for Water Years 2024 and 2025

3 CONCLUSIONS

Groundwater levels below sea level, the cumulative effect of pumping in excess of recharge and freshwater inflows, and ongoing seawater intrusion in the nearby Salinas Valley all suggest that seawater intrusion has the potential to occur in the Seaside Groundwater Basin.

Data collected in WY 2025 from monitoring and production wells do not indicate seawater intrusion is occurring within the Seaside Groundwater Basin. However, induction logging shows continued incremental increases in conductivity over time in Sentinel wells SBWM-1, 2, and 4 within zones of the Upper Paso Robles Formation (shallow aquifer) that are not screened within nearby monitoring wells. Continual increases in conductivity may be a precursor to seawater intrusion.

Based on the findings of this report, the following ongoing detrimental groundwater conditions pose a direct threat of seawater intrusion:

- All aquifers in the Seaside Groundwater Basin are susceptible to seawater intrusion. The shallow aquifer is in direct hydrogeologic connection with Monterey Bay, and seawater will eventually flow into it if inland groundwater levels continue to be below sea level. It is uncertain whether the deep aquifer is in direct connection with Monterey Bay. If it is not in direct connection, then seawater intrusion will take longer as seawater in the shallow aquifer would need to move down through the clay rich deposits overlying the Purisima and Santa Margarita aquifers before entering the deep aquifer itself and making its way into deep aquifer production wells. It is not if, but when, seawater intrusion into these aquifers will occur if protective water elevations are not achieved.
- Sentinel wells SBWM-1 and SBWM-2, located north of the Seaside Basin, and SBWM-4, located in the Northern Coastal subarea where most of the Seaside Basin's groundwater extraction occurs, exhibit sustained increases in conductivity over time within the shallow aquifer's Upper Paso Robles Formation. It is believed the increased conductivity in the shallow portions of SBWM-1 and SBWM-2 are associated with the mapped extent of seawater intrusion emanating from the Salinas Valley Basin shown on Figure 20. Since SBWM-3 does not have increasing conductivity in the Paso Robles Formation like the other three Sentinel wells, the cause of increasing conductivity in SBWM-4 may be different than SBWM-1 and SBWM-2 to the north. Evaluation of SBWM-4 conductivity data collected prior to 2019 indicates conductivity has been increasing within this zone from at least 2007 when induction logging started. An estimate of the total dissolved solids (TDS) increase associated with the logged change in conductivity in SBWM-4 since 2007 is approximately 1,000 mg/L. The Secondary Drinking Water limit is 500 mg/L. This indicates a significant salinity increase in the Paso Robles Formation. Induction logging conducted at monitoring well PCA-West

Deep—located 780 feet southwest of SBWM-4—to verify increasing conductivity in this area does indicate high salinity within the Upper Paso Robles Formation. However, several years of induction logs are needed to compare against the first baseline before it can be determined if conductivity is increasing at that well too.

- While most groundwater samples for WY 2025 from depth-discreet monitoring wells generally plot in a single cluster on Piper diagrams, with no water chemistry changes toward seawater, there are three monitoring wells—PCA-West Shallow (Appendix C, Figure C-1), PCA-East Deep (Appendix C, Figure C-4), Ord Terrace Shallow (Appendix C, Figure C-5)—that have trends indicating groundwater may be mixing with seawater.
- Groundwater levels in some portions of both the shallow and deep aquifers in the Northern Coastal subarea continue to be below sea level year-round. Groundwater levels below sea level create hydraulic conditions causing onshore flow. WY 2025 fourth quarter (summer/fall) groundwater levels in the deep aquifer are almost 30 feet below sea level north of the Seaside Basin and approximately 20 feet below sea level in the southern portion of the Northern Coastal subarea. The Northern Coastal subarea pumping depression in the deep aquifer is slightly larger in horizontal extent than the previous year. The pumping depression in the shallow aquifer is about the same as last year's depression.
- Groundwater levels remain below protective elevations in all three deep aquifer protective elevation monitoring wells (MSC Deep, PCA-W Deep, and Sentinel well SBWM-3), and in one of the three shallow aquifer protective elevation monitoring wells (MSC Shallow). In fall of WY 2025, groundwater elevations in the deep aquifer (MSC-Deep, PCA-West Deep, and Sentinel Well 3) decreased to seasonal lows similar to those observed in WY 2016 and WY 2022. In WY 2025, seasonal high groundwater levels at all three deep aquifer monitoring wells increased slightly or were about the same as the previous year. Groundwater elevations at all three shallow aquifer protective elevation monitoring wells showed an increase in seasonal highs. Increased shallow groundwater levels in the Northern Coastal subarea is likely due to Bayonet/Blackhorse golf courses irrigation switching from locally pumped groundwater to recycled water.

The following evidence from this report demonstrates that seawater intrusion has not been detected in monitoring and production wells from which groundwater quality samples are collected:

- In some production wells, groundwater quality plots on Piper diagrams are different than groundwater quality in monitoring wells. This may be a result of mixed water quality because these wells are perforated in both the shallow and deep aquifers. None of the production wells' groundwater qualities are indicative of seawater intrusion.

- None of the Stiff diagrams for monitoring and production wells show the characteristic chloride spike that typically indicates seawater intrusion in Stiff diagrams.
- Maps of chloride concentrations for the shallow aquifer do not show chlorides increasing toward the coast. Deep aquifer chloride concentration maps show that the highest chloride concentrations are limited to coastal monitoring wells PCA-West Deep and MSC Deep, but these are not indicative of seawater intrusion since their sodium/chloride molar ratios are not less than 0.86, and they do not have increasing trends.

Other important findings from the analysis contained in this report include the following:

- It is evident from comparing the long-term groundwater level trends of PCA-West Shallow and PCA-East Shallow, both in the shallow aquifer, that golf course irrigation pumping was the cause of groundwater levels falling below protective elevations at PCA-West Shallow over the past 7 years. Using recycled water for golf course irrigation has allowed shallow groundwater levels to recover to above the protective elevations at PCA-West Shallow and they remain above protective elevations at this well.
- Due to its distance from the coast, seawater intrusion is not an issue of concern in the Laguna Seca subarea. However, groundwater levels in the eastern Laguna Seca subarea have historically declined at rates of 0.6 feet per year in the shallow aquifers, and up to 4 feet per year in the deep aquifers. These declines have occurred since 2001 despite triennial reductions in allowable pumping and CAWC ceasing pumping its Ryan Ranch and Bishop wells. The cause of the declines is the subarea's limited groundwater inflows and natural recharge compounded by the influence of wells pumping east of the Seaside Basin in the Monterey Subbasin Corral de Tierra Management Area.
- Native groundwater production in the Seaside Basin for WY 2025 was 2,112 acre-feet, which is 239 acre-feet less than WY 2024 and 888 acre-feet less than the Decision-ordered Operating Yield of 3,000 acre-feet. Though WY 2025 was a below average year for rainfall, recovery of 3,851 acre-feet of recycled water from Pure Water Monterey and use of recycled water at the Bayonet/Blackhorse golf courses helped offset pumping of native groundwater. As outlined in the Basin Management Action Plan (M&A, 2018a), it is vital that the Watermaster continues to identify ways to reduce pumping native groundwater and/or to recover groundwater elevations with water that is left in the Seaside Basin and is not extracted out as water supply.

It is important to closely monitor groundwater quality at different depths through the Seaside Basin's aquifers. Although existing monitoring and production wells are not detecting seawater intrusion, it does not mean seawater intrusion is not occurring. The discovery of increasing conductivity in specific zones in the Sentinel wells that are not screened in nearby monitoring wells illustrates this fact. Using geophysical methods such as induction logging and electromagnetic surveys to identify salinity provides a more complete "scan" of the depth of the Seaside Basin than discreetly screened wells cannot provide.

4 RECOMMENDATIONS

Actions Regarding Increased Conductivity Observed in Induction Logs in SBWM-1, SBWM-2, and SBWM-4

- Inform EKI and Marina Coast Water District Groundwater Sustainability Agency (MCWD GSA) that Sentinel wells SBWM-1 and SBWM-2 continue to show increases in conductivity from 520 to 540, 605 to 625, and 685 to 695 feet below ground surface (bgs) at SBWM-1 and 340 to 390 feet bgs at SBWM-2 in defined coarser-grained zones in the Paso Robles aquifer and the upper Purisima aquifer. These monitoring wells are located outside of the Seaside Basin and are within the Marina-Ord Management Area of the Monterey Subbasin.

- Annual induction logs in PCA-West Deep and PCA-East Deep should continue to be conducted to expand the area being monitored by geophysical methods.

Verify Chloride Concentrations and Water Chemistry in the 140 – 200 foot Zone of SBWM-4

Watermaster has been unable to find a site for a new monitoring well near SBMW-4 to verify chloride levels. However, other subsurface access options may exist. By monitoring well activity in the Basin, Watermaster could leverage opportunities to access the subsurface near SBMW-4. An upcoming example is to request permission from the SNG well owner for isolated water quality sampling during the construction of the replacement SNG well and to offer reimbursement for that additional work.

Destroy the Existing Damaged SNG Well

The privately owned SNG well with damaged casing is scheduled to be destroyed and replaced in WY 2026. Watermaster should provide input on recommended well construction and coordinate with the owner of the SNG well to take depth-specific samples at the SNG replacement well when it is drilled.

Continue to Analyze and Report on Water Quality Annually

Seawater intrusion is a significant threat to the Seaside Basin, and data must be collected and analyzed regularly to identify incipient intrusion. Maps, graphs, and analyses similar to what are found in this report should continue to be developed every year.

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Appendix A

Seaside Basin Monitoring
Groundwater Quality Data for WY 2025

Seaside Basin Monitoring Groundwater Quality Data for WY 2025

ASR MW-1 **WM No. 257**

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
241206_039-01	12/6/2024	28	31	7.9	2.4	96	29	0.28	44	1.1	11	< 15		0.14	0.16	7.6	222	366
250307_065-01	3/7/2025	49	38	12.1	2.6	192	66	0.14	34	0.2	23	< 15		< 0.1	0.15	7.9	340	532
250516_057-02	5/16/2025	47	44	13.1	3.2	178	74	0.2	36	0.1	< 30	< 15		< 0.1	0.1	7.2	350	537
250826_063-01	8/26/2025	50	42	13.2	2.9	177	64	0.1	35	0.3	< 30	< 15		< 0.1	0.2	7.9	318	538

Del Monte Test **WM No. 231**

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
250919_030-01	9/19/2025	20	45	9.1	3.7	123	18	0.1	54	0.1	3280	69		<0.05	0.2	7.53	238	410

FO09(S)2023 **WM No. 331**

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
241206_037-02	12/6/2024	26	39	6.3	3.8	90	16	0.08	63	< 0.1	29	56		0.06	0.19	7.8	268	386
250304_099-02	3/4/2025	26	37	6.3	3.7	92	14	0.08	63	< 0.1	20	57		0.06	0.2	7.8	260	384
250516_054-02	5/16/2025	26	39	6.3	4	91	15	< 0.1	63	< 0.1	12	54		0.06	0.2	7.7	264	382
250821_067-01	8/21/2025	24	36	6.2	4.3	87	15	< 0.1	63	< 0.1	21	53		< 0.1	0.2	7.7	294	386

< = not detected above detection limit of value following <

all values other than pH and EC are in mg/L

FO-09-Deep **WM No. 112**

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
241206_037-01	12/6/2024	31	55	4.2	4.2	131	12	0.08	70	< 0.1	483	17		0.07	0.22	7.6	266	458
250304_099-01	3/4/2025	31	53	4.1	3.9	126	13	0.09	71	< 0.1	360	14		0.08	0.23	7.6	266	454
250516_054-01	5/16/2025	30	54	4	4	126	14	< 0.1	70	< 0.1	544	13		0.07	0.2	7.6	276	456
250826_065-01	8/26/2025	42	64	6	4.2	165	17	< 0.1	81	< 0.1	386	29		0.09	0.3	7.7	338	577

FO-10-Shallow **WM No. 113**

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
241205_076-02	12/5/2024	26	43	7.7	2.6	77	10	0.05	86	0.1	241	< 15		< 0.1	0.26	7.4	272	438

FO-11-Deep **WM No. 123**

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
250507_033-01	5/7/2025	27	38	4.8	3.3	84	16	< 0.1	44	0.2	8910	2370		0.22		7.7	242	314

FO-11-Shallow **WM No. 122**

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
250515-028	5/14/2025	75	93	20.6	5.1	172	26	< 0.1	218	0.4	8220	739		< 0.1		7.9	682	1029

LS Golf New #12 **WM No. 203**

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
250925_010-02	9/25/2025	157	147	39.3	6.8	297	256	0.6	265	0.2	9530	94		0.16	0.9	7.4	1120	1727

< = not detected above detection limit of value following <   all values other than pH and EC are in mg/L

LSRA #1

WM No. 197

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
AC97812	9/8/2025	18	101	11	2.5	118.3	20	0.16	137	1.4	<100	14		98	0.48	6.1	425	688

LSRA #2

WM No. 196

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
AC97813	9/8/2025														0.52			
250925_010-04	9/25/2025	18	99	12.6	3	113	21	0.2	148	0.6	205	36		0.12	0.5	7.2	410	716

Luzern #2

WM No. 159

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
250910_028-01	9/10/2025	56	89	15.4	4.4	150	100	0.2	120	5.3	< 10	12		0.17	0.5	7.26	524	890

MMP monitor

WM No. 154

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
250923_064-03	9/23/2025	29	57	8.9	2.8	113	28	< 0.1	73	4.8	< 30	< 15		< 0.1	0.3	7.6	302	520

MSC - Shallow

WM No. 101

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
241204_082-02	12/4/2024	18	33	5.3	3	81	16	0.1	44	0.2	< 30	< 15		< 0.1	0.14	7.7	198	309
250307_066-01	3/7/2025	18	30	4.9	2.5	82	15	0.11	44	0.2	< 30	< 15		< 0.1	0.14	7.6	210	304
250515_095-04	5/15/2025	19	34	5.3	3.1	81	16	0.1	44	0.2	< 30	< 15		< 0.1	0.1	7.4	230	304

< = not detected above detection limit of value following <

all values other than pH and EC are in mg/L

250822_037-02	8/22/2025	18	34	5.4	3.2	78	15	0.1	42	0.1	< 30	< 15		< 0.1	0.1	6.5	212	306

MSC-Deep

WM No. 102

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
241204_082-01	12/4/2024	77	106	14.8	4.5	290	46	0.19	148	< 0.1	105	45		0.1	0.46	7.8	534	1003
250307_066-02	3/7/2025	73	97	13.6	4.1	294	46	0.2	148	< 0.1	111	43		0.1	0.47	7.7	574	996
250515_095-03	5/15/2025	78	111	14.8	4.8	293	46	0.2	147	< 0.1	101	40		0.11	0.5	7.7	596	999
250822_037-01	8/22/2025	72	105	14.3	5.1	278	44	0.2	140	< 0.1	104	42		0.12	0.5	7.8	604	1011

Ord Grove #2

WM No. 153

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
250910_029-01	9/10/2025	39	61	11.2	3.6	134	40	0.1	87	2.2	< 10	< 5		0.14	0.3	7.3	350	613

Ord Terrace-Shallow

WM No. 109

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
250925_047-01	9/25/2025	72	83	16.1	4.2	254	50	0.2	120	2.1	42	< 15		< 0.1	0.4	7.9	530	904

Paddock 16

WM No. 1028

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
250925_010-01	9/25/2025	114	111	29.2	4.8	286	173	0.5	188	0.7	65	30		0.12	0.6	7.5	844	1346

< = not detected above detection limit of value following <

all values other than pH and EC are in mg/L

Paralta

WM No. 169

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
241209_081-02	12/9/2024	35	42	9.6	2.9	127	44	0.26	47	0.5	< 30	6		0.12	0.16	7.4	260	448
250307_059-01	3/7/2025	34	40	10	2.9	124	42	0.29	49	0.6	23	7		0.18	0.18	7.4	238	454
250522_033-01	5/22/2025	41	43	11	3	155	60	0.3	46	0.4	< 30	8		0.1	0.2	7.5	304	510
250822_036-01	8/22/2025	34	47	9.5	4.1	121	39	0.3	50	0.7	1290	12		0.41	0.2	7.9	272	464
250910_030-01	9/10/2025	32	41	8.6	2.9	117	37	0.3	54	0.8	< 10	5		0.13	0.2	7.2	254	450

Paralta Test Well

WM No. 108

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
241209_081-01	12/9/2024	26	50	8.3	2.7	100	29	0.04	71	0.6	< 30	< 15		< 0.1	0.21	7.6	276	451
250307_059-02	3/7/2025	26	49	8.1	2.4	105	30	0.05	73	0.9	15	< 5		< 0.05	0.22	7.6	288	477
250522_033-02	5/22/2025	28	52	8.7	2.6	106	33	< 0.1	74	1.2	36	81		< 0.1	0.2	7.8	326	491
250822_036-02	8/22/2025	27	52	8.6	2.8	103	28	0	72	0.7	262	126		0.08	0.2	8	310	485

Pasadera Golf - Main Gate

WM No. 208

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
250916_027-01	9/16/2025	115	112	28.6		280	164				987			0.11		7.2	884	1329

PCA East Deep

WM No. 106

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
241209_081-03	12/9/2024	76	108	15.7	4.9	304	45	0.19	145	< 0.1	411	230		0.12	0.44	7.2	566	998

< = not detected above detection limit of value following <

all values other than pH and EC are in mg/L

250310_031-01	3/10/2025	76	98	14.5	4.3	304	45	0.2	146	< 0.1	251	234		0.12	0.5	7.7	594	1052
250516_057-01	5/16/2025	77	113	15.7	5.1	303	45	0.2	146	< 0.1	209	218		0.13	0.5	7.8	582	1003
250821_068-01	8/21/2025	71	105	15.1	5.1	290	45	0.2	147	< 0.1	159	202		0.12	0.5	7.4	600	1026
250923_064-01	9/23/2025	75	107	15.4	5.2	300	45	0.2	147	< 0.1	147	210		0.14	0.5	7.9	582	1018
250923_064-01	9/23/2025															7.9		

PCA-E Shallow

WM No. 105

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
250923_064-02	9/23/2025	25	41	6.1	3	102	14	0.1	56	0.3	< 30	< 15		< 0.1	0.2	7.8	222	384

PCA-W Deep

WM No. 104

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
241205_076-01	12/5/2024	82	114	18	5.2	300	45	0.23	165	< 0.1	904	251		0.12	0.52	7.8	620	1069
250307_066-03	3/7/2025	79	106	16.8	4.8	299	44	0.25	168	< 0.1	453	221		0.12	0.55	7.7	630	1069
250515_095-01	5/15/2025	80	112	17.1	5.2	298	45	0.3	168	< 0.1	517	209		0.13	0.6	7.8	606	1073
250825_054-02	8/25/2025	77	110	16.9	5.1	292	43	0.2	161	< 0.1	415	196		0.14	0.6	7.9	616	1089

PCA-W Shallow

WM No. 103

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
241204_082-03	12/4/2024	20	35	5.5	2.6	88	12	0.08	47	0.2	311	< 15		< 0.1	0.14	6.8	196	322
250307_066-04	3/7/2025	19	31	5	2.1	84	13	0.09	46	0.3	202	< 15		< 0.1	0.15	6.7	216	317
250515_095-02	5/15/2025	19	35	5.3	2.5	84	13	0.1	46	0.5	14	< 15		< 0.1	0.1	6.9	210	314
250825_054-01	8/25/2025	18	34	5.3	2.4	82	12	0.1	44	0.6	< 30	< 15		< 0.1	0.1	7	214	323

< = not detected above detection limit of value following <

all values other than pH and EC are in mg/L

Playa #3

WM No. 162

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
250919_029-01	9/19/2025	49	84	15.7	4.4	136	88	<0.04	112	6.7	<10	24		0.13	0.5	7.6	506	814

Plumas #4

WM No. 177

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
250919_027-01	9/19/2025	46	130	22.5	4.6	145	81	0.1	192	2.6	<10	5		0.1	0.7	7.4	584	1047

Sand City Corp Yard

WM No. 165

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
251006_026-01	10/6/2025	24	251	4.6	4.4	163	149	4.6	254	4.1	< 30	34		1.1	0.8	7.9	850	1470

York School 2001

WM No. 212

		Major Cations				Major Anions					Major Ions					Physical		
Sample Id	Sample Date	Ca	Na	Mg	K	HCO3	SO4	F	Cl	N	Fe	Mn	HPO4	B	Br	pH	TDS	EC (us/cm)
250925_010-03	9/25/2025	35	155	29.4	4.5	75	35	0.2	333	1.1	< 30	< 15		0.1	1.1	7.2	794	1294

< = not detected above detection limit of value following <

all values other than pH and EC are in mg/L

Appendix B

Seaside Basin Monitoring
Groundwater Level Data for WY 2025

Seaside Basin Monitoring

Groundwater Level Data for WY 2025

ASR - 1 Watermaster No. 188 Northern Inland

Owner: MPWMD

Aquifer Unit: Tsm

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/23/2024		337.23		Rehabing well
02/27/2025	279	337.23	58.23	
03/27/2025	342	337.23	-4.77	
04/24/2025	359	337.23	-21.77	
05/29/2025	360	337.23	-22.77	
06/26/2025	364	337.23	-26.77	
07/15/2025	367	337.23	-29.77	
07/31/2025	367	337.23	-29.77	
08/28/2025	367	337.23	-29.77	
09/25/2025	377	337.23	-39.77	

ASR - 2 Watermaster No. 256 Northern Inland

Owner: MPWMD

Aquifer Unit: Tsm

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/23/2024		354.66		Rehabing well
11/28/2024	372	354.66	-17.34	
12/26/2024	372	354.66	-17.34	
01/30/2025	381	354.66	-26.34	
02/27/2025	241	354.66	113.66	
03/27/2025	302	354.66	52.66	
04/24/2025	370.9	354.66	-16.24	

05/29/2025	375	354.66	-20.34	
06/26/2025	378	354.66	-23.34	
07/15/2025	381.4	354.66	-26.74	
07/31/2025	381	354.66	-26.34	
08/28/2025	382	354.66	-27.34	
09/25/2025	391	354.66	-36.34	

ASR - 3 Watermaster No. 261 Northern Coastal

Owner: MPWMD

Aquifer Unit:

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/23/2024	455	339.33	-115.67	Well on at 960gpm
11/28/2024	411	339.33	-71.67	Well On
12/26/2024	411	339.33	-71.67	Well On
01/30/2025	441	339.33	-101.67	Well On
01/31/2025	435.8	339.33	-96.47	Well on
02/27/2025	424	339.33	-84.67	Well On
03/27/2025	423	339.33	-83.67	Well On
04/24/2025	399.8	339.33	-60.47	Well On
05/29/2025	428.3	339.33	-88.97	Well On
06/26/2025	443	339.33	-103.67	Well On
07/15/2025	450.4	339.33	-111.07	
07/31/2025	442	339.33	-102.67	Well On
08/28/2025	448	339.33	-108.67	Well On
09/25/2025	432	339.33	-92.67	Well On

ASR - 4 Watermaster No. 282

Owner:

Aquifer Unit:

Well Type:

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/23/2024	393.53	339.93	-53.60	Well running 1100 to the pit
11/28/2024	357	339.93	-17.07	
12/26/2024	357	339.93	-17.07	
01/30/2025	359	339.93	-19.07	
01/31/2025	359.2	339.93	-19.27	from logger
02/27/2025	344	339.93	-4.07	
06/26/2025	352	339.93	-12.07	Well On
07/15/2025	363.65	339.93	-23.72	
07/31/2025	354	339.93	-14.07	
09/25/2025	352	339.93	-12.07	Well On

Bay Ridge Watermaster No. 226 Southern Inland

Owner: California American Water

Aquifer Unit: QTc/Tsm

Well Type: Producer

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/31/2024	437	545.92	108.92	Well On
11/28/2024	428.6	545.92	117.32	Well On
12/26/2024	379.4	545.92	166.52	
01/30/2025	380.5	545.92	165.42	
02/27/2025	434	545.92	111.92	Well On
03/27/2025	376.2	545.92	169.72	
04/24/2025	430	545.92	115.92	Well On
05/29/2025	381	545.92	164.92	
06/26/2025	435	545.92	110.92	Well On

07/31/2025	434	545.92	111.92	Well On
08/28/2025	384	545.92	161.92	
09/25/2025	430	545.92	115.92	Well On

Bishop #1 (west) Watermaster No. 209 Southern Inland

Owner: California American Water Aquifer Unit: QTc/Tsm

Well Type: Producer All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/31/2024	247	398.81	151.81	
11/28/2024	247	398.81	151.81	
12/26/2024	245.5	398.81	153.31	

Bishop #3 Watermaster No. 262 Southern Inland

Owner: CAW Aquifer Unit:

Well Type: Producer All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/31/2024	252	420.58	168.58	
11/28/2024	250.1	420.58	170.48	

Blue Larkspur-East End Watermaster No. 143 Southern Inland

Owner: Laguna Seca Resorts Aquifer Unit:

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	115.85	253.29	137.44	
03/27/2025	114.9	253.29	138.39	
06/18/2025	114.61	253.29	138.68	
09/24/2025	115.32	253.29	137.97	

CalAm Granite Construction Watermaster No. 242 Southern Inland

Owner: California American Water Aquifer Unit: Tsm

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	134.92	226.43	91.51	

03/28/2025	134.8	226.43	91.63	
06/18/2025	134.84	226.43	91.59	
09/23/2025	134.8	226.43	91.63	

Camp Huffman (D) Watermaster No. 250 Salinas Valley, Monterey

Owner: Seaside Groundwater Basin Watermas

Aquifer Unit:

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/24/2024	412.05	401.21	-10.84	
11/26/2024	410.83	401.21	-9.62	
01/02/2025	409.93	401.21	-8.72	
01/28/2025	409.8	401.21	-8.59	
02/27/2025	407.46	401.21	-6.25	
03/26/2025	405.92	401.21	-4.71	
04/24/2025	407.61	401.21	-6.40	
05/27/2025	408.13	401.21	-6.92	
06/26/2025	409.5	401.21	-8.29	
07/24/2025	411.22	401.21	-10.01	
08/27/2025	411	401.21	-9.79	
09/24/2025	413.33	401.21	-12.12	

Camp Huffman (S) Watermaster No. 249 Salinas Valley, Monterey

Owner: Seaside Groundwater Basin Watermas

Aquifer Unit:

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/23/2024	411.91	401.21	-10.70	
11/26/2024	411.55	401.21	-10.34	
01/02/2025	410.15	401.21	-8.94	
01/28/2025	409.65	401.21	-8.44	

02/27/2025	409.07	401.21	-7.86
03/26/2025	408.74	401.21	-7.53
04/24/2025	409.41	401.21	-8.20
05/27/2025	410.8	401.21	-9.59
06/26/2025	411.97	401.21	-10.76
07/24/2025	412.99	401.21	-11.78
08/27/2025	413.96	401.21	-12.75
09/24/2025	414.49	401.21	-13.28

CDM MW#4 Watermaster No. 238 Southern Coastal

Owner: MPWMD

Aquifer Unit: Qod

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/02/2024	14.89	18.69	3.80	
10/02/2024	14.89	18.69	3.80	
11/07/2024	14.78	18.69	3.91	
11/26/2024	14.55	18.69	4.14	
01/02/2025	14.14	18.69	4.55	
01/28/2025	13.88	18.69	4.81	
02/28/2025	13.92	18.69	4.77	
03/27/2025	14.07	18.69	4.62	
04/24/2025	14.81	18.69	3.88	
05/27/2025	14.98	18.69	3.71	
06/27/2025	15.23	18.69	3.46	
07/24/2025	15.53	18.69	3.16	
08/28/2025	15.31	18.69	3.38	
09/24/2025	14.93	18.69	3.76	

CDM MW-1 Watermaster No. 251 Northern Coastal

Owner: MPWMD Aquifer Unit: Qod/Qar

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/29/2024	90.12	93.53	3.41	
12/04/2024	89.38	93.53	4.15	
01/03/2025	88.39	93.53	5.14	
01/31/2025	89.54	93.53	3.99	
03/03/2025	88.48	93.53	5.05	
03/26/2025	88.66	93.53	4.87	
04/24/2025	89.1	93.53	4.43	
05/28/2025	89.29	93.53	4.24	
06/27/2025	89.5	93.53	4.03	
07/28/2025	90.2	93.53	3.33	
09/02/2025	90.25	93.53	3.28	

CDM MW-2 Watermaster No. 252 Northern Coastal

Owner: MPWMD Aquifer Unit: Qod/Qar

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/29/2024	60.71	63.86	3.15	
12/04/2024	60.12	63.86	3.74	
01/03/2025	58.8	63.86	5.06	
01/31/2025	60.51	63.86	3.35	
03/03/2025	58.8	63.86	5.06	
03/26/2025	59.06	63.86	4.80	
04/24/2025	59.71	63.86	4.15	
05/28/2025	59.96	63.86	3.90	

06/27/2025	60.15	63.86	3.71	
07/28/2025	61.25	63.86	2.61	
09/02/2025	61.27	63.86	2.59	

CDM MW-3 Watermaster No. 239 Southern Coastal

Owner: MPWMD Aquifer Unit: Qod/Qar

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/02/2024	32.2	33.81	1.61	
10/02/2024	32.2	33.81	1.61	
11/07/2024	31.51	33.81	2.30	
11/26/2024	32.01	33.81	1.80	
01/02/2025	31.05	33.81	2.76	
01/28/2025	31.81	33.81	2.00	
02/28/2025	30.04	33.81	3.77	
03/27/2025	31.21	33.81	2.60	
04/24/2025	31.56	33.81	2.25	
05/27/2025	33.11	33.81	0.70	
06/27/2025	32.17	33.81	1.64	
07/24/2025	32.52	33.81	1.29	
08/28/2025	32.75	33.81	1.06	
09/24/2025	38.28	33.81	-4.47	

Cypress Pacific Production Watermaster No. 150 Southern Coastal

Owner: Paul Bruno Aquifer Unit: QTc

Well Type: Producer All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
11/07/2024	47.33	50.23	2.90	
11/26/2024	47.08	50.23	3.15	

01/02/2025	46.39	50.23	3.84	
01/28/2025	46.48	50.23	3.75	well disconnected
02/28/2025	46.39	50.23	3.84	
03/27/2025	46.45	50.23	3.78	
04/24/2025	46.93	50.23	3.30	
05/27/2025	46.97	50.23	3.26	
06/27/2025	47.23	50.23	3.00	
07/24/2025	47.48	50.23	2.75	
08/28/2025	47.58	50.23	2.65	
09/24/2025	47.42	50.23	2.81	

Del Monte Test Watermaster No. 231 Northern Coastal

Owner: California American Water

Aquifer Unit: QTc

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/31/2024	28	32.62	4.62	
11/28/2024	28.8	32.62	3.82	
12/26/2024	29	32.62	3.62	
01/30/2025	29	32.62	3.62	
02/27/2025	28	32.62	4.62	
03/27/2025	28.5	32.62	4.12	
04/24/2025	27.5	32.62	5.12	
05/29/2025	29.8	32.62	2.82	
06/26/2025	28.5	32.62	4.12	
07/31/2025	29	32.62	3.62	
08/28/2025	30	32.62	2.62	
09/25/2025	25.5	32.62	7.12	

Design Ctr. Watermaster No. 167 Southern Coastal

Owner: City of Sand City

Aquifer Unit: Qod/Qar/QTc

Well Type: Producer

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/25/2024	13.68	21.31	7.63	
12/04/2024	13.75	21.31	7.56	
01/03/2025	13.6	21.31	7.71	
01/30/2025	13.7	21.31	7.61	
02/28/2025	13.52	21.31	7.79	
03/27/2025	14.47	21.31	6.84	
04/25/2025	13.6	21.31	7.71	
05/27/2025	13.5	21.31	7.81	
06/27/2025	13.8	21.31	7.51	
07/24/2025	13.95	21.31	7.36	
08/29/2025	14.17	21.31	7.14	
09/24/2025	14.1	21.31	7.21	

FO-01-Deep Watermaster No. 116 Northern Inland

Owner: MPWMD

Aquifer Unit: Tm

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	342.44	365.57	23.13	
03/26/2025	342.05	365.57	23.52	
06/18/2025	342.07	365.57	23.50	
09/24/2025	342.23	365.57	23.34	

FO-01-Shallow Watermaster No. 115 Northern Inland

Owner: MPWMD Aquifer Unit: QTc

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	204.07	362.61	158.54	
03/26/2025	204.1	362.61	158.51	
06/18/2025	204.07	362.61	158.54	
09/24/2025	203.97	362.61	158.64	

FO-03-Deep Watermaster No. 127 Southern Inland

Owner: MPWMD Aquifer Unit: Tsm

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	637.73	774.74	137.01	
03/26/2025		774.74		reachedbottom of well near 640. no water detected
06/17/2025	615.34	774.74	159.40	
09/29/2025	636.8	774.74	137.94	

FO-04-Deep (W) Watermaster No. 130 Southern Inland

Owner: MPWMD Aquifer Unit: Tsm

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/02/2024	115.42	167.44	52.02	
10/02/2024	115.42	167.44	52.02	
10/23/2024	115.77	167.44	51.67	
12/03/2024	115.41	167.44	52.03	
01/03/2025	115.61	167.44	51.83	
01/30/2025	116.06	167.44	51.38	
03/03/2025	116.35	167.44	51.09	
03/26/2025	116.44	167.44	51.00	

04/24/2025	116.44	167.44	51.00
05/28/2025	116.32	167.44	51.12
06/26/2025	116.75	167.44	50.69
07/29/2025	116.99	167.44	50.45
08/28/2025	117.15	167.44	50.29
09/24/2025	117.3	167.44	50.14

FO-04-Shallow (E) Watermaster No. 129 Southern Inland

Owner: MPWMD

Aquifer Unit: QTc

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/02/2024	114.52	168.23	53.71	
10/02/2024	114.52	168.23	53.71	
10/23/2024	115.47	168.23	52.76	
12/03/2024	114.65	168.23	53.58	
01/03/2025	115.4	168.23	52.83	
01/30/2025	116	168.23	52.23	
03/03/2025	116.32	168.23	51.91	
03/26/2025	116.35	168.23	51.88	
04/24/2025	115.98	168.23	52.25	
05/28/2025	116.14	168.23	52.09	
06/26/2025	116.69	168.23	51.54	
07/29/2025	117.02	168.23	51.21	
08/28/2025	117.18	168.23	51.05	
09/24/2025	117.29	168.23	50.94	

FO-05-Deep Watermaster No. 132 Southern Inland

Owner: MPWMD Aquifer Unit: Tsm

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	322.98	479.29	156.31	
03/26/2025	321.69	479.29	157.60	
06/16/2025	324.16	479.29	155.13	
09/25/2025	325.05	479.29	154.24	

FO-05-Shallow Watermaster No. 131 Southern Inland

Owner: MPWMD Aquifer Unit: QTc

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	255.06	478.97	223.91	
03/26/2025	254.26	478.97	224.71	
06/16/2025	258.56	478.97	220.41	
09/25/2025	259.5	478.97	219.47	

FO-06-Deep Watermaster No. 134 Southern Inland

Owner: MPWMD Aquifer Unit: Tsm

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	233.66	470.63	236.97	
03/26/2025	232.1	470.63	238.53	
06/16/2025	234.14	470.63	236.49	
09/25/2025	235.45	470.63	235.18	

FO-06-Shallow Watermaster No. 133 Southern Inland

Owner: MPWMD Aquifer Unit: QTc

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	243.41	470.13	226.72	

03/26/2025	243.35	470.13	226.78	
06/16/2025	244.64	470.13	225.49	
09/25/2025	245.3	470.13	224.83	

FO-07-Deep Watermaster No. 119 Northern Inland

Owner: MPWMD

Aquifer Unit: Tsm

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/23/2024	491.23	470.15	-21.08	
11/26/2024	486.15	470.15	-16.00	
01/02/2025	485.06	470.15	-14.91	
01/28/2025	486.13	470.15	-15.98	
02/27/2025	478.45	470.15	-8.30	
03/26/2025	475.76	470.15	-5.61	
04/24/2025	483.82	470.15	-13.67	
05/27/2025	483.25	470.15	-13.10	
06/26/2025	487.47	470.15	-17.32	
07/24/2025	491.01	470.15	-20.86	
08/27/2025	486.55	470.15	-16.40	
09/24/2025	494.76	470.15	-24.61	

FO-07-Shallow Watermaster No. 118 Northern Inland

Owner: MPWMD

Aquifer Unit: QTc

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/23/2024	463.47	473.44	9.97	
11/26/2024	463.24	473.44	10.20	
01/02/2025	462.79	473.44	10.65	
01/28/2025	462.49	473.44	10.95	

02/27/2025	462.18	473.44	11.26
03/26/2025	461.87	473.44	11.57
04/24/2025	461.64	473.44	11.80
05/27/2025	461.94	473.44	11.50
06/26/2025	462.27	473.44	11.17
07/24/2025	462.62	473.44	10.82
08/27/2025	463.02	473.44	10.42
09/24/2025	463.21	473.44	10.23

FO-08-Deep Watermaster No. 121 Northern Inland

Owner: MPWMD Aquifer Unit: Tsm

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/02/2024	395.03	378.1	-16.93	
10/02/2024	395.03	378.1	-16.93	
10/23/2024	398.55	378.1	-20.45	
12/04/2024	394.3	378.1	-16.20	
01/02/2025	393.33	378.1	-15.23	
01/31/2025	395.39	378.1	-17.29	
03/06/2025	390.6	378.1	-12.50	
03/28/2025	385.4	378.1	-7.30	
04/24/2025	391.31	378.1	-13.21	
05/27/2025	391.37	378.1	-13.27	
06/26/2025	395.05	378.1	-16.95	
07/24/2025	398.54	378.1	-20.44	
08/29/2025	397.9	378.1	-19.80	
09/24/2025	402.56	378.1	-24.46	

FO-08-Shallow Watermaster No. 120 Northern Inland

Owner: MPWMD Aquifer Unit: QTc

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/02/2024	385.65	378.04	-7.61	
10/02/2024	385.65	378.04	-7.61	
10/23/2024	385.79	378.04	-7.75	
12/04/2024	385.14	378.04	-7.10	
01/02/2025	384.56	378.04	-6.52	
01/31/2025	383.96	378.04	-5.92	
03/06/2025	383.44	378.04	-5.40	
03/28/2025	382.94	378.04	-4.90	
04/24/2025	383.11	378.04	-5.07	
05/27/2025	383.83	378.04	-5.79	
06/26/2025	384.6	378.04	-6.56	
07/24/2025	385.38	378.04	-7.34	
08/29/2025	386.12	378.04	-8.08	
09/24/2025	386.54	378.04	-8.50	

FO09(S)2023 Watermaster No. 331

Owner: Aquifer Unit:

Well Type: All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/23/2024	163.49	168	4.51	
12/02/2024	163.12	168	4.88	
01/02/2025	162.76	168	5.24	
01/29/2025	162.38	168	5.62	
02/28/2025	161.99	168	6.01	

03/27/2025	161.74	168	6.26	
04/24/2025	161.59	168	6.41	
05/28/2025	161.76	168	6.24	
06/26/2025	162.07	168	5.93	
07/24/2025	162.37	168	5.63	
08/27/2025	162.55	168	5.45	
09/25/2025	162.7	168	5.30	

FO-09-Deep Watermaster No. 112 Northern Coastal

Owner: MPWMD

Aquifer Unit: Tsm

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/23/2024	142.23	118.85	-23.38	
12/02/2024	137.28	118.85	-18.43	
01/02/2025	135.89	118.85	-17.04	
01/29/2025	136.68	118.85	-17.83	
02/28/2025	130.17	118.85	-11.32	
03/26/2025	127.9	118.85	-9.05	water almost certainly going into the well
04/24/2025	133.22	118.85	-14.37	
05/28/2025	134.59	118.85	-15.74	
06/26/2025	138.77	118.85	-19.92	
07/24/2025	142.58	118.85	-23.73	
08/27/2025	142.75	118.85	-23.90	
09/24/2025	147.54	118.85	-28.69	

FO-10-Deep

Watermaster No. 114

Northern Coastal

Owner: MPWMD

Aquifer Unit: Tp

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/23/2024	214.34	201.03	-13.31	
12/02/2024	213.25	201.03	-12.22	
01/02/2025	211.71	201.03	-10.68	
01/29/2025	213.67	201.03	-12.64	
02/27/2025	211.29	201.03	-10.26	
03/26/2025	209.52	201.03	-8.49	
04/24/2025	212.36	201.03	-11.33	
05/27/2025	213.22	201.03	-12.19	
06/26/2025	215.05	201.03	-14.02	
07/28/2025	217.41	201.03	-16.38	
09/24/2025		201.03		No Longer visiting

FO-10-Shallow

Watermaster No. 113

Northern Coastal

Owner: MPWMD

Aquifer Unit: QTc

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/23/2024	215.08	200.85	-14.23	
12/02/2024	214.03	200.85	-13.18	
01/02/2025	212.93	200.85	-12.08	
01/29/2025	212.71	200.85	-11.86	
02/27/2025	211.79	200.85	-10.94	
03/26/2025	210.92	200.85	-10.07	
04/24/2025	212.1	200.85	-11.25	
05/27/2025	213.1	200.85	-12.25	

06/26/2025	214.35	200.85	-13.50	
07/28/2025	215.45	200.85	-14.60	
09/24/2025		200.85		No Longer visiting

FO-11-Deep Watermaster No. 123 Northern Inland

Owner: MPWMD Aquifer Unit: Tp

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/24/2024	347.63	332.96	-14.67	
11/26/2024	346.65	332.96	-13.69	
01/02/2025	344.27	332.96	-11.31	
01/29/2025	343.44	332.96	-10.48	
02/28/2025	342.47	332.96	-9.51	
03/26/2025	341.86	332.96	-8.90	
04/24/2025	342.96	332.96	-10.00	
05/27/2025	345.09	332.96	-12.13	
06/26/2025	347.05	332.96	-14.09	
07/24/2025	348.28	332.96	-15.32	
08/29/2025	349.72	332.96	-16.76	
09/24/2025	350.4	332.96	-17.44	

FO-11-Shallow Watermaster No. 122 Northern Inland

Owner: MPWMD Aquifer Unit: QTc

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/24/2024	367.73	332.93	-34.80	
11/26/2024	366.67	332.93	-33.74	
01/02/2025	364.83	332.93	-31.90	
01/29/2025	364.08	332.93	-31.15	

02/28/2025	363.15	332.93	-30.22
03/26/2025	362.58	332.93	-29.65
04/24/2025	363.45	332.93	-30.52
05/27/2025	365.04	332.93	-32.11
06/26/2025	366.67	332.93	-33.74
07/24/2025	368.1	332.93	-35.17
08/29/2025	369.84	332.93	-36.91
09/24/2025	369.92	332.93	-36.99

Hilby MGT Watermaster No. 244 Southern Coastal

Owner: California American Water Aquifer Unit: QTc

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/28/2024	249.35	248.04	-1.31	
10/31/2024	242	248.04	6.04	
11/28/2024	242.3	248.04	5.74	
12/26/2024	241	248.04	7.04	
01/30/2025	242	248.04	6.04	
02/05/2025	248.9	248.04	-0.86	
02/27/2025	243	248.04	5.04	
03/27/2025	242	248.04	6.04	
04/24/2025	242.8	248.04	5.24	
05/29/2025	244.2	248.04	3.84	
06/26/2025	241.2	248.04	6.84	
07/15/2025	248.1	248.04	-0.06	
07/31/2025	242	248.04	6.04	
08/28/2025	241	248.04	7.04	
09/25/2025	244.6	248.04	3.44	

Justin Court Watermaster No. 135 Southern Inland

Owner: California American Water Aquifer Unit: QTc

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	142.64	240.28	97.64	
03/28/2025	142.65	240.28	97.63	
06/18/2025	142.5	240.28	97.78	
09/23/2025	142.47	240.28	97.81	

K-Mart Watermaster No. 125 Southern Coastal

Owner: MPWMD Aquifer Unit: Qod/Qar

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/02/2024	22.1	30.65	8.55	
10/02/2024	22.1	30.65	8.55	
10/28/2024	22.2	30.65	8.45	
12/04/2024	23.1	30.65	7.55	
01/03/2025		30.65		Inaccesible
01/30/2025	22.97	30.65	7.68	
03/03/2025	22.62	30.65	8.03	
03/27/2025	22.5	30.65	8.15	
04/24/2025	22.64	30.65	8.01	
05/30/2025	21.91	30.65	8.74	
06/27/2025	23	30.65	7.65	
07/29/2025	22.38	30.65	8.27	
08/28/2025	23.4	30.65	7.25	
09/26/2025	22.53	30.65	8.12	

LS Golf Old #12 Watermaster No. 144 Southern Inland

Owner: Laguna Seca Resorts Aquifer Unit: QTc/Tsm

Well Type: Producer All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
09/24/2025	233.33	368.02	134.69	

LS No. 1 Subdivision Watermaster No. 142 Southern Inland

Owner: Laguna Seca Resorts Aquifer Unit: Tsm

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	139.07	277.13	138.06	
03/27/2025	138.15	277.13	138.98	
06/18/2025	137.65	277.13	139.48	
09/24/2025	138.56	277.13	138.57	

LS Pistol Range Watermaster No. 136 Southern Inland

Owner: County of Monterey Aquifer Unit: Tsm

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	286.48	514.39	227.91	
03/26/2025	285.85	514.39	228.54	
06/16/2025	285.63	514.39	228.76	
09/29/2025	285.4	514.39	228.99	

LSRA #1 Watermaster No. 197 Southern Inland

Owner: Monterey County Parks Department Aquifer Unit: QTc

Well Type: Producer All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/09/2024	195	392.72	197.72	
11/04/2024	191	392.72	201.72	
12/04/2024	280	392.72	112.72	
01/06/2025	190	392.72	202.72	

02/03/2025	191	392.72	201.72
03/05/2025	280	392.72	112.72
04/03/2025	212	392.72	180.72
05/07/2025	203	392.72	189.72
06/10/2025	203	392.72	189.72
07/02/2025	204	392.72	188.72
08/05/2025	189	392.72	203.72
09/08/2025	201	392.72	191.72

Luxton Watermaster No. 243 Northern Coastal

Owner: California American Water

Aquifer Unit: QTc

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/28/2024	90.8	89.12	-1.68	
10/31/2024	92	89.12	-2.88	
11/28/2024	89.1	89.12	0.02	
12/26/2024	93	89.12	-3.88	
01/30/2025	88	89.12	1.12	
01/31/2025	89.58	89.12	-0.46	
02/27/2025	88	89.12	1.12	
03/27/2025	88	89.12	1.12	
04/24/2025	86.5	89.12	2.62	
05/29/2025	86.1	89.12	3.02	
06/26/2025	86.2	89.12	2.92	
07/15/2025	88.08	89.12	1.04	
07/31/2025	86.9	89.12	2.22	
08/28/2025	88.5	89.12	0.62	
09/25/2025	88.3	89.12	0.82	

Luzern #2 Watermaster No. 159 Northern Coastal

Owner: California American Water

Aquifer Unit: QTc/Tsm

Well Type: Producer

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/31/2024	193	156.99	-36.01	Well On
11/28/2024	177.3	156.99	-20.31	
12/26/2024		156.99		No Reading - Blocked
02/27/2025	169	156.99	-12.01	
03/27/2025	171	156.99	-14.01	
04/24/2025	168.5	156.99	-11.51	
05/29/2025	166.5	156.99	-9.51	
06/26/2025	185.4	156.99	-28.41	Well On
07/31/2025	172.7	156.99	-15.71	
08/28/2025	188.8	156.99	-31.81	Well On
09/25/2025	190	156.99	-33.01	Well On

Military Watermaster No. 151 Northern Coastal

Owner: California American Water

Aquifer Unit: QTc

Well Type: Producer

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/28/2024	159.7	135.8	-23.90	
10/31/2024	158	135.8	-22.20	
11/28/2024	154.5	135.8	-18.70	
12/26/2024	157	135.8	-21.20	
01/30/2025	152	135.8	-16.20	
01/31/2025	154.57	135.8	-18.77	
02/27/2025	152	135.8	-16.20	
03/27/2025	149	135.8	-13.20	

04/24/2025	147.7	135.8	-11.90	
05/29/2025	147.6	135.8	-11.80	
06/26/2025	151.6	135.8	-15.80	
07/15/2025	154.48	135.8	-18.68	
07/31/2025	153.3	135.8	-17.50	
08/28/2025	157	135.8	-21.20	
09/25/2025	159.2	135.8	-23.40	

MMP monitor Watermaster No. 154 Northern Coastal

Owner: Mission Memorial Park

Aquifer Unit: QTc

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
11/18/2024	382.74	315.42	-67.32	
12/02/2024	332	315.42	-16.58	
01/02/2025	329.91	315.42	-14.49	
01/29/2025	332.37	315.42	-16.95	
03/06/2025	326.52	315.42	-11.10	
03/28/2025	315.74	315.42	-0.32	
04/25/2025	327.1	315.42	-11.68	
06/02/2025	328.72	315.42	-13.30	
06/30/2025	333.1	315.42	-17.68	
07/28/2025	340.51	315.42	-25.09	
08/28/2025	341.85	315.42	-26.43	
09/24/2025	347.09	315.42	-31.67	

MSC - Shallow Watermaster No. 101 Northern Coastal

Owner: MPWMD

Aquifer Unit: QTc

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/25/2024	79.01	80.1	1.09	
12/02/2024	78.64	80.1	1.46	
01/03/2025	77.65	80.1	2.45	
01/28/2025	76.9	80.1	3.20	
02/28/2025	76.89	80.1	3.21	
03/27/2025	77.73	80.1	2.37	
04/25/2025	77.48	80.1	2.62	
05/27/2025	77.3	80.1	2.80	
06/27/2025	76.36	80.1	3.74	
07/24/2025	78.47	80.1	1.63	
08/22/2025	78.17	80.1	1.93	from quarterly sample
09/24/2025	78.35	80.1	1.75	

MSC-Deep Watermaster No. 102 Northern Coastal

Owner: MPWMD

Aquifer Unit: Tsm

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/25/2024	99.83	80.29	-19.54	downloaded data
12/02/2024	97.05	80.29	-16.76	
01/03/2025	94.64	80.29	-14.35	
01/28/2025	93.98	80.29	-13.69	dld and restarted logger
02/28/2025	90.41	80.29	-10.12	dld and restarted logger
03/27/2025	88.76	80.29	-8.47	
04/25/2025	91.93	80.29	-11.64	

05/27/2025	93.11	80.29	-12.82	
06/27/2025	96.55	80.29	-16.26	
07/24/2025	99.01	80.29	-18.72	
08/22/2025	99.1	80.29	-18.81	from quarterly sample
09/24/2025	103.07	80.29	-22.78	

MW-BW-08-A Watermaster No. 240 Southern Coastal

Owner: U.S.A. Fort Ord

Aquifer Unit: Qod/Qar

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/25/2024	60.85	205.18	144.33	
12/02/2024	60.95	205.18	144.23	
01/03/2025	61	205.18	144.18	
01/30/2025	61	205.18	144.18	
02/28/2025	60.87	205.18	144.31	
03/27/2025	60.81	205.18	144.37	
04/28/2025	60.85	205.18	144.33	
05/28/2025	60.8	205.18	144.38	
06/27/2025	60.82	205.18	144.36	
07/29/2025	60.96	205.18	144.22	
08/28/2025	60.95	205.18	144.23	
09/24/2025	60.94	205.18	144.24	

MW-BW-09-180 Watermaster No. 241 Southern Coastal

Owner: U.S.A. Fort Ord

Aquifer Unit: QTc

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/25/2024	208.8	206.22	-2.58	
12/02/2024	208.74	206.22	-2.52	

01/03/2025	208.55	206.22	-2.33
01/30/2025	208.5	206.22	-2.28
02/28/2025	208.15	206.22	-1.93
03/27/2025	208.1	206.22	-1.88
04/28/2025	208.13	206.22	-1.91
05/28/2025	207.86	206.22	-1.64
06/27/2025	207.7	206.22	-1.48
07/29/2025	207.81	206.22	-1.59
08/28/2025	207.56	206.22	-1.34
09/24/2025	207.43	206.22	-1.21

Ord Grove #2 Watermaster No. 153 Northern Coastal

Owner: California American Water

Aquifer Unit: QTc/Tsm

Well Type: Producer

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/31/2024	360	292.39	-67.61	Well On
11/28/2024	357	292.39	-64.61	Well On
12/26/2024	339	292.39	-46.61	Well On
01/30/2025	346	292.39	-53.61	Well On
02/27/2025	350	292.39	-57.61	Well On
03/27/2025	342	292.39	-49.61	Well On
04/24/2025	308.4	292.39	-16.01	
05/29/2025	301.3	292.39	-8.91	
06/26/2025	345	292.39	-52.61	Well On
07/31/2025	347.7	292.39	-55.31	Well On
08/28/2025	355	292.39	-62.61	Well On
09/25/2025	351.2	292.39	-58.81	Well On

Ord Grove Test Watermaster No. 107 Northern Coastal

Owner: California American Water

Aquifer Unit: QTc/Tsm

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/24/2024	331.06	294	-37.06	
10/31/2024	326	294	-32.00	
11/28/2024	324	294	-30.00	
12/02/2024	322.5	294	-28.50	
12/26/2024	328	294	-34.00	
01/02/2025	324.66	294	-30.66	
01/29/2025	326.66	294	-32.66	
01/30/2025	323	294	-29.00	
02/27/2025	319	294	-25.00	
03/03/2025	323.3	294	-29.30	
03/27/2025	317.5	294	-23.50	
03/28/2025	320.4	294	-26.40	
04/24/2025	308.3	294	-14.30	
04/25/2025	309.8	294	-15.80	
05/29/2025	301.5	294	-7.50	
05/30/2025	322.09	294	-28.09	
06/26/2025	320.9	294	-26.90	
06/26/2025	325	294	-31.00	production well on
07/28/2025	326.68	294	-32.68	
07/31/2025	323.7	294	-29.70	
08/28/2025	327.4	294	-33.40	
08/28/2025	327.4	294	-33.40	
09/25/2025	329.8	294	-35.80	

09/25/2025	332.38	294	-38.38

Ord Terrace-Shallow Watermaster No. 109 Northern Coastal

Owner: MPWMD Aquifer Unit: Tsm (upper)

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/24/2024	254.12	228.65	-25.47	
12/02/2024	250.57	228.65	-21.92	
01/02/2025	248.74	228.65	-20.09	
01/29/2025	250.07	228.65	-21.42	
03/03/2025	247.45	228.65	-18.80	
03/28/2025	244.24	228.65	-15.59	
04/25/2025	244.8	228.65	-16.15	
05/30/2025	244.23	228.65	-15.58	
06/26/2025	247.65	228.65	-19.00	
07/28/2025	250.77	228.65	-22.12	
08/28/2025	251.32	228.65	-22.67	
09/24/2025	255.51	228.65	-26.86	

Paddock 16 Watermaster No. 102882

Owner: Aquifer Unit:

Well Type: Producer All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/14/2024	275.64	352.69	77.05	Well On
10/14/2024	275.64	352.69	77.05	Well On
10/28/2024	224.55	352.69	128.14	
12/04/2024	220	352.69	132.69	
01/03/2025	217.25	352.69	135.44	
02/10/2025	214.9	352.69	137.79	

03/03/2025	214.2	352.69	138.49	
04/07/2025	212.15	352.69	140.54	
05/02/2025	272.56	352.69	80.13	Well On
06/09/2025	276.63	352.69	76.06	Well On
06/30/2025	277.8	352.69	74.89	Well On
08/05/2025	289.86	352.69	62.83	Well On
09/04/2025	281.5	352.69	71.19	Well On
09/25/2025	280.28	352.69	72.41	Well On

Paralta Watermaster No. 169 Northern Coastal

Owner: California American Water Aquifer Unit: QTc/Tsm

Well Type: Producer All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/31/2024	372	324.49	-47.51	Well On
11/28/2024	350	324.49	-25.51	Well On
12/26/2024	351	324.49	-26.51	Well On
01/30/2025	371	324.49	-46.51	Well On
02/27/2025	346	324.49	-21.51	Well On
03/27/2025	348	324.49	-23.51	Well On
04/24/2025	350.9	324.49	-26.41	Well On
05/29/2025	351	324.49	-26.51	Well On
06/26/2025	355	324.49	-30.51	Well On
07/31/2025	351	324.49	-26.51	Well On
08/28/2025	355	324.49	-30.51	Well On
09/25/2025	352	324.49	-27.51	Well On

Paralta Test Well Watermaster No. 108 Northern Coastal

Owner: MPWMD Aquifer Unit: QTc/Tsm

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/23/2024	355	330.72	-24.28	Paralta running at 995 gpm
10/31/2024	350	330.72	-19.28	
11/28/2024	351	330.72	-20.28	
12/03/2024	351	330.72	-20.28	
12/26/2024	351	330.72	-20.28	
01/02/2025	353	330.72	-22.28	
01/28/2025	355	330.72	-24.28	
01/30/2025	356	330.72	-25.28	
02/27/2025	352	330.72	-21.28	
02/27/2025	346	330.72	-15.28	
03/26/2025	344	330.72	-13.28	pumping at 1104
03/27/2025	346	330.72	-15.28	
04/24/2025	346	330.72	-15.28	
04/28/2025	346	330.72	-15.28	production well on at 700 gpm
05/28/2025	350	330.72	-19.28	
06/26/2025	342	330.72	-11.28	
06/27/2025	347	330.72	-16.28	
07/28/2025	359.8	330.72	-29.08	
07/31/2025	340	330.72	-9.28	
08/25/2025	354	330.72	-23.28	
08/28/2025	343	330.72	-12.28	
09/24/2025	349	330.72	-18.28	
09/25/2025	341	330.72	-10.28	

Pasadera Golf - Paddock Watermaster No. 204 Southern Inland

Owner: Pasadera Country Club, LLC Aquifer Unit: QTc/Tsm

Well Type: Producer All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/28/2024	223.67	359.69	136.02	
02/10/2025	213.4	359.69	146.29	
05/02/2025	227.15	359.69	132.54	

PCA East Deep Watermaster No. 106 Northern Coastal

Owner: MPWMD Aquifer Unit: Tsm

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/24/2024	91.65	68.54	-23.11	
12/03/2024	85.79	68.54	-17.25	
01/02/2025	84.52	68.54	-15.98	
01/30/2025	87.02	68.54	-18.48	
02/28/2025	78.77	68.54	-10.23	
03/27/2025	76.4	68.54	-7.86	
04/25/2025	82.05	68.54	-13.51	
05/28/2025	82.65	68.54	-14.11	
06/30/2025	86.4	68.54	-17.86	
08/05/2025	89.31	68.54	-20.77	
08/29/2025	91.38	68.54	-22.84	
09/24/2025	95.75	68.54	-27.21	

PCA Production Watermaster No. 171 Northern Coastal

Owner: Security National Guaranty Inc Aquifer Unit: QTc

Well Type: Producer All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/24/2024	66.55	72.63	6.08	

11/25/2024	66.13	72.63	6.50
12/24/2024	65.03	72.63	7.60
01/25/2025	66.05	72.63	6.58
02/25/2025	67.55	72.63	5.08
03/24/2025	66.5	72.63	6.13
04/24/2025	67.7	72.63	4.93
05/25/2025	67.5	72.63	5.13
06/25/2025	64.42	72.63	8.21
07/25/2025	67.68	72.63	4.95
08/25/2025	66.75	72.63	5.88
09/25/2025	68.25	72.63	4.38

PCA-E Shallow Watermaster No. 105 Northern Coastal

Owner: MPWMD Aquifer Unit: QTc

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/24/2024	65.71	68.51	2.80	
12/03/2024	65.42	68.51	3.09	
01/02/2025	65.37	68.51	3.14	
01/30/2025	65.57	68.51	2.94	
02/28/2025	65.19	68.51	3.32	
03/27/2025	65.13	68.51	3.38	
04/25/2025	64.88	68.51	3.63	
05/28/2025	64.73	68.51	3.78	
06/30/2025	65.2	68.51	3.31	
08/05/2025	65.57	68.51	2.94	
08/29/2025	65.71	68.51	2.80	
09/24/2025	65.81	68.51	2.70	

PCA-W Deep Watermaster No. 104 Northern Coastal

Owner: MPWMD

Aquifer Unit: Tsm

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/02/2024	84.12	65.18	-18.94	meter= 209500
10/02/2024	84.12	65.18	-18.94	meter= 209500
10/29/2024	87.82	65.18	-22.64	
12/04/2024	83.52	65.18	-18.34	
01/03/2025	81	65.18	-15.82	meter = 209500
01/30/2025	83.9	65.18	-18.72	
03/03/2025	77.24	65.18	-12.06	meter = 209500
03/27/2025	73.75	65.18	-8.57	meter = 209500
04/25/2025	78.7	65.18	-13.52	meter = 209500
05/30/2025	80.22	65.18	-15.04	
06/27/2025	83.36	65.18	-18.18	meter = 209500
07/24/2025	86.81	65.18	-21.63	
08/25/2025	87.72	65.18	-22.54	
09/24/2025	92.03	65.18	-26.85	

PCA-W Shallow Watermaster No. 103 Northern Coastal

Owner: MPWMD

Aquifer Unit: QTc

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/02/2024	62.4	64.22	1.82	
10/02/2024	62.4	64.22	1.82	
10/29/2024	62.98	64.22	1.24	
12/04/2024	62.01	64.22	2.21	
01/03/2025	61.53	64.22	2.69	

01/30/2025	62.29	64.22	1.93
03/03/2025	61.59	64.22	2.63
03/27/2025	61.28	64.22	2.94
04/25/2025	61.35	64.22	2.87
05/30/2025	61.45	64.22	2.77
06/27/2025	61.82	64.22	2.40
07/24/2025	62.12	64.22	2.10
08/25/2025	62.19	64.22	2.03
09/24/2025	62.47	64.22	1.75

Playa #3 Watermaster No. 162 Northern Coastal

Owner: California American Water

Aquifer Unit: QTc

Well Type: Producer

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/31/2024	49	53.02	4.02	
11/28/2024	50.8	53.02	2.22	
12/26/2024	154	53.02	-100.98	Well On
01/30/2025	157	53.02	-103.98	Well On
02/27/2025	158	53.02	-104.98	Well On
03/27/2025	159	53.02	-105.98	Well On
04/24/2025	54.4	53.02	-1.38	
05/29/2025	52.7	53.02	0.32	
06/26/2025	57.7	53.02	-4.68	
07/31/2025	151	53.02	-97.98	Well On
08/28/2025	157.8	53.02	-104.78	Well On
09/25/2025	167	53.02	-113.98	Well On

Plumas #4 Watermaster No. 177 Southern Coastal

Owner: California American Water

Aquifer Unit: Tsm

Well Type: Producer

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/31/2024	245	161.48	-83.52	Well On
11/28/2024	115.4	161.48	46.08	
12/26/2024	245	161.48	-83.52	Well On
01/30/2025	252	161.48	-90.52	Well On
02/27/2025	252	161.48	-90.52	Well On
03/27/2025	255	161.48	-93.52	Well On
04/24/2025	114.6	161.48	46.88	
05/29/2025	255.7	161.48	-94.22	Well On
06/26/2025	255	161.48	-93.52	Well On
07/31/2025	258	161.48	-96.52	Well On
08/28/2025	254	161.48	-92.52	Well On
09/25/2025	254	161.48	-92.52	Well On

Plumas Test 1990 Watermaster No. 124 Southern Coastal

Owner: MPWMD

Aquifer Unit: Tsm

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/25/2024	109.84	157.83	47.99	
12/03/2024	109.5	157.83	48.33	
01/03/2025	109.81	157.83	48.02	
01/30/2025	110.31	157.83	47.52	
03/03/2025	110.68	157.83	47.15	
03/27/2025	110.8	157.83	47.03	
04/28/2025	110.73	157.83	47.10	

05/30/2025	110.6	157.83	47.23	
06/27/2025	111.07	157.83	46.76	
07/29/2025	111.42	157.83	46.41	
08/28/2025	111.61	157.83	46.22	
09/24/2025	111.82	157.83	46.01	

Robley Deep (South) Watermaster No. 140 Southern Inland

Owner: County of Monterey Aquifer Unit: Tsm

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	397.97	566.44	168.47	
03/26/2025	395.54	566.44	170.90	
06/16/2025	399.42	566.44	167.02	
09/23/2025	400.88	566.44	165.56	

Robley Shallow (North) Watermaster No. 139 Southern Inland

Owner: County of Monterey Aquifer Unit: QTc

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	321.49	566.54	245.05	
03/26/2025	320.43	566.54	246.11	
06/16/2025	321.83	566.54	244.71	
09/23/2025	324.06	566.54	242.48	

Sand City Corp Yard Watermaster No. 165 Southern Coastal

Owner: City of Sand City Aquifer Unit: Qod/Qar/QTc

Well Type: Producer All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/25/2024	42.3	47.25	4.95	meter = 472460
12/04/2024	44.8	47.25	2.45	well on. meter= 51237
01/03/2025	41.57	47.25	5.68	meter = 537890

01/30/2025	41.86	47.25	5.39	meter = 558850
02/28/2025	41.58	47.25	5.67	meter 584390
03/27/2025	41.65	47.25	5.60	meter = 608120
04/25/2025	41.85	47.25	5.40	meter = 633940
05/27/2025	42	47.25	5.25	meter = 662760
06/27/2025	48.2	47.25	-0.95	well on. meter = 699360
07/24/2025	42.5	47.25	4.75	
08/29/2025	42.42	47.25	4.83	meter = 768270 gal

Seaside Muni #3 Watermaster No. 174 Northern Coastal

Owner: City of Seaside

Aquifer Unit: QTc, Tsm

Well Type: Producer

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/01/2024	261	307.19	46.19	
11/01/2024	264	307.19	43.19	
12/01/2024	261	307.19	46.19	
01/01/2025	263	307.19	44.19	
02/01/2025	263	307.19	44.19	
03/01/2025	260	307.19	47.19	
04/01/2025	260	307.19	47.19	
05/01/2025	260	307.19	47.19	
06/01/2025	259	307.19	48.19	
07/01/2025	259	307.19	48.19	
08/01/2025	259	307.19	48.19	
09/01/2025	260	307.19	47.19	

Seaside Muni #4 Watermaster No. 173 Northern Coastal

Owner: City of Seaside Aquifer Unit: QTc, Tsm

Well Type: Producer All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/01/2024	333.01	312.12	-20.89	
11/01/2024	332.06	312.12	-19.94	
12/01/2024	330.45	312.12	-18.33	
01/01/2025	325	312.12	-12.88	
02/01/2025	329	312.12	-16.88	
03/01/2025	327	312.12	-14.88	
04/01/2025	325.1	312.12	-12.98	
05/01/2025	326	312.12	-13.88	
06/01/2025	325.7	312.12	-13.58	
07/01/2025	327.2	312.12	-15.08	
08/01/2025	329.2	312.12	-17.08	
09/01/2025	332.1	312.12	-19.98	

Seca Place Watermaster No. 138 Southern Inland

Owner: County of Monterey Aquifer Unit: Tsm

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	268.45	427.58	159.13	
03/26/2025	266	427.58	161.58	
06/17/2025	269.76	427.58	157.82	
09/24/2025	271.5	427.58	156.08	

Sentinel MW #1 Watermaster No. 245 Northern Coastal

Owner: Seaside Groundwater Basin Watermas Aquifer Unit: Tsm/Tp

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/29/2024	118.9	93.03	-25.87	
01/31/2025	114.17	93.03	-21.14	
04/24/2025	110.81	93.03	-17.78	
07/28/2025	120.98	93.03	-27.95	

Sentinel MW #2 Watermaster No. 246 Northern Coastal

Owner: Seaside Groundwater Basin Watermas Aquifer Unit: Tp

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/29/2024	94.51	70.73	-23.78	
12/04/2024	90.72	70.73	-19.99	
01/31/2025	90.47	70.73	-19.74	
04/25/2025	86.95	70.73	-16.22	
07/28/2025	96.57	70.73	-25.84	

Sentinel MW #3 Watermaster No. 247 Northern Coastal

Owner: Seaside Groundwater Basin Watermas Aquifer Unit: Tp

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/29/2024	79.05	56.53	-22.52	
01/31/2025	75.45	56.53	-18.92	
04/24/2025	71.55	56.53	-15.02	
07/28/2025	80.91	56.53	-24.38	

Sentinel MW #4 Watermaster No. 248 Northern Coastal

Owner: Seaside Groundwater Basin Watermas

Aquifer Unit: Tsm/Tp

Well Type: Monitor

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/29/2024	81.71	59.43	-22.28	
01/31/2025	77.74	59.43	-18.31	
04/24/2025	73.51	59.43	-14.08	
07/28/2025	82.02	59.43	-22.59	

Target Well Watermaster No. 152 Northern Coastal

Owner: DBO Development

Aquifer Unit: QTc/Tsm

Well Type: Producer

All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/02/2024	59.53	44.42	-15.11	
10/02/2024	59.53	44.42	-15.11	
11/07/2024	61.31	44.42	-16.89	
11/26/2024	59.98	44.42	-15.56	
01/02/2025	57.89	44.42	-13.47	
01/28/2025	57.64	44.42	-13.22	
02/28/2025	54.03	44.42	-9.61	
03/27/2025	51.75	44.42	-7.33	
05/05/2025	55.25	44.42	-10.83	
05/27/2025	55.67	44.42	-11.25	
06/27/2025	58.4	44.42	-13.98	
07/24/2025	61.34	44.42	-16.92	
08/29/2025	62.03	44.42	-17.61	
09/24/2025	65.53	44.42	-21.11	

York Rd-West Watermaster No. 137 Southern Inland

Owner: County of Monterey Aquifer Unit: Tsm

Well Type: Monitor All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
12/30/2024	320.41	490.28	169.87	
03/27/2025	319.59	490.28	170.69	
06/16/2025	320.61	490.28	169.67	
09/23/2025	321.85	490.28	168.43	

York School 2001 Watermaster No. 212 Southern Inland

Owner: York School Aquifer Unit: QTc/Tsm

Well Type: Producer All Values in Feet

Date Measured	Depth to Water	Reference Point	Water Elevation	Comments
10/14/2024	290.1	384.3	94.20	meter 39719300
10/14/2024	290.1	384.3	94.20	meter 39719300
10/23/2024	221.94	384.3	162.36	
12/04/2024	219.7	384.3	164.60	
01/03/2025		384.3		gates locked
01/22/2025	218.7	384.3	165.60	Meter Read:4044330 gallons
02/10/2025	218.3	384.3	166.00	off. Meter = 40525700
03/03/2025	218.3	384.3	166.00	off. meter= 40527300
03/28/2025	218.1	384.3	166.20	off. meter = 40535000
05/02/2025	236.2	384.3	148.10	well off. meter = 41214200
06/09/2025	231.48	384.3	152.82	meter 42258600
06/27/2025	227.35	384.3	156.95	meter = 42617300. small leaknfrom meter
07/29/2025	237.52	384.3	146.78	
09/09/2025	226.6	384.3	157.70	
09/25/2025	224.85	384.3	159.45	meter 45338500

MONTGOMERY
& ASSOCIATES

Appendix C

Piper Diagrams

Appendix C Contents

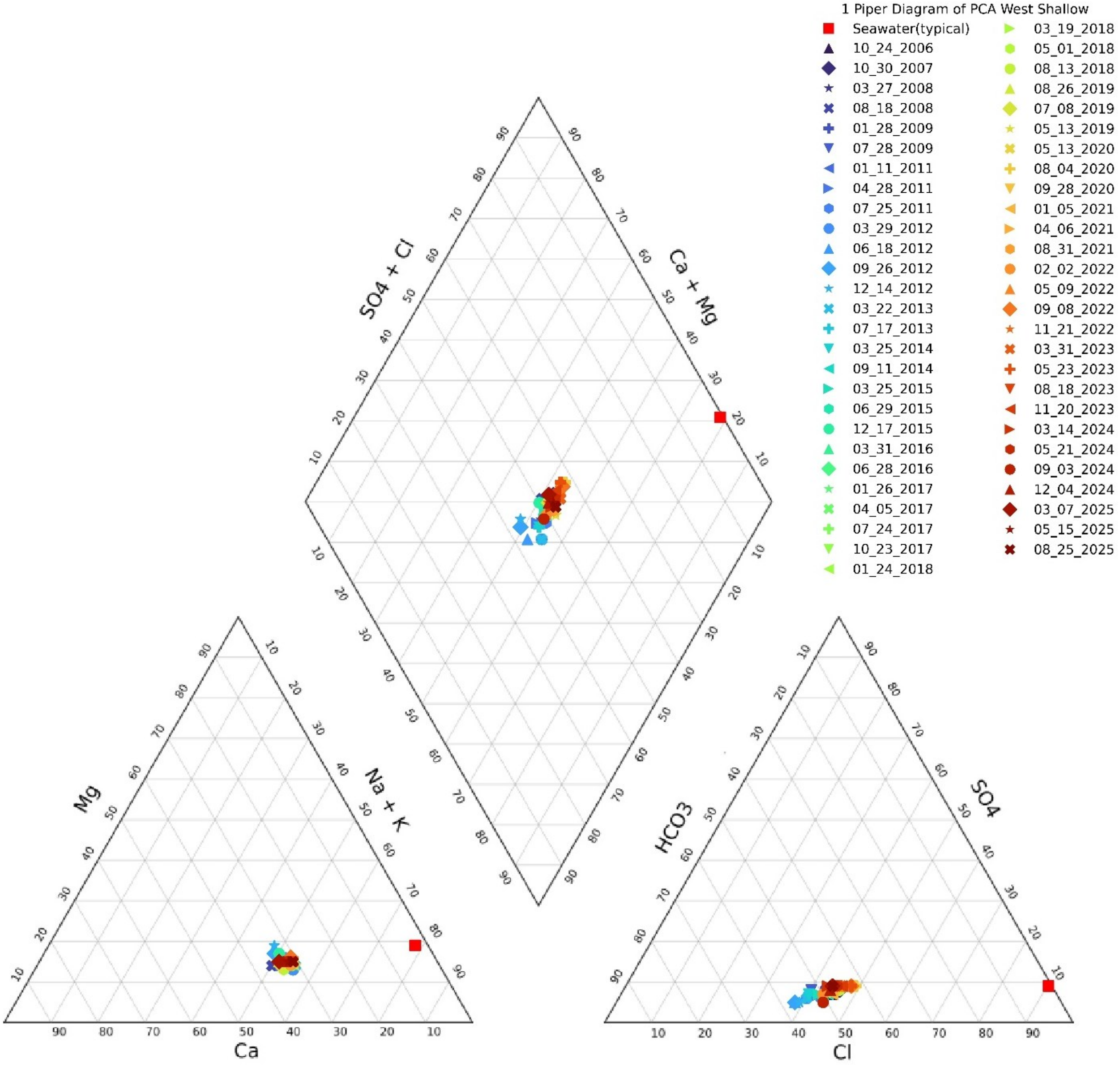


Figure C-1. Piper Diagram of PCA West Shallow

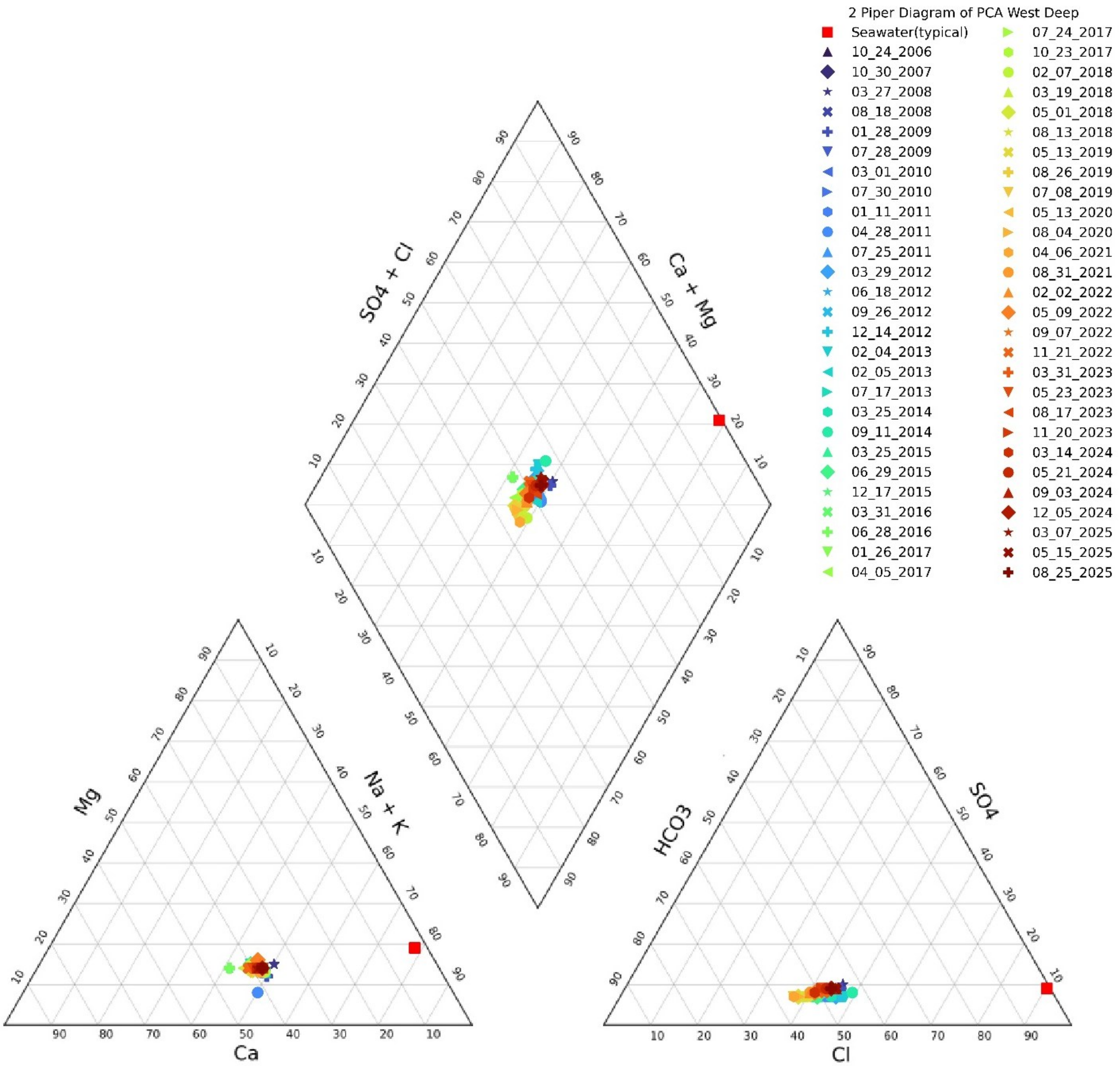


Figure C-2. Piper Diagram of PCA West Deep

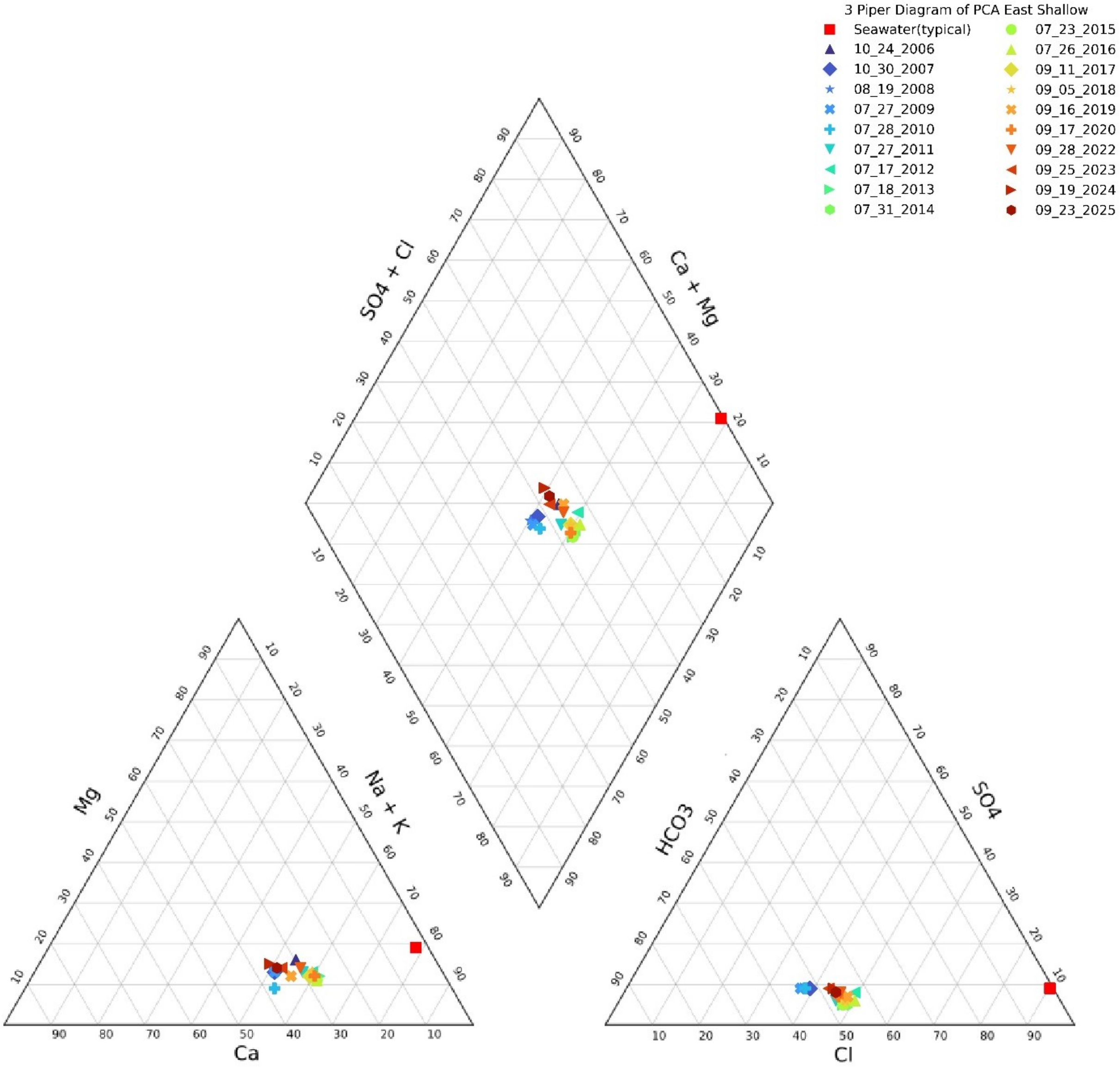


Figure C-3. Piper Diagram of PCA East Shallow

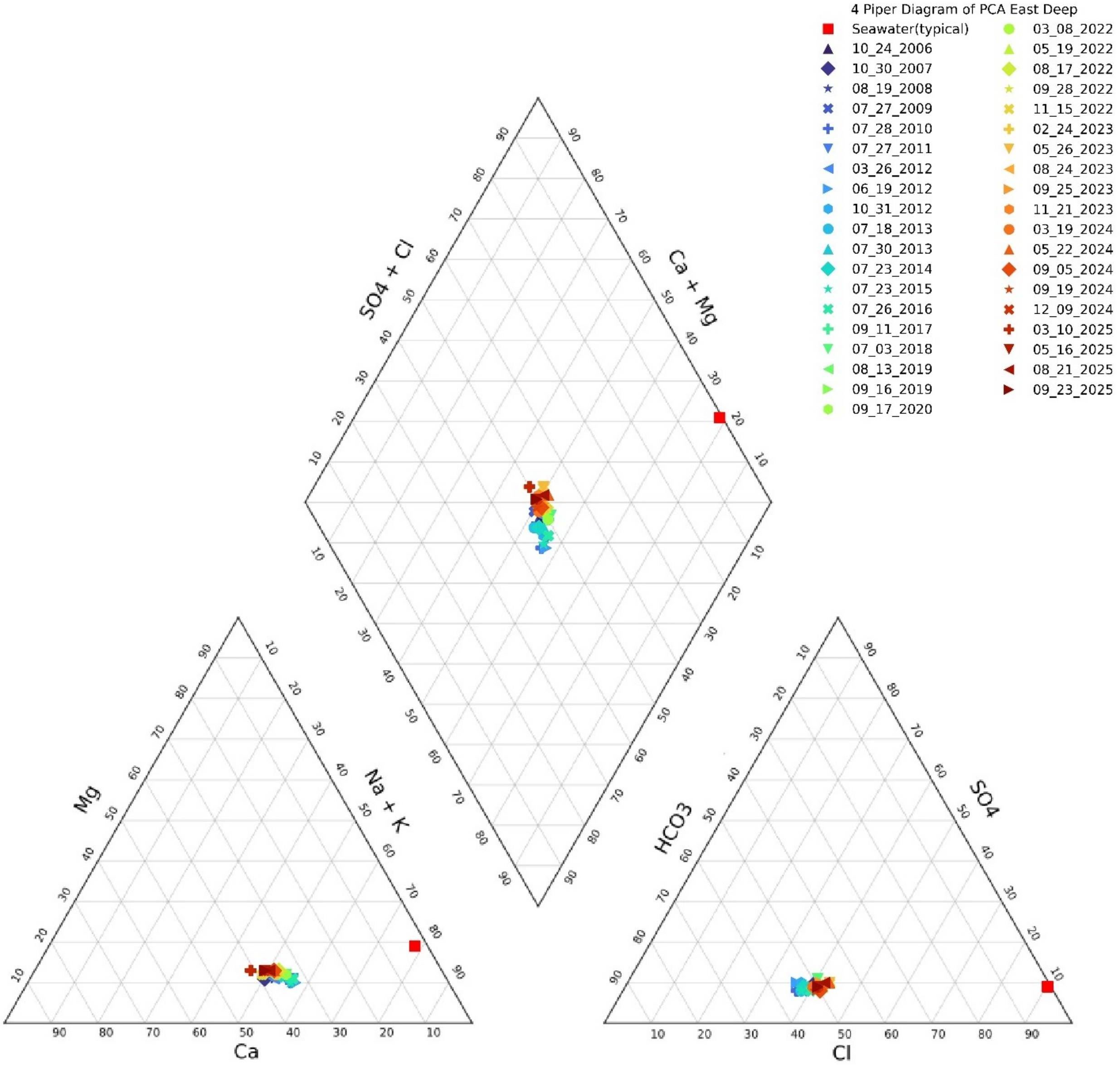


Figure C-4. Piper Diagram of PCA East Deep

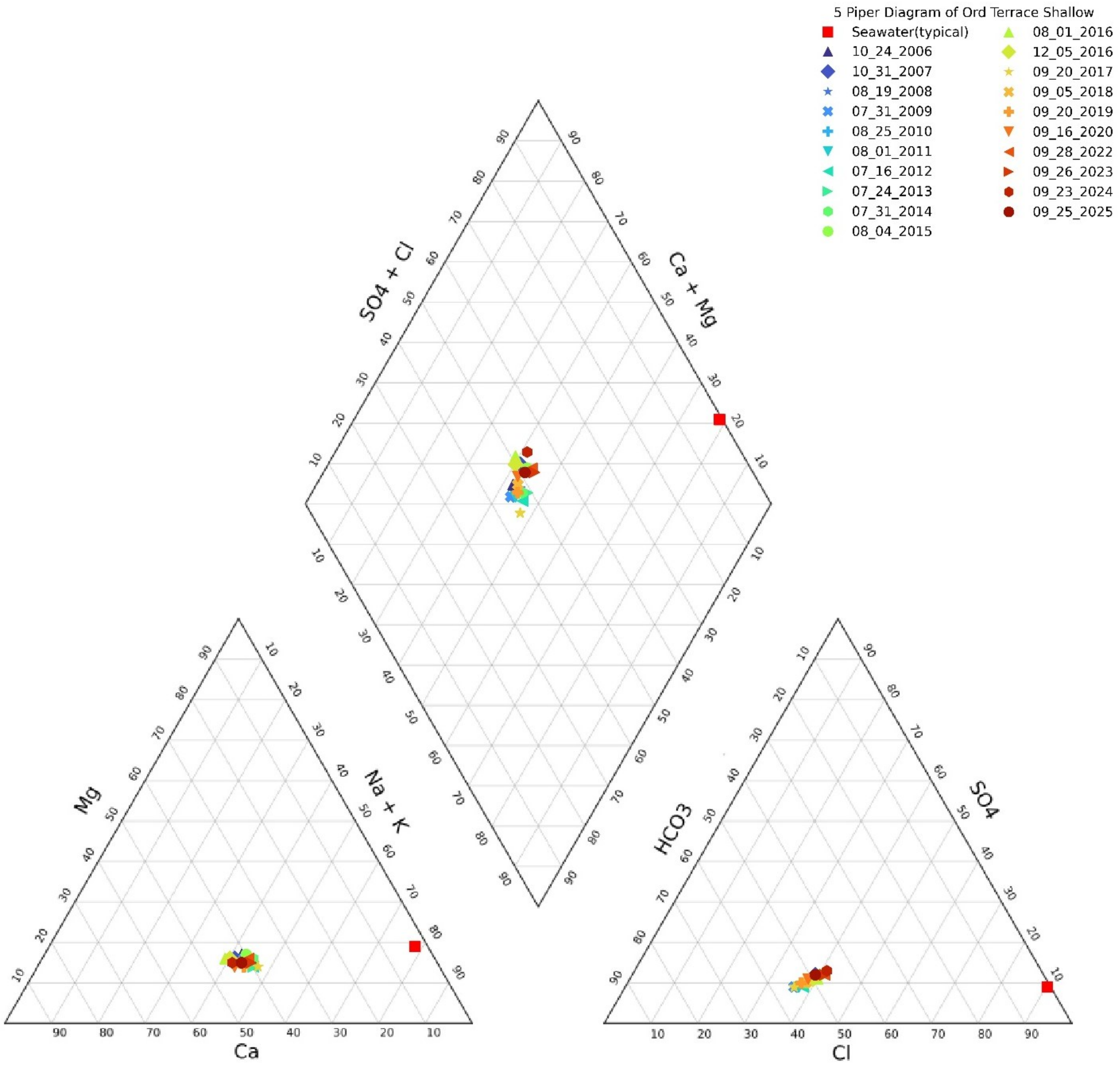


Figure C-5. Piper Diagram of Ord Terrace Shallow

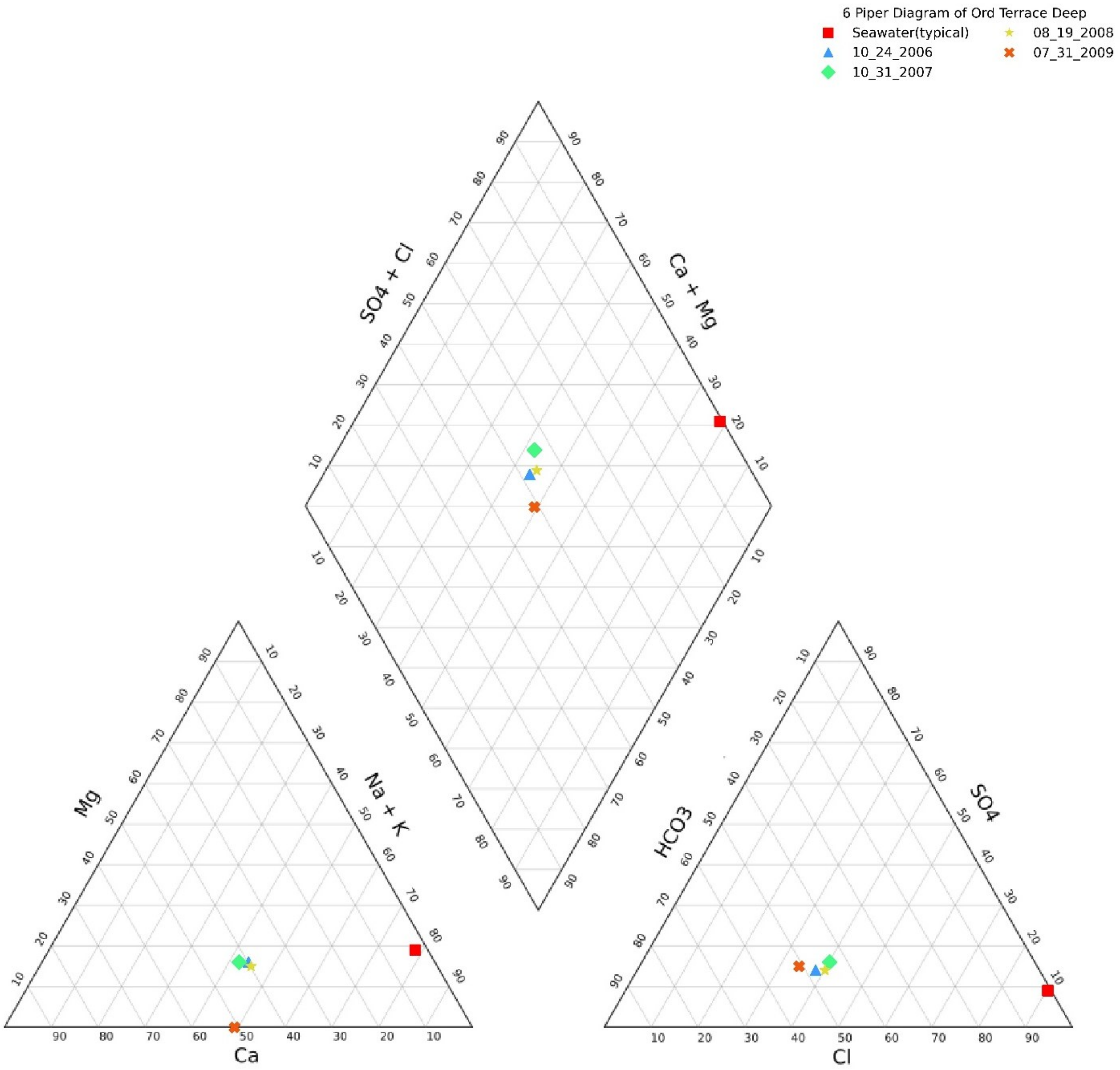


Figure C-6. Piper Diagram of Ord Terrace Deep

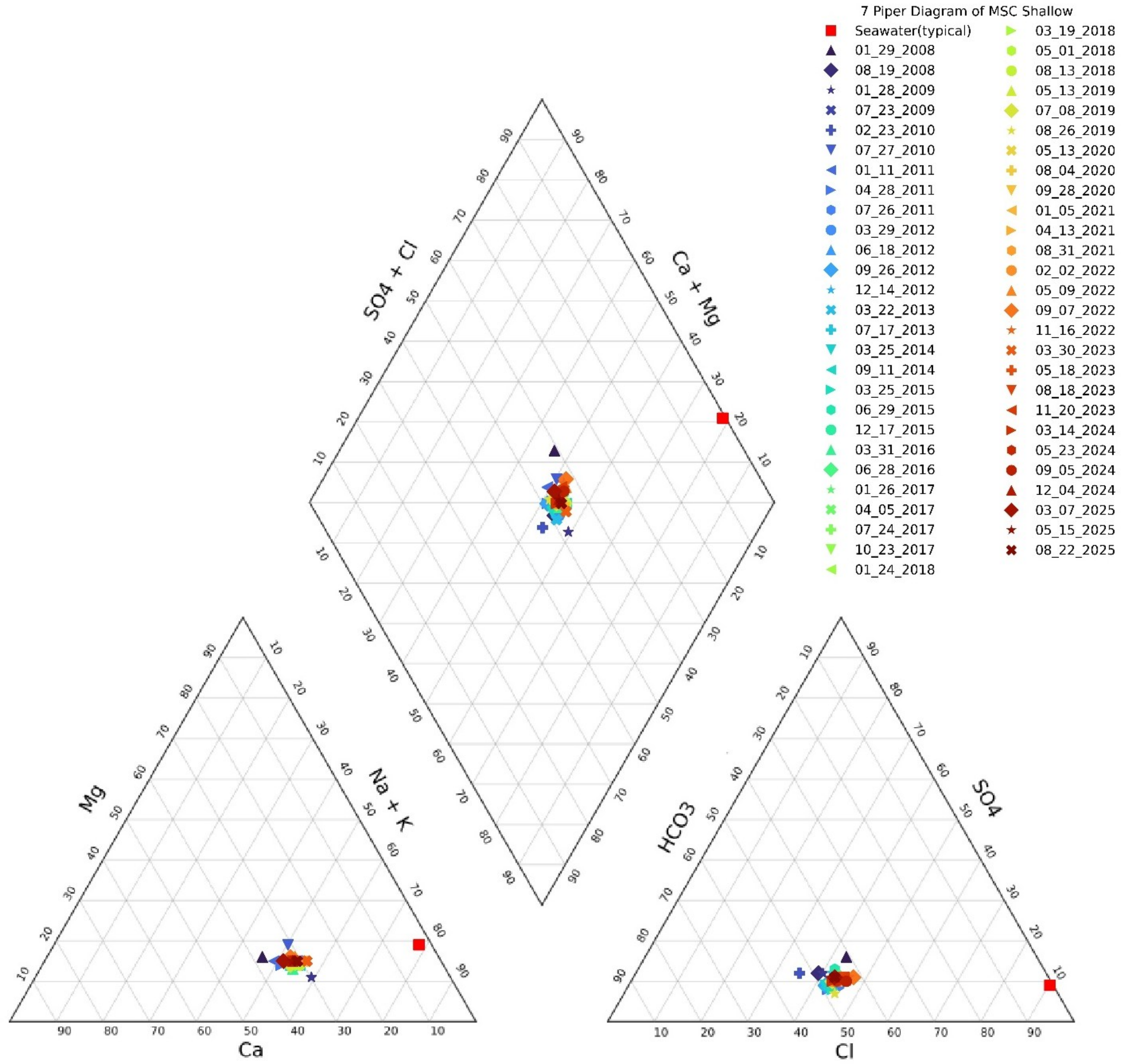


Figure C-7. Piper Diagram of MSC Shallow

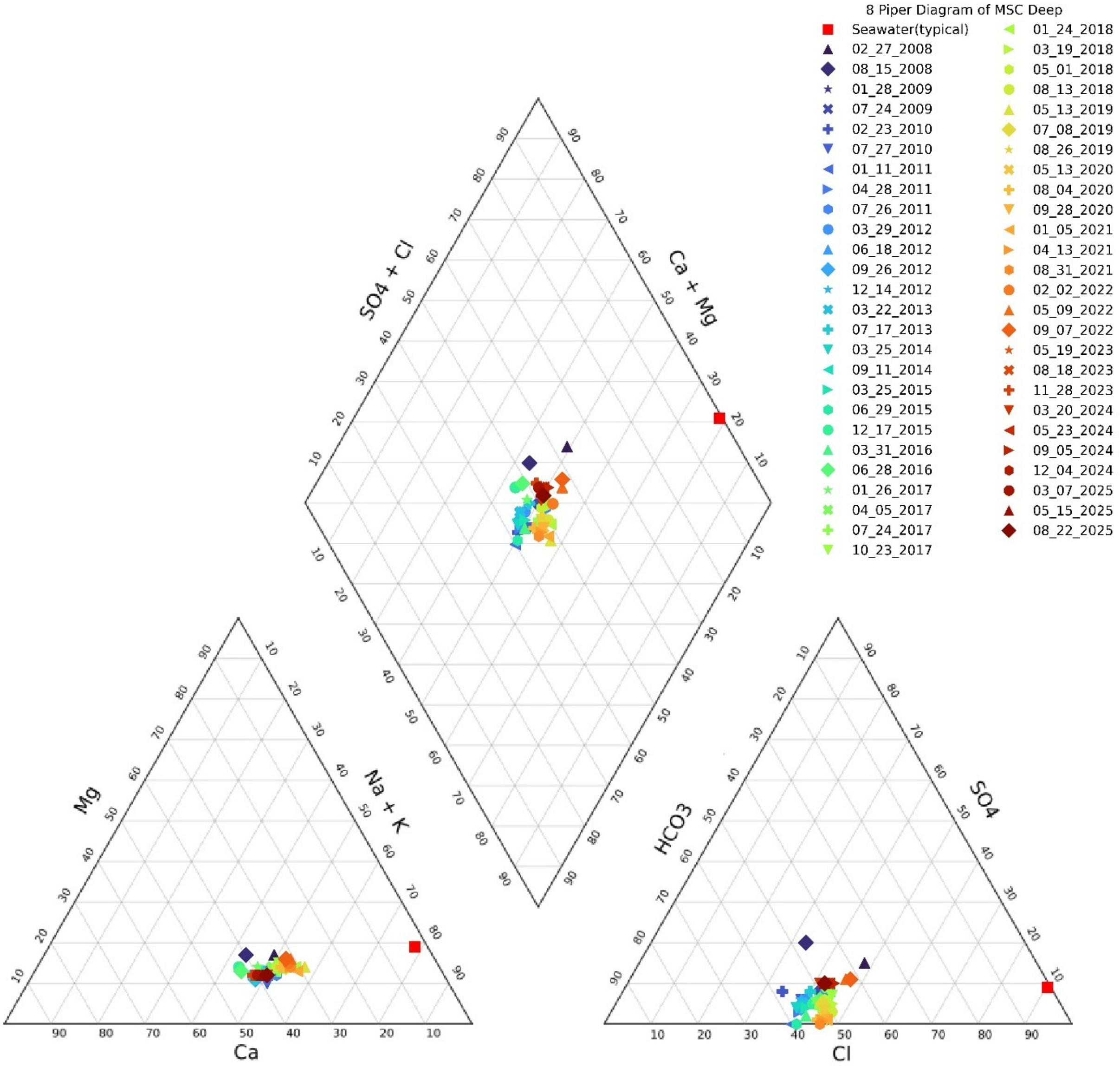


Figure C-8. Piper Diagram of MSC Deep

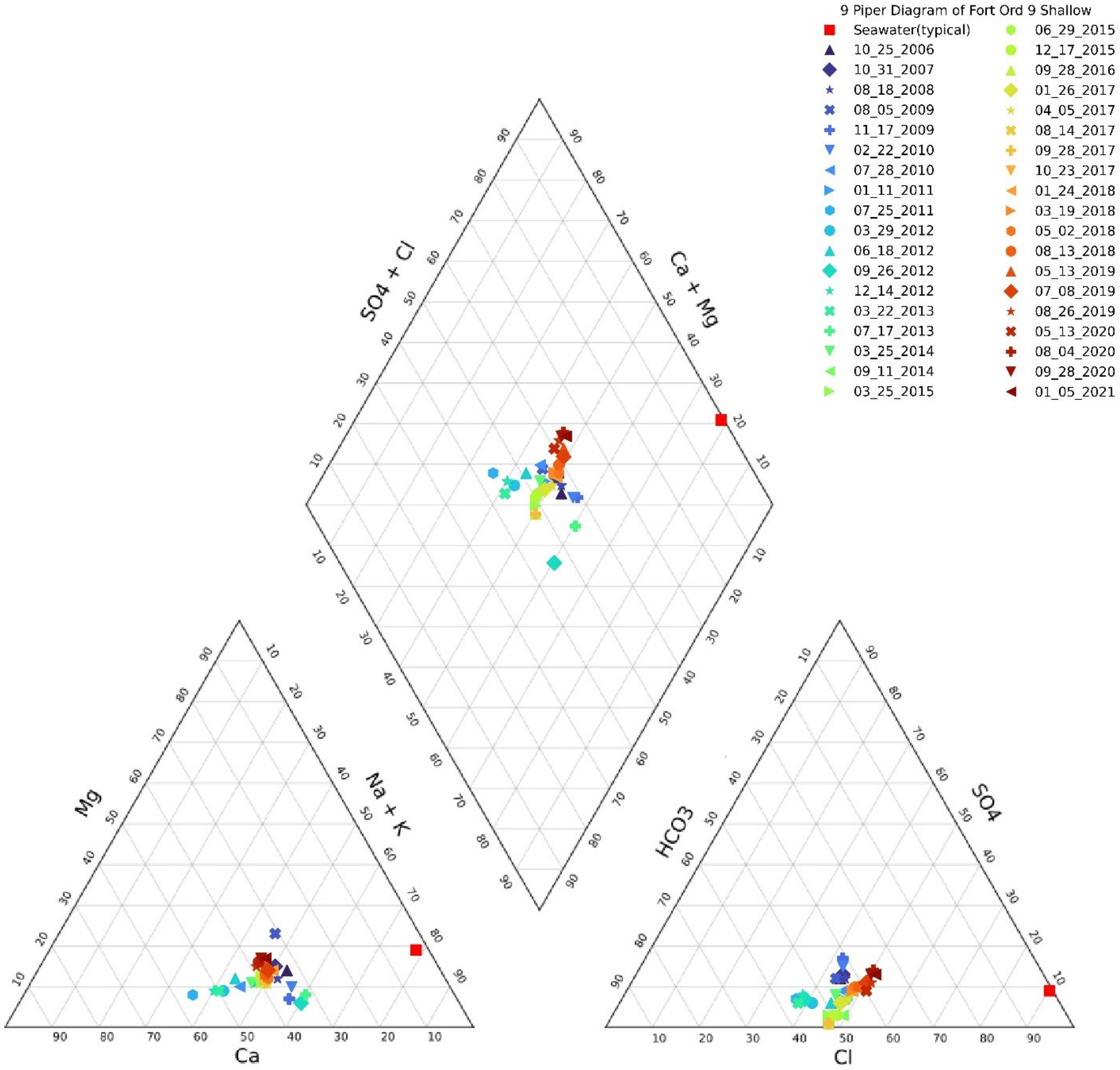


Figure C-9. Piper Diagram of Fort Ord 9 Shallow

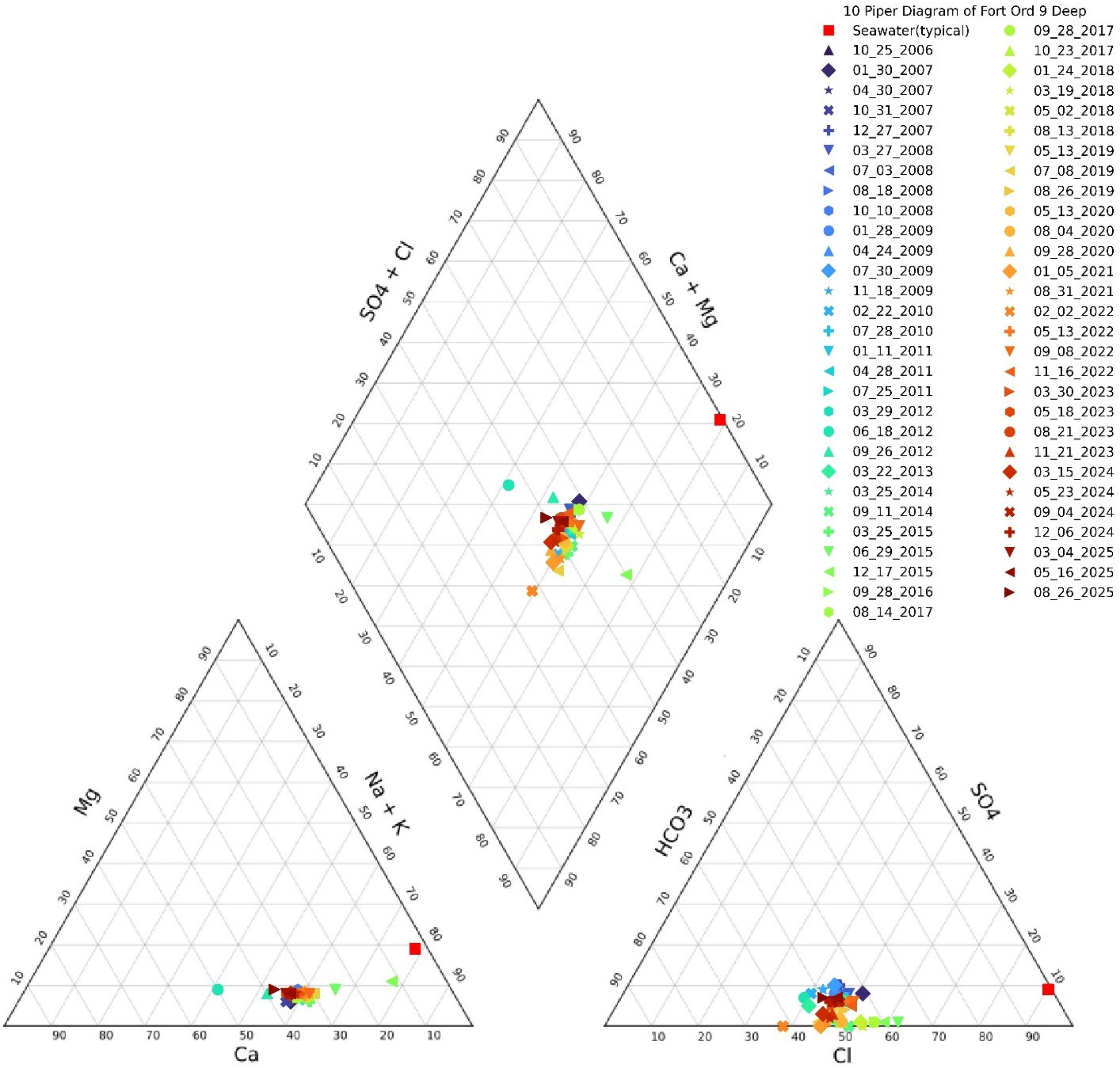


Figure C-10. Piper Diagram of Fort Ord 9 Deep

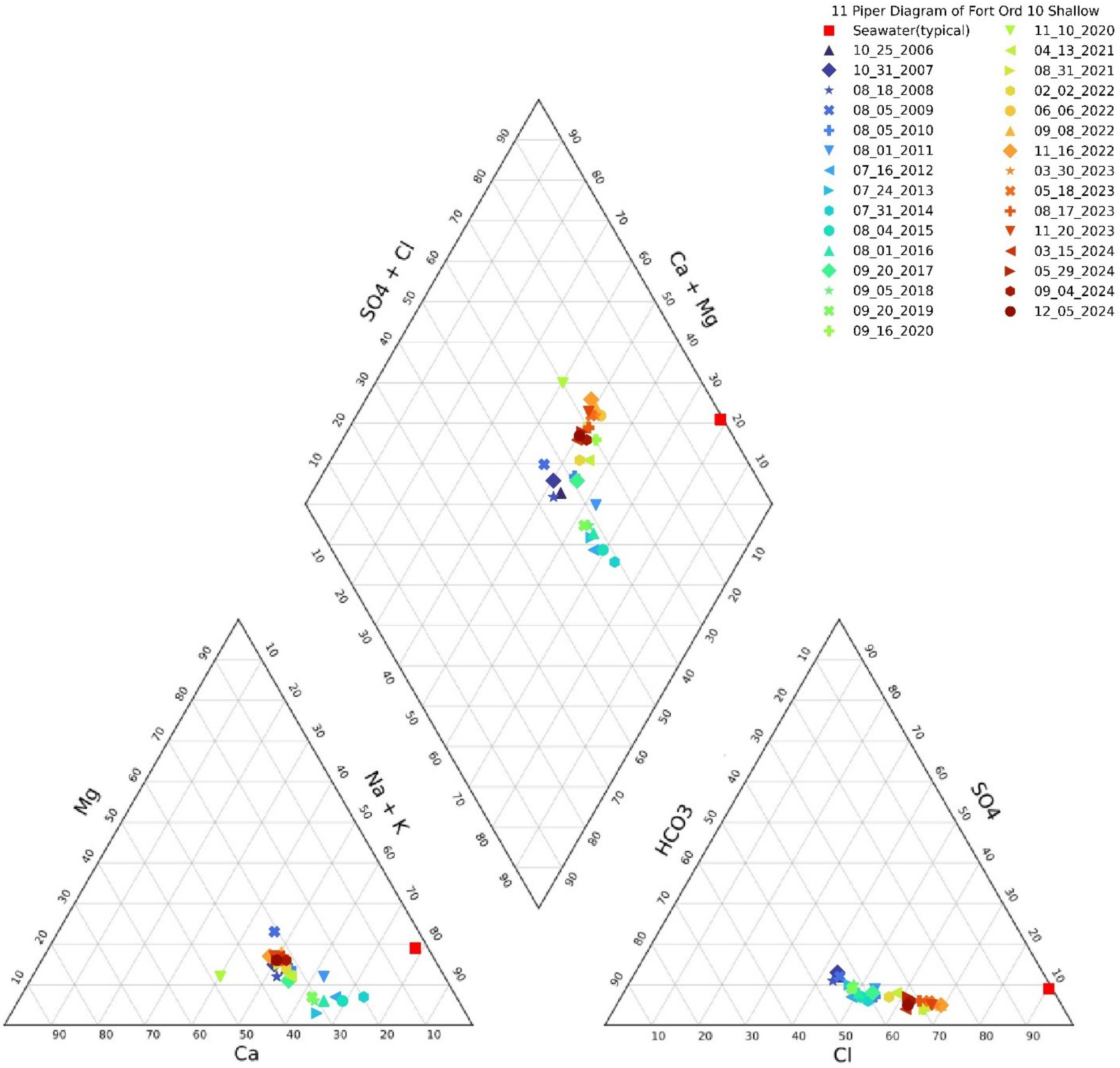


Figure C-11. Piper Diagram of Fort Ord 10 Shallow

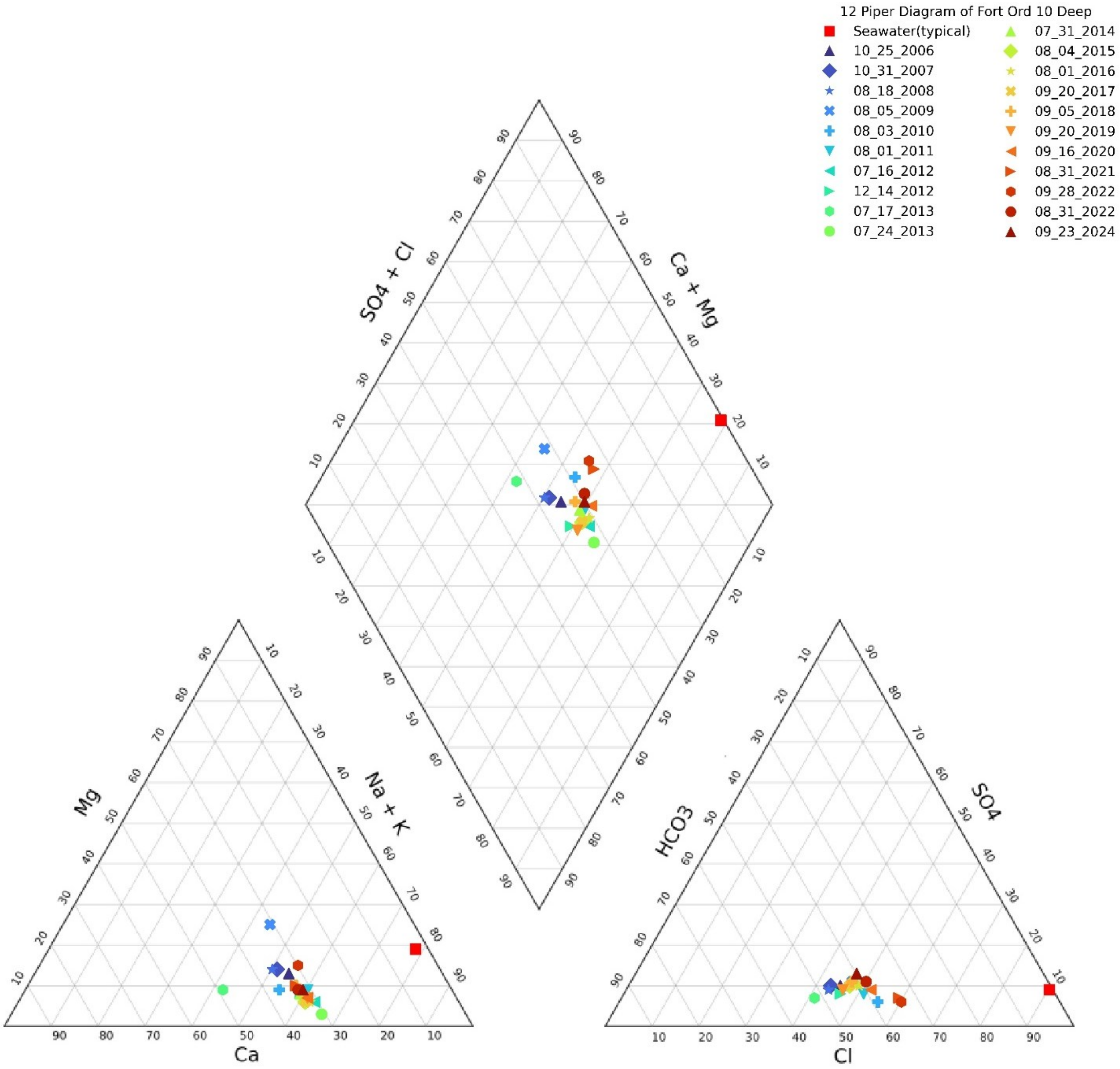


Figure C-12. Piper Diagram of Fort Ord 10 Deep

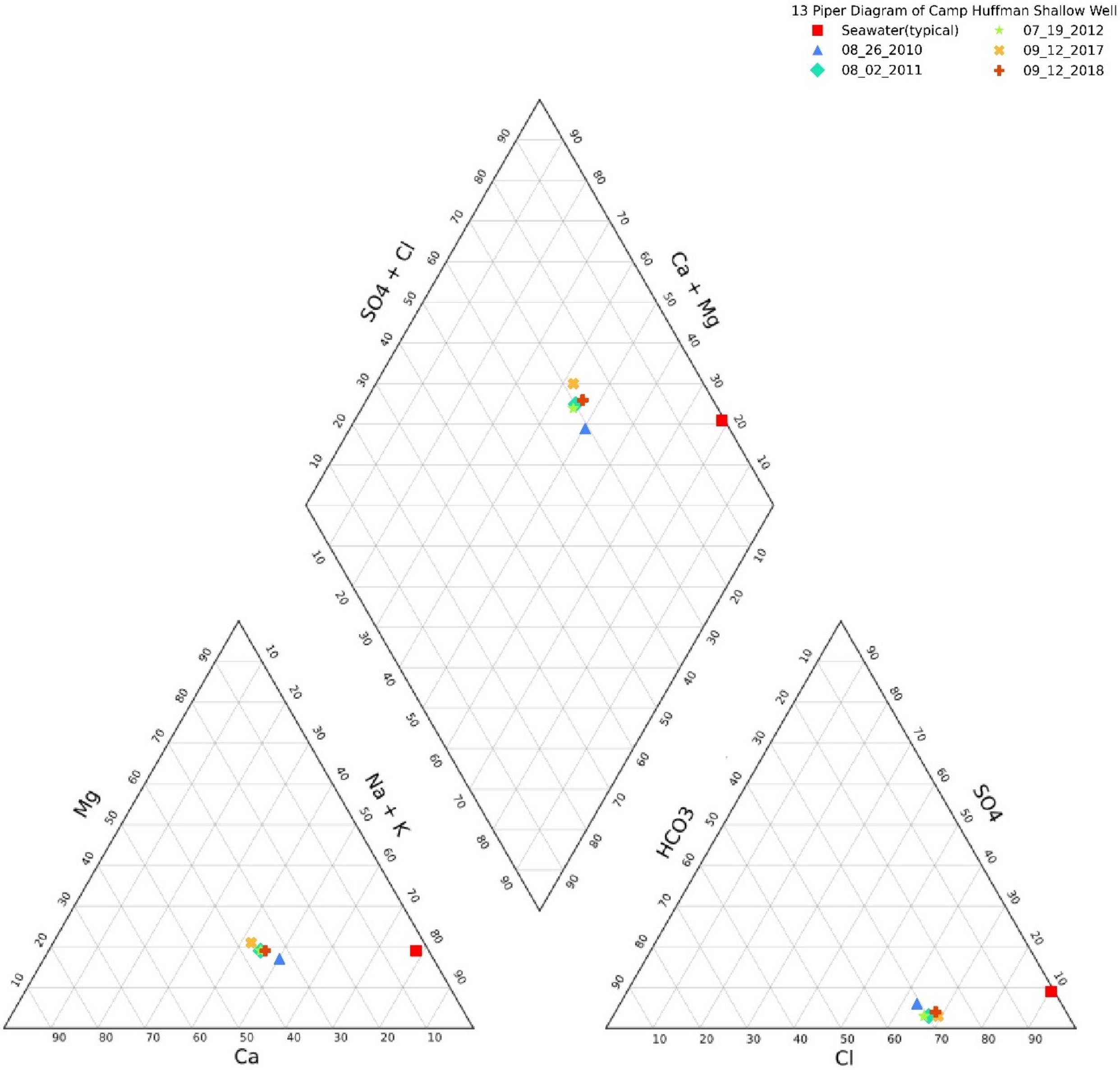


Figure C-13. Piper Diagram of Camp Huffman Shallow Well

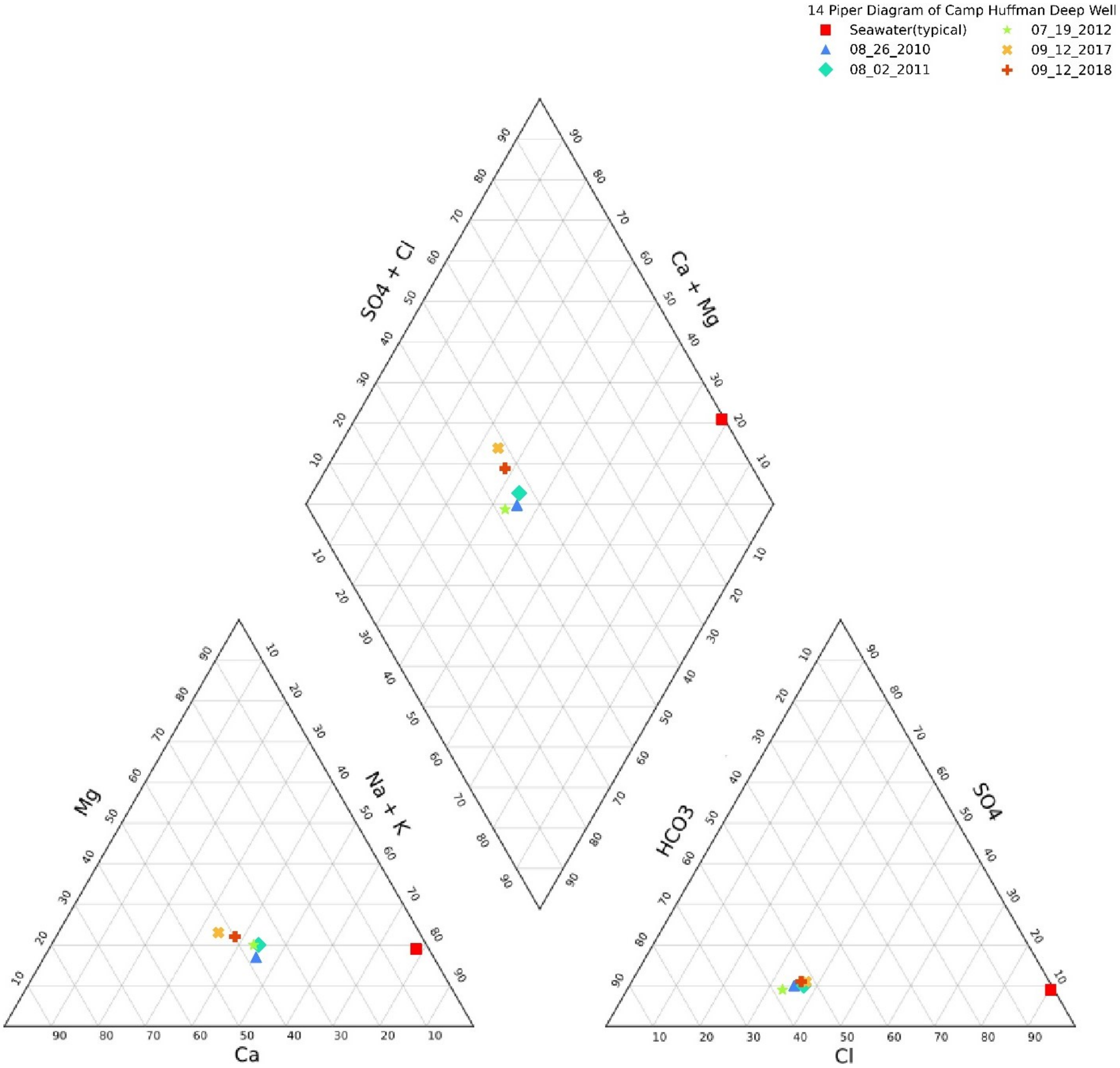


Figure C-14. Piper Diagram of Camp Huffman Deep Well

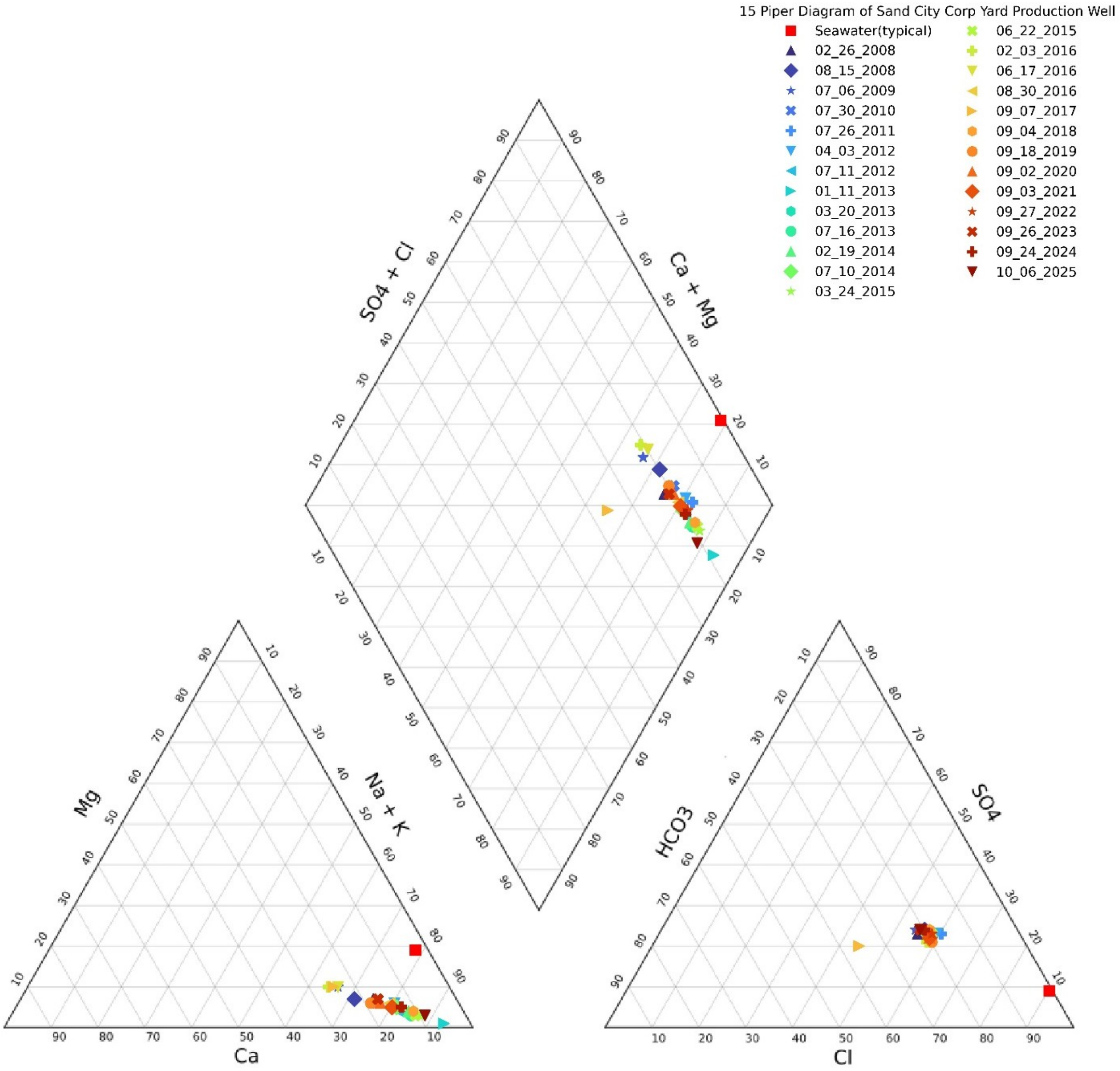


Figure C-15. Piper Diagram of Sand City Corp. Yard Production Well

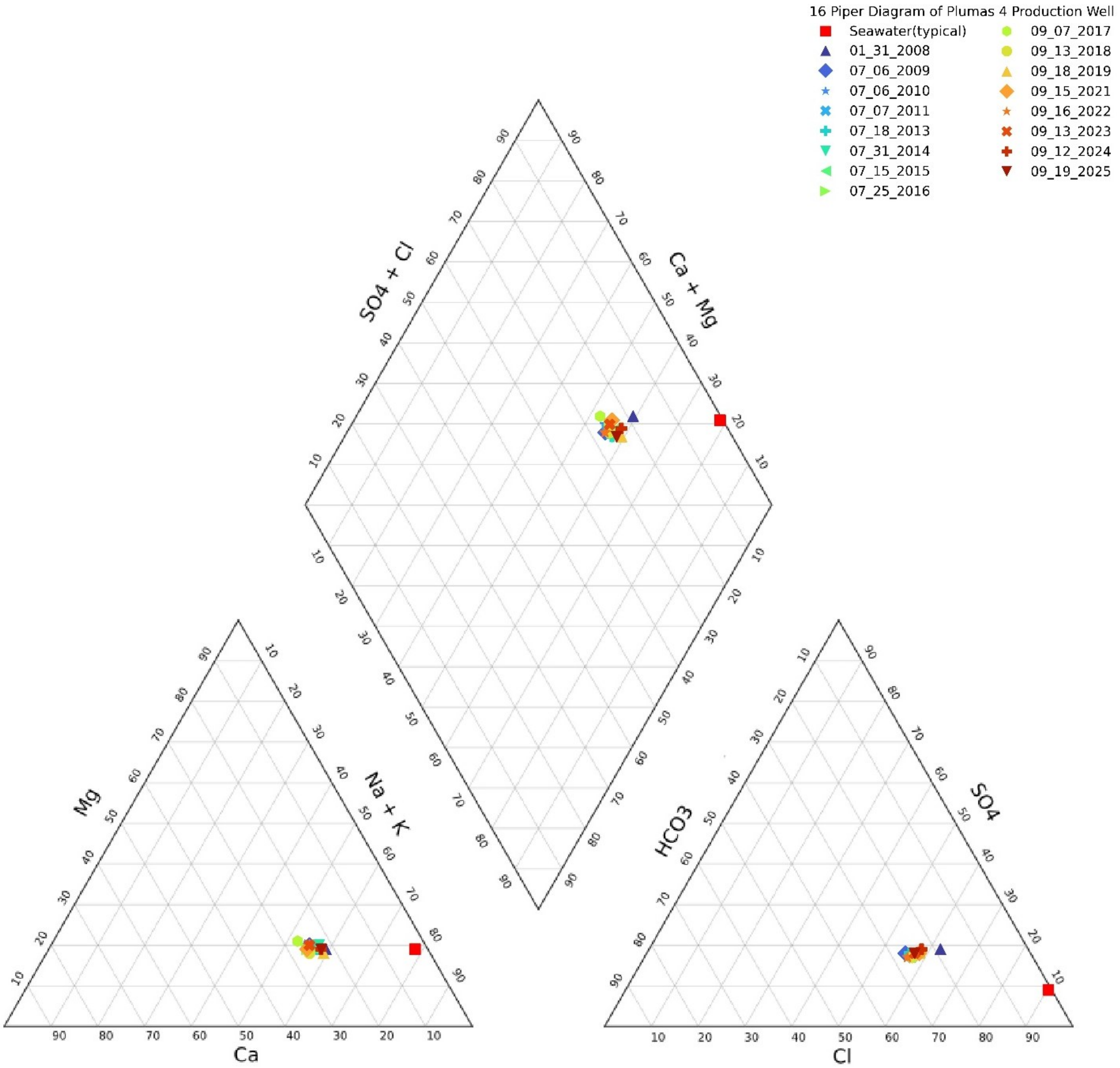


Figure C-16. Piper Diagram of Plumas 4 Production Well

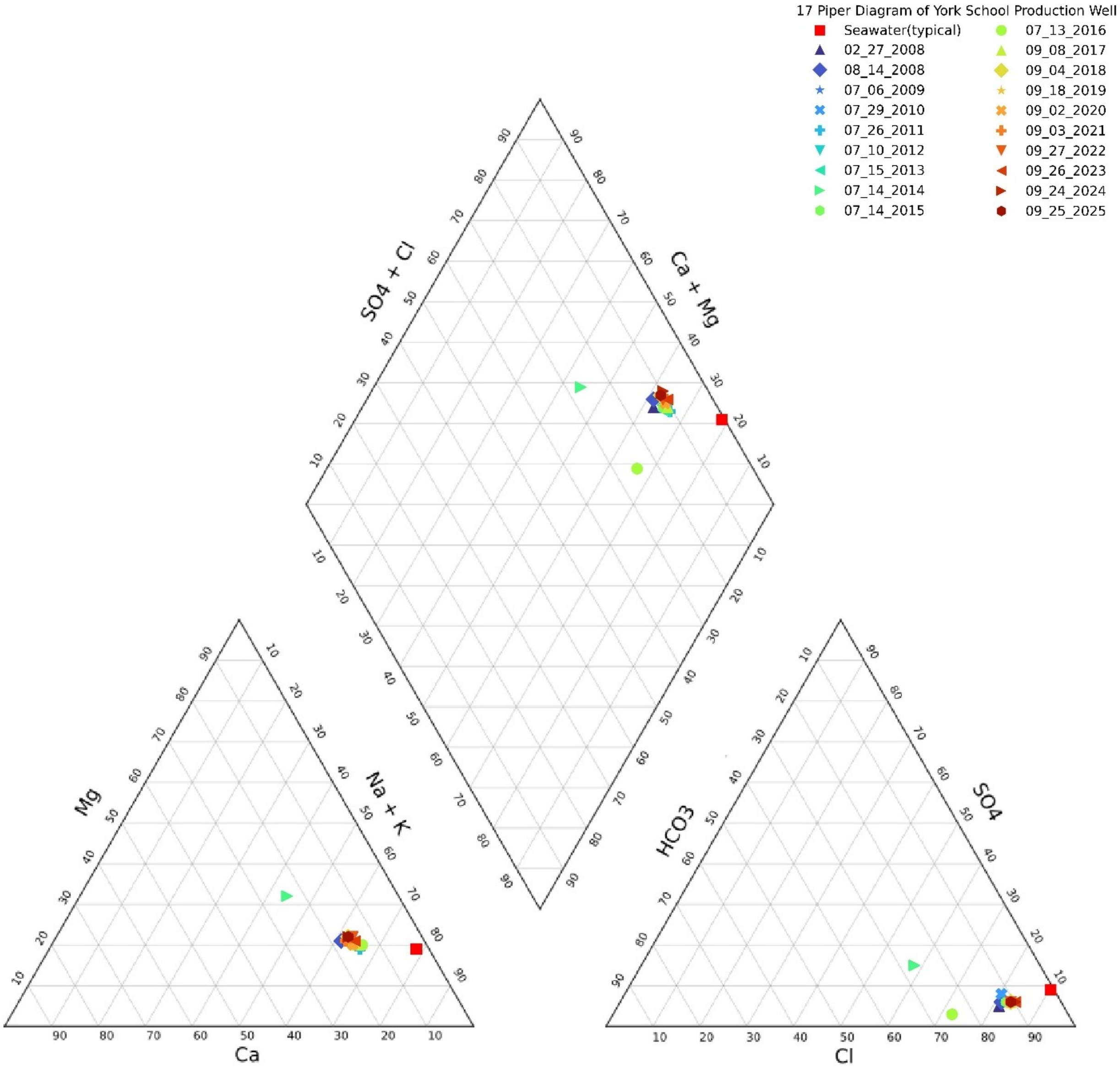


Figure C-17. Piper Diagram of York School Production Well

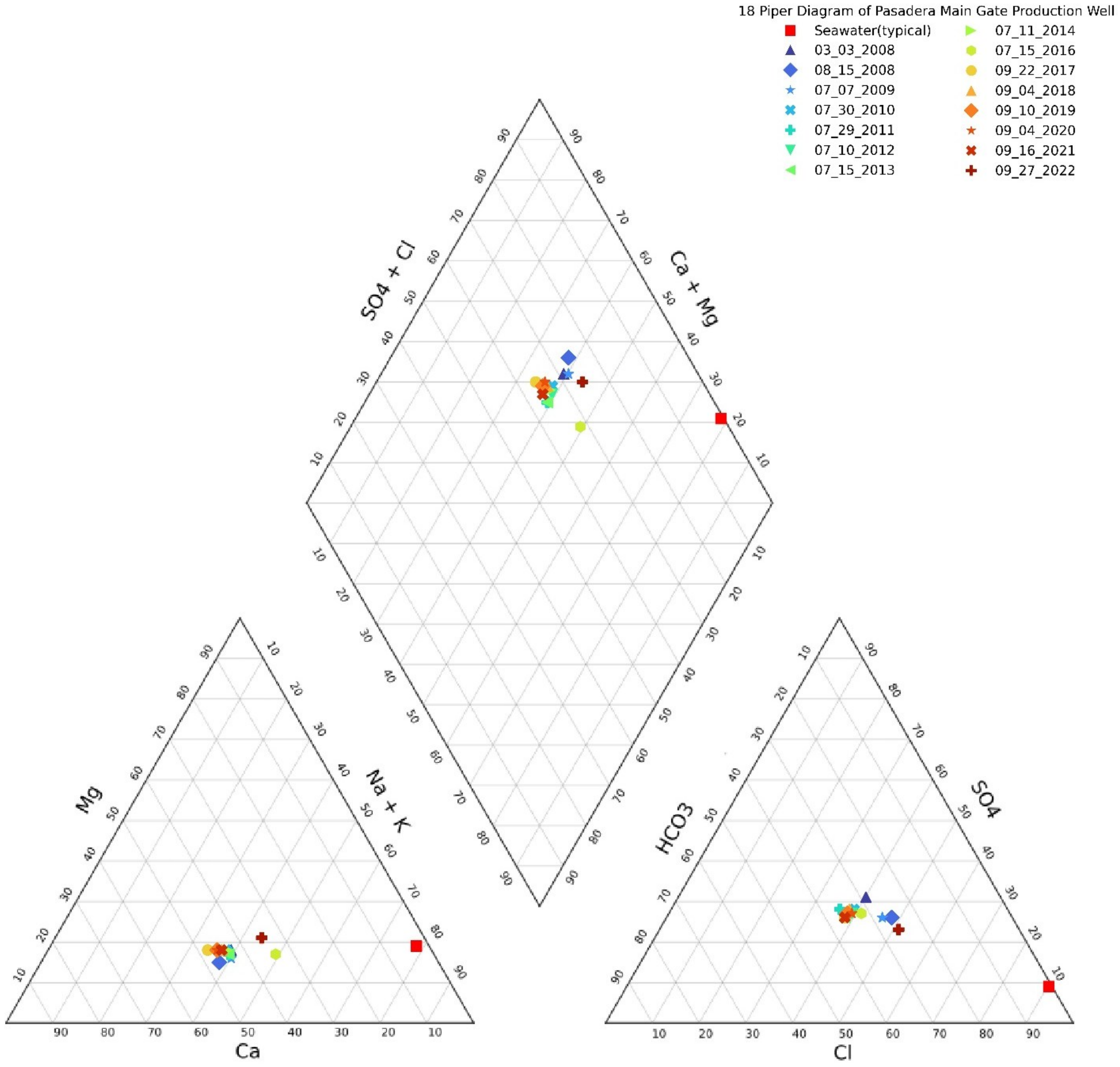


Figure C-18. Piper Diagram of Pasadera Main Gate Production Well

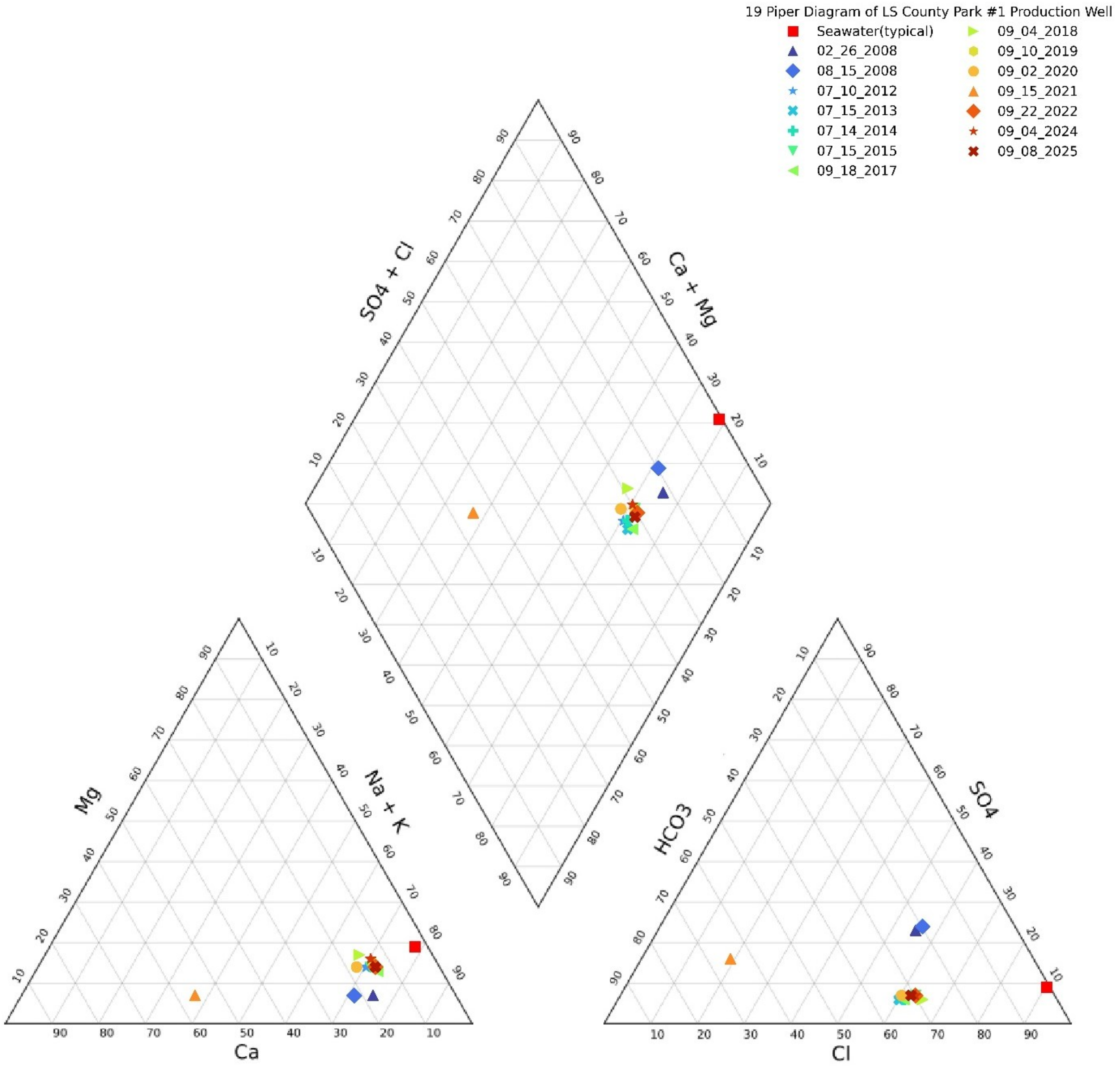


Figure C-19. Piper Diagram of LS County Park #1 Production Well

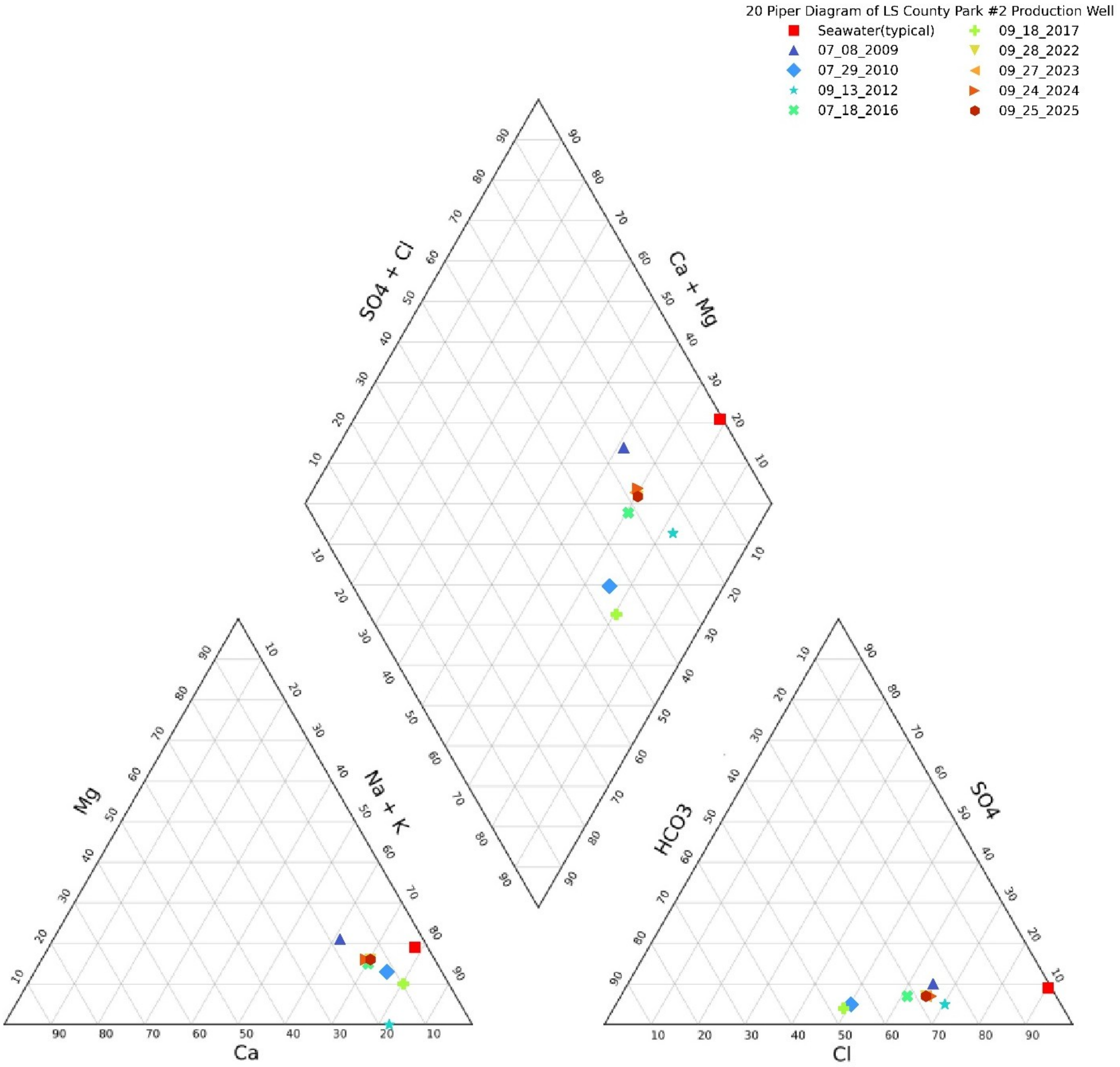


Figure C-20. Piper Diagram of LS County Park #2 Production Well

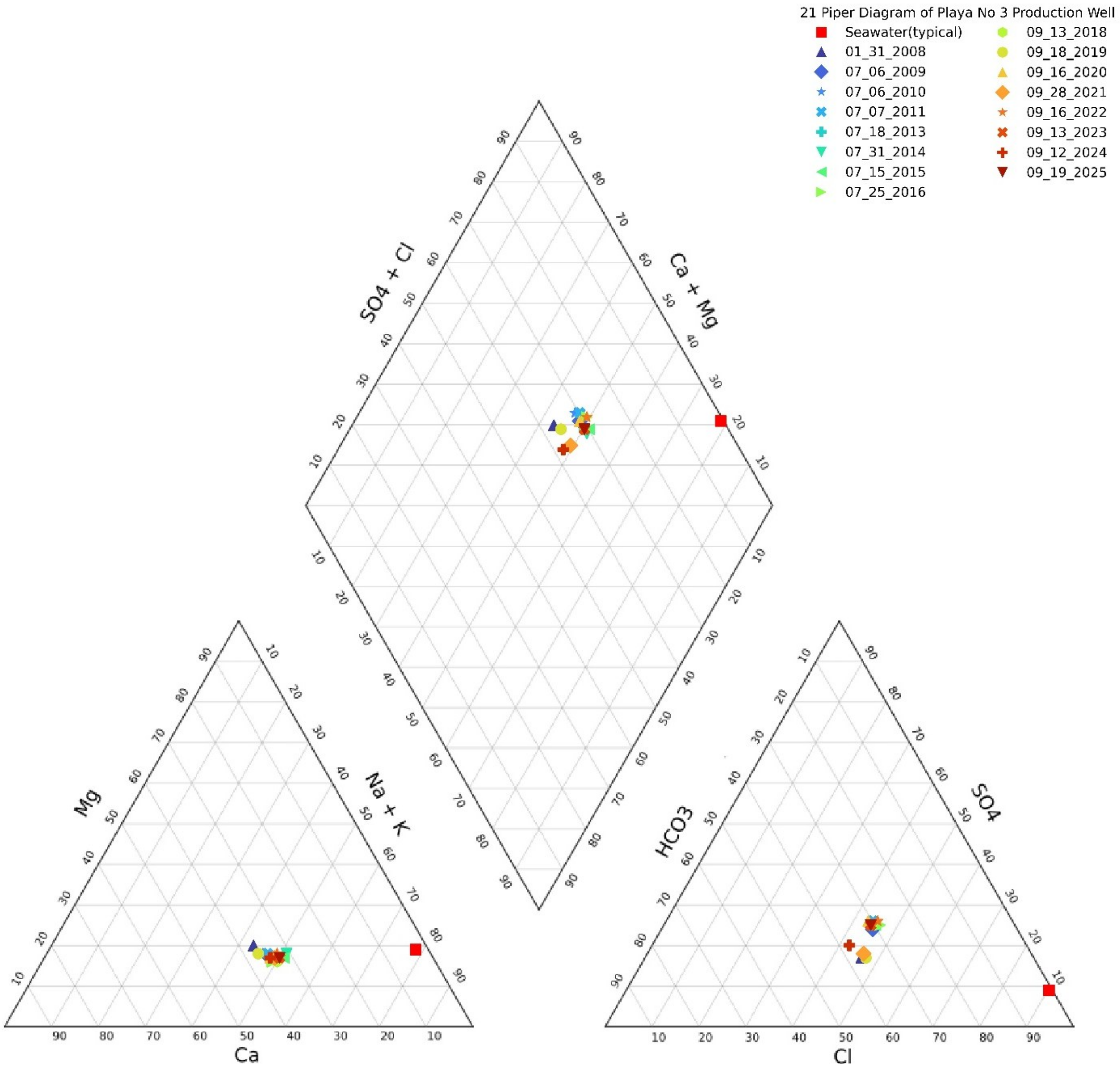


Figure C-21. Piper Diagram of Playa No. 3 Production Well

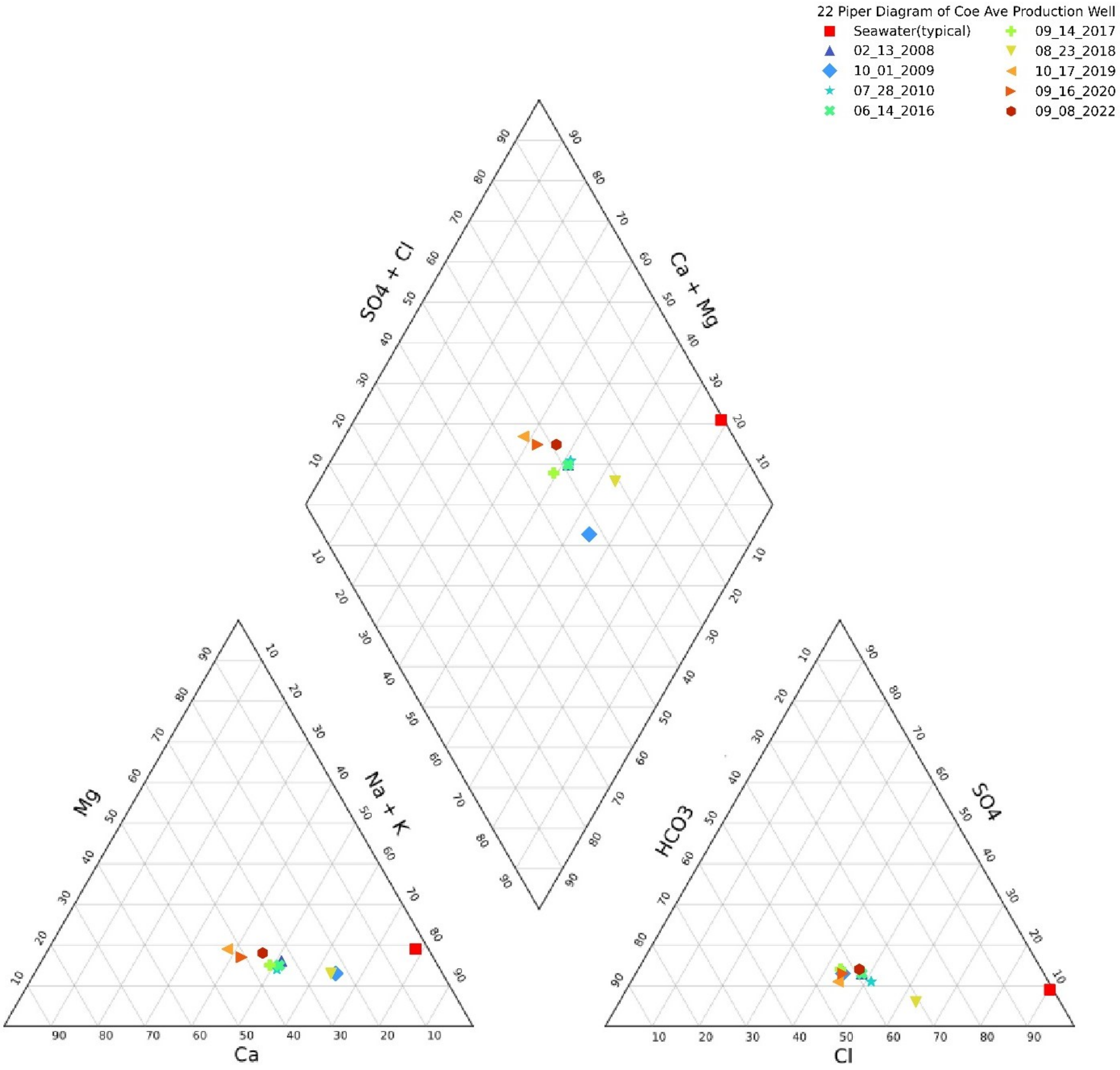


Figure C-22. Piper Diagram of Coe Ave. Production Well

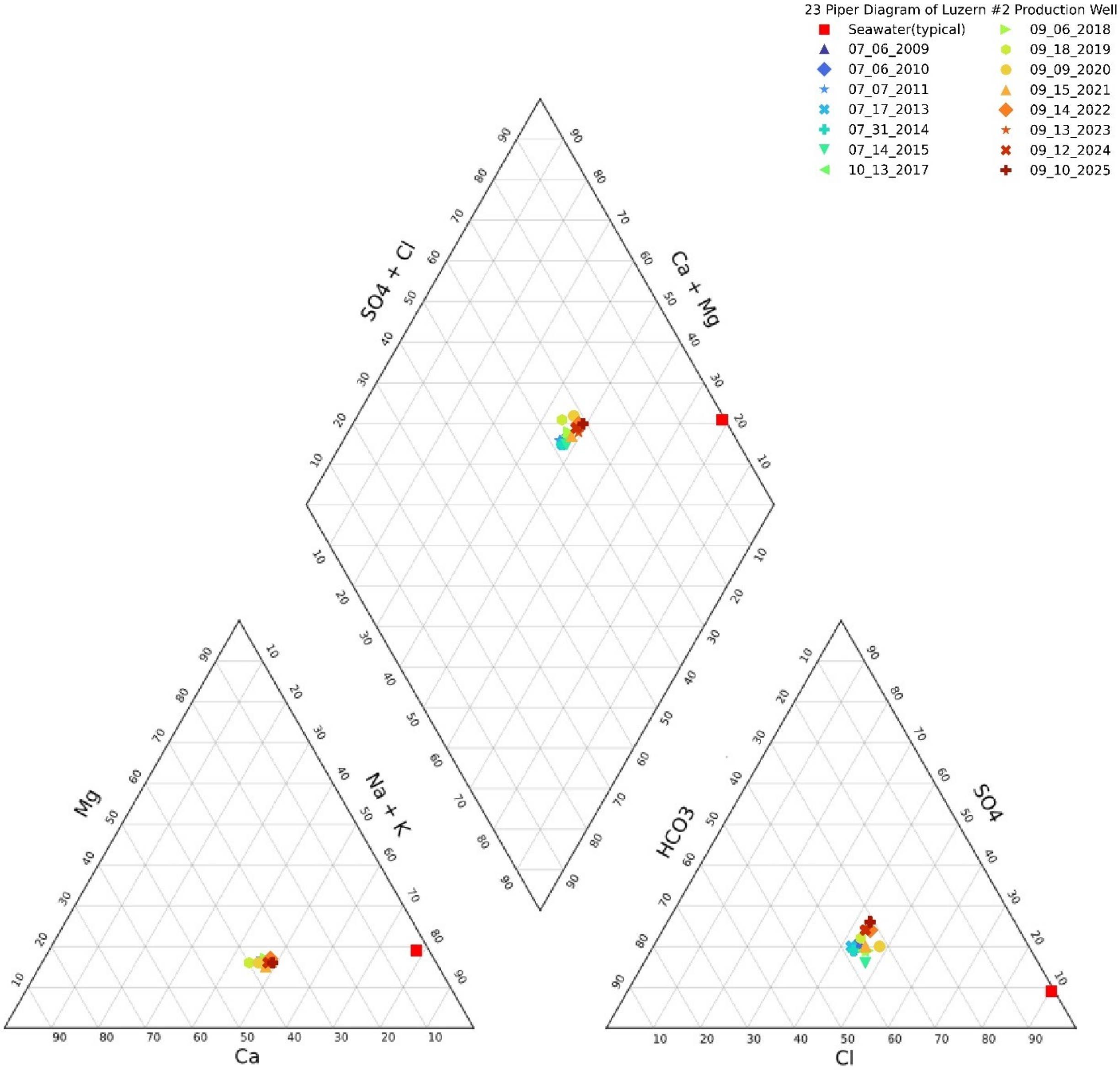


Figure C-23. Piper Diagram of Luzern #2 Production Well

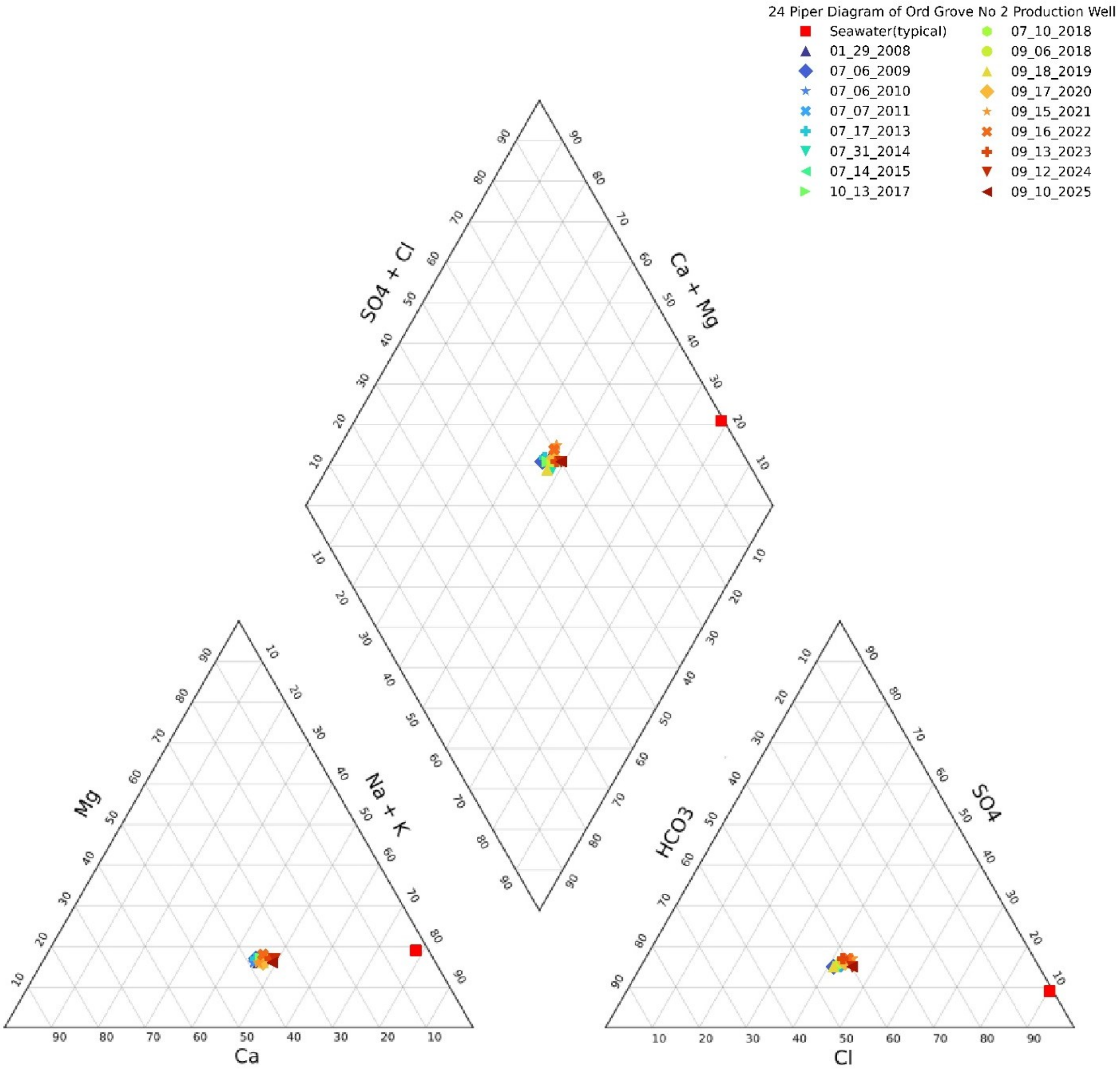


Figure C-24. Piper Diagram of Ord Grove No. 2 Production Well

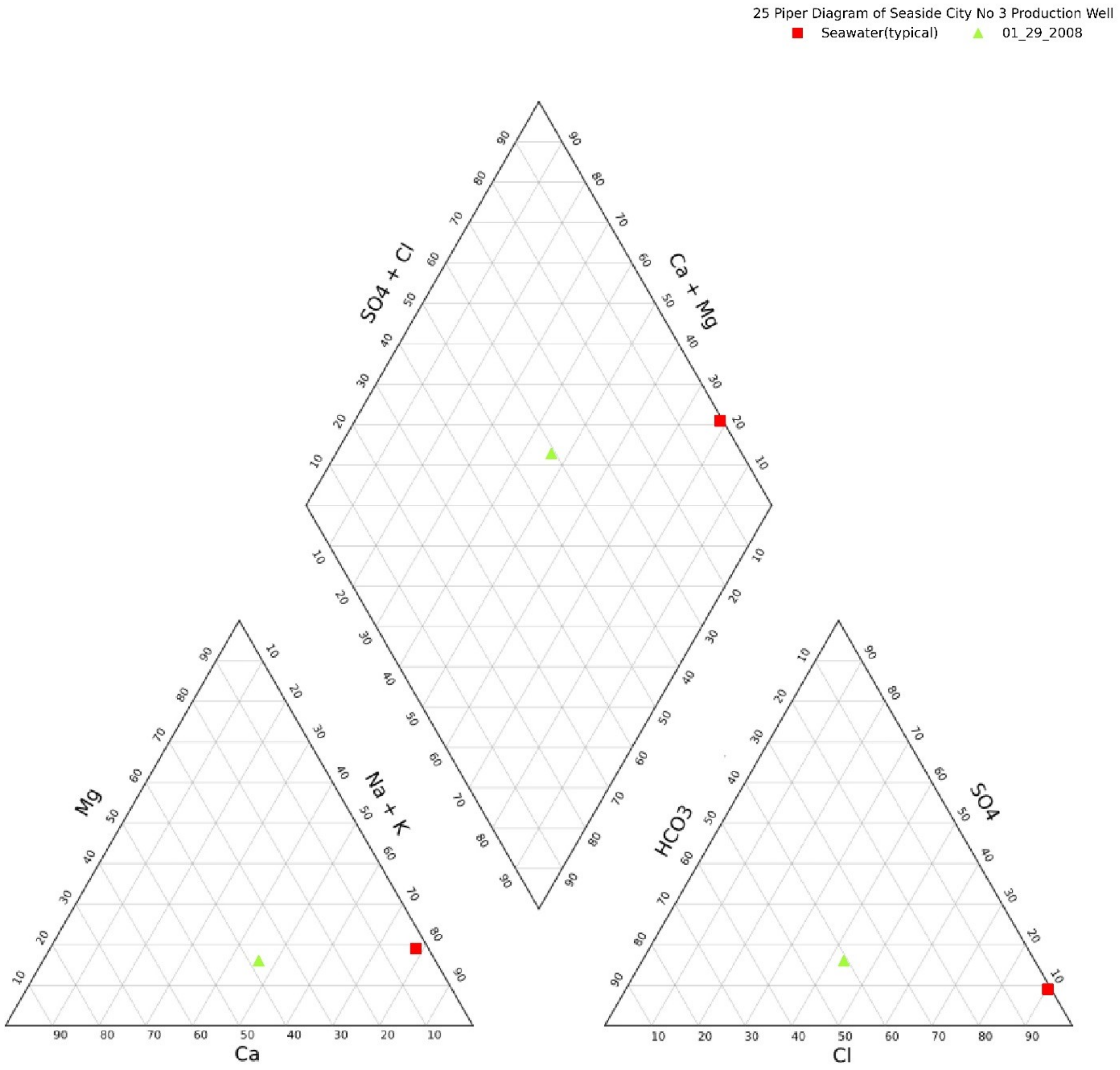


Figure C-25. Piper Diagram of Seaside City No. 3 Production Well

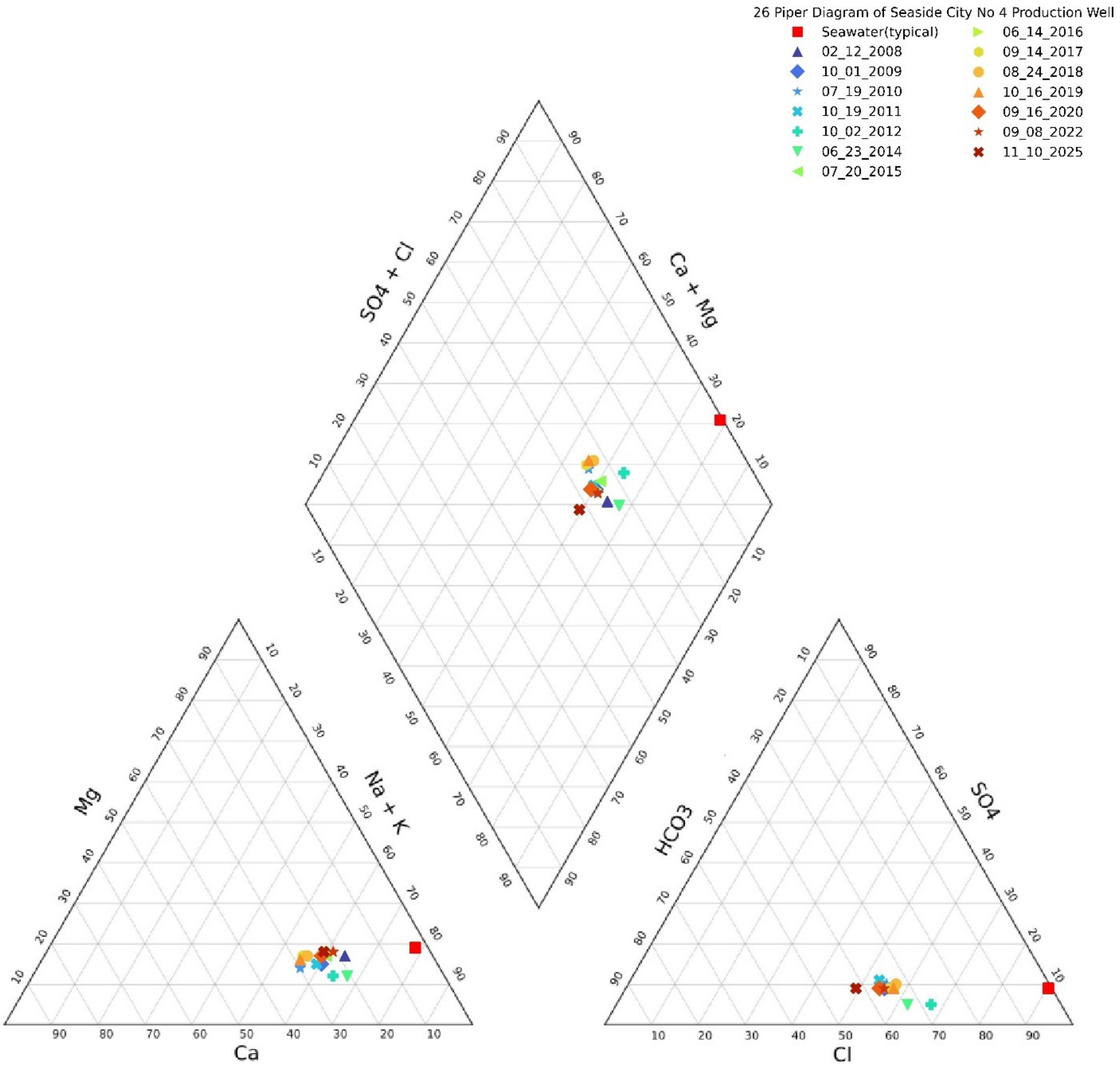


Figure C-26. Piper Diagram of Seaside City No. 4 Production Well

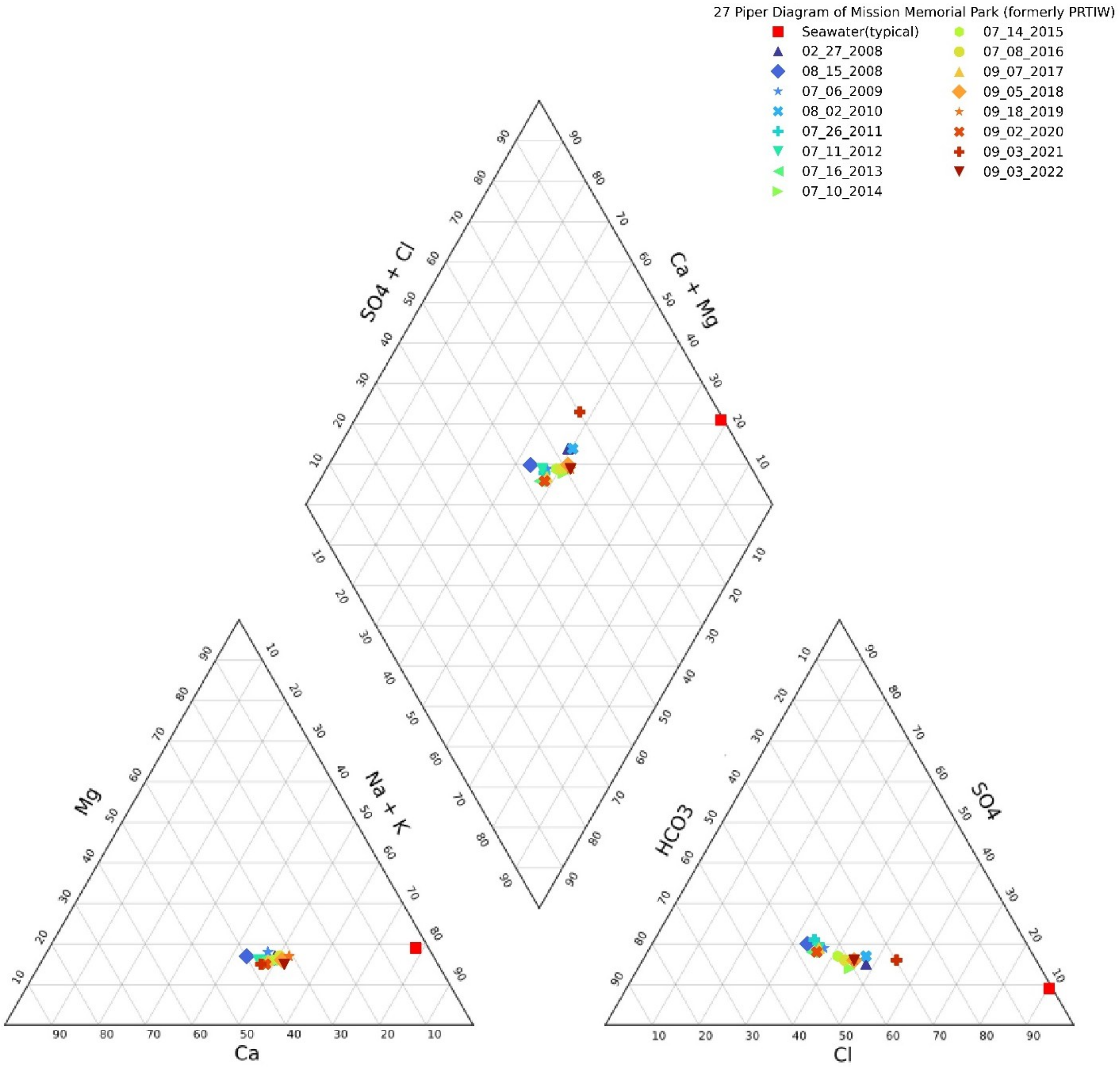


Figure C-27. Piper Diagram of Mission Memorial Park (formerly PRTIW)

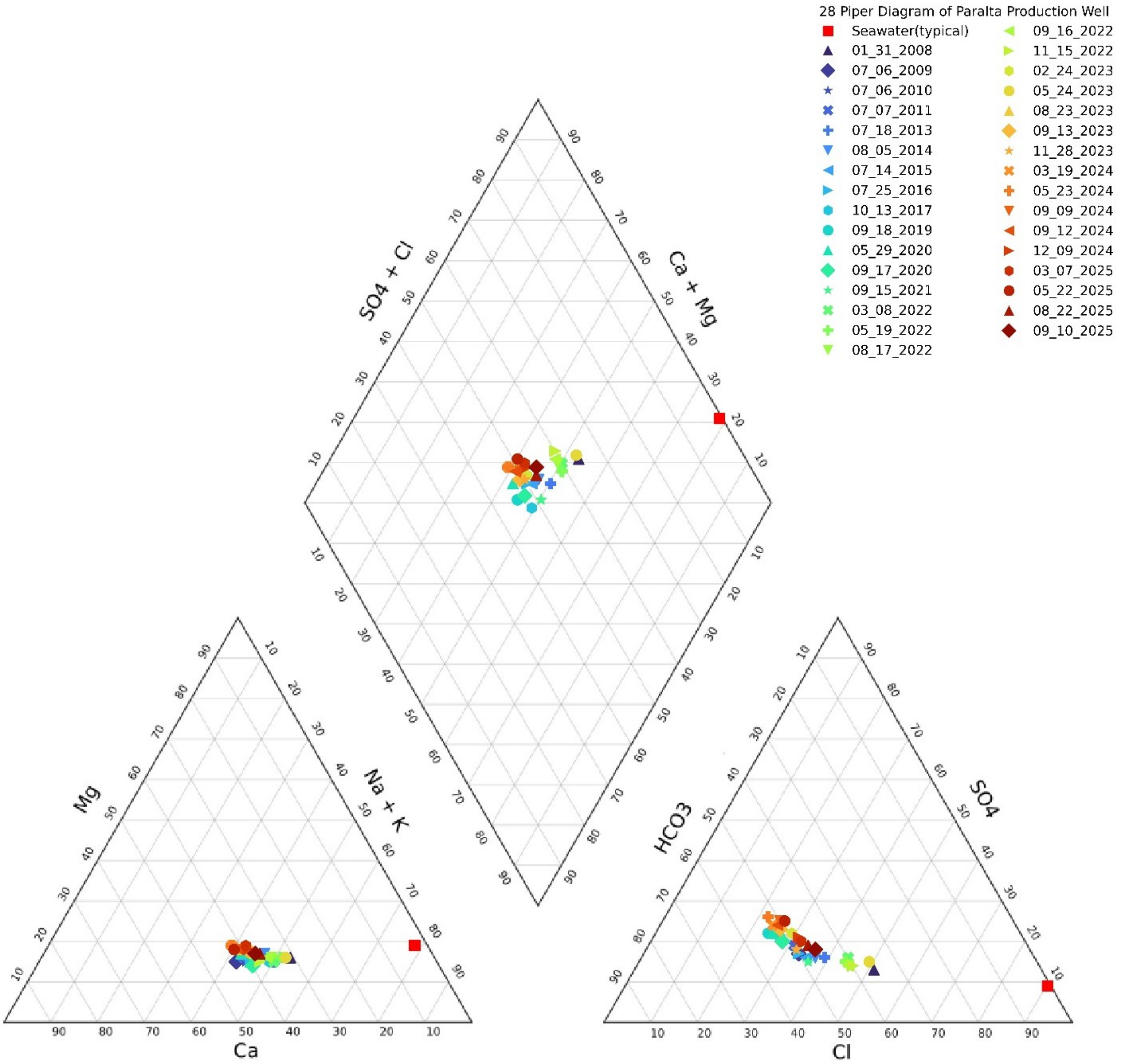


Figure C-28. Piper Diagram of Paralta Production Well

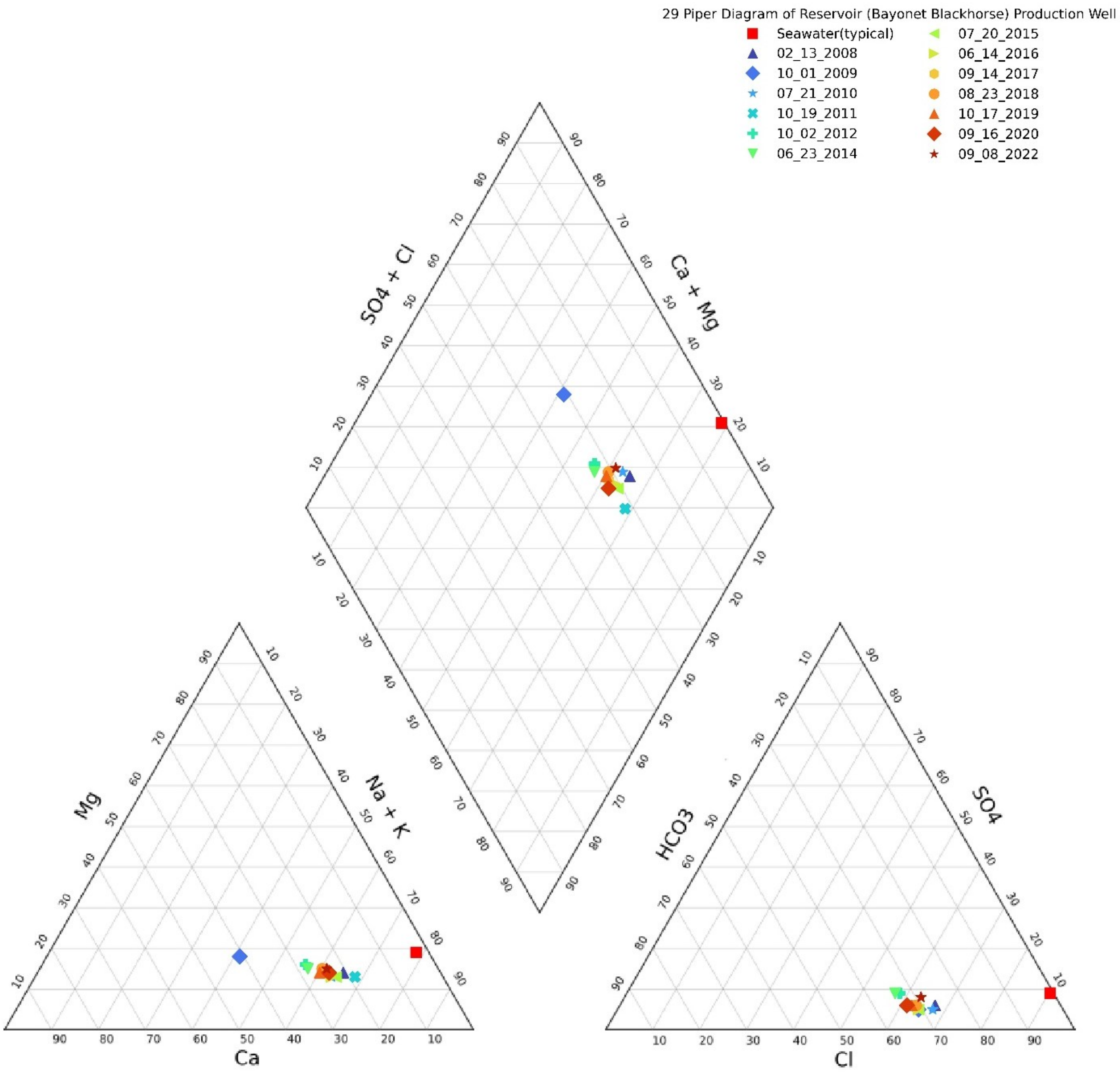


Figure C-29. Piper Diagram of Reservoir (Bayonet Blackhorse) Production Well

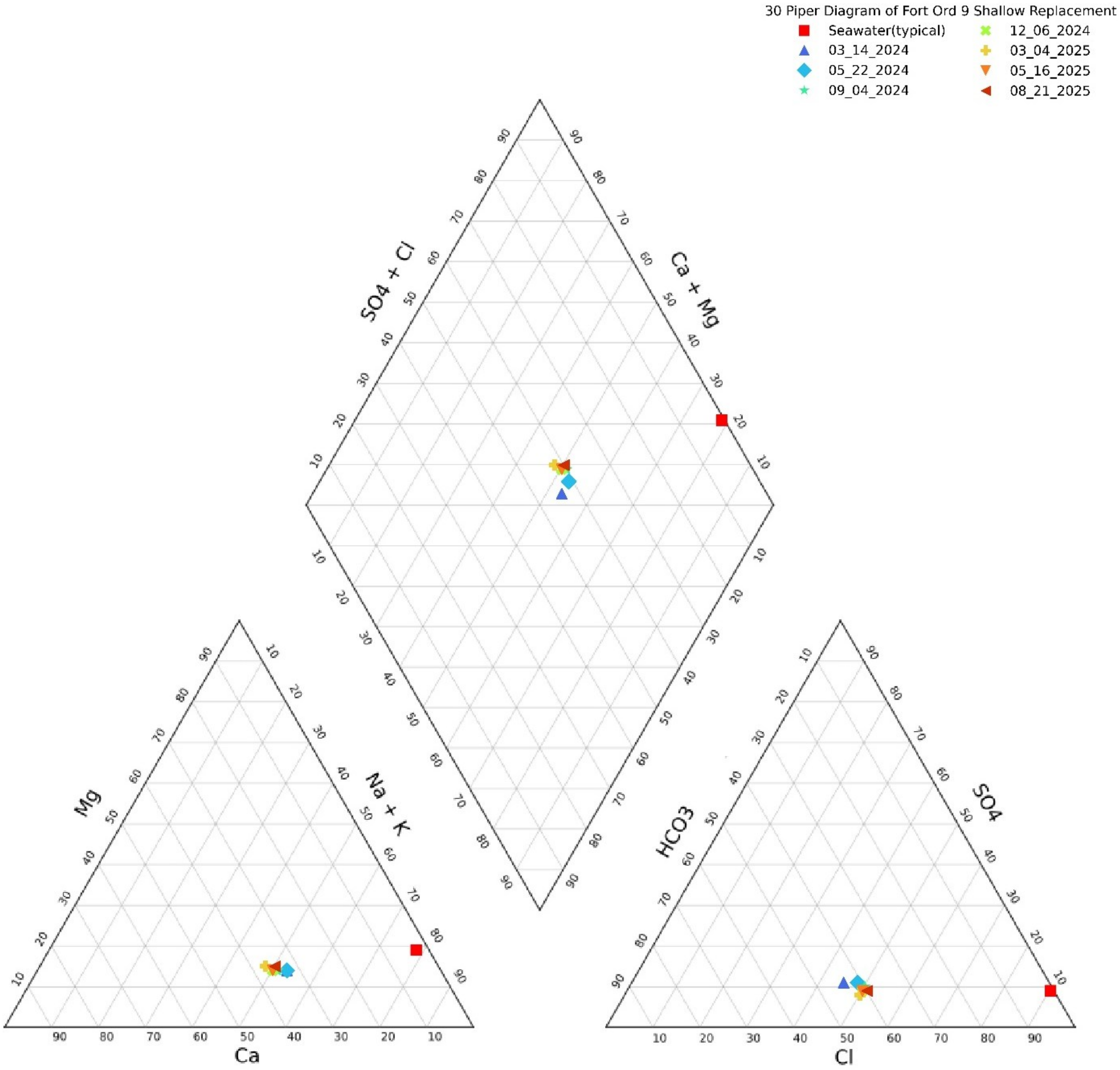


Figure C-30. Piper Diagram of Fort Ord 9 Shallow Replacement Well

MONTGOMERY
& ASSOCIATES

Appendix D

Chloride and Sodium/Chloride Molar Ratio Graphs

Appendix D Contents

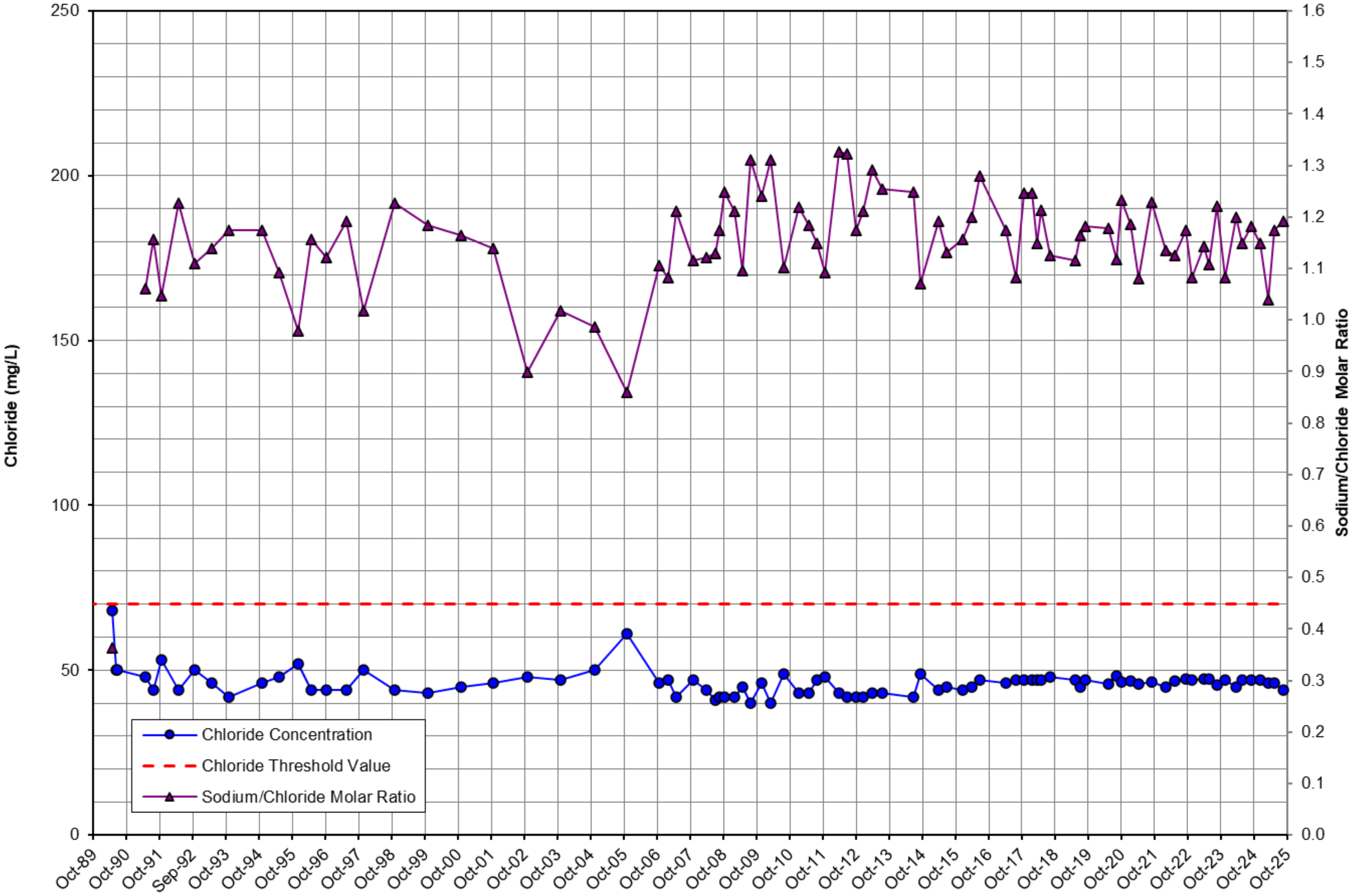


Figure D-1. PCA West Shallow Well Chloride and Sodium/Chloride Molar Ratio Graph

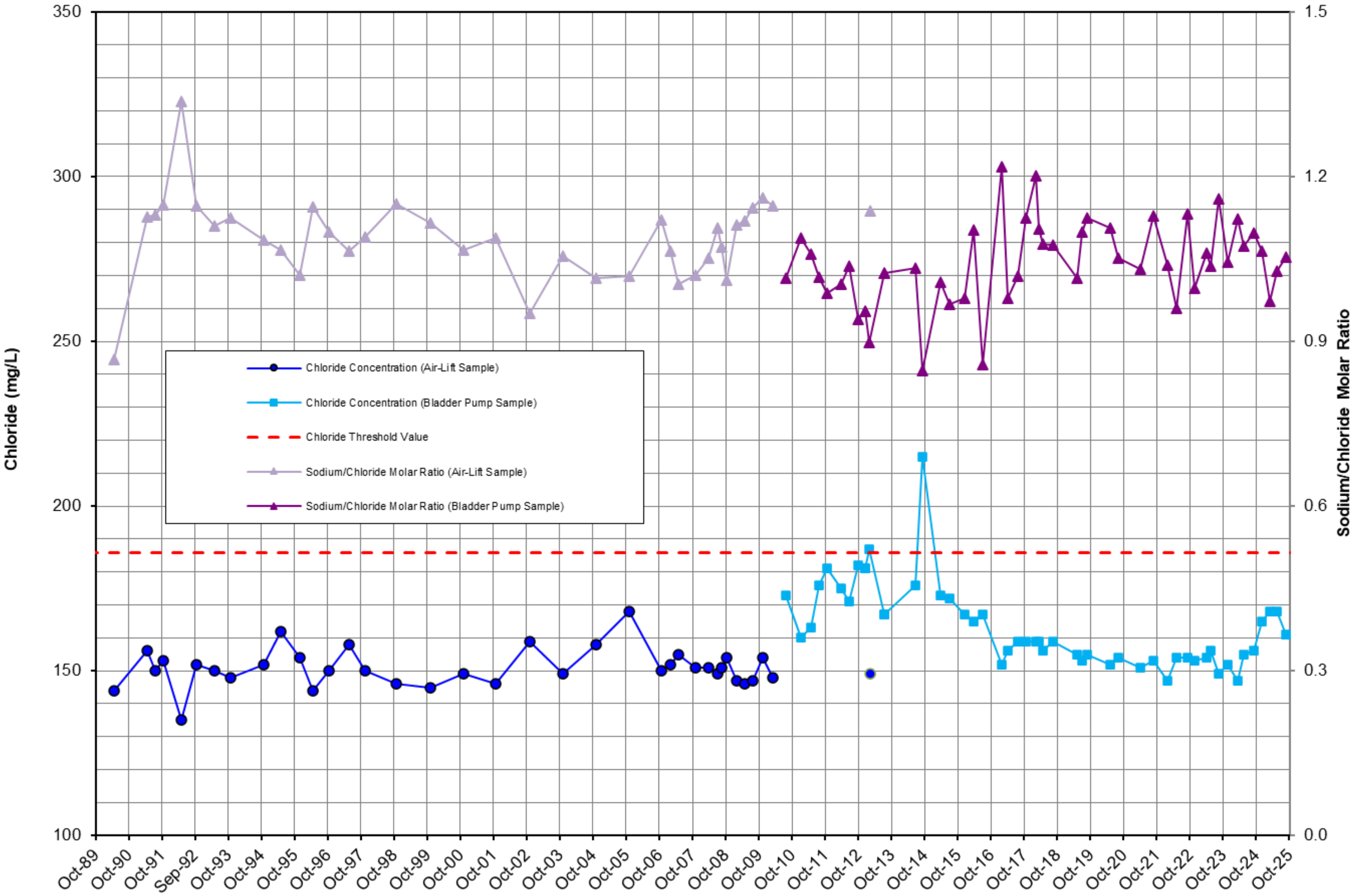


Figure D-2. PCA West Deep Well Chloride and Sodium/Chloride Molar Ratio Graph

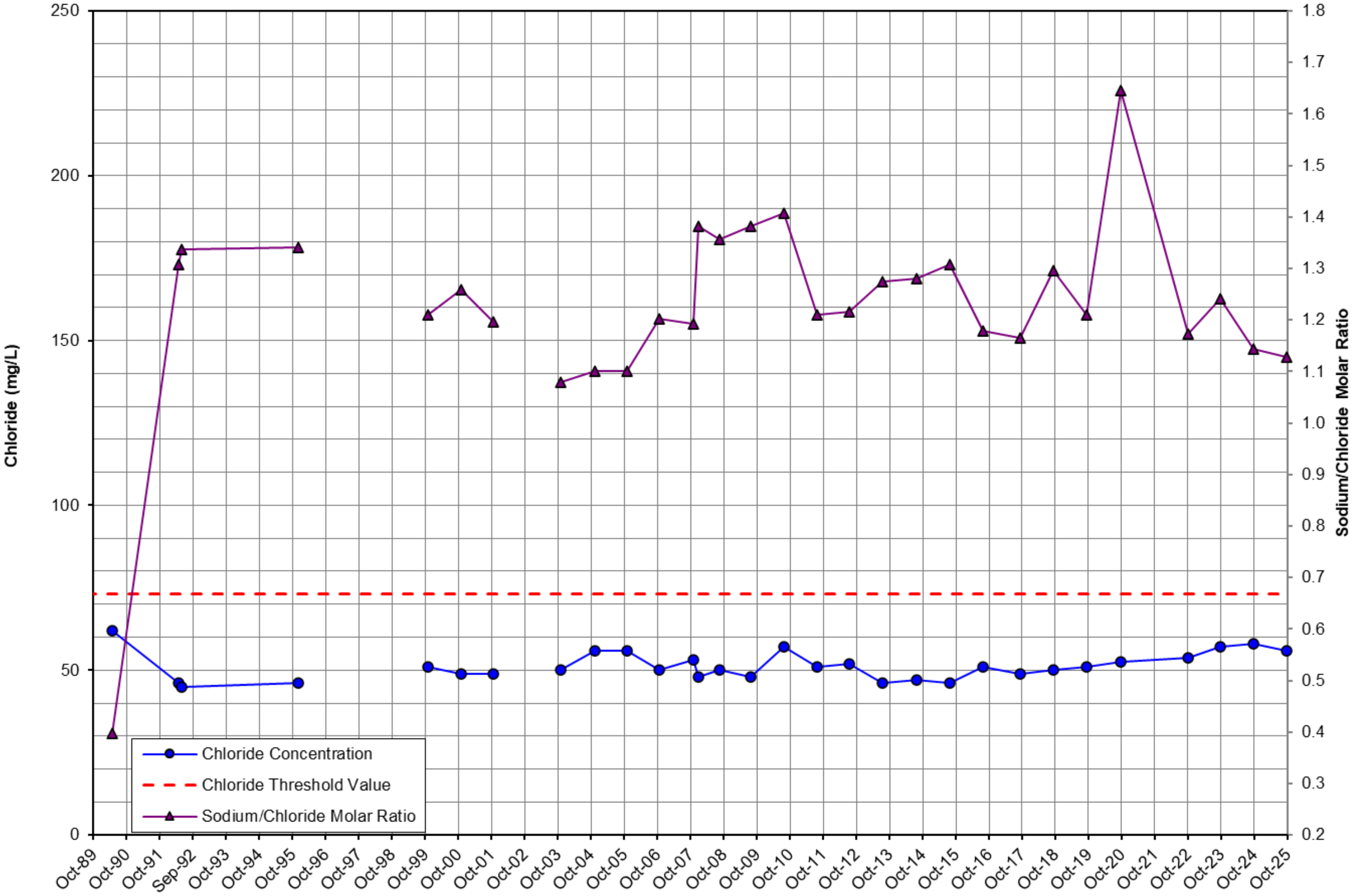


Figure D-3. PCA East Shallow Well Chloride and Sodium/Chloride Molar Ratio Graph

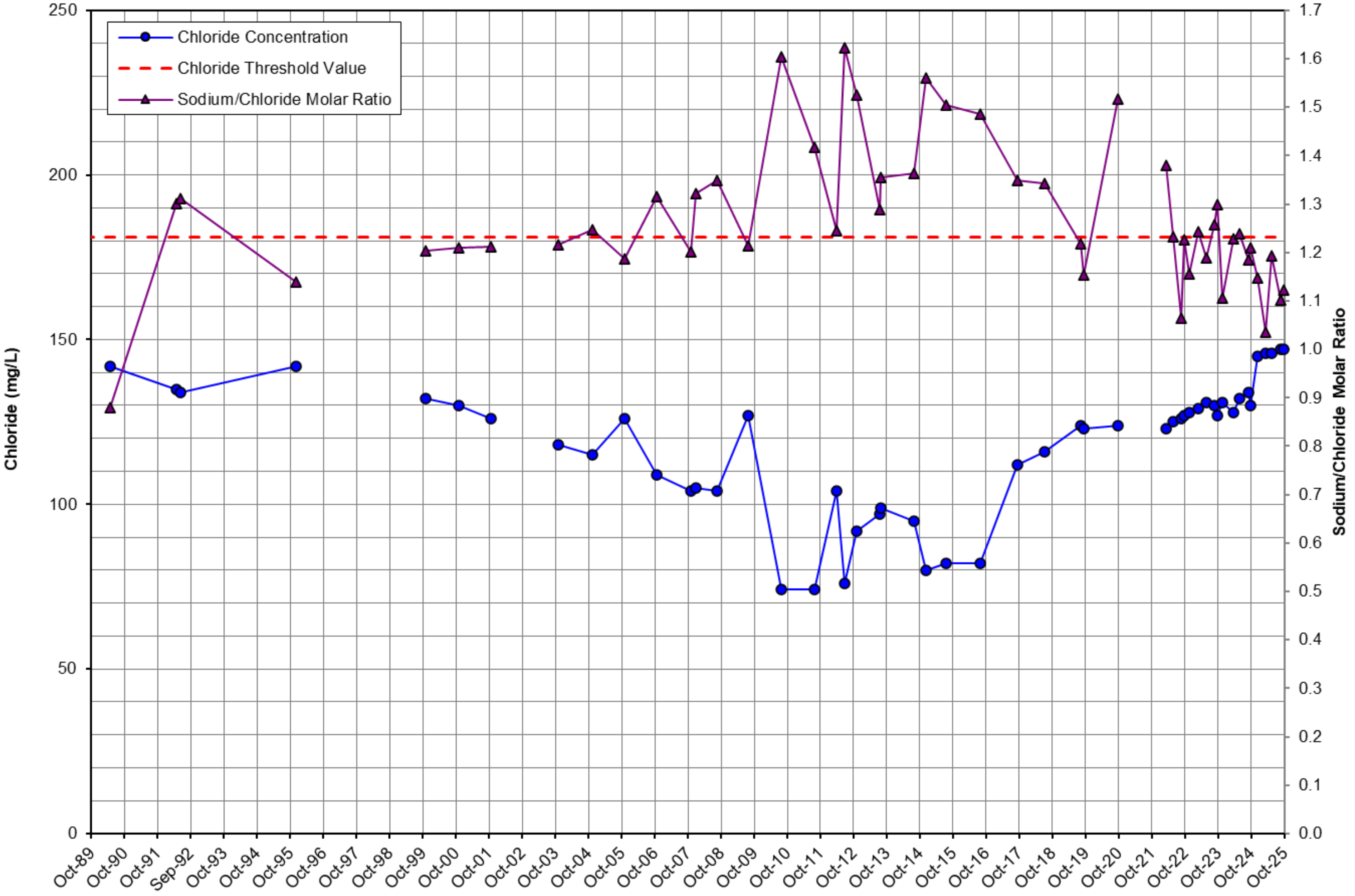


Figure D-4. PCA East Deep Well Chloride and Sodium/Chloride Molar Ratio Graph

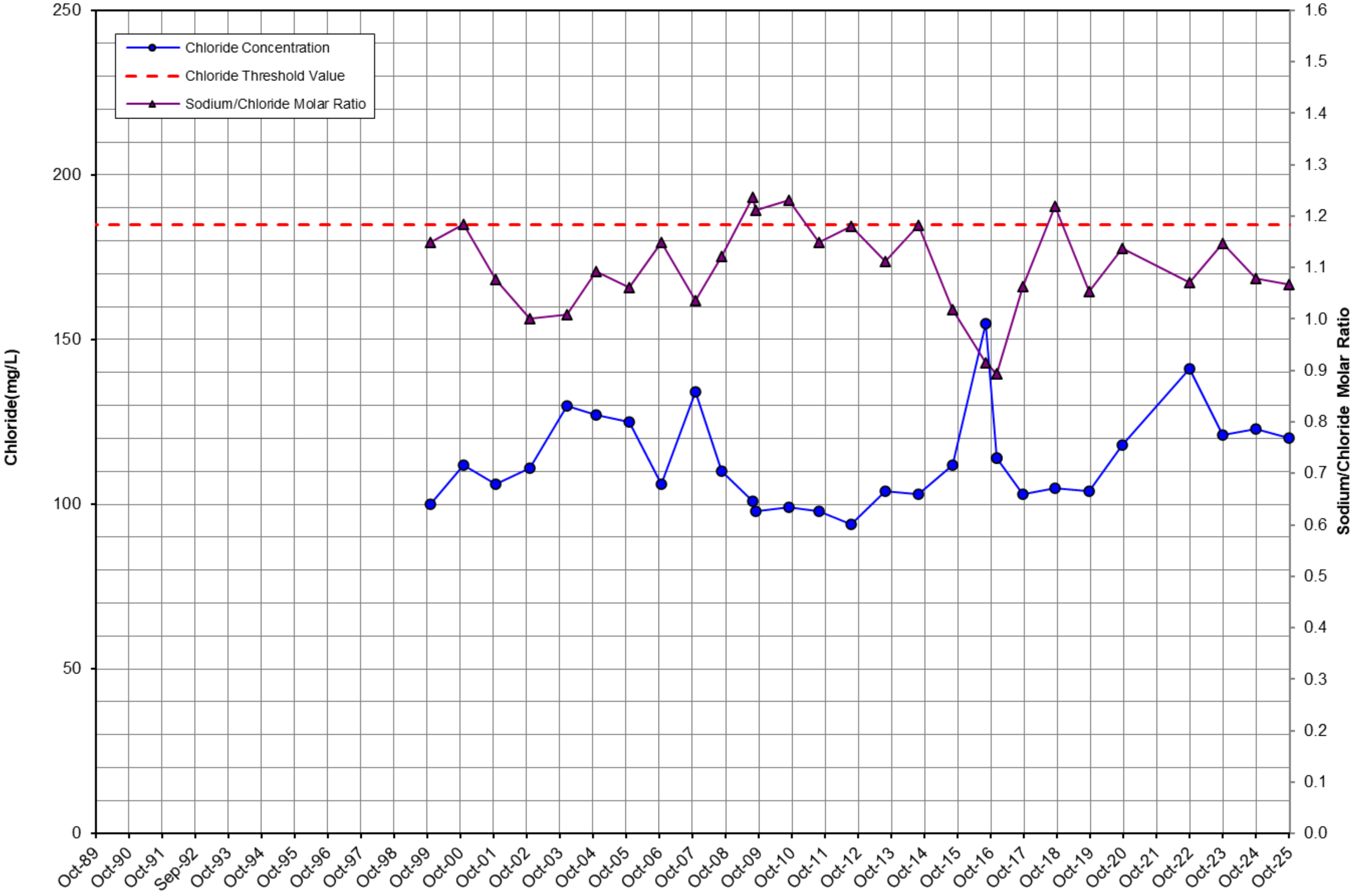


Figure D-5. Ord Terrace Shallow Well Chloride and Sodium/Chloride Molar Ratio Graph

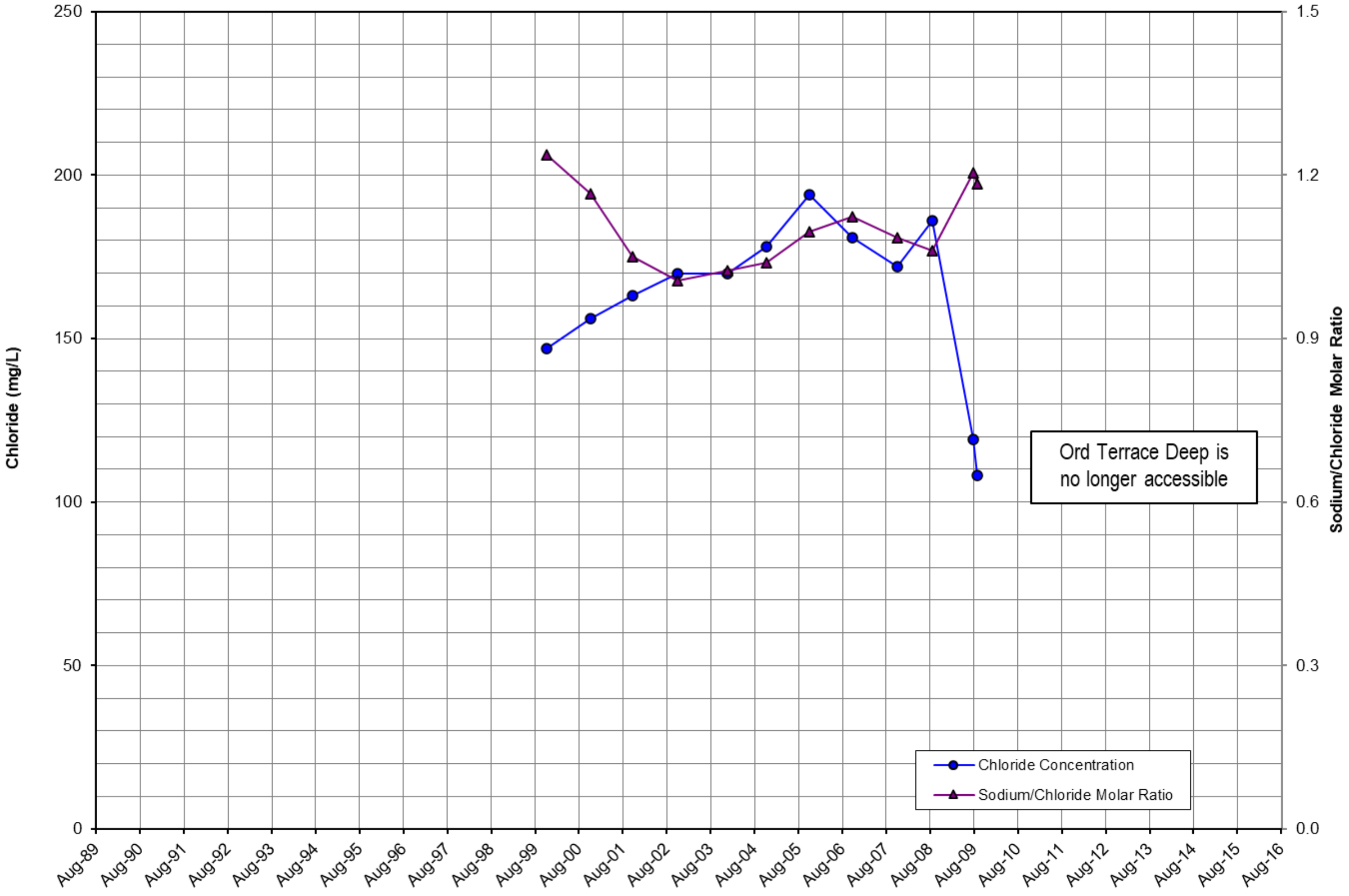


Figure D-6. Ord Terrace Deep Well Chloride and Sodium/Chloride Molar Ratio Graph

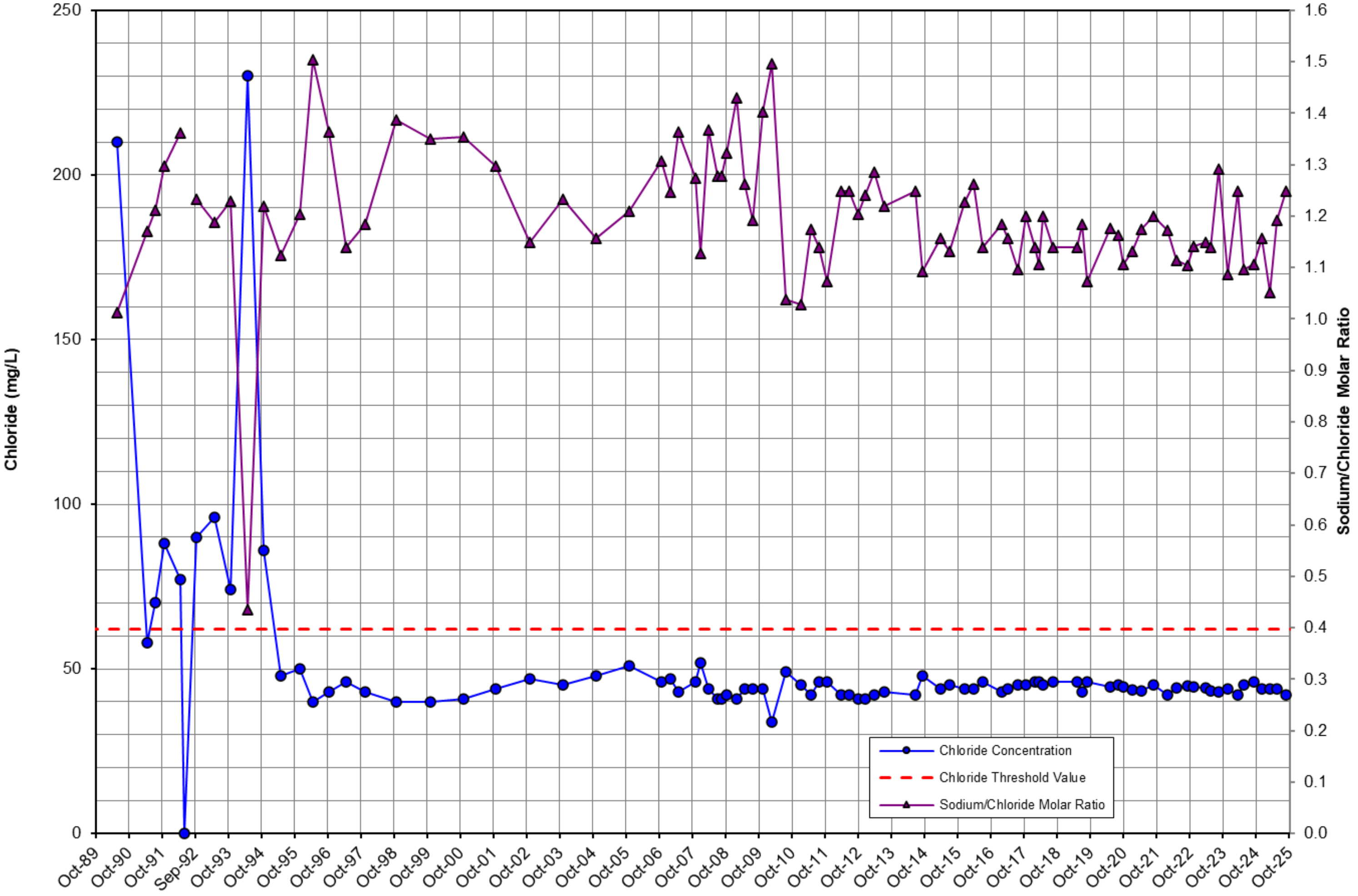


Figure D-7. MSC Shallow Well Chloride and Sodium/Chloride Molar Ratio Graph

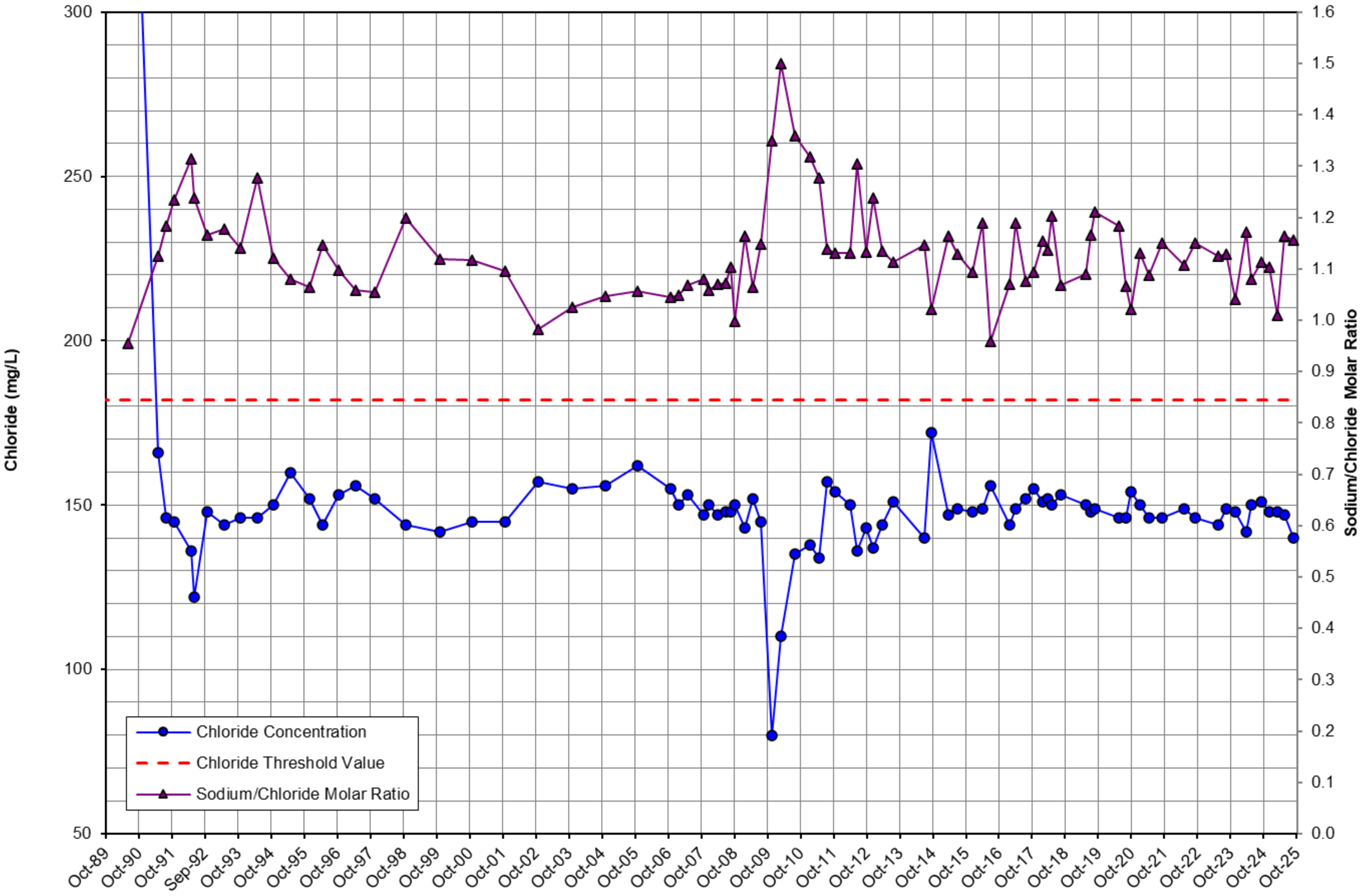
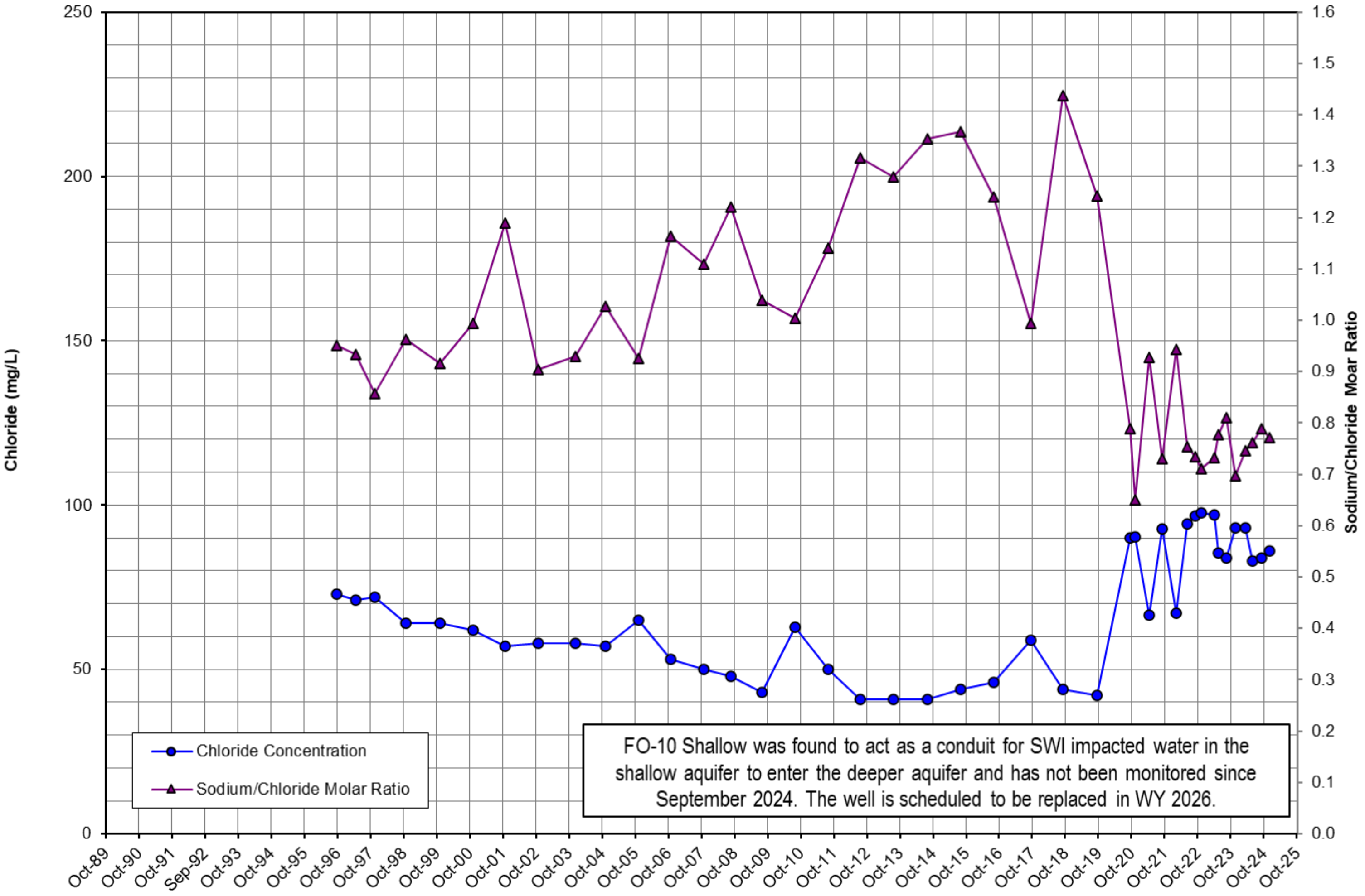
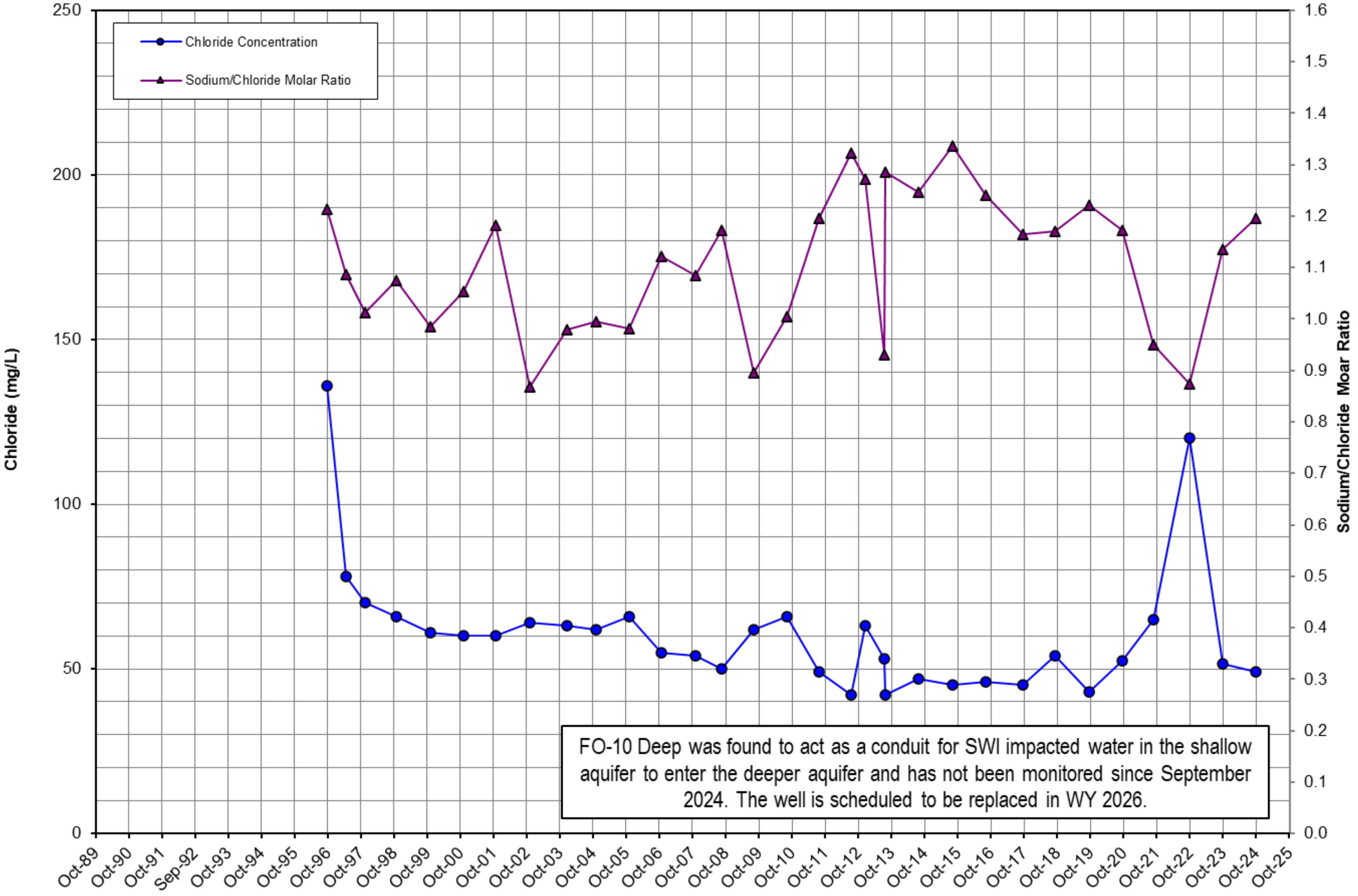


Figure D-8. MSC Deep Well Chloride and Sodium/Chloride Molar Ratio Graph



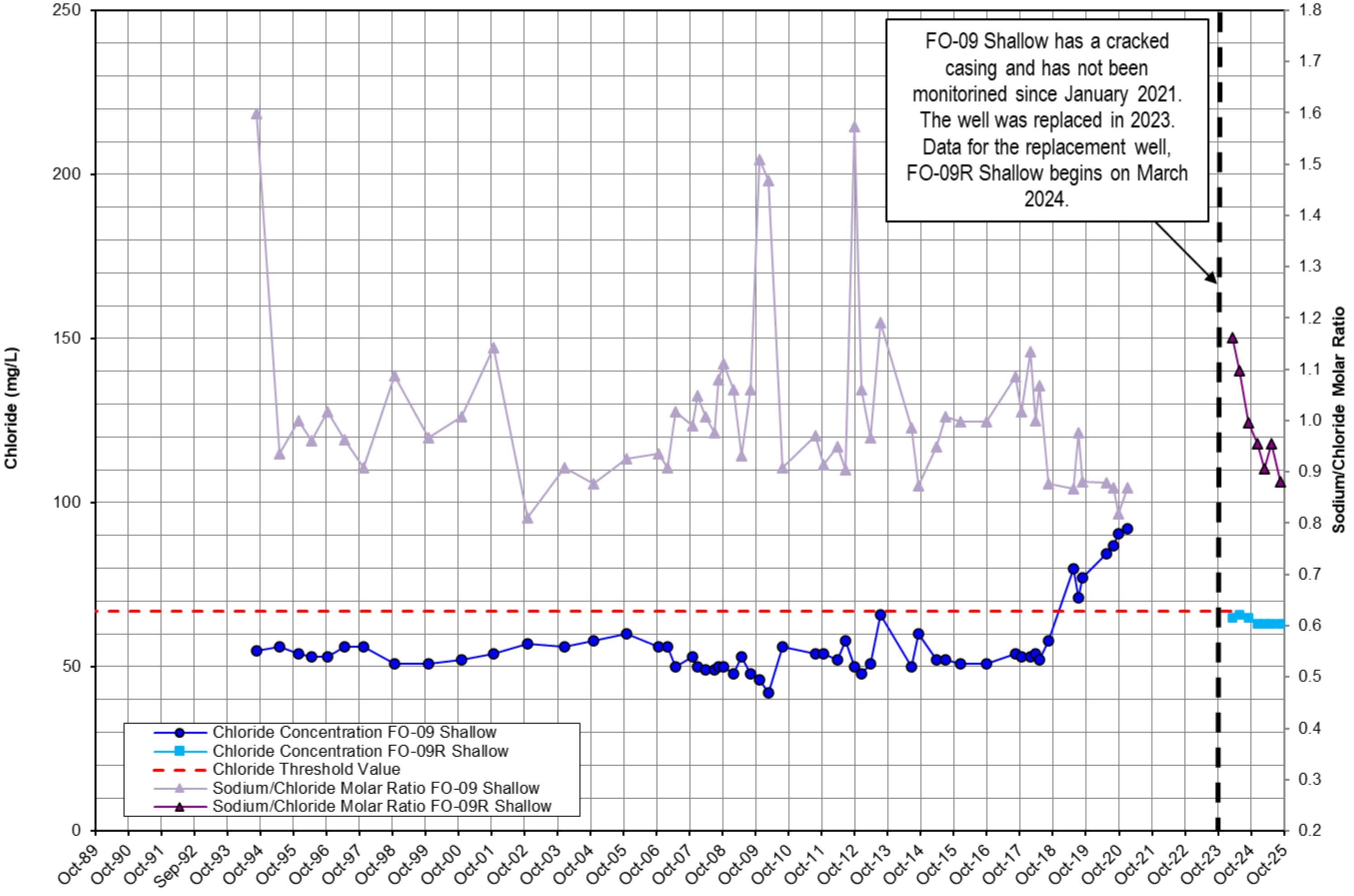
FO-10 Shallow was found to act as a conduit for SWI impacted water in the shallow aquifer to enter the deeper aquifer and has not been monitored since September 2024. The well is scheduled to be replaced in WY 2026.

Figure D-9. Fort Ord 10 Shallow Well Chloride and Sodium/Chloride Molar Ratio Graph



FO-10 Deep was found to act as a conduit for SWI impacted water in the shallow aquifer to enter the deeper aquifer and has not been monitored since September 2024. The well is scheduled to be replaced in WY 2026.

Figure D-10. Fort Ord 10 Deep Well Chloride and Sodium/Chloride Molar Ratio Graph



FO-09 Shallow has a cracked casing and has not been monitorined since January 2021. The well was replaced in 2023. Data for the replacement well, FO-09R Shallow begins on March 2024.

Figure D-11. Fort Ord 9 Shallow Well Chloride and Sodium/Chloride Molar Ratio Graph

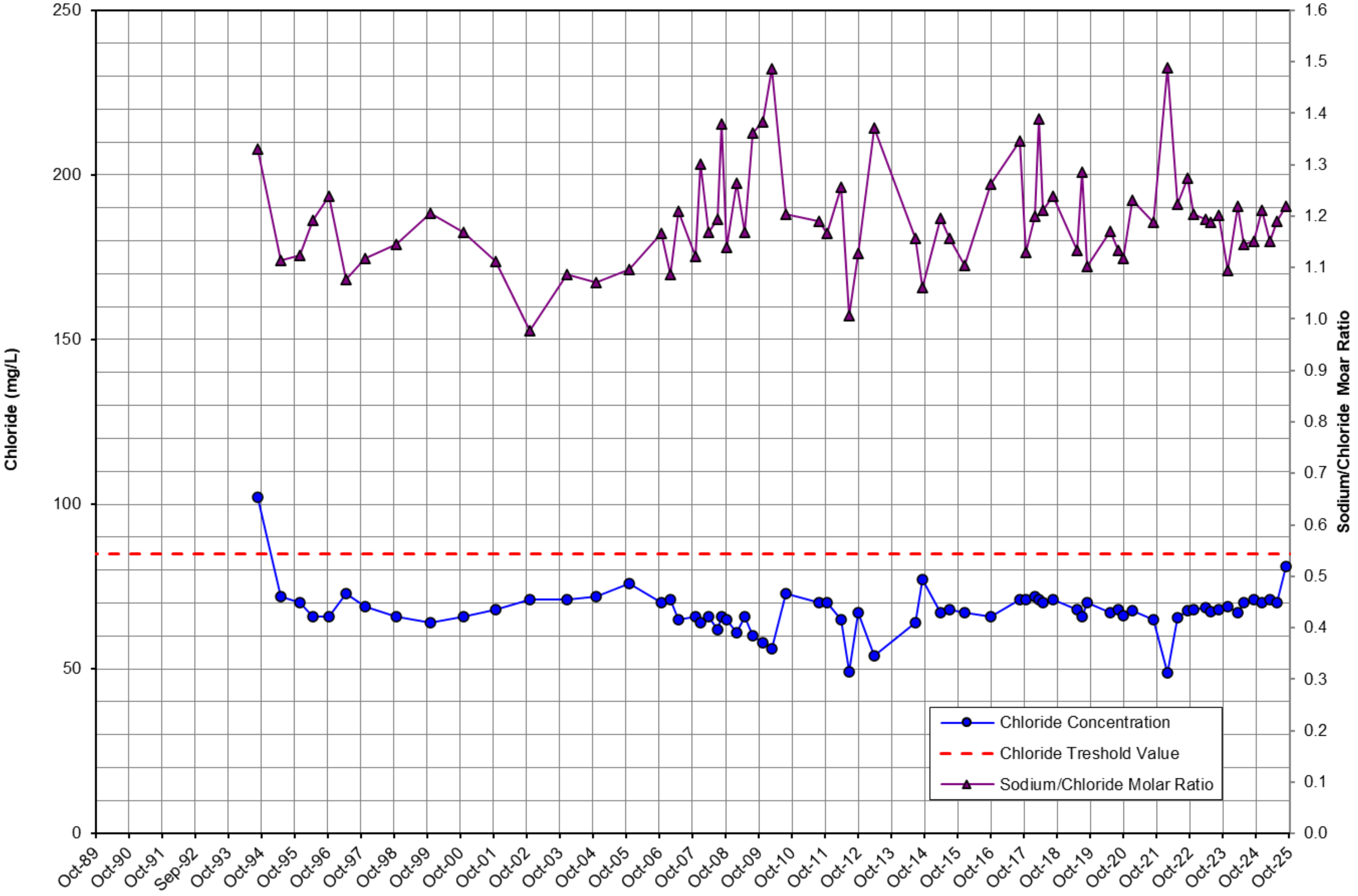


Figure D-12. Fort Ord 9 Deep Well Chloride and Sodium/Chloride Molar Ratio Graph

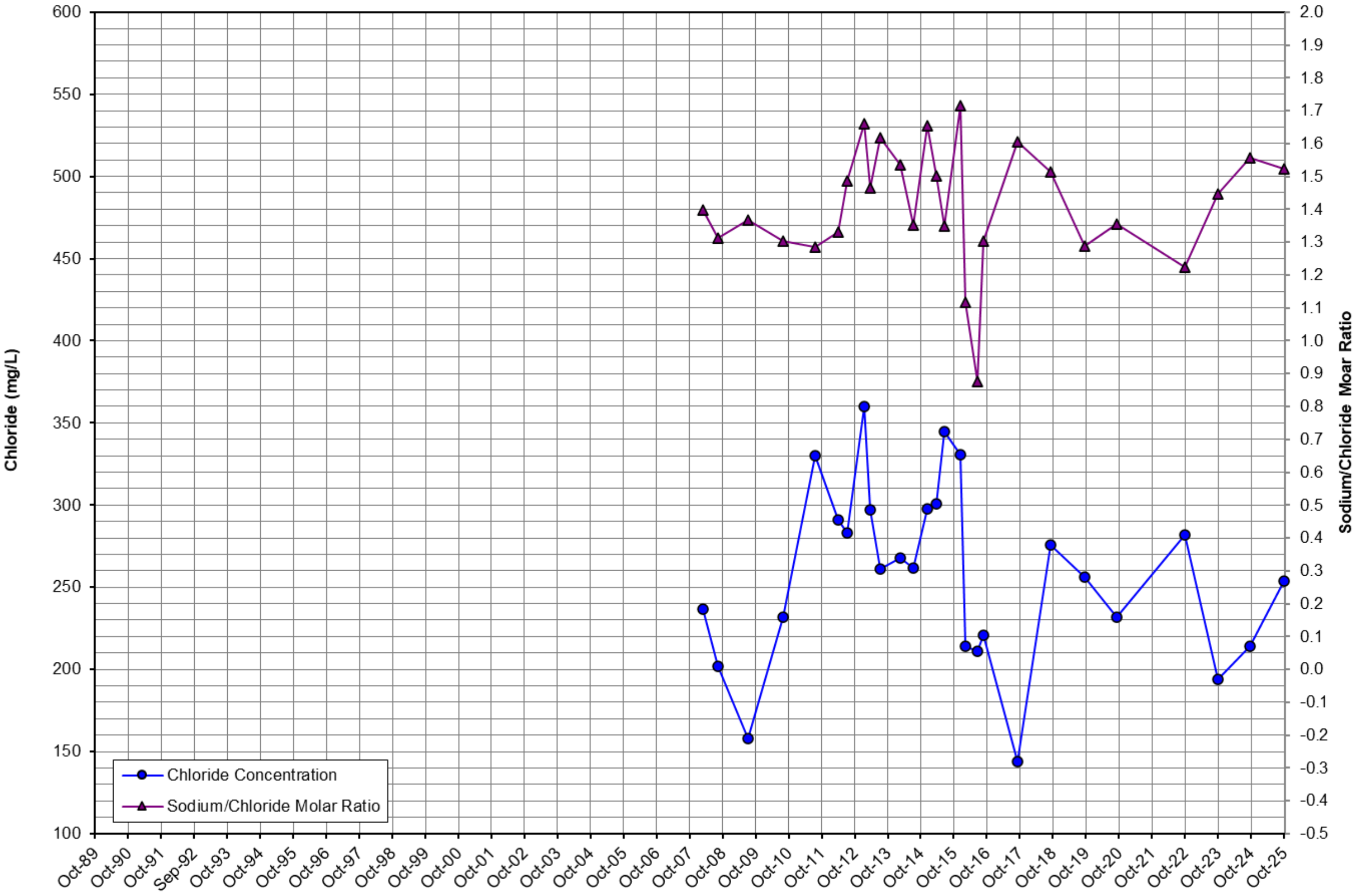


Figure D-13. Sand City Corp Yard Production Well Chloride and Sodium/Chloride Molar Ratio Graph