# Agenda

## Santa Cruz Mid-County Groundwater Sustainability Plan

### *Advisory Committee Meeting #15*

**Wednesday, January 23, 2019, 5:00 – 8:30 p.m.**
**Simpkins Family Swim Center**
**Rooms A & B - 979 17th Avenue Santa Cruz CA 95062**

**Meeting Objectives**

- Continue reviewing groundwater modeling results from pumping impact scenarios
- Discuss challenges in the Aromas Aquifer and options for moving forward
- Discuss proposed refinements to minimum thresholds for the Chronic Lowering of Groundwater Levels Sustainability Indicator

**Agenda**

| Item No. | Time[1] | Topic | Presenter & Materials |
|---|---|---|---|
| | *4:30 p.m.* | *Arrivals/Committee members collect food for dinner* | |
| 1. | 5:00 p.m. | Welcome, Introductions, Meeting Objectives, and Agenda Review<br>• Review updated project timeline | • Rosemary Menard, City of Santa Cruz<br>• Eric Poncelet, Facilitator<br>*Materials:*<br>*1.1 Agenda*<br>*Refer to PowerPoint Presentation*<br>• *Santa Cruz Mid-County Basin Groundwater Sustainability Plan Process Overview Timeline* |
| 2. | 5:10 p.m. | Oral Communications<br>• *Members of the public to comment on non-agenda items* | • Public |
| 3. | 5:20 p.m. | Project updates<br>• Surface Water Interaction Working Group<br>• Anticipated groundwater modeling enrichment session in February<br>• Santa Margarita Basin informational meetings<br>• Water exchanges, Pure Water Soquel and other<br>• DWR update | • John Ricker, County of Santa Cruz<br>• Cameron Tana, Montgomery & Associates<br>• Sierra Ryan, County of Santa Cruz<br>• Ron Duncan, Soquel Creek Water District<br>• Rosemary Menard, City of Santa Cruz |

[1] The times allotted on this agenda are approximate and are subject to change.

| Item No. | Time[1] | Topic | Presenter & Materials |
|---|---|---|---|
| 4. | 5:35 p.m. | Review and discuss groundwater modeling results for sustainability strategies<br>• Update on modeling results | • Ron Duncan, Soquel Creek Water District<br>• Cameron Tana, Montgomery & Associates<br>• Advisory Committee<br>*Refer to PowerPoint Presentation* |
| 5. | 6:25 p.m. | Public Comment | • Public |
| 6. | *6:35 p.m.* | *Break* | |
| 7. | 6:50 p.m. | Discuss other groundwater modeling results<br>• Non-municipal pumping effects | • Cameron Tana, Montgomery & Associates<br>• Advisory Committee<br>*Materials:*<br>7.1 *Summary of Groundwater Modeling Assumptions and Scenarios*<br>*Refer PowerPoint Presentation* |
| 8. | 7:10 p.m. | Discuss approaches for addressing challenges in the Aromas Aquifer<br>• Report on ongoing coordination with Pajaro Valley Water Management Agency<br>• Discuss new modeling results | • Ralph Bracamonte, Central Water District<br>• Cameron Tana, Montgomery & Associates<br>• Advisory Committee<br>*Materials:*<br>*Refer to 7.1 Summary of Groundwater Modeling Assumptions and Scenarios*<br>*Refer to PowerPoint Presentation* |
| 9. | 7:40 p.m. | Update on minimum thresholds for Chronic Lowering of Groundwater Levels Sustainability Indicator | • Georgina King, Montgomery & Associates<br>*Materials:*<br>*9.1 Proposed Draft Chronic Lowering of Groundwater Levels Sustainable Management Criteria (Version 3)*<br>*Refer to PowerPoint Presentation* |
| 10. | 8:10 p.m. | Public Comment | • Public |
| 11. | 8:20 p.m. | Confirm:<br>• December 12, 2018 GSP Advisory Committee Meeting Summary | • Advisory Committee<br>• Eric Poncelet, Facilitator<br>*Materials:*<br>*11.1 Draft Meeting Summary Groundwater Sustainability Plan Advisory Committee Meeting #14, December 12, 2018* |
| 12. | 8:25 p.m. | Recap and Next Steps | • Eric Poncelet, Facilitator |
| | *8:30 p.m.* | *Adjourn* | |

**Written Communications and Correspondence (included in the packet materials)**

1. Email Correspondence from B. Lockwood (PVWMA), December 14, 2018

2. Email Correspondence from A. Peisch (DWR), January 15, 2019

# Summary of Groundwater Modeling Assumptions and Scenarios

## Model Assumptions for Predictive Runs

The model assumptions provided below were discussed at the August and September GSP Advisory Committee meetings.

| **Model Assumptions** with Water Supply Augmentation Options as Superscript | **Assumptions** | **Follow up work** |
|---|---|---|
| Pumping demand [1] | CWD: pre-drought average 2008-2011<br>SqCWD: 2015 Urban Water Management Plan projections that reduce over time<br>City of Santa Cruz: cooperative agreement with SqCWD<br>Pre-drought estimates for non-municipal pumping | SqCWD projected demand may be too low; test SqCWD demand that is stable over time |
| Return Flow | Municipal system losses from sewer and water pipes | |
| Santa Margarita/Pajaro Valley boundaries | No annual changes in heads | |
| Stream-aquifer interaction | Streamflow calculated by model and calibrated to gauge flow data | Calibration of stream alluvium to gradient between shallow groundwater level and stream level |
| Climate change | Catalog Climate: 10% less rainfall, 1.5 degree F increase in temps | Model TAC approved use of Catalog Climate as opposed to individual global circulation models; will need to check approach with DWR |
| Sea level rise | +1.5 ft | Model TAC advised updating to 2018 Ocean Protection Council updated guidance +2.3 feet in 2070 based on 5% probability |
| Surface water transfer [2] | 2015 AFY pilot transfer to SqCWD continues indefinitely | |

## Modeled Basin Effects from Scenarios Reflecting Potential Management Actions and Projects

The modeled scenarios provided below were discussed at the September,October and December GSP Advisory Committee meetings.

Red font indicates added information since December GSP Advisory Committee meeting.

| | Model Scenario with Water Supply Augmentation Options as Superscript | Type | General Effect on Groundwater Levels | Follow up work |
|---|---|---|---|---|
| 1 | Eliminate non-municipal inland pumping in areas where simulated groundwater levels are > 50 ft above sea level | Sensitivity | small effect in coastal groundwater levels (< 1 ft increase) | Test effect of non-municipal pumping in Aromas area (Purisima F and Aromas) |
| 2 | Reduce septic tanks return flow from 90% to 50% | Sensitivity | small effect in coastal groundwater levels (~1 ft decrease) | |
| 3 | Eliminate non-municipal wells in area of municipal pumping | Sensitivity | small effect in coastal groundwater levels in deepest Purisima protected aquifer (~1 ft increase) | |
| 4 | Eliminate non-municipal wells in area between the area of municipal pumping and the inland area where simulated groundwater levels are > 50 ft above sea level | Sensitivity | Effect of up to 2 feet in coastal groundwater levels in deepest Purisima protected aquifers | |
| 5 | Pajaro Valley Boundary, groundwater levels increase 3 ft | Sensitivity | benefits groundwater levels in the Aromas area (up to 1.2 ft increase at protective elevation wells). Similar effect at SC-A3A in Aromas Red Sands to eliminating coastal Pajaro Valley Subbasin pumping and greater effect in Purisima F unit wells (SC-A1B, SC-A8A, and SC-A2A) than eliminating non-municipal Aromas area wells (see below). | |
| 6 | Effect of non-municipal pumping in alluvium | Sensitivity | In progress | Move pumping in aquifers below alluvium and Terrace Deposits to alluvium and Terrace Deposits |
| 7 | Effect of non-municipal pumping in Soquel Creek and Bates Creek Valleys | Sensitivity | In progress | Turn off pumping in these areas |
| 8 | Effect of vertical distribution of pumping near Soquel Creek | Sensitivity | In progress | Move municipal pumping in wells screened in AA and Tu to only Tu |
| 9 | Eliminate coastal Aromas/Purisima F unit municipal wells (four SqCWD wells and two CWD) on coastal groundwater levels | Sensitivity | Influence of between 2 - 4 ft (depending on redistribution and pumping curtailment scenario) on coastal Purisima F unit groundwater levels at SC-A1B, SC-A8A and SC-A2A. The most southerly of the coastal monitoring wells, SC-A3A in the Aromas Red Sands aquifer, has little influence from Aromas/Purisima F municipal pumping | |

| | Model Scenario with Water Supply Augmentation Options as Superscript | Type | General Effect on Groundwater Levels | Follow up work |
|---|---|---|---|---|
| 10 | Eliminate coastal Aromas/Purisima F unit non-municipal wells on coastal groundwater levels | Sensitivity | Less of an influence on coastal Purisima F unit groundwater levels at SC-A1B, SC-A8A and SC-A2A than Aromas/Purisima F unit municipal pumping but still around 1 ft increase. The most southerly of the coastal monitoring wells, SC-A3A in the Aromas Red Sands aquifer, has little influence from Aromas/Purisima F non-municipal pumping | |
| 11 | Eliminate coastal Pajaro Valley non-municipal pumping | Sensitivity | Influence of up to 1.5 ft on the southernmost coastal monitoring well, SC-A3A, in Aromas Red Sands aquifer. This influence is greater than coastal Aromas/Purisima F non-municipal pumping at SC-A3A. Non-municipal pumping in the Coastal Pajaro Valley has decreased influence northwards into the Mid-County Basin. | |
| 12 | Remove surface water transfer to SqCWD | Management action | Lowers groundwater levels in coastal Purisima A unit and Tu unit up to 4 feet. | |
| 13 | Municipal pumping redistribution towards coast | Current operational limits | Lowers groundwater levels 1-4 feet in western coastal Purisima A unit. Increase groundwater levels 10+ feet in coastal Tu unit. Decreases groundwater levels <1 ft in coastal Aromas area. | |
| 14 | Reduce municipal pumping [1, 2a, 4a, 4bii, 4d, 5a, 5b] | Management action | - helps recover Purisima A-unit and BC unit, Purisima A/BC units can have increased pumping and still achieve sustainability<br>- Aromas area/Purisima F unit pumping needs further reduction<br>- Tu unit pumping needs further reduction<br>- coastal elevations La Selva Beach area of Aromas aquifer (SC-A3A) are not impacted by reducing municipal pumping because municipal wells already inactive. | Redistribute municipal pumping further in an attempt to reach Minimum Thresholds and Measurable Objectives at more wells<br>Test effect of non-municipal pumping in Aromas area (Purisima F and Aromas) |
| 15 | Aquifer storage and recovery by City of Santa Cruz [2b] | Project | Greater groundwater level declines near recovery wells for in-lieu scenarios compared to ASR injection scenarios | Continue feasibility evaluation by simulating different project configurations |
| 16 | Pure Water Soquel seawater intrusion prevention by SqCWD [4bi, 4c] | Project | see Draft EIR<br>Project to be discussed at January 2019 GSP Advisory Committee meeting | |

| | Model Scenario with Water Supply Augmentation Options as Superscript | Type | General Effect on Groundwater Levels | Follow up work |
|---|---|---|---|---|
| 18 | Managed aquifer recharge in the Aromas area (500 AFY) | Theoretical project | Project in area identified as suitable for MAR increases groundwater levels in Purisima F unit wells SC-A1, SC-A8 and SC-A2 2-3 feet to help achieve protective elevations at those wells, but only 0.5 feet at the most southerly protective Aromas Red Sands well SC-A3A . Over the long-term, 500 afy of recharge results in 200 afy increase in flow offshore and 300 afy increase in flow to Pajaro Valley Sub-basin | |

# Santa Cruz Mid-County Basin
# Proposed Draft Chronic Lowering of Groundwater Level Sustainable Management Criteria (version 3)

This document is the third proposed draft that documents development of some of the Sustainable Management Criteria to be included in the Groundwater Sustainability Plan (GSP) for chronic lowering of groundwater levels. Specifically, the Sustainable Management Criteria included in this document are:

- Chronic lowering of groundwater level conditions that the GSP Advisory Committee considered significant and unreasonable,
- A set of conditions that cause undesirable results that may lead to significant and unreasonable chronic lowering of groundwater levels, and
- Updated proposed Minimum Thresholds at Representative Monitoring Wells.

## Chronic Lowering of Groundwater Levels - Significant and Unreasonable Conditions

**A significant number of private, agricultural, industrial, and municipal production wells can no longer provide enough groundwater to supply beneficial uses.**

Rationale: Groundwater levels should be managed to support existing and/or proposed overlying land uses and environmental water user's beneficial needs.

Note: this has not changed since the last version presented in September 2018.

## Chronic Lowering of Groundwater Level Undesirable Results

**The average monthly Representative Monitoring Well groundwater elevation falls below the <Minimum Threshold>. All Representative Monitoring Wells to be equipped with data loggers.**

Rationale: Monthly average groundwater levels will adequately monitor and identify seasonal low groundwater elevations.

Note: this has not changed since the last version presented in September 2018.

"Average monthly" means all groundwater levels recorded by the data logger over each month (at least daily measurements) will be averaged to result in an average groundwater level for each month. For each Representative Monitoring Well, a chart

will be created annually showing 12 average groundwater elevations compared to the minimum threshold for each well. We will provide theses charts in our annual GSP report to DWR. An undesirable result will occur if the average monthly groundwater level falls below the minimum threshold for any Representative Monitoring Well.

## Chronic Lowering of Groundwater Level Minimum Thresholds

Staff's initial proposal to the Advisory Committee was to define Minimum Thresholds as being 20 feet from the bottom of wells. Although pumps for private wells are often placed 20 feet from the bottom of wells, this is not a suitable metric as some pumps are placed higher. There also needs to be some groundwater above the pump for it to pump water without being damaged. The Advisory Committee suggested an approach to develop Minimum Thresholds that considers the overlying land use and beneficial users of groundwater. After bringing the proposed approach to the Advisory Committee in September 2018, the approach has been adjusted slightly, and is presented below.

***Approach for Developing Minimum Thresholds***

Basic concepts/principals:

1. For each Representative Monitoring Well (RMW) location the adjusted minimum saturated thickness (i.e., groundwater level required above the bottom of the shallowest well in the vicinity of the RMW to meet the overlying water demand) is estimated using the method outlined below.
2. The previous version of this proposal recommended 30 feet below historic low groundwater levels as the maximum decline allowed before it is considered significant and unreasonable. The GSP Advisory Committee needs to provide feedback on whether they agree with this maximum decline, or if another decline depth should be used.
3. In some cases, there may be other reasons for moving Minimum Thresholds to a higher elevation than the adjusted MST. Table 1 includes the rationale for moving Minimum Thresholds higher for specific wells.
4. This sustainability indicator is related only to chronic lowering of groundwater levels, and not to seawater intrusion or interconnected surface water, even though those indictors also use groundwater elevations as proxies.
5. Groundwater levels in RMWs for chronic lowering of groundwater levels can be at or just below sea level if they are inland enough (Figure 1). When inland levels are below sea level, it is still possible to have coastal groundwater levels above protective elevations protecting against seawater intrusion. This is currently

occurring in parts of the Basin. However, any metrics developed should not interfere with the ability to meet coastal monitoring wells' metrics.

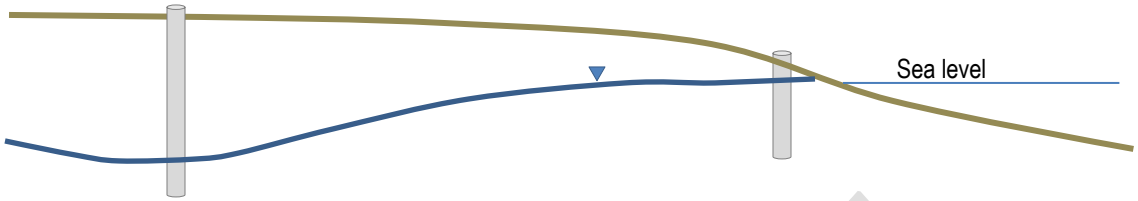


**Figure 1. Schematic of Inland Groundwater Levels below Sea Level**

The general premise for determining Minimum Thresholds for chronic lowering of groundwater levels is that groundwater levels cannot go below a level which prevents overlying groundwater users from meeting their typical water demand. Overlying water demand is determined from land use and by the well use indicated on well driller logs in the vicinity of the RMW.

The saturated thickness of an aquifer is an important factor that can limit well yields. When groundwater levels decline, the saturated thickness of the aquifer decreases. The saturated thickness may decrease to a point at which the aquifer can no longer produce water to the well at the minimum rate of pumping needed to meet typical demands.

The pump rate and aquifer properties control how much saturated aquifer thickness (distance between the bottom of the well and the groundwater level) is needed to meet water demands. Water demands by municipal wells are known as municipal agencies have detailed records of each well's pump capacity and volumes pumped. Private domestic and agricultural well users generally do not have this information, and therefore assumptions were made to estimate their water usage. For domestic use, average rates of 10 gpm were provided by a local pump contractor. For purposes of estimating the minimum saturated thickness (MST) needed, a more conservative rate of 15 gpm was used as this needs more saturated thickness than a well pumping at 10 gpm (i.e. the groundwater level needs to be higher for 15 gpm). For agricultural wells, the estimated capacity provided on the well driller's logs available indicated 250 gpm is typical.

A theoretical MST for each RMW is estimated using a spreadsheet tool developed by the Kansas Geological Survey based on the overlying water demand. The tool considers well efficiency, nearby pumping wells, and drawdown in the well due to pumping at a given rate. To consider uncertainties in the MST estimation, a 20% safety factor is added to the MST obtained from the spreadsheet tool. It is also assumed that a well pump can be

placed no deeper than 20 feet from the bottom of the well to prevent the pump from being damaged by settled sediment in the bottom of the well. This is the typical depth well pumps are set in domestic wells according to a local pump installer. To account for this, a further 20 feet is added to the estimated MST. Figure 2 provides a generalized schematic that illustrates the method described above. The resultant adjusted MST is the minimum thickness of saturated aquifer that is needed for overlying groundwater users to meet their typical demand. In some areas there may be two overlying uses, such as agricultural and domestic, or municipal and domestic. For these cases, the adjusted MST of the use type that results in the shallowest groundwater level is used.

As a conservative measure, the approach assumes the RMW has a depth equal to the shallowest nearby well screened in the same aquifer as the RMW. ~~or if the shallowest well results in a Minimum Threshold above the groundwater level in the RMW, up to the 15th percentile shallowest well depth is used (i.e. up to 85% of wells are deeper than this depth)~~. This results in a shallower groundwater elevation than if the actual depth of the RMW is used (if it is deeper than nearby wells).

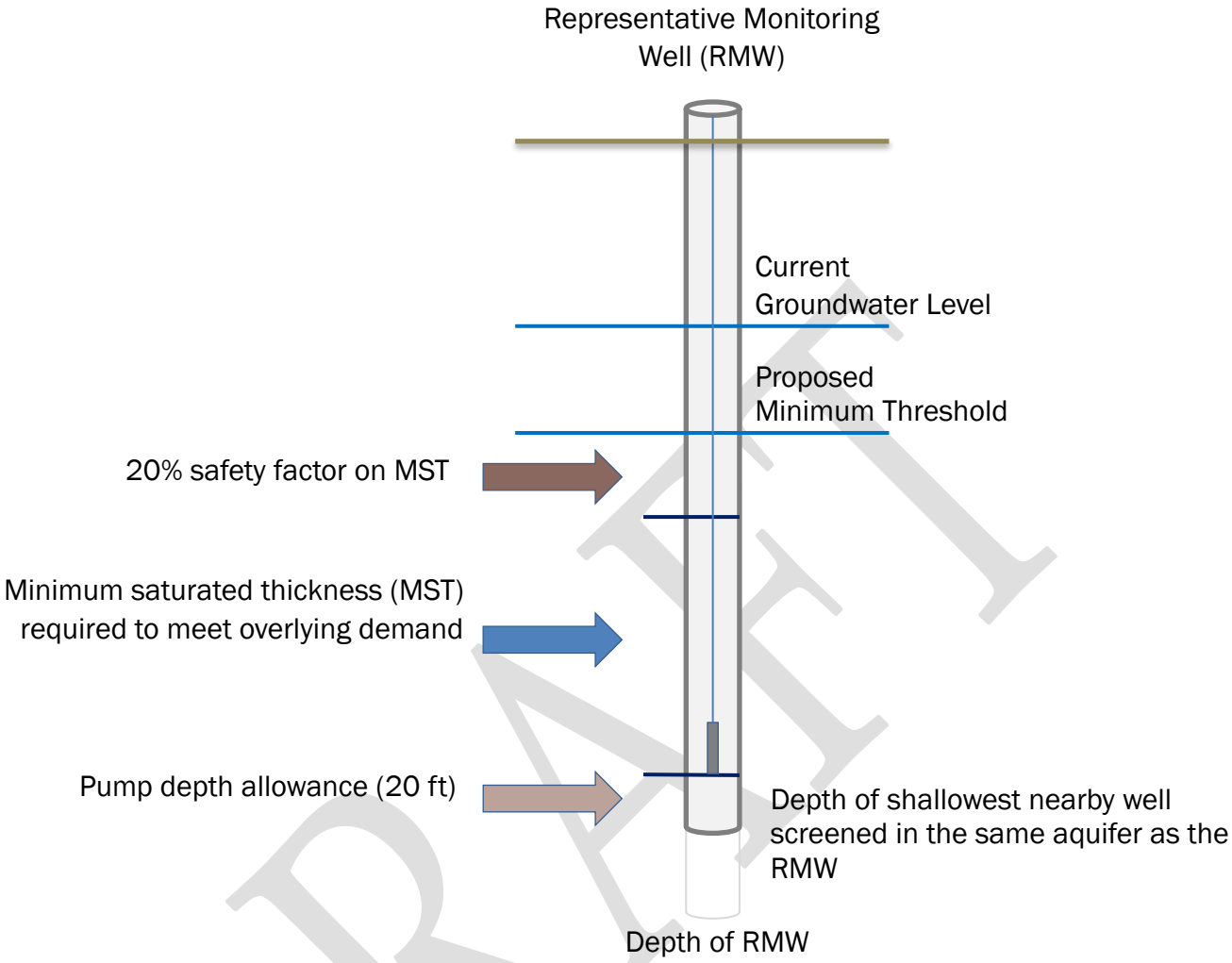


**Figure 2. Schematic of Development of Minimum Thresholds based on Overlying Demand**

***Proposed Minimum Thresholds***

Figure 3 shows the locations of the 17 RMWs within the Basin with their revised proposed Minimum Thresholds, and Table 1 summarizes proposed Minimum Thresholds for those wells. The hydrographs that follow (Figures 4 – 20) provide historical groundwater level data for each RMW, along with proposed Minimum Thresholds indicated as a dashed horizontal line. There were five wells that had adjusted MSTs that are more than 30 feet below historic low groundwater levels. For these wells, the proposed Minimum Threshold was raised to 30 feet below historic low groundwater levels. This was done because, although the wells could meet their demand with a much lower groundwater level, having groundwater levels drop to these depths may influence other Sustainability Indicators. There are three wells where the Minimum Thresholds were raised to sea level

as these are close to protective elevation coastal monitoring wells and having groundwater levels below sea level will make it difficult to achieve protective elevations at the coast. Other reasons for raising elevations from the MST levels are provided in Table 1.

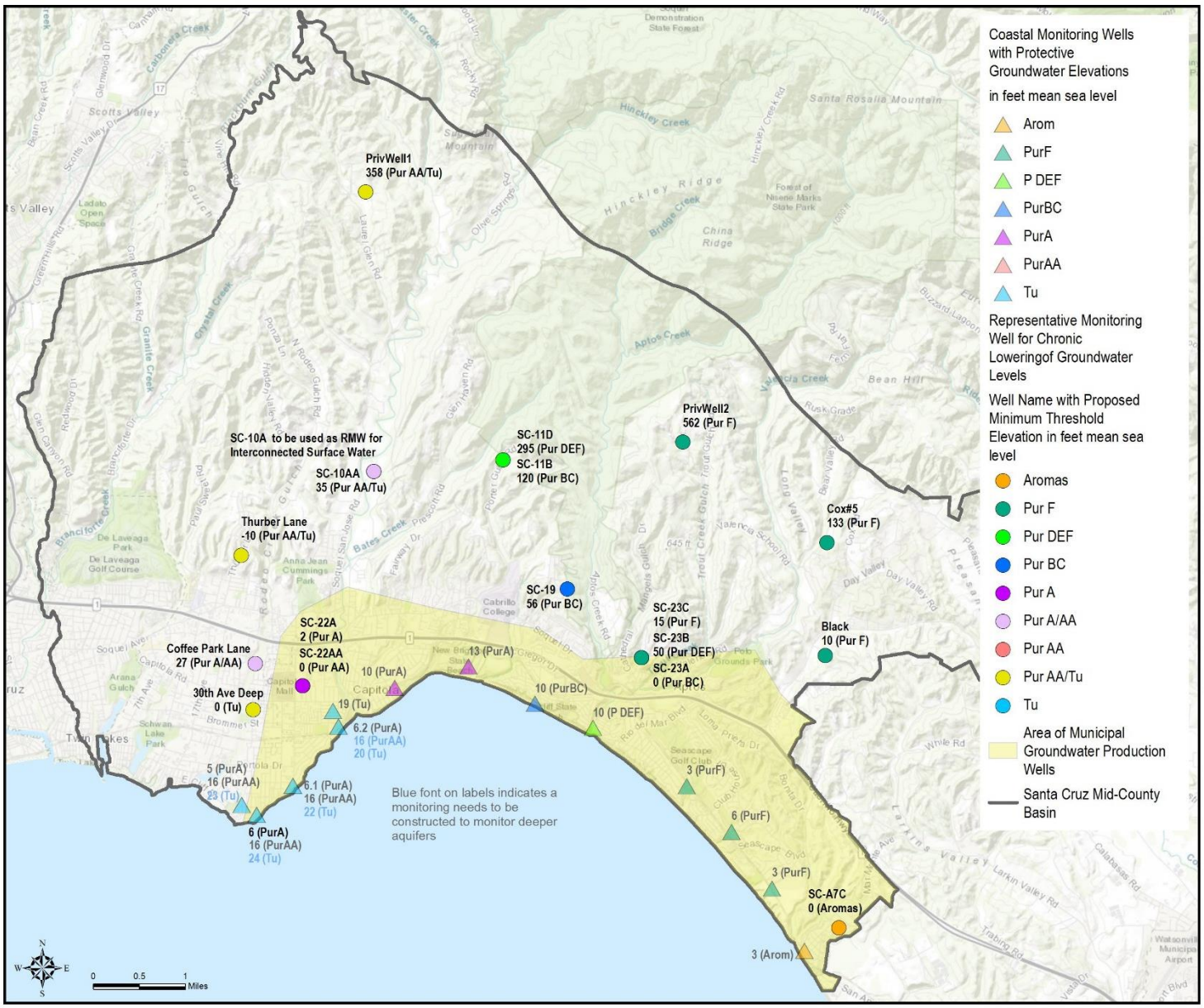


**Figure 3. Representative Monitoring Wells for Chronic Lowering of Groundwater Levels with Revised Proposed Minimum Thresholds by Aquifer**

## Table 1. Summary of Representative Monitoring Wells with Proposed Minimum Thresholds

| RMW Name | Overlying Demand Type | Aquifer | Proposed Minimum Threshold Elevation (feet amsl) | Minimum Saturated Thickness (MST) Assumptions and Adjustments made to Minimum Thresholds (MT) |
|---|---|---|---|---|
| **30th Ave Deep** (replaces SC-22AAA in previous draft) | Municipal | Tu | 0 | No private wells screened in this very deep aquifer. There are some municipal wells screened in this aquifer > 0.8 mile to the north. Shallowest municipal well depth results in a minimum elevation of -324 ft amsl based on the MST. However, well screens are typically at 200 ft below ground so the MT is adjusted upwards to sea level which is typically above well screens. |
| ~~**SC-22AAA**~~ | ~~Municipal~~ | ~~Tu~~ | ~~-39~~ | ~~Shallowest municipal well depth, adjusted MST at -326 ft amsl, MT set to 30 ft below historic low~~ 30th AVE DEEP REPLACES THIS RMW |
| **Thurber Lane Deep** | Private Domestic | Pur AA/Tu | -10 | Shallowest domestic well depth results in a minimum elevation of -33 ft amsl that still meets demands. Increase the elevation to -10 ft amsl so that there is not such a steep gradient between this RMW and the coast where there are higher protective groundwater elevations. |
| **SC-10RAA** | Private Domestic | Pur AA/Tu | 35 | There are no deep domestic wells in the area of this RMW that are screened in the Pur AA/Tu similar to the RMW. They are screened shallower in Pur A/AA and in the alluvium. Even using the shallowest domestic well depth (not screened in the same aquifer), adjusted MST is at -275 ft amsl, MT is therefore set to 30 ft below historic low levels. |
| **Private Well #1** | Private Domestic | Pur AA/Tu | 358 | Shallowest domestic well depth (one well of 100 ft depth was excluded because it was at an elevation 100 ft lower than the RMW and next to Moores Gulch – likely screened in shallower alluvium and not in underlying Purisima AA/Tu) |
| **SC-22AA** | Municipal | Pur AA | 0 | Shallowest municipal well depth and municipal well MST, Adjusted MST is --3 ft amsl, MT is therefore set at sea level. |
| **Coffee Lane Shallow** | Municipal | Pur A/AA | 27 | Shallowest domestic well depth |

| RMW Name | Overlying Demand Type | Aquifer | Proposed Minimum Threshold Elevation (feet amsl) | Minimum Saturated Thickness (MST) Assumptions and Adjustments made to Minimum Thresholds (MT) |
|---|---|---|---|---|
| ~~SC-10RA~~ | ~~Private Domestic~~ | ~~Pur A/AA~~ | ~~41~~ | ~~Shallowest domestic well depth that is greater than 100 ft~~ TO BE REMOVED FROM THIS SUSTAINABILITY INDICATOR AND RATHER USE AS INTERCONNECTED SURFACE WATER RMW |
| SC-22A | Municipal/Private Domestic | Pur A | 2 | Shallowest domestic well depth, adjusted MST at muni well MST is -3 ft amsl. MT set at 2 ft above SC-22AA MT because groundwater levels in SC-22A are typically 2 ft higher than SC-22AA levels, which has a draft minimum threshold of 0 ft amsl. |
| SC-11RB | Private Domestic | Pur BC | 120 | Not many domestic wells are deep enough in this location to go down through the DEF and D units into the underlying BC unit. Shallowest domestic well depth in same aquifer as RMW (555 ft). MT set to 30 ft below historic low because adjusted MST results in > 30 ft below historic low level |
| SC-19 | Municipal/Private Domestic | Pur BC | 56 | Not many private wells nearby. Municipal wells are shallower than private wells with County records. Used shallowest municipal well depth in same aquifer as RMW. |
| SC-23A | Municipal | Pur BC | 0 | No domestic wells at this depth in the area. Shallowest municipal well depth, adjusted MST >30 ft below historic low. MT set to 0 ft amsl to keep at sea level. |
| SC-11RD | Private Domestic | Pur DEF | 295 | Shallowest domestic well depth in same aquifer as RMW. |
| SC-23B | Small Water System/ Private | Pur DEF | 50 | Shallowest domestic well depth results in a minimum elevation of -137 ft amsl that still meets demands. Increase the elevation to 50 ft amsl. Difference in groundwater levels between SC-23B and SC-23A is 50 ft during historic low levels on hydrograph. |
| SC-23C | Municipal | Pur F | 15 | Shallowest domestic well depth results in a minimum elevation of -14 ft amsl that still meets demands. Increase the elevation to 15 ft amsl. This is both 30 ft lower than historic low and equal to the average depth below SC-23B elevation. |

| RMW Name | Overlying Demand Type | Aquifer | Proposed Minimum Threshold Elevation (feet amsl) | Minimum Saturated Thickness (MST) Assumptions and Adjustments made to Minimum Thresholds (MT) |
|---|---|---|---|---|
| **Cox 5** | Private Domestic | Pur F | 133 | Shallowest domestic well depth results in a minimum elevation of -97 ft amsl that still meets demands. Increase the MT elevation to 140 ft amsl, which is 30 ft below average historic lows. |
| **Private Well #2** | Private Domestic | Pur F | 562 | Shallowest domestic well depth results in a minimum elevation of 433 ft amsl that still meets demands. Increase the elevation to 562 ft amsl, which is 30 ft below historic lows. |
| **Black** | Private Domestic | Pur F | 21 | Other domestic wells in the area are screened in both the Aromas and Purisima F, while this RMW is screened in only the Purisima F. The MT is set at a level less than 30 ft below the historic low. |
| **SC-A7C** | Ag/Municipal | Aromas | 0 | Shallowest Ag well depth results in a minimum elevation of -20 ft amsl that still meets demands. MT is therefore set at sea level. |

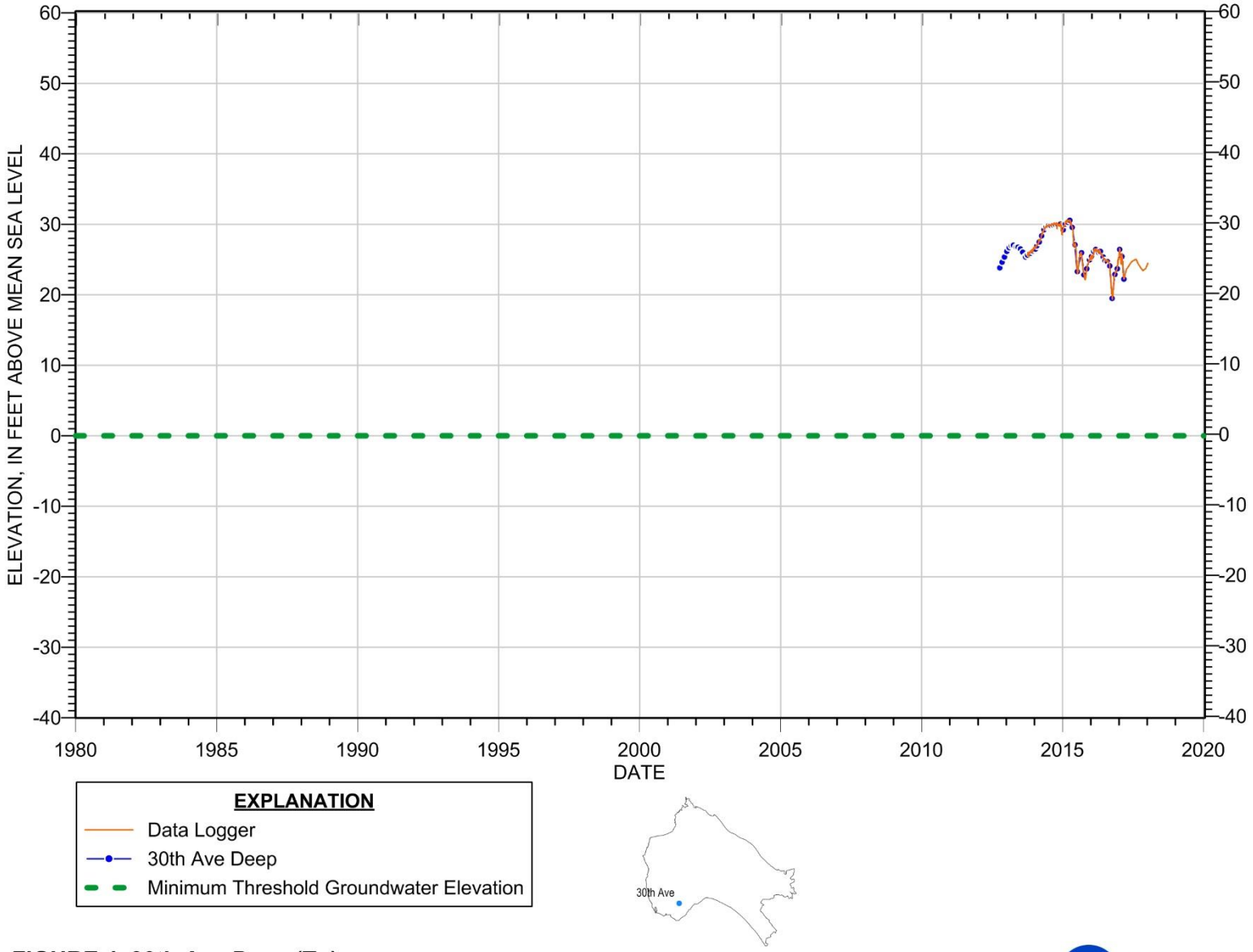


**FIGURE 4. 30th Ave Deep (Tu)**

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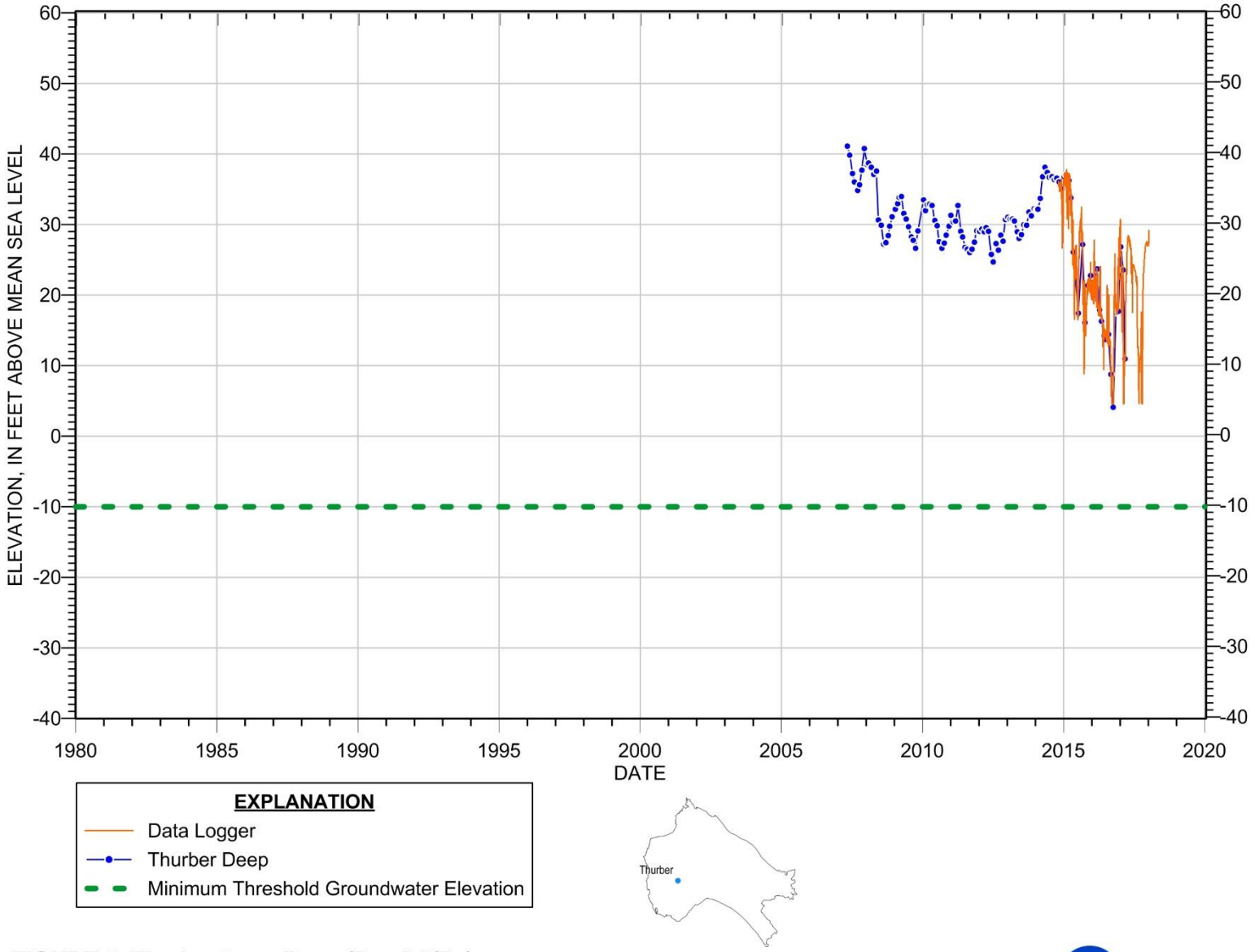


**FIGURE 5. Thurber Lane Deep (Pur AA/Tu)**

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MONTGOMERY & ASSOCIATES

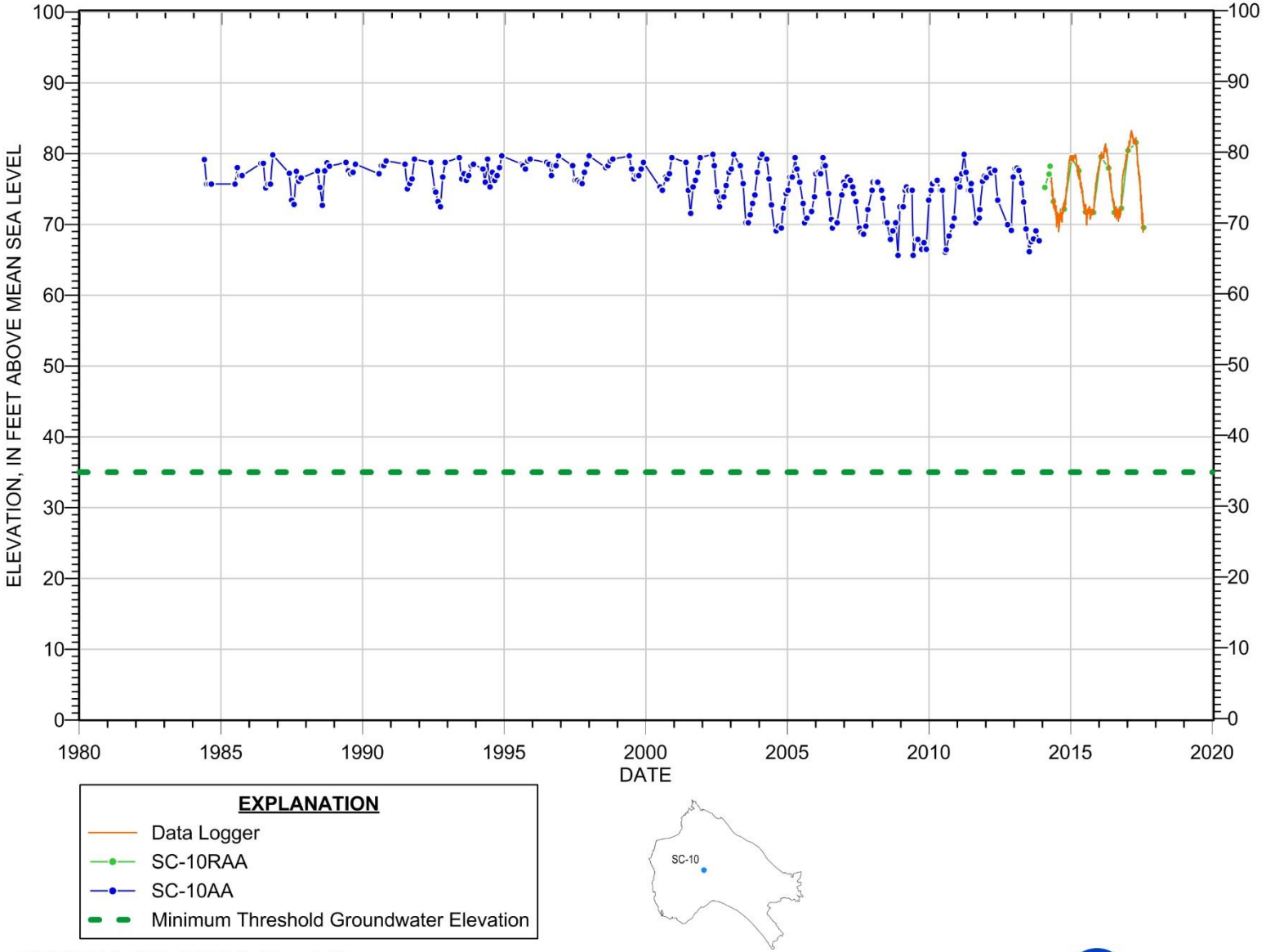


**FIGURE 6. SC-10RAA (Pur AA)**

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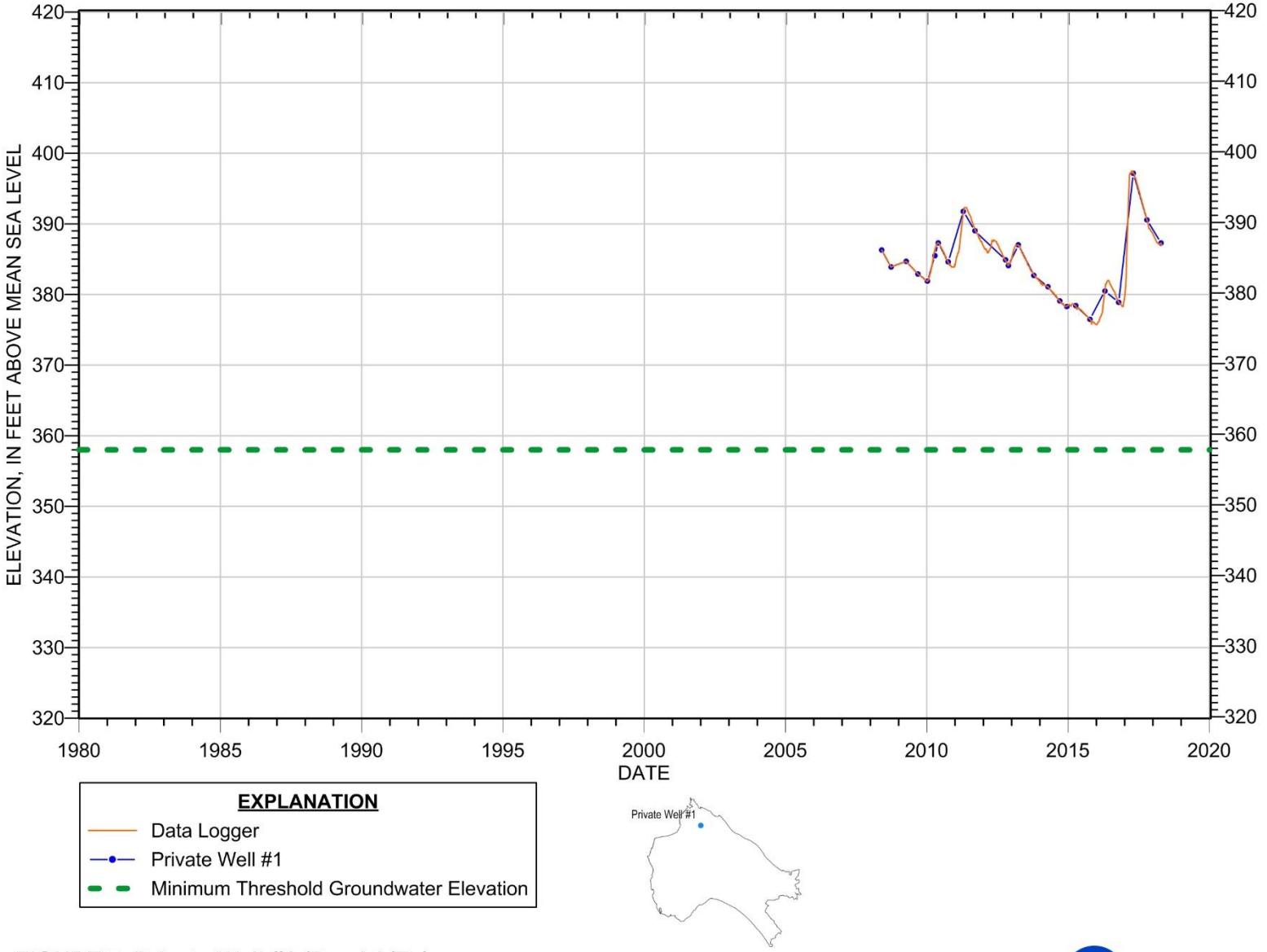


**FIGURE 7. Private Well #1 (Pur AA/Tu)**

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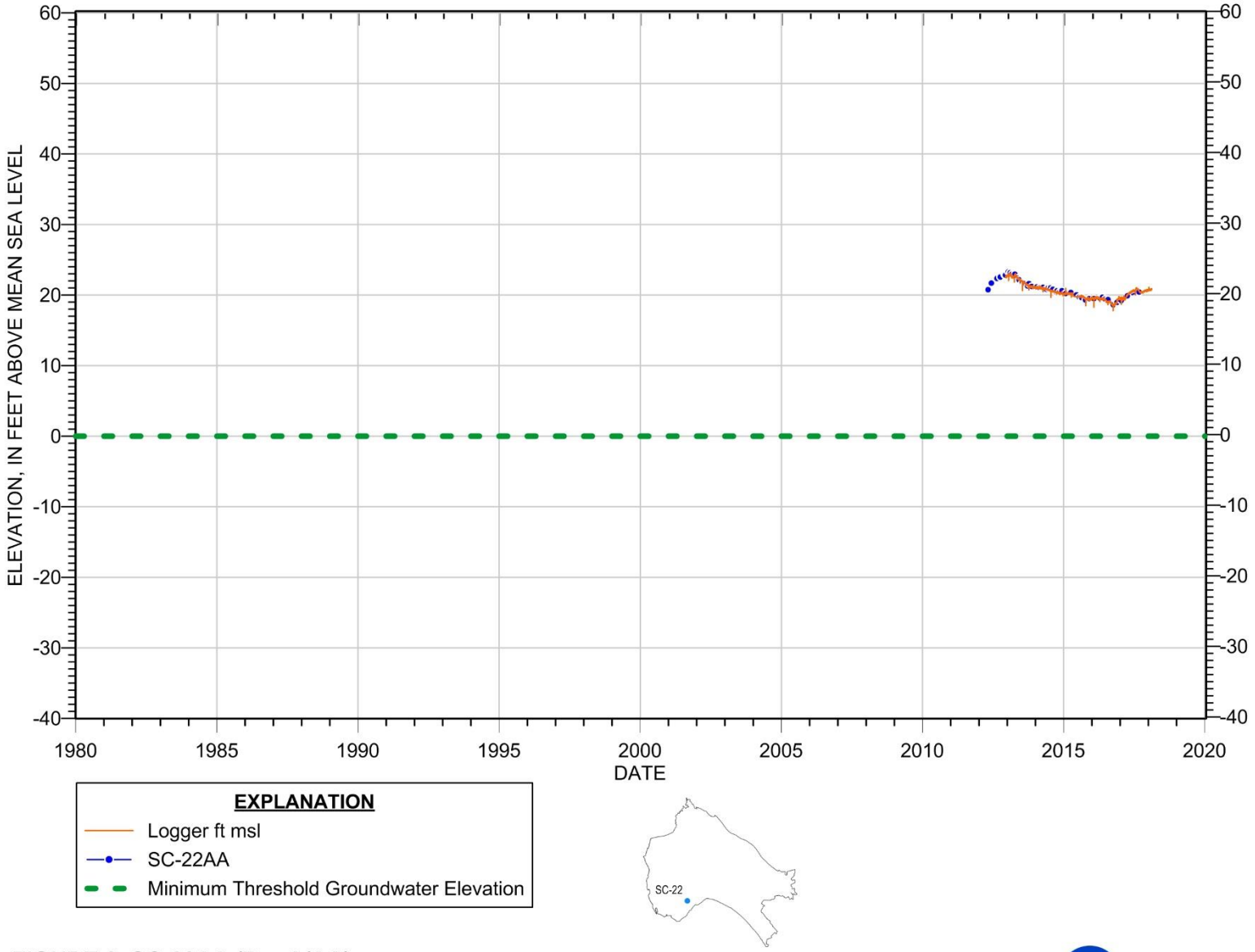


**FIGURE 8. SC-22AA (Pur A/AA)**

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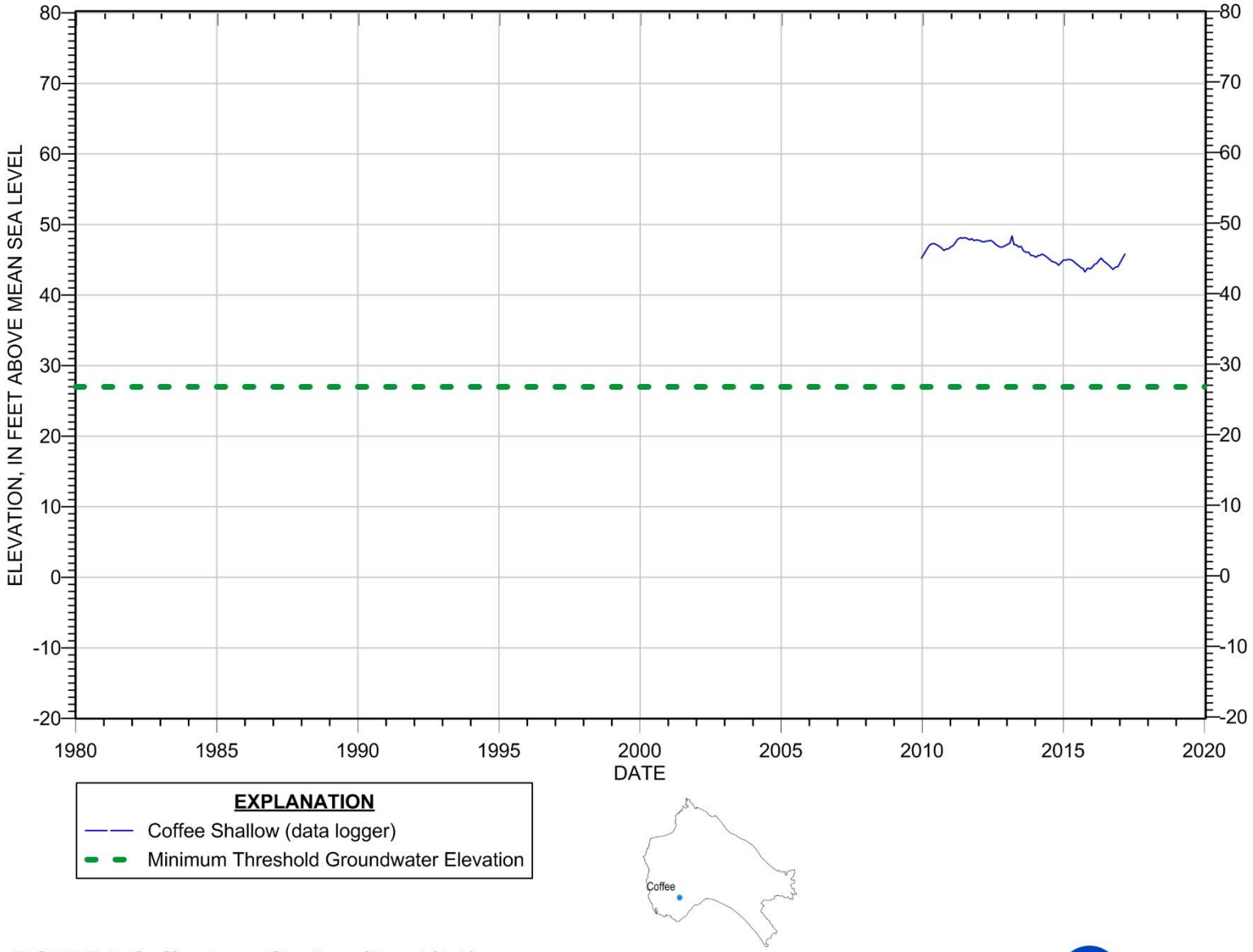


**FIGURE 9. Coffee Lane Shallow (Pur A/AA)**

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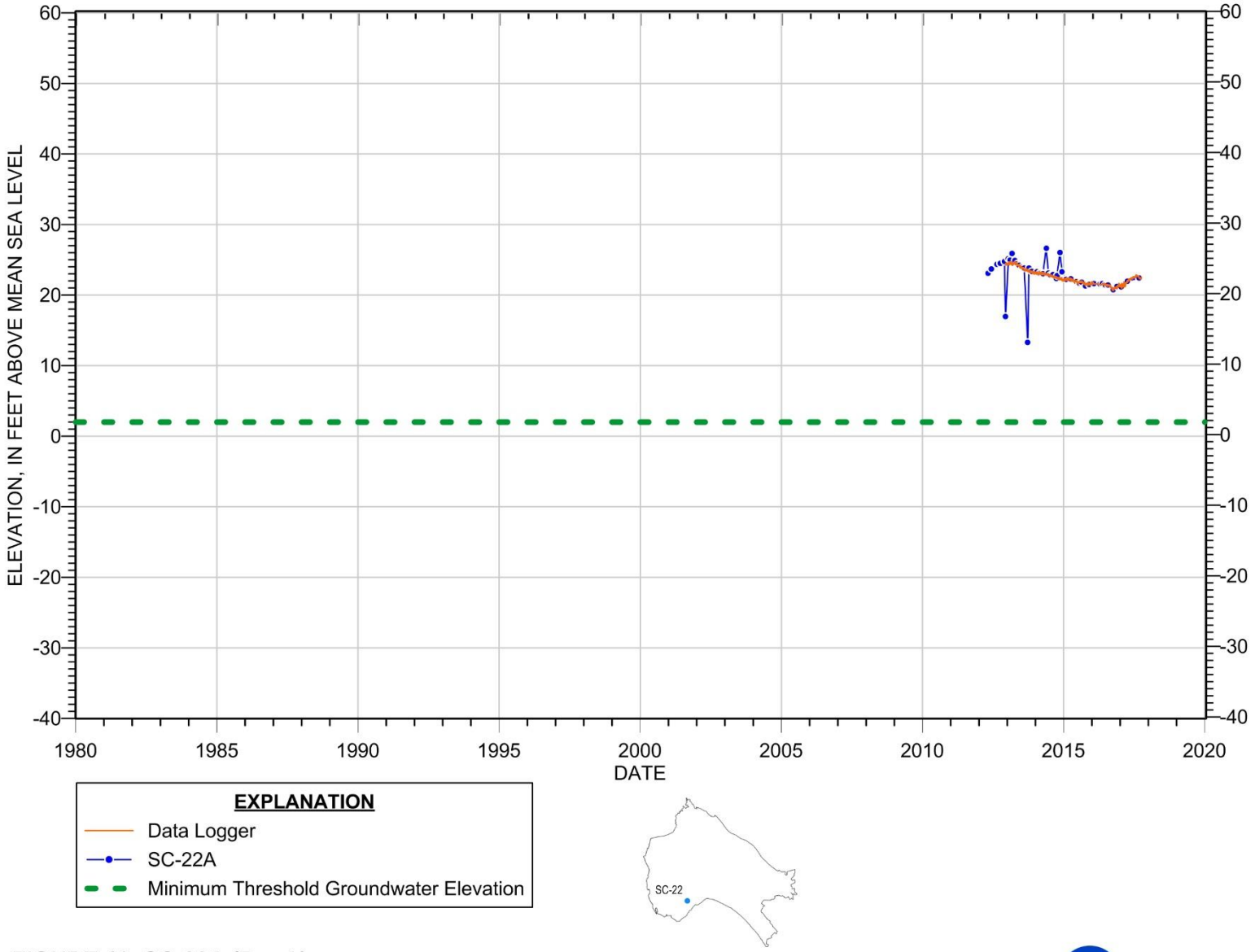


**FIGURE 10. SC-22A (Pur A)**

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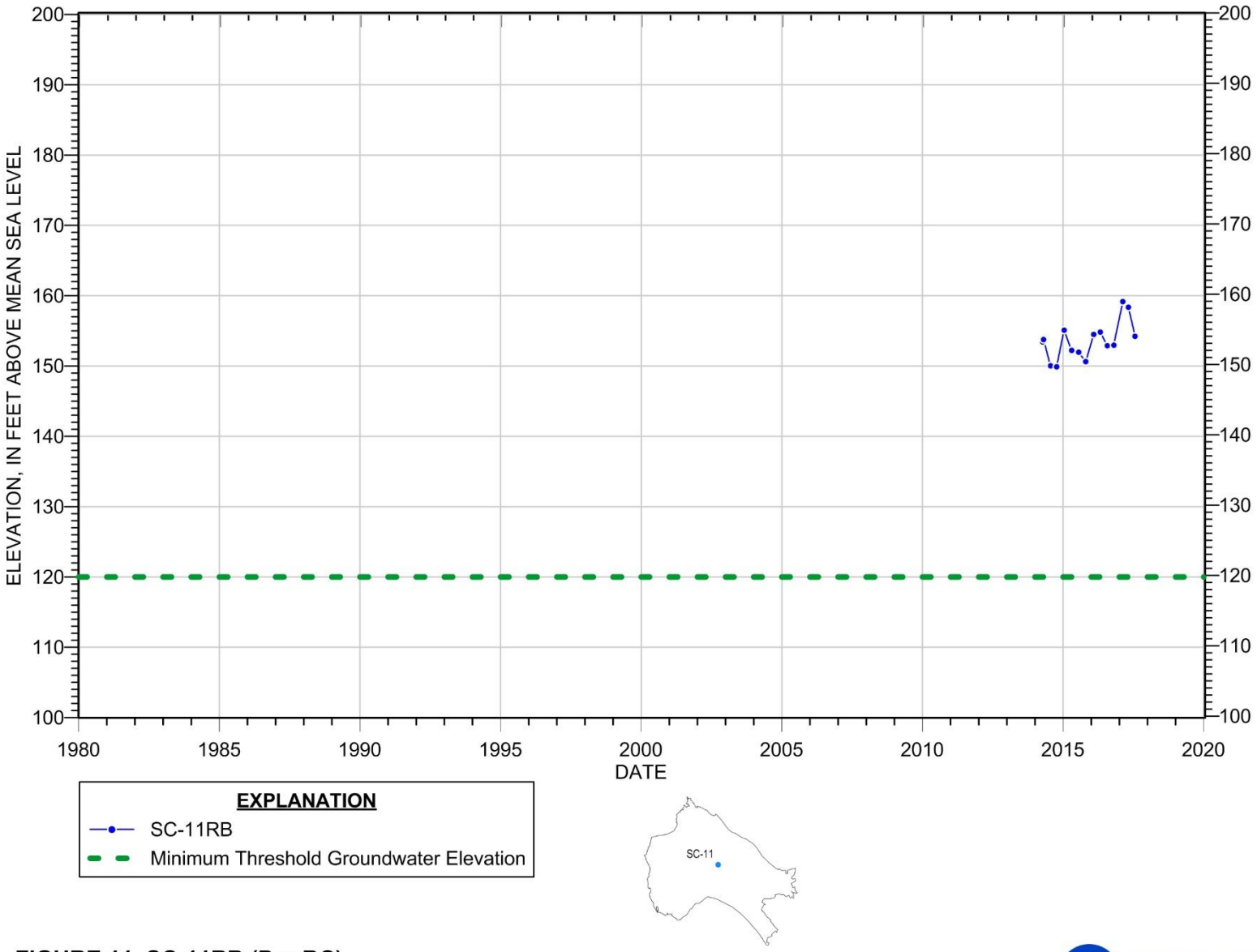


**FIGURE 11. SC-11RB (Pur BC)**

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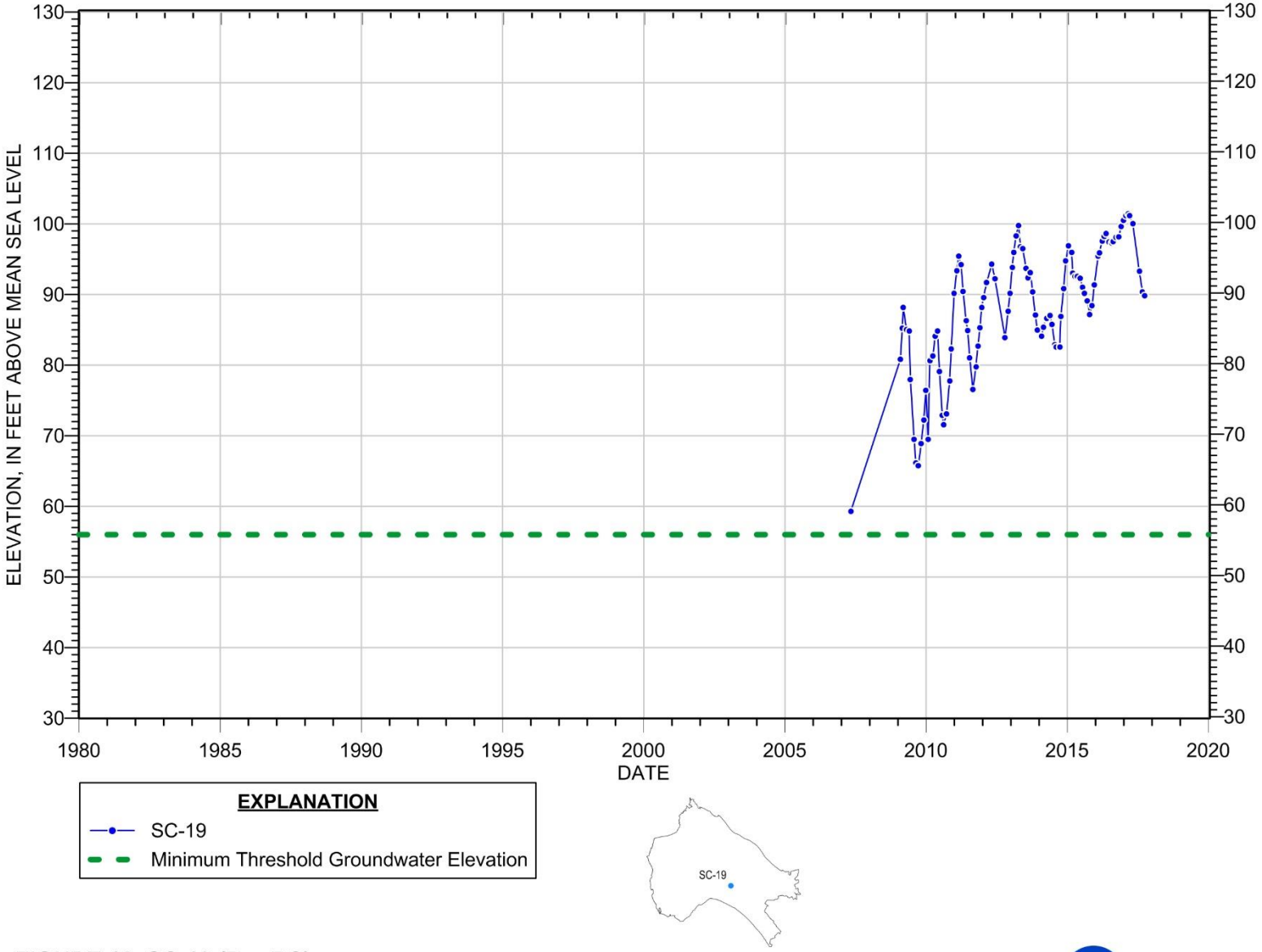


**FIGURE 12. SC-19 (Pur BC)**

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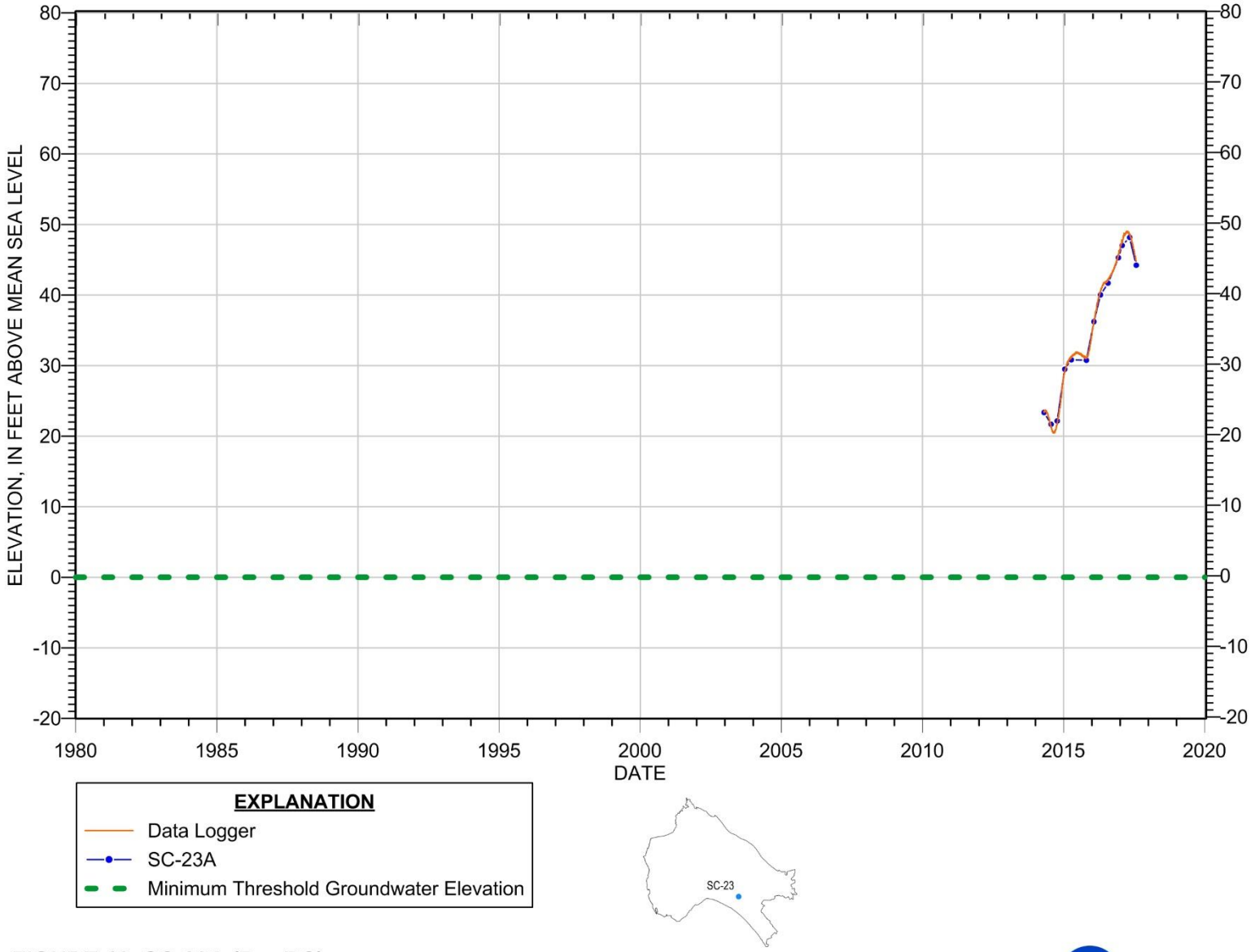


**FIGURE 13. SC-23A (Pur BC)**

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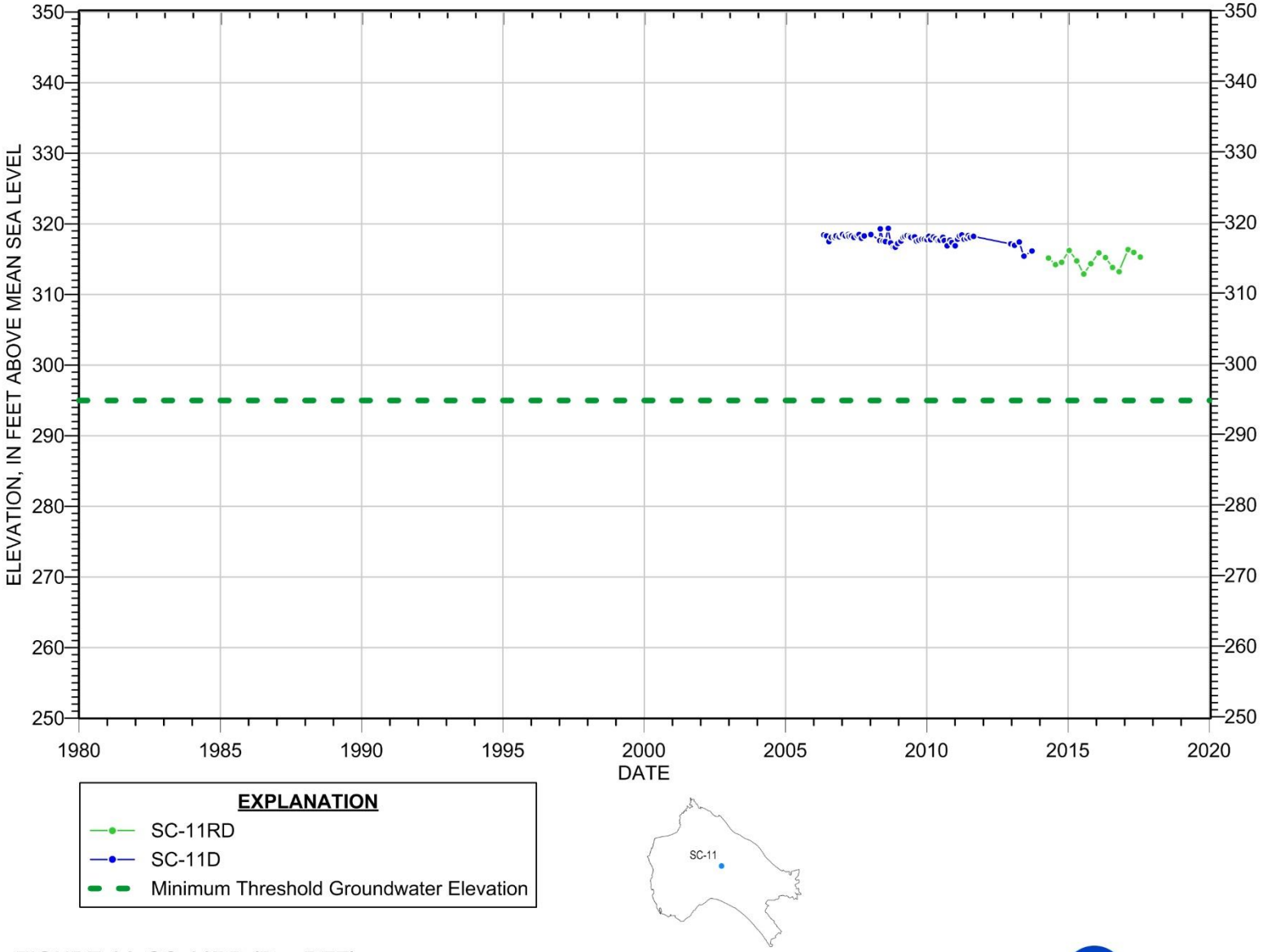


**FIGURE 14. SC-11RD (Pur DEF)**

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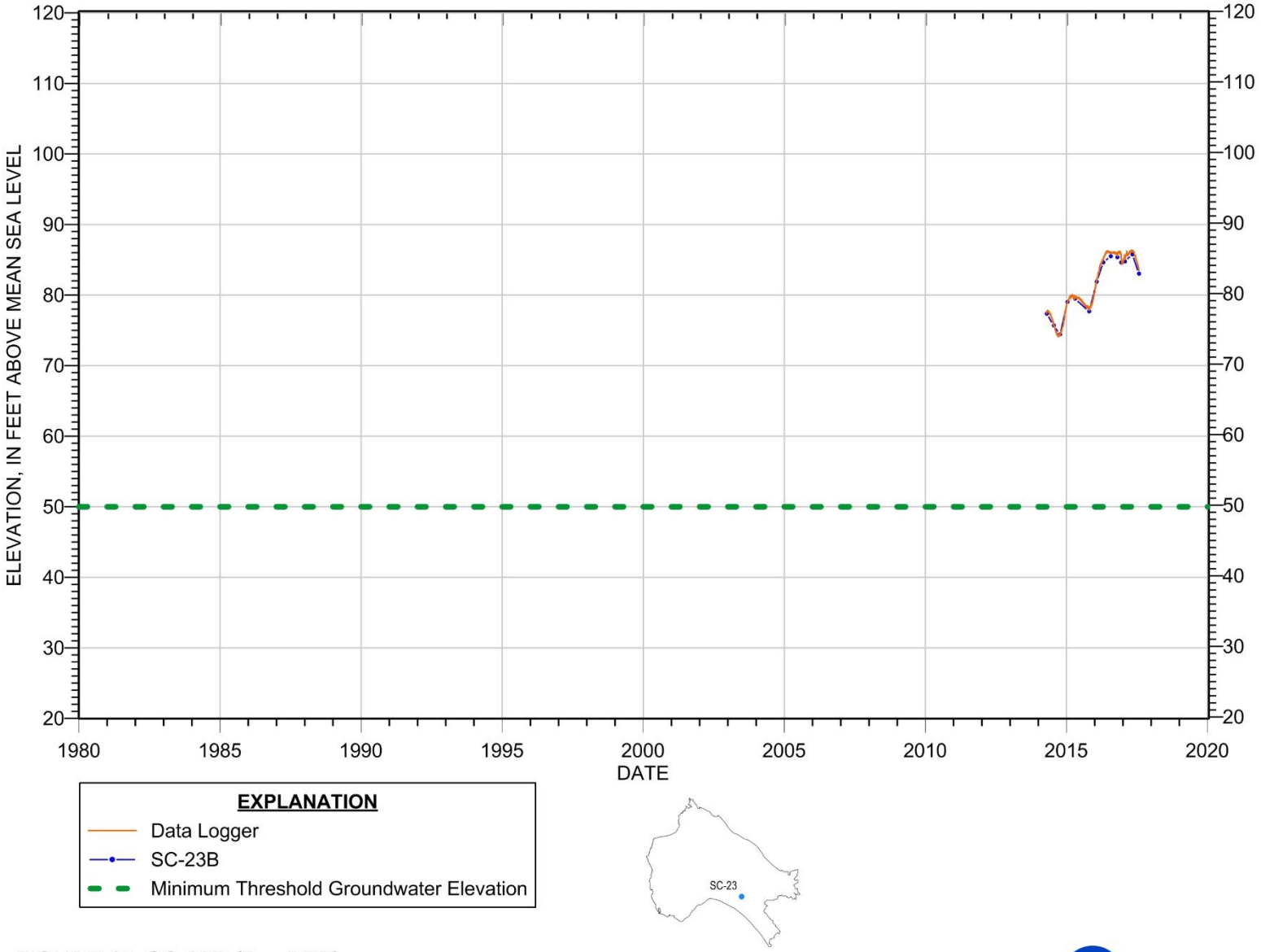


**FIGURE 15. SC-23B (Pur DEF)**

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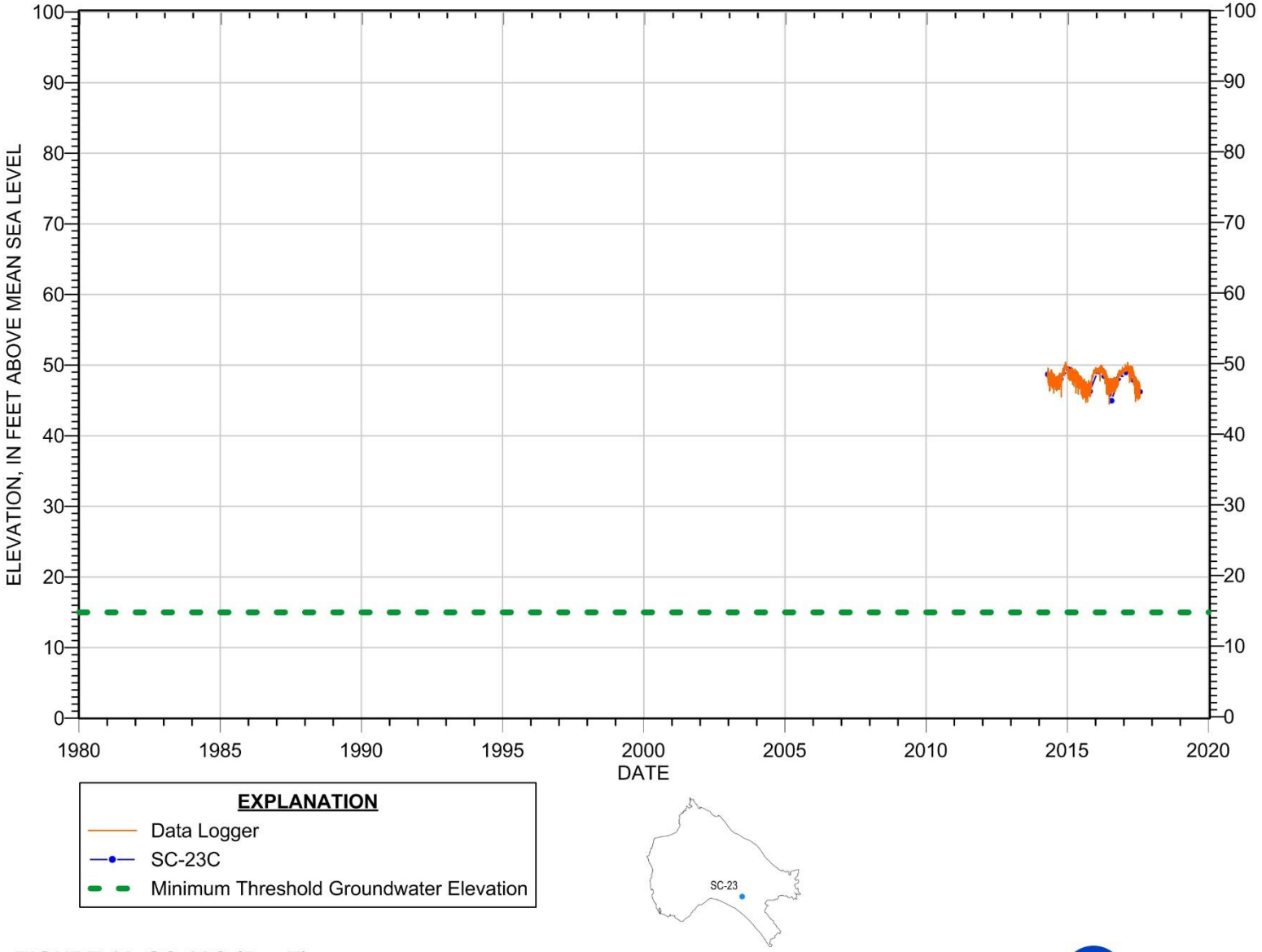


**FIGURE 16. SC-23C (Pur F)**

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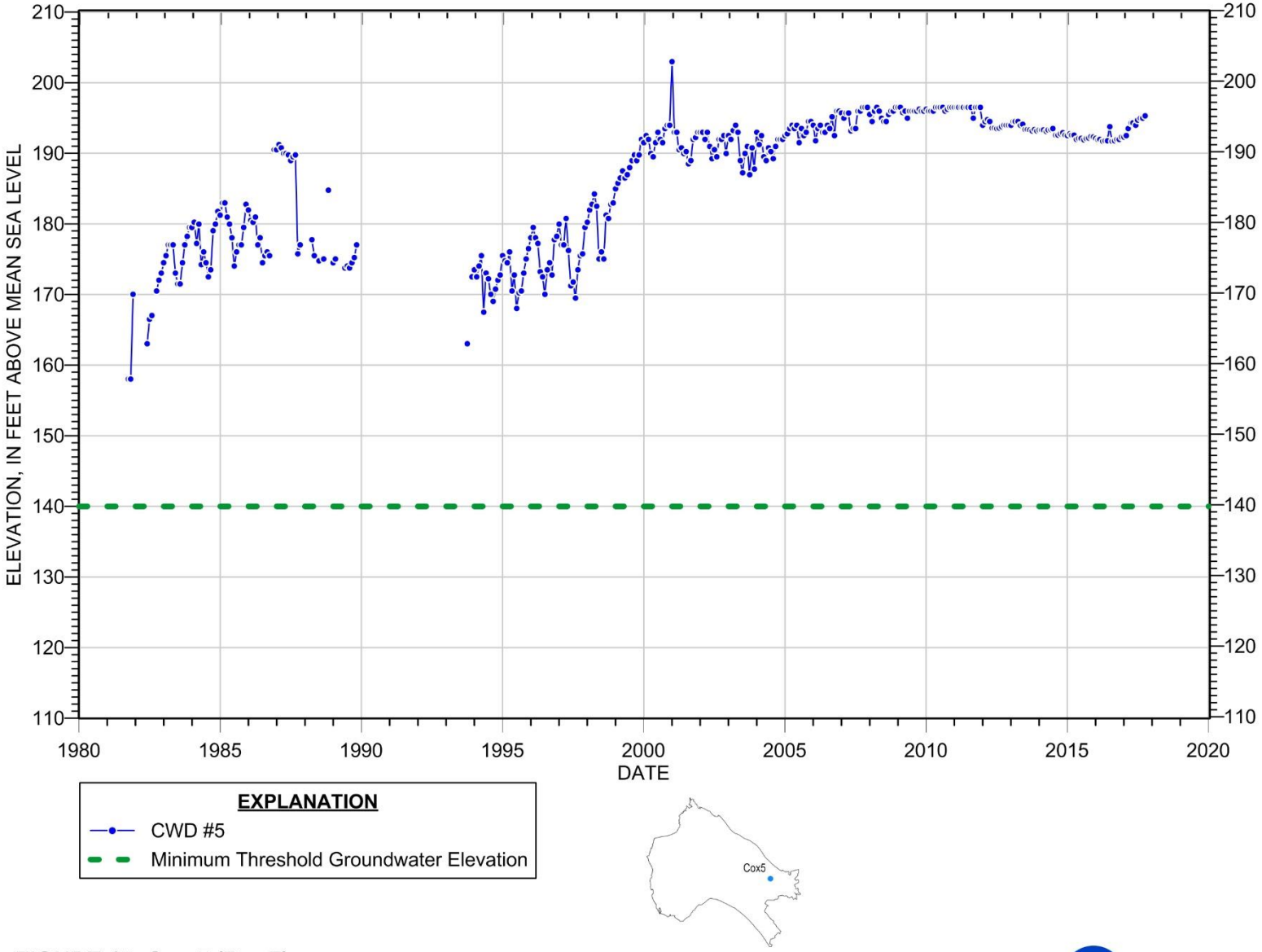


**FIGURE 17. Cox 5 (Pur F)**

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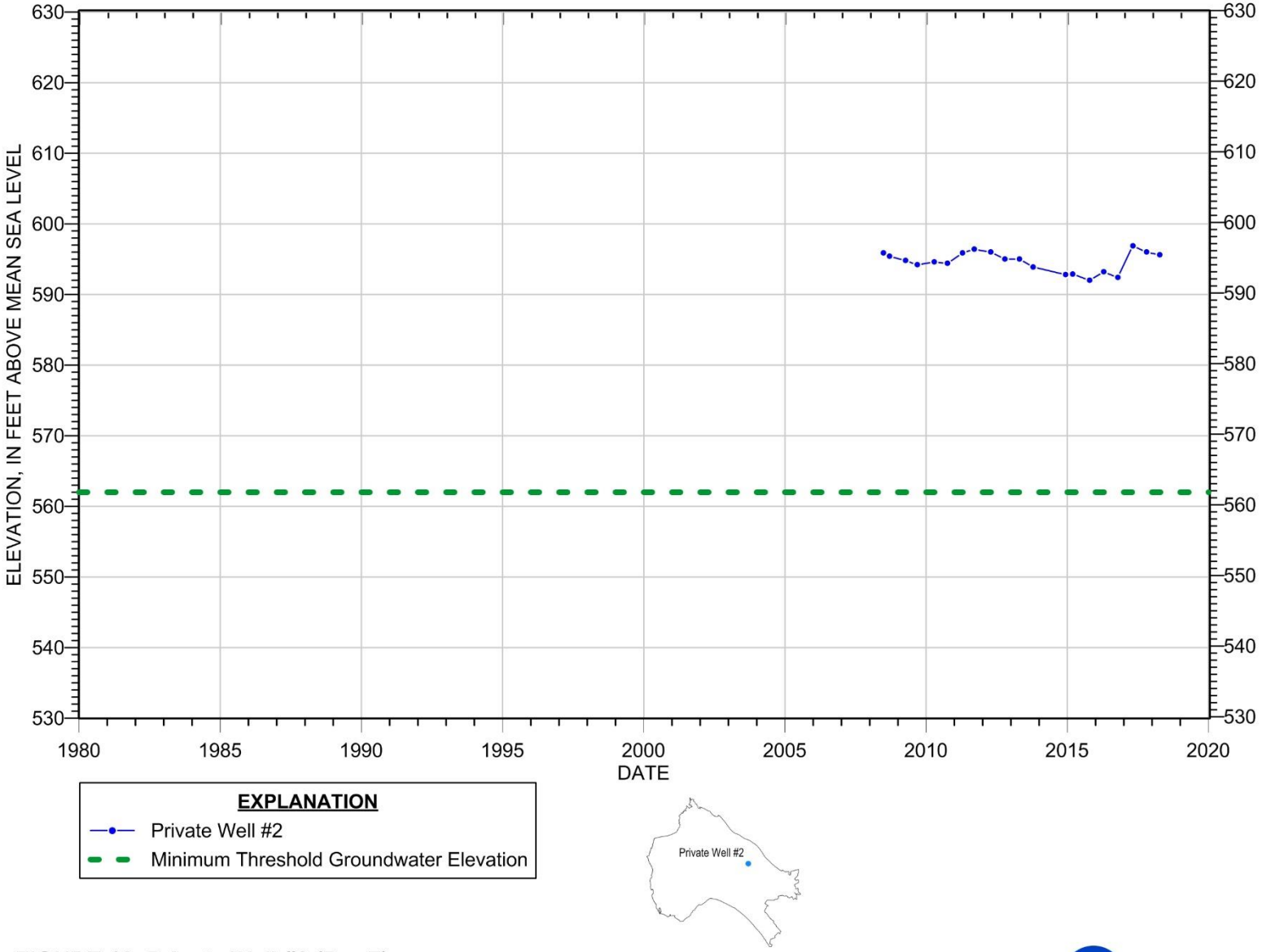


**FIGURE 18. Private Well #2 (Pur F)**

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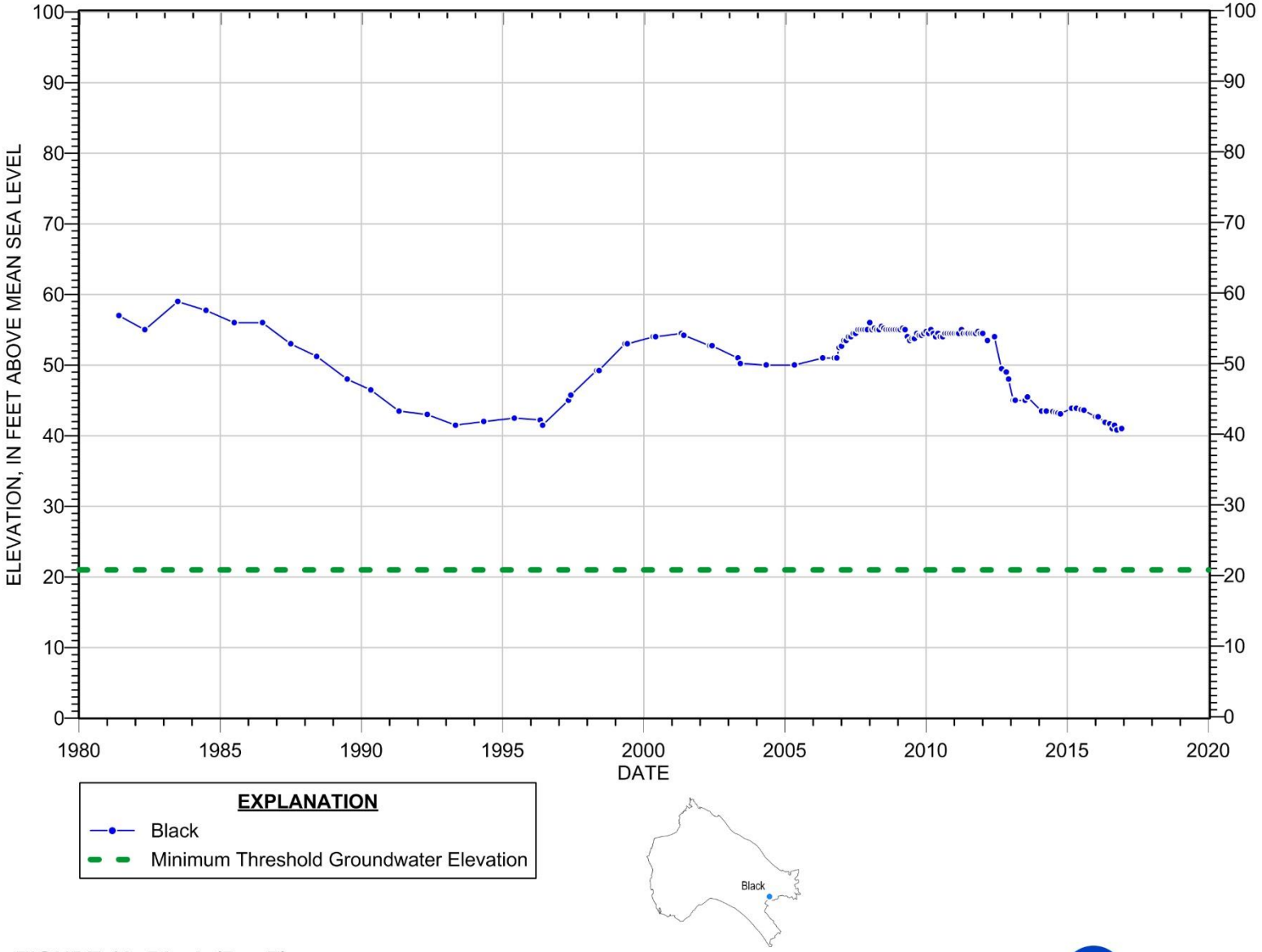


**FIGURE 19. Black (Pur F)**

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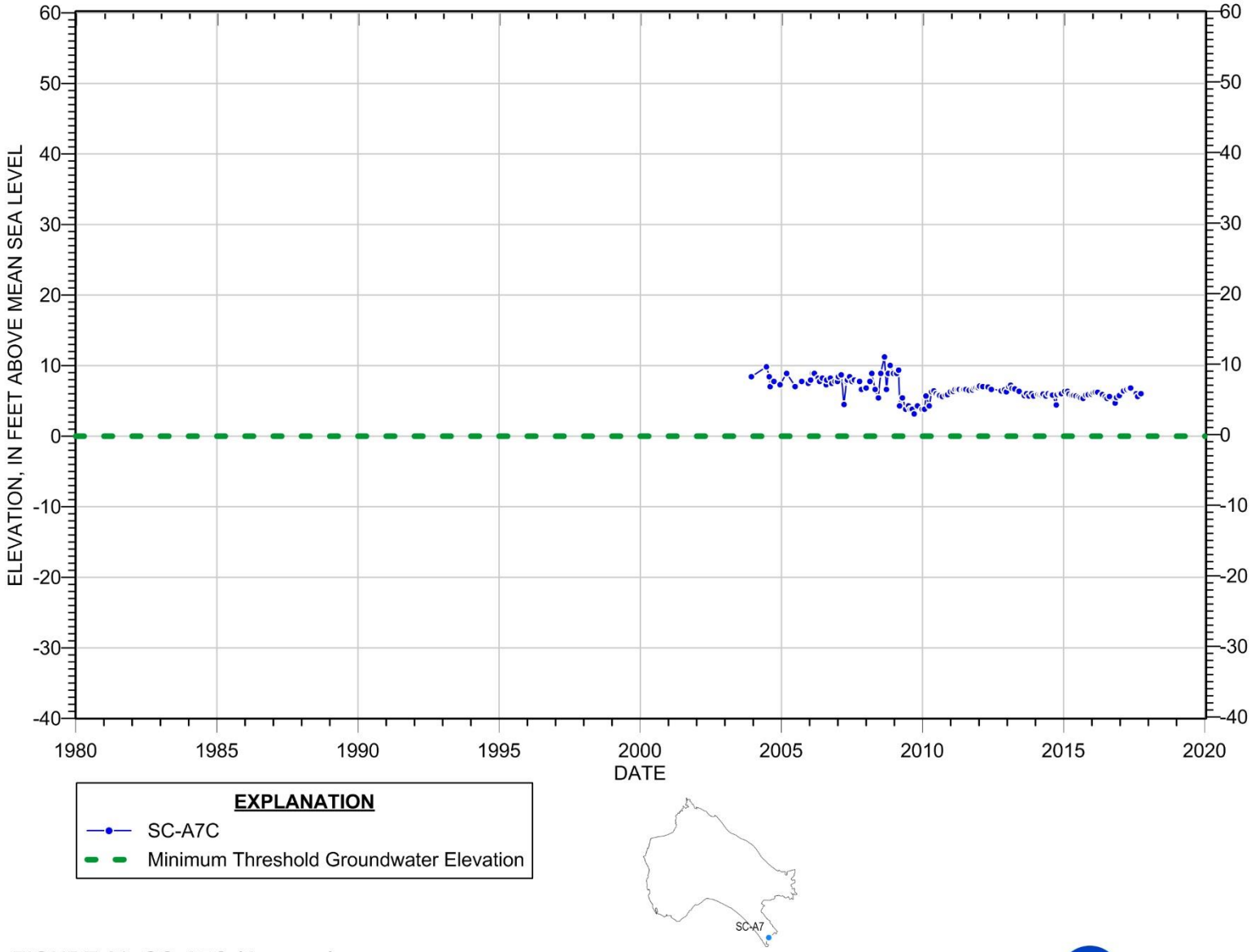


**FIGURE 20. SC-A7C (Aromas)**

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# *Draft* Meeting Summary

## Santa Cruz Mid-County Groundwater Sustainability Plan
## Advisory Committee Meeting #14
### December 12, 2018, 5:00 – 8:30 pm

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This meeting was the fourteenth convening of the Santa Cruz Mid-County Groundwater Sustainability Planning (GSP) Advisory Committee. It took place on December 12, 2018 from 5:00 - 8:30 p.m. at the Simpkins Family Swim Center in Santa Cruz. This document summarizes key outcomes from Advisory Committee and staff discussions on the following topics: project updates; briefing on current water management efforts in the Aromas Aquifer; differences between the Aromas and Purisima Aquifers; impacts from pumping; and how all of these factors influence the development of the GSP. This document also provides an overview of public comment received. It is not intended to serve as a detailed transcript of the meeting.

**Meeting Objectives**

The primary objectives for the meeting were to:

- Receive updates and guidance from the November 15, 2018 Mid-County Groundwater Agency (MGA) Board meeting.
- Receive briefing on current water management efforts in the Aromas Aquifer by the Pajaro Valley Water Management Agency, and discuss implications for the Mid-County Groundwater Sustainability Plan (GSP).
- Begin discussing groundwater modeling impacts and how these will influence the GSP.

**Action Items**

Key action items from the meeting include the following:

1. Staff (Darcy Pruitt) to publicly post press release regarding the Santa Margarita Groundwater Agency's GSP educational community meeting series, the first of which will be held on January 12, 2019.
2. Staff to discuss further modeling scenarios involving Pajaro Valley (Aromas Aquifer) with respect to recharge.

3. Staff to coordinate scheduling a Mid-County Basin groundwater model enrichment session in early 2019 and invite the following Committee members: Marco Romanini, Jon Kennedy, Kate Anderton, Keith Gudger, and Jonathan Lear.
    a. Staff also to publicly post details of the groundwater model enrichment session.
4. Kearns & West to send confirmed meeting summaries for the October 23 Advisory Committee field trip and October 24 Advisory Committee meeting to RWMF staff to include in the next MGA Board meeting packet.

**Meeting attendance**

Committee members in attendance included:

1. Kate Anderton, Environmental Representative
2. John Bargetto, Agricultural Representative
3. David Baskin, City of Santa Cruz
4. Rich Casale, Small Water System Management
5. Keith Gudger, At-Large Representative
6. Dana Katofsky McCarthy, Water Utility Rate Payer
7. Jon Kennedy, Private Well Representative
8. Jonathan Lear, At-Large Representative
9. Marco Romanini, Central Water District
10. Allyson Violante, County of Santa Cruz
11. Thomas Wyner for Cabrillo College, Institutional Representative

Committee members who were absent included:

1. Bruce Jaffe, Soquel Creek Water District
2. Charlie Rous, At-Large Representative

**Meeting Key Outcomes (linked to agenda items)**

**1. Introduction and Discussion of GSP Process Timeline and Project Updates**

Ralph Bracamonte, Central Water District, opened the meeting and welcomed participants. Mr. Bracamonte asked the GSP Advisory Committee members, MGA Executive Team, and the consultant support team around the room to introduce themselves. He also addressed members of the public in attendance and asked them for self-introductions.

Eric Poncelet, facilitator, reviewed the agenda and meeting objectives, and described key updates to the project process for the first quarter of 2019 as reflected on the updated GSP process timeline.

**2. Oral Communications (for items *not* on the agenda)**

No public comments were provided on non-agenda items during this session.

**3. Project Updates**

Mr. Poncelet invited the following project updates:

- **Outcomes of November 15, 2018 MGA Board Meeting**
  Committee members Jon Kennedy, David Baskin and Allyson Violante, who were present at the Board meeting, provided a brief overview of the outcomes of the November 15, 2018 MGA Board meeting, including a summary of the Board motion that passed. They reported on three main outcomes from the Board meeting. These related to: 1) the MGA's role with respect to GSP management measures and environmental actions; 2) inclusion of comprehensive management measures in Section 4 of the GSP; and 3) inclusion of Pure Water Soquel and Santa Cruz Winter Water Harvest projects in Section 5 of the GSP. The Committee and staff had a brief discussion about these topics following the report. Key points included:
  - Uncertainty about the role of the Advisory Committee in the GSP process given the high level of oversight the MGA Board has over the Advisory Committee's work.
  - Lack of clarity on continuity of the GSP process once Advisory Committee disbands.

  Concern about limiting Mid-County GSP projects to only Pure Water Soquel and Santa Cruz Winter Water Harvest, and excluding other suitable projects.

- **Surface Water Interaction Working Group**
  Mr. Ricker reported that once the groundwater model results are completed by technical staff, staff will reconvene the Surface Water Interaction Working Group, which would most likely be in late January or early February, 2019.

- **January 12 Santa Margarita Basin Meeting**
  Sierra Ryan, County of Santa Cruz, provided a brief update on topics to be covered in the upcoming Santa Margarita Basin educational series on water from January through March, 2019. There will be three outreach meetings on the following topics:
  - January 12: land use and water.
  - February: water budget and modeling and balancing the use of and need for water.
  - March: projects and management of aquifers.

  Ms. Ryan reported that all of the meetings will be held from 9:00 a.m. – 1:00 p.m. at the Felton Community Center. Staff will post a press release with all meeting details shortly.

**4. Current Water Management Efforts in the Aromas Aquifer**

Mr. Bracamonte introduced guest speaker, Brian Lockwood, General Manager of the Pajaro Valley Water Management Agency (PVWMA or PV Water), who presented on the topic of water management efforts in the Aromas Aquifer and implications for the Mid-County GSP[1]. Mr. Lockwood provided background on PV Water's collaboration with other neighboring water districts and focused his presentation mainly on multi-jurisdictional basin management planning. He also discussed this planning in the context of the Sustainable Groundwater Management Act (SGMA) and briefly covered funding of PV Water's groundwater projects and programs. Last, Mr. Lockwood emphasized that public outreach to the broader community is hugely important.

The Advisory Committee's discussion of Mr. Lockwood's presentation included the following key points:

- Pajaro Valley is different from Mid-County because a majority of their water is used for agricultural purposes.
- Successful PV Water approaches to groundwater sustainability include conservation and recharge net metering.
- PV Water fees and rates for groundwater management activities are mainly litigation-focused.
    - PV Water is subject to Proposition 218[2] in augmenting management rates, which are tax assessed.
    - PV Water has a tiered water rate system based on property size for residents but a non-tiered system for agricultural customers as they tend to have more variability in size, need and usage.
- PV Water has adopted creative ways of collecting of rainfall related to agricultural activities, including catching runoff from ranches and nurseries.

**5. Public Comment**

Mr. Poncelet, facilitator, invited members of the public to comment on Mr. Lockwood's presentation on current water management efforts in the Aromas Aquifer, the Advisory Committee's comments on the presentation, and any other Advisory Committee work.

One participant asked Mr. Lockwood about PV Water's net recharge program, whether it considers soil and storm water, and whether it is done in collaboration with Dr. Helen Dahlke (University of California, Davis). Mr. Lockwood indicated that PV Water considers areas where large scale recharge can occur, and this is not limited to the foothills. Mr. Lockwood indicated that he is familiar with Dr. Helen Dahlke's work but does not work directly with her on recharge issues.

[1] Presentation, Brian Lockwood, Pajaro Valley Water Management Agency
[2] https://lao.ca.gov/1996/120196_prop_218/understanding_prop218_1296.html

Another participant asked whether PV Water riparian owners have water rights. Mr. Lockwood indicated that riparian owners do have water rights in PV Water's jurisdiction.

A participant asked why PV Water does not have a net metering program in lieu of making estimates for water usage. Mr. Lockwood clarified that PV Water does have a net metering program, but that it is only applicable to larger customers. He added that for smaller and more rural customers, PV Water does make usage estimates.

A final participant asked how PV Water monitors water quality for private and domestic use wells (e.g., Harkin Slough) and whether there are any issues with contamination in that water. Mr. Lockwood reported that PV Water does monitor water quality for private and domestic wells and found one well with elevated nitrate levels. He indicated that PV Water also does extensive water quality monitoring for water diverted from Harkin Slough, mostly to determine irrigation suitability.

**6. Primer on Difference Between the Aromas and Purisima Aquifers**

In this segment of the meeting, Georgina King, Montgomery & Associates Inc., presented on differences between the Aromas and Purisima Aquifers. She focused on the categories of hydrogeologic, groundwater quality, connected surface water and sensitivity to pumping, and the respective implications for Mid-County Basin GSP.

Some key discussion points on the topic of differences between the Aromas and Purisima Aquifers included:

- There is more connection between surface water and groundwater in the Purisima than in the Aromas as groundwater levels are deeper in the Purisima and there is no aquitard to influence penetration of surface water into the ground.
- There is more sensitivity to pumping in the Aromas areas where it is shallower than in the Purisima areas

**7. Impacts from Pumping and How These Influence the GSP**

Ms. King presented an update on groundwater modeling assumptions and scenarios. She described how the data have changed since they were initially presented to the Committee in August and September, 2018, as well as targeted follow-up work anticipated for certain scenarios. Ms. King also discussed the option of having "management areas" in the basin—in particular, to differentiate the southern part of the basin, where there are undesirable results, from the northern part, where there are not.

The Advisory Committee discussed the following factors as influencing a decision to include management areas in the Mid-County GSP:

- DWR's input on inclusion of management areas.
- Neighboring basin influence on development of management areas for GSP.
- Stakeholder input and feedback in the Aromas Aquifer on management areas.
- Other GSP's logic for not including management areas.
- The need for further modeling scenarios involving the Aromas Aquifer with respect to recharge.

During the discussion, DWR representative Amanda Peisch-Derby stated that identifying management areas in a GSP is optional under SGMA and is encouraged only if they help manage a basin more effectively. Ms. Peisch-Derby added that whatever the decision is on management areas, DWR requires a sufficient description and justification of the decision to be included in the GSP. She also indicated that thus far, she is not aware of any GSP that includes management areas to address issues in the basin. Finally, in addressing the question of unreasonable results for a certain sustainability criteria using management areas, the unreasonable results have to be defined consistently for the entire basin.

At the end of the Committee's discussion, there was general agreement that no strong rationale for utilizing management areas in the Mid-County Basin has been identified. Committee members recognized that key differences characterizing the distinct areas in the basin would be captured through the different sustainable management criteria that would be established for individual representative monitoring wells.

**8. Public Comment**

During this final public comment session, Mr. Poncelet invited members of the public to focus comments on the Committee's discussion of the differences between the Aromas and Purisima Aquifers, pumping impacts on the Mid-County Basin, and on any other Advisory Committee work.

One participant asked for clarification from Ms. King on how one can determine whether agriculture or septic tanks are the source of existing or increasing nitrate levels in the Seascape area. Ms. King indicated that water quality testing detected pharmaceuticals in the same wells, which come from waste water sources.

**9. Confirm the October 23, 2018 GSP Advisory Committee Field Trip and the October 24, 2018 Advisory Committee Meeting Summaries**

The Advisory Committee did not have any edits or comments on the drafts October 23, 2018 GSP Advisory Committee Field Trip and October 24, 2018 Advisory Committee Meeting summaries. Mr. Poncelet confirmed them for submission to the MGA Board.

**10. Next Steps**

In closing, Mr. Poncelet provided a recap of the GSP process timeline for first quarter of 2019 and discussed general next steps.

Before the meeting adjourned, Mr. Ricker queried the Committee for interest in scheduling a dedicated enrichment session on groundwater modeling scenarios and assumptions. The following Committee members expressed interest in a dedicated modeling session: Marco Romanini, Jon Kennedy, Kate Anderton, Keith Gudger and Jonathan Lear. Members of the public also expressed interest in participating in such a session. Mr. Ricker indicated that staff will coordinate this session and post an announcement in early 2019.

Executive Team members closed the meeting by thanking the attendees for their participation.

## Tim Carson

**From:** Brian Lockwood <Lockwood@pvwater.org>
**Sent:** Friday, December 14, 2018 9:38 AM
**To:** 'Ralph Bracamonte, CWD'; Rosemary Menard; 'Ron Duncan (RonD@soquelcreekwater.org)'; John Ricker; Tim Carson
**Subject:** SC MGA GSP Committee

Dear Colleagues,

I wanted to thank you the opportunity to present to the Santa Cruz Mid-County Groundwater Agency (MGA) Groundwater Sustainability Plan Advisory Committee on December 12. PV Water has long collaborated with the predecessors to the MGA, the Basin Implementation Group, via the Basin Advisory Group, and we look forward to continued collaboration with the MGA. As neighbors who share some of the same groundwater resources, it is important we continue to collaborate, share ideas and data, in order to support our collective goals and objectives. Please know there is an open-ended invitation for you and or your board or committee members to attend any of our committee meetings and board meetings. A complete schedule with meeting locations is available on our website, www.pvwater.org. Perhaps, when the time is right, we can schedule an informational report from the MGA to the PV Water Board of Directors.

Sincerely,
Brian

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Brian Lockwood
General Manager
Pajaro Valley Water Management Agency
36 Brennan Street
Watsonville, CA 95076

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T: 831.722.9292 ext. 15
F: 831.722.3139
W: www.pvwater.org

**From:** Peisch, Amanda@DWR [mailto:Amanda.Peisch@water.ca.gov]
**Sent:** Tuesday, January 15, 2019 3:15 PM
**To:** Darcy Pruitt <DPruitt@cfscc.org>; Eric Poncelet <eponcelet@kearnswest.com>
**Cc:** Cici Vu <cvu@kearnswest.com>; Olvera, Christopher@DWR <Christopher.Olvera@water.ca.gov>; Brian Lockwood <Lockwood@pvwater.org>; Mathis, Dane@DWR <Dane.Mathis@water.ca.gov>
**Subject:** GSP Review

Darcy and Eric,

I wanted to follow-up you and the MGA Advisory Committee on a question that they asked on 12/12/2018 regarding DWR's plans for GSP review for determining if a Plan will adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of its sustainability goal (§ 355.4(b)(7)). The response is that an Alternative and GSP are considered both "Plans", so yes, as part of the review of the GSP DWR will look at Alternatives and GSPs for adjacent basins and will make that determination. Hopefully, the agencies have coordinated so that there would not be any adverse effects resulting from either Plan. Please let me know if I have fully addressed the question or if you or the Committee needs more information from DWR.

Regards,

**Amanda Peisch-Derby, P.E.**
Senior Engineer, W.R.

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