DRAFT
Chapter 8

180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan

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SVBGSA

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Contents

8 SUSTAINABLE MANAGEMENT CRITERIA

This chapter defines the conditions that constitute sustainable groundwater management, discusses the process by which the SVBGSA will characterize undesirable results, and establishes minimum thresholds and measurable objectives for each sustainability indicator.

This is the fundamental chapter in the GSP that defines sustainability in the 180/400-Foot Aquifer Subbasin and addresses significant regulatory requirements. The measurable objectives, minimum thresholds, and undesirable results detailed in this chapter define the Subbasin's future conditions and commits the GSA to actions that will meet these objectives. Defining these Sustainable Management Criteria (SMC) requires a significant level of analysis and scrutiny, and this chapter includes adequate data to explain how SMC were developed and how they influence all beneficial uses and users.

This chapter is structured to address all of the SGMA regulations regarding SMC. The SGMA regulations are extensive. To retain an organized approach, this chapter follows the same structure for each sustainability indicator. The result is somewhat repetitive, but is complete when addressing the regulations. The SMC are grouped by sustainability indicator. Each section follows a consistent format that contains the information required by Section 354.22 *et. seq* of the regulations and outlined in the SMC BMP (DWR, 2017). Each SMC section includes a description of:

- How locally defined significant and unreasonable conditions were developed
- How minimum thresholds were developed, including:
  - The information and methodology used to develop minimum thresholds (§354.28 (b)(1))
  - The relationship between minimum thresholds and the relationship of these minimum thresholds to other sustainability indicators (§354.28 (b)(2))
  - The effect of minimum thresholds on neighboring basins (§354.28 (b)(3))
  - The effect of minimum thresholds on beneficial uses and users (§354.28 (b)(4))
  - Relevant federal, state, or local standards (§354.28 (b)(5))
  - The method for quantitatively measuring minimum thresholds (§354.28 (b)(6))
- How measurable objectives were developed, including:
  - The methodology for setting measurable objectives (§354.30)
  - Interim milestones (§354.30 (a), §354.30 (e), §354.34 (g)(3))

- How undesirable results were developed, including:
    - The criteria for defining undesirable results (§354.26 (b)(2))
    - The potential causes of undesirable results (§354.26 (b)(1))
    - The effects of these undesirable results on the beneficial users and uses (§354.26 (b)(3))

8.1 Definitions

The SGMA legislation and Regulations contain a number of new terms relevant to the SMC. These terms are defined below using the definitions included in the regulations. Where appropriate, additional explanatory text is added in italics. This explanatory text is not part of the official definitions of these terms.

- **Interconnected surface water** refers to surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted.

  Interconnected surface waters are sections of streams, lakes, or wetlands where the groundwater table is at or near the ground surface.

- **Interim milestone** refers to a target value representing measurable groundwater conditions, in increments of five years, set by an Agency as part of a Plan.

  Interim milestones are targets such as groundwater elevations that will be achieved every five years to demonstrate progress towards sustainability.

- **Management area** refers to an area within a basin for which the Plan may identify different minimum thresholds, measurable objectives, monitoring, or projects and management actions based on differences in water use sector, water source type, geology, aquifer characteristics, or other factors.

- **Measurable objectives** refer to specific, quantifiable goals for the maintenance or improvement of specified groundwater conditions that have been included in an adopted Plan to achieve the sustainability goal for the basin.

  Measurable objectives are goals that the GSP is designed to achieve.

- **Minimum threshold** refers to a numeric value for each sustainability indicator used to define undesirable results.

  Minimum thresholds are indicators of an unreasonable condition. For example, the level of a pump in a well may be a minimum threshold because groundwater levels dropping below the pump level would be an unreasonable condition.

- **Representative monitoring** refers to a monitoring site within a broader network of sites that typifies one or more conditions within the basin or an area of the basin.
- **Sustainability indicator** refers to any of the effects caused by groundwater conditions occurring throughout the basin that, when significant and unreasonable, cause undesirable results, as described in Water Code Section 10721(x).

  The six sustainability indicators relevant to this subbasin include chronic lowering of groundwater levels; reduction of groundwater storage; degraded water quality; land subsidence; seawater intrusion; and depletion of interconnected surface waters.
- **Uncertainty** refers to a lack of understanding of the basin setting that significantly affects an Agency's ability to develop sustainable management criteria and appropriate projects and management actions in a Plan, or to evaluate the efficacy of Plan implementation, and therefore may limit the ability to assess whether a basin is being sustainably managed.
- **Undesirable Result**

  Undesirable Result is not defined in the Regulations. However, the description of undesirable result states that it should be a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the subbasin. An example undesirable result is more than 10% of the measured groundwater levels being lower than the minimum thresholds. Undesirable results should not be confused with significant and unreasonable conditions. Significant and unreasonable conditions are physical conditions to be avoided; an undesirable result is a quantitative assessment based on minimum thresholds.

8.2 Sustainability Goal

Per Section §354.24 of the SGMA regulations, the sustainability goal for the Subbasin has three parts:

- A description of the sustainability goal;
- A discussion of the measures that will be implemented to ensure the Subbasin will be operated within sustainable yield, and;
- An explanation of how the sustainability goal is likely to be achieved.

The goal of this GSP is to manage the groundwater resources of the 180/400-Foot Aquifer Subbasin for long-term community, financial, and environmental benefits to the Subbasin's residents and businesses. This GSP will ensure long-term viable water supplies while maintaining the unique cultural, community, and business aspects of the Subbasin. It is the express goal of this GSP to balance the needs of all water users in the Subbasin.

The following information will be updated when the GSP is completed.

A number of projects and actions measures are included in this GSP. Not all of these measures will be implemented. However, some combination of these measures will be implemented to ensure the Subbasin is operated within its sustainable yield and achieves sustainability.

The list of projects and actions will be included here once finalized.

These measures will achieve sustainability within 20 years by the following means:

The effects of the projects and actions will be included here once finalized.

8.3 General Process for Establishing Sustainable Management Criteria

The SMC presented in this chapter were developed using information from publicly available information, feedback gathered during public meetings, hydrogeologic analysis, and meetings with GSA staff and Advisory Committee members. The general process included:

- Presentations to the Board of Directors on the SMC requirements and implications.
- Presentations to the Technical Advisory Committee and Subbasin Specific working groups outlining the approach to developing SMC and discussing initial SMC ideas. The TAC and working groups provided feedback and suggestions for the development of initial SMC.
- Discussions with GSA staff and various Board Members
- Modifying minimum thresholds and measurable objectives based on input from GSA staff and Board Members.

This general process resulted in the SMC presented in this chapter.

8.4 Management Areas

SGMA allows for the establishment of management areas within a basin or subbasin to distinguish different monitoring and management criteria and facilitate implementation of the GSP. Management areas have not been established in the Subbasin. These are not to be confused with the Management Area set up by MCWRA for monitoring reasons, as described below.

8.5 Sustainable Management Criteria Summary

Table 8-1 provides a summary of the SMCs for each of the six sustainability indicators. The rational and background for developing these criteria are described in detail in the following sections.

Table 8-1: Sustainable Management Criteria Summary

Sustainability Indicator	Minimum Threshold	Measurement	Measurable Objective	Undesirable Result	Interim Milestones
Chronic lowering of groundwater levels	Water level minimum thresholds set to 1 foot above 2015 groundwater elevations. See Table 8-2for wells in the 180- and 400- Foot aquifers	Measured through monitoring well network.	Water level measurable objectives set to 2003 groundwater elevations	Over the course of any one year, no more than 15% of groundwater elevation minimum thresholds shall be exceeded in any single aquifer and no one well shall exceed its minimum threshold for more than two consecutive years. Allows two exceedances in the 180-Foot aquifer and two exceedances in the 400-Foot aquifer	To be developed
Reduction in groundwater storage	Minimum threshold set to the estimated long-term future sustainable yield of 112,000 acre-feet/year for the entire 180/400-Foot Aquifer Subbasin	Measured through total groundwater extractions. Municipal users and small systems report groundwater extractions to the state. Agricultural pumping will either be collected by MCWRA, or estimated based on crop data	Measurable objective is Identical to the minimum threshold. Set to the estimated long-term future sustainable yield of 112,000 acre-feet/year for the entire 180/400-Foot Aquifer Subbasin	During average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, the total groundwater pumping shall not exceed the minimum threshold.	Set to 112,000 acre-feet per year
Seawater intrusion	Minimum threshold is the 2017 extent of 500 mg/L chloride isocontour is developed by MCWRA for the 180- and 400- Foot aquifers. The minimum threshold is the line defined by Highway one for the deep aquifer.	Seawater intrusion maps developed by MCWRA	Measurable objective is the line defined by Highway 1 for the 180-Foot, 400-Foot, and Deep aquifers	On average in any one year there shall be no mapped seawater intrusion beyond the 2017 extent of the 500 mg/L chloride isocontour.	To be developed
Degraded groundwater quality	Minimum threshold is zero additional exceedances of groundwater quality	Groundwater quality data downloaded annually from state and local sources.	Measurable objective is Identical to the minimum threshold.	On average during any one year, no groundwater quality minimum threshold shall be exceeded as a	Identical to current conditions

Sustainability Indicator	Minimum Threshold	Measurement	Measurable Objective	Undesirable Result	Interim Milestones
	constituents of concern known to exist in the subbasin above drinking water or agricultural limits. Exceedances are only measured in supply wells that regularly test for the parameters. See Tables 8-2 and 8-3 for the list of constituents.		Zero additional exceedances of groundwater quality constituents of concern known to exist in the subbasin above drinking water or agricultural limits.	direct result of projects or management actions taken as part of GSP implementation.	
Subsidence	Minimum threshold is zero net long-term subsidence	Measured using groundwater elevation as a proxy for subsidence. Proposed to use InSAR data to develop relationship between groundwater elevations and subsidence.	Measurable objective is identical to the minimum threshold. Zero net long-term subsidence.	In any one year, there will be zero exceedances of the groundwater elevation proxy minimum thresholds based on average groundwater levels.	Zero long-term subsidence averaged over every five-year period.
Depletion of interconnected surface water	Set to the estimated average historical rate of stream depletion, adjusted for climate change. This is currently estimated to be 69,700 acre-feet per year for future conditions including climate change	Estimated using the SVIHM integrated model	Identical to the minimum threshold. Set to the estimated average rate of stream depletion of 69,700 acre-feet per year for future conditions including climate change	During average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, the depletion of interconnected surface waters shall not exceed the minimum threshold.	Average annual depletion rate set to 69,700 acre-feet per year for every five-year period.

8.6 Chronic Lowering of Groundwater Levels SMC

8.6.1 Locally Defined Significant and Unreasonable Conditions

Locally defined significant and unreasonable conditions were determined based on public meetings, and discussions with GSA staff. Significant and unreasonable groundwater levels in the Subbasin are those that:

- Are at or below the lowest observed groundwater elevations. Public and stakeholder input identified historically low groundwater elevations as significant and unreasonable.
- Cause significant financial burden to local agricultural interests
- Interfere with other sustainability indicators

8.6.2 Minimum Thresholds

Section §354.28(c)(1) of the Regulations states that "The minimum threshold for chronic lowering of groundwater levels shall be the groundwater elevation indicating a depletion of supply at a given location that may lead to undesirable results."

8.6.2.1 Information and Methodology Used to Establish Minimum Thresholds and Measurable Objectives

The development of minimum thresholds and measurable objectives follow a similar process and are described concurrently in this section. The information used for establishing the chronic lowering of groundwater levels measurable objectives and minimum thresholds include:

- Feedback from discussions with local stakeholders on challenges and goals.
- Feedback about significant and unreasonable conditions gathered during public meetings.
- Historical groundwater elevation data from wells monitored by the Monterey County Water Resources Agency (MCWRA).
- Maps of current and historical groundwater elevation data.

The general steps for developing minimum thresholds and measurable objectives were:

- Use MCWRA-generated average groundwater level change hydrographs to select representative years that represent minimum thresholds and measurable objectives for the subbasin

- Use the MCWRA-generated groundwater elevation contour map from the appropriate years to identify minimum threshold and measurable objective values for each monitoring network well
- Plot the minimum thresholds and measurable objectives on the respective monitoring well hydrographs
- Visually inspect each hydrograph to check if the minimum threshold and measurable objective are appropriate according to the actual water levels measured during the representative years selected from the groundwater level change hydrographs
- Manually adjust the minimum thresholds and measurable objectives as needed, to better represent conditions at each well

Each of these steps is described in more detail below.

The MCWRA provided hydrographs of average cumulative groundwater elevation changes over time for the Pressure Management Area (MAs), which covers the 180/400-Foot Aquifer Subbasin. This hydrograph shows relative water level changes over time. These data were based on available Fall monitoring well data. The period of record provided includes 1944 to 2017 and the water levels were measured in October of each year. Based on this period of record, a representative climatic cycle from 1967 to 1998 was used to develop values for minimum thresholds and measurable objectives. This representative period also corresponds to important water management milestones for the Salinas Valley; water year 1967 marks the beginning of operations at San Antonio Reservoir, with first water releases in November 1966. The Castroville Seawater Intrusion Project (CSIP) began operating in 1998.

The groundwater level change hydrograph with preliminary minimum threshold and measurable objectives lines for the Pressure MA are shown in Figure 8-1. The Pressure MA represents both the 180/400-foot Aquifer Subbasin and the Monterey Subbasin.

The average 2015 and 2016 groundwater levels in the Pressure MA are considered significant and unreasonable. The minimum thresholds were therefore set above the 2015 and 2016 groundwater levels. When looking at the water level changes within the representative climatic cycle (Figure 8-1), the historical lowest levels occurred in 1991 and 1992, at one foot above the 2015 level (Figure 8-1). Therefore, the Pressure area minimum thresholds were set one foot above 2015 groundwater levels.

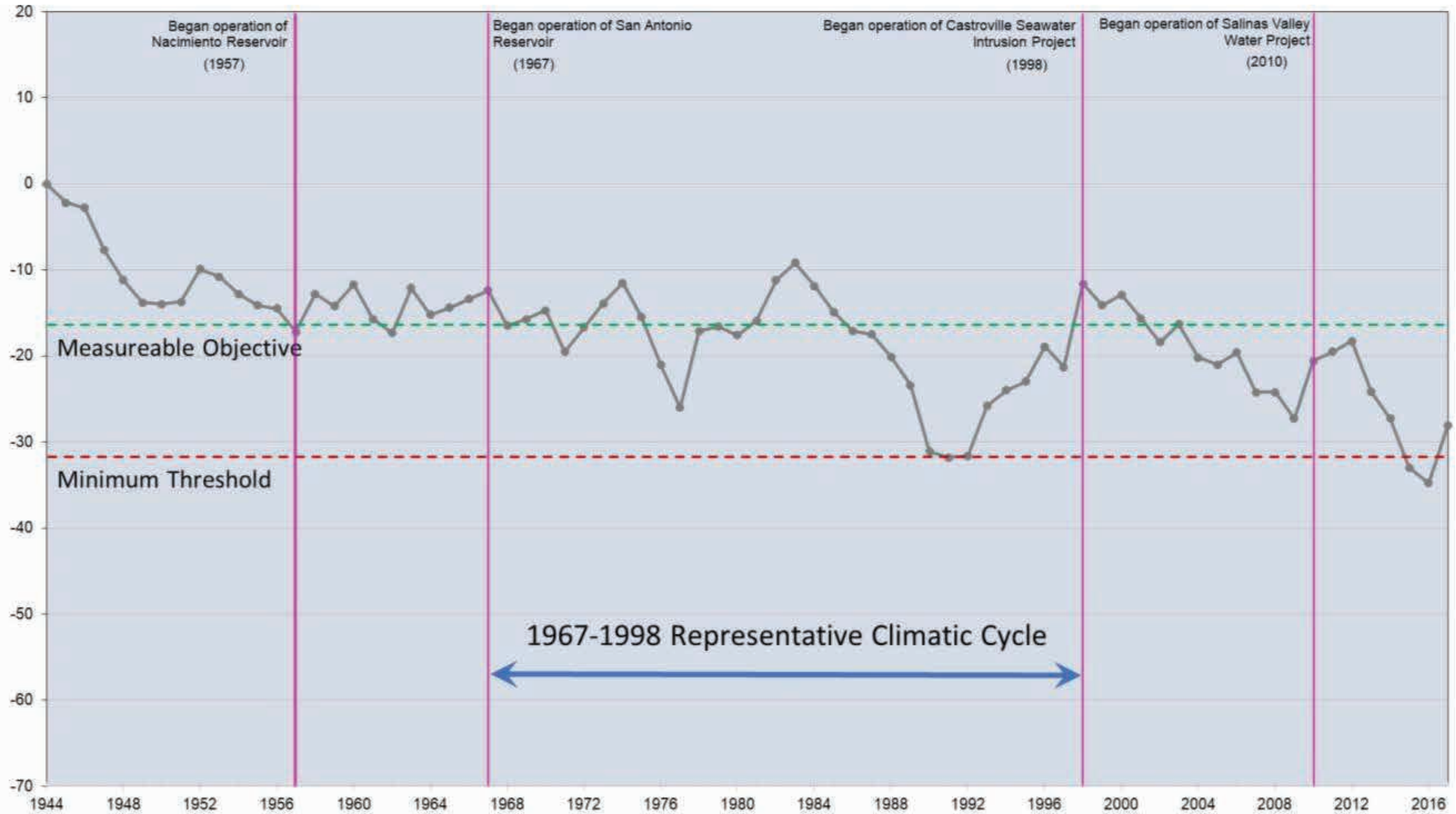

Figure 8-1: Cumulative Groundwater Level Change Hydrograph with Selected Measurable Objective and Minimum Threshold for the Pressure MA

After the representative year was selected, MCWRA-provided groundwater elevation contour map for October with the additional 1-foot adjustment factor was for minimum thresholds, and a separate map for measurable objectives, for both the 180-Foot Aquifer and for the 400-Foot Aquifer. No groundwater elevation contour maps currently exist for the deep aquifer due to a lack of monitoring data.

The preliminary minimum threshold contour maps along with the monitoring network wells are shown in Figure 8-2 for the 180-Foot Aquifer, and in Figure 8-3 for the 400-Foot aquifer.

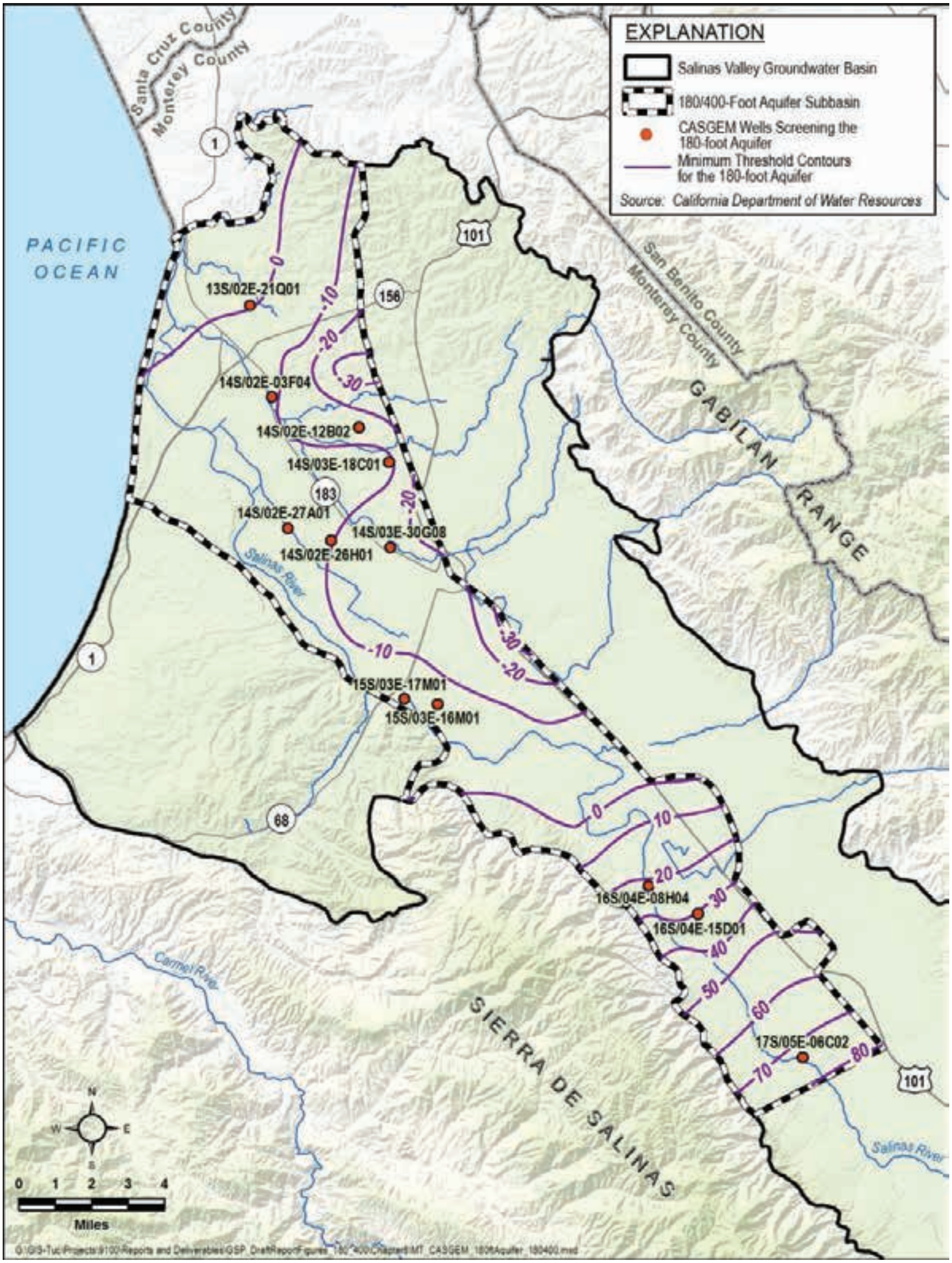

Figure 8-2: Preliminary Groundwater Elevation Minimum Threshold Contour Map for the 180-foot Aquifer

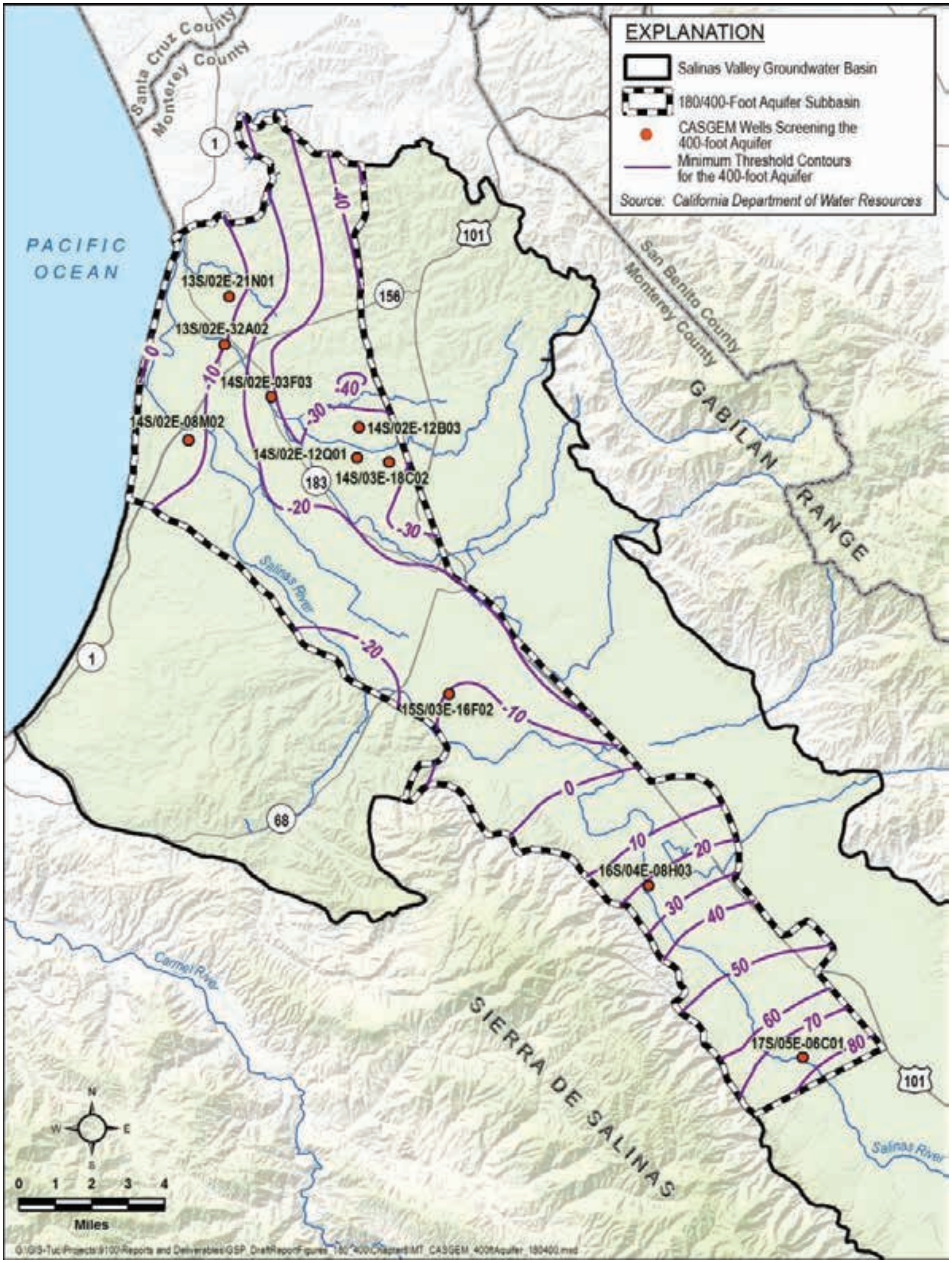

Figure 8-3: Preliminary Groundwater Elevation Minimum Threshold Contour Map for the 400 Foot Aquifer

The monitoring network well locations were intersected with the contour map to establish the initial minimum threshold for each RMS for chronic lowering of groundwater levels. The initial minimum threshold values were plotted on the respective RMS groundwater elevation hydrographs to visually inspect the applicability of these values for each well. In some cases, the values were not adequate for various reasons including:

- Wells located outside of contour maps
- Deep wells with no contour map available
- Wells located in foothill area where contour maps don't apply
- Interpolated values on the contour maps did not match the individual RMS well values adequately for the month of October and designated year

A detailed review of minimum thresholds and measurable objectives at each RMS well, comparison to the actual measured values at the designated years in October, and professional judgment, resulted in a revised set of minimum thresholds and measurable objectives at each RMS well. October was used as the month at which values for minimum thresholds and measurable objectives are established because this is the Fall measurement that MCWRA takes every year after the agricultural pumping season ends, and before the winter rains start. Future water levels in October will be compared to these values.

Hydrographs for each RMS with well completion information, and minimum thresholds are included in Appendix 8-A. These minimum thresholds are selected to avoid the significant and unreasonable conditions outlined above. The minimum threshold values for each well within the groundwater level monitoring network are provided in Table 8-2 .

Table 8-2: Chronic Lowering of Groundwater Levels Minimum Thresholds and Measurable Objectives

Monitoring Site	Aquifer	Minimum Threshold (ft)	Measurable Objective (ft)
13S/02E-21Q01	180-ft Aquifer	3	8
14S/02E-03F04	180-ft Aquifer	-12	-7.1
14S/02E-12B02	180-ft Aquifer	-19	-11.9
14S/02E-26H01	180-ft Aquifer	-25	-18
14S/02E-27A01	180-ft Aquifer	-18.7	-10.7
14S/03E-18C01	180-ft Aquifer	5	10
14S/03E-30G08	180-ft Aquifer	-29	-3.5
15S/03E-16M01	180-ft Aquifer	-16	-4.1
15S/03E-17M01	180-ft Aquifer	-17.2	2.9
16S/04E-08H04	180-ft Aquifer	30	54.8
16S/04E-15D01	180-ft Aquifer	26	55
17S/05E-06C02	180-ft Aquifer	73.5	94.1
13S/02E-21N01	400-ft Aquifer	-15	-7.6
13S/02E-32A02	400-ft Aquifer	-9.9	-5
14S/02E-03F03	400-ft Aquifer	-40	-19.4
14S/02E-08M02	400-ft Aquifer	-12	-5.9
14S/02E-12B03	400-ft Aquifer	-54	-43
14S/02E-12Q01	400-ft Aquifer	-26.3	-13.5
14S/03E-18C02	400-ft Aquifer	-38	-17.4
15S/03E-16F02	400-ft Aquifer	-20	1.2
16S/04E-08H03	400-ft Aquifer	19	48
17S/05E-06C01	400-ft Aquifer	77	89.6
13S/02E-19Q03	Deep Aquifer	-10	5

8.6.2.2 Minimum Thresholds Impact on Domestic Wells

Minimum thresholds for groundwater elevations are compared to the range of domestic well depths in the Subbasin in DWR's Online System for Well Completion Reports (OSWCR) database. This check was done to assure that the minimum thresholds maintain operability in a reasonable percentage of domestic wells. The proposed minimum thresholds for groundwater elevation do not necessarily protect all domestic wells because it is impractical to manage a groundwater basin in a manner that fully protects the shallowest wells. The average computed well depth of domestic wells in the Subbasin is 316.6 ft, for the domestic wells in the OSWCR that include depth information.

The comparison showed:

- In the 180-foot aquifer, 89% of all domestic wells will have at least 25 feet of water in them as long as groundwater levels remain above minimum thresholds; and 91% of all domestic wells will have at least 25 feet of water in them when measurable objectives are achieved.
- In the 400-foot aquifer, 79% of all domestic wells will have at least 25 feet of water in them as long groundwater levels remain above minimum thresholds; and 82% of all domestic wells will have at least 25 feet of water in them when measurable objectives are achieved.

8.6.2.3 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators

Section 354.28 of the Regulations requires that the description of all minimum thresholds include a discussion about the relationship between the minimum thresholds for each sustainability indicator. In the SMC BMP (DWR, 2017), DWR has clarified this requirement. First, the GSP must describe the relationship between each sustainability indicator’s minimum threshold (e.g., describe why or how a water level minimum threshold set at a particular representative monitoring site is similar to or different from water level thresholds in nearby representative monitoring sites). Second, the GSP must describe the relationship between the selected minimum threshold and minimum thresholds for other sustainability indicators (e.g., describe how a water level minimum threshold would not trigger an undesirable result for land subsidence).

The groundwater elevation minimum thresholds are derived from smoothly interpolated groundwater elevations in the Subbasin. Therefore, the minimum thresholds are unique at every well, but when combined represent a reasonable and potentially realistic groundwater elevation map. Because the underlying groundwater elevation map is a reasonably achievable condition, the individual minimum thresholds at RMSs do not conflict with each other.

Groundwater elevation minimum thresholds can influence other sustainability indicators. The groundwater elevation minimum thresholds are selected to avoid undesirable results for other sustainability indicators.

- **Change in groundwater storage**. A significant and unreasonable condition for change in groundwater storage is pumping in excess of the sustainable yield for an extended period of years. Pumping at or less than the sustainable yield will maintain or raise average groundwater elevations in the Subbasin. The groundwater elevation minimum thresholds are set at or above existing groundwater elevations, consistent with the practice of pumping at or less than the sustainable yield. Therefore, the groundwater elevation minimum thresholds will not result in long term significant or unreasonable change in groundwater storage.

- **Seawater intrusion.** A significant and unreasonable condition for seawater intrusion is seawater intrusion in excess of the extent delineated by MCWRA in 2017. Lower groundwater elevations, particularly in the 180- and 400-Foot Aquifers, could cause seawater to advance inland. The groundwater elevation minimum thresholds are set at or above existing groundwater elevations. Therefore, the groundwater elevation minimum thresholds will not exacerbate, and may help control, seawater intrusion.
- **Degraded water quality**. A significant and unreasonable condition for degraded water quality is exceeding regulatory limits for constituents of concern in production wells due to actions proposed in the GSP. Water quality could be affected through two processes:

1. Low groundwater elevations in an area could cause deep poor-quality groundwater to flow upward to levels where supply wells pump groundwater. Because the groundwater elevation minimum thresholds are at or above existing groundwater elevations, there is no mechanism for triggering any new upward flow of deep groundwater. Therefore, the groundwater elevation minimum thresholds are set to avoid deep poor-quality water from impacting shallower production wells.
2. Changes in groundwater elevation due to actions implemented to achieve sustainability could change groundwater gradients, which could cause poor quality groundwater to flow towards production wells that would not have otherwise been impacted. These groundwater gradients, however, are only dependent on differences between groundwater elevations, not on the groundwater elevations themselves. Therefore, the minimum threshold groundwater elevations do not directly lead to a significant and unreasonable degradation of groundwater quality in production wells.

- **Subsidence**. A significant and unreasonable condition for subsidence is any measurable long-term inelastic subsidence that damages existing infrastructure. Subsidence is caused by dewatering and compaction of clay-rich sediments in response to lowering groundwater levels. The groundwater elevation minimum thresholds are set at or above existing groundwater elevations. Because future groundwater elevations will be higher than current groundwater elevations, they will not induce additional dewatering of clay-rich sediments; and thus, will not induce additional subsidence.
- **Depletion of interconnected surface waters.** A significant and unreasonable condition for the depletion of interconnected surface waters is groundwater pumping-induced depletion of flow in the Salinas River or its major tributaries in excess of current depletion rates. Lowering average groundwater elevations in areas adjacent to interconnected surface water bodies will increase depletion rates. Because the groundwater elevation minimum thresholds are set to current elevations or higher, future

groundwater elevations will not induce additional depletion of interconnected surface waters. Therefore, the groundwater elevation minimum thresholds will not result in a significant or unreasonable depletion of interconnected surface waters.

8.6.2.4 Effect of Minimum Thresholds on Neighboring Basins and Subbasins

The 180/400-Foot Aquifer Subbasin has four neighboring subbasins within the Salinas Valley:

- The Langley Subbasin to the north
- The Eastside Subbasin to the northeast
- The Forebay Subbasin to the south
- The Monterey Subbasin to the West

The SVBGSA is either the exclusive GSA, or is one of two coordinating GSAs for the adjacent Langley, Eastside, Forebay, and Monterey Subbasins. Because the SVBGSA covers all of these subbasins, the GSA Board of Directors opted to develop the minimum thresholds and measurable objectives for all of these neighboring subbasins in a single process that is coordinated with the 180/400-Foot Aquifer Subbasin. These minimum thresholds are designed to ensure that all the subbasins can be managed sustainably in a coordinated fashion. Therefore, the minimum thresholds for the 180/400-Foot Aquifer Subbasin will not prevent the neighboring subbasins from achieving sustainability, by design.

In addition, the Pajaro Valley Basin occurs directly to the north. The Pajaro Valley Basin has submitted an alternative submittal, and it is unclear if specific minimum thresholds have been set in the Basin. However, because the minimum thresholds in the 180/400-Foot Aquifer Subbasin are above historical low groundwater levels, it is likely that the minimum thresholds will not prevent the Pajaro Basin from achieving and maintaining sustainability. The SVBGSA will coordinate closely with the Pajaro Valley Water Agency as it sets minimum thresholds to ensure that the basins do not prevent each other from achieving sustainability.

8.6.2.5 Effects on Beneficial Users and Land Uses

The groundwater elevation minimum thresholds may have several effects on beneficial users and land uses in the Subbasin.

Agricultural land uses and users. The groundwater elevation minimum thresholds prevent continued lowering of groundwater levels in the Subbasin. This may have the effect of limiting the amount of groundwater pumping in the Subbasin. Limiting the amount of groundwater pumping may limit the amount and type of crops that can be grown in the Subbasin. The groundwater elevation minimum thresholds could therefore limit expansion of the Subbasin's agricultural economy. This could have various effects on beneficial users and land uses:

- Agricultural land currently under irrigation may become more valuable as bringing new lands into irrigation becomes more difficult and expensive.
- Agricultural land not currently under irrigation may become less valuable because it may be too difficult and expensive to irrigate.

Urban land uses and users. The groundwater elevation minimum thresholds may reduce the amount of groundwater pumping in the Subbasin. This may limit urban growth, or result in urban areas obtaining alternative sources of water. This may result in higher water costs for municipal water users.

Domestic land uses and users. The groundwater elevation minimum thresholds are intended to protect most domestic wells. Therefore, the minimum thresholds will likely have an overall beneficial effect on existing domestic land uses by protecting the ability to pump from domestic wells. However, shallow domestic wells may become dry, requiring owners to drill deeper wells. Additionally, the groundwater elevation minimum thresholds may limit the number of new domestic wells that can be drilled in order to limit future declines in groundwater levels caused by more domestic pumping.

Ecological land uses and users. Groundwater elevation minimum thresholds may limit the amount of groundwater pumping in the Subbasin and, may limit both urban and agricultural growth. This outcome may benefit ecological land uses and users by curtailing the conversion of native vegetation to agricultural or domestic uses, and by reducing pressure on existing ecological land caused by declining groundwater levels.

8.6.2.6 Relevant Federal, State, or Local Standards

No federal, state, or local standards exist for chronic lowering of groundwater elevations.

8.6.2.7 Method for Quantitative Measurement of Minimum Thresholds

Groundwater elevation minimum thresholds will be directly measured from the monitoring well network. The groundwater level monitoring will be conducted in accordance with the monitoring plan outlined in Chapter 7. Furthermore, the groundwater level monitoring will meet the requirements of the technical and reporting standards included in the Regulations.

As noted in Chapter 7, the current groundwater level monitoring network in the Subbasin across aquifers includes 23 wells. Data gaps were identified in Chapter 7 and will be resolved during implementation of this GSP.

8.6.3 Measurable Objectives

The measurable objectives for chronic lowering of groundwater levels represent target groundwater elevations that are higher than the minimum thresholds. These measurable objectives provide operational flexibility to ensure that the Subbasin can be managed sustainably over a reasonable range of hydrologic variability. Measurable objectives for the chronic lowering of groundwater levels are summarized in Table 8-2Table 8-2. The measurable objectives are also shown on the hydrographs for each RMS in Appendix 8-A.

8.6.3.1 Methodology for Setting Measurable Objectives

The methodology for establishing measurable objectives is described in detail in Section 8.6.2.1 and summarized below.

Figure 8-1 shows that there was only a slow downward trend in average groundwater levels through 2003. Since 2003, water levels have consistently decreased at a more rapid rate. To ensure that the measurable objective is achievable, an average groundwater level from the relatively recent past was selected as the goal, or measurable objective. Groundwater levels from 2003 were selected as representative of this objective for the 180/400-Foot Aquifer Subbasin. Therefore, water levels from 2003 were selected to represent the measurable objective.

The preliminary measurable objective contour maps along with the monitoring network wells are shown in Figure 8-4 for the 180-Foot Aquifer, and in for the 400-Foot Aquifer.

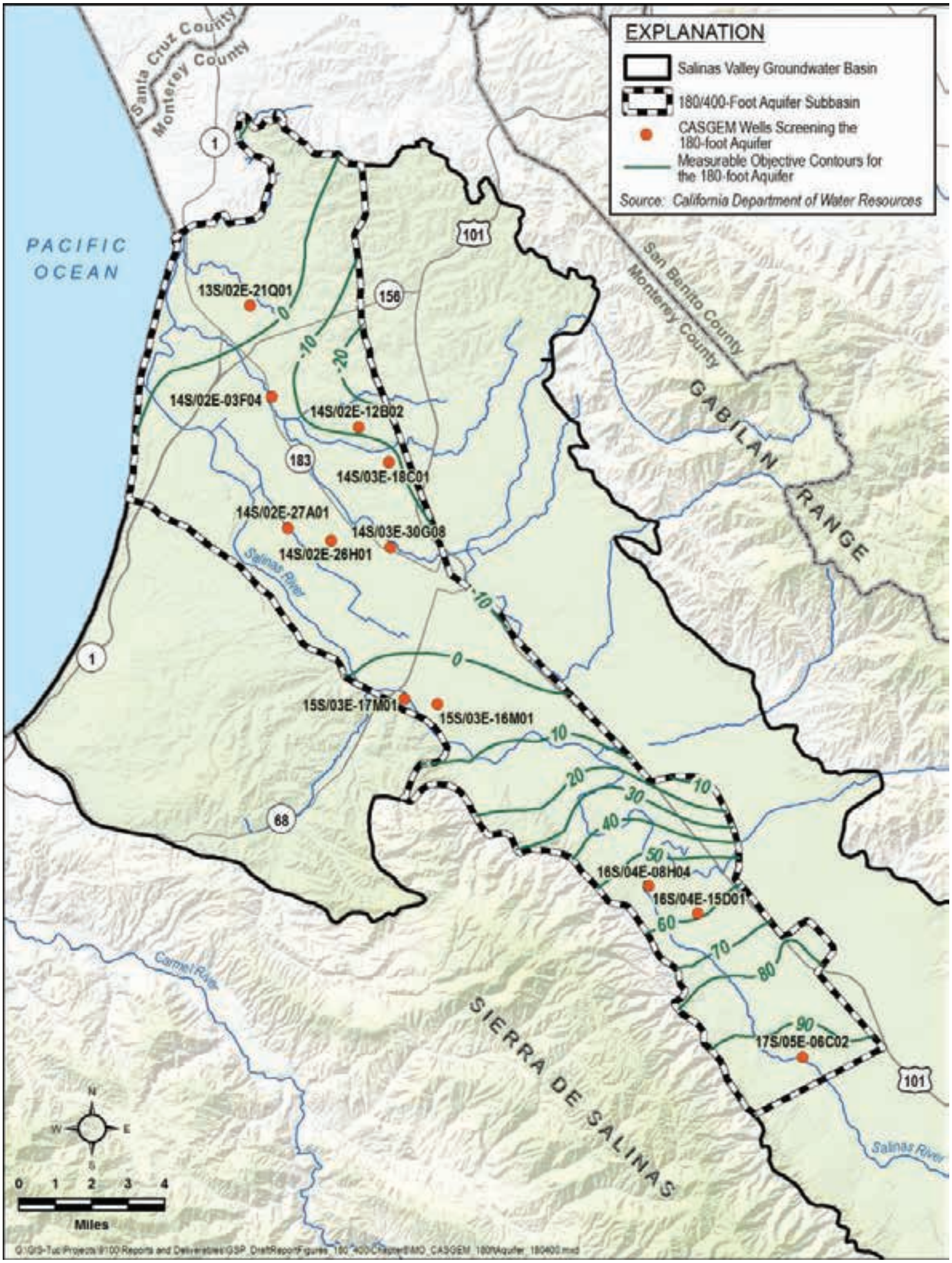

Figure 8-4: Preliminary Groundwater Elevation Measurable Objective Contour Map for the 180' Aquifer

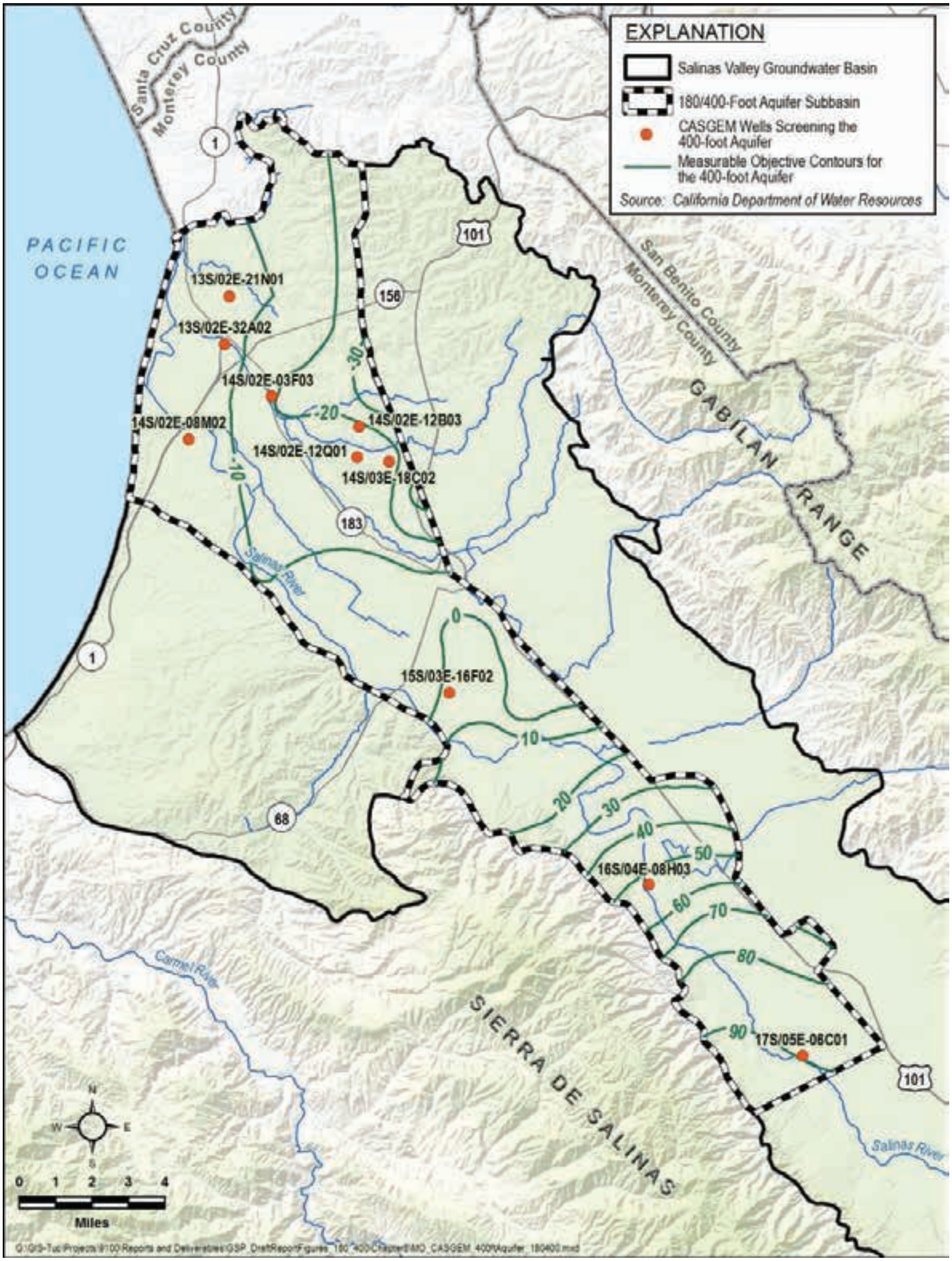

Figure 8-5: Preliminary Groundwater Elevation Measurable Objective Contour Map for the 400-Foot Aquifer

8.6.3.2 Interim Milestones

To be developed after projects and implementation schedule are developed.

8.6.4 Undesirable Results

8.6.4.1 Criteria for Defining Chronic Lowering of Groundwater Levels Undesirable Results

The chronic lowering of groundwater elevation undesirable result is a quantitative combination of groundwater elevation minimum threshold exceedances. For the Subbasin, the groundwater elevation undesirable result is:

Over the course of any one year, no more than 15% of the groundwater elevation minimum thresholds shall be exceeded in any single aquifer. Additionally, the minimum threshold in any one well shall not be exceeded for more than two sequential years.

Undesirable results provide flexibility in defining sustainability. Increasing the percentage of allowed minimum threshold exceedances provides more flexibility, but may lead to significant and unreasonable conditions for a number of beneficial users. Reducing the percentage of allowed minimum threshold exceedances ensures strict adherence to minimum thresholds, but reduces flexibility due to unanticipated hydrogeologic conditions. The undesirable result was set at 15% to balance the interests of beneficial users with the practical aspects of groundwater management under uncertainty.

The 15% limit on minimum threshold exceedances in the chronic lowering of groundwater level undesirable result allows for four exceedances in the 23 existing monitoring wells: two in the 180-Foot Aquifer and two in the 400-Foot Aquifer. As the monitoring system grows, additional exceedances will be allowed. One additional exceedance will be allowed for approximately every seven new monitoring wells. This was considered a reasonable number of exceedances given the hydrogeologic uncertainty of the subbasin.

8.6.4.2 Potential Causes of Undesirable Results

An undesirable result for chronic lowering of groundwater levels does not currently exist, since 22 out of 23 of the existing monitoring wells (95.7%) in the 180/400-ft. Aquifer Subbasin had their most recent Fall water level measurement above the minimum threshold. Conditions that may lead to an undesirable result include the following:

- **Localized pumping clusters**. Even if regional pumping is maintained within the sustainable yield, clusters of high-capacity wells may cause excessive localized drawdowns that lead to undesirable results.

- **Expansion of *de-minimis* pumping**. Individual *de-minimis* pumpers do not have a significant impact on groundwater elevations. However, many *de-minimis* pumpers are often clustered in specific residential areas. Pumping by these *de-minimis* users is not regulated under this GSP. Adding additional domestic *de-minimis* pumpers in these areas may result in excessive localized drawdowns and undesirable results.
- **Extensive, unanticipated drought**. Minimum thresholds were established based on historical groundwater elevations and reasonable estimates of future groundwater elevations. Extensive, unanticipated droughts may lead to excessively low groundwater elevations and undesirable results.

8.6.4.3 Effects on Beneficial Users and Land Uses

The primary detrimental effect on beneficial users from allowing multiple exceedances occurs if more than one exceedance occurs in a small geographic area. Allowing 15% exceedances is reasonable as long as the exceedances are spread out across the Subbasin, and as long as any one well does not regularly exceed its minimum threshold. If the exceedances are clustered in a small area, it will indicate that significant and unreasonable effects are being born by a localized group of landowners. To avoid this, the monitoring system will be developed to have broad geographic coverage; ensuring that minimum threshold exceedances cannot be clustered in a single area.

8.7 Reduction in Groundwater Storage SMC

8.7.1 Locally Defined Significant and Unreasonable Conditions

Locally defined significant and unreasonable conditions were determined based on public meetings, and discussions with GSA staff. Significant and unreasonable changes in groundwater storage in the Subbasin are those that:

- Lead to long-term reduction in groundwater storage.
- Interfere with other sustainability indicators.

8.7.2 Minimum Thresholds

Section §354.28(c)(2) of the Regulations states that "The minimum threshold for reduction of groundwater storage shall be a total volume of groundwater that can be withdrawn from the subbasin without causing conditions that may lead to undesirable results."

As noted in the regulatory definition of minimum thresholds quoted above, the reduction on groundwater storage minimum threshold is established for the subbasin as a whole, not for individual aquifers. Therefore, one minimum threshold is established for the entire Subbasin.

The total volume of groundwater that can be annually withdrawn from the Subbasin without leading to a long-term reduction in groundwater storage or interfering with other sustainability indicators is the calculated sustainable yield of the Subbasin. As discussed in Chapter 6, the future long-term sustainable yield of the Subbasin under reasonable climate change assumptions is 112,000 AFY. This sustainable yield represents an approximately 7% reduction in groundwater pumping from the projected pumping volumes.

Public and stakeholder input on the significant and unreasonable conditions for groundwater storage suggested a preference for increasing groundwater storage, but not a preference for restricting average year pumping. Therefore, the minimum threshold is set at the long-term future sustainable yield of 112,000 AFY.

The minimum threshold applies to pumping of natural recharge only. Natural recharge includes items such as recharge from precipitation and percolation of excess irrigation water. Pumping of intentionally recharged water that is not part of the natural recharge is not considered when compared against the minimum threshold. Intentionally recharged water refers to water recharged through injection wells or percolation ponds set up with the sole intent to add water to the aquifer to increase storage and raise water levels.

8.7.2.1 Information and Methodology Used to Establish Minimum Thresholds

The calculations used to estimate the sustainable yield, and the subsequent minimum threshold for reduction in groundwater storage are detailed in Chapter 6. These calculations acknowledge and account for current land use, future urban growth, and anticipated reasonable climate change.

8.7.2.2 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators

The minimum threshold for reduction in groundwater storage is a single value for the entire Subbasin. Therefore, the concept of potential conflict between minimum thresholds is not applicable.

The reduction in groundwater storage minimum threshold could influence other sustainability indicators. The reduction in groundwater storage minimum threshold is selected to avoid undesirable results for other sustainability indicators, as outlined below.

- **Chronic lowering of groundwater levels**. Pumping at or below the sustainable yield will maintain or raise average groundwater elevations in the Subbasin. Therefore, the minimum threshold for reduction in groundwater storage will not result in a significant or unreasonable lowering of groundwater levels.

- **Seawater intrusion**. Pumping at or below the sustainable yield will maintain or raise average groundwater elevations in the Subbasin. Therefore, the minimum threshold for reduction in groundwater storage will not result in a significant or unreasonable seawater intrusion.
- **Degraded water quality**. Groundwater quality could be affected through two processes:
    1. Low groundwater elevations could result in poor-quality groundwater being drawn upward into production wells from deep aquifers. The reduction in storage minimum threshold is set to prevent any reduction in storage, and therefore prevent lower groundwater levels. Therefore, the reduction in storage minimum threshold will not draw additional poor-quality water from deep aquifers towards production wells.
    2. Changes in groundwater elevations could cause changes in groundwater gradients, which could cause poor quality water to flow towards production wells that would not have otherwise been impacted. These groundwater gradients however, are only dependent on differences between groundwater elevations, not on the groundwater elevations themselves. Therefore, the minimum threshold for reduction in groundwater storage does not directly lead to a significant and unreasonable degradation of groundwater quality in production wells.
- **Subsidence**. The reduction in storage minimum threshold is established to prevent any reduction in storage, and therefore prevent lowering of groundwater levels. Because future groundwater elevations will be at or higher than existing groundwater elevations, they will not induce any additional dewatering of clay-rich sediments; and will not induce additional subsidence.
- **Depletion of interconnected surface waters.** The reduction in storage minimum threshold is established to prevent further reduction in storage, and therefore prevent lowering of groundwater levels. Therefore, the change in storage minimum threshold will not induce additional depletion of interconnected surface waters and will not result in a significant or unreasonable depletion of interconnected surface waters.

8.7.2.3 Effect of Minimum Thresholds on Neighboring Basins and Subbasins

The 180/400-Foot Aquifer Subbasin has four neighboring subbasins within the Salinas Valley:

- The Langley Subbasin to the north
- The Eastside Subbasin to the northeast
- The Forebay Subbasin to the south
- The Monterey Subbasin to the West

The SVBGSA is either the exclusive GSA, or is one of two coordinating GSAs for the adjacent Langley, Eastside, Forebay, and Monterey Subbasins. Because the SVBGSA covers all of these subbasins, the GSA Board of Directors opted to develop the minimum thresholds and measurable objectives for all of these neighboring subbasins in a single process that is coordinated with the 180/400-Foot Aquifer Subbasin. These minimum thresholds are designed to ensure that all the subbasins can be managed sustainably in a coordinated fashion. Therefore, the minimum thresholds for the 180/400-Foot Aquifer Subbasin will not prevent the neighboring subbasins from achieving sustainability, by design.

In addition, the Pajaro Valley Basin occurs directly to the north. The Pajaro Valley Basin has submitted an alternative submittal, and it is unclear if specific minimum thresholds have been set in the Basin. However, because the minimum thresholds in the 180/400-Foot Aquifer Subbasin are set at the long-term future sustainable yield, it is likely that the minimum thresholds will not prevent the Pajaro Basin from achieving and maintaining sustainability. The SVBGSA will coordinate closely with the Pajaro Valley Water Agency as it sets minimum thresholds to ensure that the basins do not prevent each other from achieving sustainability.

8.7.2.4 Effect on Beneficial Uses and Users

The reduction in groundwater storage minimum threshold of maintaining pumping at the Subbasin's calculated sustainable yield requires a restriction on the amount of groundwater pumping in the Subbasin. Restricting pumping may impact the beneficial uses and users of the Subbasin.

Agricultural land uses and users. Restricting the amount of groundwater pumping may limit or reduce agricultural production in the Subbasin by reducing the amount of available water. Agricultural lands that are currently not irrigated may be particularly impacted because the additional groundwater pumping needed to irrigate these lands will increase the Subbasin pumping beyond the sustainable yield, violating the minimum threshold.

Urban land uses and users. Restricting the amount of groundwater pumping may increase the cost of water for municipal users in the Subbasin because municipalities may need to find other, more expensive water sources.

Domestic land uses and users. Domestic groundwater users may generally benefit from this minimum threshold. Many domestic groundwater users are *de-minimis* users whose pumping may not be restricted by the projects and management actions adopted in this GSP. By restricting the amount of groundwater that is pumped from the Subbasin, the *de-minimis* users are protected from overdraft that could impact their ability to pump groundwater.

Ecological land uses and users. Environmental groundwater uses may generally benefit from this minimum threshold. Restricting the amount of groundwater that is pumped from the Subbasin, maintains groundwater supplies at levels similar to present levels which can be used for environmental purposes.

8.7.2.5 Relation to State, Federal, or Local Standards

No federal, state, or local standards exist for reductions in groundwater storage.

8.7.2.6 Method for Quantitative Measurement of Minimum Threshold

The total amount of groundwater withdrawn from the subbasin will be measured in a number of ways:

- Municipal groundwater users and small water systems report their measured groundwater usage to the State of California. These data are available on the State's Drinking Water Information Clearinghouse website. These data will be used to quantify municipal and small system pumping on an annual basis.
- Agricultural pumping will be collected in one of two ways:
  - Agricultural pumpers may report their pumping directly to the SVBGSA
  - Pumping will be estimated for agricultural pumpers that do not report their pumping. The annual pumping will be estimated using Monterey County crop data and crop duty estimates, times a multiplier.
- Domestic pumping will be estimated by multiplying the estimated number of domestic users by a water use factor. The current water use factor is assumed to be 0.39 AFY/dwelling unit. This is consistent with a 2014 study that estimated the annual indoor water use of a new, three-bedroom home occupied by four people at 46,521 gallons per year (0.14 ac-ft). Combined indoor and outdoor water use was estimated at 0.39 AFY per household.

The impact of groundwater withdrawals on the amount of groundwater in storage will be checked using the updated SVIHM model. At a minimum, the model will be updated every five years with new data and the amount of pumping that occurred in the previous five years will be checked against the simulated change in groundwater storage. These checks will indicate whether reducing pumping to the sustainable yield will result in no net reduction in groundwater storage under average hydrologic conditions, or whether the sustainable yield should be reevaluated.

8.7.3 Measurable Objectives

The measurable objectives for reduction in groundwater storage is the same as the minimum threshold. The measurable objective is set at the long-term future sustainable yield of 112,000 AFY.

8.7.3.1 Method for Setting Measurable Objectives

As discussed in Section 8.7, input from stakeholders suggested that they would prefer more groundwater in storage. However, stakeholders also suggested that they would prefer not to attain this increase in groundwater storage by reducing existing pumping during average years. Instead, they prefer to increase groundwater storage through improving local recharge or by other means.

By regulation, the metric used to assess reductions in groundwater storage is an amount of pumping. Therefore, although increases in groundwater storage are preferred, attaining this measurable objective should not be achieved through future pumping reductions. Therefore, the measurable objective is set at the same level as the minimum threshold of 112,000 AF per year of pumping.

8.7.3.2 Interim Milestones

To be developed after projects and implementation schedule are developed.

8.7.4 Undesirable Results

8.7.4.1 Criteria for Defining Reduction in Groundwater Storage Undesirable Results

The reduction in groundwater storage undesirable result is a quantitative combination of reduction in groundwater storage minimum threshold exceedances. However, there is only one reduction in groundwater storage minimum threshold. Therefore, no minimum threshold exceedances are allowed to occur and the reduction in groundwater storage undesirable result is:

During average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, the total groundwater pumping shall not exceed the minimum threshold, which is equivalent to the long-term sustainable yield of the aquifers in the Subbasin.

8.7.4.2 Potential Causes of Undesirable Results

Conditions that may lead to an undesirable result for the reduction in groundwater storage sustainability indicator include the following:

- **Expansion of agricultural or municipal pumping.** Additional agricultural or municipal pumping may result in exceedance of the long-term sustainable yield, an undesirable result.
- **Expansion of *de-minimis* pumping**. Pumping by *de-minimis* users is not regulated under this GSP. Adding domestic *de-minimis* pumpers in the Subbasin may result in excessive pumping and exceedance of the long-term sustainable yield, an undesirable result.
- **Extensive, unanticipated drought**. Minimum thresholds are established based on reasonable anticipated future climatic conditions. Extensive, unanticipated droughts may lead to excessively low groundwater recharge and unanticipated high pumping rates that could cause an exceedance of the long-term sustainable yield.

8.7.4.3 Effects on Beneficial Users and Land Use

The practical effect of the reduction in groundwater storage undesirable result is no net change in groundwater storage during average hydrologic conditions and over the long-term. Therefore, during average hydrologic conditions and over the long-term, beneficial uses and users will have access to the same amount of water in storage that currently exists, and the undesirable result will not have a negative effect on the beneficial users and uses of groundwater. However, pumping at the long-term sustainable yield during dry years will temporarily reduce the amount of groundwater in storage. Therefore, if this occurs, there could be short-term impacts from a reduction in groundwater in storage on all beneficial users and uses of groundwater. In particular, groundwater pumpers that rely on water from shallower wells may be temporarily impacted as the amount of groundwater in storage drops and water levels in their wells decline.

8.8 Seawater Intrusion SMC

8.8.1 Locally Defined Significant and Unreasonable Conditions

Locally defined significant and unreasonable conditions were determined based on public meetings, and discussions with GSA staff. Significant and unreasonable seawater intrusion in the Subbasin is:

- Seawater intrusion in excess of the seawater intrusion line defined by MCWRA in 2017.

8.8.2 Minimum Thresholds

Section §354.28(c) (3) of the Regulations states that “The minimum threshold for seawater intrusion shall be defined by a chloride concentration isocontour for each principal aquifer where seawater intrusion may lead to undesirable results “.

The 2017 extent of the 500 mg/L chloride concentration isocontour as mapped by MCWRA is adopted as the seawater intrusion minimum threshold for both the 180- and 400-Foot aquifers. As depicted in Figures 5-15 and 5-16, seawater intrusion has been reported in the 180- and 400-Foot aquifers in the 180/400-Foot Aquifer Subbasin. Separate minimum thresholds are defined for the 180-Foot Aquifer and the 400-Foot Aquifer. The line defined by Highway 1 is adopted as the seawater intrusion minimum threshold for the Deep Aquifer.

8.8.2.1 Information and Methodology Used to Establish Minimum Thresholds and Measurable Objectives

The Regulations require the following supporting information when setting the seawater intrusion minimum threshold at a chloride isocontour:

- Section §354.28(c)(3)(A): *Maps and cross-sections of the chloride concentration isocontour that defines the minimum threshold and measurable objective for each principal aquifer.*
- Section §354.28(c)(3)(B): *A description of how seawater intrusion minimum threshold considers the effects of current and projected sea levels.*

Seawater intrusion minimum thresholds are based on seawater intrusion maps developed by the MCWRA. MCWRA publishes estimates of the extent of seawater intrusion every two years. The MCWRA maps define the extent of seawater intrusion as the inferred location of the 500 mg/L chloride concentration. These maps are developed through analysis and contouring of the values measured at dedicated monitoring wells near the coast, as shown on Figure 8-6 and Figure 8-7.

The groundwater model that will be used to assess the effectiveness of projects and management actions on seawater intrusion specifically incorporates assumptions for future sea level rise. Therefore, the minimum thresholds and actions to avoid undesirable results will address sea level rise.

Figure 8-6 presents proposed draft minimum thresholds for seawater intrusion in the 180-Foot Aquifer and Figure 8-7 presents proposed draft minimum thresholds for seawater intrusion in the 400-Foot Aquifer, represented by the 500 mg/L chloride concentration isocontour.

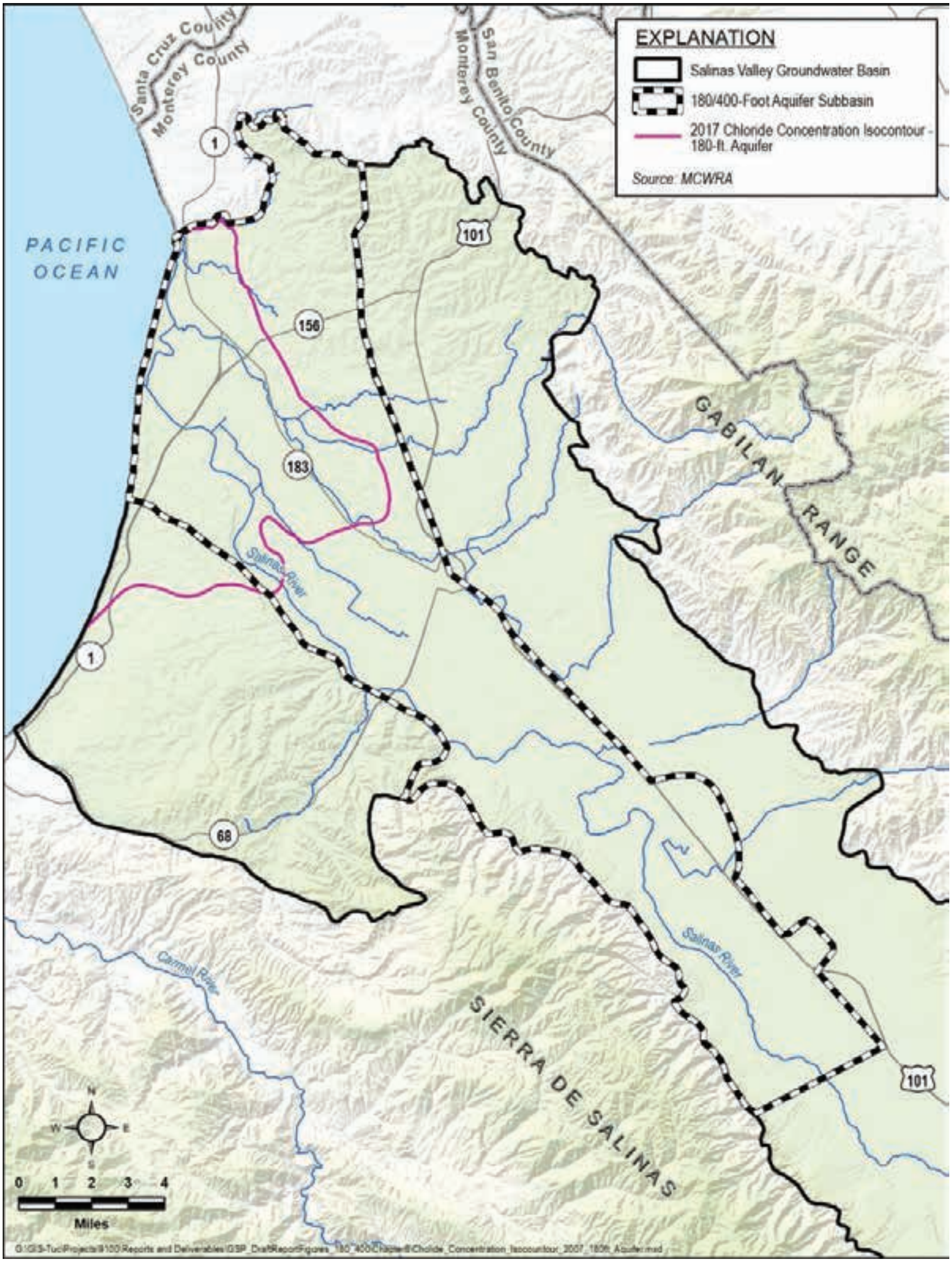

Figure 8-6: Proposed Draft Minimum Thresholds for Seawater Intrusion in the 180-Foot Aquifer

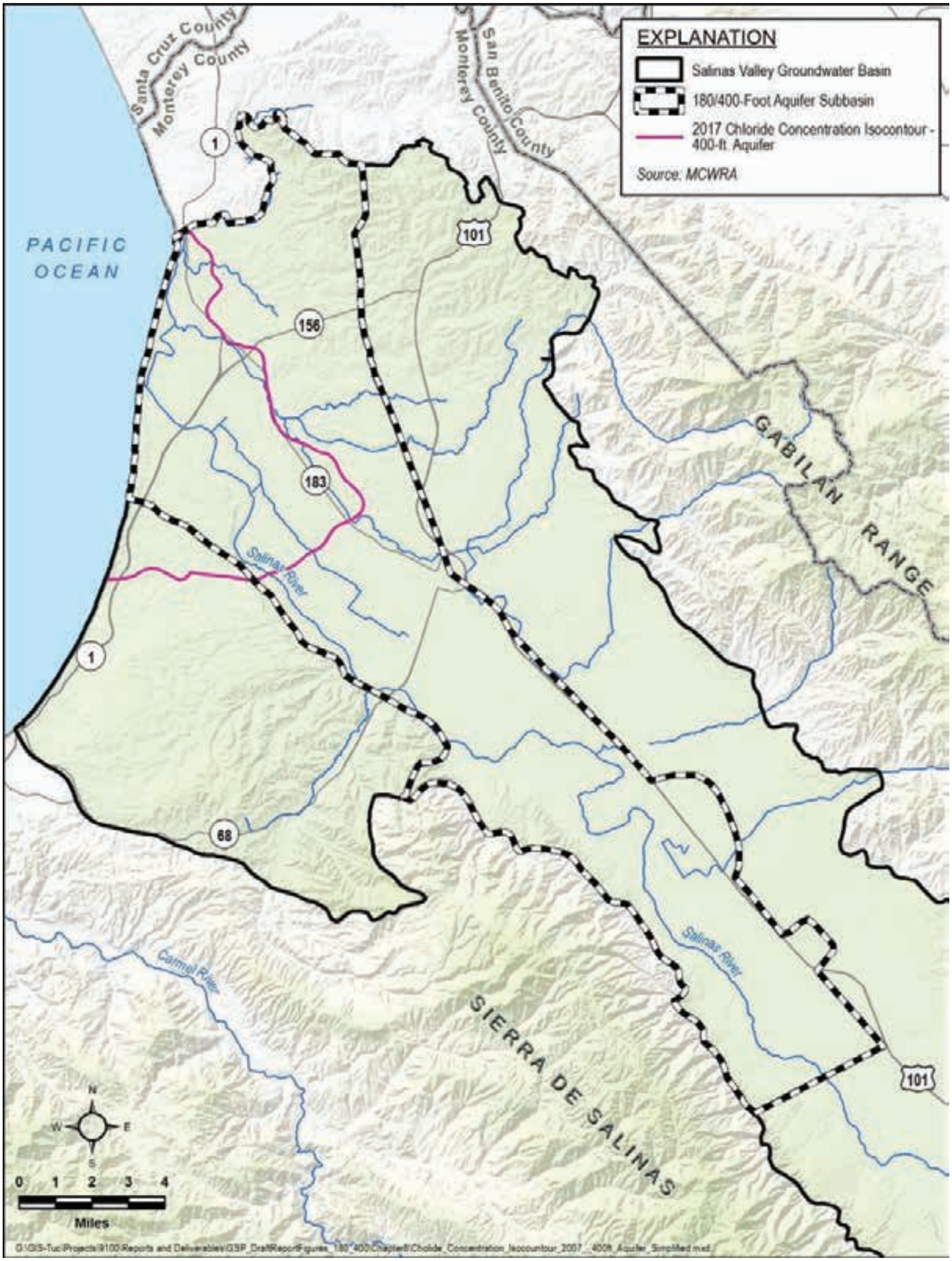

Figure 8-7: Proposed Draft Minimum Thresholds for Seawater Intrusion in the 400-Foot Aquifer

8.8.2.2 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators

The minimum threshold for seawater intrusion is a single value for each aquifer. The minimum thresholds are set at the limit of current seawater intrusion, meaning that the minimum thresholds are currently and simultaneously met in all three aquifers. Therefore, no conflict exists between minimum thresholds measured in various aquifers within the Subbasin.

The seawater intrusion minimum threshold could influence other sustainability indicators as follows:

- **Chronic lowering of groundwater levels**. Water levels will not be affected by the seawater intrusion minimum thresholds.
- **Change in groundwater storage**. Groundwater storage, as measured by pumping, will not be affected by the seawater intrusion minimum thresholds.
- **Degraded water quality**. The seawater intrusion minimum thresholds may have a beneficial impact on groundwater quality by preventing increases in chloride concentrations in supply wells.
- **Inelastic subsidence**. Inelastic subsidence will not be affected by the seawater intrusion minimum thresholds.
- **Depletion of interconnected surface water**. Interconnected surface water will not be affected by the seawater intrusion minimum thresholds.

8.8.2.3 Effect of Minimum Threshold on Neighboring Basins and Subbasin

The 180/400-Foot Aquifer Subbasin has two neighboring subbasins with seawater intrusion concerns:

- The Monterey Subbasin to the west
- The Pajaro Valley Basin to the north

The SVBGSA is one of two coordinating GSAs for the adjacent Monterey Subbasin. The minimum thresholds and measurable objectives for seawater intrusion was developed in a single process that is coordinated the 180/400-Foot Aquifer Subbasin with the Monterey Subbasin. These minimum thresholds are designed to ensure that both of the subbasins can be managed sustainably in a coordinated fashion. Therefore, the minimum thresholds for the 180/400-Foot Aquifer Subbasin will not prevent the Monterey Subbasin from achieving sustainability, by design.

The Pajaro Valley Basin has submitted an alternative submittal, and it is unclear if specific seawater intrusion minimum thresholds have been set in the Basin. However, because the minimum thresholds in the 180/400-Foot Aquifer Subbasin is no further intrusion, it is likely that the minimum threshold will not prevent the Pajaro Basin from achieving and maintaining sustainability. The SVBGSA will coordinate closely with the Pajaro Valley Water Agency as it sets minimum thresholds to ensure that the basins do not prevent each other from achieving sustainability.

8.8.2.4 Effects on Beneficial Users and Land Uses

Agricultural land uses and users. The seawater intrusion minimum thresholds generally provide positive benefits to the Subbasin's agricultural water users. Preventing additional seawater intrusion ensures that a supply of usable groundwater will exist for beneficial agricultural use.

Urban land uses and users. The seawater intrusion minimum thresholds generally provide positive benefits to the Subbasin's urban water users. Preventing additional seawater intrusion will help ensure an adequate supply of groundwater for municipal supplies.

Domestic land uses and users. The seawater intrusion minimum thresholds generally provide positive benefits to the Subbasin's domestic water users. Preventing additional seawater intrusion will help ensure an adequate supply of groundwater for domestic supplies.

Ecological land uses and users. Although the seawater intrusion minimum thresholds do not directly benefit ecological uses, it can be inferred that the seawater intrusion minimum thresholds provide generally positive benefits to the Subbasin's ecological water uses. Preventing additional seawater intrusion will help prevent unwanted high salinity levels by the coast from impacting ecological groundwater uses.

8.8.2.5 Relevant Federal, State, or Local Standards

No federal, state, or local standards exist for seawater intrusion.

8.8.2.6 Method for Quantitative Measurement of Minimum Threshold

Chloride concentrations are measured in groundwater samples collected from the MCWRA's seawater intrusion monitoring network. These samples are used to develop the inferred location of the 500 mg/L chloride isocontour. The methodology and protocols for collecting samples and developing the 500 mg/L isocontour are detailed in Appendix 7-B and Appendix 7-C.

8.8.3 Measurable Objectives

8.8.3.1 Method for Setting Measurable Objectives

Measurable objectives are quantitative goals that reflect the SVBGA's desired groundwater conditions in the Subbasin and will guide the SVBGSA to achieve its sustainability goal within 20 years. Measurable objectives are set for each Sustainability Indicator at the same Representative Monitoring Wells and using the same metrics as minimum thresholds.

In the 180/400-Foot Aquifer Subbasin, the measurable objective for the seawater intrusion SMC is to move the 500 mg/L chloride isocontour to the line defined by Highway 1. This will improve the Subbasin's groundwater quality and provide access to usable groundwater to additional beneficial users.

8.8.3.2 Interim Milestones

To be developed after projects and implementation schedule are developed.

8.8.4 Undesirable Results

8.8.4.1 Criteria for Defining Seawater Intrusion Undesirable Results

The seawater intrusion undesirable result is a quantitative combination of chloride concentrations minimum threshold exceedances. There is only one minimum threshold for each of the three aquifers. Because even localized seawater intrusion is not acceptable, the basinwide undesirable result is zero exceedances of minimum thresholds. For the Subbasin, the seawater intrusion undesirable result is:

- On average in any one year there shall be no exceedances of any minimum threshold

8.8.4.2 Potential Causes of Undesirable Results

An undesirable result for seawater intrusion has already occurred in some coastal wells. Conditions that may lead to an undesirable result include the following:

- Increased coastal pumping that could draw seawater more inland.
- Unanticipated high sea level rise.

8.8.4.3 Effects on Beneficial Users and Land Use

The primary detrimental effect on beneficial users and land uses from allowing seawater intrusion to continue or occur in the future is that the pumped groundwater may become saltier and thus impact both domestic/municipal wells, and agricultural wells and associated land uses. The state's upper maximum contaminant level is set at 500 mg/L, when it becomes undrinkable by humans.

Allowing seawater intrusion to continue or occur in the future may also impact agriculture. Chloride moves readily within soil and water and is taken up by the roots of plants. It is then transported to the stems and leaves. Sensitive berries and avocado rootstocks can tolerate only up to 120 mg/L of chloride, while grapes can tolerate up to 700 mg/L or more (University of California Agriculture and Natural Resources, 2002).

8.9 Degraded Water Quality SMC

8.9.1 Locally Defined Significant and Unreasonable Conditions

Locally defined significant and unreasonable conditions were determined based on public meetings, and discussions with GSA staff.

Significant and unreasonable changes in groundwater quality in the Subbasin are increases in a chemical constituent that either:

- Result in groundwater concentrations in a public supply well above an established MCL or SMCL, or
- Lead to reduced crop production.

8.9.2 Minimum Thresholds

Section §354.28(c)(2) of the Regulations states that "The minimum threshold shall be based on the number of supply wells, a volume of water, or a location of an isocontour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin."

As stated above, the Regulations allow three options for setting degraded water quality minimum thresholds. In the 180/400-Foot Aquifer Subbasin, minimum thresholds are based on a number of supply wells that exceed concentrations of constituents determined to be of concern for the Subbasin. The definition of supply wells for constituents of concern that have an MCL or SMCL are public supply wells. The definition of supply wells for constituents of concern that may lead to reduced crop production are agricultural irrigation supply wells.

As noted in Section 354.28 (c)(4) of the Regulations, minimum thresholds are based on a degradation of groundwater quality, not an improvement of groundwater quality. Therefore, this GSP is designed to avoid taking any action that may inadvertently move groundwater constituents that have already been identified in the Subbasin in such a way that the constituents have a significant and unreasonable impact that would not otherwise occur. Constituents of concern must meet two criteria:

1. They must have an established level of concern such as an MCL or SMCL, or a level that reduces crop production
2. They must have been found in the Subbasin at levels above the level of concern

Based on the review of groundwater quality in Chapter 5, a variety of constituents of concern (COCs) were identified that may affect both agricultural wells and drinking water supply wells. The constituents of concern for drinking water supply wells include:

- 1,2,3-trichloropropane
- alpha radioactivity
- arsenic
- chloride
- coliform bacteria
- hexavalent chromium
- iron
- manganese
- molybdenum
- nitrate
- N-nitrosodimethylamine (also known as NDMA)
- perchlorate
- radon-222
- selenium
- strontium
- sulfate
- total dissolved solids (TDS)
- uranium

This original list of COCs was further refined and five parameters were eliminated from this list for the following reasons:

- Coliform bacteria: not routinely measured or reported in water supply wells
- Hexavalent chromium: this constituent does not currently have an actionable limit. Should the state of California establish an MCL or SMCL for hexavalent chromium, it will be added to the list of parameters monitored in the drinking water supply wells.
- Molybdenum: constituent does not currently have a USEPA or California standard
- NDMA: this constituent does not currently have an actionable limit, only a public health goal. Should the state of California establish an MCL or SMCL for NDMA, it will be added to the list of parameters monitored in the drinking water supply wells.
- Strontium: drinking water wells are not sampled for this constituent

Therefore, the remaining 13 COCs are carried forward into the analysis of minimum thresholds for degraded water quality in drinking water supply wells.

The constituents of concern for agricultural wells include:

- boron
- chloride
- iron
- manganese

These constituents are monitored with the ILRP wells and are known to cause reductions in crop production when irrigation water includes them in concentrations above agricultural water quality objectives.

As noted in Section 5.6.3, based on available information there are no mapped groundwater contamination plumes in the Subbasin. Therefore, potential impacts from moving groundwater plumes in the Subbasin is not addressed in this GSP and only the potential impact of diffuse or naturally occurring constituents listed above is addressed.

As discussed in Chapter 7, wells for 3 separate water quality monitoring networks were reviewed and used for developing SMCs:

- Municipal public supply wells, regulated by the SWRCB Department of Drinking Water. This dataset was obtained from the SWRCB through the GAMA online portal.
- Small public water systems wells, regulated by Monterey County Department of Public Health. This dataset was obtained from the County. The limitation of this dataset is that

the exact well locations and construction information are currently missing; this is a data gap.

- Agricultural and domestic wells, monitored as part of the Irrigated Lands Regulatory Program (ILRP), by the Central Coast Groundwater Coalition (CCGC). This dataset was obtained from the SWRCB through the GAMA online portal. The data were separated into two data sets, one for domestic wells and the other for agricultural wells for purposes of developing minimum thresholds and measurable objectives for each type of well and associated beneficial use. Some rural residential wells in the northern part of the Subbasin with groundwater quality problems may not be reporting under the ILRP, and this may constitute a data gap that could be addressed if these land owners begin reporting under the ILRP. However, the SVBGSA will not initiate new sampling of these wells.

Each of these well networks are monitored for different purposes and overseen by different entities, and therefore include different types of water quality parameters. Furthermore, some groundwater quality impacts are detrimental to only certain networks. For example, high nitrates are detrimental to municipal and small water supply systems, but are not detrimental to agricultural irrigation wells. Therefore, different sets of groundwater quality parameters are monitored at each monitoring network based on which parameters are reported in the network and which parameters are detrimental to the network (see Table 8-3).

- The municipal public supply wells are sampled for the full suite of 13 COCs. Minimum thresholds are set for these 13 COCs in the municipal public supply wells.

- The small public water systems are only sampled for arsenic, nitrate and hexavalent chromium. Both arsenic and nitrate have established MCLs. Minimum thresholds are set for these two COC's in the small public water supply wells systems

- The ILRP wells are sampled for general cations and anions, as well as nitrate and salinity. Minimum thresholds are established in the ILRP wells for both drinking water standards to protect domestic wells, and for agricultural irrigation water quality objectives.

Table 8-3: Summary of Constituents Monitored at Each Well Network

Constituent	Municipal	Small System	Domestic	Agricultural
1,2,3-TCP	✓			
Alpha radioactivity	✓			
Arsenic	✓	✓		
Boron				✓
Chloride	✓		✓	✓
Iron	✓		✓	✓
Manganese	✓		✓	✓
Nitrate	✓	✓	✓	
Perchlorate	✓			
Radon-222	✓			
Selenium	✓			
Sulfate	✓		✓	
TDS	✓		✓	
Uranium	✓			

The bases for establishing minimum thresholds for each constituent of concern in the 180/400-Foot Aquifer Subbasin are listed in Table 8-4. All MCL and SMCL values reflect California drinking water standards. The agricultural water quality objectives are listed in the Water Quality Control Plan for the Central Coastal Basin (SWRCB 2017).

This table does not identify the number of supply wells that will exceed the level of concern, but rather identifies how many additional wells will be allowed to exceed the level of concern. Wells that already exceed this limit are not counted against the minimum thresholds.

Table 8-4: Groundwater Quality Minimum Thresholds Bases

Constituent of Concern	Minimum Threshold Based on Number of Production Wells
Municipal Wells in Monitoring Program	
	Zero additional municipal production wells that are in the GSP monitoring area shall exceed the 1,2,3-trichloropropane MCL of 0.005 ug/L.
	Zero additional municipal production wells that are in the GSP monitoring program shall exceed the gross alpha radiation MCL of 15 pCi/L.
	Zero additional municipal production wells that are in the GSP monitoring area shall exceed the arsenic MCL of 0.010 mg/L.
	Zero additional municipal production wells that are in the GSP monitoring program shall exceed the chloride Recommended SMCL of 250 mg/L.
	Zero additional municipal production wells that are in the GSP monitoring program shall exceed the iron SMCL of 0.3 mg/L
	Zero additional municipal or domestic production wells that are in the GSP monitoring program shall exceed the manganese SMCL of 0.05 mg/L
	Zero additional municipal production wells that are in the GSP monitoring program shall exceed the nitrate MCL of 10 mg/L, measured as nitrogen.
	Zero additional municipal production wells that are in the GSP monitoring program shall exceed the perchlorate MCL of 6 ug/L.
	Zero additional municipal production wells that are in the GSP monitoring program shall exceed the radon-222 proposed MCL of 300 pCi/L.
	Zero additional municipal production wells that are in the GSP monitoring program shall exceed the selenium MCL of 0.05 mg/L.
	Zero additional municipal production wells that are in the GSP monitoring program shall exceed the sulfate Upper SMCL of 500 mg/L.
	Zero additional municipal production wells that are in the GSP monitoring program shall exceed the TDS Recommended SMCL of 500 mg/L.
	Zero additional municipal production wells that are in the GSP monitoring program shall exceed the uranium MCL of 20 pCi/L.
Small Water System Wells in Monitoring Program	
Arsenic	Zero additional small system production wells that are in the GSP monitoring area shall exceed the arsenic MCL of 0.010 mg/L.
Nitrate	Zero additional small system production wells that are in the GSP monitoring program shall exceed the nitrate MCL of 10 mg/L, measured as nitrogen.
ILRP Wells in Monitoring Program - Domestic Well Constituents and Minimum Thresholds	
Chloride	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the chloride MCL of 250 mg/L.
Iron	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the iron SMCL of 0.3 mg/L.
Manganese	Zero additional municipal or ILRP wells that are in the GSP monitoring program shall exceed

	the manganese SMCL of 0.05 mg/L.
	Zero additional ILRP production wells that are in the GSP monitoring program shall exceed the nitrate MCL of 10 mg/L, measured as nitrogen.
	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the sulfate Upper SMCL of 500 mg/L.
	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the TDS Recommended SMCL of 500 mg/L.
ILRP Wells in Monitoring Program – Agricultural Irrigation Constituents and Minimum Thresholds	
Boron	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the boron agricultural water quality objective of 0.75 mg/L.
Chloride	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the chloride agricultural water quality objective of 350 mg/L.
Iron	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the iron agricultural water quality objective 5 mg/L.
Manganese	Zero additional ILRP wells that are in the GSP monitoring program shall exceed the manganese agricultural water quality objective 0.2 mg/L.

8.9.2.1 Municipal Production Wells

The minimum thresholds for degraded water quality for the municipal production wells are based on the goal of zero additional exceedances in existing wells shown in Table 8-4. However, some exceedances already exist in those wells, and these exceedances will likely continue into the future. The minimum threshold for the number of allowed exceedances is therefore equal to the current number of exceedances. Based on the number of municipal production wells in the existing water quality monitoring network that is described in Chapter 7, the number of existing exceedances since 2015 for each constituent is shown in Table 8-5.

In addition, exceedances are based on existing wells only. The well networks will be re-assessed every 5 years to identify any new wells that should be added to the monitoring networks. According to the GSP Regulations, the Minimum Thresholds are based on the same number of wells to have exceedances, not necessarily the same wells. An average of water quality samples is used for wells that are measured more than once a year.

Table 8-5: Minimum Thresholds for Degradation of Groundwater Quality for the Municipal Supply Wells Under the Current Monitoring Network

Constituent of Concern	Regulatory Exceedance Standard	Standard Units	Number of Sampled Wells in Monitoring Network	Minimum Threshold - Number of Wells Exceeding Regulatory Standard
Alpha Radioactivity	15	pCi/L	38	3
Arsenic	0.01	mg/L	58	1
Chloride	250	mg/L	41	2
Iron	0.3	mg/L	43	8
Manganese	0.05	mg/L	42	3
Nitrate	10	mg/l	74	9
Perchlorate	6	ug/L	59	0
Radon-222	300	pCi/L	0	-NA-
Selenium	0.05	mg/L	52	0
Sulfate	500	mg/l	41	2
123-Trichloropropane	0.005	ug/L	60	2
TDS	500	mg/l	41	18
Uranium	20	pCi/L	32	1

8.9.2.2 Small Public Water Systems Wells

The minimum thresholds for degraded water quality for the small public water supply system wells are similarly based on the goal of zero additional exceedances in existing wells shown in Table 8-4. Following a similar process as that of the municipal production wells, the minimum thresholds for degraded water quality in small public water systems is shown in Table 8-6. The small water systems monitoring data are based on the County of Monterey Public Health Department routine monitoring of both Local and State Small Water Systems and cover the period from 2015-2017. As with the municipal production wells, exceedances are based on existing wells only. The well networks will be re-assessed every 5 years to identify any new wells that should be added to the monitoring networks.

Table 8-6: Minimum Thresholds for Degradation of Groundwater for the Small Systems Supply Wells Under the Current Monitoring Network

Constituent of Concern	Regulatory Exceedance Standard	Standard Units	Number of Sampled Wells in Monitoring Network	Minimum Threshold - Number of Wells Exceeding Regulatory Standard
Arsenic	0.01	mg/L	47	1
Nitrate	10	mg/l	136	22

8.9.2.3 Agricultural and Domestic Wells – ILRP

The minimum thresholds for degraded water quality for the ILRP wells are similarly based on the goal of zero additional exceedances shown in Table 8-4. Following the same process as that of the municipal production wells, the minimum thresholds for degraded water quality is shown in Table 8-7 for domestic drinking water wells, and in Table 8-8 for agricultural irrigation wells. Based on the number of ILRP wells in the existing water quality monitoring network that is described in Chapter 7, the number of existing exceedances for each constituent is shown for constituents monitored at wells since 2012 to represent recent measurements.

The monitoring well network for the ILRP will change in 2020 with the adoption of Ag Order 4.0. At that time, the new ILRP monitoring network will be incorporated into this GSP, replacing the current network, for water quality monitoring.

Table 8-7: Minimum Thresholds for Degradation of Groundwater Quality for ILRP Domestic Wells Under the Current Monitoring Network

Constituent of Concern	Regulatory Exceedance Standard	Standard Units	Number of Sampled Wells in Monitoring Network	Minimum Threshold - Number of Wells Exceeding Regulatory Standard
Chloride	250	mg/L	172	29
Iron	0.3	mg/L	37	12
Manganese	0.05	mg/L	37	4
Nitrate	10	mg/l	179	51
Sulfate	500	mg/l	172	43
TDS	500	mg/l	148	111

Table 8-8: Minimum Thresholds for Degradation of Groundwater Quality for Agricultural Use in ILRP Wells Under the Current Monitoring Network

Constituent of Concern	Agricultural Usage Water Quality Objective	Water Quality Objective Units	Number of Existing Wells in Monitoring Network	Minimum Threshold - Number of Wells Exceeding Water Quality Objective
Boron	0.75	mg/L	95	0
Chloride	350	mg/L	311	28
Iron	5	mg/L	90	3
Manganese	0.2	mg/L	90	2

8.9.2.4 Information and Methodology Used to Establish Water Quality Minimum Thresholds and Measurable Objectives

The exceedances shown in Table 8-5, Table 8-6, Table 8-7, and Table 8-8were based on a review of recent datasets. The information used for establishing the degradation of groundwater quality minimum thresholds includes:

- Historical groundwater quality data from municipal, small systems, agricultural, and domestic production wells in the Subbasin
- Federal and State drinking water quality standards
- Central Coast Basin Plan assessment of water quality objectives for agricultural water use
- Feedback from GSA staff members and public members

The historical groundwater quality data used to establish groundwater quality minimum thresholds are presented in Chapter 5. Based on the reviews of historical and current groundwater quality data, federal and state drinking water standards, and irrigation water quality needs, the GSA agreed that these standards are appropriate to define groundwater quality minimum thresholds.

8.9.2.5 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators

Because SGMA does not require projects or actions to improve groundwater quality, there will be no direct actions under the GSP associated with the groundwater quality minimum thresholds. Therefore, there are no actions that directly influence other sustainability indicators. However, preventing migration of poor groundwater quality may limit activities needed to achieve minimum thresholds for other sustainability indicators.

- **Change in groundwater levels.** Groundwater quality minimum thresholds could influence groundwater level minimum thresholds by limiting the types of water that can be used for recharge to raise groundwater levels. Water used for recharge cannot exceed any of the groundwater quality minimum thresholds. In addition, a change in groundwater levels may cause a change in groundwater flow direction which in turn could cause poor water quality to migrate into areas of good water quality.
- **Change in groundwater storage**. Nothing in the groundwater quality minimum thresholds promotes pumping in excess of the sustainable yield. Therefore, the groundwater quality minimum thresholds will not result in an exceedance of the groundwater storage minimum threshold.
- **Seawater intrusion**. Nothing in the groundwater quality minimum thresholds promotes additional pumping that could exacerbate seawater intrusion. Therefore, the groundwater quality minimum thresholds will not result in an exceedance of the seawater intrusion minimum threshold.
- **Subsidence**. Nothing in the groundwater quality minimum thresholds promotes additional pumping that could cause subsidence. Therefore, the groundwater quality minimum thresholds will not result in an exceedance of the subsidence minimum threshold.
- **Depletion of interconnected surface waters.** Nothing in the groundwater quality minimum thresholds promotes additional pumping or lower groundwater elevations adjacent to interconnected surface waters. Therefore, the groundwater quality minimum thresholds will not result in a significant or unreasonable depletion of interconnected surface waters.

8.9.2.6 Effect of Minimum Thresholds on Neighboring Basins and Subbasins

The anticipated effect of the degraded groundwater quality minimum thresholds on each of the neighboring subbasins is addressed below.

The 180/400-Foot Aquifer Subbasin has four neighboring subbasins within the Salinas Valley:

- The Langley Subbasin to the north
- The Eastside Subbasin to the northeast
- The Forebay Subbasin to the south
- The Monterey Subbasin to the West

The SVBGSA is either the exclusive GSA, or is one of two coordinating GSAs for the adjacent Langley, Eastside, Forebay, and Monterey Subbasins. Because the SVBGSA covers all of these subbasins, the GSA Board of Directors opted to develop the minimum thresholds and measurable objectives for all of these neighboring subbasins in a single process that is coordinated with the 180/400-Foot Aquifer Subbasin. These minimum thresholds are designed to ensure that all the subbasins can be managed sustainably in a coordinated fashion. Therefore, the minimum thresholds for the 180/400-Foot Aquifer Subbasin will not prevent the neighboring subbasins from achieving sustainability, by design.

In addition, the Pajaro Valley Basin occurs directly to the north. The Pajaro Valley Basin has submitted an alternative submittal, and it is unclear if specific minimum thresholds have been set in the Basin. However, because the minimum thresholds in the 180/400-Foot Aquifer Subbasin are to prevent migration of poor-quality water, it is likely that the minimum thresholds will not prevent the Pajaro Basin from achieving and maintaining sustainability. The SVBGSA will coordinate closely with the Pajaro Valley Water Agency as it sets minimum thresholds to ensure that the basins do not prevent each other from achieving sustainability.

8.9.2.7 Effect on Beneficial Uses and Users

Agricultural land uses and users. The degradation of groundwater quality minimum thresholds generally provides positive benefits to the Subbasin's agricultural water users. Preventing additional agricultural supply wells from exceeding levels that could reduce crop production ensures that a supply of usable groundwater will exist for beneficial agricultural use.

Urban land uses and users. The degradation of groundwater quality minimum thresholds generally provides positive benefits to the Subbasin's urban water users. Preventing constituents of concern in additional drinking water supply wells from exceeding MCLs or SMCLs ensures an adequate supply of groundwater for municipal supplies.

Domestic land uses and users. The degradation of groundwater quality minimum thresholds generally provides positive benefits to the Subbasin's domestic water users. Preventing constituents of concern in additional drinking water supply wells from exceeding MCLs or SMCLs ensures an adequate supply of groundwater for domestic supplies.

Ecological land uses and users. Although the groundwater quality minimum thresholds do not directly benefit ecological uses, it can be inferred that the degradation of groundwater quality minimum thresholds provide generally positive benefits to the Subbasin's ecological water uses. Preventing constituents of concern from migrating will prevent unwanted contaminants from impacting ecological groundwater uses.

8.9.2.8 Relation to State, Federal, or Local Standards

The degradation of groundwater quality minimum thresholds specifically incorporate state and federal standards for drinking water.

8.9.2.9 Method for Quantitative Measurement of Minimum Thresholds

Degradation of groundwater quality minimum thresholds will be directly measured from existing or new municipal, domestic, or agricultural supply wells. Groundwater quality will be measured through existing monitoring programs.

- Exceedances of MCLs and SMCLs will be monitored from annual water quality reports submitted to the California Division of Drinking Water and the County of Monterey by municipalities and small water systems.
- Exceedances of crop production based minimum thresholds will be monitored as part of the ILRP as presented in Chapter 7.

Initially, the review of MCLs and SMCLs will be centered around the constituents of concern identified above. If during review of the water quality data additional constituents appear to exceed MCLs and SMCLs, minimum thresholds and measurable objectives will be developed for these additional constituents.

8.9.3 Measurable Objectives

The measurable objectives for degradation of groundwater quality represent target groundwater quality distributions in the Subbasin. SGMA does not mandate the improvement of groundwater quality. Therefore, the SVBGSA has set the measurable objectives identical to the minimum thresholds, as defined in Table 8-5, Table 8-6, Table 8-7, and Table 8-8.

8.9.3.1 Method for Setting Measurable Objectives

As described above, measurable objectives are set to be identical to the minimum thresholds and therefore follow the same method as detailed in Section 8.7.2.4.

8.9.3.2 Interim Milestones

Interim milestones show how the GSA anticipates the Subbasin will gradually move from current conditions to meeting the measurable objectives over the next 20 years of implementation. Interim milestones are set for each five-year interval following GSP adoption.

The measurable objectives for degradation of groundwater quality are set at current conditions; there is no anticipated degradation of groundwater quality during GSP implementation that results from the implementation of projects and actions as described in Chapter 9. Therefore, the expected interim milestones are identical to current conditions.

8.9.4 Undesirable Results

8.9.4.1 Criteria for Defining Undesirable Results

By regulation, the degradation of groundwater quality undesirable result is a quantitative combination of groundwater quality minimum threshold exceedances. For the Subbasin, any groundwater quality degradation is unacceptable as a direct result of GSP implementation. Some groundwater quality changes are expected to occur independent of SGMA activities; because these changes are not related to SGMA activities they do not constitute an undesirable result. Therefore, the degradation of groundwater quality undesirable result is:

During any one year, no groundwater quality minimum threshold shall be exceeded when computing annual averages at each well, as a direct result of projects or management actions taken as part of GSP implementation.

8.9.4.2 Potential Causes of Undesirable Results

Conditions that may lead to an undesirable result include the following:

- **Required Changes to Subbasin Pumping**. If the location and rates of groundwater pumping change as a result of projects implemented under the GSP, these changes could alter hydraulic gradients and associated flow directions, and cause movement of one of the constituents of concern towards a supply well at concentrations that exceed relevant standards.
- **Groundwater Recharge.** Active recharge of imported water or captured runoff could modify groundwater gradients and move one of the constituents of concern towards a supply well in concentrations that exceed relevant limits.
- **Recharge of Poor-Quality Water.** Recharging the Subbasin with water that exceeds an MCL, SMCL, or level that reduces crop production will lead to an undesirable result.

8.9.4.3 Effects on Beneficial Users and Land Use

The undesirable result for degradation of groundwater quality is avoiding groundwater degradation due to actions directly resulting from GSP implementation. Therefore, the undesirable result will not impact the use of groundwater and will not have a negative effect on the beneficial users and uses of groundwater. This undesirable result, however, only applies to groundwater quality changes directly caused by projects or management actions implemented as part of this GSP. This undesirable result does not apply to groundwater quality changes that occur due to other causes.

8.10 Subsidence SMC

8.10.1 Locally Defined Significant and Unreasonable Conditions

Locally defined significant and unreasonable conditions were assessed based on public meetings and discussions with GSA staff. Significant and unreasonable rates of land subsidence in the Subbasin are those that lead to a permanent subsidence of land surface levels that impact infrastructure. Significant and unreasonable subsidence in the Subbasin is defined as follows:

- Any inelastic land subsidence that impacts infrastructure and is caused by lowering of groundwater levels occurring in the subbasin is significant and unreasonable.

Subsidence can be elastic or inelastic. Inelastic subsidence is generally irreversible. Elastic subsidence is small, reversible lowering and rising of the ground surface. This SMC only concerns inelastic subsidence.

Currently, InSAR data provided by DWR shows that no inelastic subsidence has been measured in the 180/400-Foot Aquifer Subbasin. The Subbasin, however, is one of two subbasins in the Salinas Valley that has geologic conditions that may make it susceptible to subsidence if groundwater levels drop below historic lows. The geology that may cause subsidence is the thick clay units that define the confining layers in the subbasin. Most of the pumping in this area occurs below these clay layers, potentially inducing subsidence. However, seawater intrusion has kept water levels relatively stable and no subsidence has been observed

8.10.2 Minimum Thresholds

Section 354.28(c)(5) of the Regulations states that "The minimum threshold for land subsidence shall be the rate and extent of subsidence that substantially interferes with surface land uses and may lead to undesirable results." Because it is difficult to assess a-priori where subsidence may interfere with surface land uses and where it may not, a single minimum threshold is set for the entire Subbasin.

Based on an analysis of potential errors in the InSAR data, as discussed in the following section, the subsidence minimum threshold is:

The InSAR measured subsidence between June of one year and June of the subsequent year shall be no more than 0.01 foot, resulting in zero long-term subsidence.

8.10.2.1 Information Used and Methodology for Establishing Subsidence Minimum Thresholds

Minimum thresholds were established using InSAR data available from DWR. The general minimum threshold is for no long-term irreversible subsidence in the Subbasin. The InSAR data provided by DWR, however, is subject to measurement error. DWR has stated that, on a statewide level, for the total vertical displacement measurements between June 2015 and June 2018, the errors are as follows (Brezing, personal communication):

1. The error between InSAR data and continuous GPS data is 16 mm (0.052 feet) with a 95% confidence level
2. The measurement accuracy when converting from the raw InSAR data to the maps provided by DWR is 0.048 feet with 95% confidence level.

By simply adding the errors 1 and 2, we arrive at a combined error of 0.1 foot. While this is not a robust statistical analysis, it does provide an estimate of the potential error in the InSAR maps provided by DWR. A land surface change of less than 0.1 feet is therefore within the noise of the data, and is equivalent to no subsidence in this GSP.

Additionally, the InSAR data provided by DWR reflects both elastic and inelastic subsidence. While it is difficult to compensate for elastic subsidence, visual inspection of monthly changes in ground elevations suggest that elastic subsidence is largely seasonal. Figure 8-8 shows the ground level changes at a randomly selected point in the Subbasin (Latitude 36.69318, Longitude -121.72295). This figure demonstrates the general seasonality of the elastic subsidence. To minimize the influence of elastic subsidence on our assessment of long-term, permanent subsidence, changes in ground level will only be measured annually from June of one year to June of the following year.

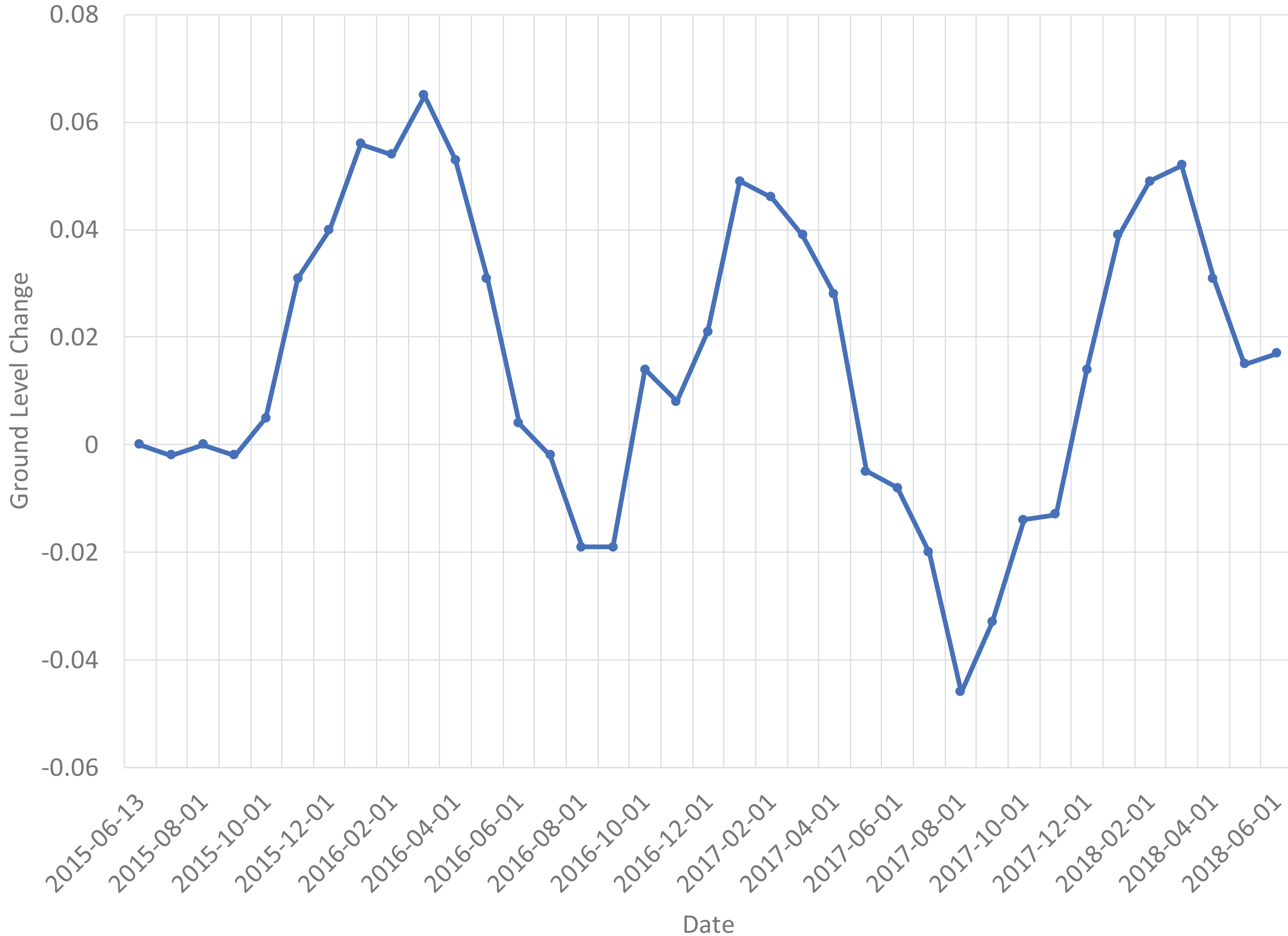

Figure 8-8: Seasonal Ground Surface Change at Point 36.69318, -121.72295

8.10.2.2 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators

Subsidence minimum thresholds have little or no impact on other minimum thresholds, as described below.

- **Chronic lowering of groundwater elevations.** Subsidence minimum thresholds will not result in significant or unreasonable groundwater elevations.
- **Change in groundwater storage**. The subsidence minimum thresholds will not change the amount of pumping, and will not result in a significant or unreasonable change in groundwater storage.
- **Seawater intrusion**. The subsidence minimum thresholds will not induce additional advancement of seawater intrusion along the coast.
- **Degraded water quality**. The subsidence minimum thresholds will not change the groundwater flow directions or rates, and therefore and will not result in a significant or unreasonable change in groundwater quality.
- **Depletion of interconnected surface waters.** The ground level subsidence minimum thresholds will not change the amount or location of pumping and will not result in a significant or unreasonable depletion of interconnected surface waters.

8.10.2.3 Effect of Minimum Thresholds on Neighboring Basins and Subbasins

The 180/400-Foot Aquifer Subbasin has four neighboring subbasins within the Salinas Valley:

- The Langley Subbasin to the north
- The Eastside Subbasin to the northeast
- The Forebay Subbasin to the south
- The Monterey Subbasin to the West

The SVBGSA is either the exclusive GSA, or is one of two coordinating GSAs for the adjacent Langley, Eastside, Forebay, and Monterey Subbasins. Because the SVBGSA covers all of these subbasins, the GSA Board of Directors opted to develop the minimum thresholds and measurable objectives for all of these neighboring subbasins in a single process that is coordinated with the 180/400-Foot Aquifer Subbasin. These minimum thresholds are designed to ensure that all the subbasins can be managed sustainably in a coordinated fashion. Therefore, the minimum thresholds for the 180/400-Foot Aquifer Subbasin will not prevent the neighboring subbasins from achieving sustainability, by design.

In addition, the Pajaro Valley Basin occurs directly to the north. The Pajaro Valley Basin has submitted an alternative submittal, and it is unclear if specific minimum thresholds have been set in the Basin. However, because the minimum thresholds in the 180/400-Foot Aquifer Subbasin is zero subsidence, it is likely that the minimum thresholds will not prevent the Pajaro Basin from achieving and maintaining sustainability. The SVBGSA will coordinate closely with the Pajaro Valley Water Agency as it sets minimum thresholds to ensure that the basins do not prevent each other from achieving sustainability.

8.10.2.4 Effects on Beneficial Uses and Users

The subsidence minimum thresholds are set to prevent any long-term inelastic subsidence that could harm infrastructure. Available data indicate that there is currently no long-term subsidence occurring in the Subbasin that affects infrastructure, and reductions in pumping are already required by minimum thresholds for other sustainability indicators. Therefore, the subsidence minimum thresholds do not require any additional reductions in pumping and there is no negative impact on any beneficial user.

8.10.2.5 Relation to State, Federal, or Local Standards

There are no federal, state, or local regulations related to subsidence.

8.10.2.6 Method for Quantitative Measurement of Minimum Threshold

Minimum thresholds will be assessed using DWR supplied InSAR data.

8.10.3 Measurable Objectives

The measurable objectives for ground surface subsidence represents target subsidence rates in the Subbasin. Because the minimum thresholds of zero net long-term subsidence are the best achievable outcome, the measurable objectives are identical to the minimum thresholds.

8.10.3.1 Method for Setting Measurable Objectives

The measurable objectives are set to the groundwater levels that result in zero long-term subsidence. These groundwater levels are identical to the minimum threshold groundwater levels.

8.10.3.2 Interim Milestones

Interim milestones show how the GSAs anticipate moving from current conditions to meeting the measurable objectives. Interim milestones are set for each five-year interval following GSP adoption.

Subsidence measurable objectives are set at current conditions of no long-term subsidence. Therefore, there is no change between current conditions and sustainable conditions. Therefore, the interim milestones are identical to current conditions of keeping groundwater levels above historical lows.

8.10.4 Undesirable Results

8.10.4.1 Criteria for Defining Undesirable Results

By regulation, the ground surface subsidence undesirable result is a quantitative combination of subsidence minimum threshold exceedances. For the f180/400-Foot Subbasin, no long-term subsidence that impacts infrastructure is acceptable. Therefore, the ground surface subsided undesirable result is:

- In any one year, there will be zero exceedances of the minimum thresholds for subsidence.

Should potential subsidence be observed, , the SVBGSA will first assess whether the subsidence may be due to elastic subsidence. If the subsidence is not elastic, the SVBGSA will undertake a program to correlate the observed subsidence with measured groundwater levels.

8.10.4.2 Potential Causes of Undesirable Results

Conditions that may lead to an undesirable result include a shift in pumping locations. Shifting a significant amount of pumping to an area that is susceptible to subsidence could trigger subsidence that has not been observed before.

8.10.4.3 Effects on Beneficial Users and Land Use

The undesirable result for subsidence does not allow any subsidence to occur in the Subbasin. If groundwater levels drop below historic lows and subsequent subsidence is measured, then localized subsidence could impact beneficial users by impacting infrastructure.

8.11 Depletion of Interconnected Surface Water SMC

In the 180/400-Foot Aquifer Subbasin, areas with shallow water levels exist that may be connected to the surface water system. There is evidence that shallow sediments occur above the confined 180-Foot aquifer that are connected to the surface water system. However, there is almost no groundwater pumping in this area and it is not identified as a defined aquifer.

The Salinas River tends to be a losing river where surface water infiltrates into the unconfined zone above the 180-Foot Aquifer. This occurs primarily in the dry season, and the Salinas River is largely dependent on the San Antonio and Nacimiento Reservoir releases for its continuous flow rate. Chapter 5 provides a discussion on gaining and losing stream definitions for interconnected surface waters.

8.11.1 Locally Defined Significant and Unreasonable Conditions

Locally defined significant and unreasonable conditions were assessed based on public meetings, and discussions with GSA staff. Significant and unreasonable depletion of interconnected surface water in the Subbasin is depletion of interconnected surface water flows that may prevent the MCWRA from meeting biological flow requirements in the Salinas River, or would induce an unreasonable impact on other water rights holders. The GSA does not have authority to manage reservoir releases and is not required to manage surface waters.

The U.S. Army Corps of Engineers has re-initiated consultation with the National Marine Fisheries Service (NMFS) on the Biological Opinion for the Salinas Valley Water Project (National Marin Fisheries Service, 2007). Therefore, no biological opinion currently regulates environmental flows in the Salinas River. MCWRA, however, continues to manage flows in the Salinas River under the previous, 2007 biological opinion as a safe harbor practice. Until a new biological opinion is developed, and a Habitat Conservation Plan (HCP) is drafted by MCWRA, this GSP will use the 2007 biological opinion as guidance to establish the effects of stream depletion due to groundwater pumping.

The 2007 NMFS biological opinion was developed using measured streamflows between 1995 and 2005. The measured streamflow reflects current surface water depletion rates, and therefore current depletion rates are already incorporated into the river management plan. Furthermore, releases from Nacimiento Reservoir and San Antonio Reservoir are designed to maintain required environmental flows. Current groundwater pumping is assumed not to be unreasonable for environmental flows but this assumption is subject to the process of establishing the new HCP. The Steelhead Trout flow prescriptions are described in *Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River* (MCWRA, 2005). This document guides the operating rules for the San Antonio and Nacimiento reservoir releases. Therefore, steelhead flow requirements were being met under the 2007 biological opinion and surface water depletion rates were not unreasonable with regards to maintaining environmental flow requirements. This assessment will be revisited after the HCP is drafted by MCWRA.

In addition to managing the river for environmental needs, the Salinas River is managed to maintain adequate water supply for other beneficial uses. The Nacimiento and San Antonio reservoirs provide flood control benefits as well as groundwater recharge benefits through its sandy channels, where water rights holders along the river can pump out water according to their water rights. Therefore, the Salinas River is managed to satisfy the water supply needs of riparian pumpers and the existing depletions are neither significant nor unreasonable.

Currently, there is significant leakage from the Salinas River to the underlying groundwater, but it is not considered unreasonable with regards to riparian rights holders. To the extent that groundwater pumping depletes surface water flows, these depletions and the potential surface water limitations would be injurious only if the surface water right holders held rights senior to the groundwater pumpers. Riparian rights holders and groundwater pumpers both have correlative rights to the common water pool. As stated in the SVWC v. MCWRA Report of Referee (2019):

> *The common source doctrine applies to groundwater and surface waters that are hydrologically connected and integrates the relative priorities of the rights without regard to whether the diversion is from surface or groundwater.*

Therefore, groundwater pumping-induced depletions that limit surface water rights are considered potentially significant, but not unreasonable.

8.11.2 Minimum Thresholds

Section 354.28(c)(6) of the Regulations states that "The minimum threshold for depletions of interconnected surface water shall be the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results." Minimum thresholds only apply to the interconnected stream reaches.

As stated in Chapter 6, the estimated surface water depletion rate in the 180/400-Foot Aquifer Subbasin is approximately 69,700 acre-feet per year on average in the future water budget. This is considered a reasonable estimate of the current surface water depletion. However, without good historical data or a numerical model, it is difficult to assess whether and where the stream is connected to underlying groundwater. Furthermore, without simulating a no-pumping scenario and comparing it to a current pumping scenario, it is not possible to determine how much of the surface water depletion is due to pumping.

As stated above, the current rate of stream depletion from pumping is not considered significant and unreasonable Therefore, the minimum threshold for depletion of interconnected surface water is currently set to the current average rate of 69,700 acre-feet per year.

Interconnected stream depletion flows can only be accurately predicted with a surface water/groundwater flow model. Currently, the historical SVHIM is not available, and therefore the development of numerical minimum thresholds for the depletions of interconnected surface water is a data gap. As soon as the model is available, current flow depletions will be computed and set as the minimum threshold not to be exceeded during implementation of the GSP.

8.11.2.1 Information Used and Methodology for Establishing Depletion of Interconnected Surface Water Minimum Thresholds

The minimum thresholds for depletion of interconnected surface water are developed using the definition of significant and unreasonable conditions described above, public information about critical habitat, public information about water rights described below, and results from the future SVIHM model of the Subbasin.

A summary of surface water diversions by riparian water rights holders on the Salinas River and its tributaries within the 180/400-Foot Aquifer Subbasin is provided in Table 8-9. The diversion data were obtained from queries of the DWR eWRIMS water rights management system, and represent all surface water diversions as self-reported by water-rights holders with points of diversion located within the subbasin boundaries. It should be noted that there is currently a data gap (lack of quality control) in the State Board's diversions reporting that needs to be resolved in order for the public to obtain more accurate data. Furthermore, some of the diversions shown on Table 8-9 may be reported to MCWRA as groundwater pumping, resulting in a double counting of these extractions.

Table 8-9: Surface Water Diversions on the Salinas River and its Tributaries in the 180/400-Foot Aquifer Subbasin

	2010	2011	2012	2013	2014	2015	2016	2017
Diversions (Acre-Feet)	6,359	6,498	7,277	9,579	8,689	8,164	8,065	7,431

Figure 8-9 presents the average monthly total diversions on the Salinas River for the period 2010 to 2017. In the 180/400 foot aquifer subbasin, the largest diversions occur in the summer months, as expected, to satisfy agricultural irrigation needs.

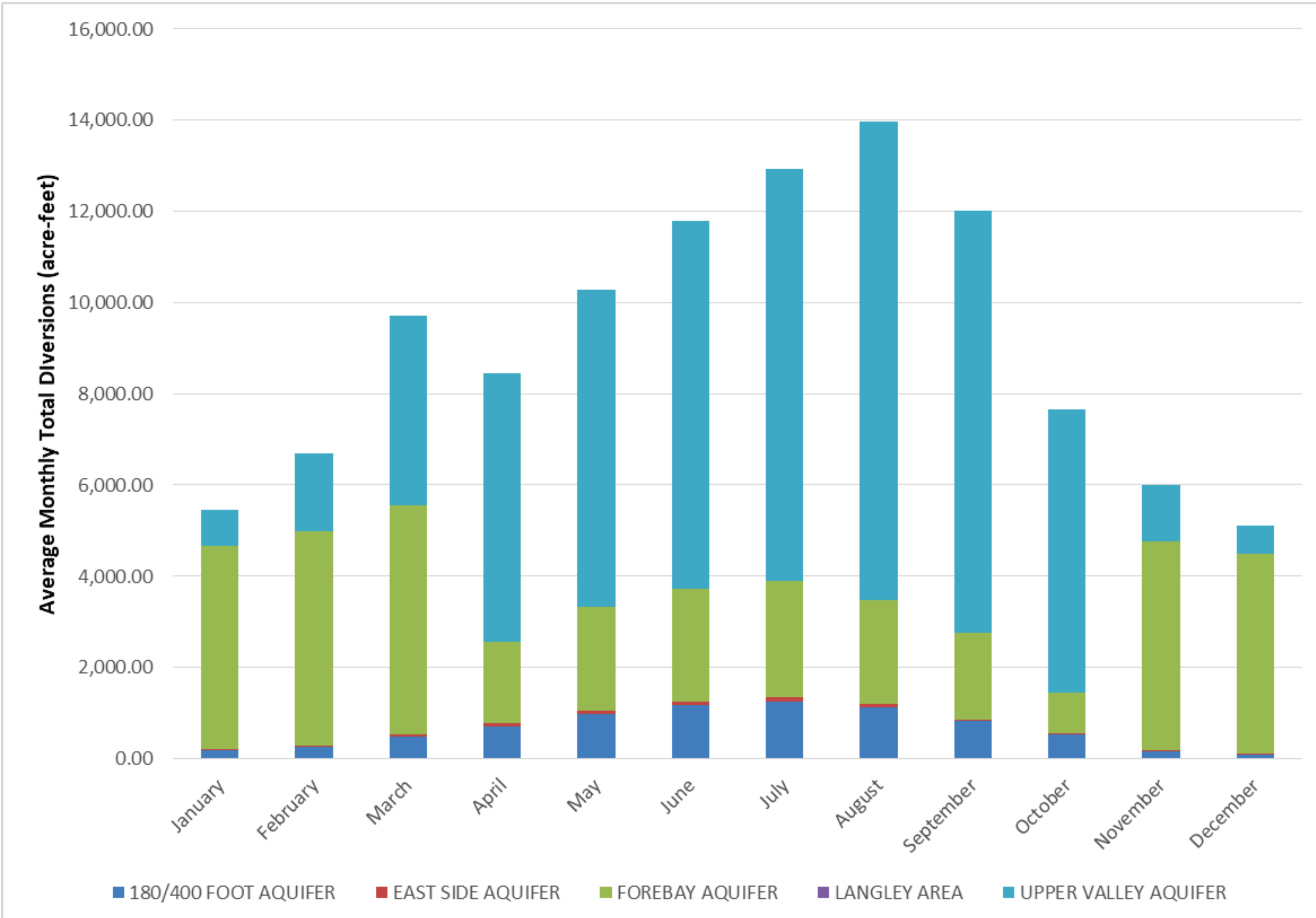

Figure 8-9: Average Monthly Total Salinas River Diversions by Subbasin

8.11.2.2 Relationship between Individual Minimum Thresholds and Relationship to Other Sustainability Indicators

The minimum threshold for depletion of surface water is a single value for the entire Subbasin. Therefore, no conflict exists between minimum thresholds measured at various locations within the Subbasin.

The depletion of surface water minimum threshold could influence other sustainability indicators as follows:

- **Chronic lowering of groundwater levels**. Capping the amount of surface water depletion could limit the amount of natural streamflow percolation that would otherwise maintain groundwater levels. However, the surface water depletion minimum thresholds do not directly influence the chronic lowering of groundwater levels minimum thresholds
- **Change in groundwater storage**. The depletion of surface water minimum threshold may limit the amount of pumping near rivers and streams. This limitation on pumping could also limit losses of groundwater storage. The depletion of surface water minimum threshold is therefore consistent with the change in groundwater storage minimum threshold.
- **Seawater intrusion**. Seawater intrusion will not be affected by the depletion of surface water minimum thresholds.
- **Degraded water quality**. Water quality will not be affected by the depletion of surface water minimum thresholds.
- **Inelastic subsidence**. Inelastic subsidence will not be affected by the depletion of surface water minimum thresholds.

8.11.2.3 Effect of Minimum Thresholds on Neighboring Basins and Subbasins

The 180/400-Foot Aquifer Subbasin has four neighboring subbasins within the Salinas Valley:

- The Langley Subbasin to the north
- The Eastside Subbasin to the northeast
- The Forebay Subbasin to the south
- The Monterey Subbasin to the West

The SVBGSA is either the exclusive GSA, or is one of two coordinating GSAs for the adjacent Langley, Eastside, Forebay, and Monterey Subbasins. Because the SVBGSA covers all of these subbasins, the GSA Board of Directors opted to develop the minimum thresholds and measurable objectives for all of these neighboring subbasins in a single process that is coordinated with the

180/400-Foot Aquifer Subbasin. These minimum thresholds are designed to ensure that all the subbasins can be managed sustainably in a coordinated fashion. Therefore, the minimum thresholds for the 180/400-Foot Aquifer Subbasin will not prevent the neighboring subbasins from achieving sustainability, by design.

In addition, the Pajaro Valley Basin occurs directly to the north. There is no surface water connection between the Pajaro Valley and the 180/400-Foot Aquifer Subbasin, and therefore the minimum thresholds for depletion of interconnected surface waters does not influence the ability of Pajaro Valley to achieve sustainability.

8.11.2.4 Effect on Beneficial Uses and Users

Table 3-9 of the Salinas River Long-Term Management Plan (MCWRA, 2019) shows a list of 18 different designated beneficial uses on certain reaches of the river. In general, the major beneficial uses on the Salinas River are:

- Surface water diversions for agricultural, urban/industrial and domestic supply
- Groundwater pumping from recharged surface water
- Freshwater habitat
- Rare, threated or endangered species, such as the Steelhead Trout
- CSIP diversions

The depletion of surface water minimum thresholds may have varied effects on beneficial users and land uses in the Subbasin.

Agricultural land uses and users. The depletion of surface water minimum threshold prevents lowering of groundwater levels adjacent to certain parts of streams and rivers. This has the effect of limiting the amount of groundwater pumping in these areas. Limiting the amount of groundwater pumping may limit the quantity and type of crops that can be grown in these adjacent to streams and rivers.

Urban land uses and users. The depletion of surface water minimum threshold prevents lowering of groundwater levels adjacent to certain parts of streams and rivers. This may limit the amount of urban pumping near rivers and streams, which could limit urban growth in these areas. Also, if pumping is limited, municipalities may have to obtain alternative sources of water to achieve urban growth goals. If this occurs, this may result in higher water costs for municipal water users.

Domestic land uses and users. The depletion of surface water minimum threshold may benefit existing domestic land users and uses by maintaining shallow groundwater levels near streams and protecting the operability of relatively shallow domestic wells. However, these minimum thresholds may limit the number of new domestic wells that can be installed near rivers or streams in order to limit the additional drawdown from the new wells.

Ecological land uses and users. The depletion of surface water minimum thresholds prevents further degradation of ecological impacts from groundwater pumping.

8.11.2.5 Relation to State, Federal, or Local Standards

The minimum thresholds are developed in accordance with NMFS streamflow requirements.

8.11.2.6 Method for Quantitative Measurement of Minimum Threshold

The depletion of surface waters will be estimated using the updated Salinas Valley Basin model; and monitored using new shallow monitoring wells adjacent to interconnected stream reaches.

The SVIHM will serve as the primary approach for monitoring depletion of surface water. At a minimum, once the calibrated historical SVIHM is made available, the existing model will be updated every five years and the amount of surface water depletion that occurred in the previous five years will be estimated.

The model's ability to estimate surface water depletion relies on it reasonably simulating shallow groundwater levels adjacent to interconnected surface water bodies. Therefore, additional shallow wells will be installed adjacent to interconnected stream reaches to verify the representativeness of the updated Salinas Valley Basin model. Further details on the number and locations of these shallow wells are included in Chapter 7.

8.11.3 Measurable Objectives

The measurable objective for depletion of surface water is the same as the minimum threshold. The measurable objective is set at the long-term depletion rate of 69,700 AFY.

8.11.3.1 Method for Setting Measurable Objectives

Discussions with GSA staff and stakeholder suggested that stakeholder prefer improving the health of the Salinas River during times of natural flow, but agree that summer flows are reservoir dominated and are do not necessarily mimic the natural flow system. Stakeholders showed no preference for reducing leakage from river flows that are meant to intentionally recharge the groundwater basin. Therefore, there is no need to set a measurable objective different than the minimum threshold.

8.11.3.2 Interim Milestones

Depletion of interconnected surface water measurable objectives are set at current conditions; there is no anticipated increase or decrease in surfaced water depletion during GSP implementation. Therefore, the expected interim milestones are identical to current conditions. The interim milestones for the total calculated depletion of interconnected surface water is shown in Table 8-10.

Table 8-10: Depletion of Interconnected Surface Water Interim Milestones

5 Year Depletion Rate (AFY)	10 Year Depletion Rage (AFY)	15 Year Depletion Rate (AFY)
69,700	69,700	69,700

8.11.4 Undesirable Results

8.11.4.1 Criteria for Defining Undesirable Results

By regulation, the depletion of interconnected surface water undesirable result is a quantitative combination of minimum threshold exceedances. There is only one reduction in depletion of interconnected surface water minimum threshold. Therefore, no minimum threshold exceedances are allowed to occur and the reduction in groundwater storage undesirable result is:

- During average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, the depletion of interconnected surface waters shall not exceed the minimum threshold.

8.11.4.2 Potential Causes of Undesirable Results

Conditions that may lead to an undesirable result for the depletion of interconnected surface waters include the following:

- **Localized pumping increases**. Even if the Subbasin is adequately managed at the Subbasin scale, increases in localized pumping near interconnected surface water bodies could unreasonably increase surface water depletion.
- **Expansion of riparian water rights**. Riparian water rights holders often pump from wells adjacent to the Salinas River. Pumping by these riparian water rights holder users is not regulated under this GSP. Additional riparian pumpers near interconnected reaches of rivers and streams may result in excessive localized surface water depletion.
- **Changes in Nacimiento and San Antonio Reservoir Releases**. Since the Salinas River is dependent on reservoir releases for sustained summer flows, when diversions are at the

highest level, any decrease in reservoir flows during that time could be detrimental to the interconnected surface waters by increases depletions and could cause undesirable results to beneficial users.

- **Extensive, unanticipated drought**. Minimum thresholds were established based on anticipated future climatic conditions. Extensive, unanticipated droughts may lead to excessively low groundwater levels that increase surface water depletion rates.

8.11.4.3 Effects on Beneficial Users and Land Use

The depletion of surface water undesirable result is to have no net change in surface water depletion during average hydrologic conditions and over the long-term. Therefore, during average hydrologic conditions and over the long-term, the undesirable result will not have a negative effect on the beneficial users and uses of groundwater. However, pumping during dry years could temporarily increase rates of surface water depletions. Therefore, there could be short-term impacts on all beneficial users and uses of the surface water during dry years.

8.12 References

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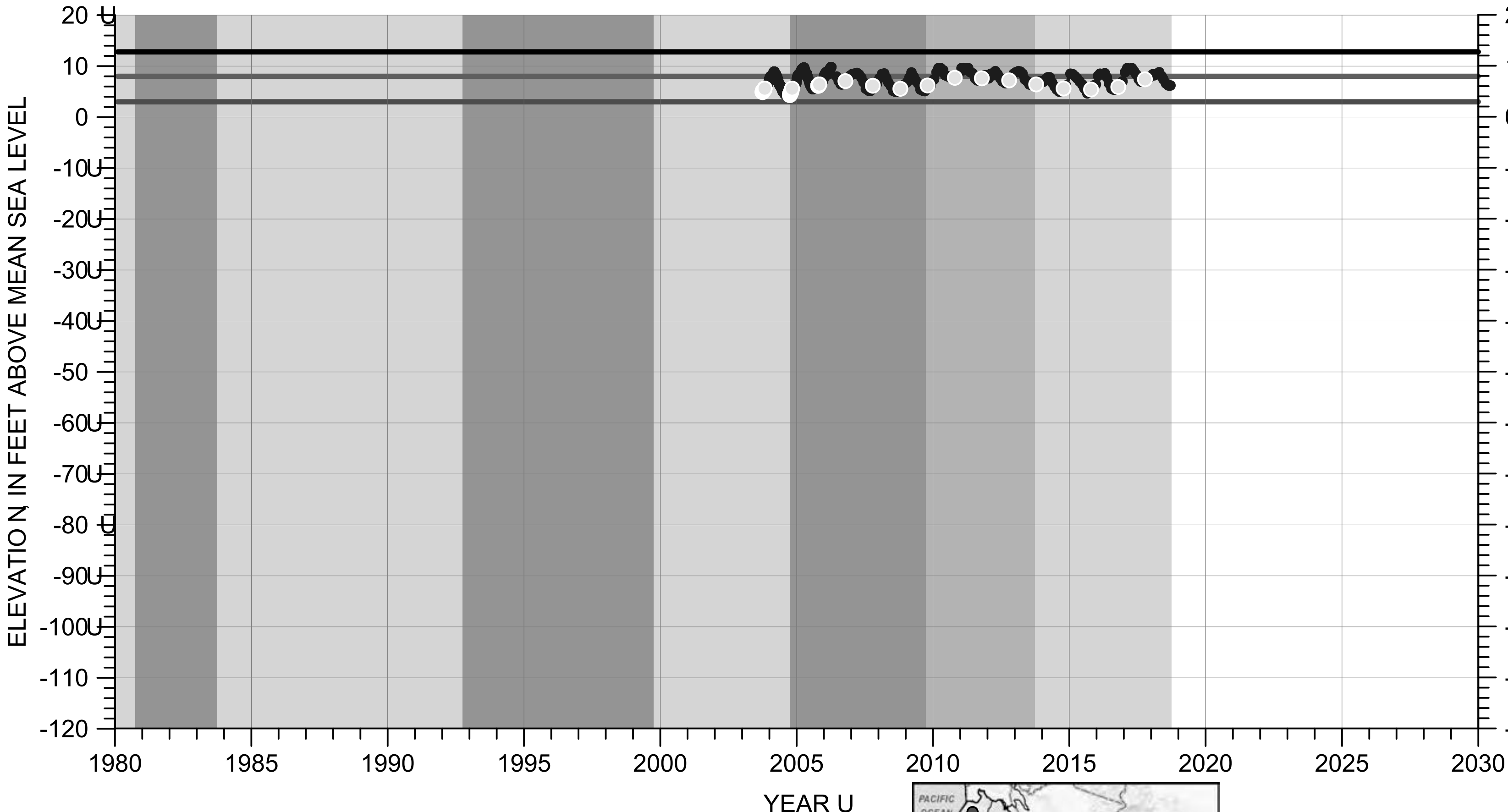
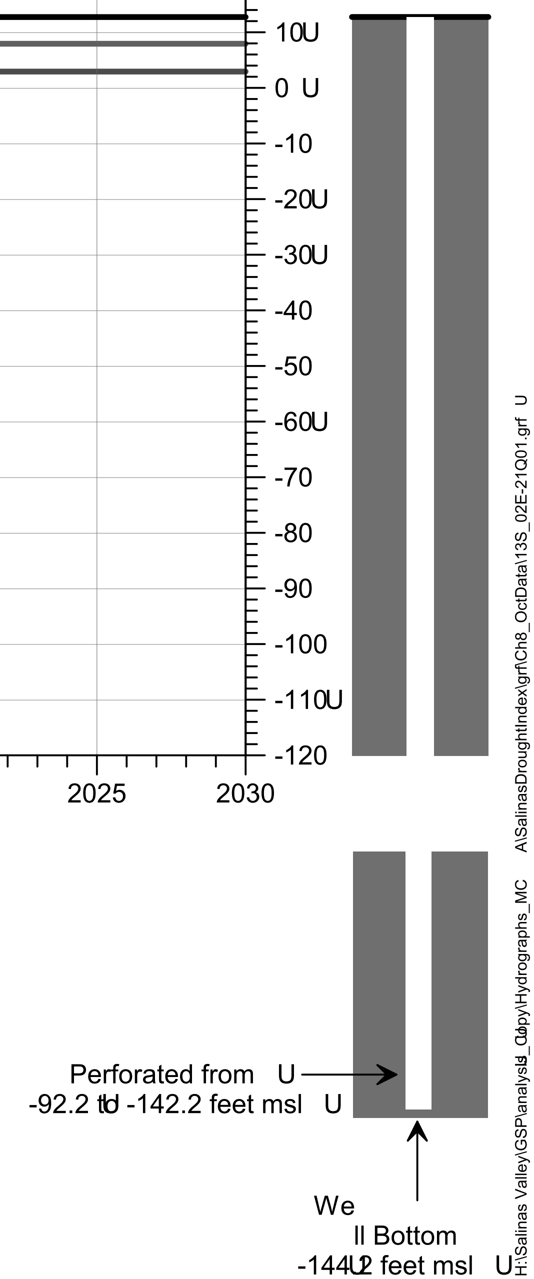
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 13S/02E-21Q01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)





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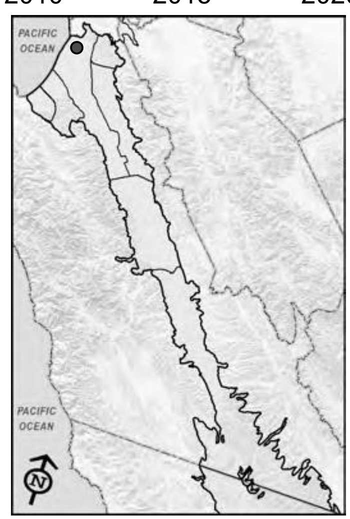
EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

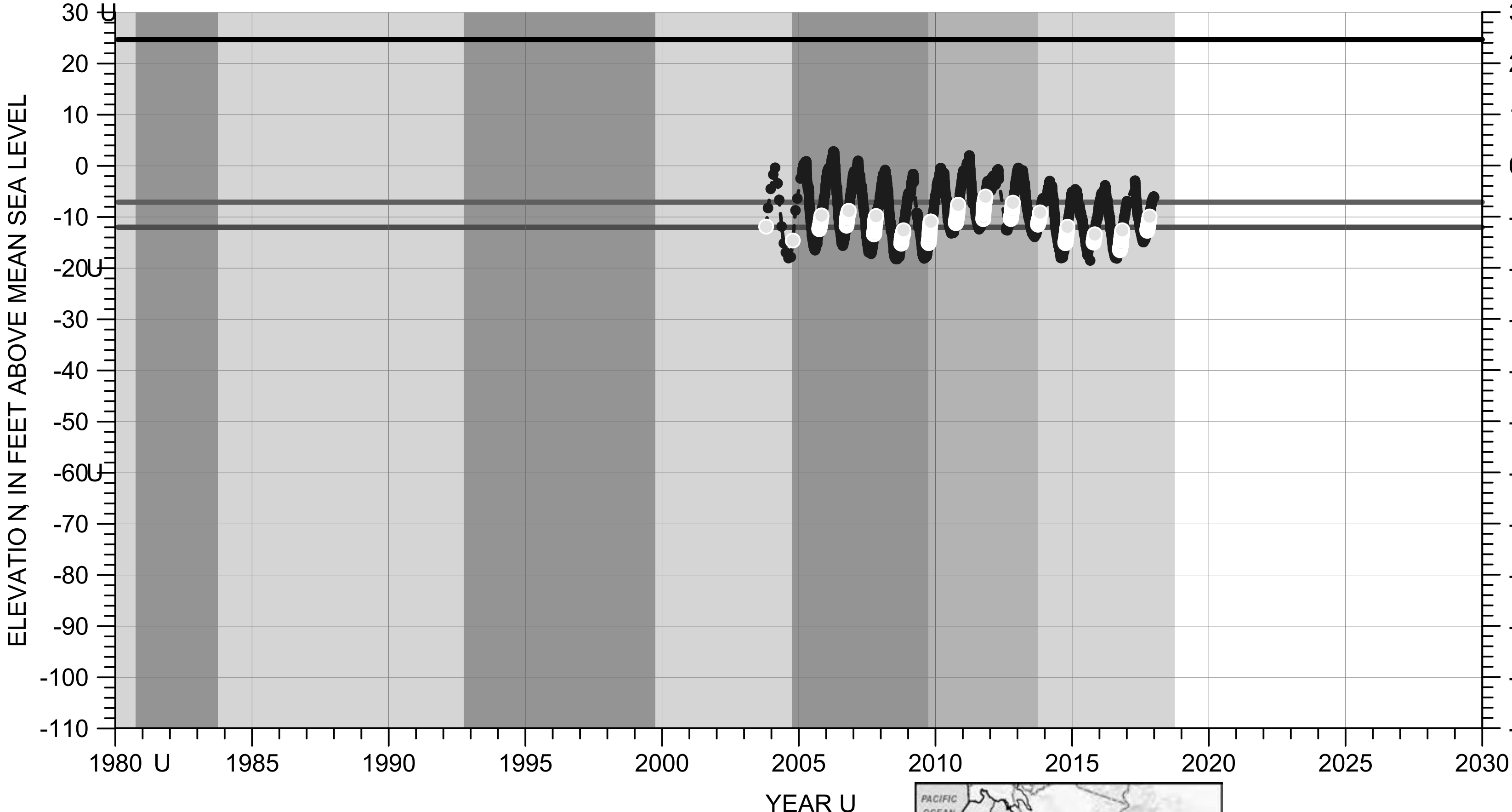
CLIMATE PERIOD CLASSIFICATION

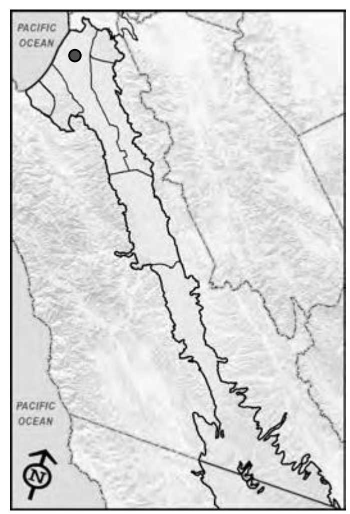
- DRY
- AVERAGE/ALTERNATING
- WET

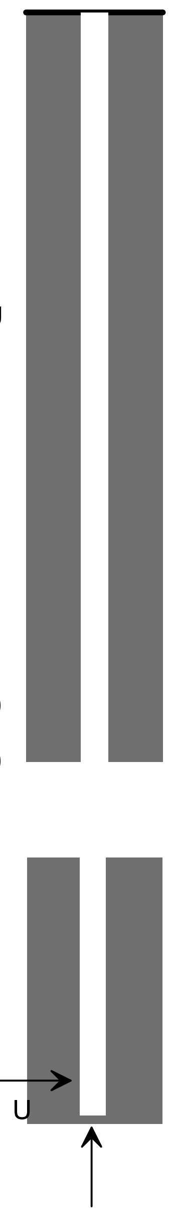


HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-03F04 U

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)







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EXPLUANATION

- GRO ND TER ELEVATIO N U
- ESTIMATED ELEVATIO N
- OCTOBER ELEVATIO N
- LAND SURFACE
- MEAS RABLE OBJEUCTIVE U
- MINIM M THRESHO LD

A

CLIMUATE UPERIOD CLASSIFICUATION

- DRY
- AVUERAUGE/ALTERNATING U
- T

Perforated from
-129.3 U to -179.3 feet msl U

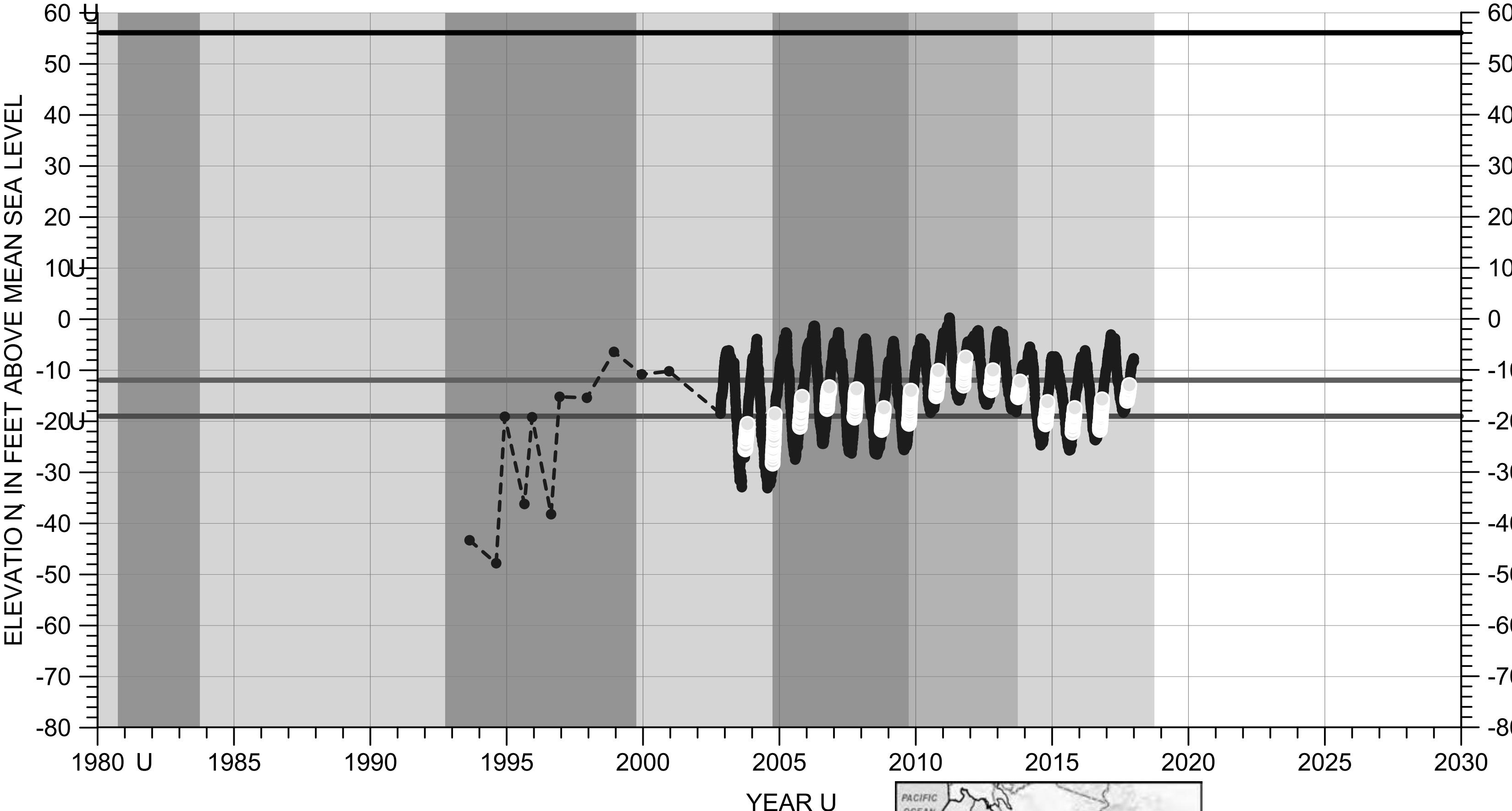
Il Bottom
-180.3 feet msl U

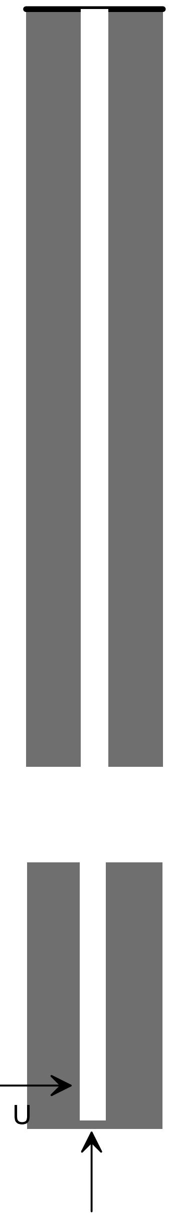
E

e

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-12B02

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



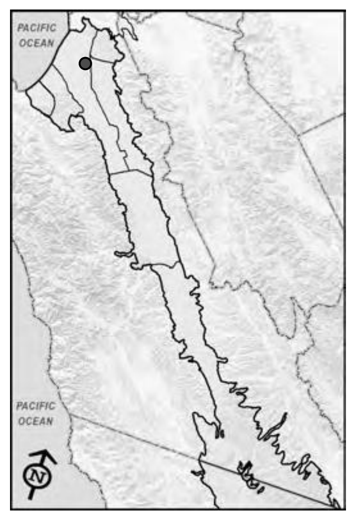


EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET



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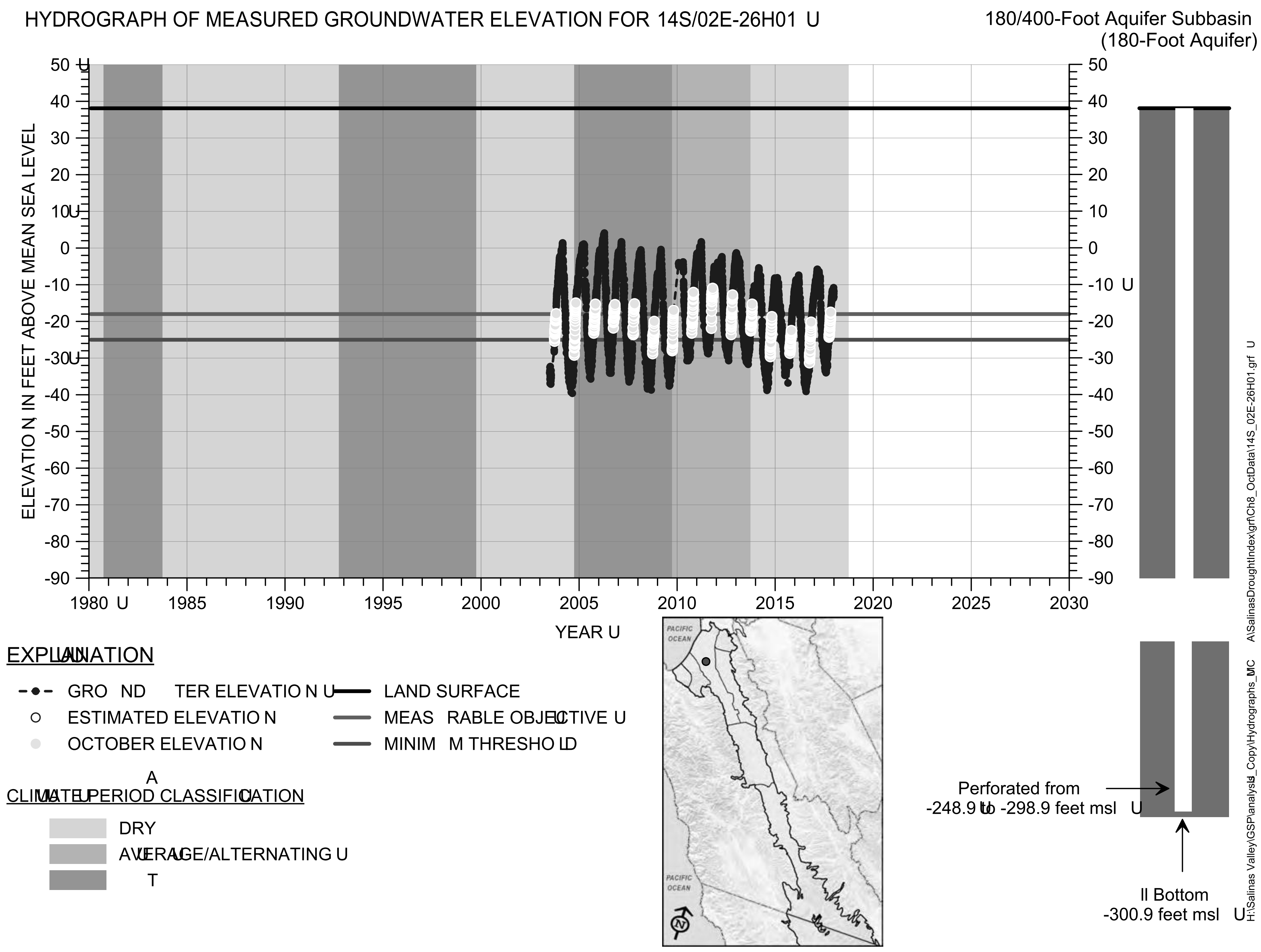

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-26H01
180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)
ELEVATION, IN FEET ABOVE MEAN SEA LEVEL
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
YEAR
EXPLANATION
GRO ND TER ELEVATIO N
ESTIMATED ELEVATIO N
OCTOBER ELEVATIO N
LAND SURFACE
MEAS RABLE OBJE CTIVE
MINIM M THRESHO LD
CLIMATE PERIOD CLASSIFICATION
DRY
AVERAGE/ALTERNATING
PACIFIC OCEAN
PACIFIC OCEAN
Perforated from
-248.9 to -298.9 feet msl
ll Bottom
-300.9 feet msl
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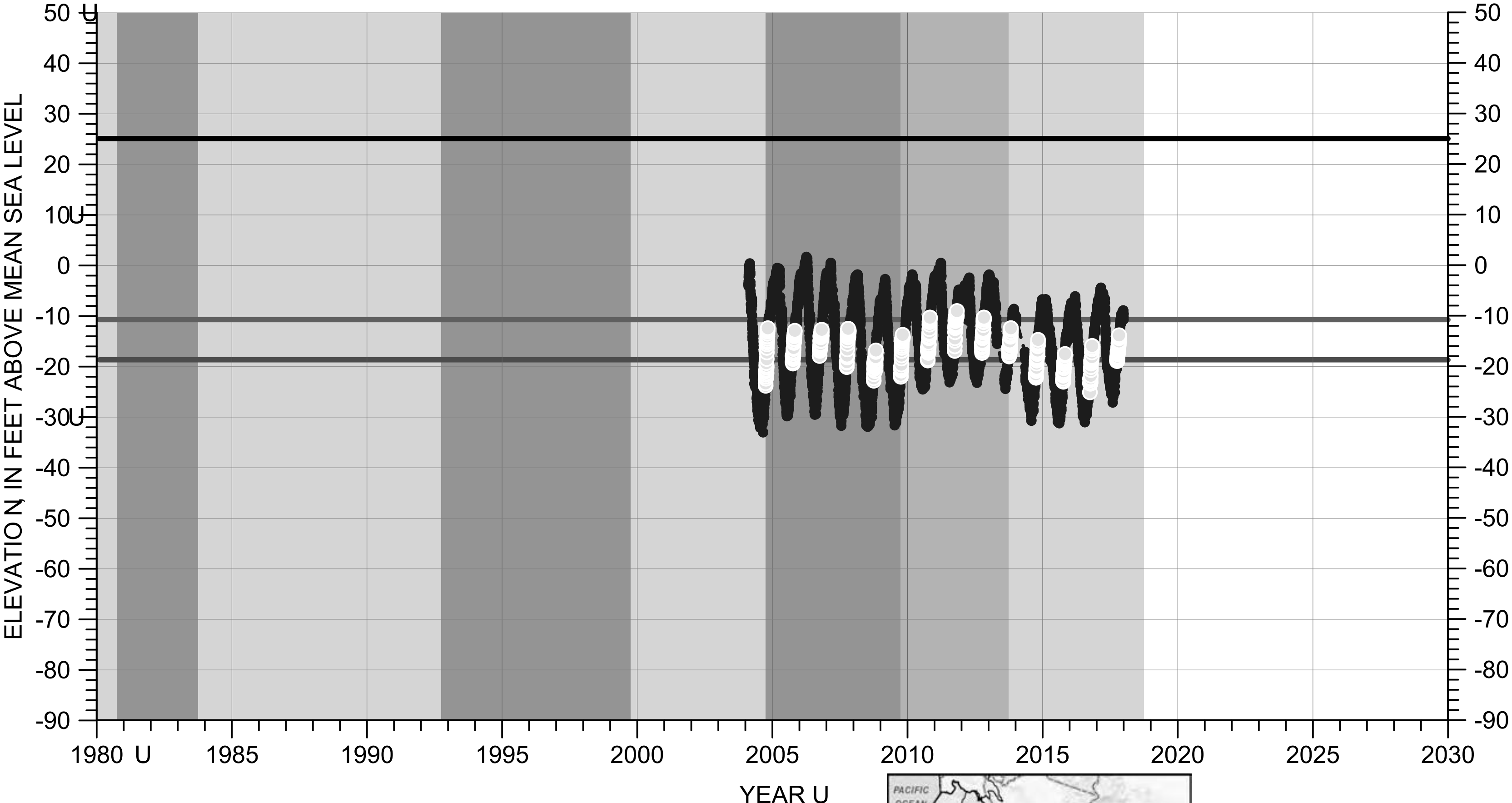
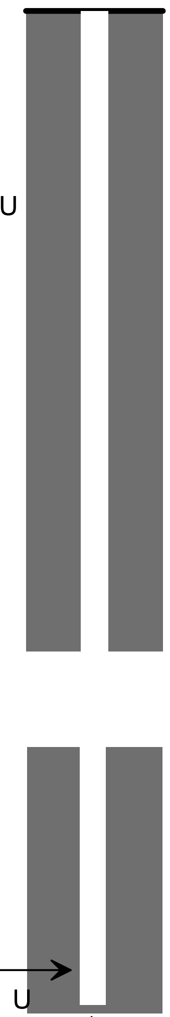
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-27A01 U

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)





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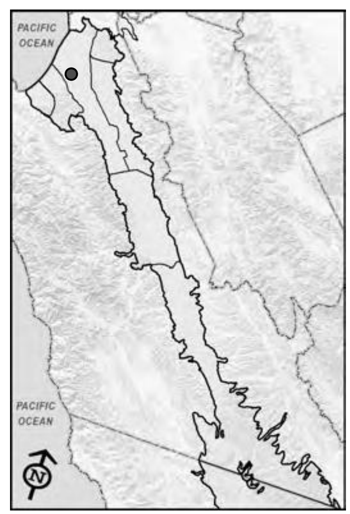
EXPLANATION

- GRO ND TER ELEVATIO N U
- ESTIMATED ELEVATIO N
- OCTOBER ELEVATIO N
- LAND SURFACE
- MEAS RABLE OBJE CTIVE U
- MINIM M THRESHO LD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING U
- T



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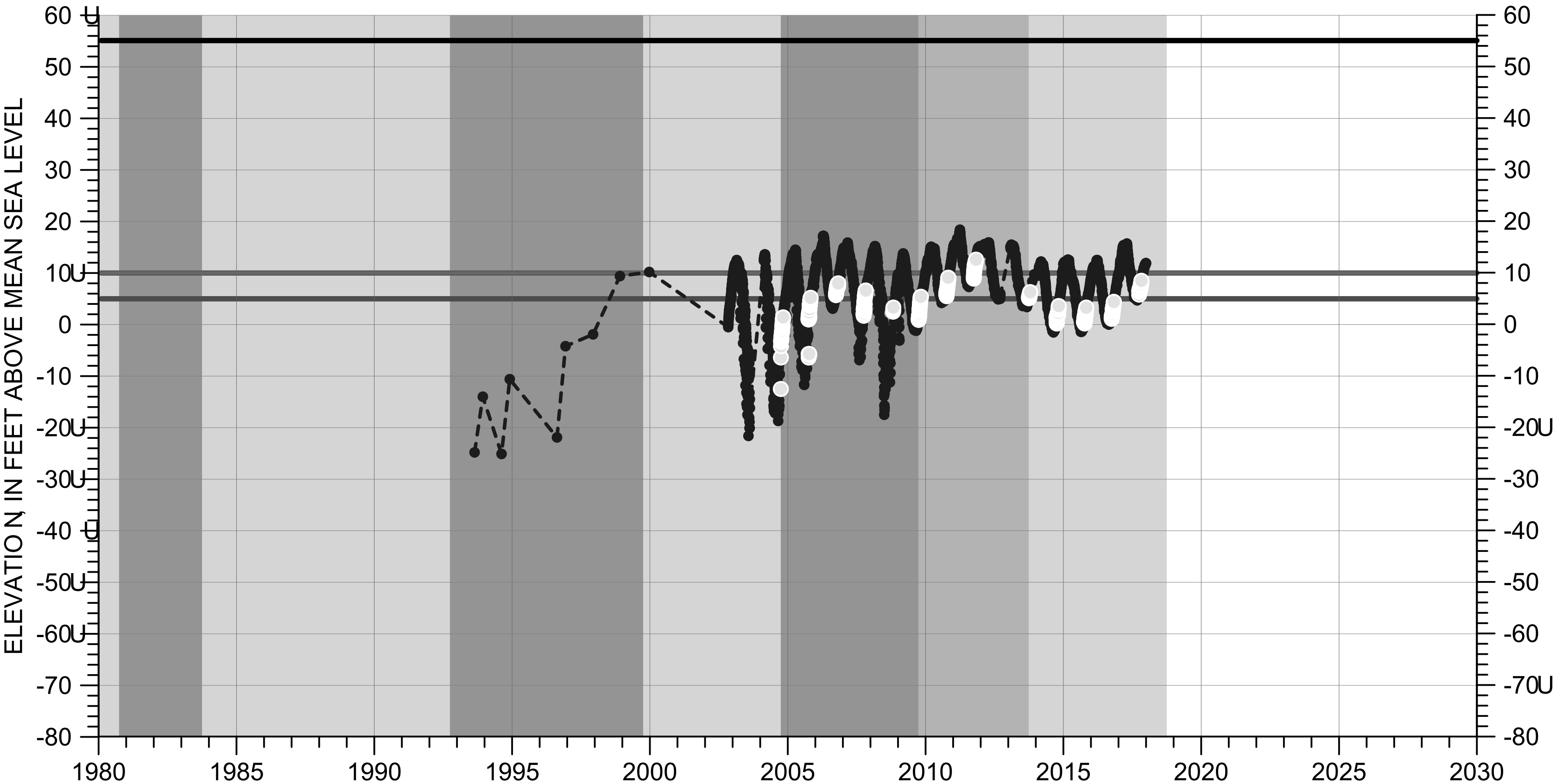
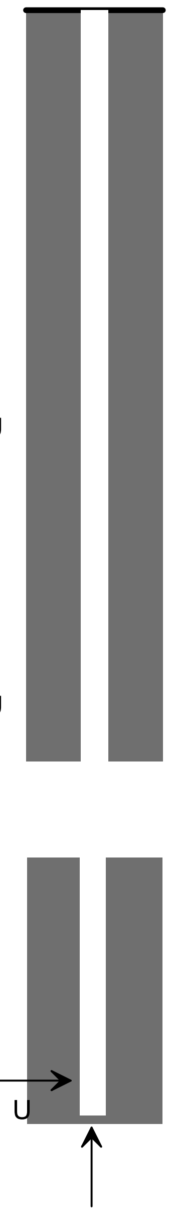
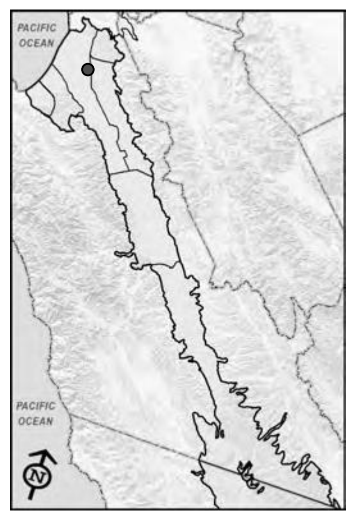
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/03E-18C01 U

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)







EXPLANATION

- GRO ND WA TER ELEVATIO N
- ESTIMATED ELEVATIO N
- OCTOBER ELEVATIO N
- LAND SURFACE
- MEAS RABLE OBJECTIVE
- M NIM M THRESHO LD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- T

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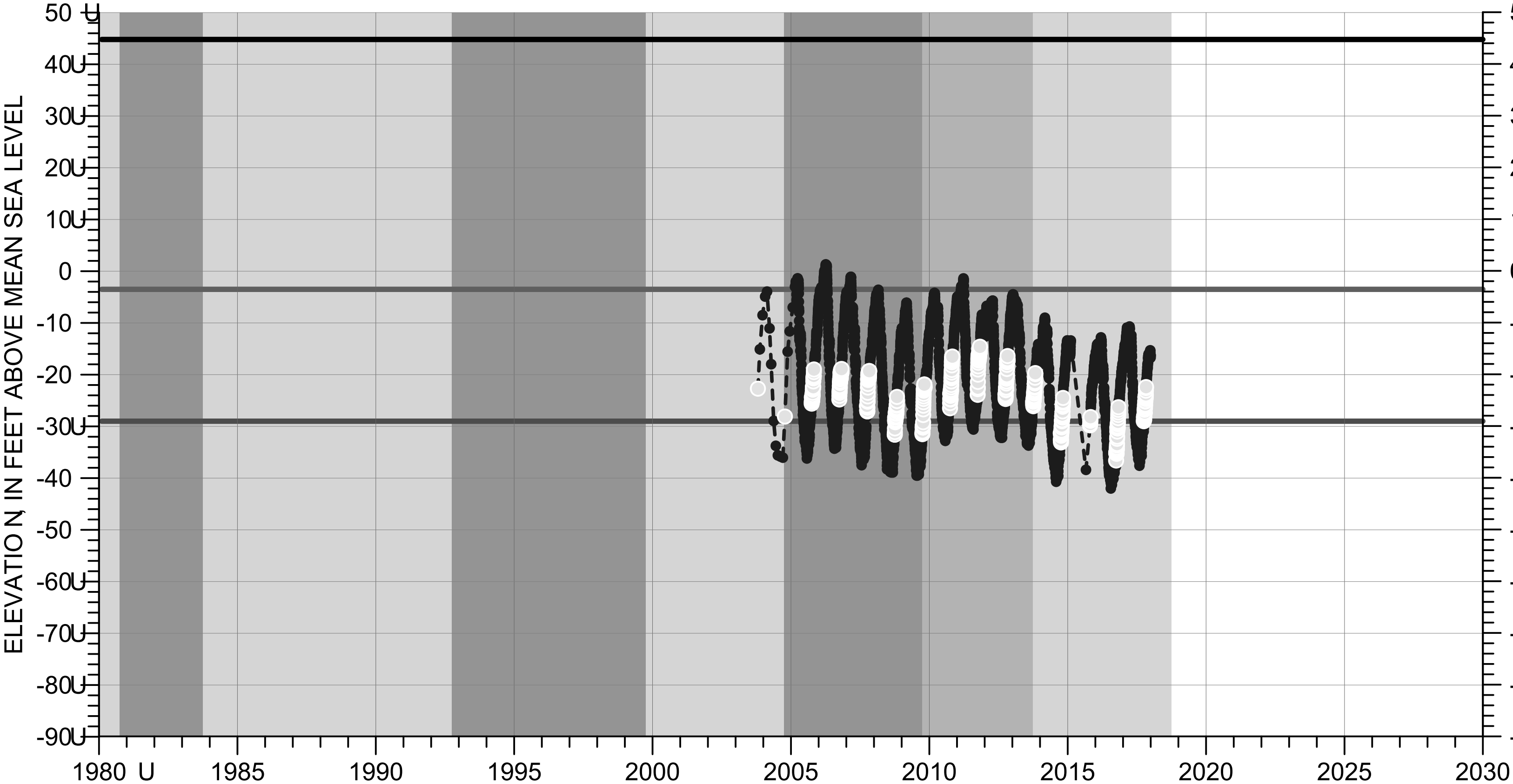
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/03E-30G08

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)

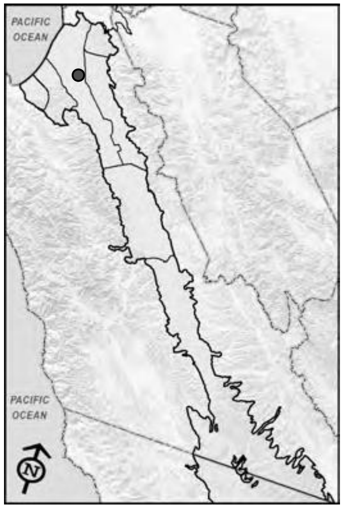


EXPLANATION

- GROUNDWATER ELEVATION
- ESTIMATED ELEVATION
- OCTOBER ELEVATION
- LAND SURFACE
- MEASURABLE OBJECTIVE
- MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- WET



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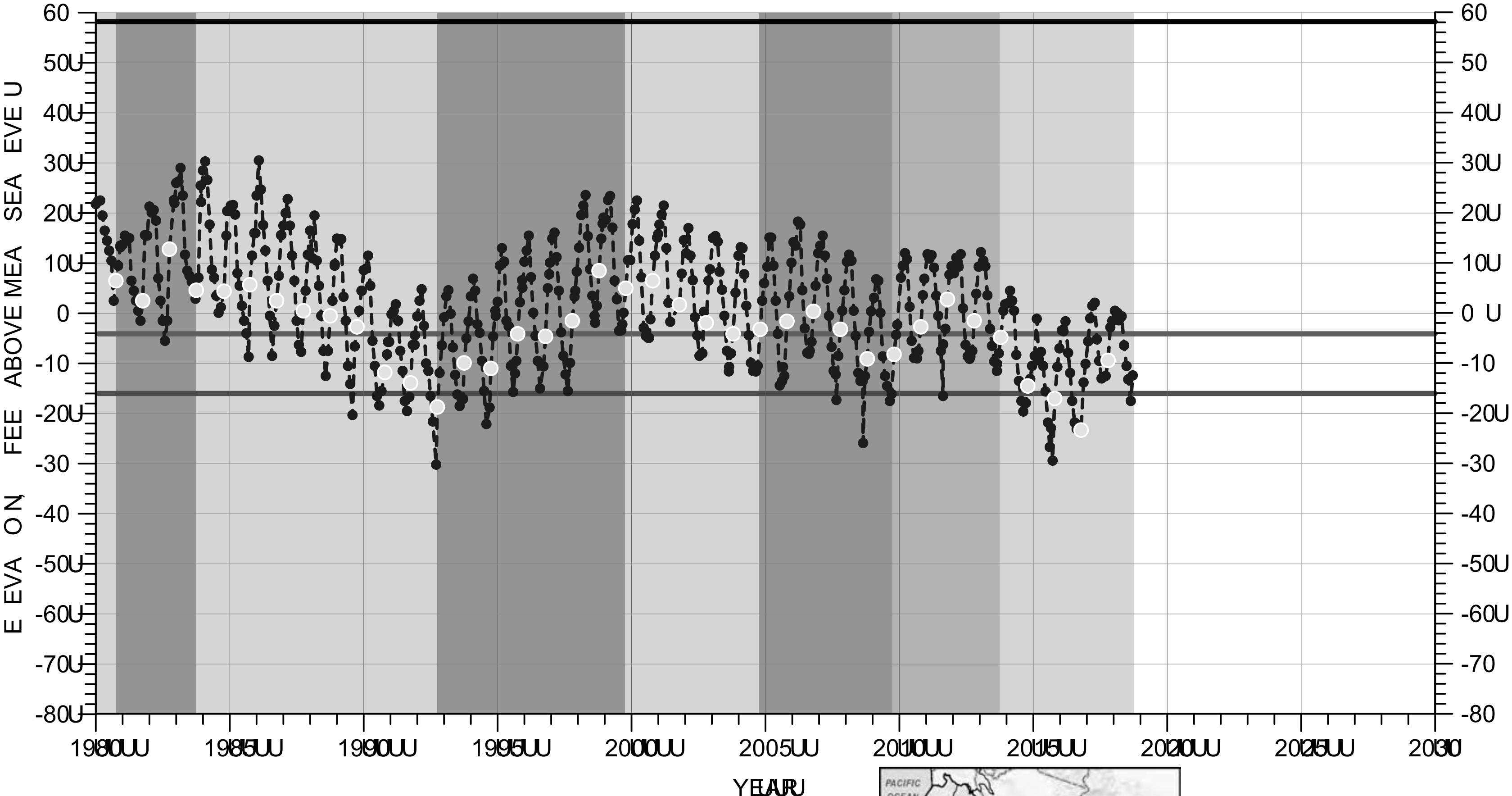
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 15S/03E-16M01

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



EXPLANATION

GROUNDWATER ELEVATION — LAND SURFACE

ESTIMATED ELEVATION — MEASURABLE OBJECTIVE

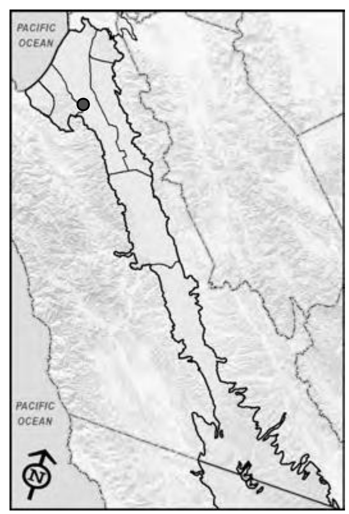
OCTOBER ELEVATION — MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

DRY

AVERAGE/ABOVE AVERAGE

WET



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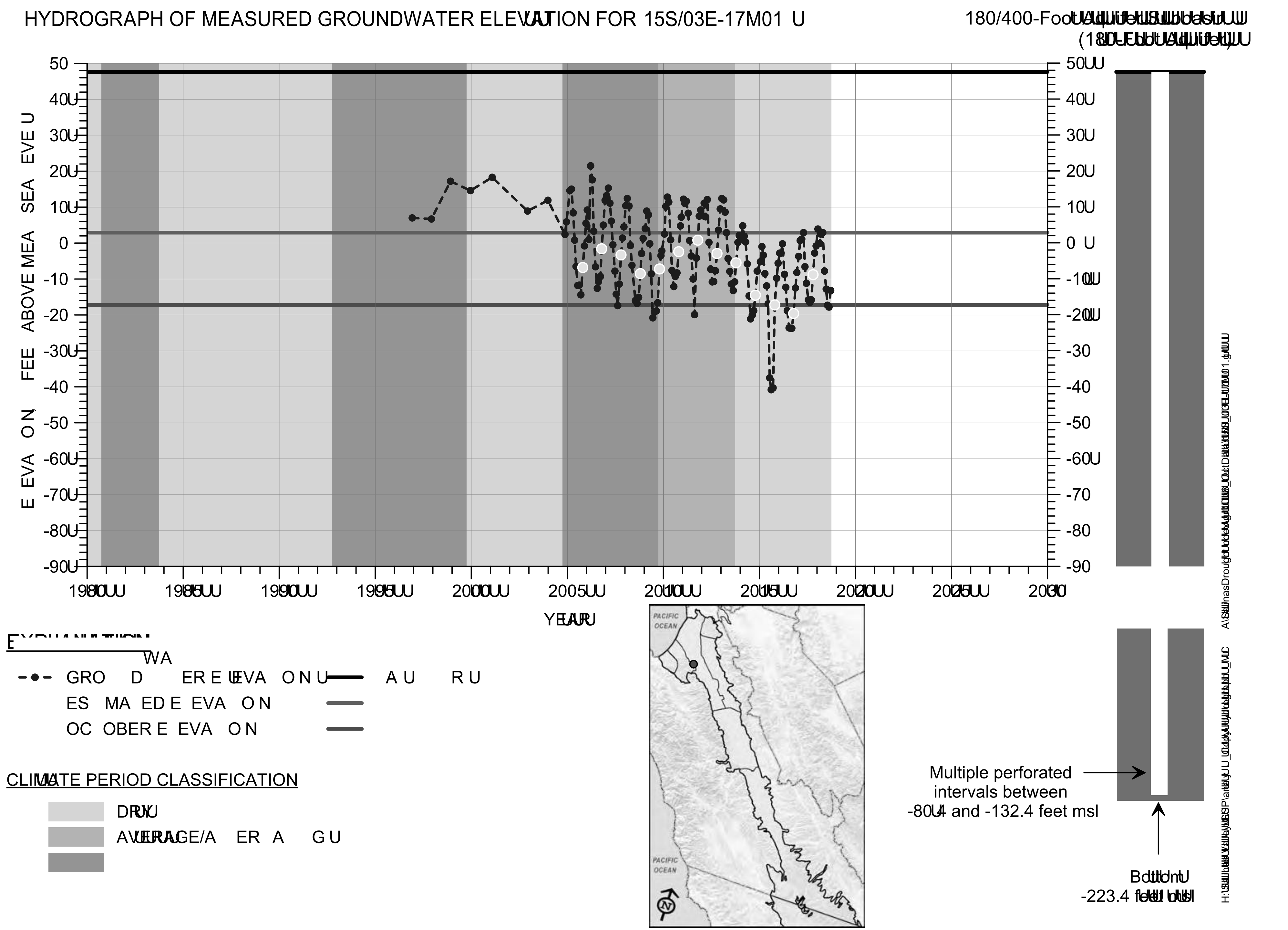


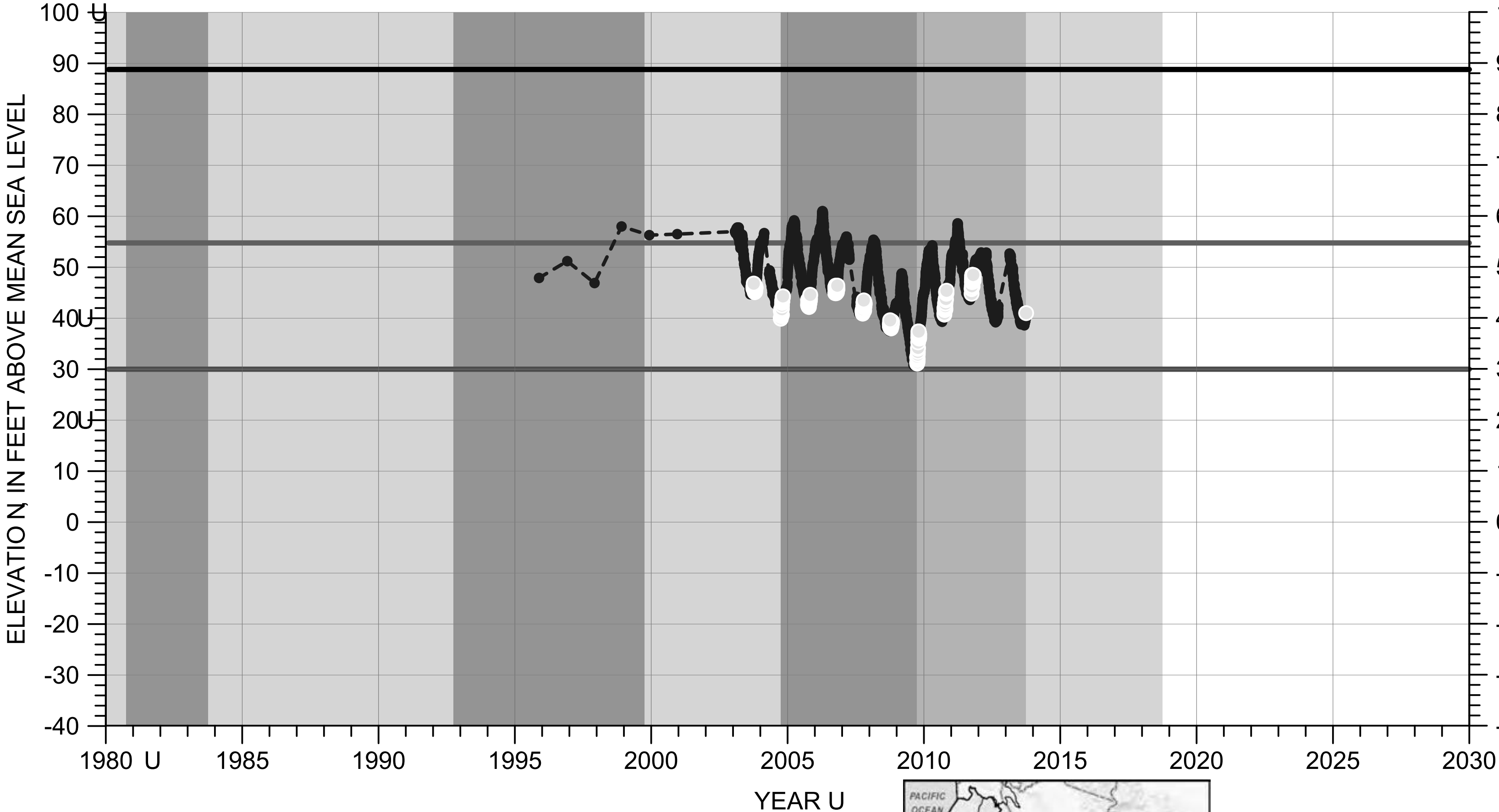
CLIMATE PERIOD CLASSIFICATION

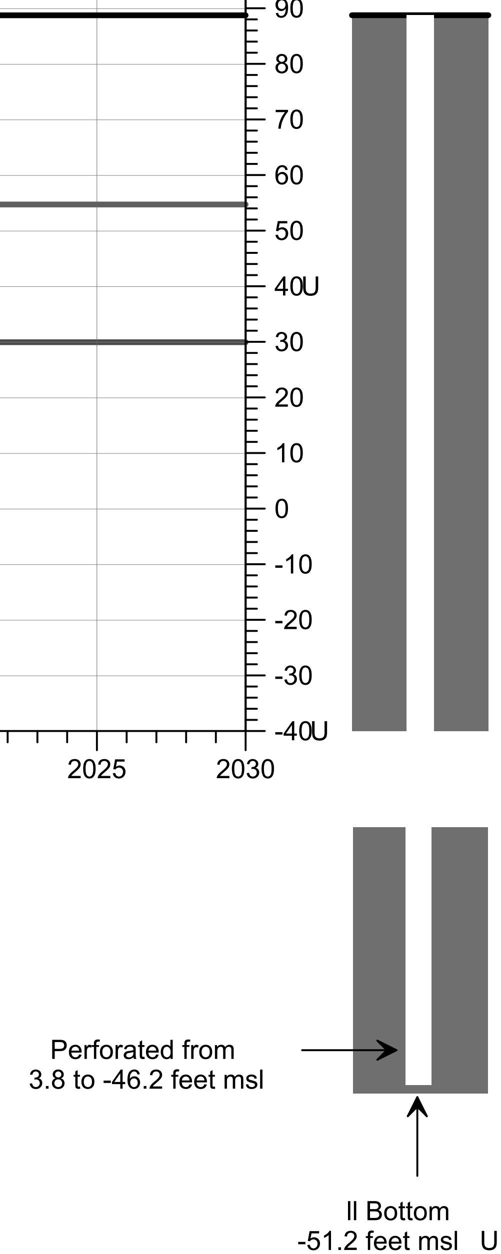
DRY

AVERAGE/A ER A G

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 16S/04E-08H04 U

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)



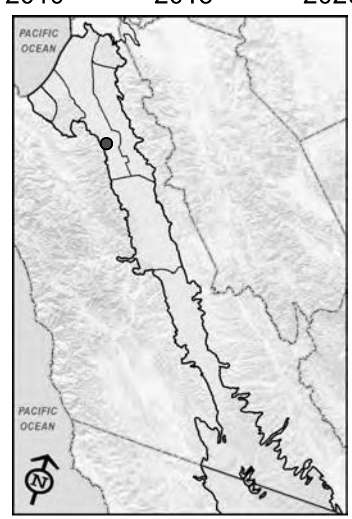


EXPLUANATION

- GRO ND TER ELEVATIO N U
- ESTIMATED ELEVATIO N
- OCTOBER ELEVATIO N
- LAND SURFACE
- MEAS RABLE OBJECTIVE U
- MINIM M THRESHO LD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING U
- T



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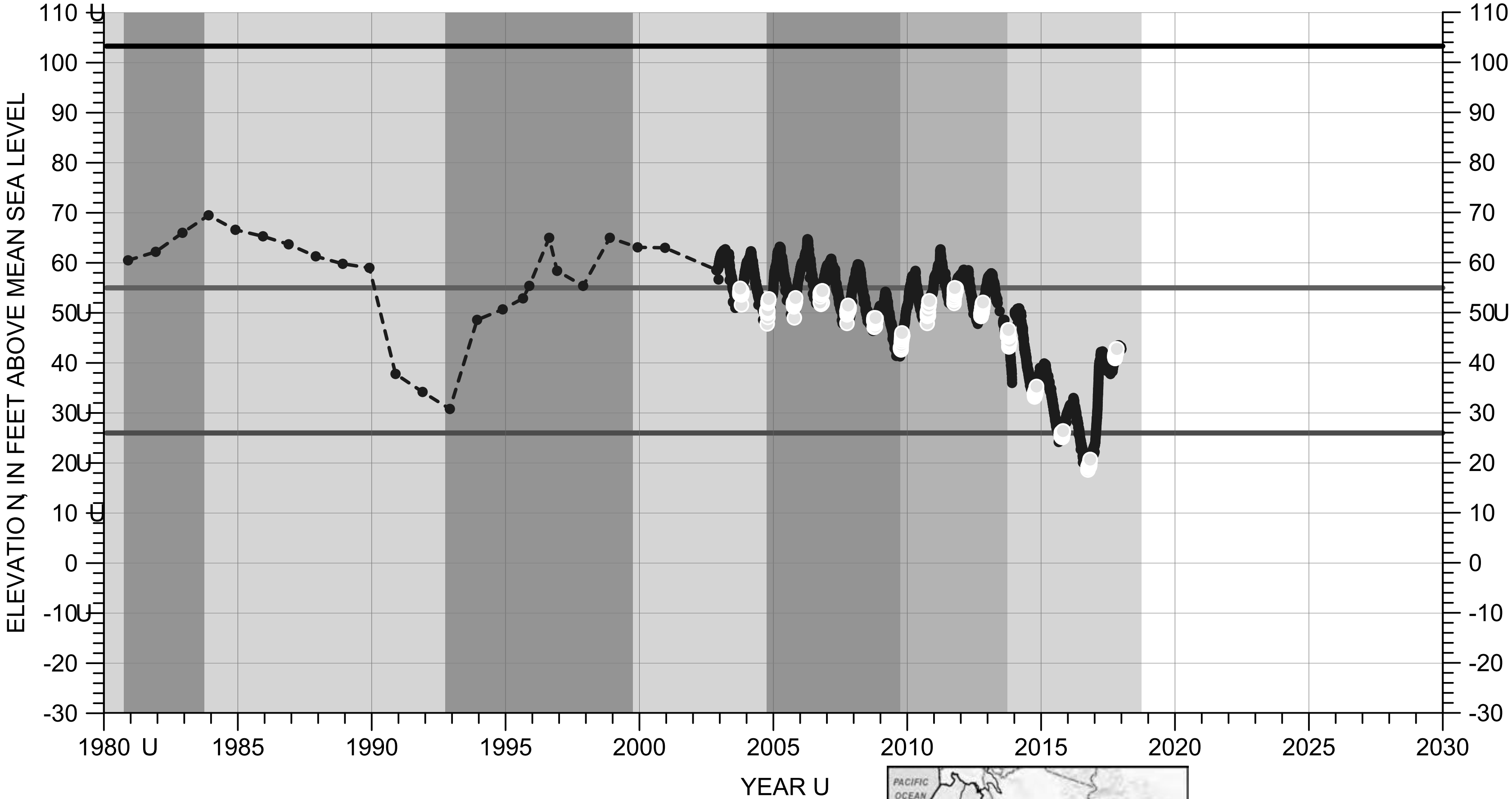
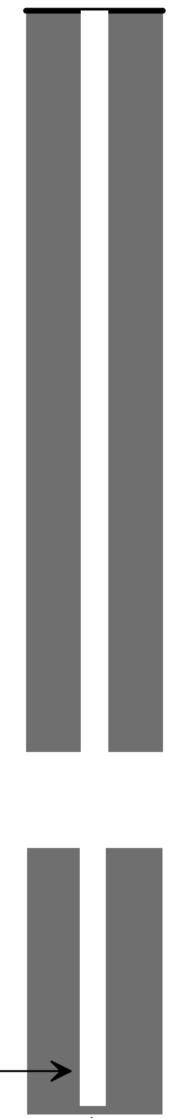
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 16S/04E-15D01 U

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)





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EXPLANATION

GRO ND TER ELEVATIO N

ESTIMATED ELEVATIO N

OCTOBER ELEVATIO N

LAND SURFACE

MEAS RABLE OBJECTIVE

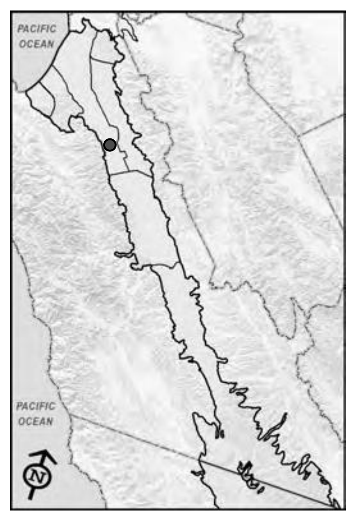
MINIM M THRESHO LD

CLIMATE PERIOD CLASSIFICATION

DRY

AVERAGE/ALTERNATING

T



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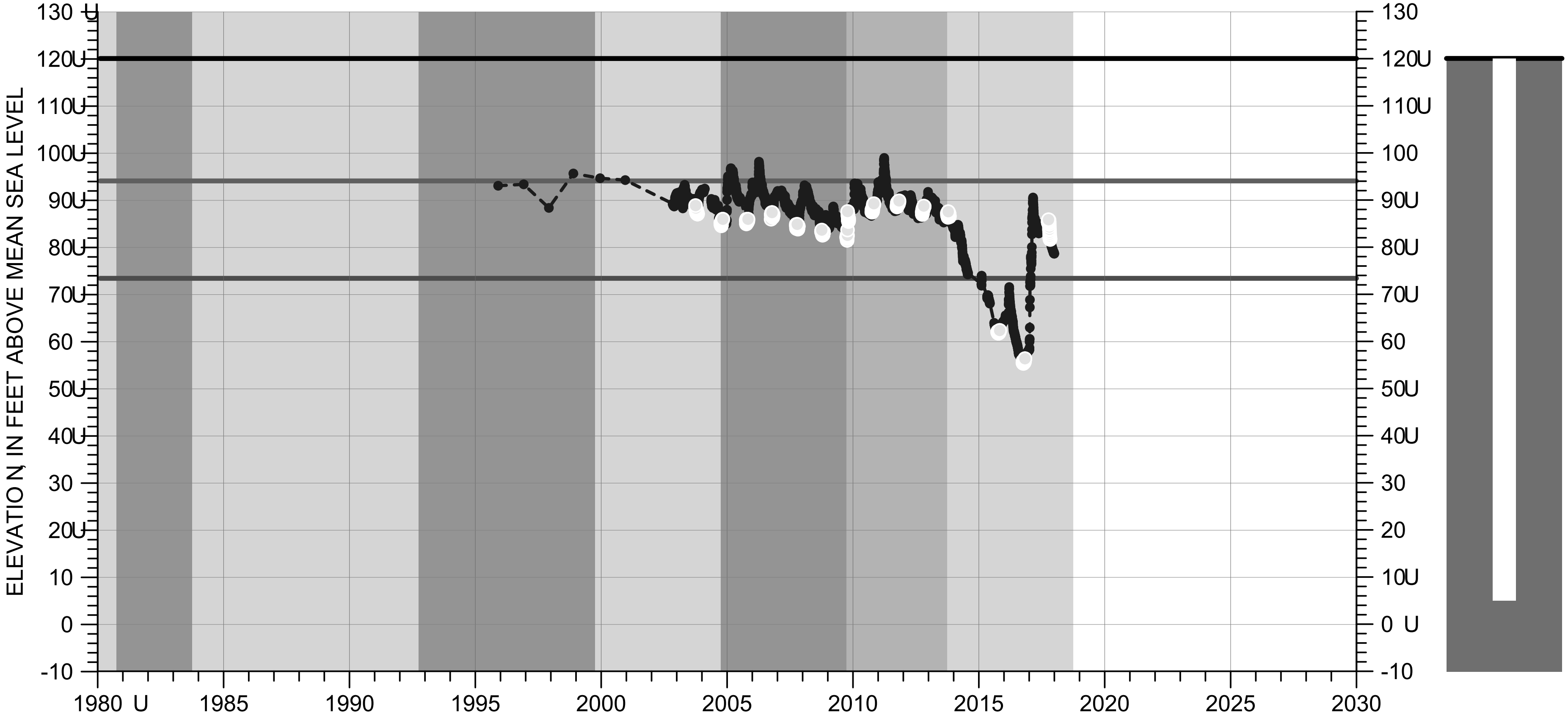
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 17S/05E-06C02

180/400-Foot Aquifer Subbasin
(180-Foot Aquifer)

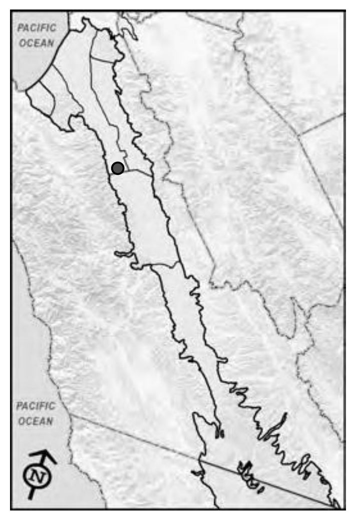


EXPLANATION

GROUNDWATER ELEVATION
ESTIMATED ELEVATION
OCTOBER ELEVATION
LAND SURFACE
MEASURABLE OBJECTIVE
MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

DRY
AVERAGE/ALTERNATING
WET



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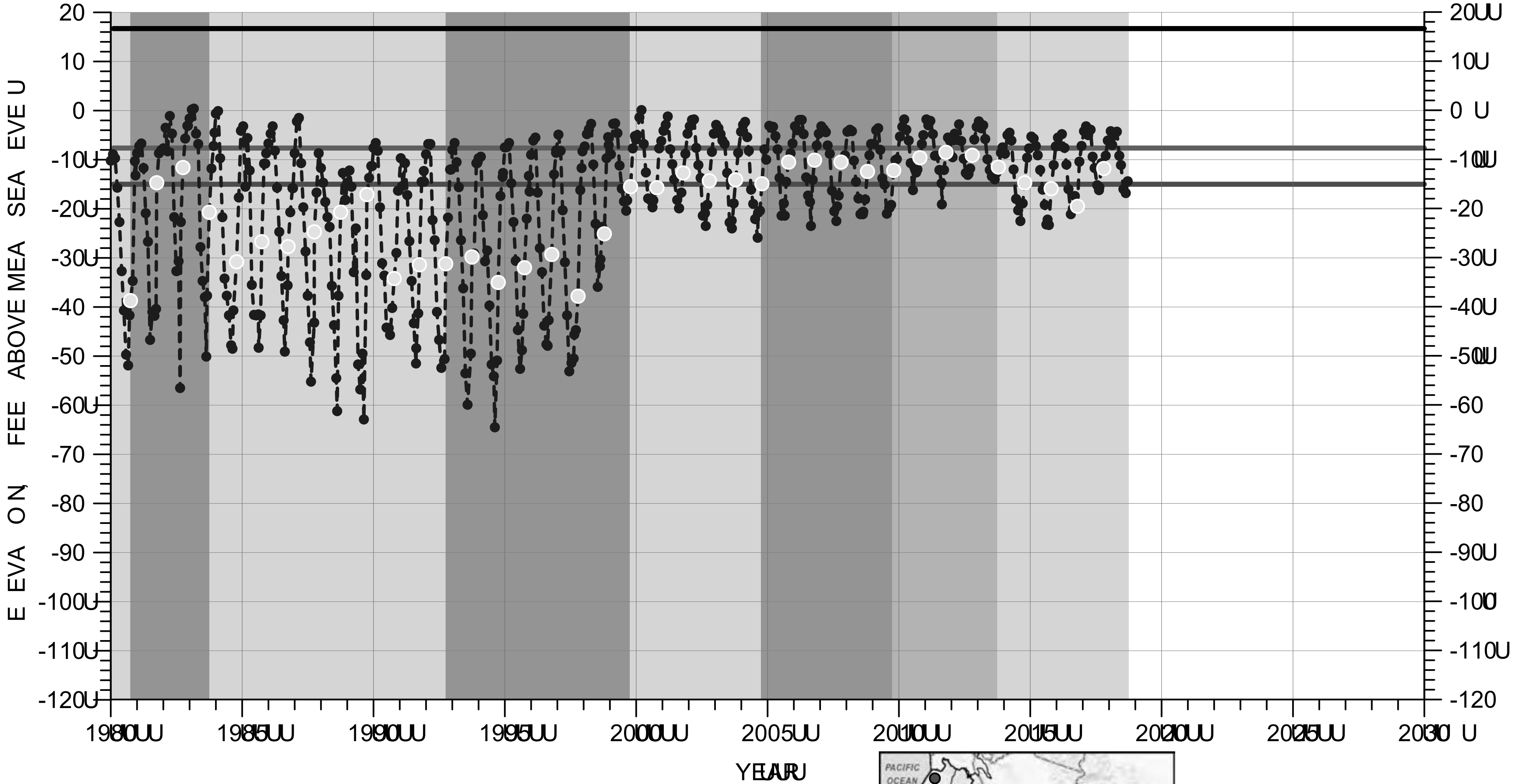
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 13S/02E-21N01

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)

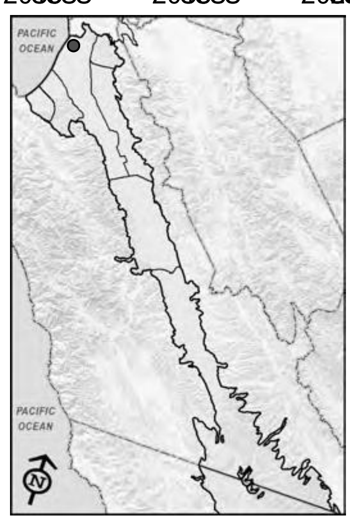


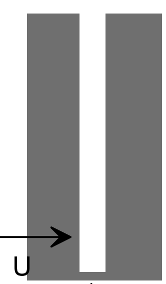
EXPLANATION

GROUNDWATER ELEVATION
ESTIMATED ELEVATION
OCTOBER ELEVATION
GROUND SURFACE
MEASURABLE OBJECTIVE
MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

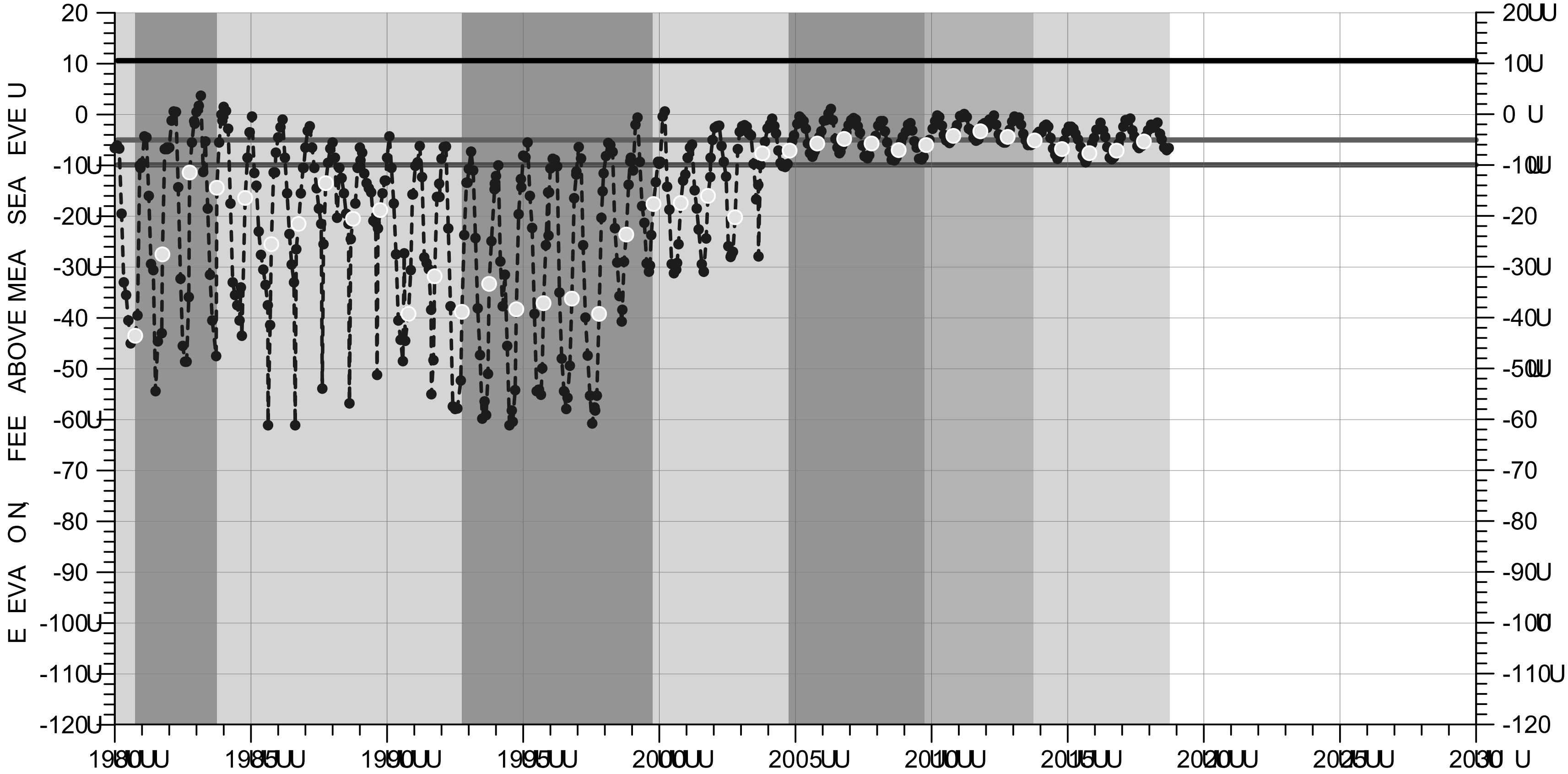
DRY
AVERAGE/ABOVE AVERAGE

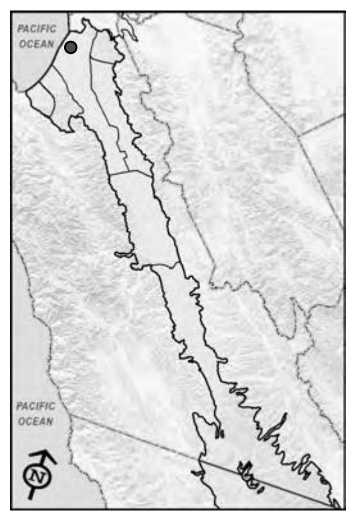




HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 13S/02E-32A02

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





EXPLANATION

GROUNDWATER ELEVATION — LAND SURFACE

ESTIMATED ELEVATION — MEASURABLE OBJECTIVE

OCTOBER ELEVATION — MINIMUM THRESHOLD

CLIMATE PERIOD CLASSIFICATION

DRY

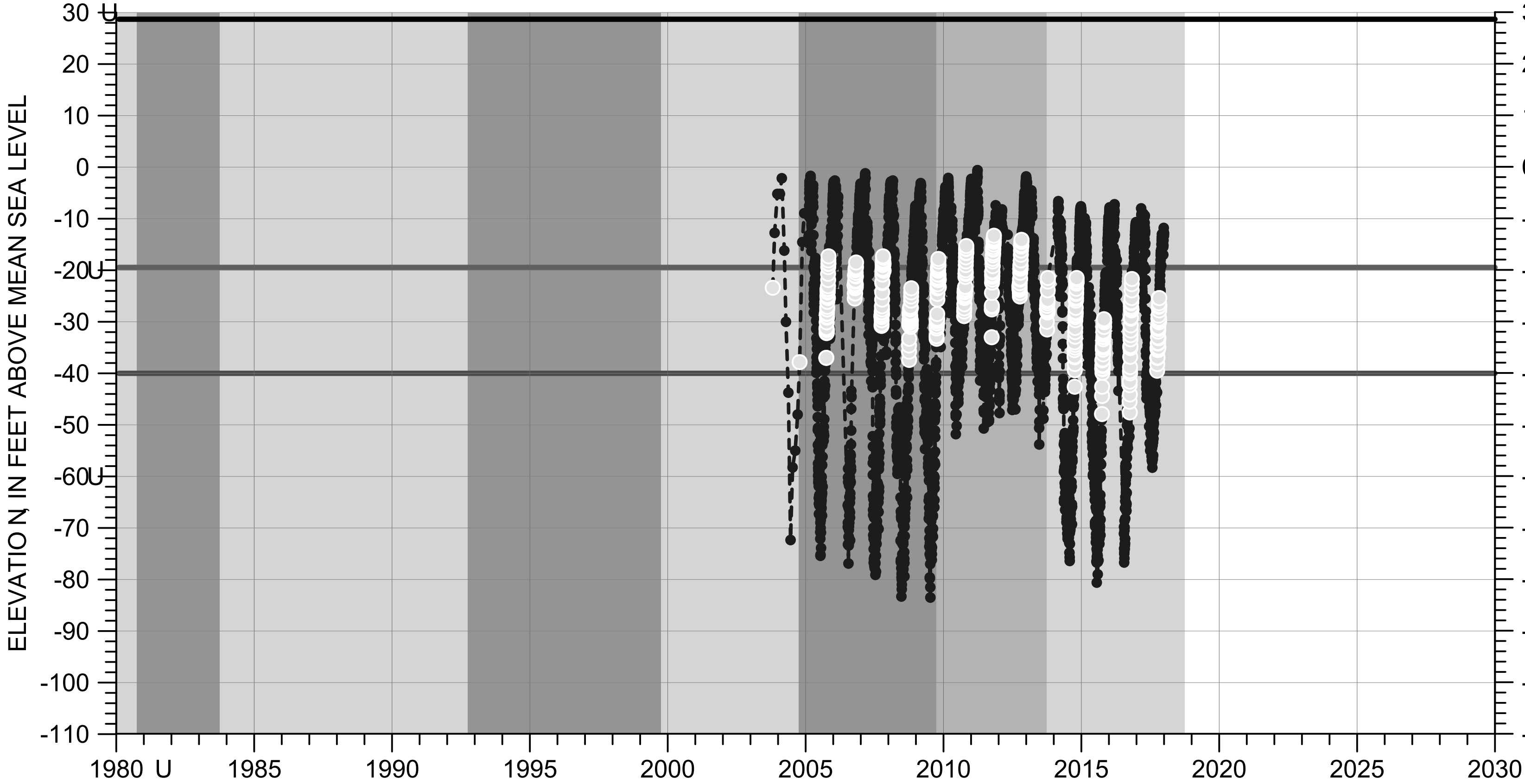
AVERAGE/ABOVE AVERAGE

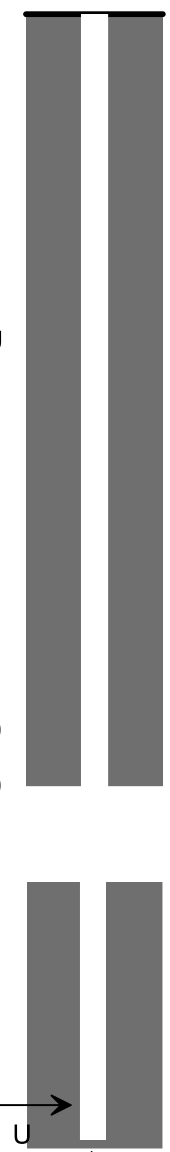
E

e

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-03F03

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





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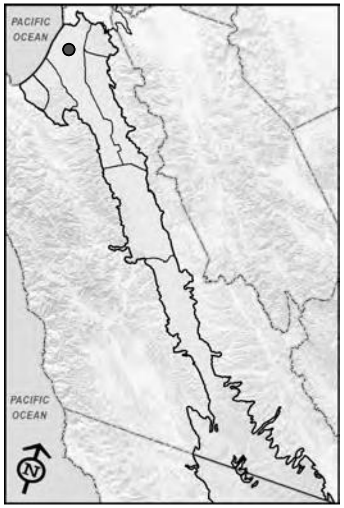
EXPLANATION

- GRO ND TER ELEVATIO N
- ESTIMATED ELEVATIO N
- OCTOBER ELEVATIO N
- LAND SURFACE
- MEAS RABLE OBJECTIVE
- MINIM M THRESHO LD

CLIMATE PERIOD CLASSIFICATION

- DRY
- AVERAGE/ALTERNATING
- T

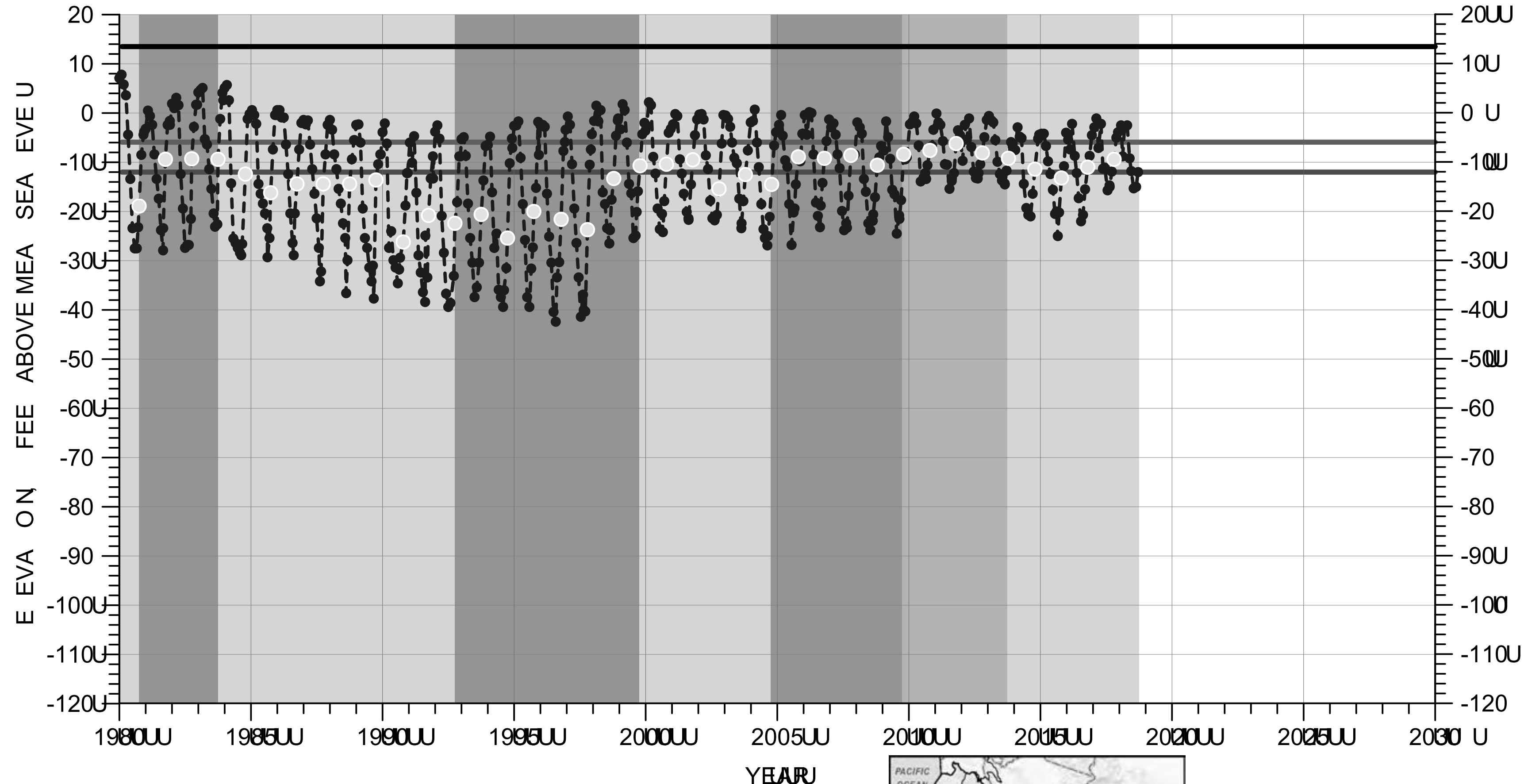


E

e

HYDROGRAPH OF MEASURED GROUNDWATER ELEVUATION FOR 14S/02E-08M02 U

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)

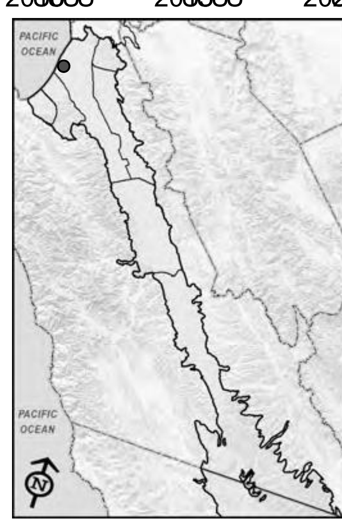


EXPLANATION

- GRO D WA ER E EVA ON
- ES MA ED E EVA ON
- OC OBER E EVA ON
- A D S RFACE
- MEAS RAB E OBJEC VE
- M I M M HRESHOLD

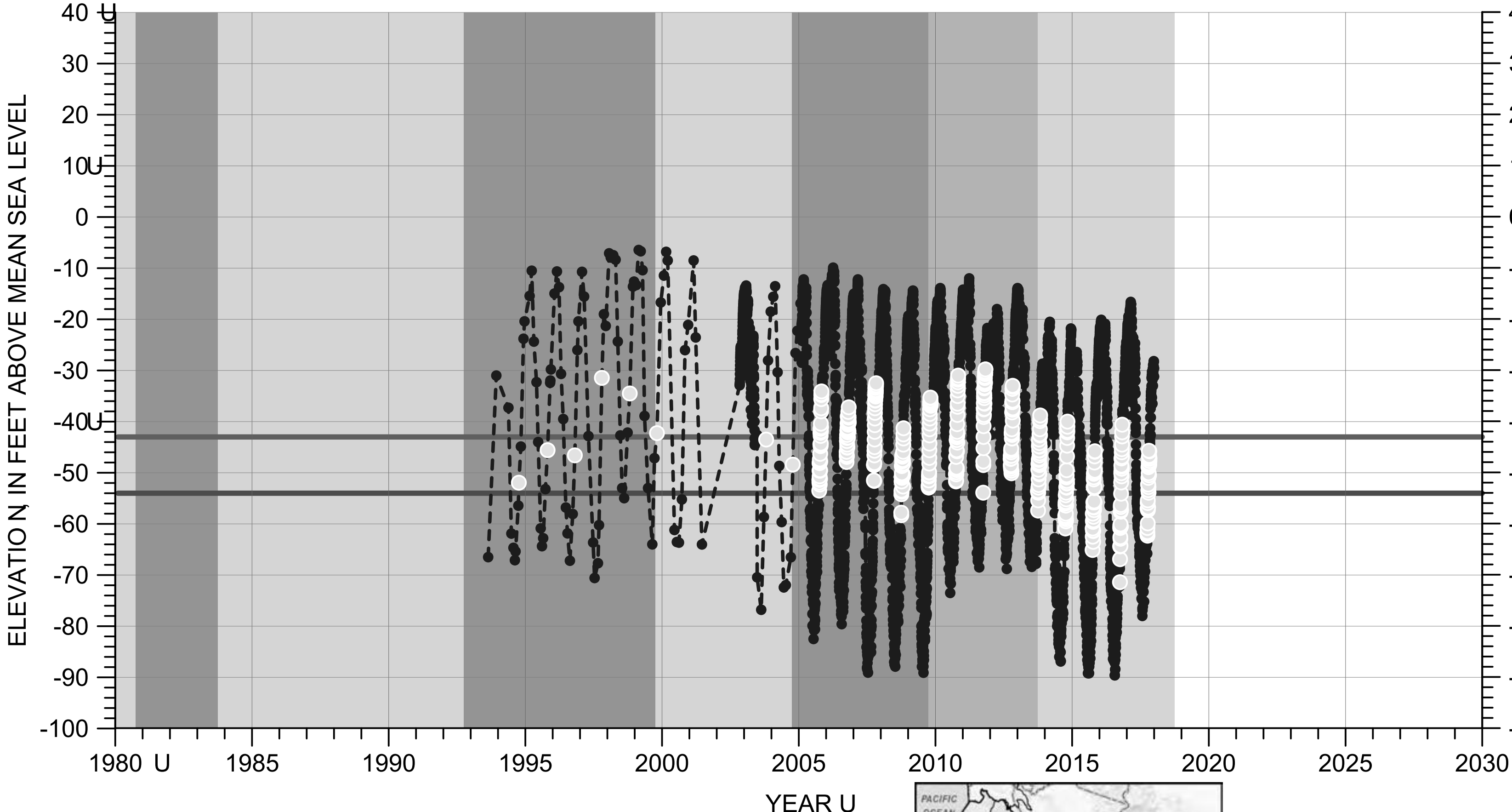
CLIMATE PERIOD CLASSIFICATION

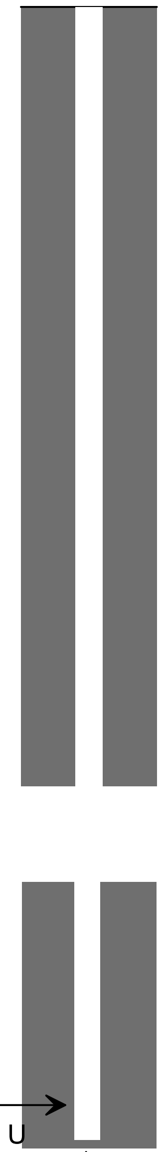
- DRY
- AVERAGE/A ER A G
- E



HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-12B03 U

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





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EXPLUANATION

GRO ND TER ELEVATIO N

ESTIMATED ELEVATIO N

OCTOBER ELEVATIO N

LAND SURFACE (56.1 FT MSL)

MEAS RABLE OBJECTIVE U

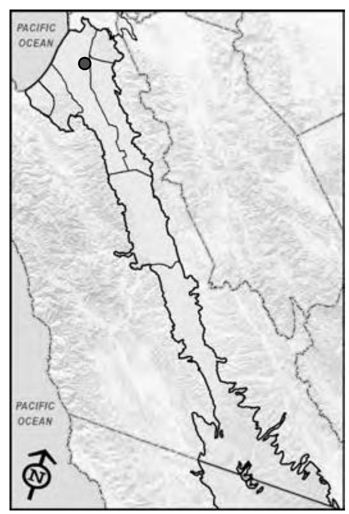
MINIM M THRESHO LD

CLIMATE PERIOD CLASSIFICATION

DRY

AVERAGE/ALTERNATING U

T



Perforated from
-293.9 to -323.9 feet msl U

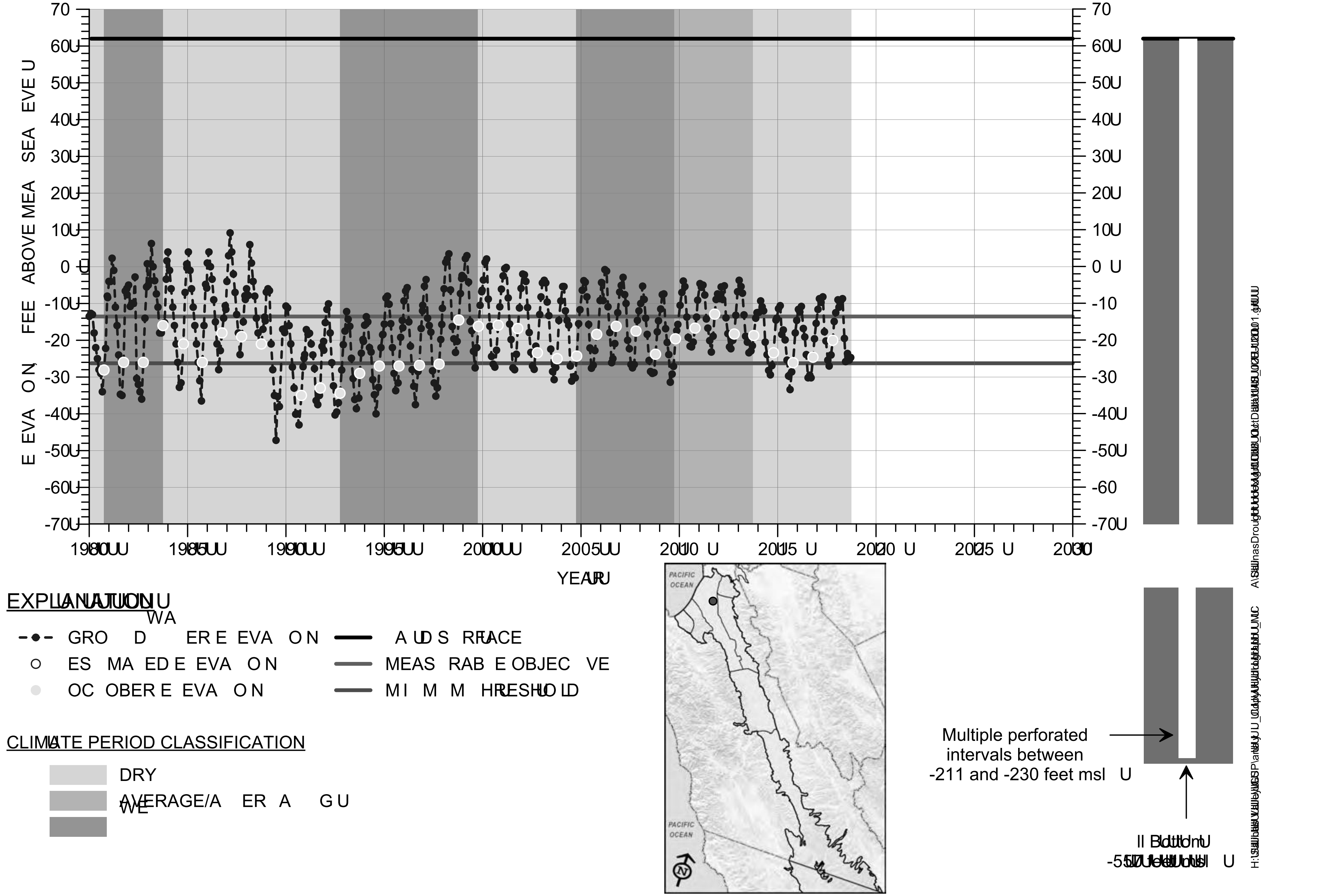
ll Bottom
-333.9 feet msl U

E

e

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/02E-12Q01

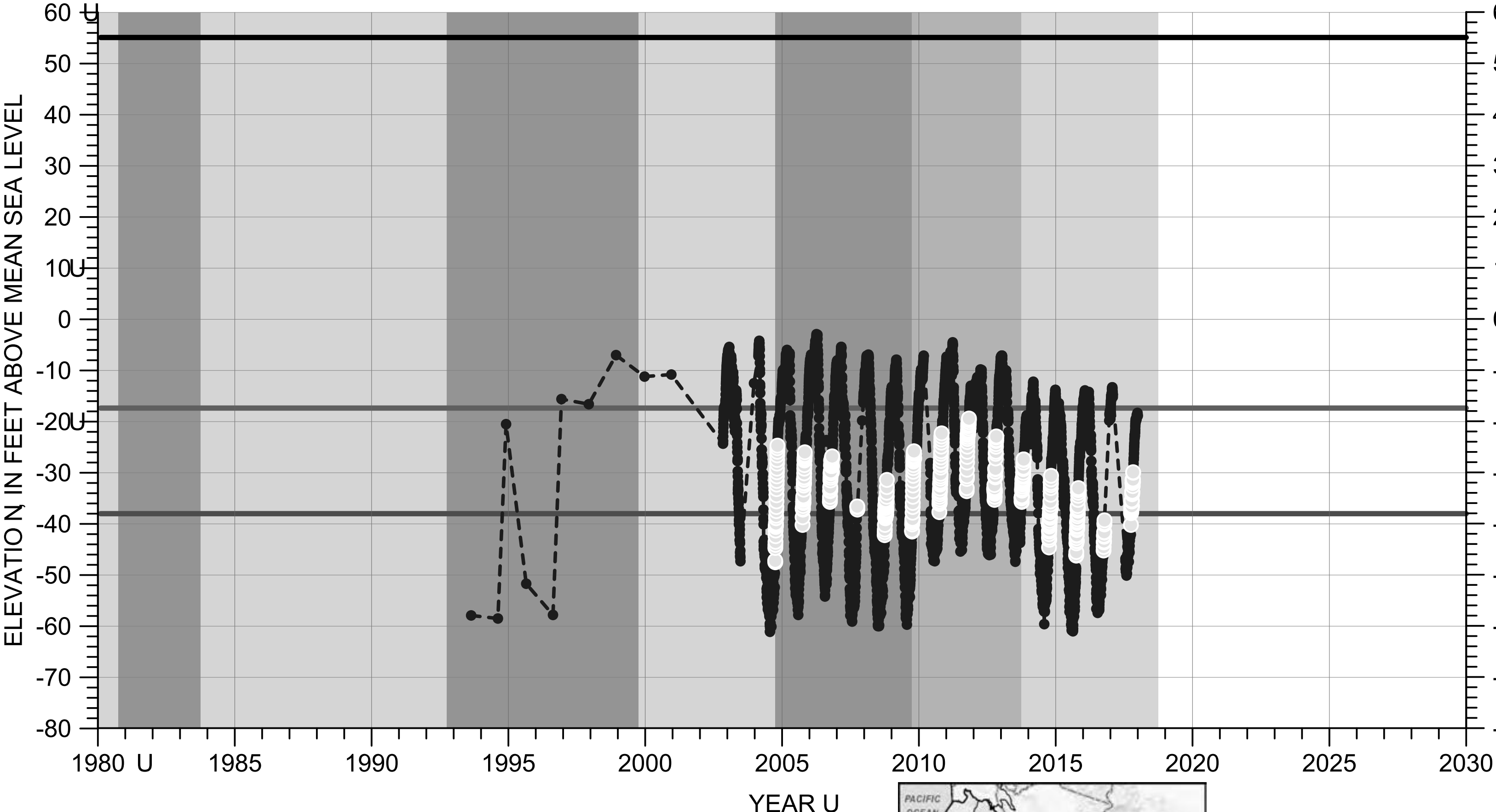
180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)

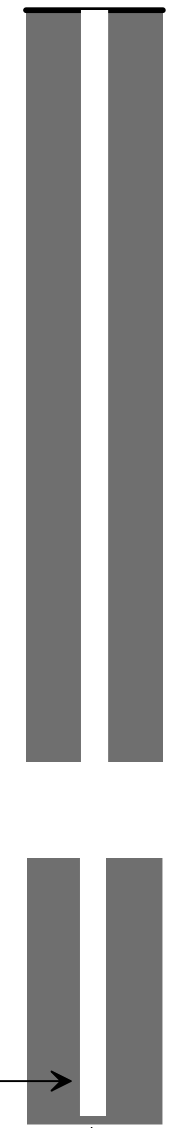


e

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 14S/03E-18C02 U

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





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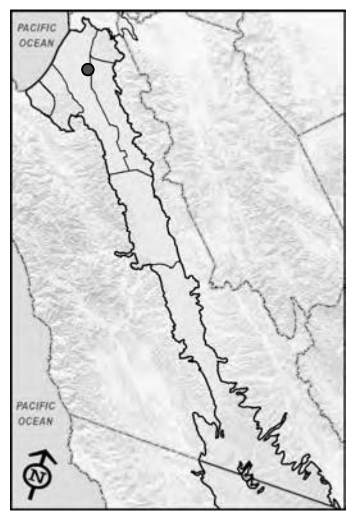
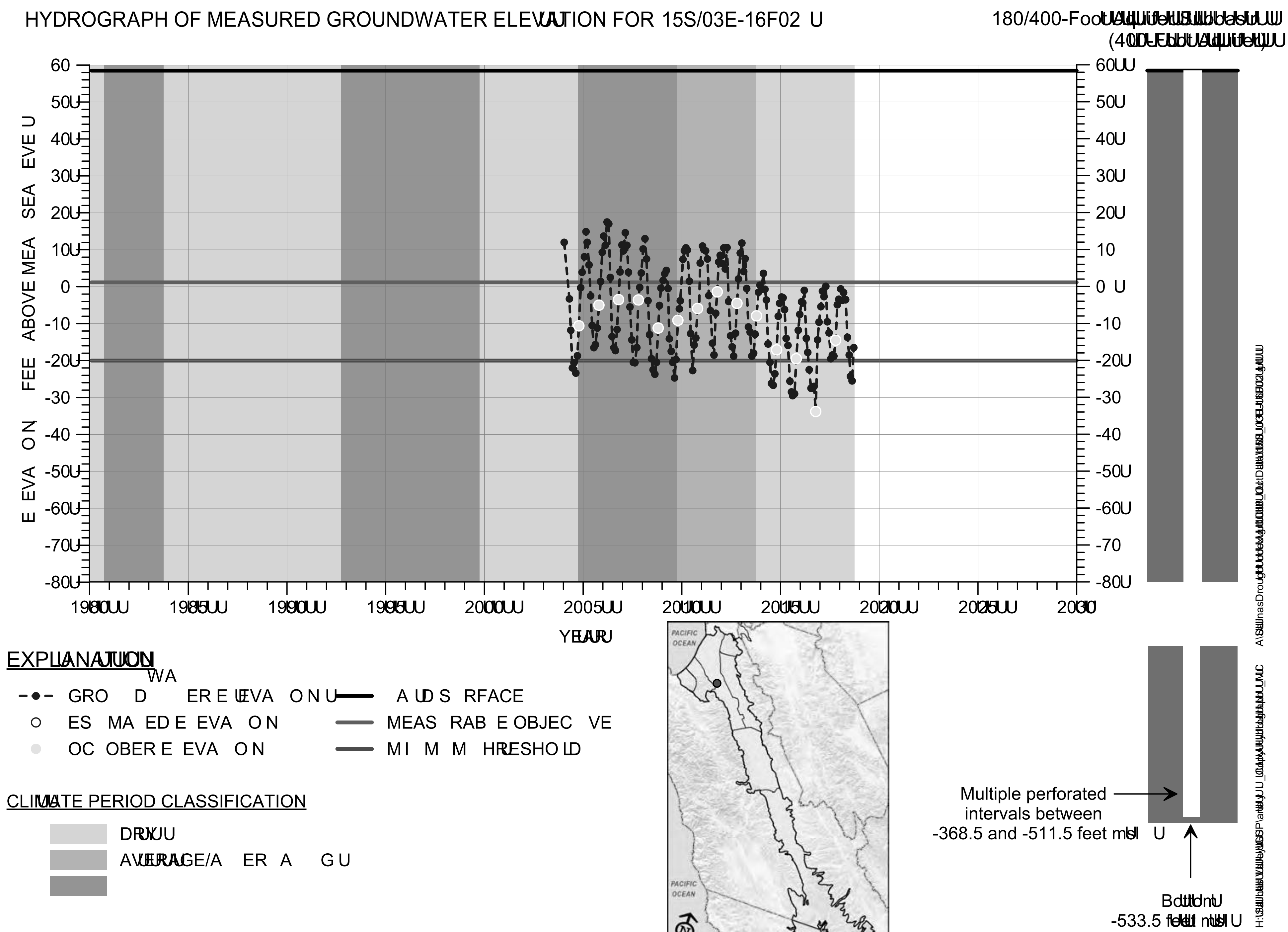
EXPLANATION

- GRO ND TER ELEVATIO N U
- ESTIMATED ELEVATIO N
- OCTOBER ELEVATIO N
- LAND SURFACE
- MEAS RABLE OBJECTIVE U
- MINIM M THRESHO LD

CLIMATE PERIOD CLASSIFICATION

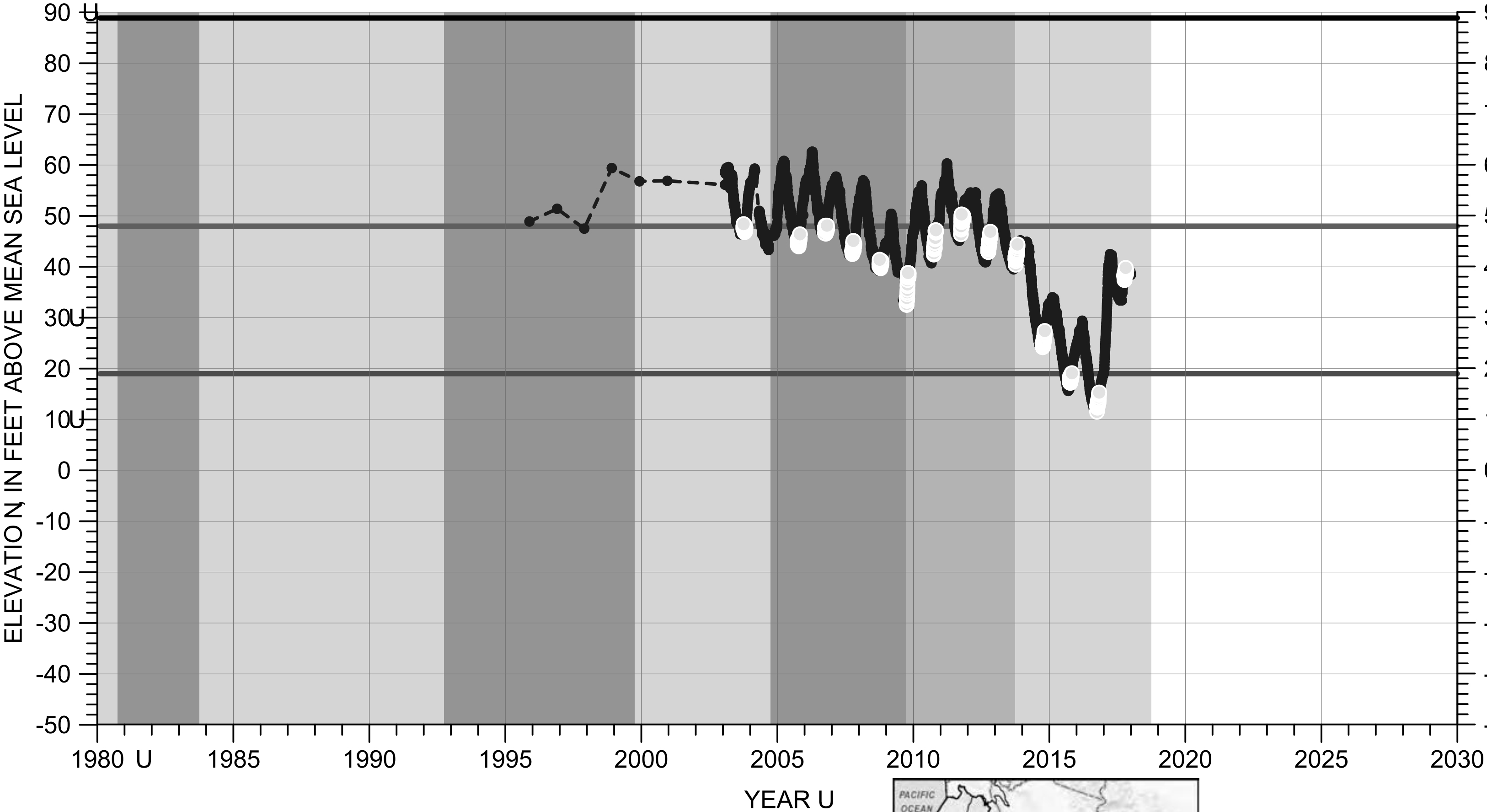
- DRY
- AVERAGE/ALTERNATING U
- T

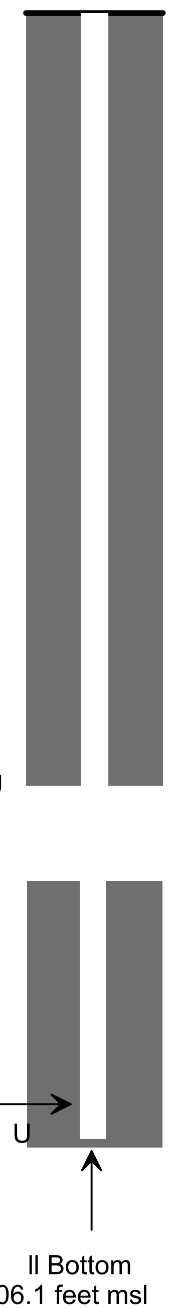



HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 15S/03E-16F02
180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
YEAR
EXPLANATION
GROUNDWATER ELEVATION
GROUND SURFACE
ESTIMATED ELEVATION
MEASURABLE OBJECTIVE
OCTOBER ELEVATION
MINIMUM THRESHOLD
CLIMATE PERIOD CLASSIFICATION
DRY
AVERAGE
PACIFIC OCEAN
Multiple perforated intervals between -368.5 and -511.5 feet msl
Bottom
-533.5 feet msl

HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 16S/04E-08H03 U

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





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EXPLUANATION

GRO ND TER ELEVATIO N U

ESTIMATED ELEVATIO N

OCTOBER ELEVATIO N

LAND SURFACE

MEAS RABLE OBJECTIVE U

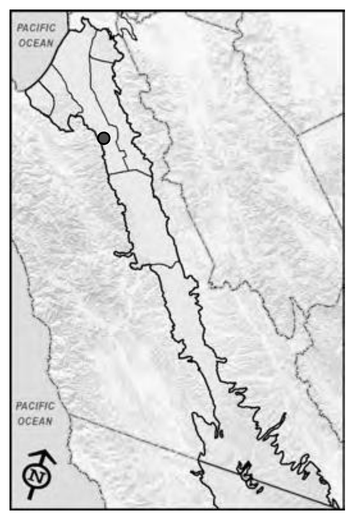
MINIM M THRESHO LD

CLIMATE PERIOD CLASSIFICATION

DRY

AVERAGE/ALTERNATING U

T



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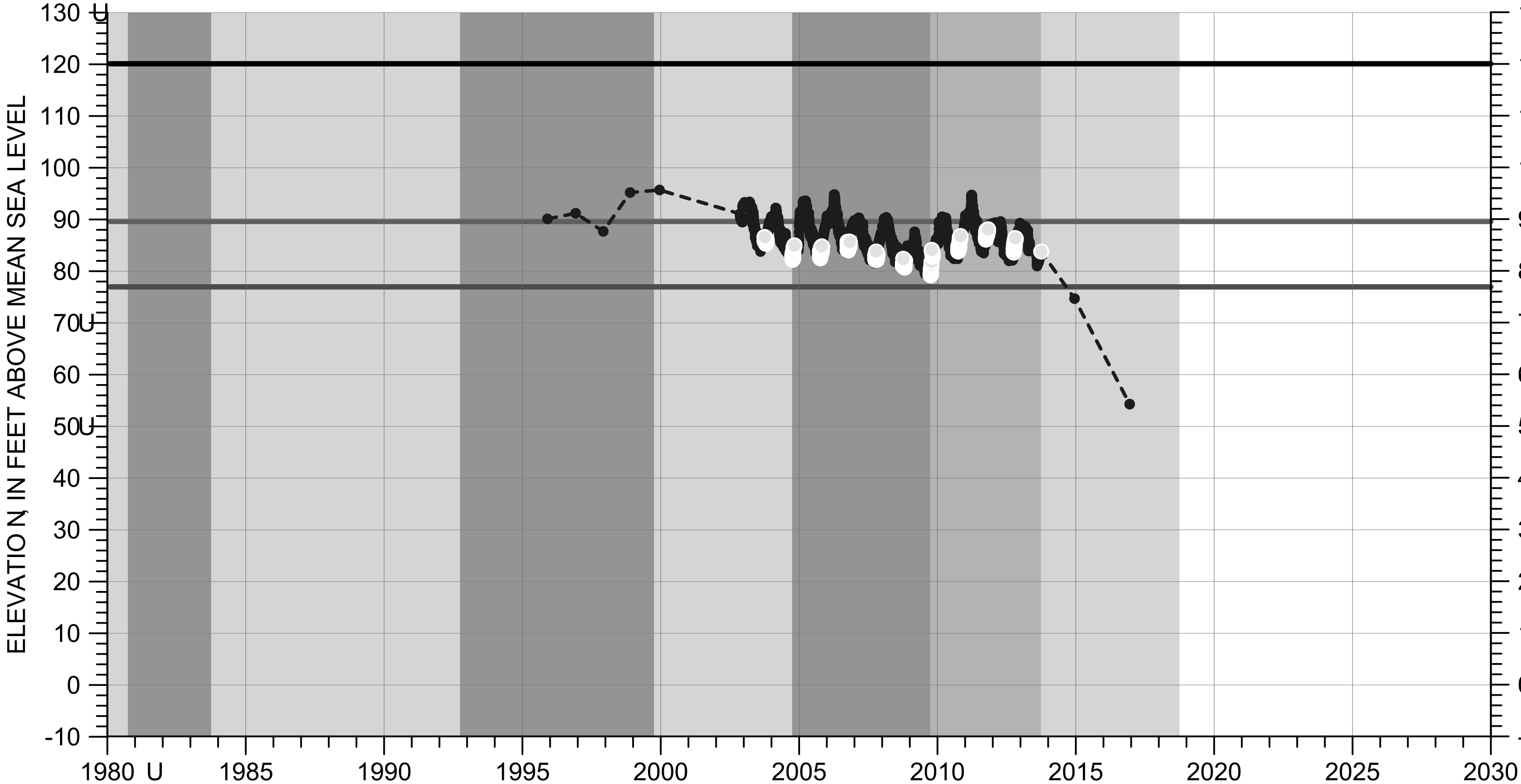
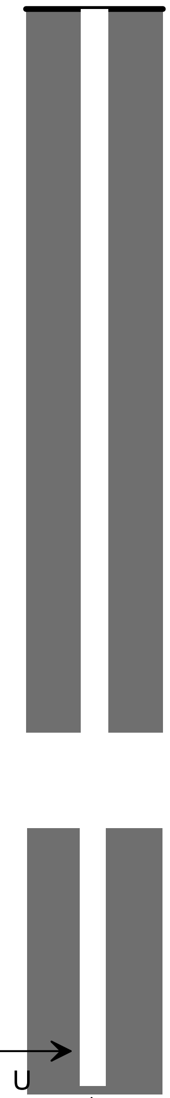
HYDROGRAPH OF MEASURED GROUNDWATER ELEVATION FOR 17S/05E-06C01 U

180/400-Foot Aquifer Subbasin
(400-Foot Aquifer)





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EXPLUANATION

GRO ND TER ELEVATIO N U

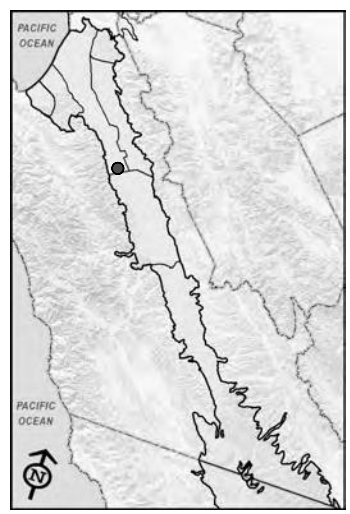
ESTIMATED ELEVATIO N

OCTOBER ELEVATIO N

LAND SURFACE

MEAS RABLE OBJEUCTIVE U

MINIM M THRESHO LD



A

CLIMATE PERIOD CLASSIFICATION

DRY

AVERAGE/ALTERNATING U

T

E

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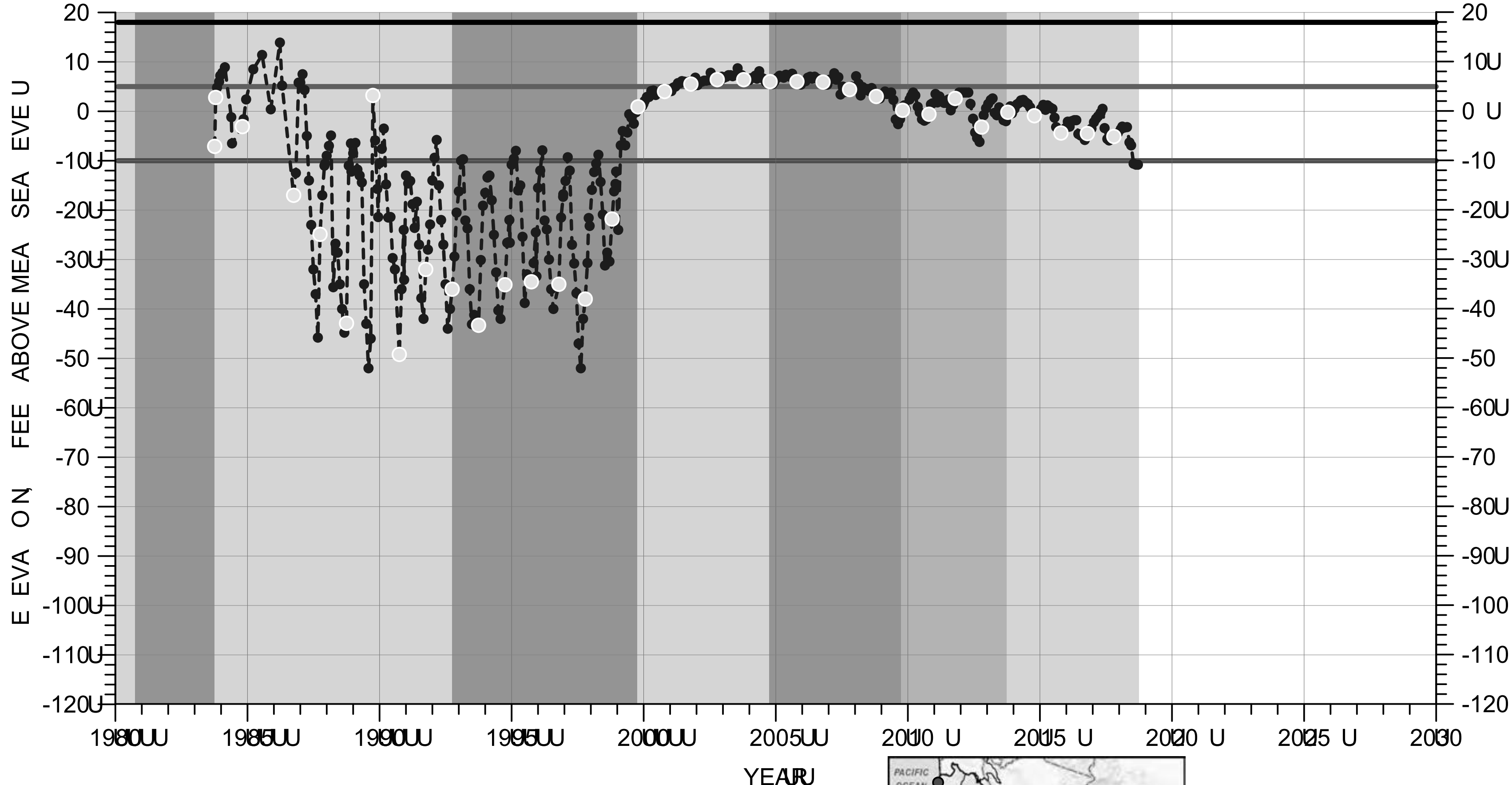
R

HYDROGRAPH OF MEASUREDGROUNDWATER ELEVATION FOR 13S/02E-19Q03

180/400-Foot Aquifer Subbasin
(Deep Aquifer)

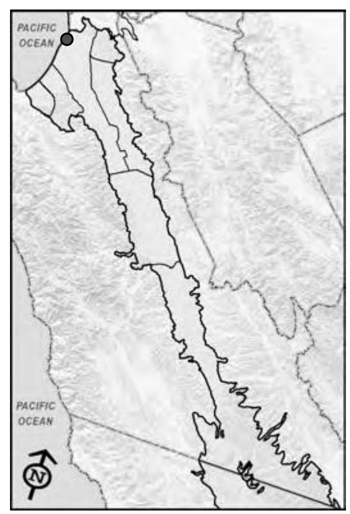


EXPLANATION

GRO D WA ER E EVA ON
ES MA ED E EVA ON
OC OBER E EVA ON
GROUND SURFACE
MEAS RAB E OBJEC VE
M M M HRESHOLD

CLIMATE PERIOD CLASSIFICATION

DRY
AVERAGE/A ER A G
WE



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Number	Document	Chapter	Table	Page	Figure	Date	Commenter	Comment	DW response	Status	Commenter doc name
8-1	180/400					5/2/19	Director Secondo	Director Secondo suggested including the seven percent in Chapter 8 also as a reference to how it compares to the 112,000 acre feet future long-term sustainable yield		Comment incorporated into Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-2	180/400					5/2/19	Tom Virsik	Tom Virsik wrote a letter of concern about the chapters not being completed in order, because it is difficult for the Board to make policy decisions. He questioned whether the DWR would find that the process is transparent with incomplete information	Comment noted	No change to Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-3	180/400			11		5/2/19	Director Brennan	Stated that the text is unclear on page 11 as to whether 2003 is the measurable objective unless referencing the quantification	D Williams will state more clearly that the 2003 water level is the mesurable objective	Comment incorporated into Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-4	180/400					5/2/19	Director McIntyre		In response to Director McIntyre, D Williams stated that he would prepare a table similar to the handout that Director Brennan distributed today summarizing all minimum thresholds and measureable objectives	Table included as Section 8.5	5-2-19 Planning Committee Minutes_Chapter 8
8-5	180/400					5/2/19	Director Secondo	Noted the error messages where the link was broken in the document. Would like the measurable objectives and historical data to be clear throughout the document and would like to express the threshold as a number instead of a percentage due to the small sampling	D Williams stated that we do not have the historical data for the deep aquifer and only have access to one well. D Williams will clarify the minimum thresholds in the deep aquifer and that we have the optoin to change the undesireable result as a number of exceedances instead of a percentage, but that is a policy decison	Question answered	5-2-19 Planning Committee Minutes_Chapter 8
8-6	180/400					5/2/19	Director McIntyre	Would like to choose a more recent year such as 2016 rather than 1991 for the Forebay for measurable objectives		Comment not incorporated at this time, as it does not pertain to the 180/400-Foot Aquifer Subbasin GSP	5-2-19 Planning Committee Minutes_Chapter 8
8-7	180/400			16		5/2/19	Director Brennan	Noted that the last sentence on page 16 is incomplete. The overhead on the 180/400 foot aquifer includes the Forebay and Upper Valley data, which was confusing	D Williams stated there was an ISP chaper on this. He would like to leave it in context	No change to Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-8	180/400					5/2/19	Director Secondo	Stated that all four graphs for th esubbasins should be in the ISP section and only the 180/400 should be in the 180/400 section	Comment noted	Chapter 8 for the 180/400-Foot Aquifer Subbasin only includes the appropriate graphs	
8-9	180/400					5/2/19			D Williams stated that we may want to differentiate between how to address and manage the sustainable criteria in the projects and actions part. Then we may want to revisit this criteria to decide if we are managing differently than this model's assumptions, in which case this may be the wrong number to report. We should revisit these numbers when we are managing, because the numbers are based on how much pumping has to occur to meet crop demand	No change to Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-10	180/400			17		5/2/19	Director Brennan	Stated that page 17 references natural recharge versus unnatural recharge, and it would be helpful to have an example		Comment incorporated into Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-11	180/400					5/2/19	Director Brennan and Director McIntyre	They would like more robust metering and reporting		Policy Decision included in list of policy issues that the Board must take up.	5-2-19 Planning Committee Minutes_Chapter 8
8-12	180/400					5/2/19	Nancy Isakson		D Williams, in response to N Isakson, will add that there is a data gap for domestic reporting for rural residential pumping, e.g. north county that is experiencing water quality issues	Sentence added to section 8.9.2 that identifies this as a possible data gap, but does not comit the SVBGSA to collecting additional groundwater quality data.	5-2-19 Planning Committee Minutes_Chapter 8
8-13	180/400					5/2/19	Director Secondo	Recommended considering abandoned wells as a groundwater extraction barrier	Comment noted	No change to Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-14	180/400					5/2/19	Tom Virsik	Stated there is not remotely enough information to make policy decisions. A consensus that we are looking at maintaining rather than improving the current situation, and the speaker would like the policy to state that instead of requiring a project	Comment noted - policy considerations for Board	No change to Chapter 8	5-2-19 Planning Committee Minutes_Chapter 8
8-15	180/400					5/6/19	Director Secondo	Referred to the statement "no new groundwater quality exceedances" so we should keep it to existing wells	D Williams stated that he would change this to "based on new new exceedances in existing monitoring wells"	Comment incorporated into Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8

8-16	180/400					5/6/19	Director Brennan	Referred to the statement in the Groundwater Quality Undesirable Result slide, "on average during one year, no groundwater quality minimum threshold shall be exceeded." She asked how zero can be averaged	D Williams stated he will rewrite this as he meant the average of mulitple water quality samples	Comment incorporated into Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-17	180/400					5/6/19	Nancy Isakson		D Williams, in response to N Isakson, stated he would include the Groundwater Quality Parameters table in Chapter 8	Table incorporated into Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-18	180/400	8.8.2.3				5/6/19	Nancy Isakson	Wondered where the data for Section 8.8.2.3 came from, given that 8.8.2 states that the dataset does not distinguish between agricultural and domestic and cannot be used for purposes of developing minimum thresholds and measurable objectives	D Williams will check to determine whether his staff made this distinction from the material that they downloaded and whether the statement in 8.8.2 should be deleted	Text revised	5-6-19 PC Special Meeting Minutes_Chapter 8
8-19	180/400					5/6/19	Director Brennan	Confirmed that the earlier direction was related to existing monitoring system versus new wells.	D Williams stated that he understands that the discussion was regarding existing wells that we have included	No change to Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-20	180/400					5/6/19	Les Girard	Noted that the requirements of the National Marine Fisheries biological opinion have been withdrawn, but the Water Resources Agency is operating under it as a safe harbor	D Williams will coordinate with Mr. Girard on the accurate phrasing	Text revised	5-6-19 PC Special Meeting Minutes_Chapter 8
8-21	180/400					5/6/19	Director Granillo	Director Granillo notes we will see water quality changes with release of summer flows		Comment noted	5-6-19 PC Special Meeting Minutes_Chapter 8
8-22	180/400					5/6/19	Director Brennan		D Williams, in resopnse to Director Brennan, stated he will add language that the GSA does not have any authority over the releases from the reservoir	Comment incorporated into Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-23	180/400					5/6/19	Director Brennan	Would like the policy questions identified	LP: a summary table of policy questions was developed and sent to Gary Petersen on 5/24/2019	No change to Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-24	180/400					5/6/19	Director Secondo	Asked whether we should be monitoring water quality if we do not control the river flow	D Williams stated there is no problem in looking at the information, but he defers to the Directors	Question answered	5-6-19 PC Special Meeting Minutes_Chapter 8
8-25	180/400					5/6/19	Director Secondo	Expressed concern about locking the GSA into monitoring when it does not have the authority	Commnet noted	No change to Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-26	180/400					5/6/19	Director Granillo	Stated that the language should say there are water quality changes that we cannot impact		Sentence added to section 8.9.4.1	5-6-19 PC Special Meeting Minutes_Chapter 8
8-27	180/400			50		5/6/19	Nancy Isakson	Referred to page 50 regarding land owners' property rights next to the river. She would like Mr. Williams to revisit this section because neither the State nor courts have made a determination as to underflow, and the section ignores the overlying groundwater rights		We believe the correct citation is page 53. The text makes no assessment regarding underflow or overlying groundwater rights.	5-6-19 PC Special Meeting Minutes_Chapter 8
8-28	180/400		8.8			5/6/19	Nancy Isakson	Questioned whether the amount of acre feet diverted from the Salinas River is that large, e.g. 185,000 acre feet in 2010. Stated that the Salinas Valley Water Coalition's litigation is ongoing and water law should be referenced in this section instead of the opinion that was included. A table of policy issues would help both the Advisory Committee and the Board to identify the policy issues and options	D Williams stated the data is self reported to the State (in response to N Isakson's question regarding Table 8.8)	Table was corrected in Chapter 8 to reflect revised calculations.	5-6-19 PC Special Meeting Minutes_Chapter 8
8-29	180/400					5/6/19	Tom Virsik	Stated that skewed diversion numbers may skew the 7% of pumping reduction. The Upper Valley suggests that ignoring surface water distrinctions is not what the DWR is looking for	D Williams responsed that the GSP will not solve all problems and is reiterative. But it should reflect the Agency's priorities	No change to Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-30	180/400					5/6/19	Nancy Isakson	Stated concern regarding the need for reconciliation	D Williams will note that there may be a data gap in the State Board's diversion reporting that should be addressed in the future	Comment incorporated into Chapter 8	5-6-19 PC Special Meeting Minutes_Chapter 8
8-31	180/400					5/1/19	Tom Virsik	The draft Chapters prominently cross-reference to a non-existent Chapter 6 (water budgets). Until Chapter 6 is/are reviewed, it is unfair to opine on draft Chapters 8. For example, one learrns of the "Basin" sustainable yield but not that of the individual Subbasins (other than the 180/400 in its own GSP). That basic information will inform the public on whether the GW levels are set correctly, among other metrics impossible to consider without Chapter 6		Chapter 6 draft has now released - Chapter 8 will be reviewed again after all Chapters have been released for comment	PlanningCommitteeComments_05012019_TomVirsik.

8-32	180/400			17/33		5/1/19	Tom Virsik	In varying degrees, the drafts lack consistency in the use of certain terms, specifically: basin, Basin and subbasin ("sub-basin" is used once). Broadly, it appears that "Basin" is meant to refer to the entire Valley as referenced in (the not yet updated post boundary changes) Bulletin 118. Yet, "Basin" is at times used to refer to what in other parts of the draft Chapters is termed a "subbasin." Cf. e.g. 17/33 (112 K AFY yield for the "Basin" -- the 180/400 with 17/193 (494 K AFY yield for the "Basin" -- an array of subbasins).		We will review the consitency in terminology prior to finalizing all GSP Chapters	PlanningCommitteeComments_05012019_TomVirsik Note: **<u>xx/yy</u>** in Page (xx represents page of the Chapter and yy is the page of the paginated packet)
8-33	180/400			10/26, 10/186		5/1/19	Tom Virsik	The draft content uses a term without (explicity) defining it. At several points, the content references "pumping allowances." See e.g. 10/26 and 10/186. The term needs a definition or reference as it is not a SGMA term of art		The phrase pumping allowance has been removed.	PlanningCommitteeComments_05012019_TomVirsik
8-34	180/400			50/66, 50/226		5/1/19	Tom Virsik	A so-called "Report of Referee" is quoted for a point of law. 50/66 and 50/226. That Report comes from a lawsuit being actively litigated, which cannot be precedential in any legal sense. Salinas Valley Water Coalition v. MCWRA et al, 17CV000157 (Monterey County Superior Court). That litigation does <u>not</u> involve the GSA, so its interests and views were absent from the process that led to the Report. Nor is a lawsuit a public or transparent process (in a SGMA sense) where others may influence, correct, or steer the Report based on the best available data. Moreover, that "Report" contains many other findings and views, some of which contradict directly or indirectly other parts of draft Chapters 8. The Report--whether its content is good or bad by whatever metric--should not be relied upon.		Although the Report of Referee I not precidential, it provides guidance for our GSP and is therefore included in the GSP. This GSP is a policy document, not a legal finding.	PlanningCommitteeComments_05012019_TomVirsik
8-35	180/400			57,73, 57,233		5/1/19	Tom Virsik	Surface (water) depletion thresholds are quantified in the draft content. But the relationship of the surface depletion to the sustainable yield is far from clear. Is the amount of depletion part of, in addition to, or bears no relationship to the sustainable yield figure for the Basin (or Subbasin)? See 57/73 and 57/233.		There is not effort to relate surface water depletion to sustainable yield in this chapter. This chpater only addresses sustainable management critera.	PlanningCommitteeComments_05012019_TomVirsik
8-36	180/400			57,73, 51,227, 51/67		5/1/19	Tom Virsik	The sections addressing the surface and groundwater interactions are insufficiently clear or documented. It appears the model is not yet ready for surface water interactions. <u>See</u> 57/73 ("once the calibrated historial SVIHM is made available") and 51/227. The content includes tables and graphics quantifying surface water diversions. <u>See</u> 51/67 et seq and 51/227 et seq. Were surface water diversions from the eWRIMS database taken into account? Are they double-counted with the "groundwater" diversions reported (per Ordinance) to the MCWRA?		Surface water diversions were accounted for in the Water Budget portion of the GSP	PlanningCommitteeComments_05012019_TomVirsik
8-37	180/400			58/74, 58/234		5/1/19	Tom Virsik	Oddly, the two Chapters 8's deviate noticeably at 8.10.4.2 Cf 58/74 with 58/234. In the 180/400 GSP, one of the bullet points states that riparian water rights holders are not regulated. In the ISP version of this section, the bullet point about riparian rights is replaced by one about de minimis pumping. Why the difference? Moreover, there is no lack of riparian pumpers with wells next to the river south of the 180/400, so why is that discussion absent in the ISP? Perhaps both riparian pumpers and de minimis pumpers belong at least in the ISP.		Versions will be reconciled.	PlanningCommitteeComments_05012019_TomVirsik

8-38	ISP			19/195		5/1/19	Tom Virsik	The ISP content lacks information about the newly added Paso Robles formation lands. No blame or fault is asserted -- only that with a lack of data and experience about the substantial "new" lands, the GSP should be explicitly note the "data gap" at this time. Whatever occurs with an Upper Valley GSP, the facts and circumstances may require that the Paso Robles lands be managed differently given the lack of data, i.e. a SGMA management area with its own sustainable yield, etc. The draft Chapter for the ISP should note that option for the Paso Robles lands instead of painting with a broad brush that implies the Paso Robles cannot be developed. See 19/195 (the Paso Robles lands are primarily not currently irrigated).		This comment will be addressed in the Upper Valley GSP.	PlanningCommitteeComments_05012019_TomVirsik
8-39	180/400					5/1/19	Tom Virsik	Conclusion: A great deal of work was put into the current (and all prior) Chapters, but the lack of Chapters 6, a far too hasty treatment of the newly added Paso Robles lands, a lack of clarity on the sources and relationship of the surface diversion numbers to the "groundwater" ones, and possibly incorrect separation of bullet points between the GSP and ISP -- among other noted instances of confusion or inquiry -- militate towards additional revisions before the drafts are further reviewed.	Comment noted	No change to Chapter 8	PlanningCommitteeComments_05012019_TomVirsik
8-40	180/400	8.5.2.3		7		5/16/19	Bob Jaques	1st paragraph - change word *"to"* to from…*"monitoring site is similar to or different from water level thresholds in nearby representative……"*		Comment incorporated into Chapter 8	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-41	180/400	8.5.4.1		15		5/16/19	Bob Jaques	2nd pararaph, text reads *"Over the course of any one year, no more than 15% of the groundwater elevation minimum thresholds shall be exceeded in any single aquifer."* Comment: The same wells should not have their Minimum Thresholds exceeded more than "X" times in any "Y" year period		Text revised	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-42	180/400	8.5.4.2		16		5/16/19	Bob Jaques	2nd bullet point under Expansion of de-minimis pumping, text reads, *"Individual de-minimis pumpers do not have a significant impact on groundwater elevations. However, many de-minimis pumpers are often clustered in specific residential areas. Pumping by these de-minimis users is not regulated under this GSP. Adding additional domestic de-minimis pumpers in these areas may result in excessive localized drawdowns and undersirable results."* Comment: This problem should be addressed as it could have a potential impact on the basin.		Comment noted	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-43	180/400	8.5.4.3		16		5/16/19	Bob Jaques	1st paragraph of Effects on Beneficial Users and Land Uses: The same wells should not have their Minimum Thresholds exceeded more than "X" times in any "Y" year period.		Text revised	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-44	180/400	8.6.2		17		5/16/19	Bob Jaques	2nd paragraph, text reads, *"As noted in the regulatory definition of minimum thresholds quoted above, the reduction on groundwater storage minimum threshold is established for the basin as a whole, not for individual aquifers. Therefore, one minimum threshold is established for the entire Basin."* Comment: It doesn't seem very protective of the individual aquifers if the reduction in storage is applied to the basin as a whole without regard to the reduction in storage from each aquifer.		Comment noted. The text has been left as is.	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-45	180/400	8.6.2.6		20		5/16/19	Bob Jaques	3rd bulletpoint: correct spelling from AF to AFY: The current water use factor is assumed to be 0.39 AFY/dwelling unit.		Comment incorporated into Chapter 8	5-16-19 AC Meeting Packet with Comments from Bob Jaques

8-46	180/400	8.6.4.2		22		5/16/19	Bob Jaques	2nd bulletpoint under Expansion of de-minimis pumping, text reads, *"Pumping by de-minimis users is not regulated under this GSP. Adding domestic de-minimis pumpers in the Basin may result in excessive pumping and exceedance of the long-term sustainable yield, an undersirable result."* : Comment: This problem should be addressed as it could have a potential impact on the basin.		Comment Noted	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-47	180/400	8.7.2.1		23		5/16/19	Bob Jaques	Comment on 2nd paragraph of the following *"These maps are devloped through analysis and contouring of the values measured at dedicated monitoring wells near the coast, as shown on Figure 8-6 and Figure 8-7."* - Comment: These contours will likely change shape over time, sometimes receding and sometimes advancing further inland. This will complicate determing if this Minimum Threshold has been exceeded.	Comment noted	No change to Chapter 8	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-48	180/400	8.7.2.2		27		5/16/19	Bob Jaques	1st paragraph text reads, "The minimum threshold for seawater intrusion is a single value for the entire Subbasin. Therefore, no conflice exists between minimum thresholds measured at various locations within the Subbasin." Comment: There should be a separate Minimum Threshold for each aquifer.		Text revised	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-49	180/400	8.8.2		31		5/16/19	Bob Jaques	See Item 2. *"They must have previously been found in the Subbasin at levels above the level of concern"* : Why should this be one of the two criteria?		This criterion shows that the constituenets are effectively a potential problem in the basin	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-50	180/400	8.8.2		32		5/16/19	Bob Jaques	Comment on Coliform bacteria COC list elimination: My understanding is that coliform is commonly monitored in water supply wells		These results are not commonly reported.	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-51	180/400	8.8.2		32		5/16/19	Bob Jaques	Comment on Strontium COC list elimination: Since this is listed as a constituent of concern, it seems like it should start being sampled for.		The GSA is not sampling for water quality independently; we are using data from other specific WQ programs; if they don't monitor certain parameters, we will not report them either	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-52	180/400	8.8.2.7		41		5/16/19	Bob Jaques	3rd paragraph under Domestic land uses and users, text reads, *"The degradation of groundwater quality minimum thresholds generally provides positive benefits to the Basin's domestic water users."* Comment: If existing exceedances are basically ignored and allowed to continue, this doesn't provide "positive benefits" to them.		Existing exceedances are not due to GSA actions or GSP implementation, therefore they do not fall under GSA's jurisdication. Other programs are in charge of water quality issues.	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-53	180/400	8.9.1		44		5/16/19	Bob Jaques	1st bulletpoint, text reads, *"Any land subsidence caused by lowering of groundwater levels occurring in the basin is significant and unreasonable."* Comment: Subsidence will not always cause a problem for example, if there is no infrastructure in an area where subsidence occurs, it will not cause any damage.		Comment noted. However, it will be difficult to *a-priori* identify areas where subsidence is acceptable and where it is not.	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-54	180/400	8.9.2.2		46		5/16/19	Bob Jaques	The wording of the following sentence doesn't make sense (see 1st bulletpoint under Chronic lowering), "*...therefore the subsidence minimium thresholds will not compel in a significant or unreasonable lowering of groundwater levels."*		Text revised	5-16-19 AC Meeting Packet with Comments from Bob Jaques
8-55	180/400					5/16/19	Steve McIntyre	Perhaps you could word the bullet point concerning the impacts of surface diversions/groundwater pumping on the environment to read: "ground water pumping is assumed not to be unreasonable for environmental flows but this assumption is subject to the process of establishing an HCP" (or something to this affect)		Comment incorporated into Chapter 8	

8-56	180/400					5/16/19	Dallas Tubbs	The text describes how the basin will be managed as a whole to prevent undesirable results. Given the criteria set forth in Chapter 8, it seems likely there will be an undesirable result in the 180/400-Foot aquifer. Accordingly, does this mean that there will be basin-wide groundwater pumping limits, and if so, how will those be apportioned?		Each subbasin will have a unique sustainable yield that will drive the pumping limit in the subbasin	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-57	180/400	8.5.2.2		7		5/16/19	Dallas Tubbs	The text states: "*Minimum thresholds for groundwatwer elevations are compared to the range of domestic well depths in the Subbasin. Conclusions from the comparison identifies modest impact to domestic wells in both the 180- and 400-foot aquifers.*" Question: Should there be a similar evaluation of the other well categories in the Subbasin to make the minimum thresholds impacts and trade-offs visible?		Only domestic wells were considered because they are commonly the most shallow wells in an area.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-58	180/400	8.5.2.3	8-1	6,7		5/16/19	Dallas Tubbs	See 1st bulletpoint Change in Groundwater Storage: The text states. "*The groundwater elevation minimum thresholds are set at or above existing groundwater elevations* ." We recommend that a "date" column be added to Table 8-1 on page 6, listing the baseline date for each well and measurement.		Because this table (Now Table 8-2) does not include any monitoring data, the date column is not included.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-59	180/400	8.5.2.3		7		5/16/19	Dallas Tubbs	Shouldn't the groundwater elevation minimum threshold be set when the GSP is adopted? Given the time gap between when these elevations were taken, groundwater elevations could be in an undesirable state before the GSP is submitted		We must include minimum thresholds in the GSP. The basin will not be out of compliance when we adopt the plan. The basin is only out of compliance if we exceed minimum thresholds 20 years after adoption.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-60	180/400	8.5.2.3		8		5/16/19	Dallas Tubbs	See 2nd bulletpoint Seawater Intrusion: In addition to text here, it would be helpful to incorporate the MCWRA maps here showing the current areal extent of seawater intrusin (or at least when citing the reference to other locations in the GSP). Please include a discussion of the groundwater gradient because this is the driving force for seawater intrusion		A discussion of seawater intrusion is included in Chapter 5.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-61	180/400	8.5.2.3		8		5/16/19	Dallas Tubbs	Question: If groundwater elevations are maintained at the minimum threshold (i.e. "at or above the existing groundwater elevations") does that mean there will be no further expansion of the areal extent of seawater intrusion?		No. Seawater intrusion will continue if groundwater elevations are simply maintained at current levels.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-62	180/400	8.5.4.1		15		5/16/19	Dallas Tubbs	Undesirable Results: One of the metrics to determine whether the basin is compliant is based on water level measurements. The proposed metric is 15% of wells below the groundwater elevation minimum threshold (or a cluster or wells) yields an undesirable result. One well in this - is already below the threshold, so three additional wells below the threshold would be considered an undesirable result (or less if the wells are in a cluster.) Also, with respect to seawater intrusin, it would seem that the location of the wells plays an important role. As worded, the requirement seems overly restrictive. Without supporting arguments, Chevon proposes the number of well be increased		Comment noted	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-63	180/400	8.5.4.1		15		5/16/19	Dallas Tubbs	Questions: (1) Have the 23 existing monitoring wells been deemed to be a statistically meaningful quantity? If not, what is the recommended number of monitoring wells needed in the basin to provide statistically meaningful data?; (2) Given the seemingly small sample size (23 wells), we question if 15% is likely to be too sensitive to be representative of the overall basin; (3) As a hypothetical question, if four wells with an undesirable result are all located at the northern end of the Subbasin, would that require the GSA to take action across the entire Basin, or just the effected Subbasin?		1) no assessment of statistical signficance has been developed. 2) Comment noted. 3) if four wells exceed minimum thresholds anywhere in the subbaisn, it will require the GSA to take action	5-19-19_180-400_Ch8_Chevon_DallasTubbs

8-64	180/400	8.6.2.6		20		5/16/19	Dallas Tubbs	Under Method for Quantitative Measurement of Minimum Threshold, third bulletpoint: Text states, *"The current water use factor is assumed to be 0.39 AF/dwelling unit."* Please cite the reference that supports the water use factor of 0.39 AF per dwelling unit.		Reference added	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-65	180/400	8.6.3.1		21		5/16/19	Dallas Tubbs	Paragraph under Method for Setting Measurable Objectives: This section is unclear (i.e., it reads like the "chicken and egg" conundrum). Please discuss the relationship between storage and pumping.		Although the SMC is called reduction in groundwater storage, the regulations require that the metric be total pumping. The GSP simply follows the regulations.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-66	180/400	8.8.1		30		5/16/19	Dallas Tubbs	Degraded Water Quality SMC, Under 1st bulletpoint: The terms "SMCL" and "MCL" need to be defined in the document.		Comment incorporated into Chapter 8	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-67	180/400	8.8.2	8-2	35		5/16/19	Dallas Tubbs	This section describes metrics around water quality. The metrics seem excessively restrictive. For example, *"Zero additional municipal production wells that are in the GSP monitoring program shall exceed the sulface SMCL of 250 mg/L."* The secondarly MCL for sulface (which has to do with taste/odor and not toxicity) should not be metric. Many of the constituents listed in this section are naturally occurring, and some may be just below the MCL or SMCL. If these concentrations increase for a reason besides groundwater withdrawal (including natural variability) it does not make sense to include these. Chevron has concern that the metric requiring "zero additioinal wells" is setting the basin up for failure. Analyticial variability, or bad sampling methods could yield an undesirable result. Interpreting analytical data is much more difficult than water level meaurement data.		This issue is addressed in the Degradation of Groundwater Quality undesirable result section. The undesirable result is based only on exceedences directly caused by the GSA's actions or projects	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-68	180/400	8.8.2		31		5/16/19	Dallas Tubbs	The text reads, *"Constituents of concern must meet two criteria: 1. They must have an established level of concern as an MCL or SMCL, or a level that reduces crop production, 2. They must have previously been found in the Subbasin at levels above the level of concern."* Why is the word "previously" inserted in the second bullet point?		The word previously has been deleted.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-69	180/400	8.8.2		32		5/16/19	Dallas Tubbs	The text reads, *"These constituents are monitored with the ILRP wells and are known to cause reductions in crop production when irrigation water includes them in high concentrations."* The term "high concentrations" is ambiguous. Should a specific value be stated for each constituent?		Comment incorporated and question answered	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-70	180/400	8.8.2		32		5/16/19	Dallas Tubbs	The text reads *"As noted in Section 5.6.3, based on available information there are no mapped groundwater contamination plumes in the Subbasin."* What is the documentation to support this statement? Also, is seawater intrusion not defined as a plume?		Seawater intrusion is a separete sustainability indicator	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-71	180/400	8.8.2.1		36		5/16/19	Dallas Tubbs	As previously mentioned, the zero exceedances expectation is setting up the GSP for failure. Analytical variability, or bad sampling methods could yield an undesirable result. Interpreting analytical data is much more difficult than monitoring water level measurement data. We recommend using historical data to develop a reasonable tolerance band for each parameter.		This issue is addressed in the Degradation of Groundwater Quality undesirable result section. The undesirable result is based only on exceedences directly caused by the GSA's actions or projects	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-72	180/400	8.8.2.1	8-3	37		5/16/19	Dallas Tubbs	We note that several of the constituents of concern listed appear to show incorrect MCLs (e.g. chloride, Radon-222, Sulface and TDS). What standard is being used for this information?		Calivornia drinking water standards are used, as specified in Table 8-4	5-19-19_180-400_Ch8_Chevon_DallasTubbs

8-73	180/400	8.8.4.1		43		5/16/19	Dallas Tubbs	Under *Criteria for Defining Undesirable Results:* To clarify, does this section mean that future projects or management actions SVBGSA might undertake will be executed in such a way that an undesirable result does not occur?		This section does mean that any project or management action undertken by the SBBGSA will not diretly lead to an undesirable result	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-74	180/400	8.8.4.2		43		5/16/19	Dallas Tubbs	2nd bulletpoint Groundwater Recharge, text reads, *"Active recharge of imported water or captured runoff could modify groundwater gradients and move one of the constituents of concern towards a supply well in concentrations that exceed relevant limits."* Does this statement mean that ground water recharge can't contain anything that has an MCL above the threshold?		That is correct	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-75	180/400	8.9.2.3		47		5/16/19	Dallas Tubbs	3rd paragraph states, *"Therefore, the minimum thresholds in the 180/400-Foot Aquifer Subbasin is zero subsidence."* Setting an absolute value for subsidence is unwise. The minimum threshold should be stated in terms of a subsidence metric measured over time. For example, is 1 cm of change over 40 years unacceptable? We advise waiting until historial InSAR data has been obtained and evaluated prior to setting the minimum threshold. Because ground elevations can change over time unrelated to water extraction, some subsidence may be reasonable depending on the rate of change		Historical InSAR data have now been obtained and are being incorporated. We will continue to use the zero subsidence metric, but will incorporate measurement error into our definition of zero subsidence.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-76	180/400	8.10.2		51		5/16/19	Dallas Tubbs	2nd paragraph, text reads, *"However, without good historical data or a numerical model, it is difficult to assess whether and where the stream is connected to underlying groundwater."* Perhaps it would be best to postpone setting a minimum threshold for depletion of interconnected surface water until more data can be captured or a numerical mode is made available.		We must include minimum thresholds in the GSP. This thrshold can be modified as additional data are collected.	5-19-19_180-400_Ch8_Chevon_DallasTubbs
8-77	180/400					5/16/19	Gary Petersen	Stated that the Integrated Sustainability Plan is being tabled temporarily.	D Williams stated that the slides still include some of the sustainability indicators for all the Valley	Question answered	2019-05-16 AC Minutes
8-78	180/400					5/16/19	Robin Lee	Why aren't the groundwater elevation measurable objectives set to stop seawater intrusion?	D Williams stated the measurable objective is not the same as the groundwater elevation, because intrusion could be stopped by pumping water out as well as by raising water levels.	Question answered	2019-05-16 AC Minutes
8-79	180/400					5/16/19	Abby Taylor Silva	How many wells have exceeded the minimum threshold in 2015?	D Williams stated that he would have to report back on how many wells would have exceeded the minimum threshold in 2015	Still to be done	2019-05-16 AC Minutes
8-80	180/400					5/16/19	Norm Groot	What is the definition of the not to exceed 15% for Undesirable Results?	D Williams stated that the not to exceed 15% he proposes for Undesirable Result can be revisited at least every five years and even before the completion of this process to determine whether we can attain the objectives with the financing we have. A public process would be required	Question answered	2019-05-16 AC Minutes
8-81	180/400					5/16/19	Robert Burton	What is the criteria for the representative period selection.	D Williams stated that the representative period was selected to include reservoir operations and wet and dry period, but it could be expanded or contracted. D Williams does not believe the 1992 minimum threshold was an outlier year in Figure 8-1 as there were 3 years that reached this level	Question answered	2019-05-16 AC Minutes
8-82	180/400					5/16/19	Bob Jaques	Might be a good idea to not show the same wells that are below the minimum threshold each year	D Williams will note not to add the same wells below the minimum threshold every year so to avoid always penalizing the same people	Text revised	2019-05-16 AC Minutes
8-83	180/400					5/16/19	Dallas Tubbs	Is the 15% measurement for undesirable results too low as a representation of the entire basin?	D Williams will note that the 15% measure for undesirable results may be too low if the monitoring wells are not representative of the entire basin	Comment noted	2019-05-16 AC Minutes
8-84	180/400					5/16/19	Harold Wolgamott	Should add footage when addressing the 15% Undesirable Results	D Williams will consider Harold's comment "by X feet" to the 15% referenced in Undesirable Results, e.g. 2 feet or 5 feet	No change to text. It would be wiser to simply change the minimum thresholds	2019-05-16 AC Minutes

8-85	180/400					5/16/19	Tom Virsik	References his previous written comments. The concentration of exceedances seems to scream a need for a management area	Comment noted	No change to Chapter 8	2019-05-16 AC Minutes
8-86	180/400					5/16/19	Heather Lukacs	Stated there should be different management areas for drinking water protections, e.g. it is not acceptable for 15% to be the undesirable result measure.	D Williams stated we will note the question whether we should have management areas near public water supply wells to avoid exceedances around those wells	Comment Noted	2019-05-16 AC Minutes
8-87	180/400					5/16/19	?	?	Mr. Williams stated that significant policy question include whether we should expand the existing groundwater pumping reporting requirements and define pumping allowance.	Question answered	2019-05-16 AC Minutes
8-88	180/400	8.6.2.6				5/16/19	Abby Taylor Silva	Can we charge de minimis users and require metering? Regarding 8.6.2.6, "Method for Quantitative Measurement of Minimum Threshold" asked about a process for collecting data that is not currently reported.	D Williams stated that we can charge de minimis users but cannot require metering. In response to Taylor Silva's question about collecting data defined under 8.6.2.6, D Williams stated that this is a policy decision in the implementation plan and the reporting system can be expanded, perhaps through the WRA	Question answered	2019-05-16 AC Minutes
8-89	180/400					5/16/19	Bob Jaques	Stated the regulations' requirement to report for the basin as a whole is not a good idea and wondered if the GSA could have minimum objectives and thresholds for each aquifer	D Williams stated that setting specific pumping amounts for each aquifer would require more calculations; not doing so could result in other sustainability criteria being violated	Question answered	2019-05-16 AC Minutes
8-90	180/400	8.6.2.2				5/16/19	Robin Lee	Asked about Section 8.6.2.2, Depletion of Interconnected Surface Waters, and what if we do not like whiat is going on today.	D Williams asked her to hold the question		2019-05-16 AC Minutes
8-91	180/400					5/16/19	Tom Ward/Howard Franklin	In response to Tom Ward, Howard Franklin stated there are 47 or 48 deep aquifer wells, and they are collecting on most of those wells. They are not all in the pressure area		Question answered	2019-05-16 AC Minutes
8-92	180/400					5/16/19	Bob Jaques	Stated that the isocontour line could change, and it may be better to say the total area is the measure.	D Williams stated that the regulations say it is line we cannot cross. The map indicates there are not huge fluctuations annually. If we implement certain projects, it could affect the isocontour. We can expand the isocontour to allow some flexibility. But when implementing projects, it may harm other indicators.	Question answered	2019-05-16 AC Minutes
8-93	180/400					5/16/19	Howard Franklin	Stated that the 2018 data does not show the isocontour line going backwards and a larger buffer over that should be allowed	Comment noted	No change to Chapter 8	2019-05-16 AC Minutes
8-94	180/400					5/16/19	Harold Wolgamott	Suggested moving the isocontour line further inland, halfway between where it is and Highway 1		Comment noted. This is a policy decision to be discussed with Board	2019-05-16 AC Minutes
8-95	180/400					5/16/19	Abby Taylor Silva	Asked if the undesirable result could be established year one of projects without knowing what the data would be.	D Williams responded that the DWR is looking for definitive, quantifiable items. Suggests 2017 as a buffer. When we get to the five-year date of the Plan, it could be changed at that point	Question answered	2019-05-16 AC Minutes
8-96	180/400					5/16/19	Heather Lukacs	The 2017 year could be reviewed for change five years from now	D Williams stated that it is worth defining the minimum threshold that is currently further inland than 2017, so he would like more feedback. It will depend on the financing to implement a project to stop seawater intrusion	Question answered	2019-05-16 AC Minutes
8-97	180/400					5/16/19	Nancy Isakson	She agreed with Heather Lukacs that the 2017 year should be retained to ensure that something is done	Comment noted	No change to Chapter 8	2019-05-16 AC Minutes
8-98	180/400					5/16/19	Dallas Tubbs	Would like to think about chain of command and protocols on how to test wells so it is equivalent and replicated well to well	D Williams stated that we are not collecting samples but gathering data from others' samplings	Question answered	2019-05-16 AC Minutes
8-99	180/400					5/16/19	Harold Wolgamott	Noted we should only use reliable data	D Williams stated that we would come up with a new list of wells and new minimum thresholds and objectives with every five-year update. They would not use a well redrilled in the same spot	Question answered	2019-05-16 AC Minutes
8-100	180/400					5/16/19	Nancy Isakson	Why are nitrates not included as constituents of concern in ag wells	D Williams stated that nitrates were not included because they are pushed into an ag well and do not negatively impact crop production, so the grower would not have to abandon the well	Question answered	2019-05-16 AC Minutes

8-101	180/400					5/16/19	Bob Jaques	Stated that we should be sampling for constituents of concern	D Williams responded that under SGMA, we are not sampling but are looking at whether we are causing any harm. The Regional Board is responsible for cleaning up the basin	Question answered	2019-05-16 AC Minutes
8-102	180/400					5/16/19	Norm Groot	?	D Williams stated they are setting additional nitrates exceedances at zero unless the DWR does not accept their proposal for undesirable results to be defined as "On average during any one year, no groundwater quality minimum threshold shall be exceeded as a direct result of projects or management actions taken as part of GSP implementation."	Question answered	2019-05-16 AC Minutes
8-103	180/400					5/16/19	Horacio Amezquita	Asked when the GSA will address the problem of increasing nitrate concentration and well pollution.	D Williams responded that the GSA would not take this issue on if it is unrelated to SGMA. We are looking at projects that would have an impact on water quality	Question answered	2019-05-16 AC Minutes
8-104	180/400					5/16/19	Heather Lukacs	Asked how are we rationalizing missing data because wells are not sampled regularly	D Williams responded that the mandate is to increase water supply without harming water quality using existing data	Question answered	2019-05-16 AC Minutes
8-105	180/400					5/16/19	Dallas Tubbs	Commented that absolute subsidence is as important as the rate of change, so the threshold would work in over time	D Williams stated that on May 6, 2019, DWR announced they will provide InSAR data that will show monthly change in ground surface. Stated that the minimum threshold for subsidence would be a very low rate of subsidence and not zero subsidence	Insar data now included in GSP. Decision was to retain zero subsidence with acknowledgment of measurement error	2019-05-16 AC Minutes
8-106	180/400					5/16/19	Harold Wolgamott	Agreed with Mr Tubbs and would like a better definition of the minimum threshold definition of no subsidence that impacts infrastructure		Comment noted	2019-05-16 AC Minutes
8-107	180/400					5/16/19	Emily Gardner	Asked about the reference to infrastructure	D Williams stated the legislation is written in that way, and there is a decrease in storage in clay where there is no pumping	Question answered	2019-05-16 AC Minutes
8-108	180/400					5/16/19			D Williams stated the surface water depletion section includes many policy questions	Commment noted	2019-05-16 AC Minutes
8-109	180/400					5/16/19	Robin Lee	Asked whether we agree that the impact on our river flows is significant but not unreasonable	D Williams answered that whether we are having an impact on ecosystems that are groundwater dependent is a different policy question	Question answered	2019-05-16 AC Minutes
8-110	180/400					5/16/19	Howard Franklin	Stated that the WRA will be redefining how to provide environmental flows, so how do we say the MCWRA is successfully achieving environmental flows in the Salinas River	D Williams responded that the Plan is based on the best data currently available and will be revisited in three to five years	Question answered	2019-05-16 AC Minutes
8-111	180/400					5/16/19	Howard Franklin	Objects to the language that they are successfully achieving environmental flows	D Williams considered modifying the language to reflect that the WRA is operating under the NOAA previous biological opinion. It is difficult to say we will not meet those environmental flows if we do not know what they are, but this is a policy issue	Question answered	2019-05-16 AC Minutes
8-112	180/400					5/16/19	Nancy Isakson	Questions whether we can say that stream depletion is not unreasonable. In response to D Williams response, she said that is not what she is saying and will provide D Williams with some quoted language	D Williams stated that the statement is open for discussion. Since the structures operate in a way that implicitly understands depletion rates, we have already addressed reservoir depletion rates so it is not unreasonable. However, we could say release less water in Nacimiento and get the same amount of flow if we had less depletion	Question answered	2019-05-16 AC Minutes
8-113	180/400					5/16/19	Donna Myers	Stated that "successfully achieving" should be changed to "providing water flows"		Comment incorporated into Chapter 8	2019-05-16 AC Minutes
8-114	180/400					5/16/19	Charles McKee	Suggested "successfully provided environmental flows as long as requirements were in place."		Comment incorporated into Chapter 8	2019-05-16 AC Minutes
8-115	180/400					5/16/19	Donna Myers	Asked if the lakes are considered in the statement "Limited recreational opportunities on the Salinas River, therefore groundwater pumping is not unreasonable for recreational flows," and whether this is an accurate statement	DW said lakes are not considered at this point because the pumping is not depleting lakes. However, lakes are a secondary consideration we could address	Question answered	2019-05-16 AC Minutes

8-116	180/400					5/16/19	Robin Lee	Asked where the environmental community's concern about habitats is addressed. She is concerned about wells on smaller tributaries that may be depleting ecosystems	D Williams stated that we have mapped potentially dependent ecosystem but not known groundwater dependent ecosystems. This is a policy decision. He has not identified which we want to protect. Implementation could include a project to hire a biologist to visit sites identified by aerial photos to assess whether they are groundwater dependent or not. Then the group could make policy recommendations on importance and establishing policies, but it will take some time. He requested further feedback as to whether we are having an unreasonable impact and how we address groundwater dependent ecosystems or should we address, better understand, and protect them. D Williams invited Committee members to provide additional input as soon as possible for inclusion for the Board's consideration.	Question answered	2019-05-16 AC Minutes
8-117	180/400					5/16/19	Harold Wolgamott	Stated that the GSA does not include surface water, e.g., pumping in Chualar would not have environmental factors directly affected	D Williams stated that this raises the question of do we think pumping is significant and unreasonable. If you are pumping from the 400 foot aquifer, it would be hard to say cut back to improve stream flows.	Question answered	2019-05-16 AC Minutes
8-118	180/400					5/16/19	Robin Lee	Would like a written description of what Mr. Williams needs to develop good decisions on the ecology.	D Williams stated he is understanding that some people would like to see ecosystems and that we may have overstated the case about no significant and unreasonable impacts. But on the other hand, there is uncertainty whether we can say that it is unreasonable. He's looking for feedback. He can help guide the Committee, but policy ideas are tough because there is not much data that we can rely upon	Question answered	2019-05-16 AC Minutes
8-119	180/400					5/16/19	Robin Lee	Added that we could propose that we get the ecosystem data	D Williams stated we could map them or look at shallow groundwater levels that are within 15 feet to 20 feet, and then we can say we know it is a Groundwater Dependent Ecosystem. Then it becomes a policy decision whether to maintain it as a viable system and whether to implement projects and plans to protect them. D Williams summarized the comment as what is the policy as to whether we are having a significant and unreasonable impact.	Question answered	2019-05-16 AC Minutes
8-120	180/400					5/16/19	Heather Lukacs	Asked whether the Agency or a standard of law would determine "significant and unreasonable."	D Williams stated that the law says the Agency decides, but there will be disagreement regardless of what is decided	Question answered	2019-05-16 AC Minutes
8-121	180/400					5/16/19	Tom Virsik	Stated that the direction should be to make it simpler and less complex	D Williams summarized to focus the discussion on pumping impacts on the 180/400 foot aquifer and not on the entire river.	Question answered	2019-05-16 AC Minutes

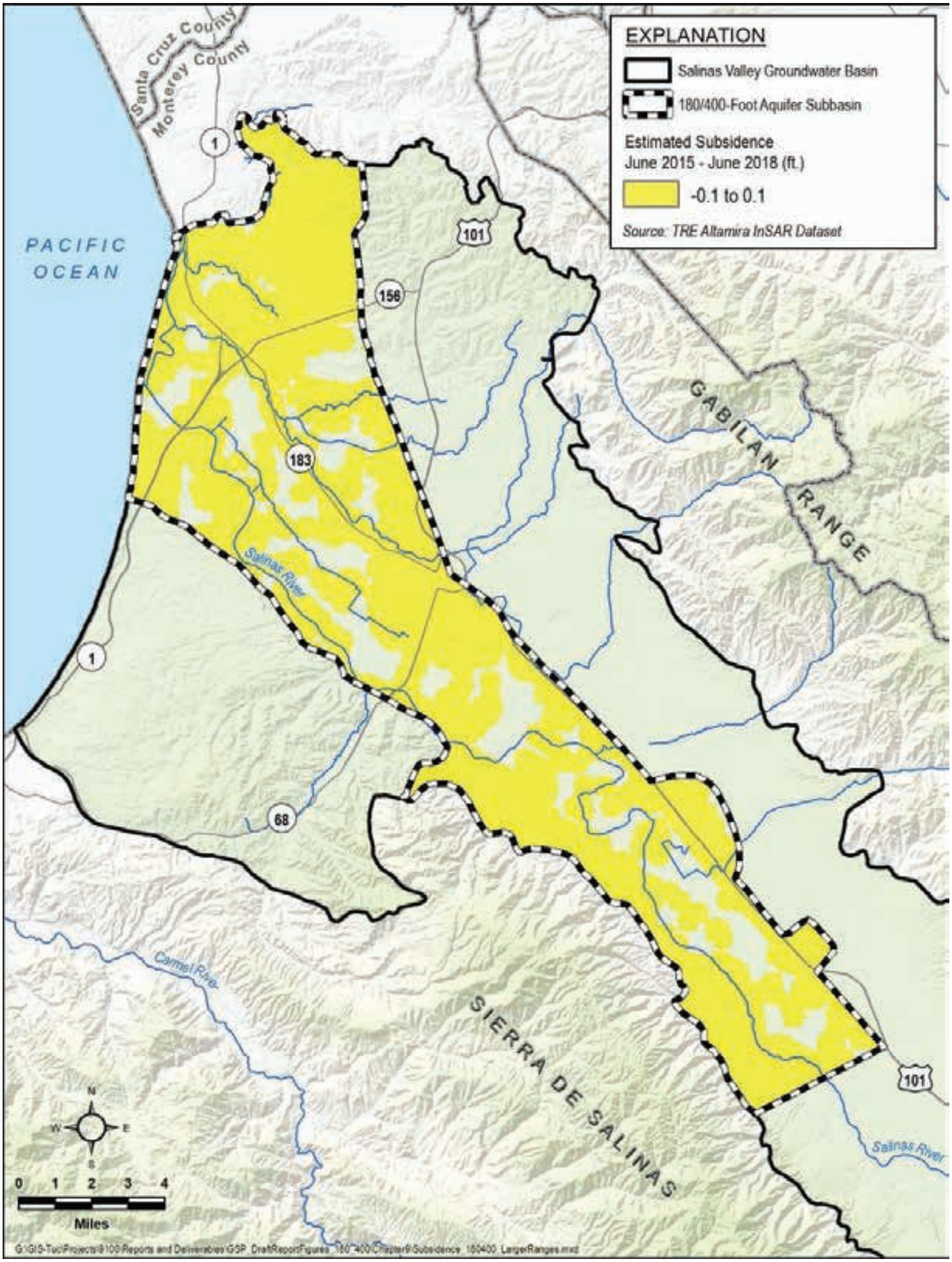
SUBSIDENCE DATA

Section 8.10 of the 180/400-Foot Aquifer GSP discusses sustainable management criteria for subsidence. These criteria are now based on satellite-derived InSAR data provided by DWR. These data were not available when the discussion of known subsidence was drafted for Chapter 5. Chapter 5 will be re-written to include the recently available InSAR data.

To help the Board of Directors understand the criteria established in Section 8.10, we are forwarding a map showing the InSAR subsidence data in the 180/400-Foot Aquifer between June 2015 and June 2108. The yellow area on the map is the area with measured changes in ground elevation of between -0.1 and 0.1 feet. As discussed in Section 8.10, because of measurement error any measured ground level changes between -0.1 and 0.1 feet is is considered the area of no subsidence.

The white areas on the map are areas with no data.

The map shows that no measurable subsidence has been recorded anywhere in the 180/400-Foot Aquifer Subbasin between June 2015 and June 2018.


EXPLANATION
Salinas Valley Groundwater Basin
180/400-Foot Aquifer Subbasin
Estimated Subsidence
June 2015 - June 2018 (ft.)
-0.1 to 0.1
Source: TRE Altamira InSAR Dataset
Santa Cruz County
Monterey County
PACIFIC OCEAN
GABILAN RANGE
SIERRA DE SALINAS
Salinas River
Carmel River
1
101
156
183
68
N
S
E
W
0 1 2 3 4
Miles