

# MADERA SUBBASIN

Sustainable Groundwater  
Management Act (SGMA)

*Joint Groundwater Sustainability  
Plan*

APPENDIX 3. SUSTAINABLE  
MANAGEMENT CRITERIA

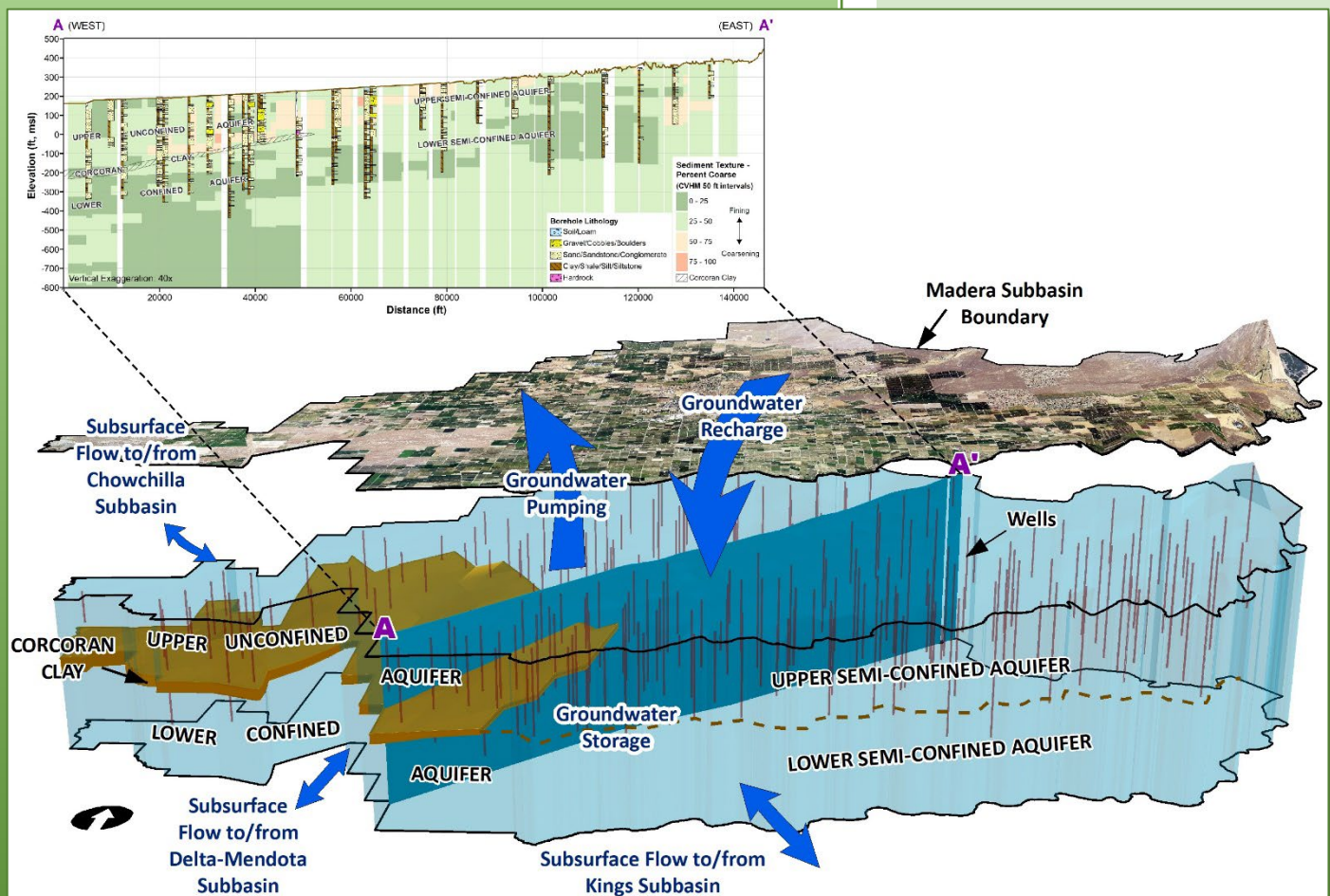
Technical Appendices 3.A. through 3.L.

January 2020, Amended January 2025



Prepared by

Dauids Engineering, Inc. (Amended GSP)  
Luhdorff & Scalmanini (Amended GSP)  
ERA Economics  
Stillwater Sciences and  
California State University, Sacramento



*Madera Subbasin*  
Sustainable Groundwater  
Management Act  
**Joint Groundwater Sustainability Plan**

Technical Appendices 3.A. through 3.L.

**January 2020**

**Amended January 2025**

**Prepared For**

Madera Subbasin Coordination Committee

**Prepared By**

Davids Engineering, Inc. (Amended GSP Team)  
Luhdorff & Scalmanini (Amended GSP Team)  
ERA Economics  
Stillwater Sciences and  
California State University, Sacramento

## **APPENDIX 3. SUSTAINABLE MANAGEMENT CRITERIA**

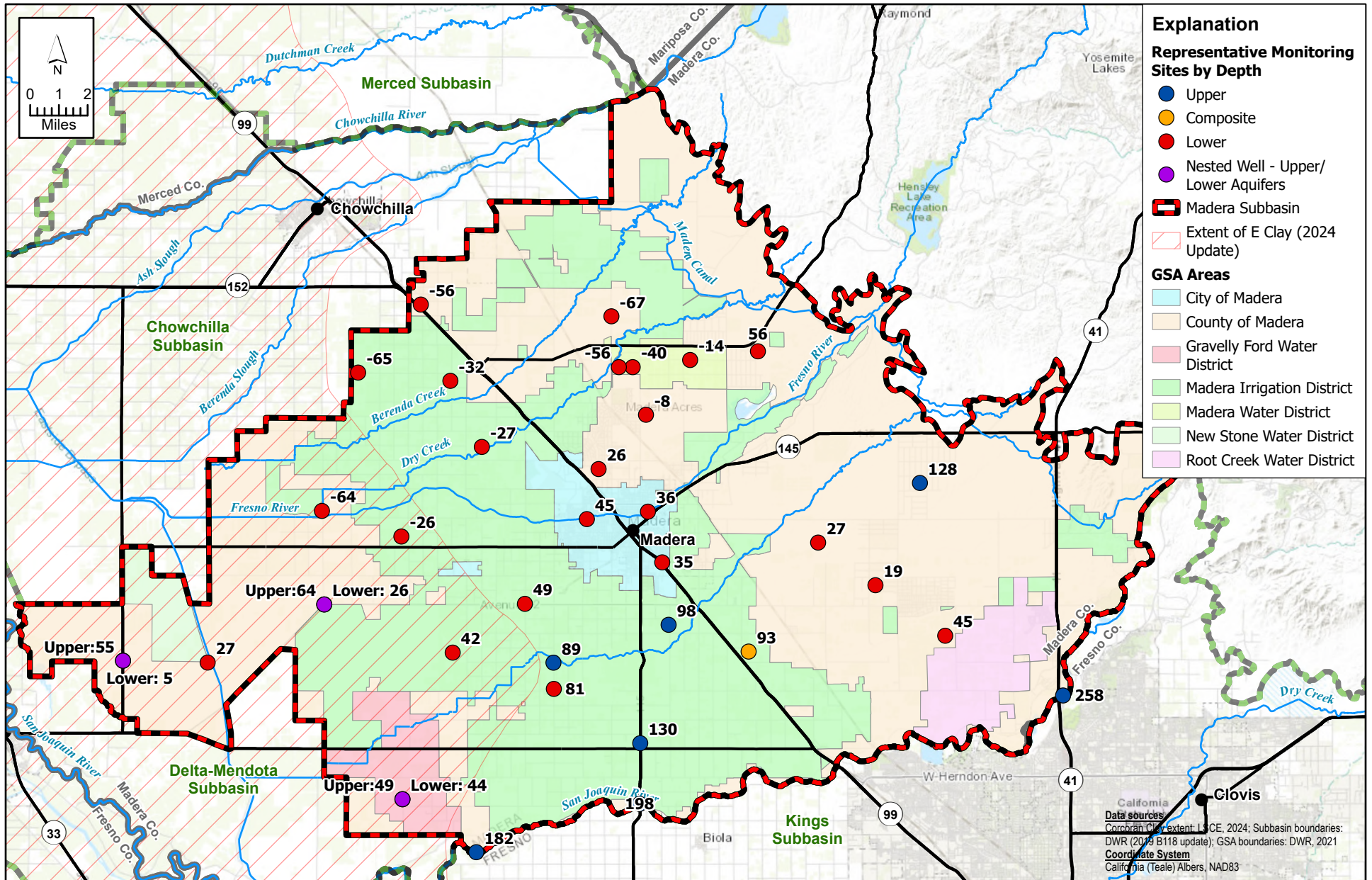
- 3.A. Measurable Objectives and Minimum Thresholds for Groundwater Levels.
- 3.B. Measurable Objectives and Minimum Thresholds for Groundwater Quality.
- 3.C. Economic Impacts of Accelerated Demand Reduction Program.
- 3.D. Economic Analysis and Framework for the Domestic Well Mitigation Program.
- 3.E. Madera Subbasin Domestic Well Mitigation Program Draft Memorandum of Understanding.
- 3.F. Emergency Tank Water Program Flyer.
- 3.G. Madera Subbasin Infrastructure Sensitivity Assessment.
- 3.H. Subsidence Data Gaps Workplan.
- 3.I. Interconnected Surface Water Updates.
  - 3.I.a. Interconnected Surface Water Data Gaps Workplan.
  - 3.I.b. Memorandum of Understanding Establishing an Interconnected Surface Water Working Group.
- 3.J. Supplemental Monitoring Networks.
- 3.K. Madera Subbasin Joint GSP First Periodic Update – Groundwater Level Representative Monitoring Site (RMS) Network Update.
- 3.L. Madera Subbasin Joint GSP First Periodic Update – Groundwater Quality Representative Monitoring Site (RMS) Network Update.

## **APPENDIX 3.A. MEASURABLE OBJECTIVES AND MINIMUM THRESHOLDS FOR GROUNDWATER LEVELS**

Prepared as part of the  
**Joint Groundwater Sustainability Plan  
Madera Subbasin**

January 2020  
Revised March 2023  
Amended January 2025

**GSP Team:**  
Davids Engineering, Inc. (Revised GSP Team)  
Luhdorff & Scalmanini (Revised GSP Team)  
ERA Economics  
Stillwater Sciences and  
California State University, Sacramento



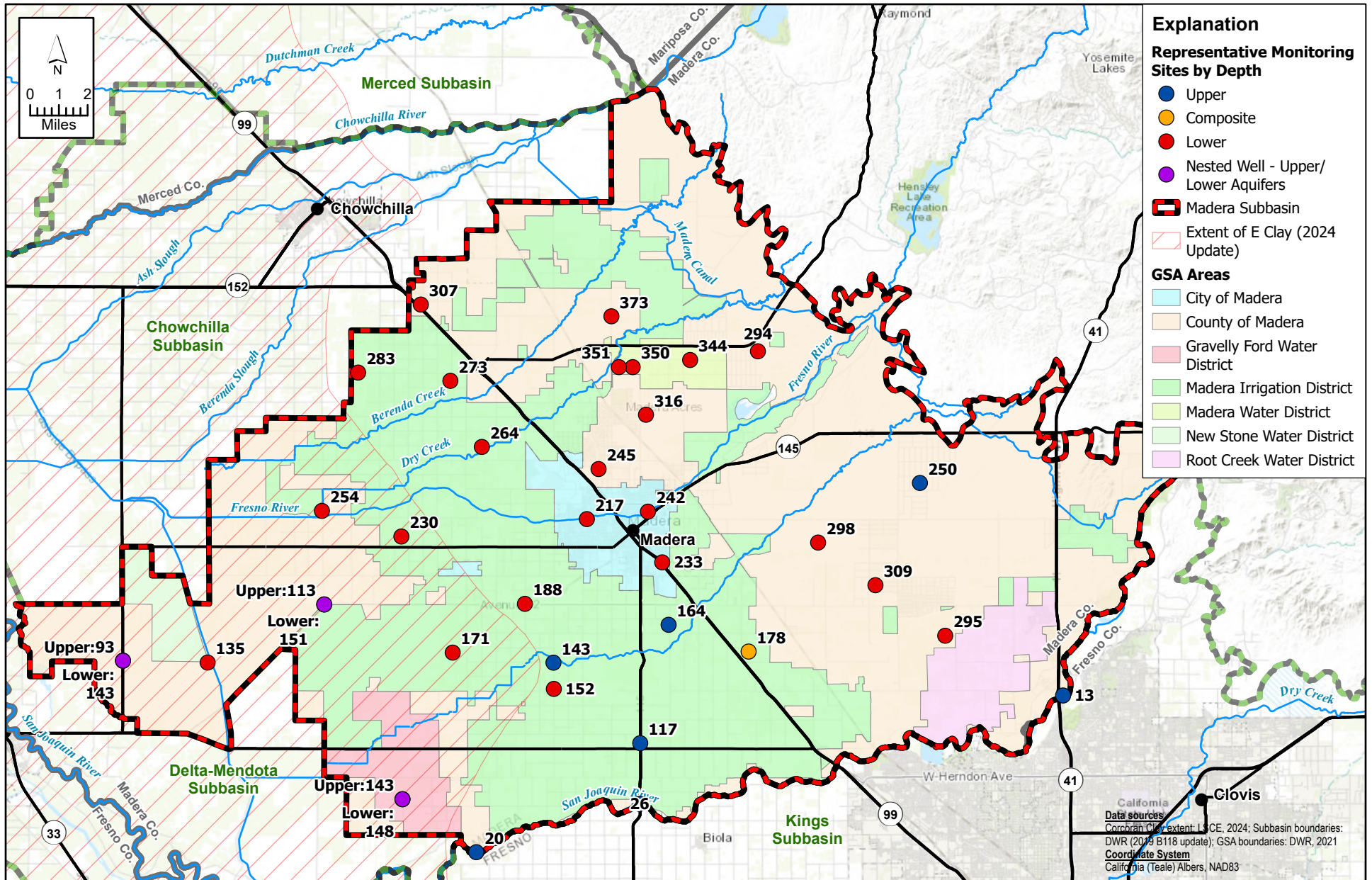
X:\2024\24-010 (1) Davids Eng. - Madera Subbasin 5-Year GSP Update\GIS\MAD\_Five\_Year\_Update\MAD\_Five\_Year\_Update.aprx; RMS\_WL\_MT\_ELEV

FIGURE 3.A-1



Elevation of Groundwater Level Minimum Thresholds

Madera Subbasin  
Groundwater Sustainability Plan - First Plan Amendment



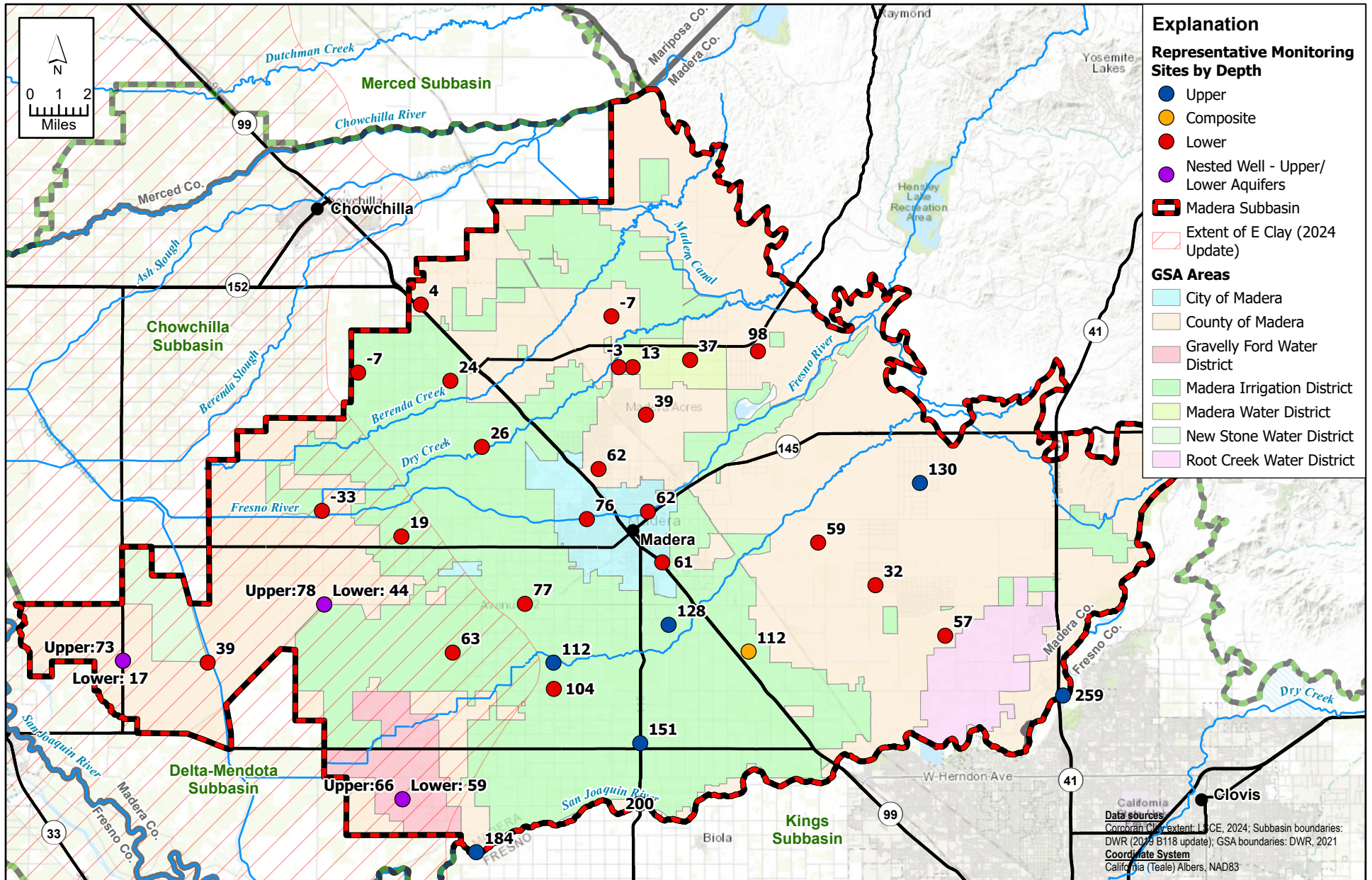
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FIGURE 3.A-2



Depth to Groundwater Level Minimum Thresholds

Madera Subbasin  
Groundwater Sustainability Plan - First Plan Amendment



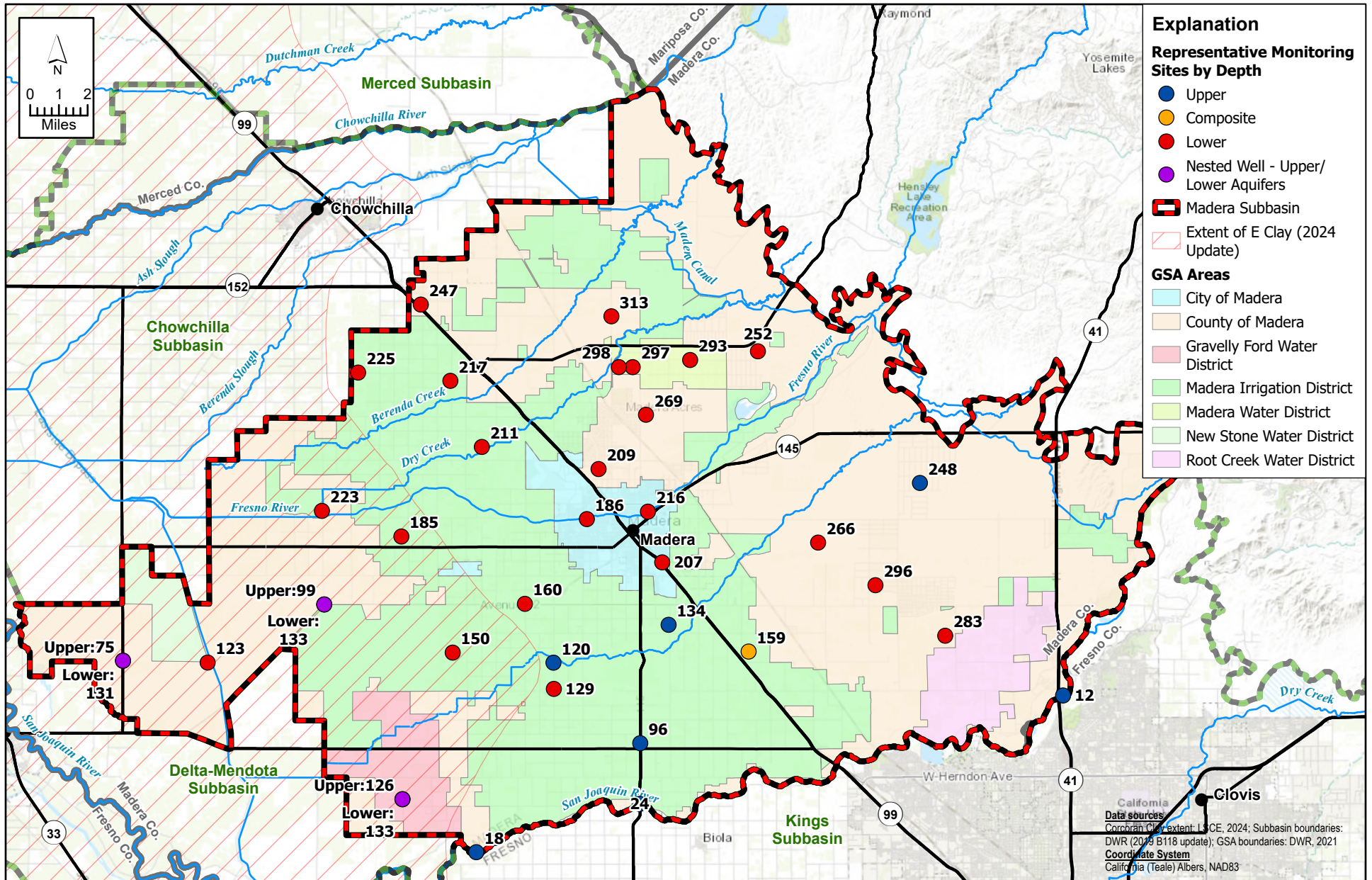
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**FIGURE 3.A-3**

**Elevation of Groundwater Level Measurable Objectives**

Madera Subbasin  
Groundwater Sustainability Plan - First Plan Amendment





X:\2024\24-010 (1) Davids Eng. - Madera Subbasin 5-Year GSP Update\GIS\MAD\_Five\_Year\_Update\MAD\_Five\_Year\_Update.aprx; RMS\_WL\_MO\_DEPTH

**FIGURE 3.A-4**



**Depth to Groundwater Level Measurable Objectives**

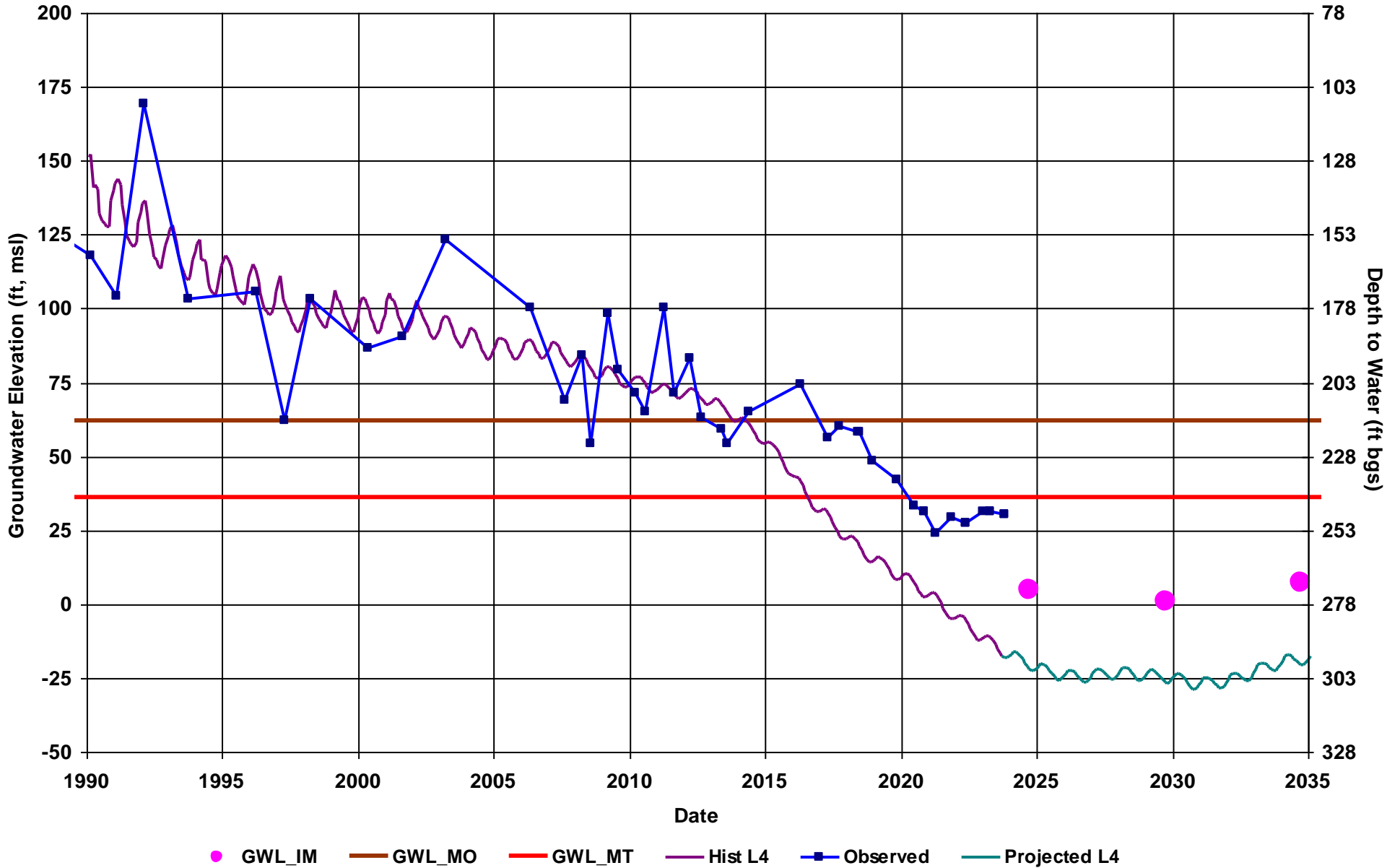
*Madera Subbasin  
Groundwater Sustainability Plan - First Plan Amendment*



Well Name: City\_of\_Madera\_24  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 278  
RMS ID: COM RMS-1

Total Depth (ft): 520  
Perf Top (ft): 210  
Perf Bottom (ft): 510  
Top Model Layer: 4  
Bottom Model Layer: 4

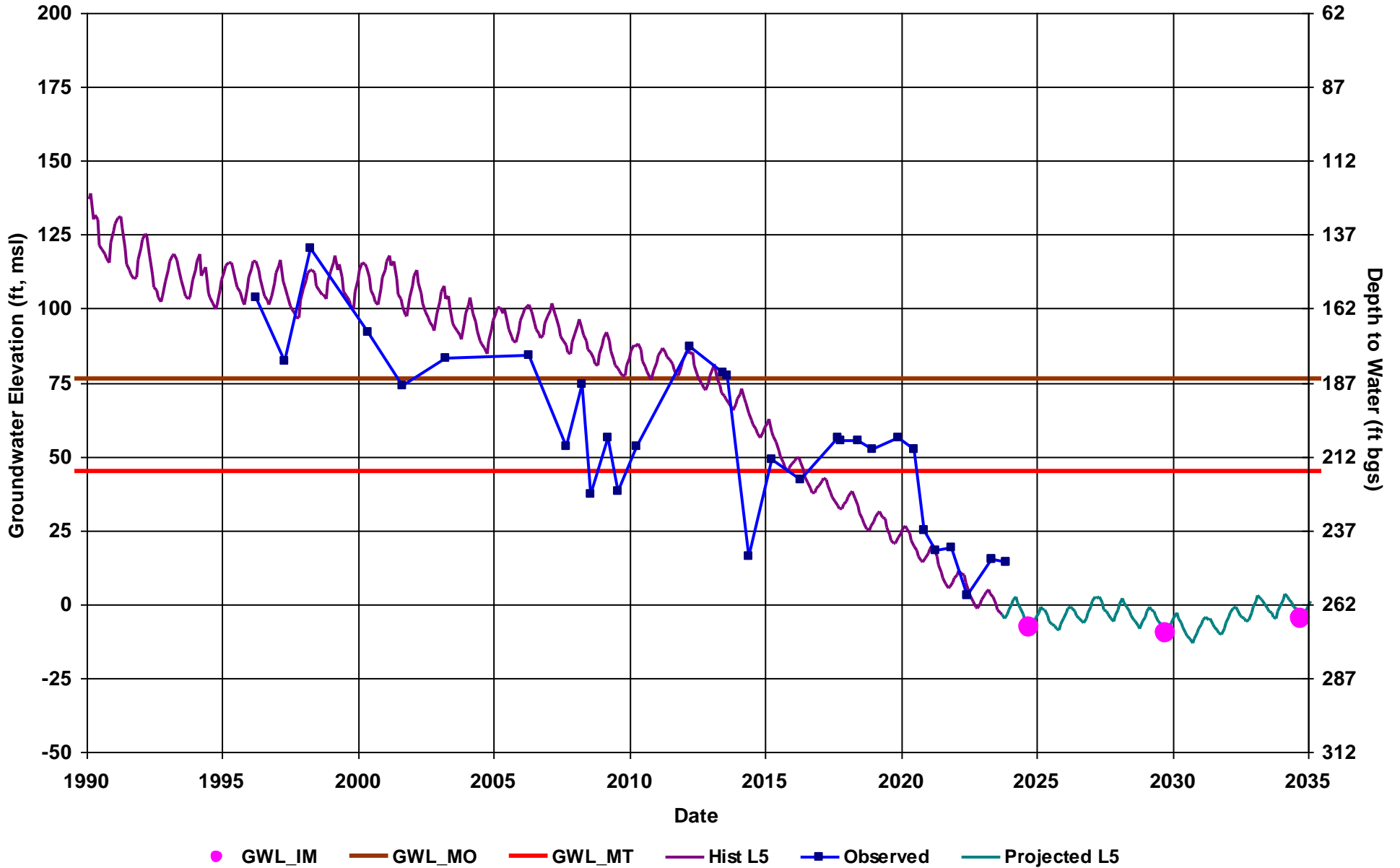
GSA: City of Madera



Well Name: City\_of\_Madera\_29  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 262  
RMS ID: COM RMS-2

Total Depth (ft): 590  
Perf Top (ft): 370  
Perf Bottom (ft): 590  
Top Model Layer: 5  
Bottom Model Layer: 5

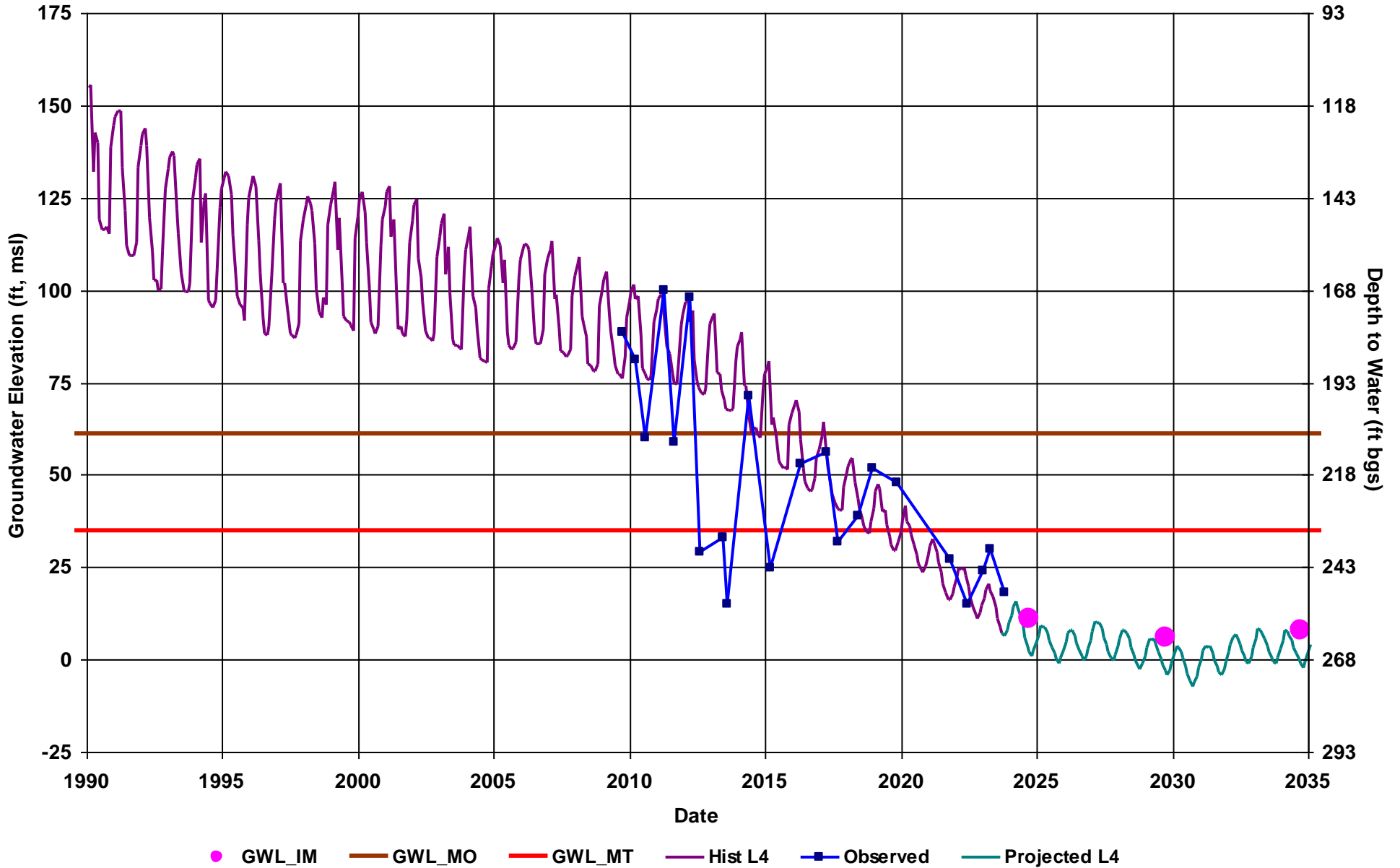
GSA: City of Madera



Well Name: City\_of\_Madera\_34  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 267  
RMS ID: COM RMS-4

Total Depth (ft): 588  
Perf Top (ft): 433  
Perf Bottom (ft): 568  
Top Model Layer: 4  
Bottom Model Layer: 4

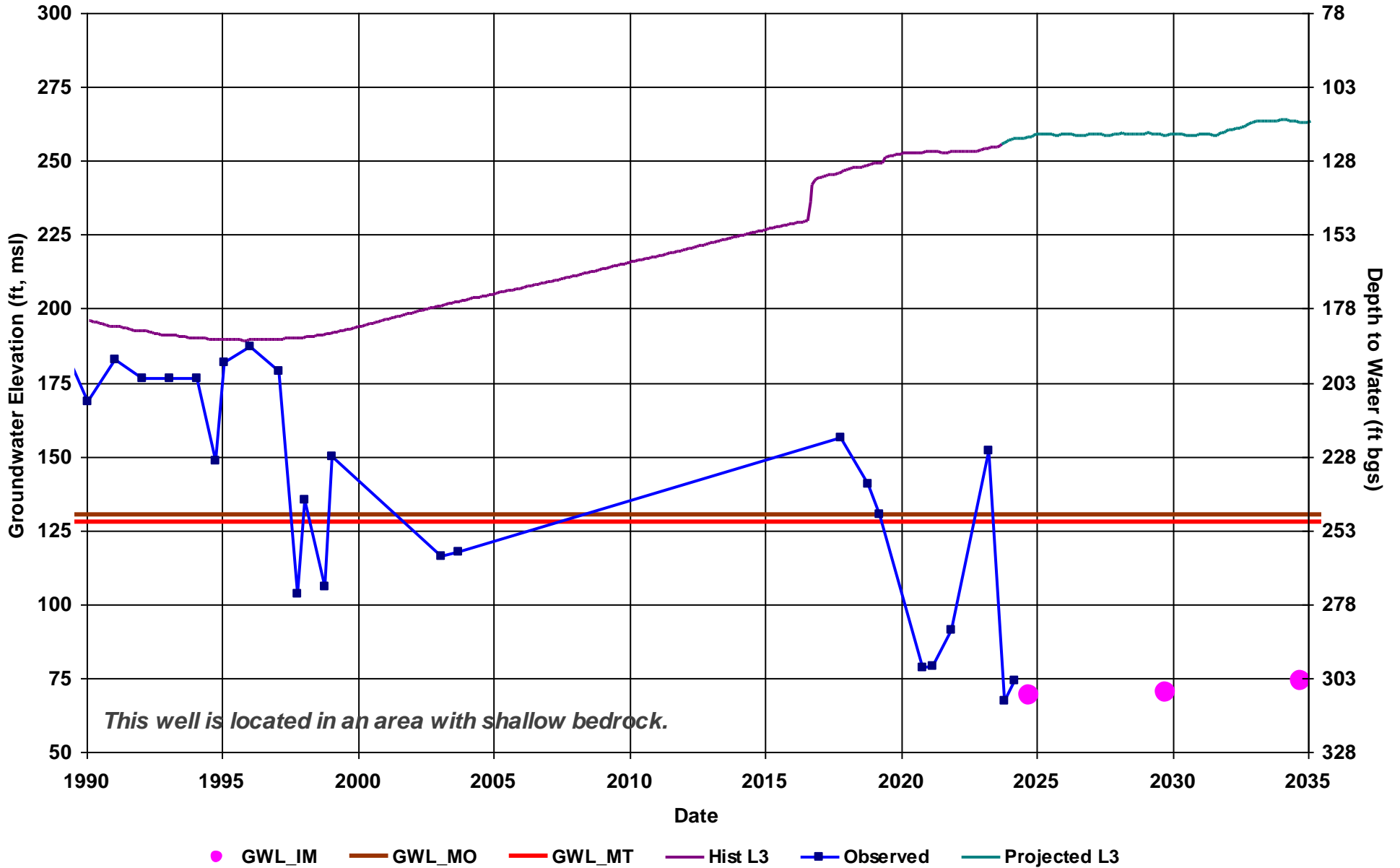
GSA: City of Madera



Well Name: 11S19E10J002M  
 Depth Zone: Unconfined  
 Subbasin: Madera  
 GSE (ft, msl): 378  
 RMS ID: MCE RMS-2

Total Depth (ft):  
 Perf Top (ft):  
 Perf Bottom (ft):  
 Top Model Layer: 3  
 Bottom Model Layer: 3

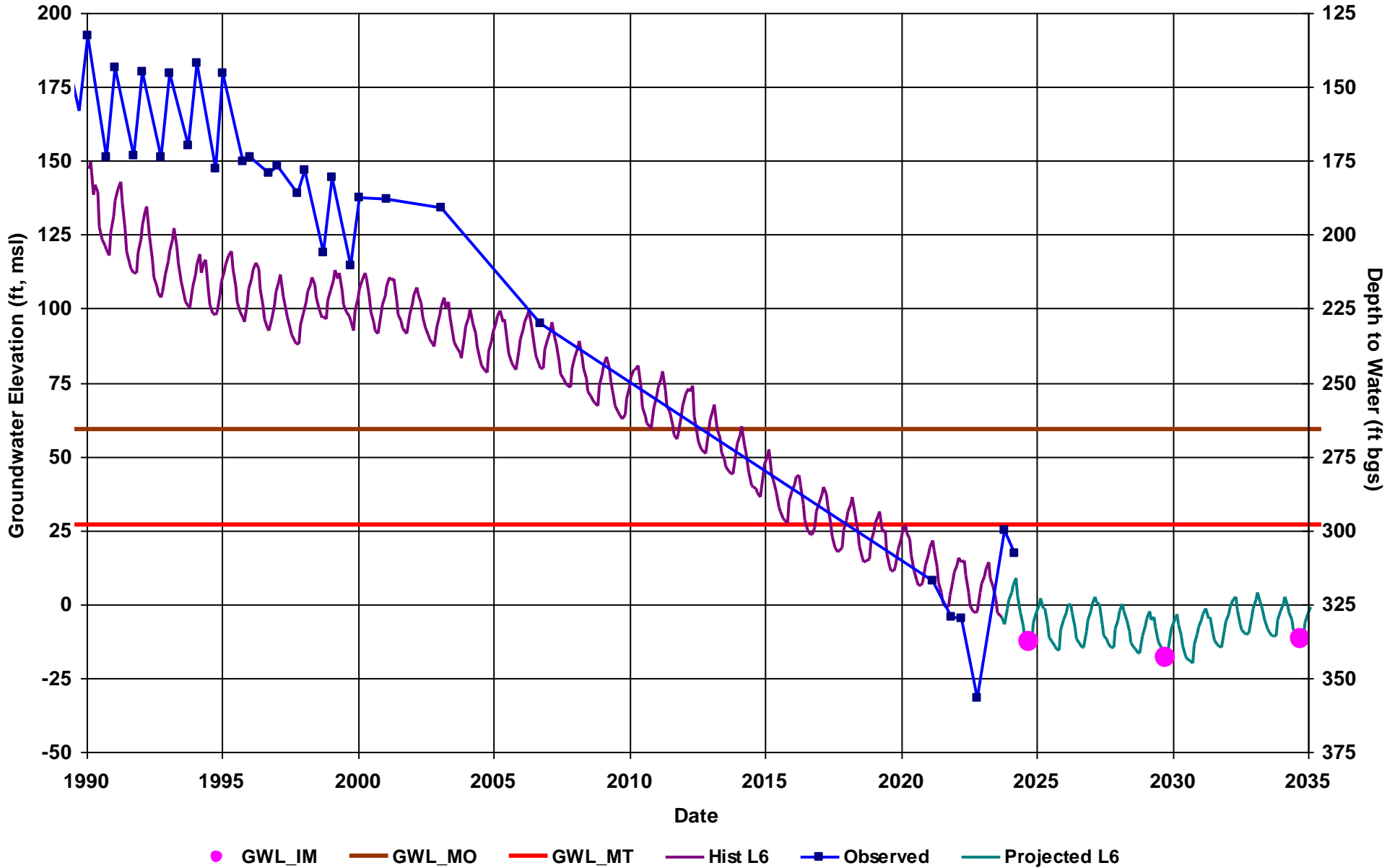
GSA: County of Madera



Well Name: 11S19E19N001M  
Depth Zone: Unconfined  
Subbasin: Madera  
GSE (ft, msl): 325  
RMS ID: MCE RMS-3

Total Depth (ft):  
Perf Top (ft):  
Perf Bottom (ft):  
Top Model Layer: 6  
Bottom Model Layer: 6

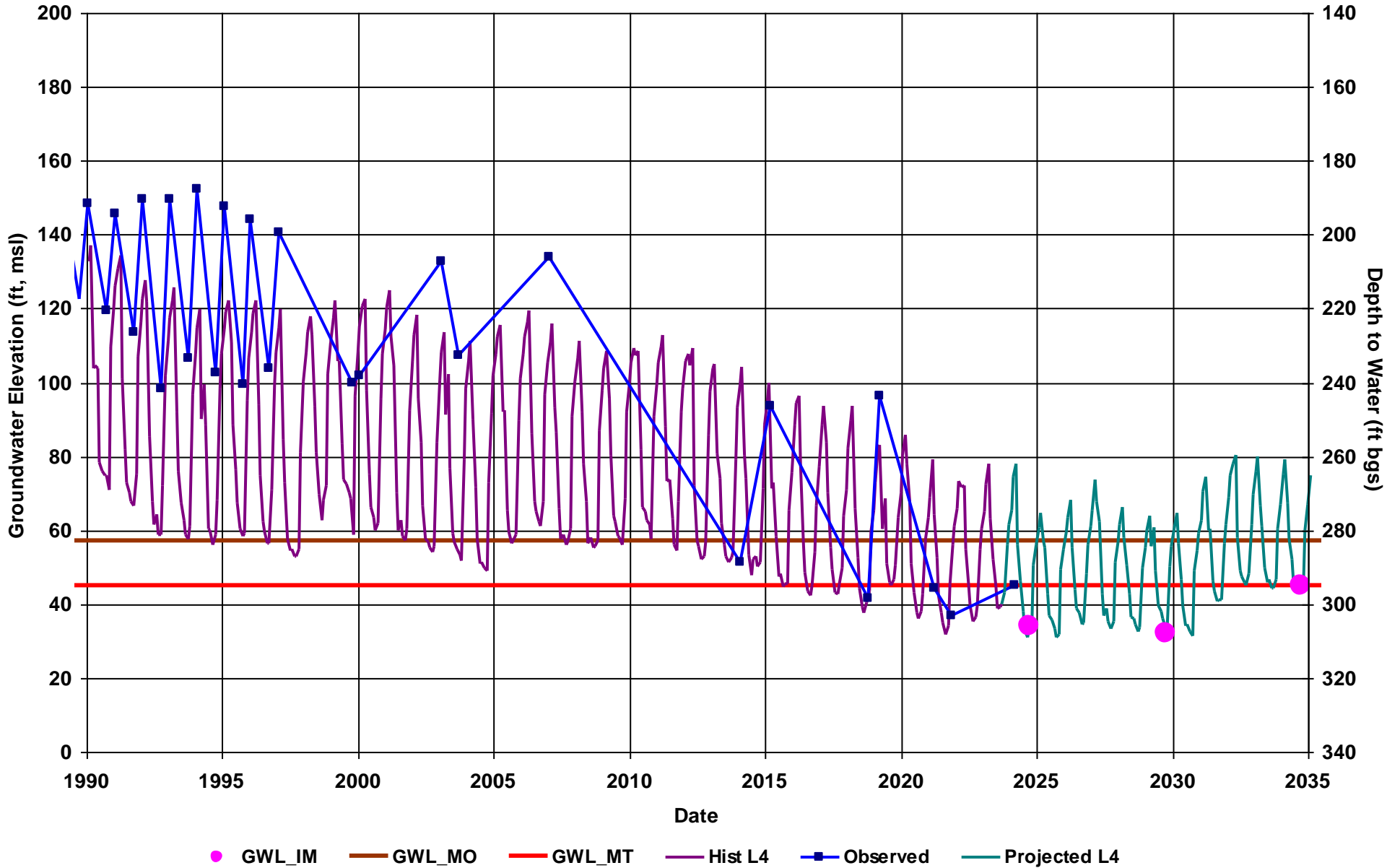
GSA: County of Madera



Well Name: 12S19E11B001M  
Depth Zone: Unconfined  
Subbasin: Madera  
GSE (ft, msl): 340  
RMS ID: MCE RMS-5

Total Depth (ft):  
Perf Top (ft):  
Perf Bottom (ft):  
Top Model Layer: 4  
Bottom Model Layer: 4

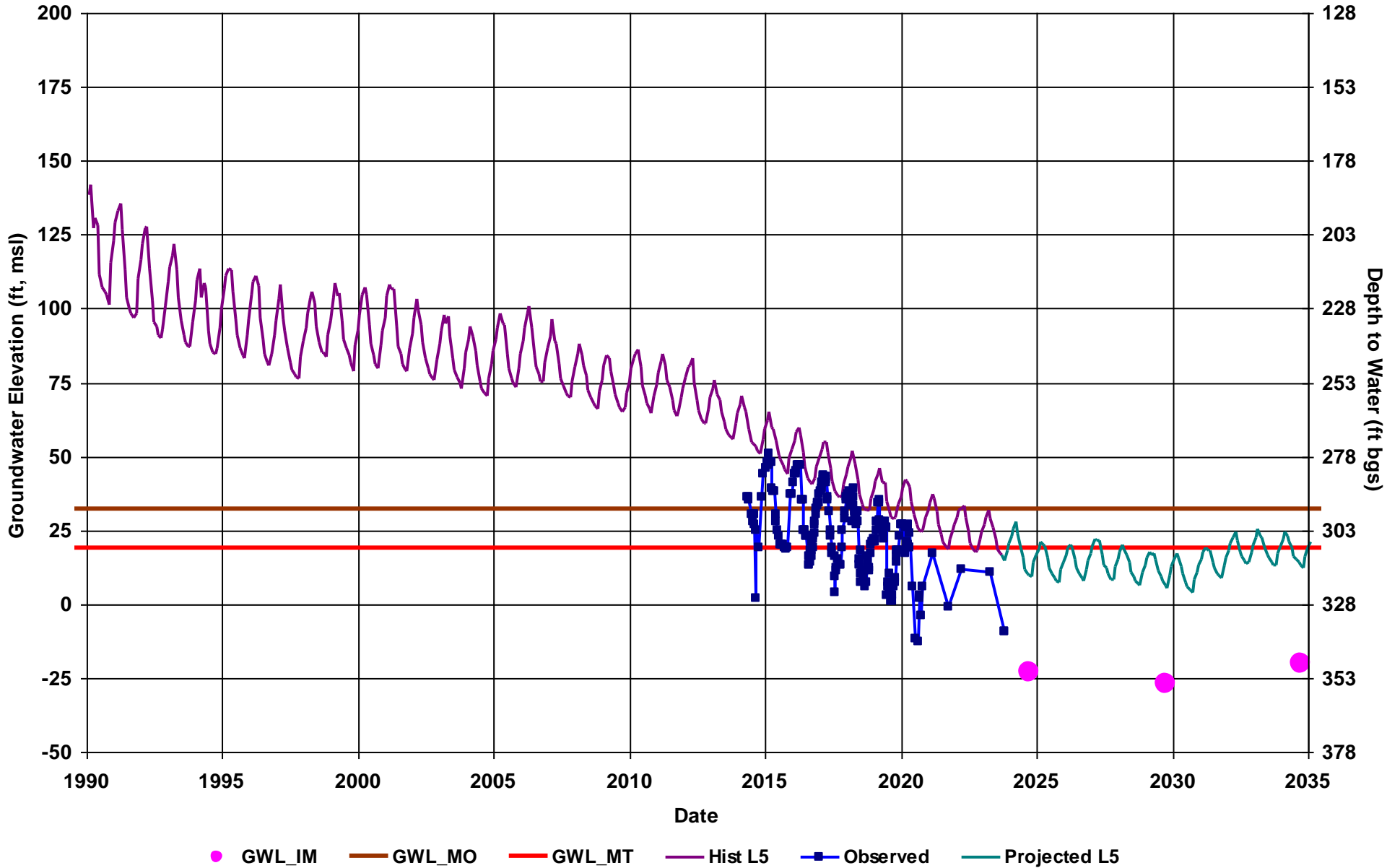
GSA: County of Madera



Well Name: MD95 Cont. Est. #1  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 328  
RMS ID: MCE RMS-6

Total Depth (ft): 550  
Perf Top (ft): 450  
Perf Bottom (ft): 550  
Top Model Layer: 5  
Bottom Model Layer: 5

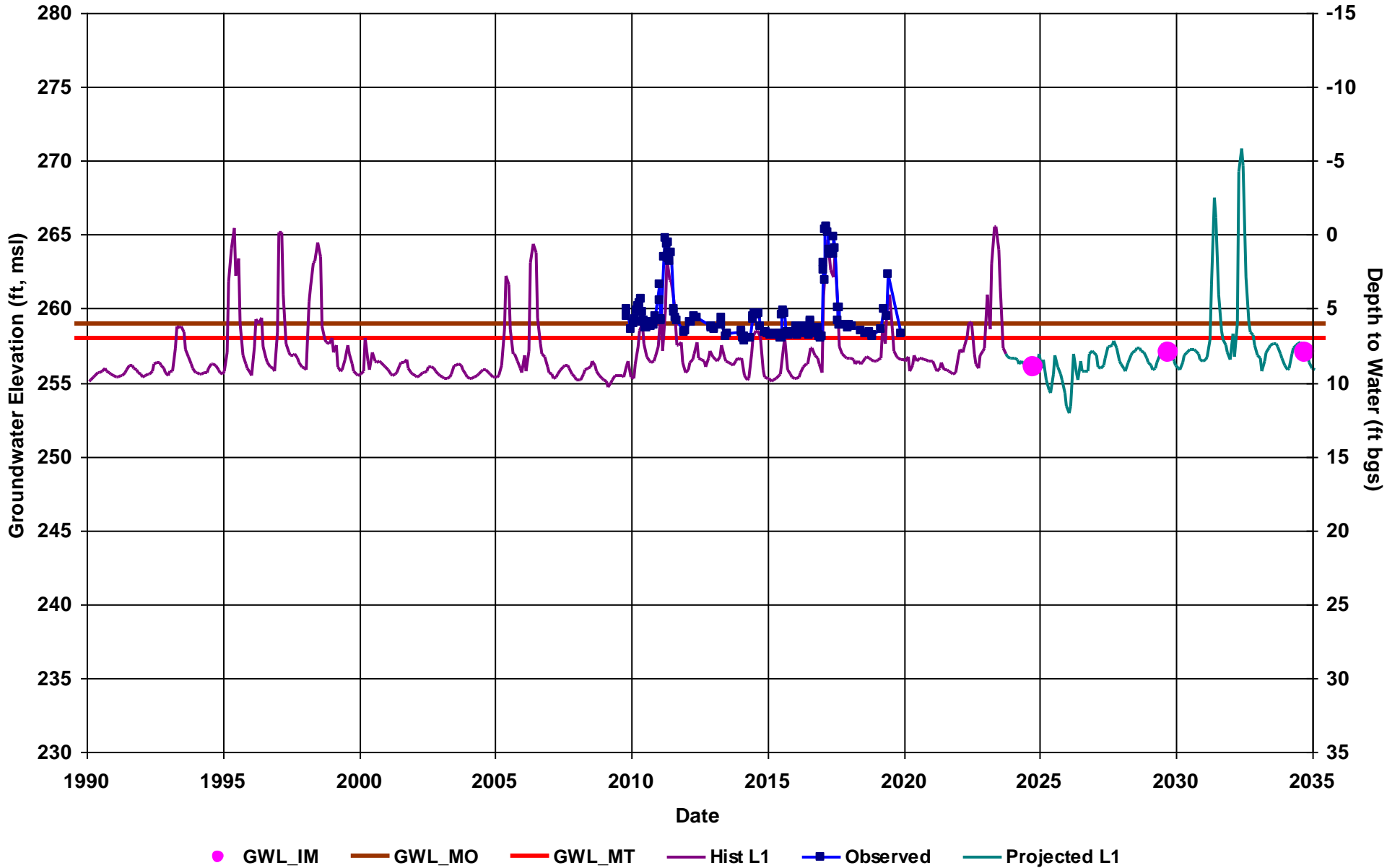
GSA: County of Madera



Well Name: SJRRP\_MW-09-1  
Depth Zone: Shallow  
Subbasin: Madera  
GSE (ft, msl): 270  
RMS ID: MCE RMS-9

Total Depth (ft): 37  
Perf Top (ft): 17  
Perf Bottom (ft): 37  
Top Model Layer: 1  
Bottom Model Layer: 1

GSA: County of Madera

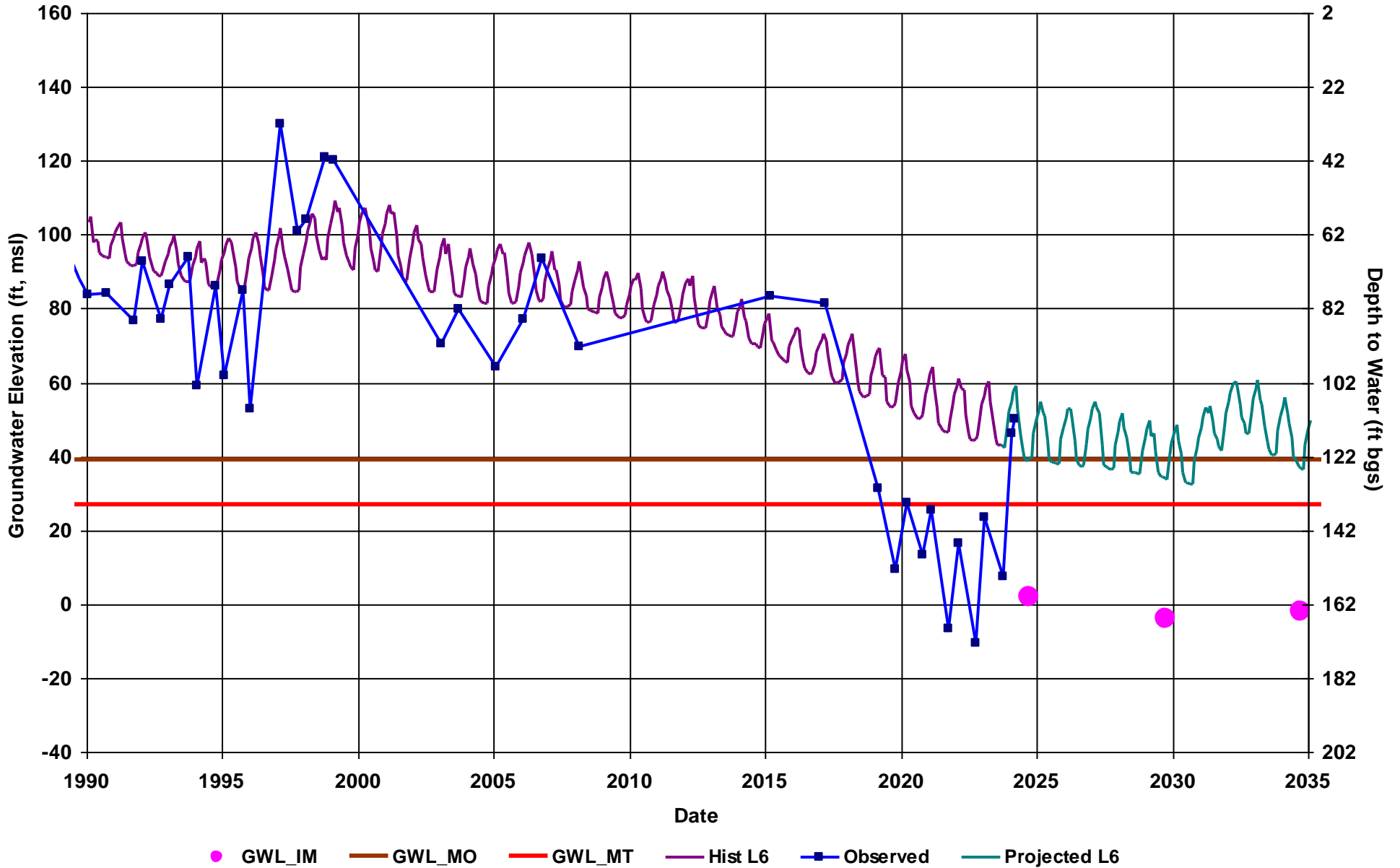




Well Name: 12S15E16A001M  
Depth Zone: Unknown  
Subbasin: Madera  
GSE (ft, msl): 163  
RMS ID: MCW RMS-3

Total Depth (ft):  
Perf Top (ft):  
Perf Bottom (ft):  
Top Model Layer: 6  
Bottom Model Layer: 6

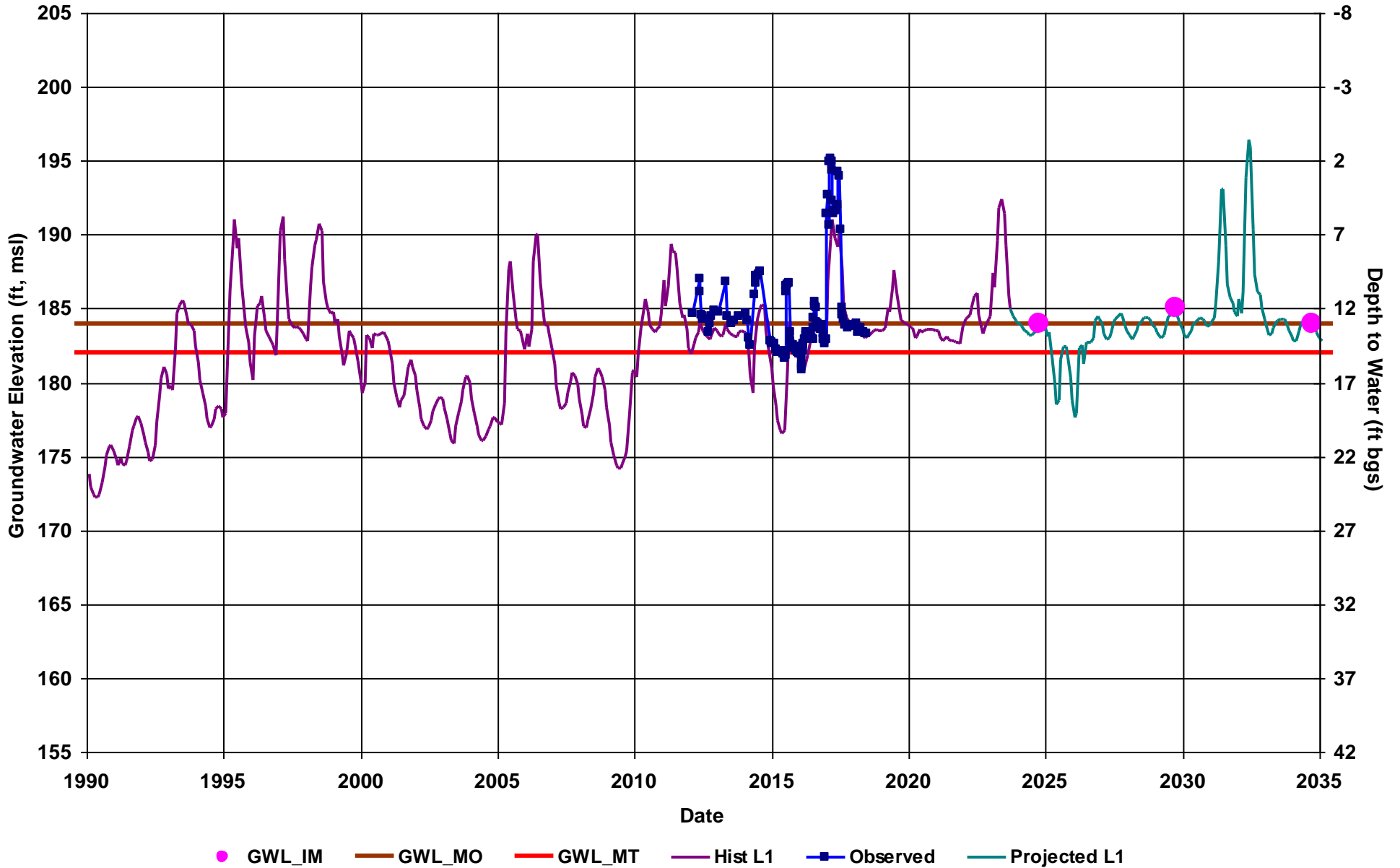
GSA: County of Madera



Well Name: SJRRP\_MW-11-158  
Depth Zone: Shallow  
Subbasin: Madera  
GSE (ft, msl): 199  
RMS ID: MCW RMS-5

Total Depth (ft): 30  
Perf Top (ft):  
Perf Bottom (ft):  
Top Model Layer: 1  
Bottom Model Layer: 1

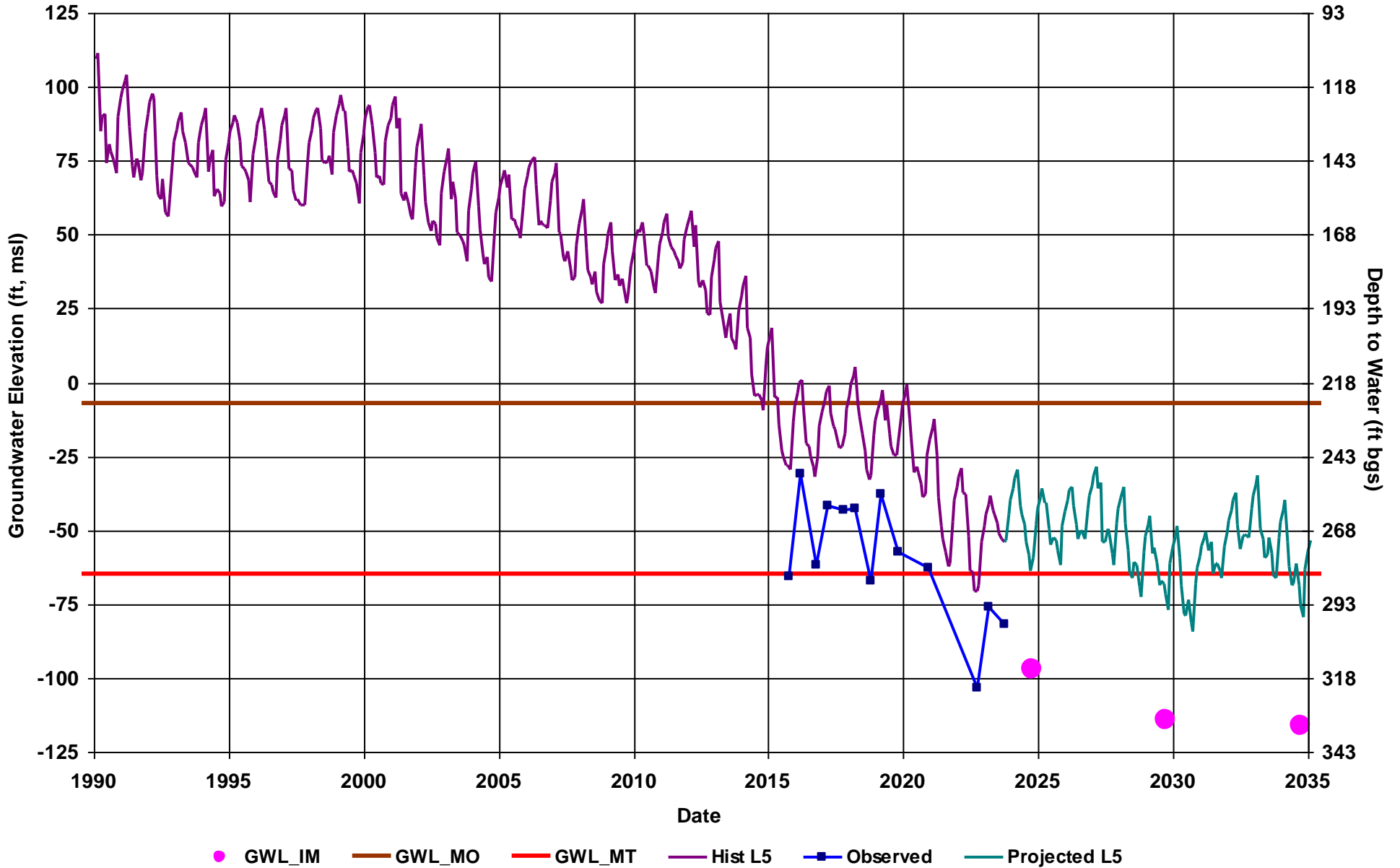
GSA: County of Madera



Well Name: 10S16E21N001M  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 294  
RMS ID: MID RMS-2

Total Depth (ft): 563  
Perf Top (ft): 298  
Perf Bottom (ft): 509  
Top Model Layer: 5  
Bottom Model Layer: 5

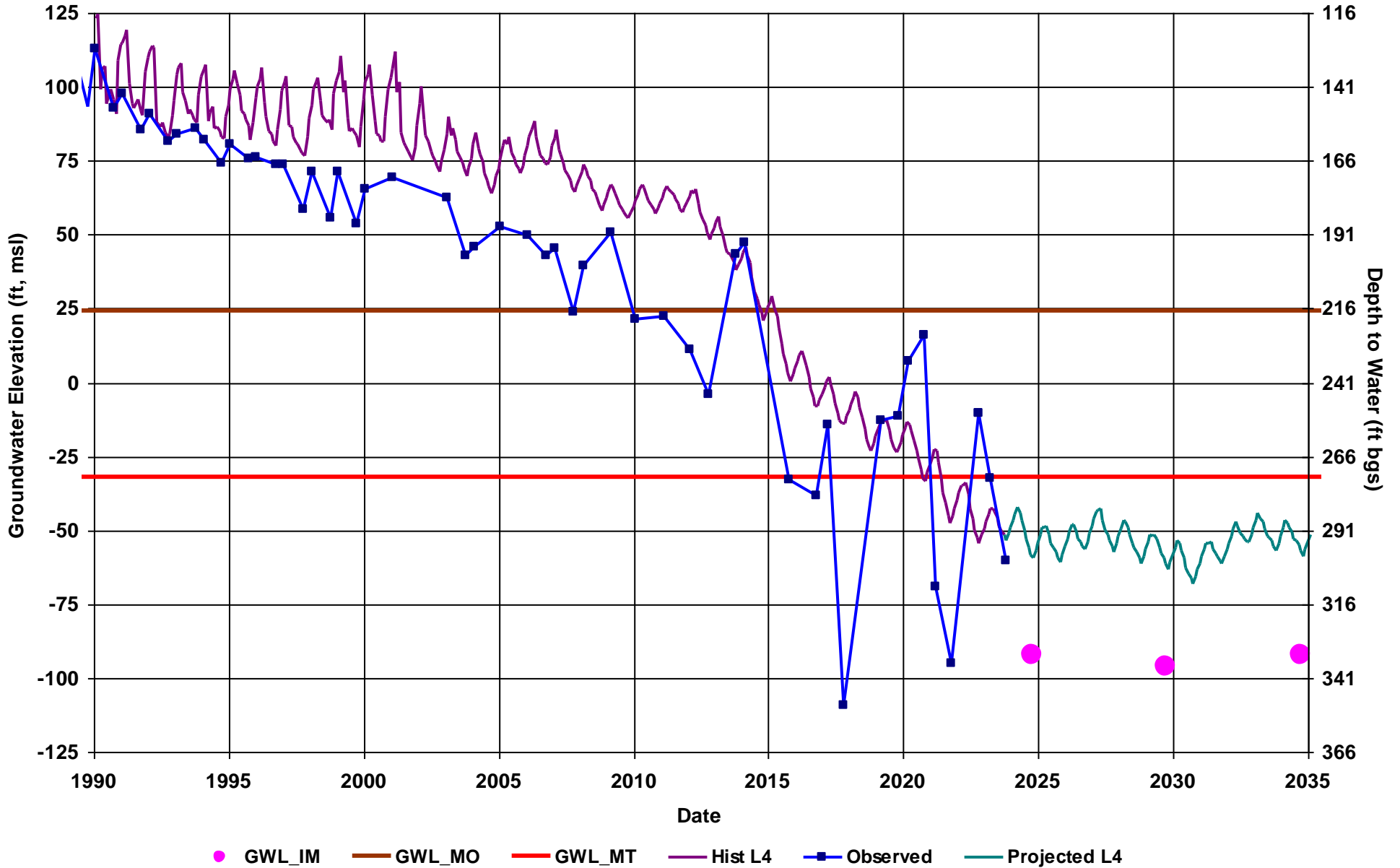
GSA: Madera Irrigation District



Well Name: 10S16E25F004M  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 273  
RMS ID: MID RMS-3

Total Depth (ft): 516  
Perf Top (ft): 260  
Perf Bottom (ft): 507  
Top Model Layer: 4  
Bottom Model Layer: 4

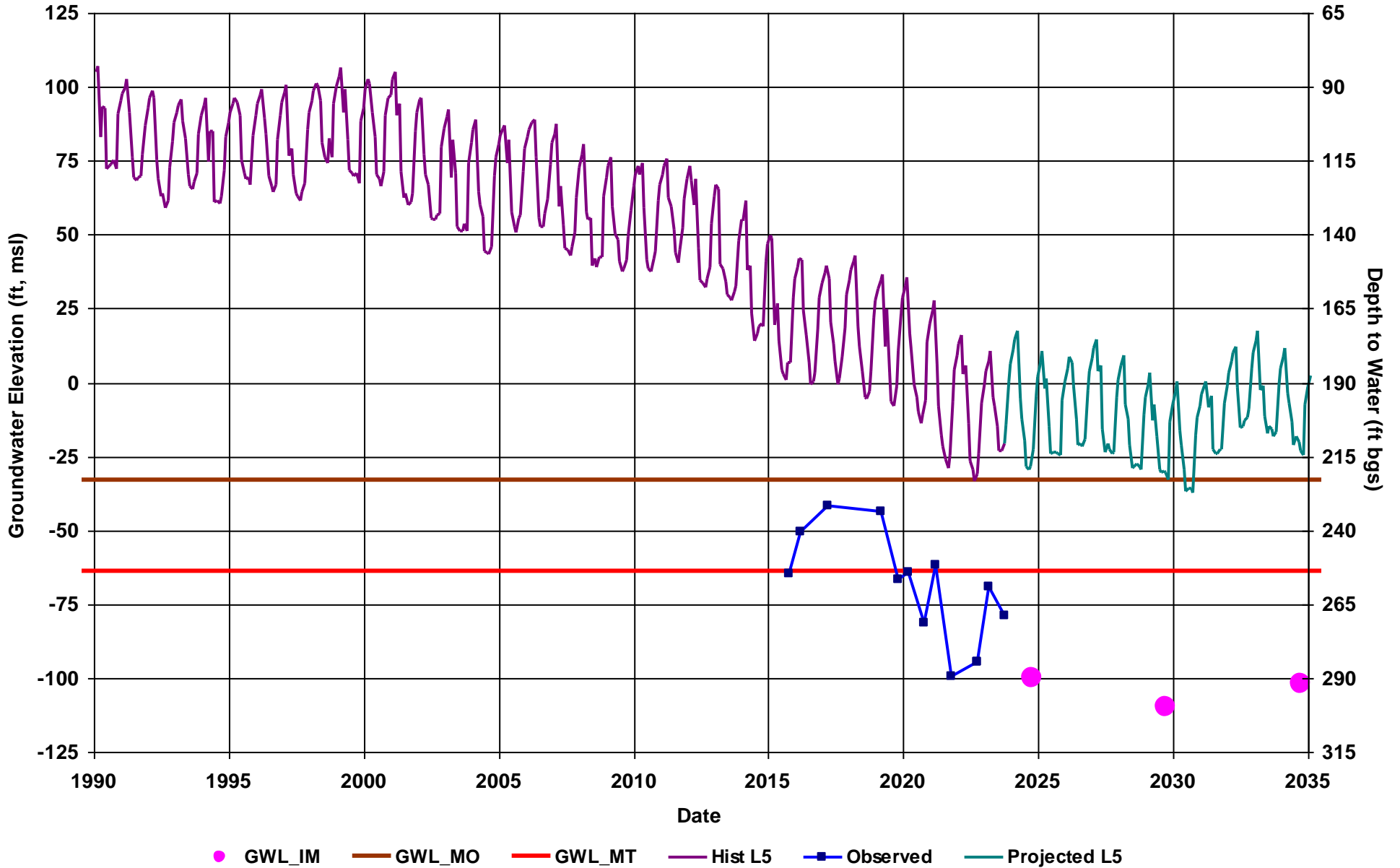
GSA: Madera Irrigation District



Well Name: 11S16E18R002M  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 259  
RMS ID: MID RMS-4

Total Depth (ft): 698  
Perf Top (ft): 320  
Perf Bottom (ft): 667  
Top Model Layer: 5  
Bottom Model Layer: 5

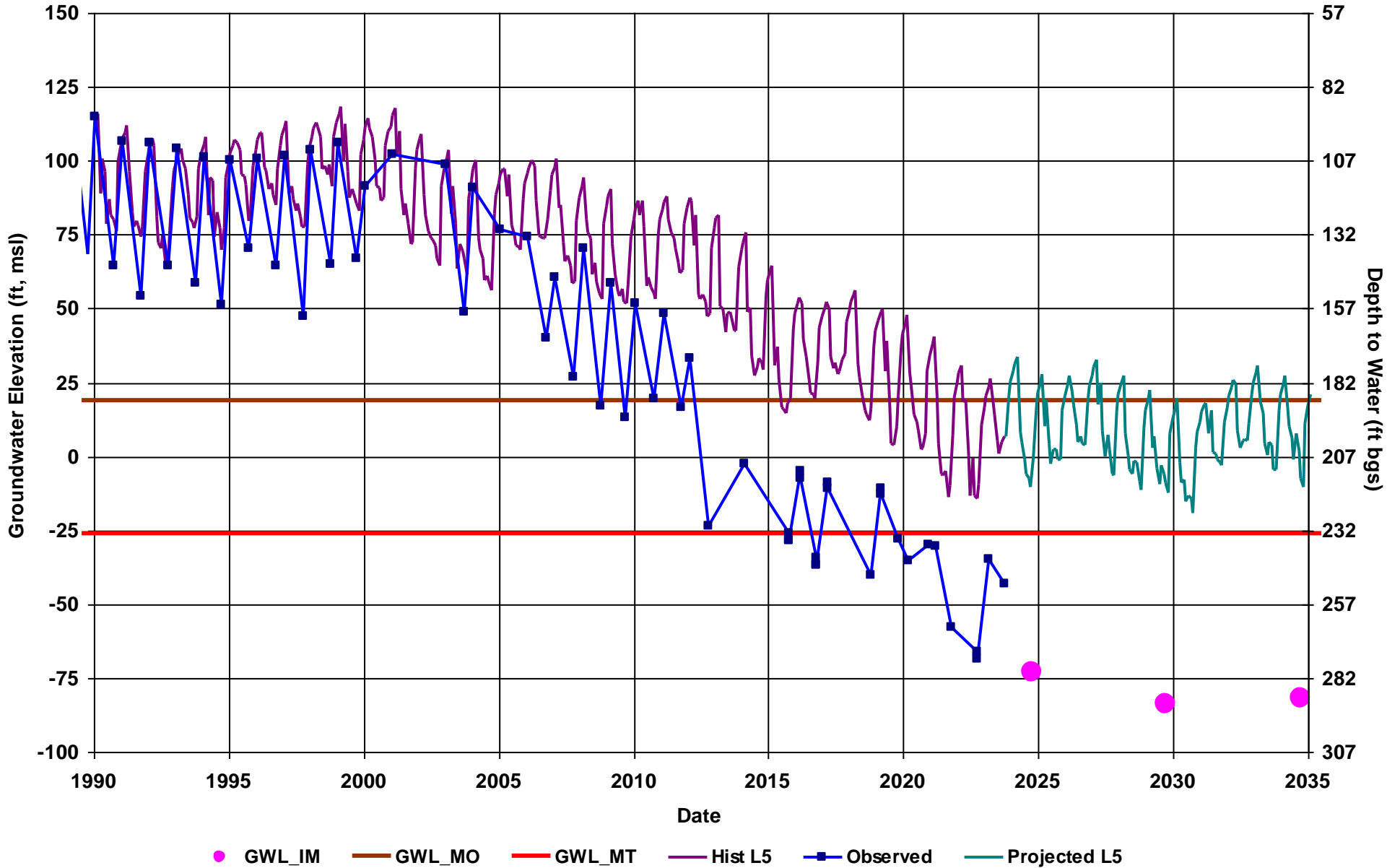
GSA: Madera Irrigation District



Well Name: 11S16E22K002M  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 239  
RMS ID: MID RMS-5

Total Depth (ft): 570  
Perf Top (ft): 270  
Perf Bottom (ft): 570  
Top Model Layer: 5  
Bottom Model Layer: 5

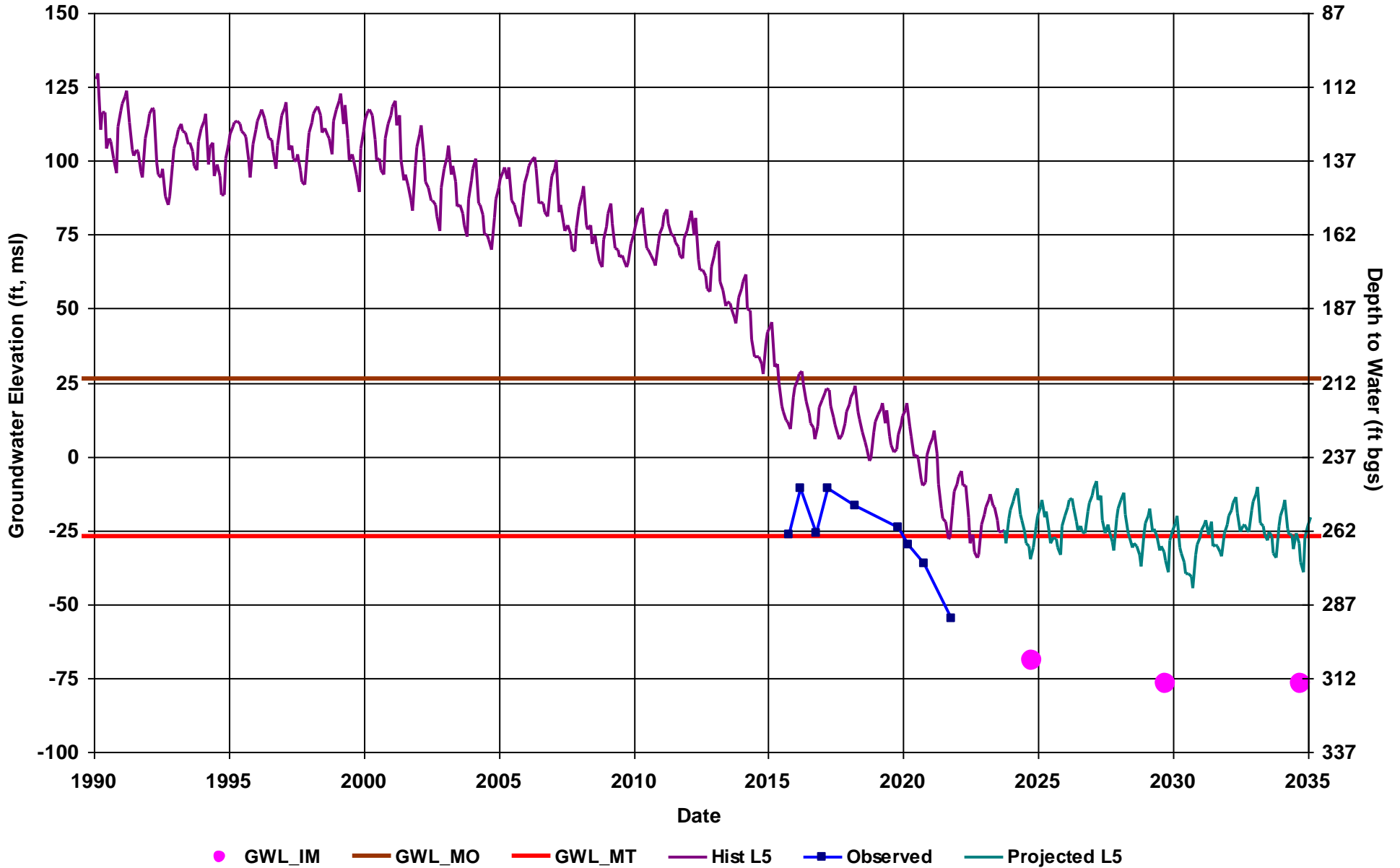
GSA: Madera Irrigation District



Well Name: 11S17E06L003M  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 237  
RMS ID: MID RMS-6

Total Depth (ft): 680  
Perf Top (ft): 320  
Perf Bottom (ft): 680  
Top Model Layer: 5  
Bottom Model Layer: 5

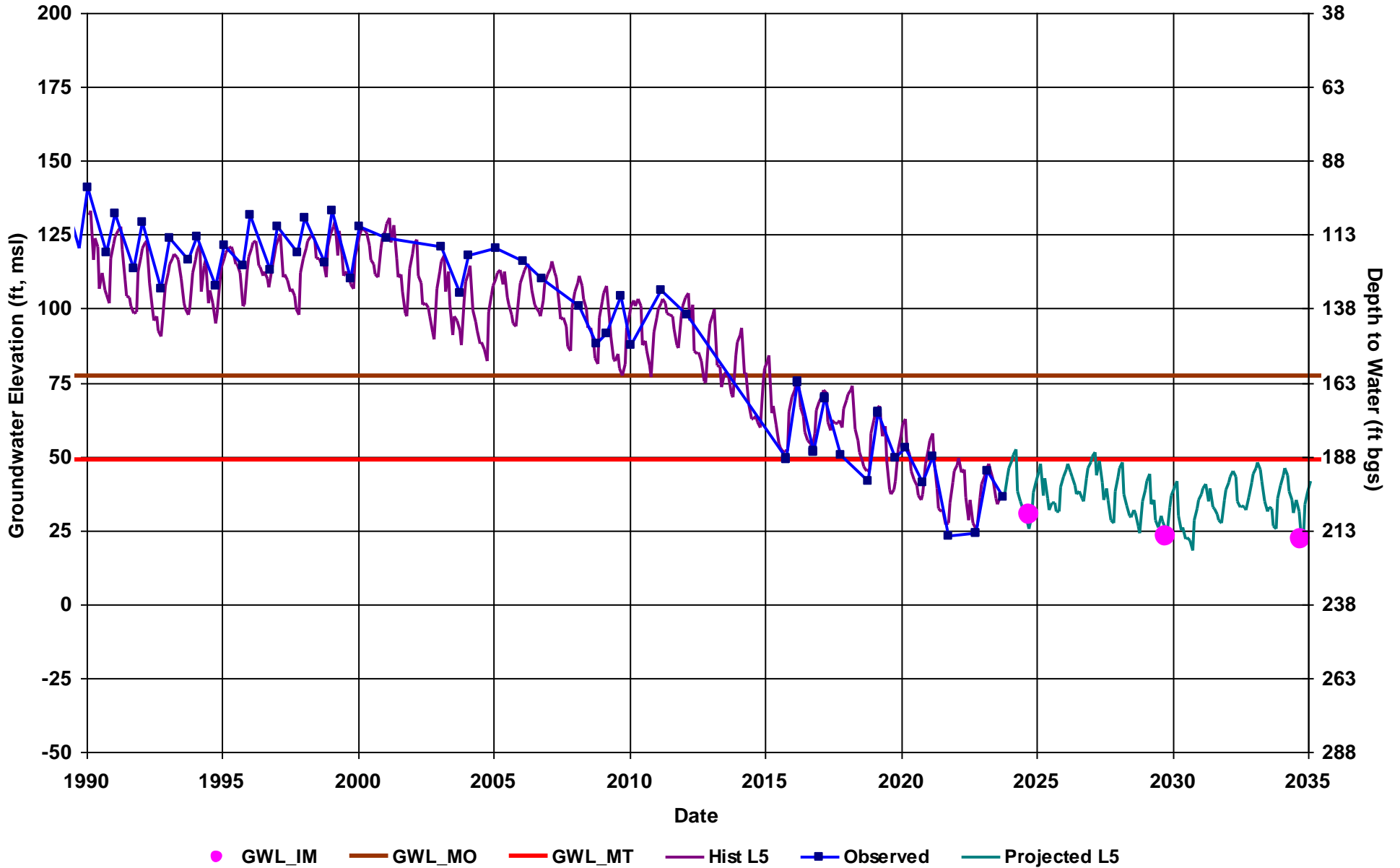
GSA: Madera Irrigation District



Well Name: 11S17E32R002M  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 238  
RMS ID: MID RMS-7

Total Depth (ft): 656  
Perf Top (ft): 290  
Perf Bottom (ft): 635  
Top Model Layer: 5  
Bottom Model Layer: 5

GSA: Madera Irrigation District

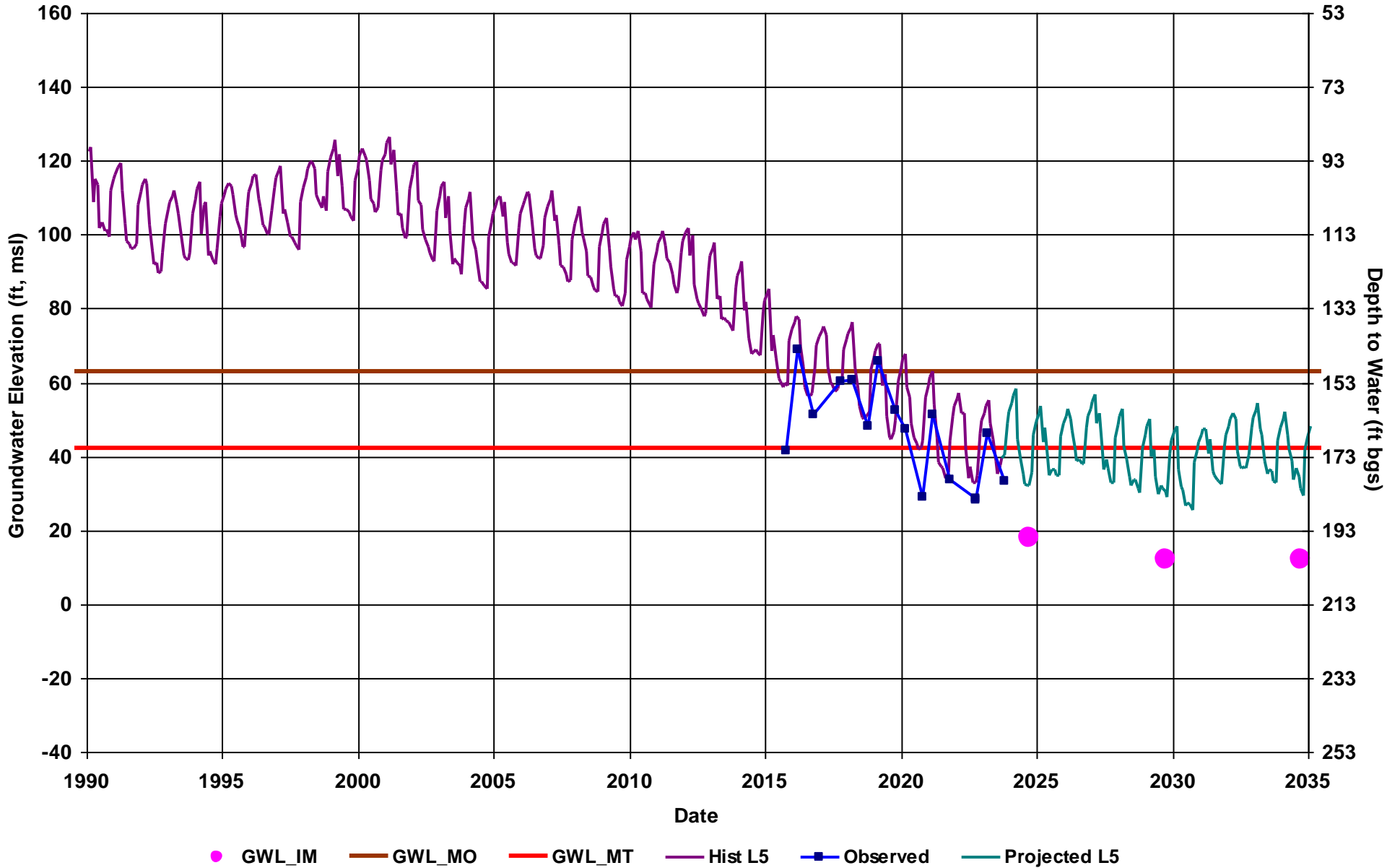




Well Name: 12S16E12L002M  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 213  
RMS ID: MID RMS-10

Total Depth (ft): 615  
Perf Top (ft): 315  
Perf Bottom (ft): 615  
Top Model Layer: 5  
Bottom Model Layer: 5

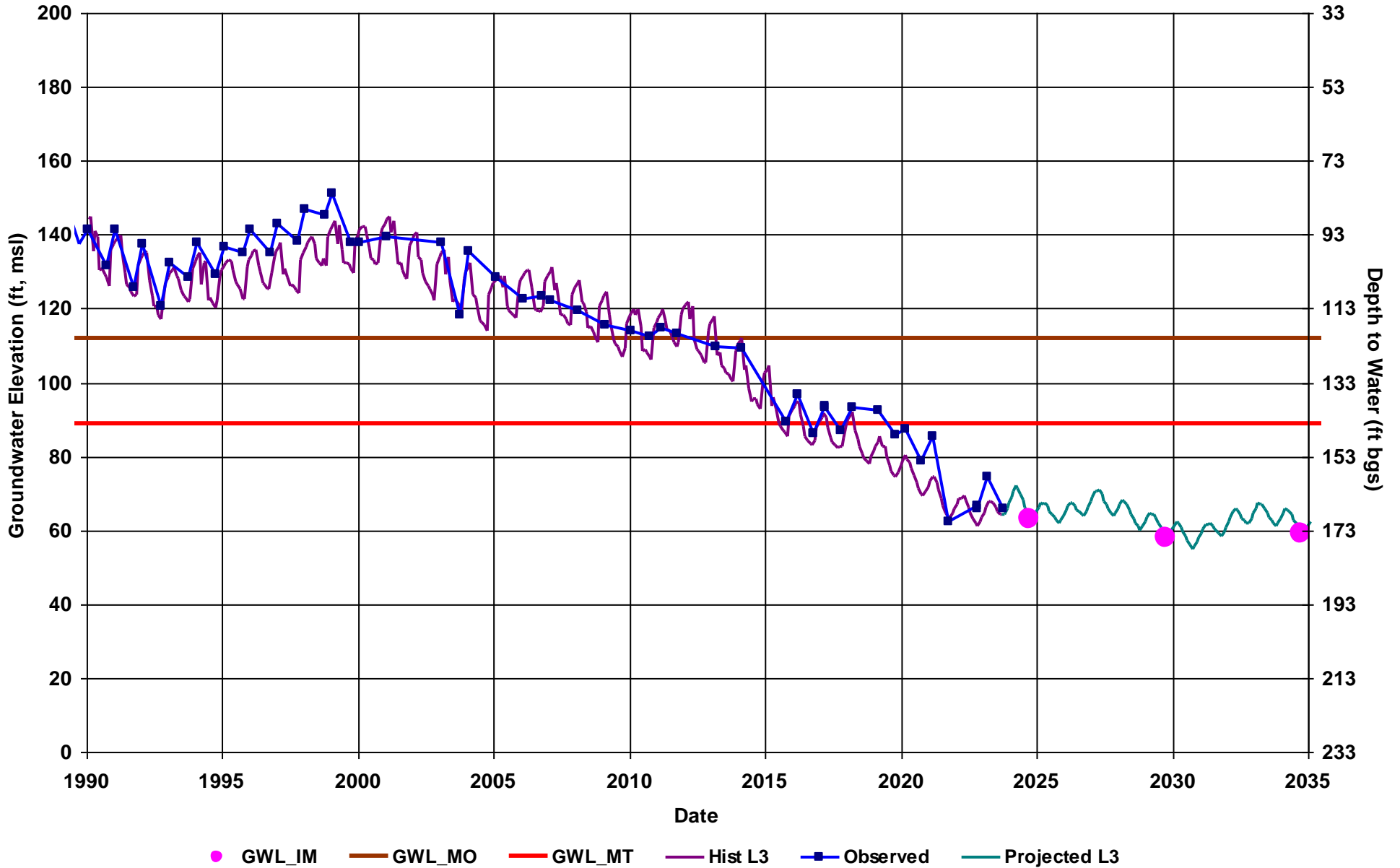
GSA: Madera Irrigation District



Well Name: 12S17E16A003M  
Depth Zone: Unconfined  
Subbasin: Madera  
GSE (ft, msl): 233  
RMS ID: MID RMS-11

Total Depth (ft): 315  
Perf Top (ft):  
Perf Bottom (ft):  
Top Model Layer: 3  
Bottom Model Layer: 3

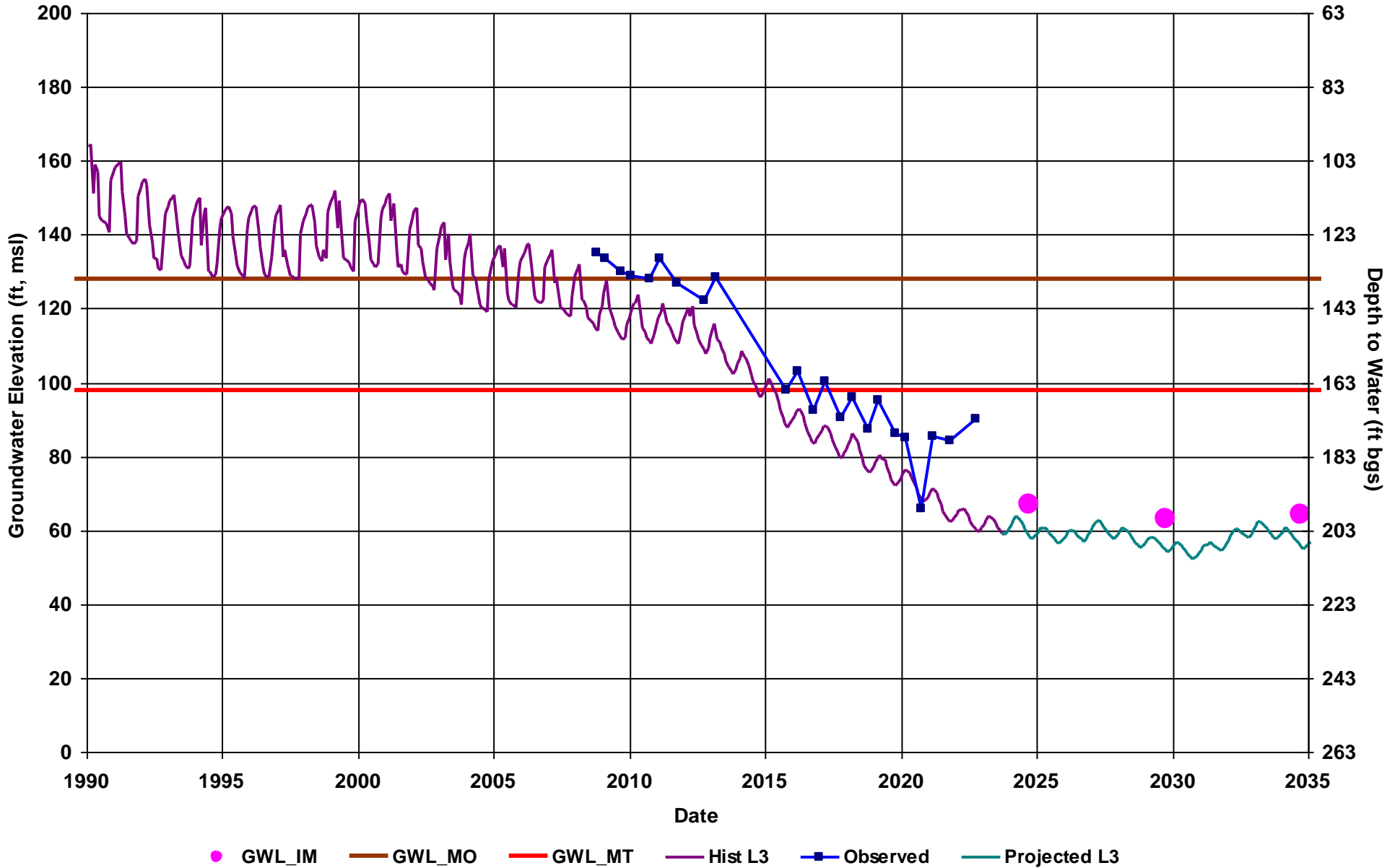
GSA: Madera Irrigation District



Well Name: 12S18E06J003M  
Depth Zone: Upper  
Subbasin: Madera  
GSE (ft, msl): 263  
RMS ID: MID RMS-12

Total Depth (ft): 176  
Perf Top (ft):  
Perf Bottom (ft):  
Top Model Layer: 3  
Bottom Model Layer: 3

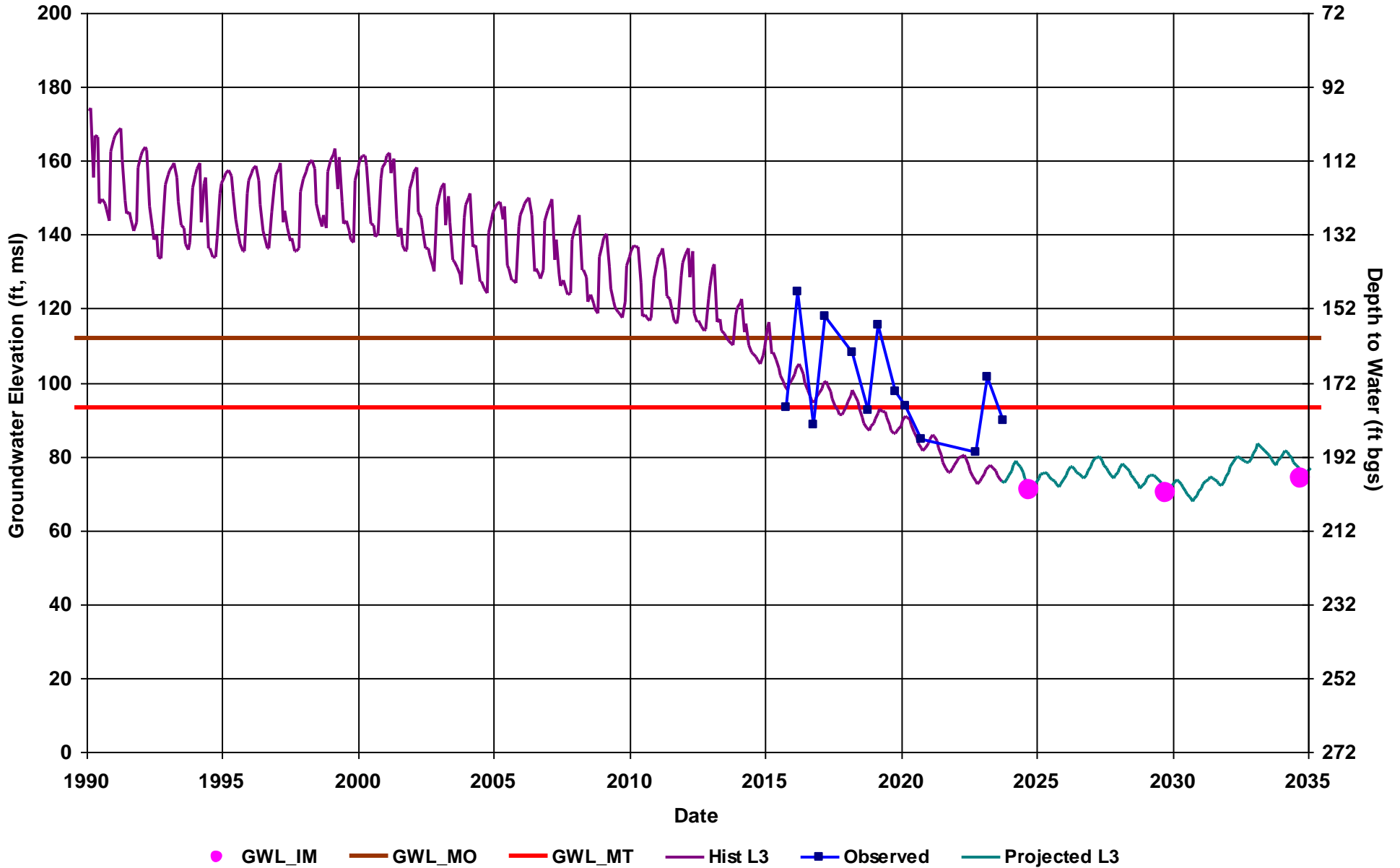
GSA: Madera Irrigation District



Well Name: 12S18E10K002M  
Depth Zone: Composite/Unconfined  
Subbasin: Madera  
GSE (ft, msl): 272  
RMS ID: MID RMS-13

Total Depth (ft): 600  
Perf Top (ft): 228  
Perf Bottom (ft): 552  
Top Model Layer: 3  
Bottom Model Layer: 3

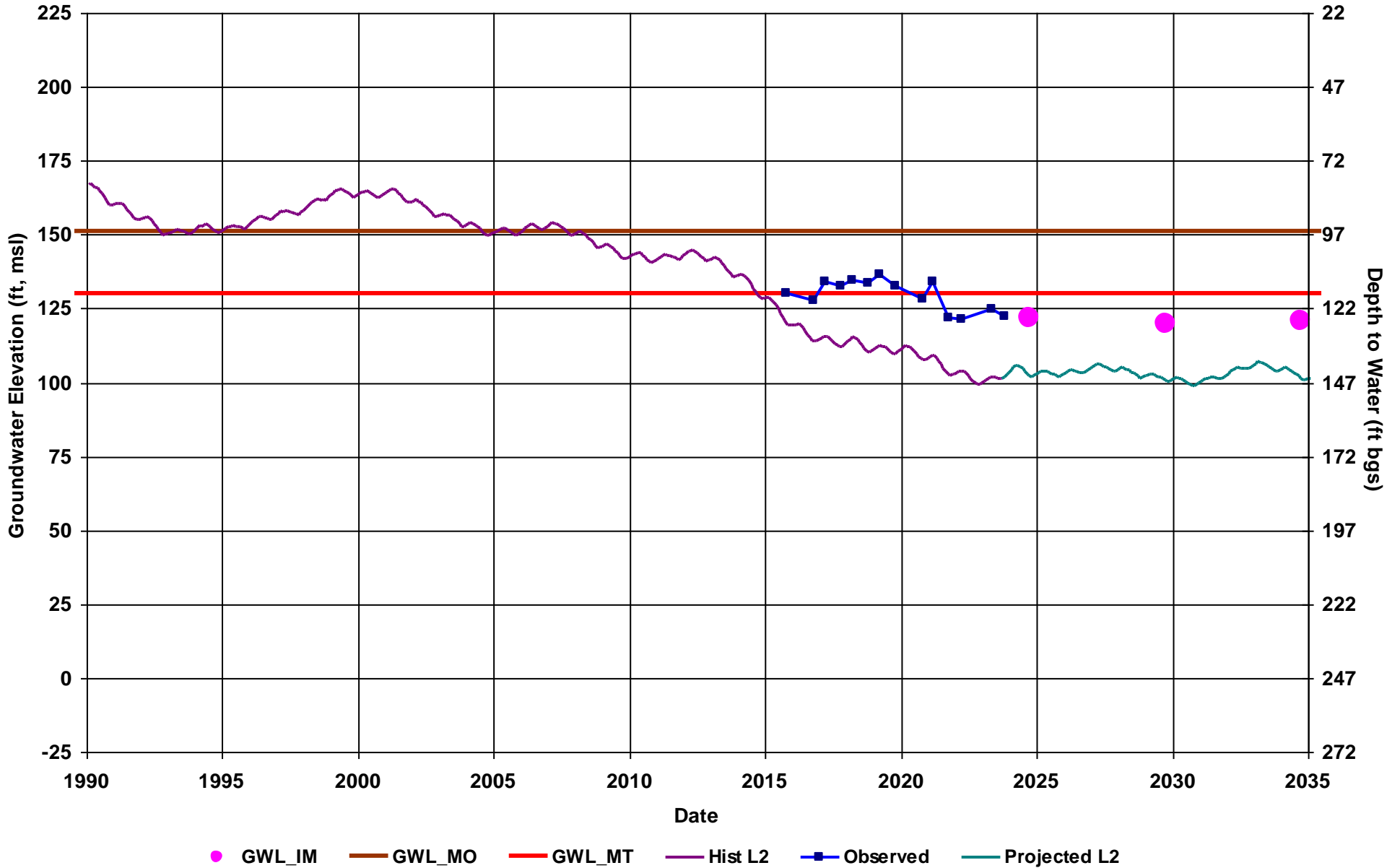
GSA: Madera Irrigation District



Well Name: MD28 Ripperdan  
Depth Zone: Upper  
Subbasin: Madera  
GSE (ft, msl): 247  
RMS ID: MID RMS-15

Total Depth (ft): 502  
Perf Top (ft): 160  
Perf Bottom (ft): 200  
Top Model Layer: 2  
Bottom Model Layer: 2

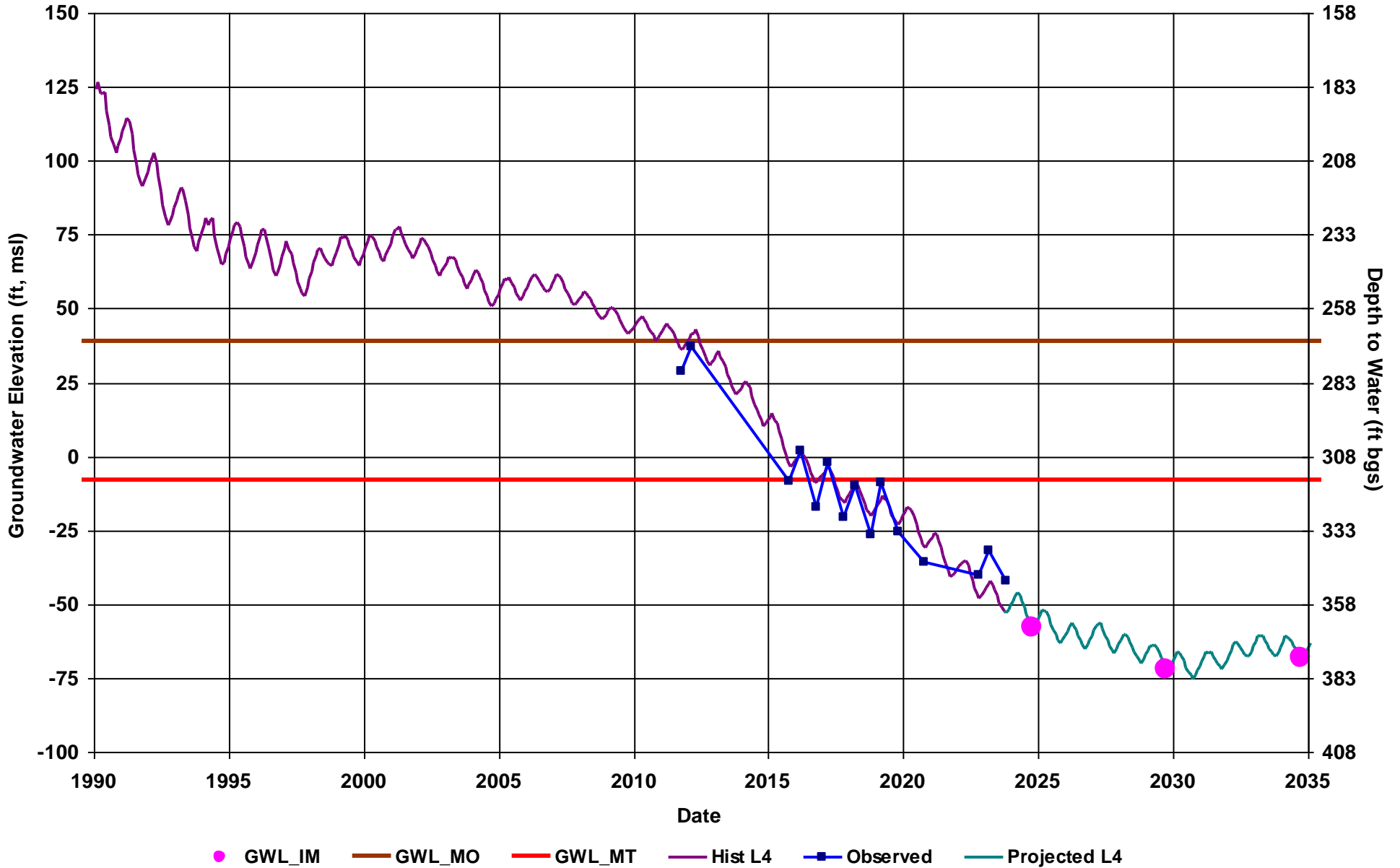
GSA: Madera Irrigation District



Well Name: MID 09  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 340  
RMS ID: MID RMS-16

Total Depth (ft): 452  
Perf Top (ft): 348  
Perf Bottom (ft): 388  
Top Model Layer: 4  
Bottom Model Layer: 4

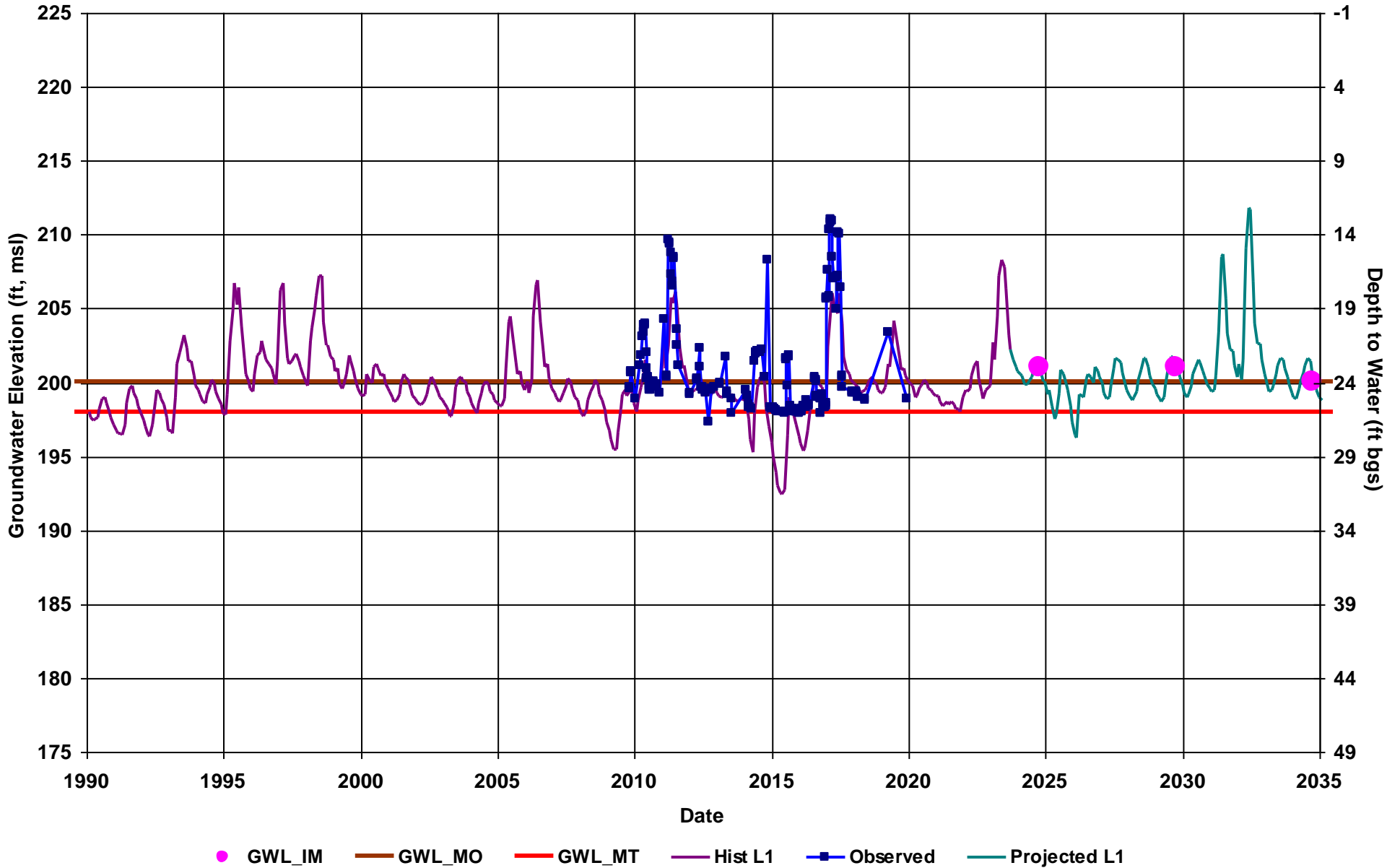
GSA: Madera Irrigation District



Well Name: SJRRP\_MW-09-25  
Depth Zone: Shallow  
Subbasin: Madera  
GSE (ft, msl): 224  
RMS ID: MID RMS-17

Total Depth (ft): 47  
Perf Top (ft): 26  
Perf Bottom (ft): 46  
Top Model Layer: 1  
Bottom Model Layer: 1

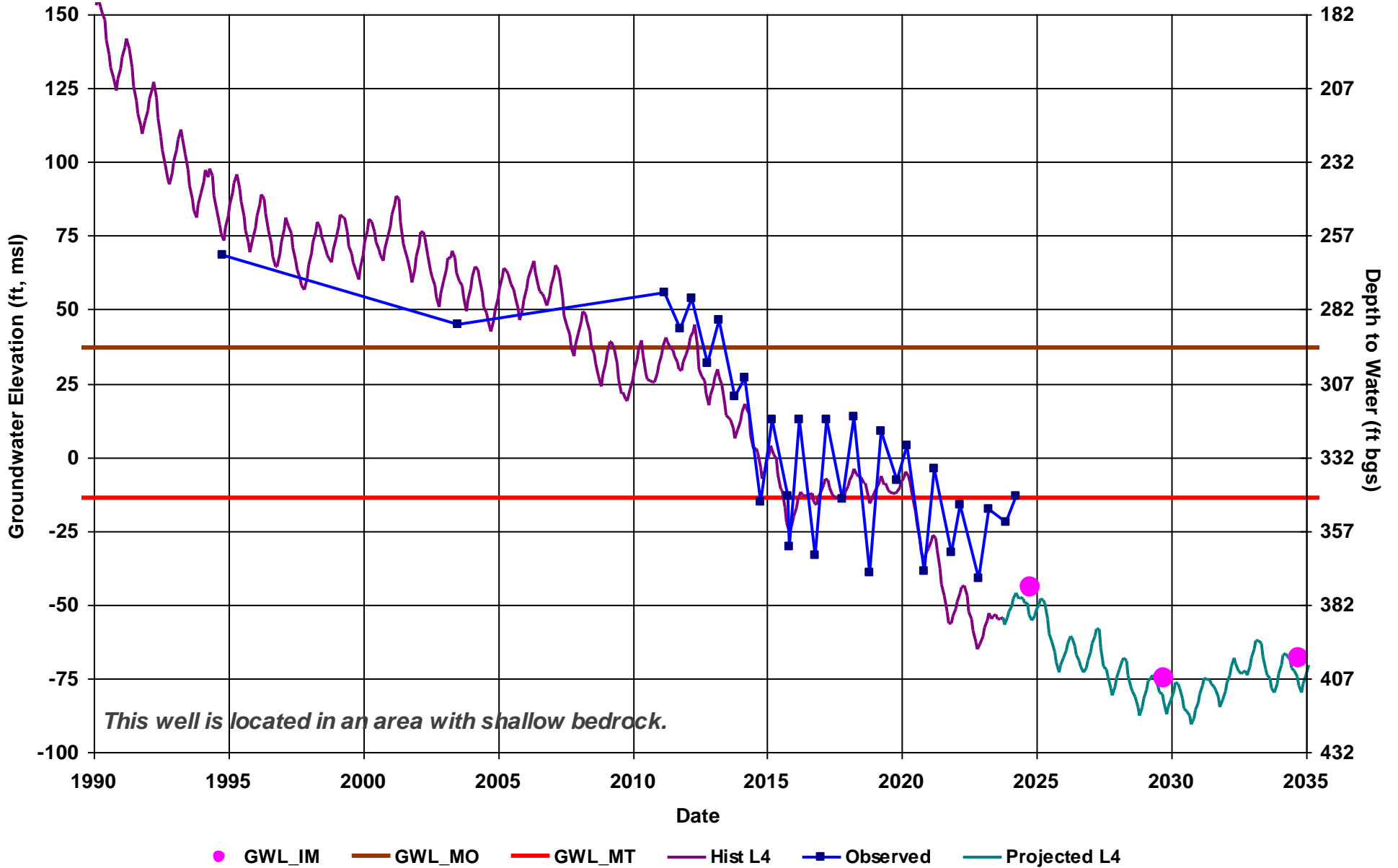
GSA: Madera Irrigation District



Well Name: MWD 04  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 350  
RMS ID: MWD RMS-1

Total Depth (ft): 504  
Perf Top (ft): 200  
Perf Bottom (ft): 500  
Top Model Layer: 4  
Bottom Model Layer: 4

GSA: Madera Water District

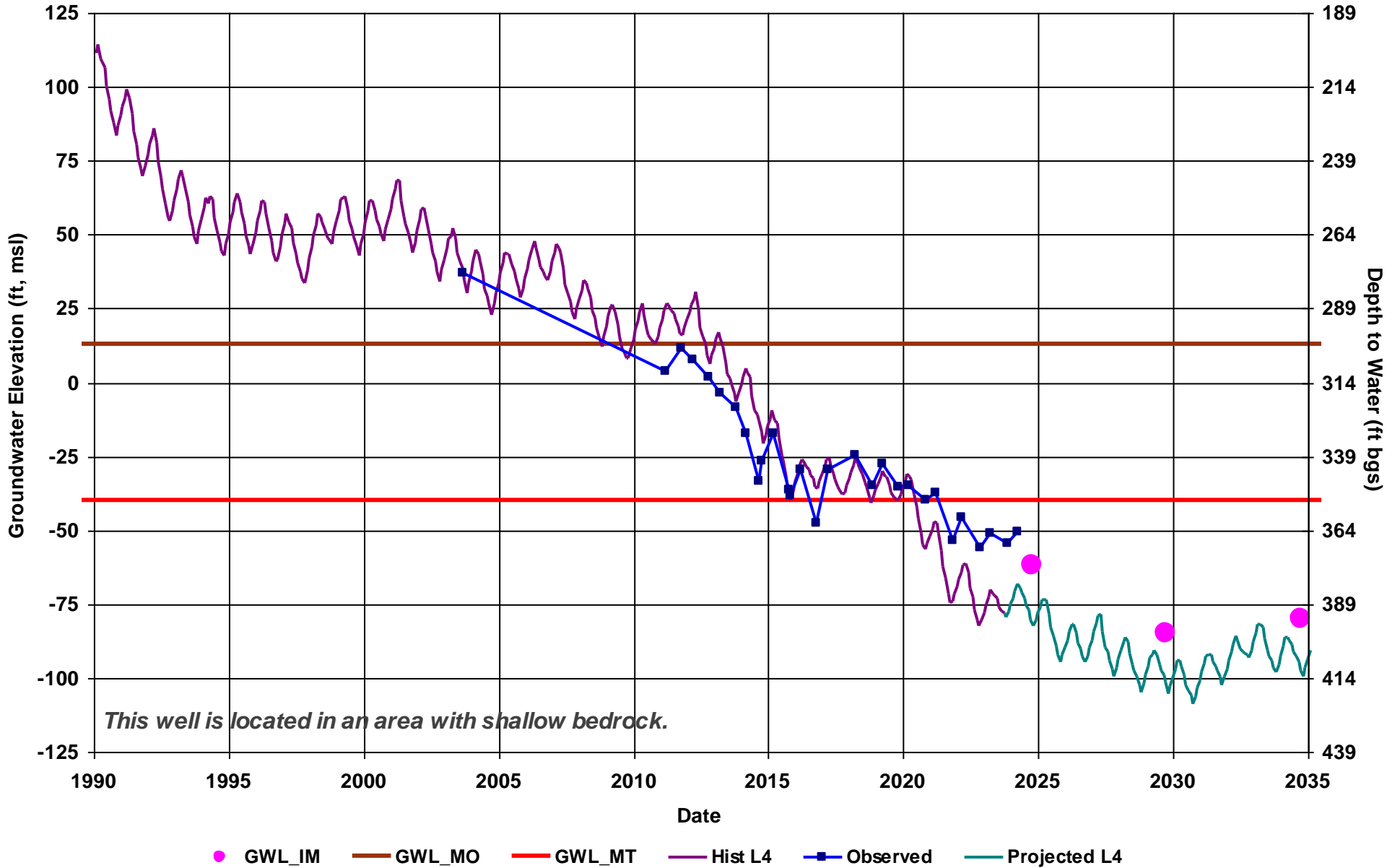




Well Name: MWD 08  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 365  
RMS ID: MWD RMS-2

Total Depth (ft): 537  
Perf Top (ft): 200  
Perf Bottom (ft): 537  
Top Model Layer: 4  
Bottom Model Layer: 4

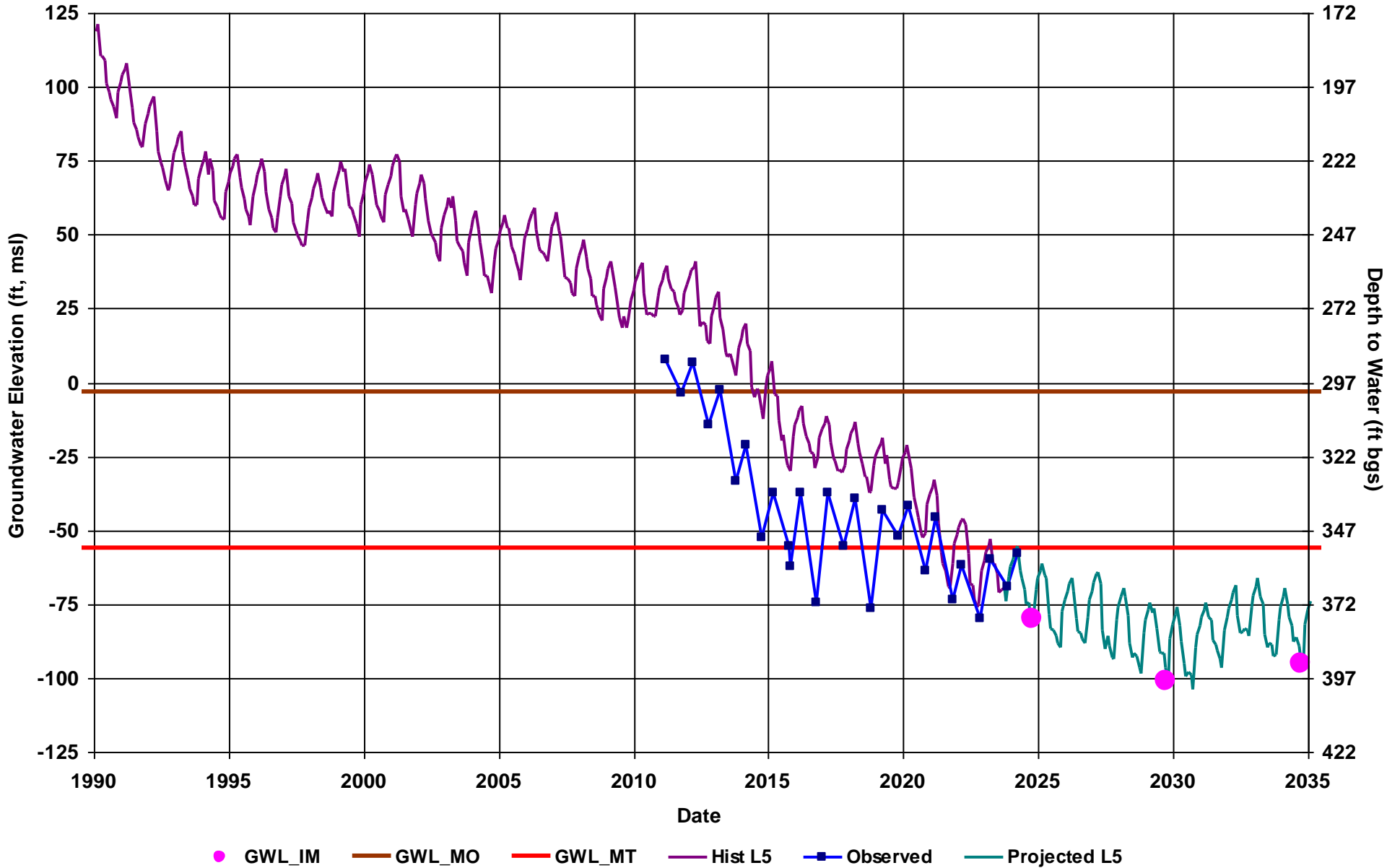
GSA: Madera Water District



Well Name: MWD 20  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 358  
RMS ID: MWD RMS-3

Total Depth (ft): 800  
Perf Top (ft): 380  
Perf Bottom (ft): 800  
Top Model Layer: 5  
Bottom Model Layer: 5

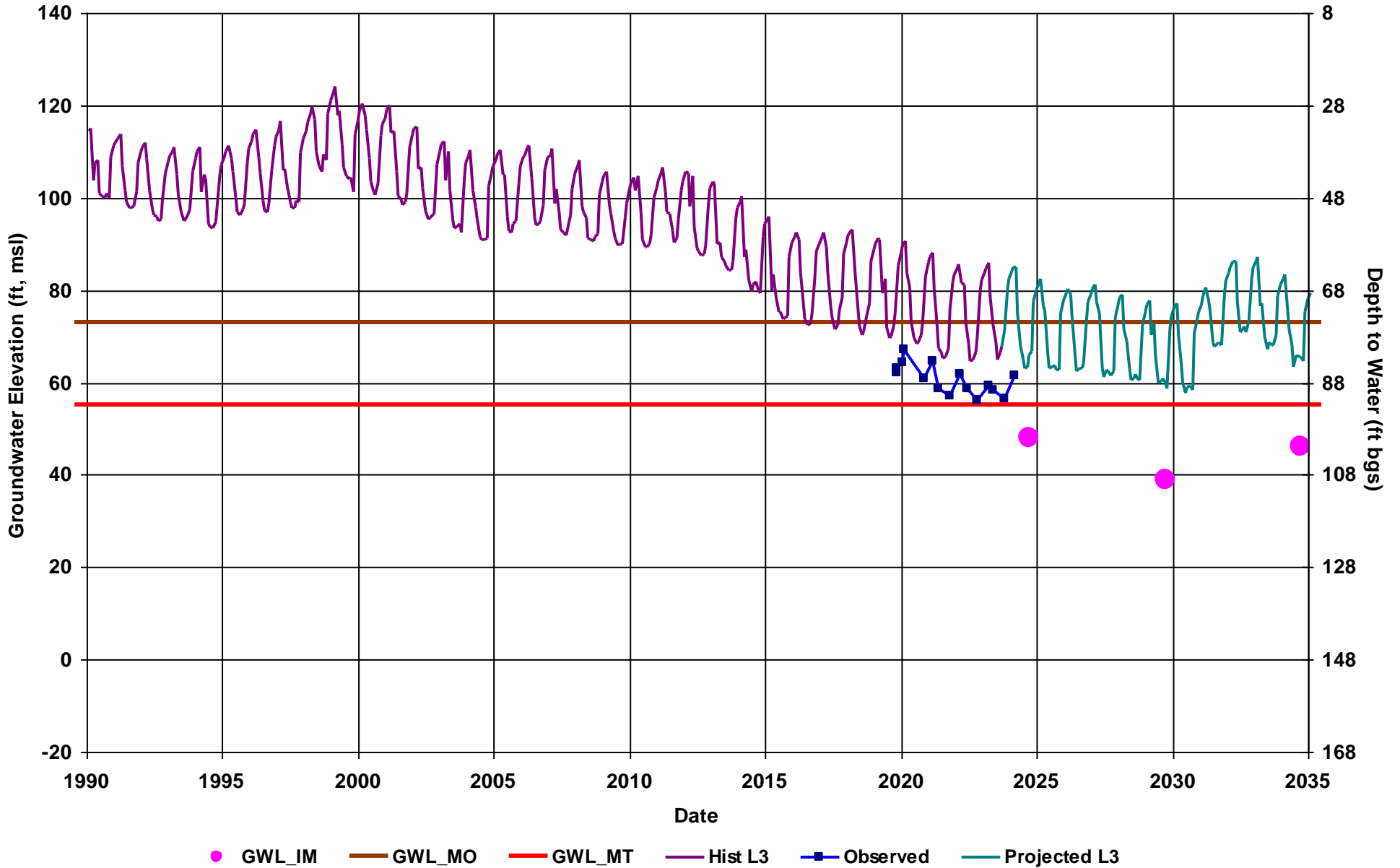
GSA: Madera Water District



Well Name: MSB03B  
Depth Zone: Upper  
Subbasin: Madera  
GSE (ft, msl): 148  
RMS ID: MSB03B

Total Depth (ft): 295  
Perf Top (ft): 215  
Perf Bottom (ft): 285  
Top Model Layer: 3  
Bottom Model Layer: 3

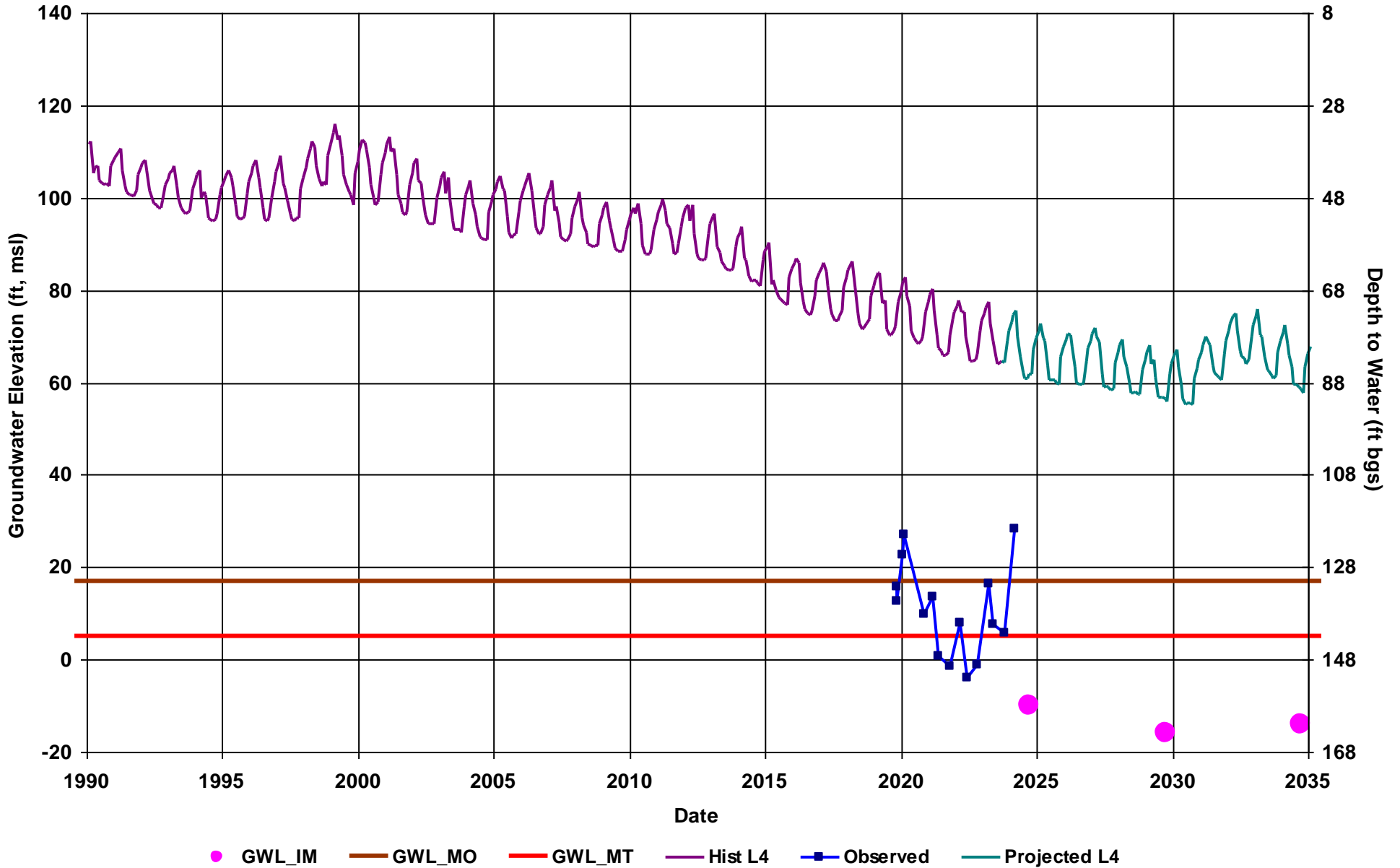
GSA: County of Madera



Well Name: MSB03C  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 148  
RMS ID: MSB03C

Total Depth (ft): 430  
Perf Top (ft): 355  
Perf Bottom (ft): 420  
Top Model Layer: 4  
Bottom Model Layer: 4

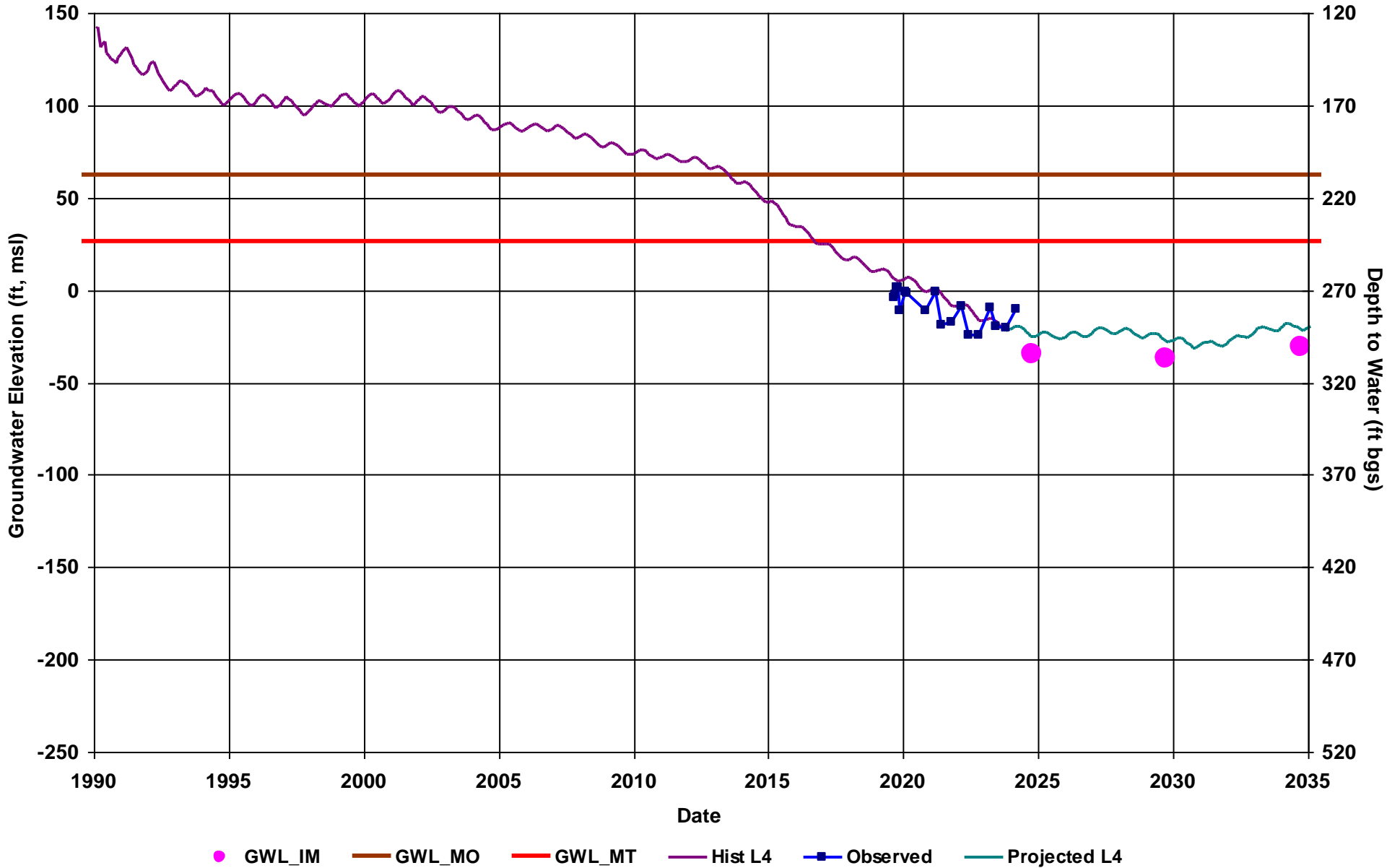
GSA: County of Madera



Well Name: MSB04B  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 270  
RMS ID: MSB04B

Total Depth (ft): 695  
Perf Top (ft): 530  
Perf Bottom (ft): 685  
Top Model Layer: 4  
Bottom Model Layer: 4

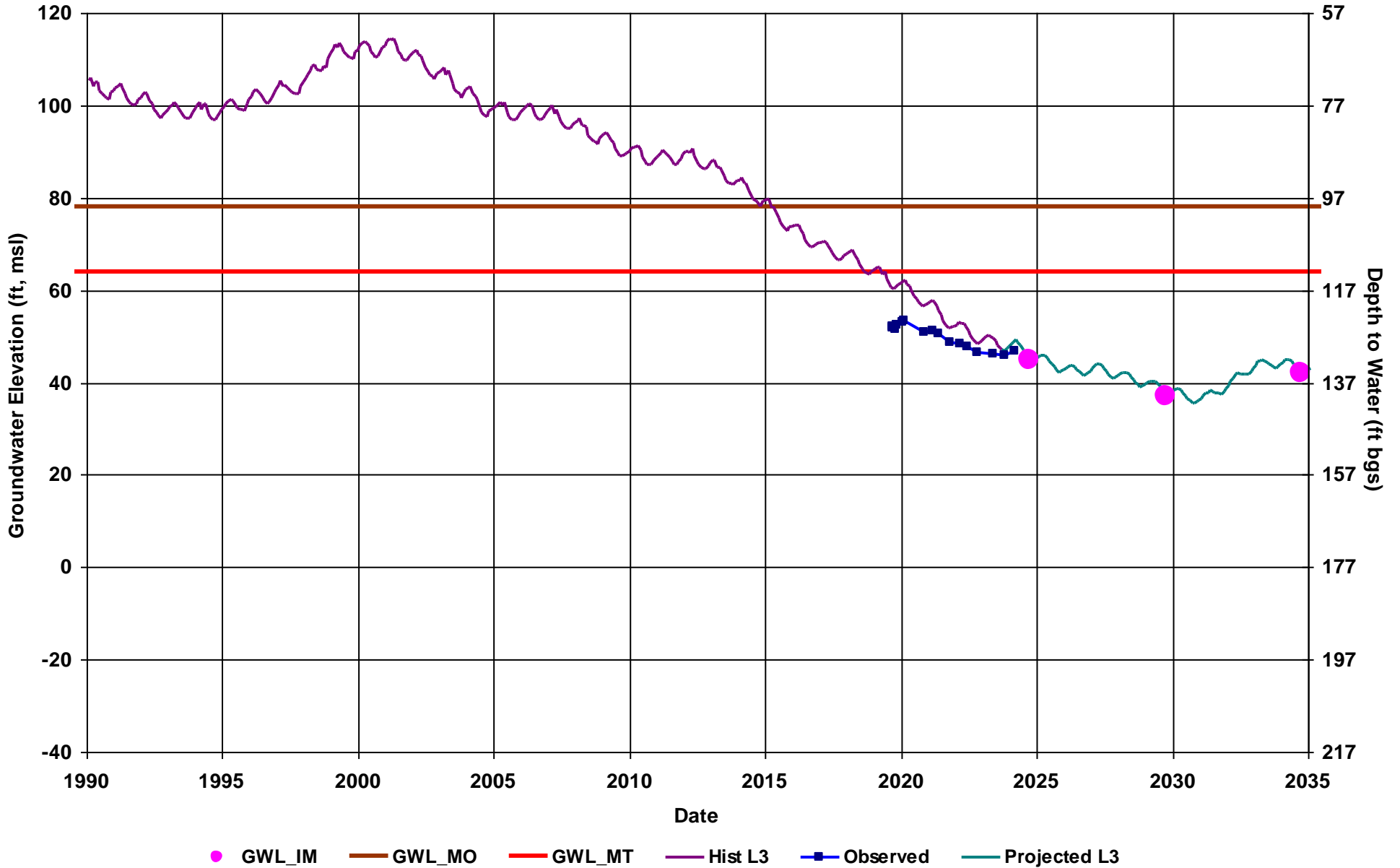
GSA: County of Madera



Well Name: MSB05A  
Depth Zone: Upper  
Subbasin: Madera  
GSE (ft, msl): 177  
RMS ID: MSB05A

Total Depth (ft): 210  
Perf Top (ft): 140  
Perf Bottom (ft): 200  
Top Model Layer: 3  
Bottom Model Layer: 3

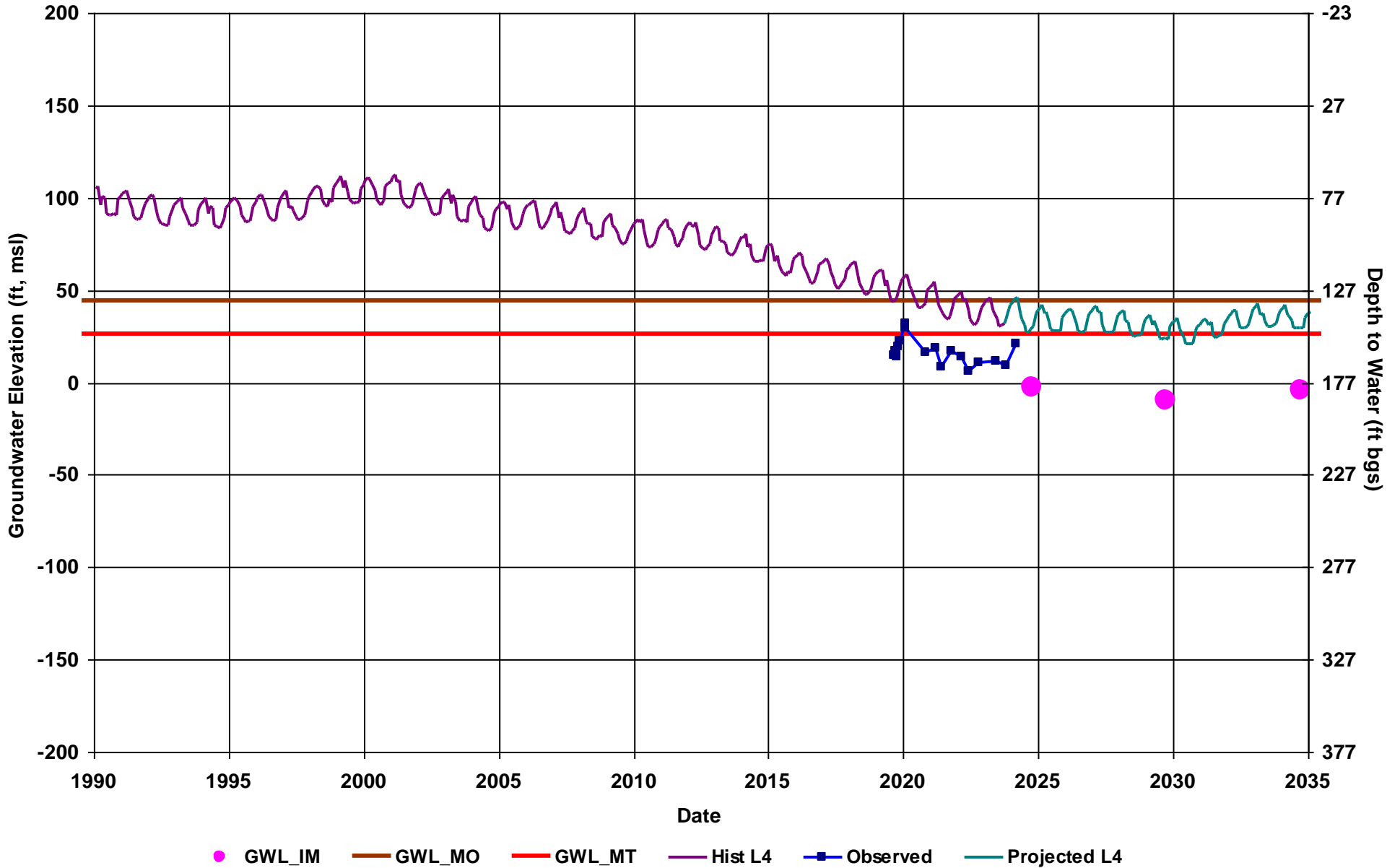
GSA: County of Madera



Well Name: MSB05B  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 177  
RMS ID: MSB05B

Total Depth (ft): 375  
Perf Top (ft): 240  
Perf Bottom (ft): 365  
Top Model Layer: 4  
Bottom Model Layer: 4

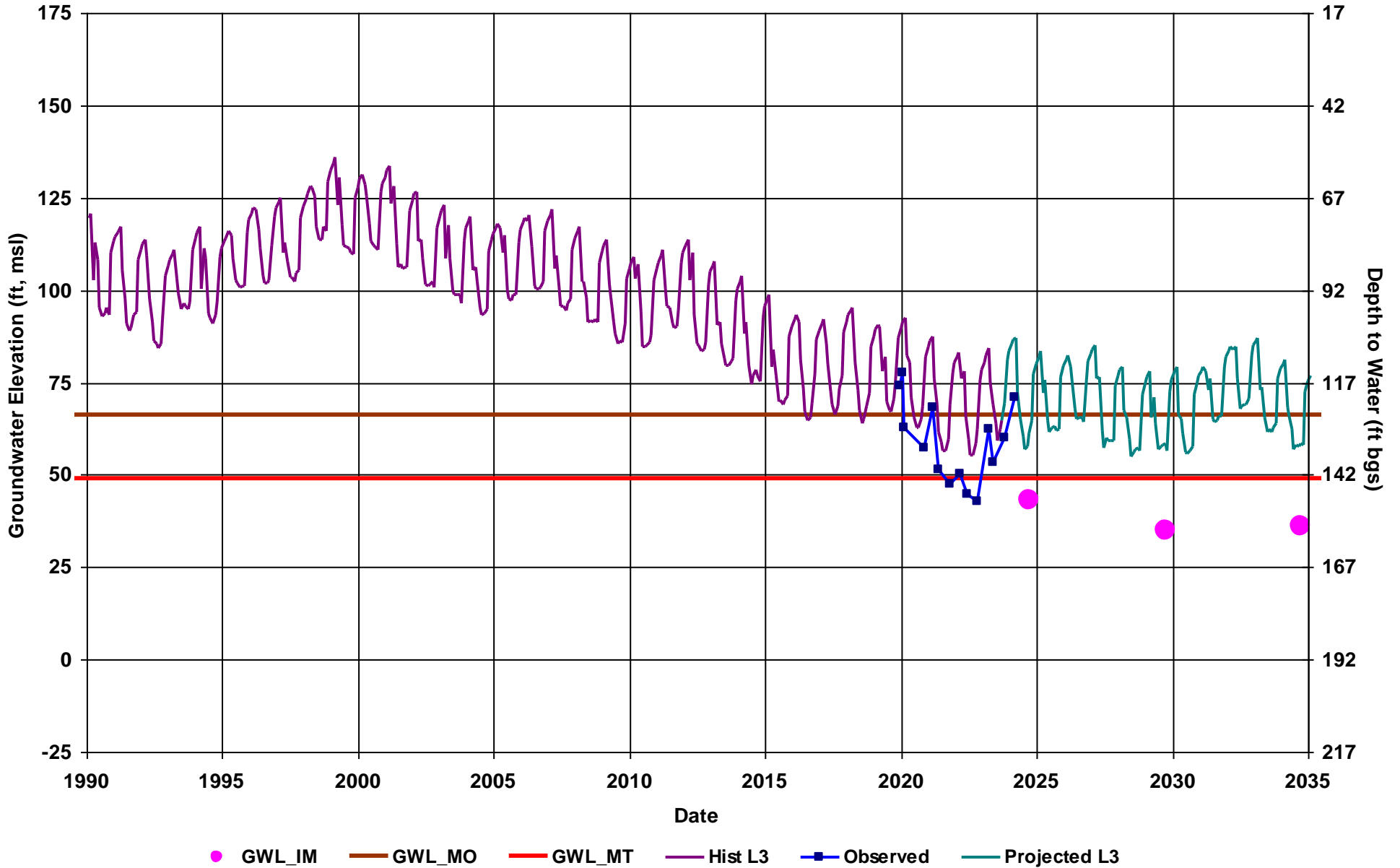
GSA: County of Madera



Well Name: MSB06A  
Depth Zone: Upper  
Subbasin: Madera  
GSE (ft, msl): 192  
RMS ID: MSB06A

Total Depth (ft): 350  
Perf Top (ft): 135  
Perf Bottom (ft): 340  
Top Model Layer: 3  
Bottom Model Layer: 3

GSA: County of Madera

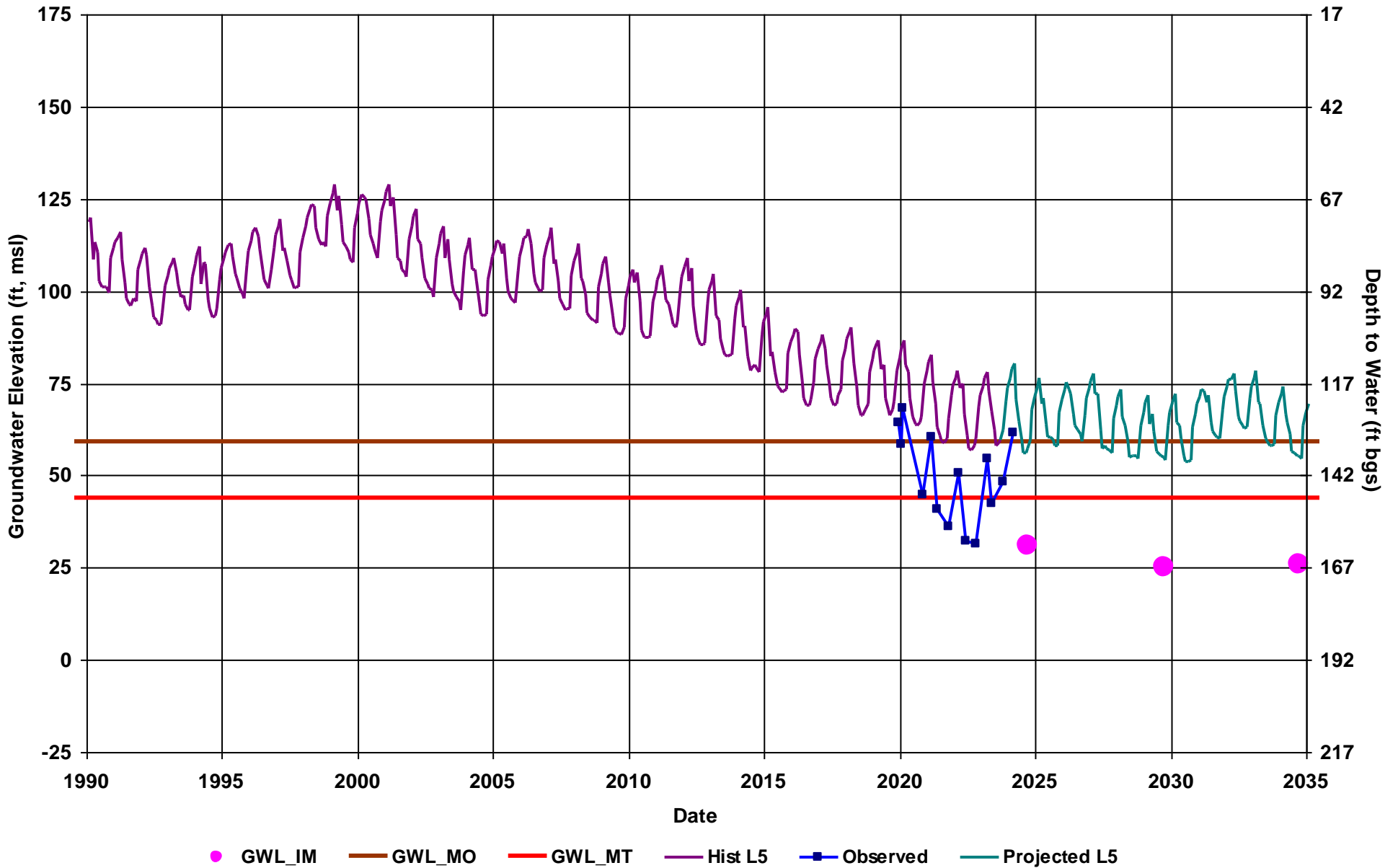




Well Name: MSB06C  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 192  
RMS ID: MSB06C

Total Depth (ft): 715  
Perf Top (ft): 630  
Perf Bottom (ft): 705  
Top Model Layer: 5  
Bottom Model Layer: 5

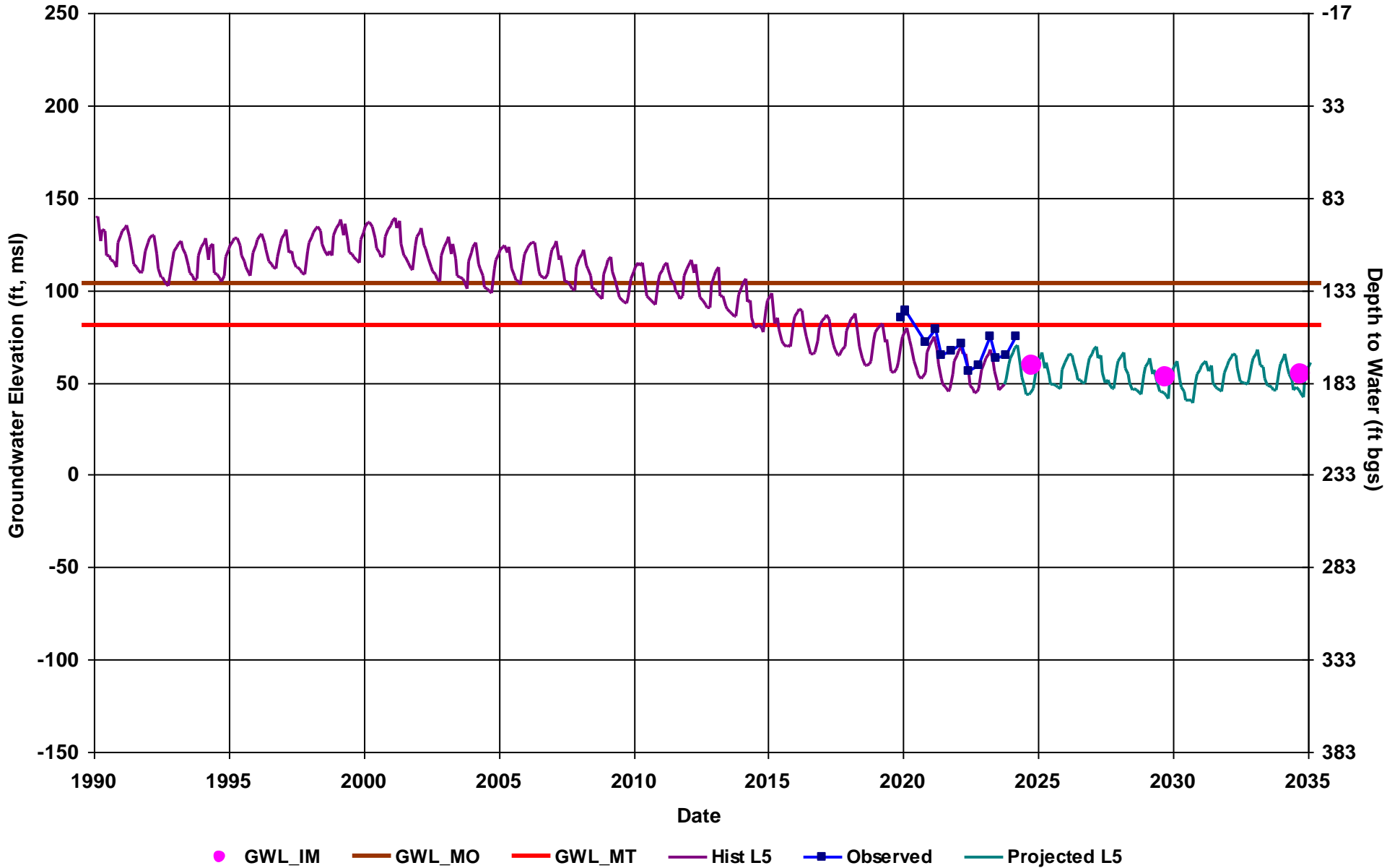
GSA: County of Madera



Well Name: MSB09C  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 233  
RMS ID: MSB09C

Total Depth (ft): 955  
Perf Top (ft): 880  
Perf Bottom (ft): 945  
Top Model Layer: 5  
Bottom Model Layer: 5

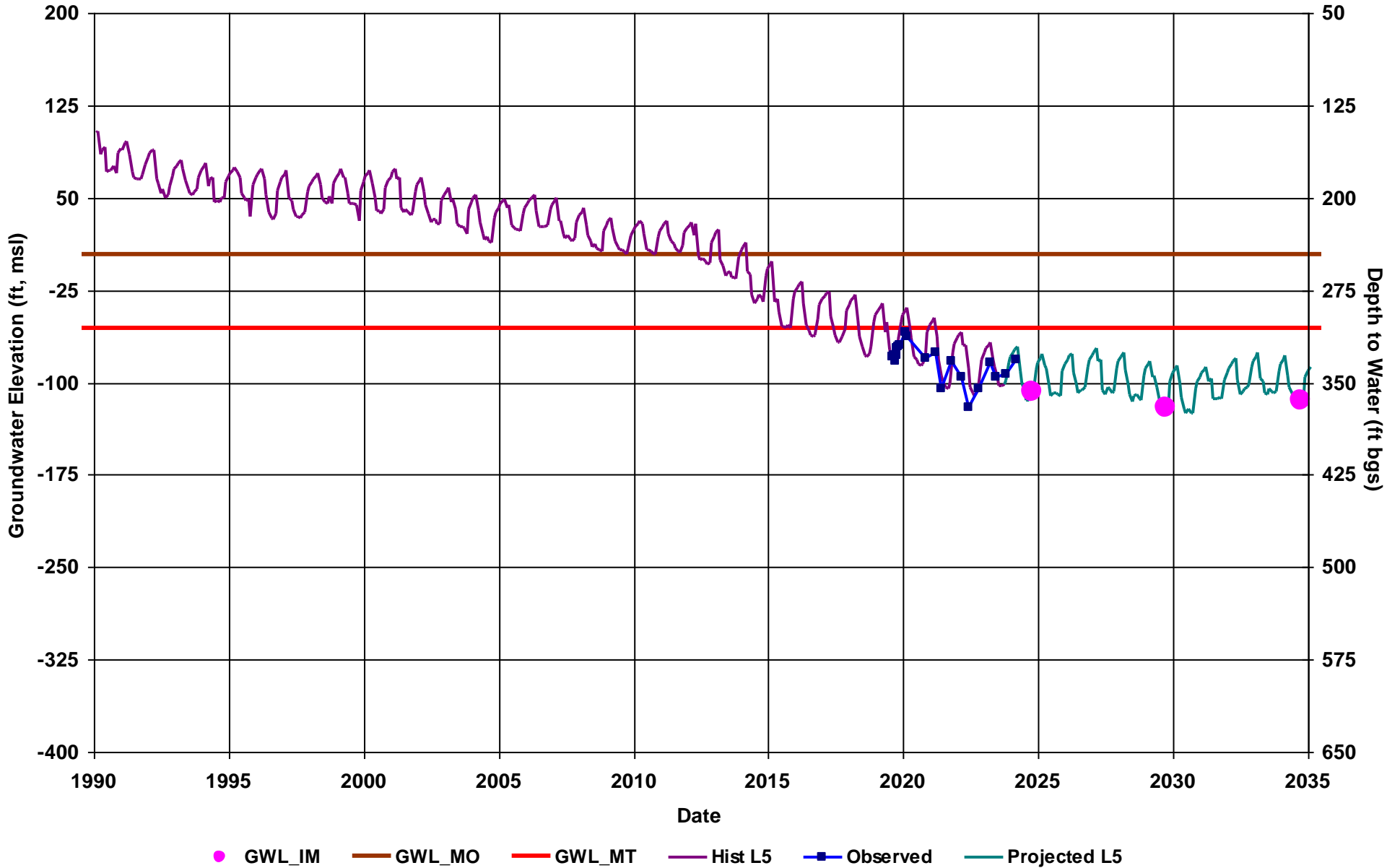
GSA: Madera Irrigation District



Well Name: MSB10C  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 250  
RMS ID: MSB10C

Total Depth (ft): 880  
Perf Top (ft): 790  
Perf Bottom (ft): 870  
Top Model Layer: 5  
Bottom Model Layer: 5

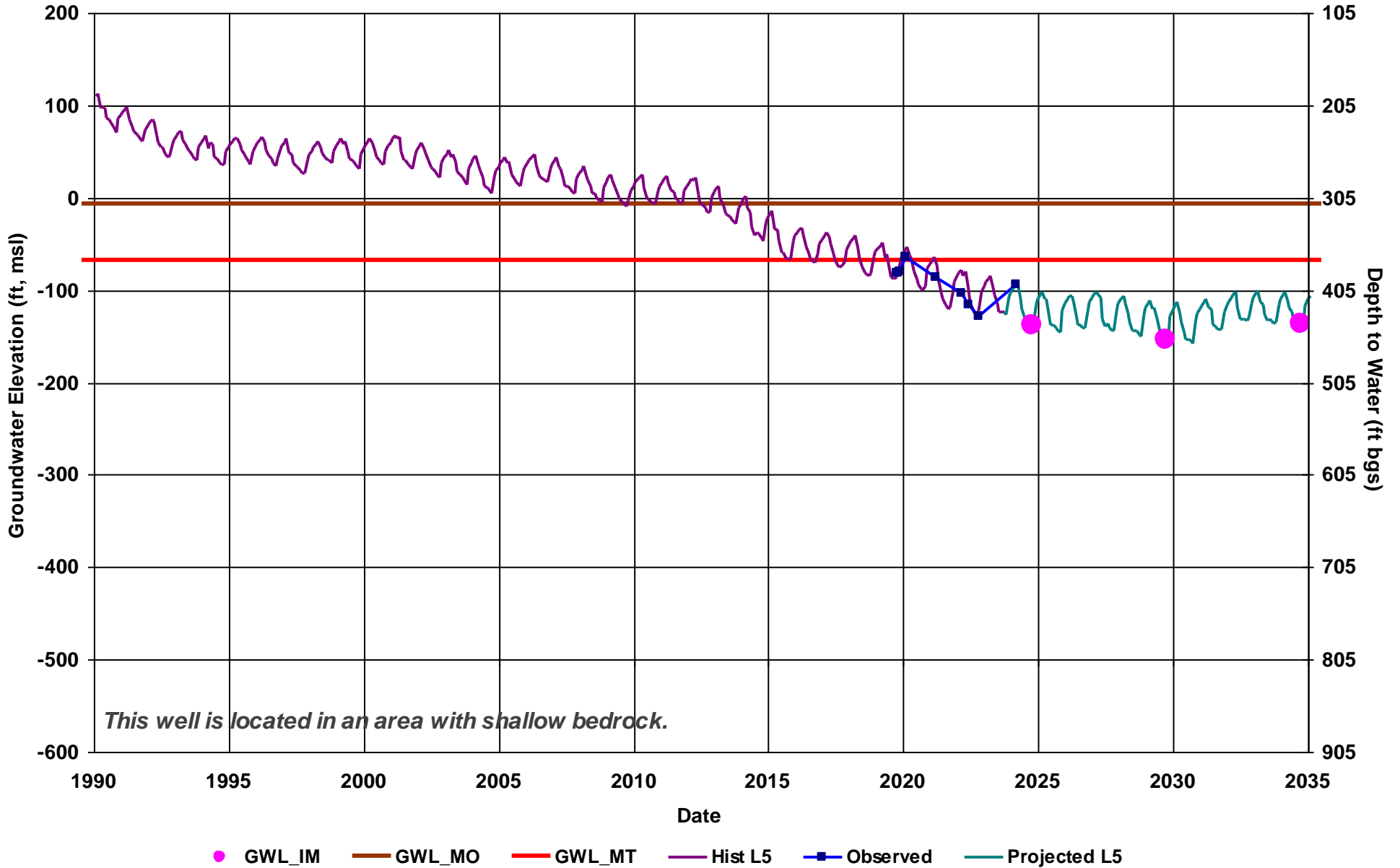
GSA: County of Madera



Well Name: MSB11C  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 305  
RMS ID: MSB11C

Total Depth (ft): 880  
Perf Top (ft): 775  
Perf Bottom (ft): 870  
Top Model Layer: 5  
Bottom Model Layer: 5

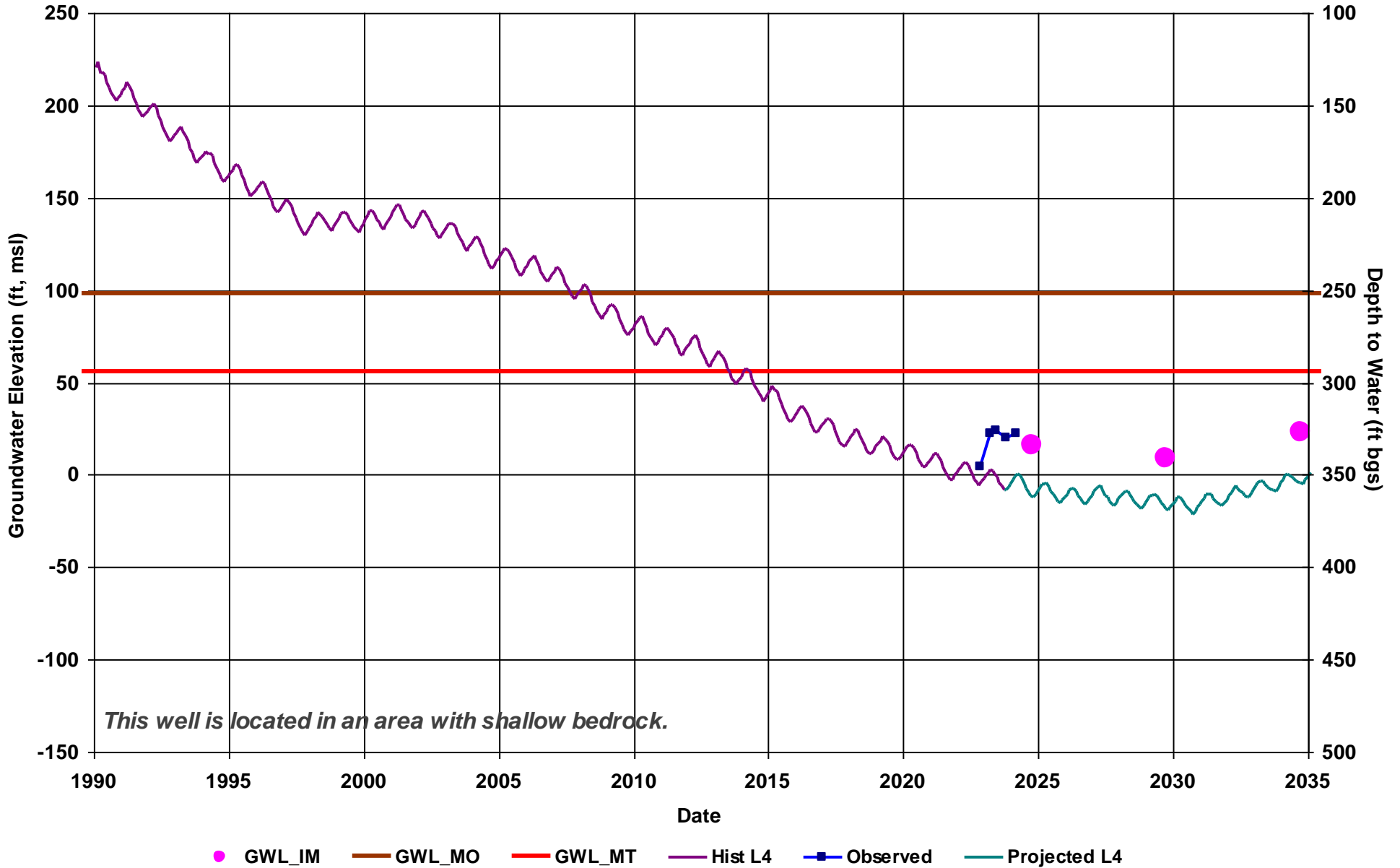
GSA: County of Madera



Well Name: MSB12  
Depth Zone: Lower  
Subbasin: Madera  
GSE (ft, msl): 350  
RMS ID: MSB12

Total Depth (ft): 465  
Perf Top (ft): 355  
Perf Bottom (ft): 465  
Top Model Layer: 4  
Bottom Model Layer: 4

GSA: County of Madera



## **APPENDIX 3.B. MEASURABLE OBJECTIVES AND MINIMUM THRESHOLDS FOR GROUNDWATER QUALITY**

Prepared as part of the  
**Joint Groundwater Sustainability Plan**  
**Madera Subbasin**

January 2020  
Amended January 2025

**GSP Team:**

Davids Engineering, Inc  
Luhdorff & Scalmanini  
ERA Economics  
Stillwater Sciences and  
California State University, Sacramento

**Summary of Recent (Since January 2015) Results for Key Water Quality Constituents in Groundwater Quality Indicator Wells**

| Well ID     | Arsenic Concentration (ug/L) |                |                |                        |                       | Nitrate Concentration (mg/L as nitrogen) |                |                |                        |                       | Specific Conductance (us/cm) |                |                |                        |                       | TDS Concentration (mg/L) |                |                |                        |                       |
|-------------|------------------------------|----------------|----------------|------------------------|-----------------------|--|----------------|----------------|------------------------|-----------------------|------------------------------|----------------|----------------|------------------------|-----------------------|--------------------------|----------------|----------------|------------------------|-----------------------|
|             | Minimum Result               | Maximum Result | Average Result | Date First Observation | Date Last Observation | Minimum Result                           | Maximum Result | Average Result | Date First Observation | Date Last Observation | Minimum Result               | Maximum Result | Average Result | Date First Observation | Date Last Observation | Minimum Result           | Maximum Result | Average Result | Date First Observation | Date Last Observation |
| MCE RMS-3   | ND                           | 160            | 63.20          | 8/18/2021              | 7/30/2024             | ND                                       | 0.53           | 0.27           | 8/18/2021              | 7/30/2024             | 873                          | 873            | 873            | 8/18/2021              | 8/18/2021             | 590                      | 720            | 640            | 8/18/2021              | 7/30/2024             |
| MID RMS-4   |                              |                |                |                        |                       |  |                |                |                        |                       |                              |                |                |                        |                       |                          |                |                |                        |                       |
| MID RMS-5B  |                              |                |                |                        |                       |  |                |                |                        |                       |                              |                |                |                        |                       |                          |                |                |                        |                       |
| MID RMS-6   | ND                           | ND             | 2.00           | 7/12/2022              | 7/12/2022             | 5.4                                      | 5.4            | 5.40           | 7/12/2022              | 7/12/2022             |                              |                |                |                        |                       | 270                      | 270            | 270            | 7/12/2022              | 7/12/2022             |
| MID RMS-7   | ND                           | ND             | 2.00           | 7/12/2022              | 7/25/2024             | 0.7                                      | 0.77           | 0.74           | 7/12/2022              | 7/25/2024             |                              |                |                |                        |                       | 190                      | 220            | 205            | 7/12/2022              | 7/25/2024             |
| MID RMS-13  |                              |                |                |                        |                       |  |                |                |                        |                       |                              |                |                |                        |                       |                          |                |                |                        |                       |
| MWD RMS-1   | 2                            | 3              | 2.75           | 7/18/2019              | 8/19/2022             | 1.4                                      | 2.8            | 2.23           | 7/18/2019              | 8/19/2022             | 256                          | 278            | 267            | 7/18/2019              | 8/19/2022             | 191                      | 230            | 205            | 7/18/2019              | 8/19/2022             |
| MSB03A      | 2.3                          | 4.7            | 3.10           | 2/12/2020              | 7/23/2024             | 7.2                                      | 8.1            | 7.70           | 6/22/2022              | 7/23/2024             | 1,200                        | 1,453          | 1,333          | 2/12/2020              | 8/3/2022              | 720                      | 930            | 833            | 2/12/2020              | 7/23/2024             |
| MSB03B      | 3.9                          | 5.5            | 4.57           | 2/12/2020              | 7/23/2024             | 0.37                                     | 0.45           | 0.41           | 6/15/2021              | 7/23/2024             | 280                          | 280            | 280            | 2/12/2020              | 2/12/2020             | 210                      | 400            | 354            | 2/12/2020              | 7/23/2024             |
| MSB03C      | ND                           | 5.5            | 4.33           | 2/12/2020              | 7/23/2024             | ND                                       | ND             | 0.22           | 6/15/2021              | 7/23/2024             | 370                          | 370            | 370            | 2/12/2020              | 2/12/2020             | 250                      | 1,400          | 990            | 2/12/2020              | 7/23/2024             |
| MSB04A      | ND                           | 3.1            | 2.52           | 2/13/2020              | 6/15/2023             | 5  | 6.5            | 5.80           | 6/15/2021              | 6/15/2023             | 280                          | 280            | 280            | 2/13/2020              | 2/13/2020             | 200                      | 240            | 218            | 2/13/2020              | 6/15/2023             |
| MSB04B      | 45                           | 57             | 48.33          | 2/13/2020              | 7/24/2024             | ND                                       | ND             | 0.20           | 6/15/2021              | 7/24/2024             | 600                          | 600            | 600            | 2/13/2020              | 2/13/2020             | 360                      | 420            | 386            | 2/13/2020              | 7/24/2024             |
| MSB04C      | 48                           | 60             | 54.00          | 2/13/2020              | 7/24/2024             | ND                                       | ND             | 0.20           | 6/15/2021              | 7/24/2024             | 520                          | 520            | 520            | 2/13/2020              | 2/13/2020             | 340                      | 400            | 364            | 2/13/2020              | 7/24/2024             |
| MSB05A      | 1.9                          | 10             | 5.15           | 2/12/2020              | 7/23/2024             | 3.2                                      | 18             | 9.53           | 6/22/2022              | 7/23/2024             | 716                          | 1,271          | 1,062          | 2/12/2020              | 8/3/2022              | 330                      | 720            | 559            | 2/12/2020              | 7/23/2024             |
| MSB05B      | 9                            | 49             | 27.50          | 2/12/2020              | 7/23/2024             | 0.29                                     | 2.3            | 0.98           | 6/22/2022              | 7/23/2024             | 340                          | 340            | 340            | 2/12/2020              | 2/12/2020             | 230                      | 320            | 260            | 2/12/2020              | 7/23/2024             |
| MSB05C      | 5.3                          | 9              | 7.55           | 2/12/2020              | 7/23/2024             | ND                                       | 0.92           | 0.68           | 6/22/2022              | 7/23/2024             | 430                          | 430            | 430            | 2/12/2020              | 2/12/2020             | 99                       | 270            | 210            | 2/12/2020              | 7/23/2024             |
| MSB06A      | ND                           | 3.2            | 2.09           | 2/12/2020              | 7/23/2024             | 8.5                                      | 16             | 10.68          | 6/15/2021              | 7/23/2024             | 562                          | 660            | 618            | 2/12/2020              | 8/3/2022              | 330                      | 1,300          | 530            | 2/12/2020              | 7/23/2024             |
| MSB06B      | ND                           | 47             | 31.80          | 2/12/2020              | 7/23/2024             | 0.25                                     | 4              | 1.39           | 6/15/2021              | 7/23/2024             | 570                          | 570            | 570            | 2/12/2020              | 2/12/2020             | 350                      | 520            | 398            | 2/12/2020              | 7/23/2024             |
| MSB06C      | 2                            | 20             | 12.67          | 2/12/2020              | 7/23/2024             | ND                                       | 0.97           | 0.37           | 6/15/2021              | 7/23/2024             | 760                          | 760            | 760            | 2/12/2020              | 2/12/2020             | 160                      | 540            | 437            | 2/12/2020              | 7/23/2024             |
| MSB09A      | ND                           | 2.1            | 1.83           | 2/11/2020              | 7/25/2024             | 7.7                                      | 9.9            | 8.63           | 6/17/2021              | 7/25/2024             | 693                          | 900            | 783            | 2/11/2020              | 8/3/2022              | 450                      | 570            | 505            | 2/11/2020              | 7/25/2024             |
| MSB09B      | ND                           | 3.3            | 2.33           | 2/11/2020              | 7/25/2024             | 1.3                                      | 1.7            | 1.45           | 6/17/2021              | 7/25/2024             | 230                          | 230            | 230            | 2/11/2020              | 2/11/2020             | 170                      | 530            | 268            | 2/11/2020              | 7/25/2024             |
| MSB09C      | 110                          | 120            | 112.00         | 2/11/2020              | 7/25/2024             | ND                                       | ND             | 0.20           | 6/17/2021              | 7/25/2024             | 430                          | 430            | 430            | 2/11/2020              | 2/11/2020             | 130                      | 310            | 248            | 2/11/2020              | 7/25/2024             |
| MSB10B      | ND                           | 3              | 2.33           | 2/13/2020              | 7/26/2024             | 1.5                                      | 2.3            | 2.03           | 6/15/2021              | 7/26/2024             | 268                          | 290            | 283            | 2/13/2020              | 8/2/2022              | 170                      | 220            | 208            | 2/13/2020              | 7/26/2024             |
| MSB10C      | ND                           | 3.8            | 2.37           | 2/13/2020              | 7/26/2024             | ND                                       | 1.7            | 0.60           | 6/15/2021              | 7/26/2024             | 440                          | 440            | 440            | 2/13/2020              | 2/13/2020             | 260                      | 540            | 326            | 2/13/2020              | 7/26/2024             |
| MSB11C      | 4.5                          | 8.5            | 6.50           | 2/11/2020              | 7/31/2024             | ND                                       | ND             | 0.23           | 6/21/2022              | 7/31/2024             | 850                          | 850            | 850            | 2/11/2020              | 2/11/2020             | 450                      | 520            | 477            | 2/11/2020              | 7/31/2024             |
| MSB13A      |                              |                |                |                        |                       |  |                |                |                        |                       |                              |                |                |                        |                       |                          |                |                |                        |                       |
| MSB13B      | 3.1                          | 3.6            | 3.35           | 6/15/2023              | 7/24/2024             | 3.5                                      | 3.7            | 3.60           | 6/15/2023              | 7/24/2024             |                              |                |                |                        |                       | 290                      | 290            | 290            | 6/15/2023              | 7/24/2024             |
| MSB13C      | 3.6                          | 4.7            | 4.15           | 6/15/2023              | 7/24/2024             | ND                                       | ND             | 0.23           | 6/15/2023              | 7/24/2024             |                              |                |                |                        |                       | 890                      | 1,000          | 945            | 6/15/2023              | 7/24/2024             |
| 2000507-001 | 2.6                          | 4.6            | 3.80           | 4/20/2017              | 5/11/2023             | 2.8                                      | 3.1            | 2.98           | 4/20/2017              | 6/28/2024             |                              |                |                |                        |                       |                          |                |                |                        |                       |
| 2000553-001 | 1.5                          | 2              | 1.78           | 9/23/2015              | 2/14/2024             | 3.8                                      | 9.8            | 5.20           | 6/22/2015              | 7/9/2024              | 380                          | 510            | 438            | 1/10/2018              | 10/9/2023             | 220                      | 420            | 325            | 9/23/2015              | 2/14/2024             |
| 2000682-002 | 2.1                          | 2.2            | 2.15           | 6/21/2017              | 8/23/2023             | 0.76                                     | 11.8           | 3.04           | 7/14/2015              | 1/16/2024             | 200                          | 230            | 215            | 5/26/2020              | 8/23/2023             |                          |                |                |                        |                       |
| 2000727-001 | 1.4                          | 1.8            | 1.63           | 9/23/2015              | 2/21/2024             | 1.5                                      | 6.7            | 2.16           | 9/23/2015              | 2/21/2024             | 290                          | 300            | 295            | 1/10/2018              | 1/6/2021              | 200                      | 380            | 253            | 9/23/2015              | 2/21/2024             |
| 2000938-001 |                              |                |                |                        |                       | 1.1                                      | 5.6            | 1.63           | 1/9/2015               | 1/17/2023             | 220                          | 230            | 227            | 6/29/2016              | 3/4/2020              |                          |                |                |                        |                       |
| 2010002-014 |                              |                |                |                        |                       | 0.88                                     | 7.4            | 1.86           | 5/21/2015              | 6/3/2024              | 240                          | 297            | 258            | 8/25/2016              | 5/22/2023             | 180                      | 207            | 191            | 8/25/2016              | 5/22/2023             |
| 2010002-032 | 2                            | 2              | 2.00           | 3/25/2024              | 3/25/2024             | 1.9                                      | 9.4            | 3.17           | 2/19/2015              | 3/25/2024             | 280                          | 349            | 312            | 2/16/2017              | 11/10/2021            | 200                      | 235            | 219            | 2/19/2015              | 11/10/2021            |
| 2010008-005 | 2                            | 3.1            | 2.68           | 3/4/2015               | 3/25/2024             | 1.8                                      | 18             | 4.65           | 3/4/2015               | 3/25/2024             | 430                          | 480            | 455            | 1/10/2018              | 1/6/2021              | 290                      | 360            | 323            | 3/4/2015               | 3/25/2024             |
| 2010009-002 |                              |                |                |                        |                       | 1.6                                      | 1.8            | 1.70           | 1/11/2016              | 1/26/2017             |                              |                |                |                        |                       |                          |                |                |                        |                       |
| 2010010-007 | 2.7                          | 2.7            | 2.70           | 9/9/2022               | 9/9/2022              | 0.24                                     | 6              | 1.67           | 1/5/2015               | 1/2/2024              | 230                          | 290            | 263            | 1/15/2016              | 9/9/2022              | 210                      | 220            | 213            | 1/15/2016              | 9/9/2022              |
| 2010801-001 | 4.8                          | 22             | 16.58          | 1/6/2015               | 7/2/2024              | 0.55                                     | 2.5            | 1.78           | 4/14/2015              | 8/5/2021              | 310                          | 320            | 315            | 8/7/2018               | 8/5/2021              | 220                      | 250            | 237            | 9/15/2015              | 8/5/2021              |
| 2801077-001 |                              |                |                |                        |                       | 0.1                                      | 0.14           | 0.12           | 4/12/2018              | 4/24/2024             |                              |                |                |                        |                       |                          |                |                |                        |                       |
| ESJ12       | 0.57                         | 0.57           | 0.57           | 7/27/2021              | 7/27/2021             |  |                |                |                        |                       | 805                          | 805            | 805            | 8/4/2020               | 8/4/2020              |                          |                |                |                        |                       |
| ESJ17       | 2                            | 2              | 2.00           | 7/27/2021              | 7/27/2021             |  |                |                |                        |                       | 249                          | 249            | 249            | 8/4/2020               | 8/4/2020              |                          |                |                |                        |                       |

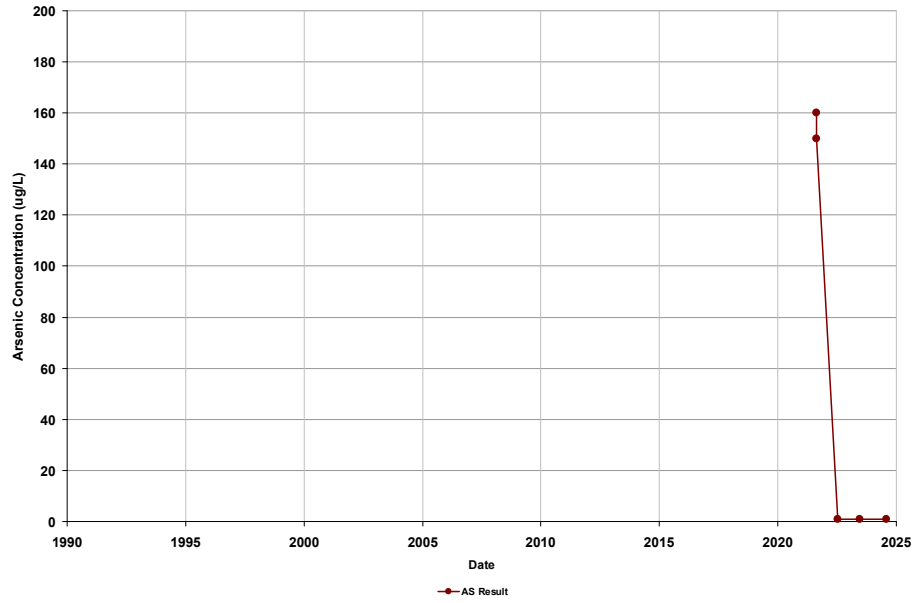
**Summary of All Historical Results for Key Water Quality Constituents in Groundwater Quality Indicator Wells**

|             | Arsenic Concentration (ug/L) |                |                |                        |                       | Nitrate Concentration (mg/L as nitrogen) |                |                |                        |                       | Specific Conductance (us/cm) |                |                |                        |                       | TDS Concentration (mg/L) |                |                |                        |                       |
|-------------|------------------------------|----------------|----------------|------------------------|-----------------------|--|----------------|----------------|------------------------|-----------------------|------------------------------|----------------|----------------|------------------------|-----------------------|--------------------------|----------------|----------------|------------------------|-----------------------|
| Well ID     | Minimum Result               | Maximum Result | Average Result | Date First Observation | Date Last Observation | Minimum Result                           | Maximum Result | Average Result | Date First Observation | Date Last Observation | Minimum Result               | Maximum Result | Average Result | Date First Observation | Date Last Observation | Minimum Result           | Maximum Result | Average Result | Date First Observation | Date Last Observation |
| MCE RMS-3   | ND                           | 160            | 63.20          | 8/18/2021              | 7/30/2024             | ND                                       | 0.53           | 0.27           | 8/18/2021              | 7/30/2024             | 873                          | 873            | 873            | 8/18/2021              | 8/18/2021             | 590                      | 720            | 640            | 8/18/2021              | 7/30/2024             |
| MID RMS-4   |                              |                |                |                        |                       |  |                |                |                        |                       |                              |                |                |                        |                       |                          |                |                |                        |                       |
| MID RMS-5B  |                              |                |                |                        |                       |  |                |                |                        |                       |                              |                |                |                        |                       |                          |                |                |                        |                       |
| MID RMS-6   | ND                           | ND             | 2.00           | 7/12/2022              | 7/12/2022             | 5.4                                      | 5.4            | 5.40           | 7/12/2022              | 7/12/2022             |                              |                |                |                        |                       | 270                      | 270            | 270            | 7/12/2022              | 7/12/2022             |
| MID RMS-7   | ND                           | ND             | 2.00           | 7/12/2022              | 7/25/2024             | 0.7                                      | 0.77           | 0.74           | 7/12/2022              | 7/25/2024             |                              |                |                |                        |                       | 190                      | 220            | 205            | 7/12/2022              | 7/25/2024             |
| MID RMS-13  |                              |                |                |                        |                       |  |                |                |                        |                       |                              |                |                |                        |                       |                          |                |                |                        |                       |
| MWD RMS-1   | 2                            | 3              | 2.75           | 7/18/2019              | 8/19/2022             | 1.4                                      | 2.8            | 2.23           | 7/18/2019              | 8/19/2022             | 256                          | 278            | 267            | 7/18/2019              | 8/19/2022             | 191                      | 230            | 205            | 7/18/2019              | 8/19/2022             |
| MSB03A      | 2.3                          | 4.7            | 3.10           | 2/12/2020              | 7/23/2024             | 7.2                                      | 8.1            | 7.70           | 6/22/2022              | 7/23/2024             | 1,200                        | 1,453          | 1,333          | 2/12/2020              | 8/3/2022              | 720                      | 930            | 833            | 2/12/2020              | 7/23/2024             |
| MSB03B      | 3.9                          | 5.5            | 4.57           | 2/12/2020              | 7/23/2024             | 0.37                                     | 0.45           | 0.41           | 6/15/2021              | 7/23/2024             | 280                          | 280            | 280            | 2/12/2020              | 2/12/2020             | 210                      | 400            | 354            | 2/12/2020              | 7/23/2024             |
| MSB03C      | ND                           | 5.5            | 4.33           | 2/12/2020              | 7/23/2024             | ND                                       | ND             | 0.22           | 6/15/2021              | 7/23/2024             | 370                          | 370            | 370            | 2/12/2020              | 2/12/2020             | 250                      | 1,400          | 990            | 2/12/2020              | 7/23/2024             |
| MSB04A      | ND                           | 3.1            | 2.52           | 2/13/2020              | 6/15/2023             | 5  | 6.5            | 5.80           | 6/15/2021              | 6/15/2023             | 280                          | 280            | 280            | 2/13/2020              | 2/13/2020             | 200                      | 240            | 218            | 2/13/2020              | 6/15/2023             |
| MSB04B      | 45                           | 57             | 48.33          | 2/13/2020              | 7/24/2024             | ND                                       | ND             | 0.20           | 6/15/2021              | 7/24/2024             | 600                          | 600            | 600            | 2/13/2020              | 2/13/2020             | 360                      | 420            | 386            | 2/13/2020              | 7/24/2024             |
| MSB04C      | 48                           | 60             | 54.00          | 2/13/2020              | 7/24/2024             | ND                                       | ND             | 0.20           | 6/15/2021              | 7/24/2024             | 520                          | 520            | 520            | 2/13/2020              | 2/13/2020             | 340                      | 400            | 364            | 2/13/2020              | 7/24/2024             |
| MSB05A      | 1.9                          | 10             | 5.15           | 2/12/2020              | 7/23/2024             | 3.2                                      | 18             | 9.53           | 6/22/2022              | 7/23/2024             | 716                          | 1,271          | 1,062          | 2/12/2020              | 8/3/2022              | 330                      | 720            | 559            | 2/12/2020              | 7/23/2024             |
| MSB05B      | 9                            | 49             | 27.50          | 2/12/2020              | 7/23/2024             | 0.29                                     | 2.3            | 0.98           | 6/22/2022              | 7/23/2024             | 340                          | 340            | 340            | 2/12/2020              | 2/12/2020             | 230                      | 320            | 260            | 2/12/2020              | 7/23/2024             |
| MSB05C      | 5.3                          | 9              | 7.55           | 2/12/2020              | 7/23/2024             | ND                                       | 0.92           | 0.68           | 6/22/2022              | 7/23/2024             | 430                          | 430            | 430            | 2/12/2020              | 2/12/2020             | 99                       | 270            | 210            | 2/12/2020              | 7/23/2024             |
| MSB06A      | ND                           | 3.2            | 2.09           | 2/12/2020              | 7/23/2024             | 8.5                                      | 16             | 10.68          | 6/15/2021              | 7/23/2024             | 562                          | 660            | 618            | 2/12/2020              | 8/3/2022              | 330                      | 1,300          | 530            | 2/12/2020              | 7/23/2024             |
| MSB06B      | ND                           | 47             | 31.80          | 2/12/2020              | 7/23/2024             | 0.25                                     | 4              | 1.39           | 6/15/2021              | 7/23/2024             | 570                          | 570            | 570            | 2/12/2020              | 2/12/2020             | 350                      | 520            | 398            | 2/12/2020              | 7/23/2024             |
| MSB06C      | 2                            | 20             | 12.67          | 2/12/2020              | 7/23/2024             | ND                                       | 0.97           | 0.37           | 6/15/2021              | 7/23/2024             | 760                          | 760            | 760            | 2/12/2020              | 2/12/2020             | 160                      | 540            | 437            | 2/12/2020              | 7/23/2024             |
| MSB09A      | ND                           | 2.1            | 1.83           | 2/11/2020              | 7/25/2024             | 7.7                                      | 9.9            | 8.63           | 6/17/2021              | 7/25/2024             | 693                          | 900            | 783            | 2/11/2020              | 8/3/2022              | 450                      | 570            | 505            | 2/11/2020              | 7/25/2024             |
| MSB09B      | ND                           | 3.3            | 2.33           | 2/11/2020              | 7/25/2024             | 1.3                                      | 1.7            | 1.45           | 6/17/2021              | 7/25/2024             | 230                          | 230            | 230            | 2/11/2020              | 2/11/2020             | 170                      | 530            | 268            | 2/11/2020              | 7/25/2024             |
| MSB09C      | 110                          | 120            | 112.00         | 2/11/2020              | 7/25/2024             | ND                                       | ND             | 0.20           | 6/17/2021              | 7/25/2024             | 430                          | 430            | 430            | 2/11/2020              | 2/11/2020             | 130                      | 310            | 248            | 2/11/2020              | 7/25/2024             |
| MSB10B      | ND                           | 3              | 2.33           | 2/13/2020              | 7/26/2024             | 1.5                                      | 2.3            | 2.03           | 6/15/2021              | 7/26/2024             | 268                          | 290            | 283            | 2/13/2020              | 8/2/2022              | 170                      | 220            | 208            | 2/13/2020              | 7/26/2024             |
| MSB10C      | ND                           | 3.8            | 2.37           | 2/13/2020              | 7/26/2024             | ND                                       | 1.7            | 0.60           | 6/15/2021              | 7/26/2024             | 440                          | 440            | 440            | 2/13/2020              | 2/13/2020             | 260                      | 540            | 326            | 2/13/2020              | 7/26/2024             |
| MSB11C      | 4.5                          | 8.5            | 6.50           | 2/11/2020              | 7/31/2024             | ND                                       | ND             | 0.23           | 6/21/2022              | 7/31/2024             | 850                          | 850            | 850            | 2/11/2020              | 2/11/2020             | 450                      | 520            | 477            | 2/11/2020              | 7/31/2024             |
| MSB13A      |                              |                |                |                        |                       |  |                |                |                        |                       |                              |                |                |                        |                       |                          |                |                |                        |                       |
| MSB13B      | 3.1                          | 3.6            | 3.35           | 6/15/2023              | 7/24/2024             | 3.5                                      | 3.7            | 3.60           | 6/15/2023              | 7/24/2024             |                              |                |                |                        |                       | 290                      | 290            | 290            | 6/15/2023              | 7/24/2024             |
| MSB13C      | 3.6                          | 4.7            | 4.15           | 6/15/2023              | 7/24/2024             | ND                                       | ND             | 0.23           | 6/15/2023              | 7/24/2024             |                              |                |                |                        |                       | 890                      | 1,000          | 945            | 6/15/2023              | 7/24/2024             |
| 2000507-001 | 2.6                          | 4.6            | 3.83           | 12/23/2008             | 5/11/2023             | 2.8                                      | 9.7            | 5.43           | 11/5/2004              | 6/28/2024             |                              |                |                |                        |                       |                          |                |                |                        |                       |
| 2000553-001 | 1.5                          | 2.6            | 1.95           | 5/27/2008              | 2/14/2024             | 3.8                                      | 22             | 7.71           | 12/8/2005              | 7/9/2024              | 170                          | 510            | 390            | 12/8/2005              | 10/9/2023             | 180                      | 420            | 281            | 12/8/2005              | 2/14/2024             |
| 2000682-002 | 2.1                          | 3.8            | 2.70           | 5/20/2008              | 8/23/2023             | 0.76                                     | 13.8           | 6.72           | 5/20/2008              | 1/16/2024             | 200                          | 306            | 245            | 5/20/2008              | 8/23/2023             | 220                      | 220            | 220            | 5/20/2008              | 5/20/2008             |
| 2000727-001 | ND                           | 2.1            | 1.80           | 5/27/2008              | 2/21/2024             | 1.5                                      | 7.8            | 4.85           | 5/24/2006              | 2/21/2024             | 190                          | 310            | 276            | 3/18/2008              | 1/6/2021              | 190                      | 380            | 229            | 5/27/2008              | 2/21/2024             |
| 2000938-001 | 2                            | 2              | 2.00           | 12/17/2008             | 8/4/2010              | 1.1                                      | 6.5            | 3.19           | 6/25/2008              | 1/17/2023             | 220                          | 230            | 226            | 8/4/2011               | 3/4/2020              |                          |                |                |                        |                       |
| 2010002-014 | ND                           | 30             | 6.71           | 3/4/1986               | 5/22/2008             | ND                                       | 14             | 4.50           | 3/4/1986               | 6/3/2024              | 221                          | 297            | 241            | 3/4/1986               | 5/22/2023             | 148                      | 207            | 181            | 3/4/1986               | 5/22/2023             |
| 2010002-032 | ND                           | 3.9            | 2.48           | 11/16/2006             | 3/25/2024             | ND                                       | 12             | 5.88           | 11/16/2006             | 3/25/2024             | 220                          | 349            | 281            | 9/6/2006               | 11/10/2021            | 190                      | 240            | 212            | 9/6/2006               | 11/10/2021            |
| 2010008-005 | 2                            | 4.4            | 3.01           | 5/1/1997               | 3/25/2024             | 1.8                                      | 22.3           | 11.82          | 5/1/1997               | 3/25/2024             | 350                          | 480            | 419            | 5/1/1997               | 1/6/2021              | 280                      | 360            | 322            | 5/1/1997               | 3/25/2024             |
| 2010009-002 | 4.1                          | 10             | 5.99           | 10/22/1985             | 7/15/2013             | 1.6                                      | 8.7            | 6.36           | 10/22/1985             | 1/26/2017             | 140                          | 200            | 173            | 10/22/1985             | 7/15/2013             | 110                      | 150            | 138            | 10/22/1985             | 7/15/2013             |
| 2010010-007 | 2                            | 3.2            | 2.38           | 10/18/2005             | 9/9/2022              | 0.24                                     | 20             | 8.16           | 10/18/2005             | 1/2/2024              | 200                          | 290            | 238            | 10/18/2005             | 9/9/2022              | 190                      | 220            | 204            | 10/18/2005             | 9/9/2022              |
| 2010801-001 | 4.3                          | 22             | 14.86          | 3/4/1998               | 7/2/2024              | ND                                       | 4.6            | 1.64           | 3/4/1998               | 8/5/2021              | 300                          | 390            | 332            | 3/4/1998               | 8/5/2021              | 220                      | 270            | 242            | 3/4/1998               | 8/5/2021              |
| 2801077-001 | 5                            | 5              | 5.00           | 4/3/2002               | 4/3/2002              | ND                                       | 75             | 10.77          | 4/3/2002               | 4/24/2024             |                              |                |                |                        |                       |                          |                |                |                        |                       |
| ESJ12       | 0.57                         | 0.57           | 0.57           | 7/27/2021              | 7/27/2021             |  |                |                |                        |                       | 805                          | 805            | 805            | 8/4/2020               | 8/4/2020              |                          |                |                |                        |                       |
| ESJ17       | 2                            | 2              | 2.00           | 7/27/2021              | 7/27/2021             |  |                |                |                        |                       | 249                          | 249            | 249            | 8/4/2020               | 8/4/2020              |                          |                |                |                        |                       |



Well Name: MCE RMS-3  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Unknown

Total Depth (ft bgs):  
Perf. Top (ft bgs):  
Perf. Bottom (ft bgs):



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-4  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

Total Depth (ft bgs): 698  
Perf. Top (ft bgs): 320  
Perf. Bottom (ft bgs): 667

NOTE: Non-Detect results shown as half the reporting limit.

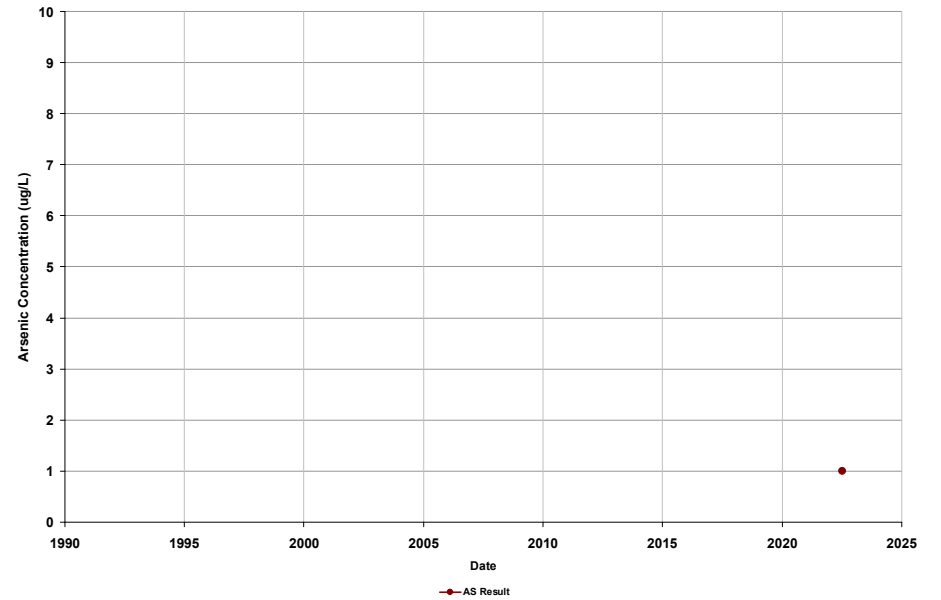
Well Name: MID RMS-5B  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

Total Depth (ft bgs): 514  
Perf. Top (ft bgs): 245  
Perf. Bottom (ft bgs): 496

NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-6  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Industrial

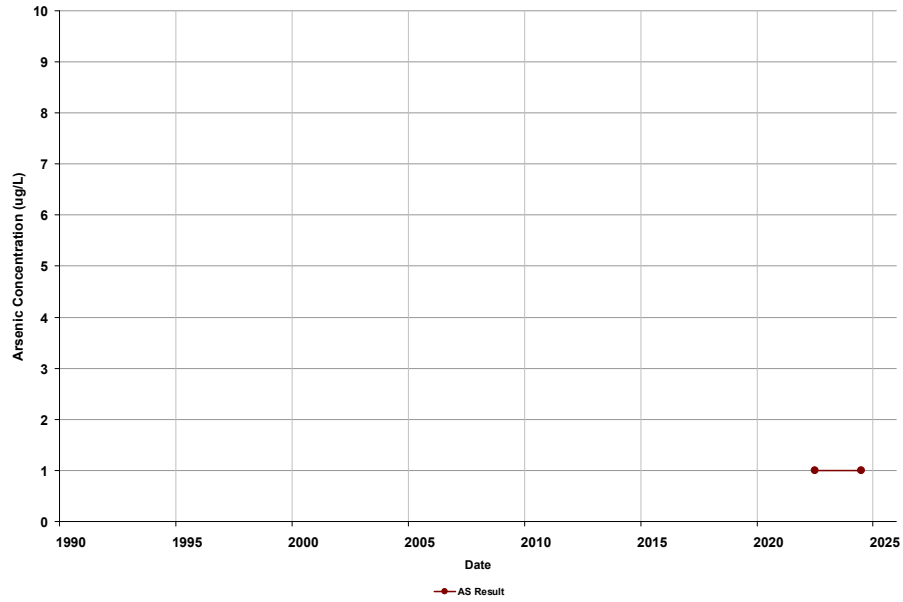
Total Depth (ft bgs): 680  
Perf. Top (ft bgs): 320  
Perf. Bottom (ft bgs): 680



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-7  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

Total Depth (ft bgs): 656  
Perf. Top (ft bgs): 290  
Perf. Bottom (ft bgs): 635



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-13  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

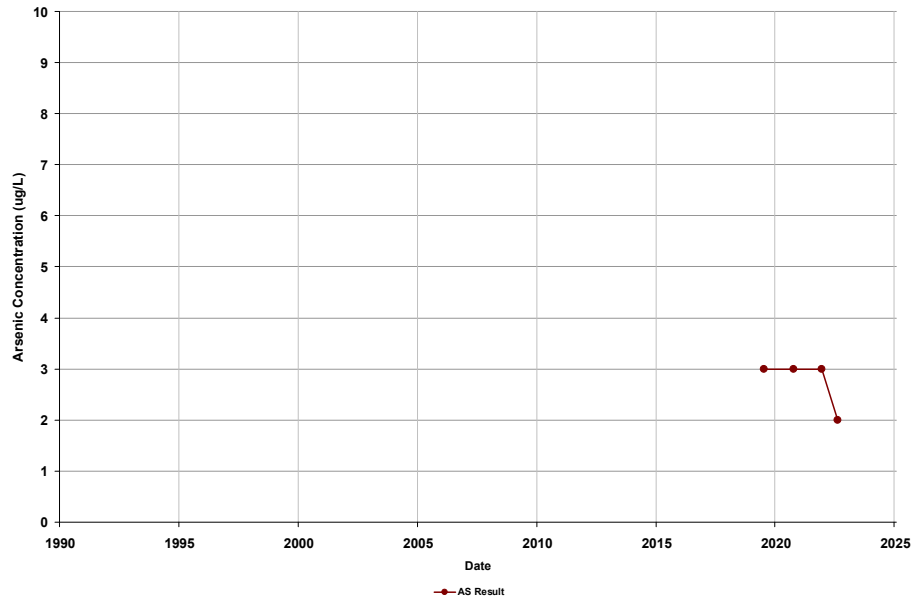
Total Depth (ft bgs): 600  
Perf. Top (ft bgs): 228  
Perf. Bottom (ft bgs): 552



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MWD RMS-1  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

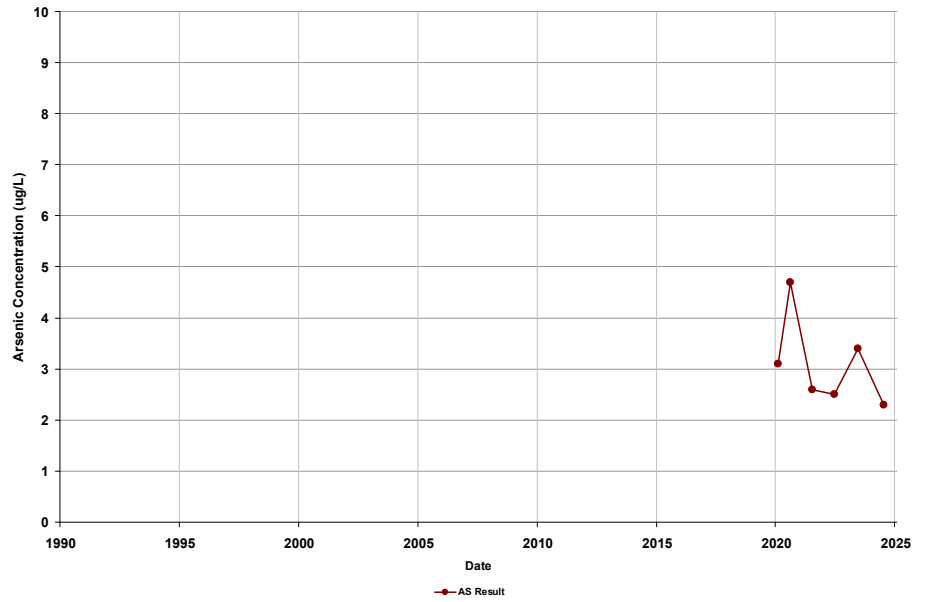
Total Depth (ft bgs): 504  
Perf. Top (ft bgs): 200  
Perf. Bottom (ft bgs): 500



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB03A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

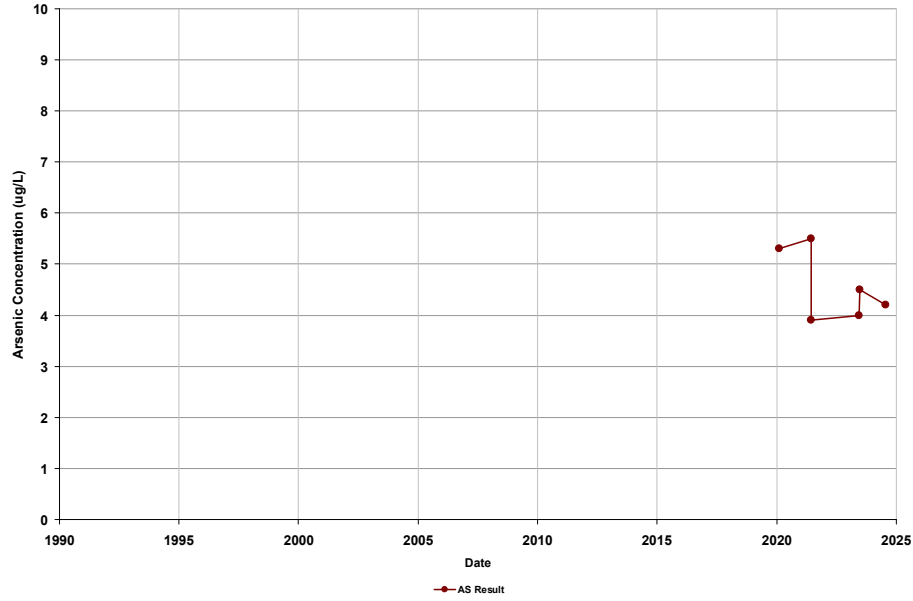
Total Depth (ft bgs): 139  
Perf. Top (ft bgs): 74  
Perf. Bottom (ft bgs): 134



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB03B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

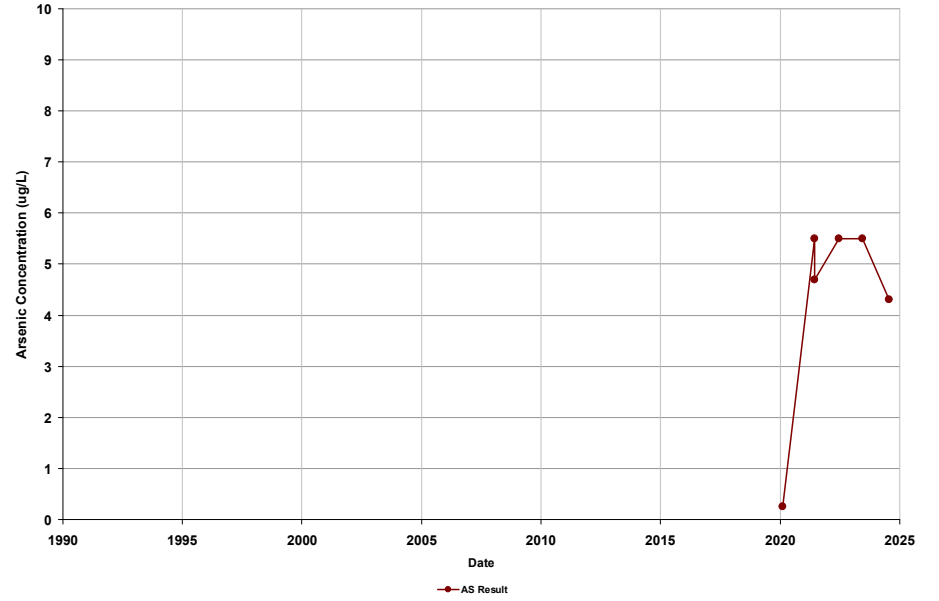
Total Depth (ft bgs): 295  
Perf. Top (ft bgs): 215  
Perf. Bottom (ft bgs): 285



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB03C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

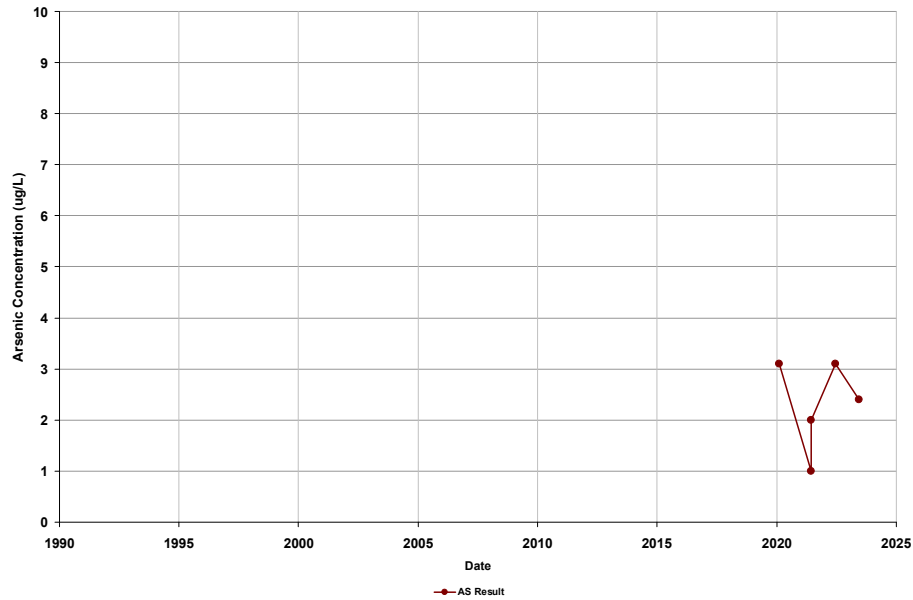
Total Depth (ft bgs): 430  
Perf. Top (ft bgs): 355  
Perf. Bottom (ft bgs): 420



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB04A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

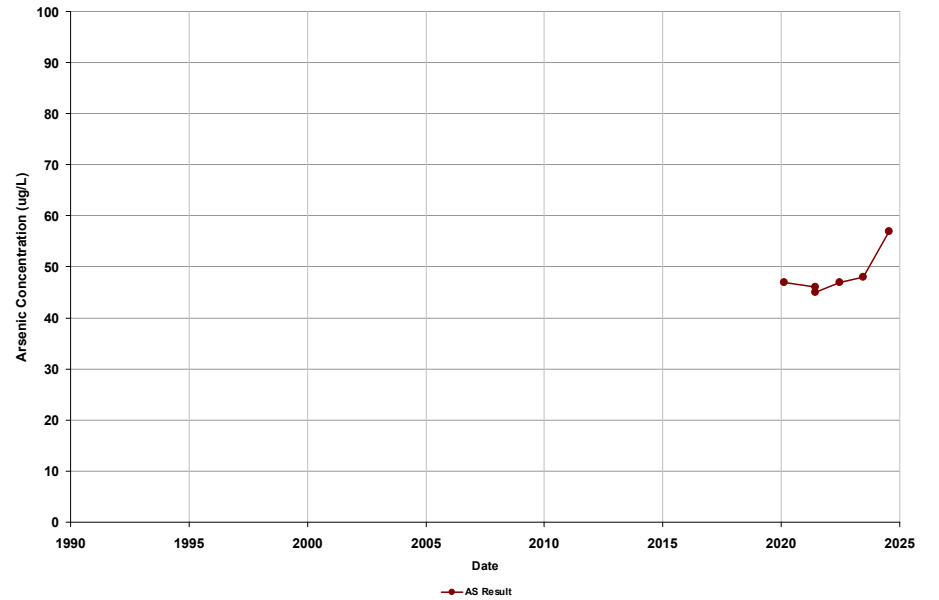
Total Depth (ft bgs): 375  
Perf. Top (ft bgs): 180  
Perf. Bottom (ft bgs): 365



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB04B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

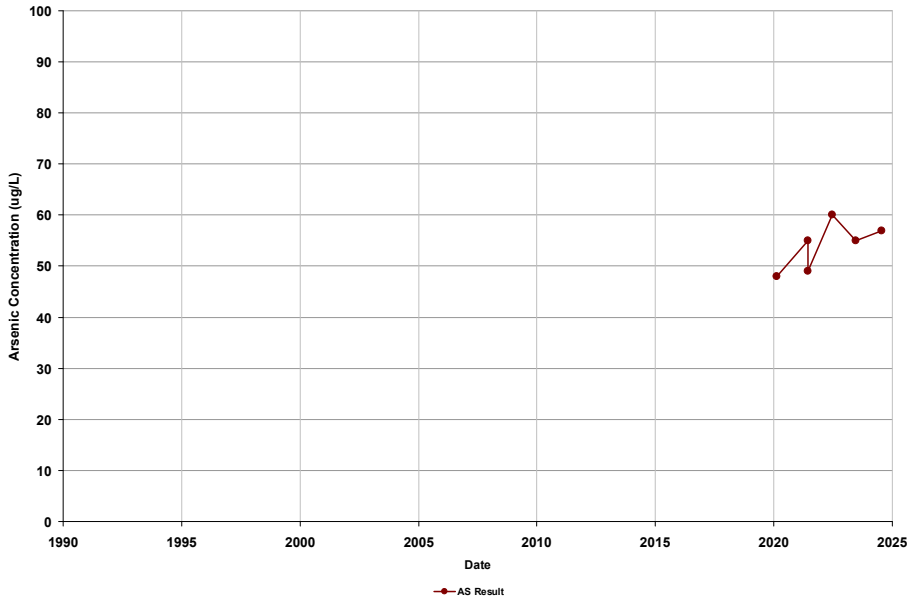
Total Depth (ft bgs): 695  
Perf. Top (ft bgs): 530  
Perf. Bottom (ft bgs): 685



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB04C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

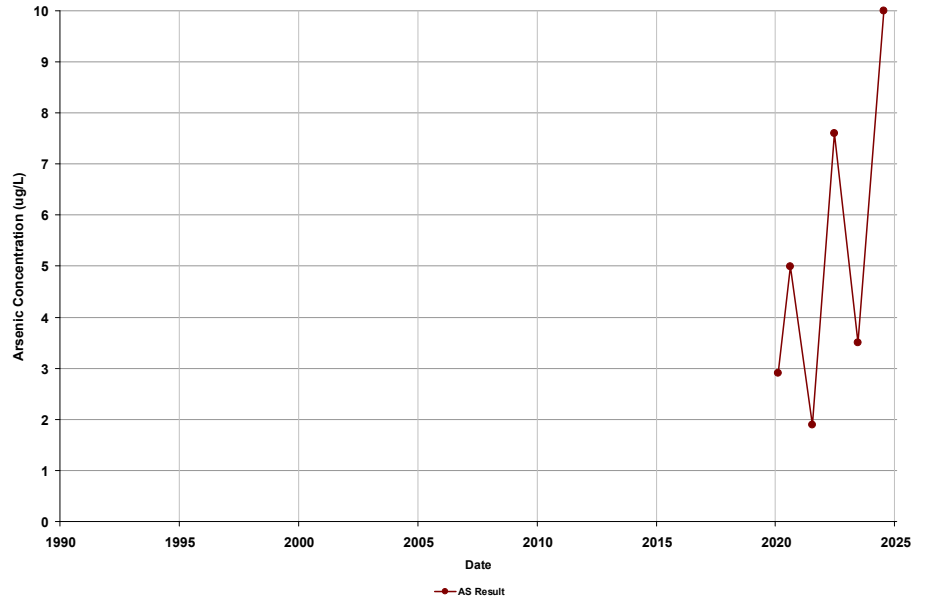
Total Depth (ft bgs): 905  
Perf. Top (ft bgs): 750  
Perf. Bottom (ft bgs): 895



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB05A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

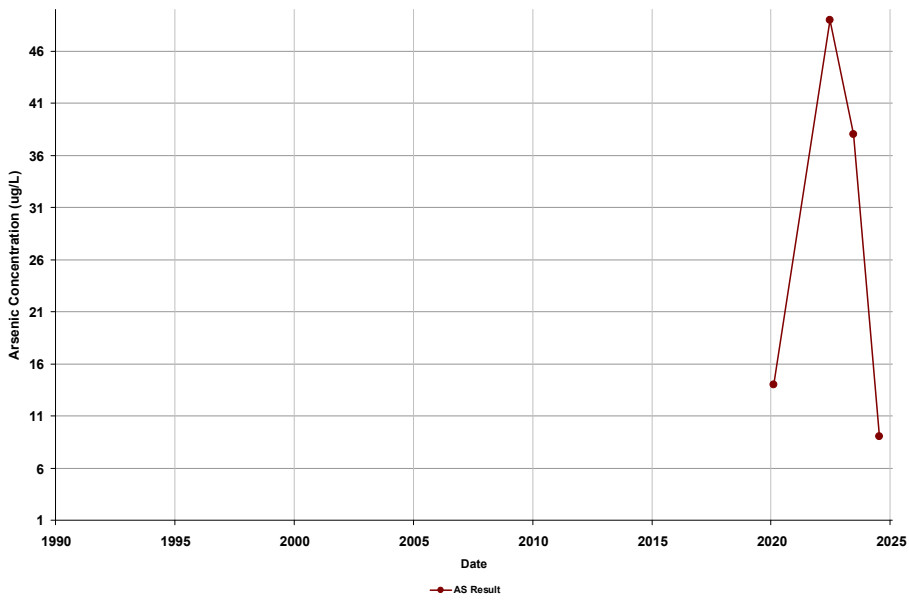
Total Depth (ft bgs): 210  
Perf. Top (ft bgs): 140  
Perf. Bottom (ft bgs): 200



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB05B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

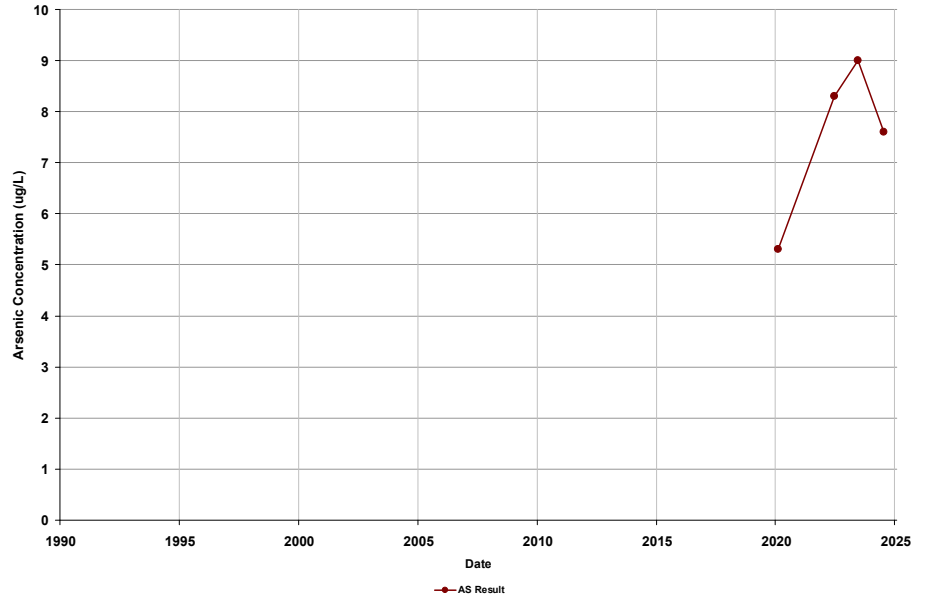
Total Depth (ft bgs): 375  
Perf. Top (ft bgs): 240  
Perf. Bottom (ft bgs): 365



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB05C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

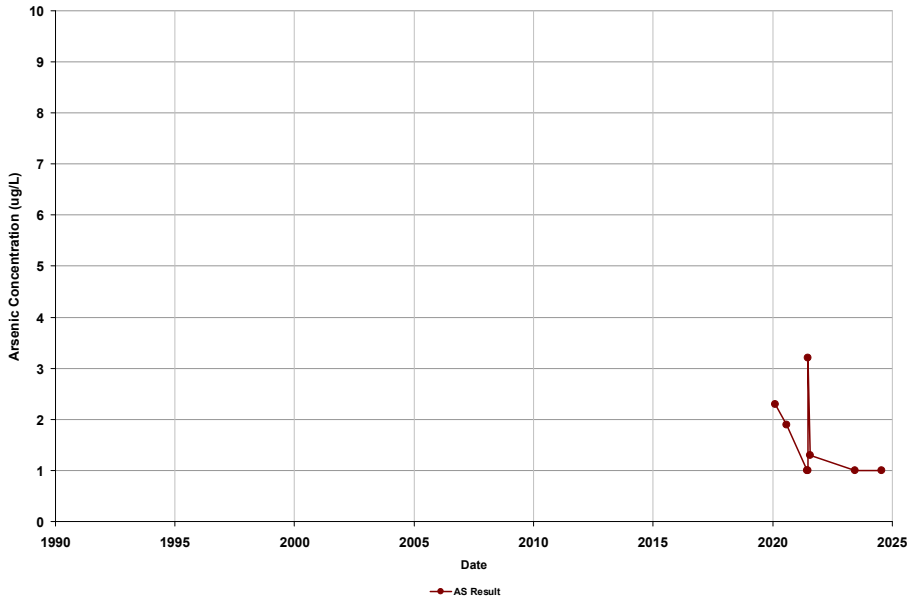
Total Depth (ft bgs): 585  
Perf. Top (ft bgs): 420  
Perf. Bottom (ft bgs): 585



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB06A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

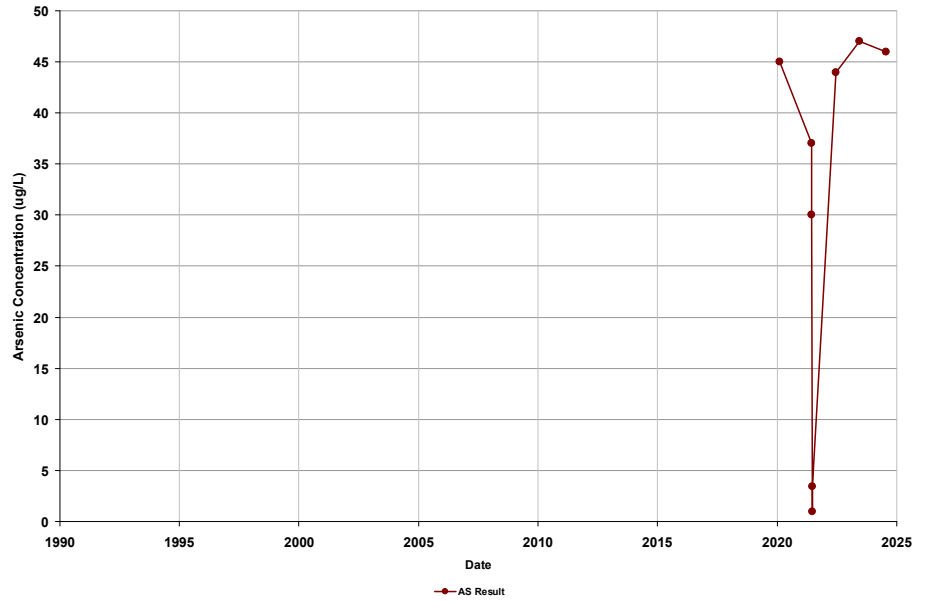
Total Depth (ft bgs): 350  
Perf. Top (ft bgs): 135  
Perf. Bottom (ft bgs): 340



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB06B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

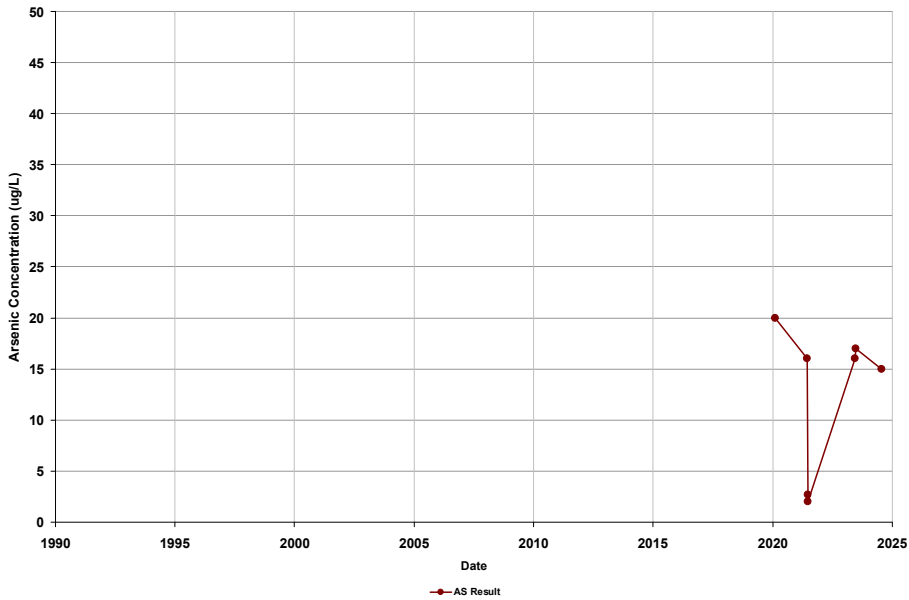
Total Depth (ft bgs): 520  
Perf. Top (ft bgs): 425  
Perf. Bottom (ft bgs): 510



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB06C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

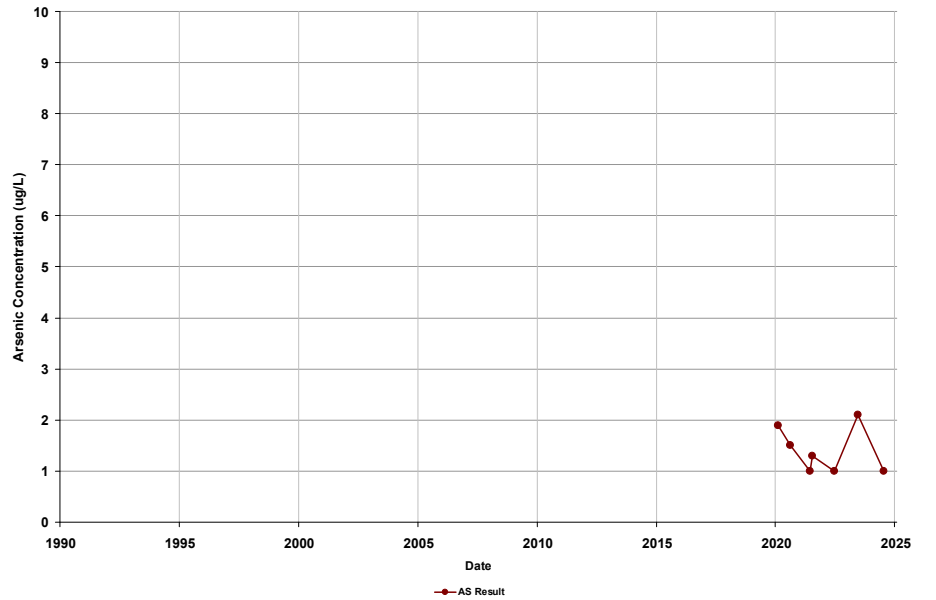
Total Depth (ft bgs): 715  
Perf. Top (ft bgs): 630  
Perf. Bottom (ft bgs): 705



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB09A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

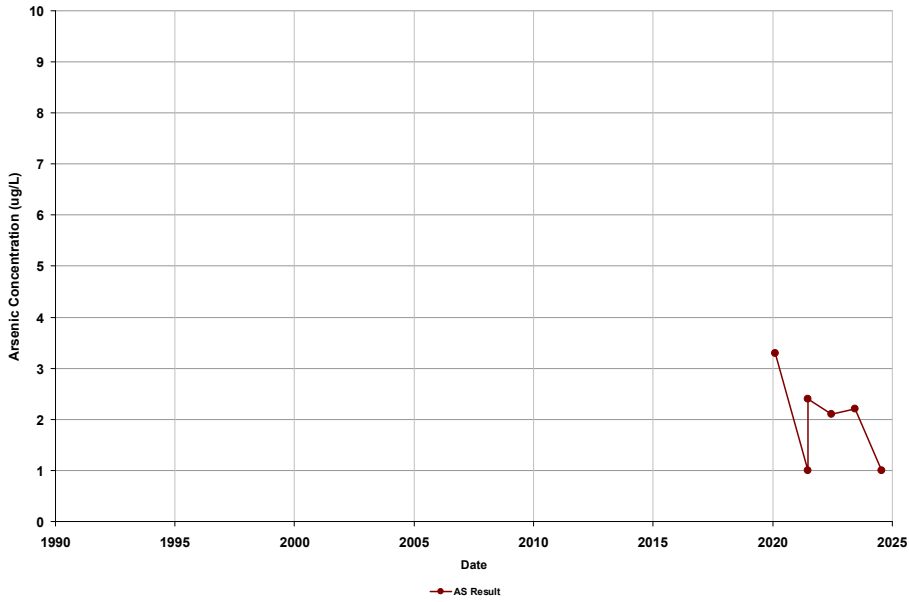
Total Depth (ft bgs): 320  
Perf. Top (ft bgs): 200  
Perf. Bottom (ft bgs): 310



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB09B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

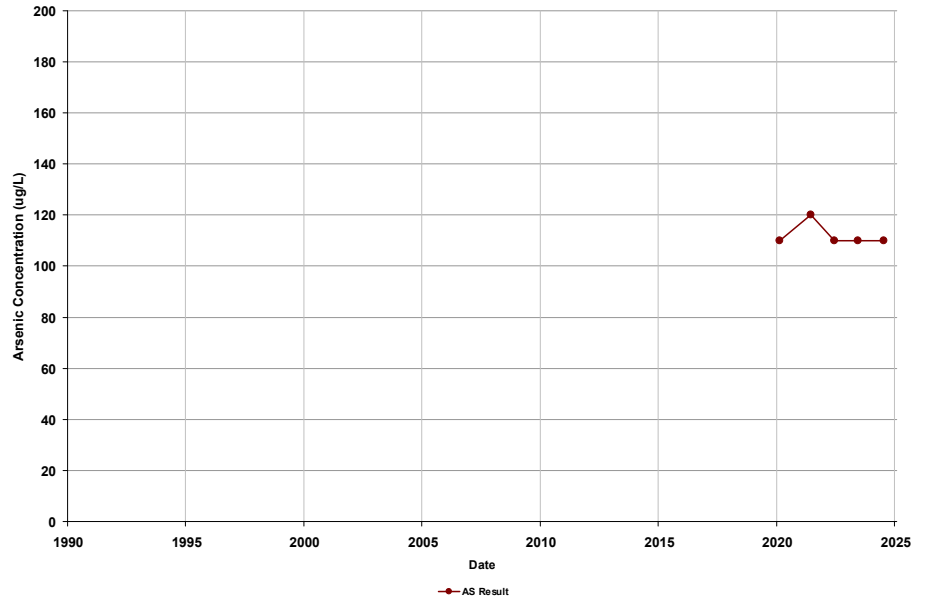
Total Depth (ft bgs): 725  
Perf. Top (ft bgs): 520  
Perf. Bottom (ft bgs): 715



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB09C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

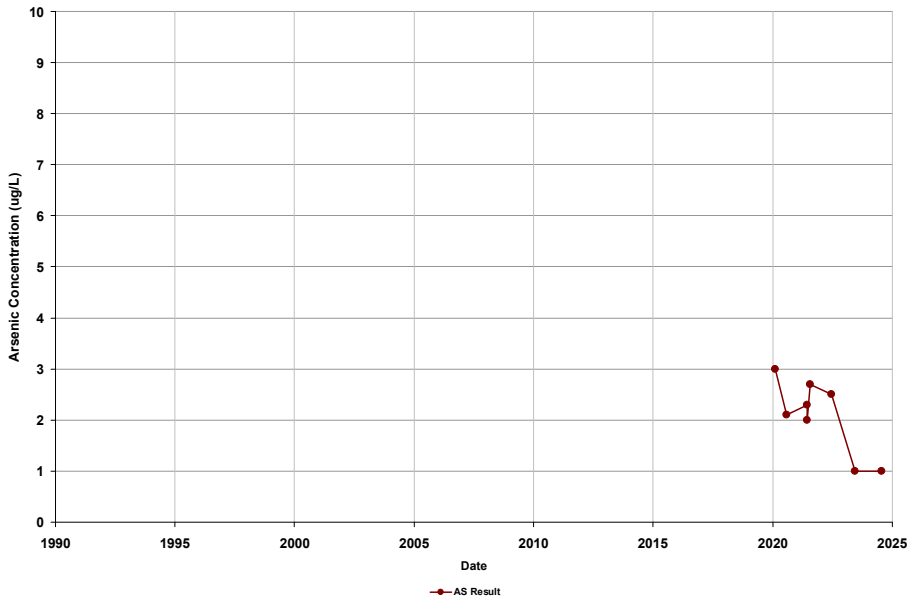
Total Depth (ft bgs): 955  
Perf. Top (ft bgs): 880  
Perf. Bottom (ft bgs): 945



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB10B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

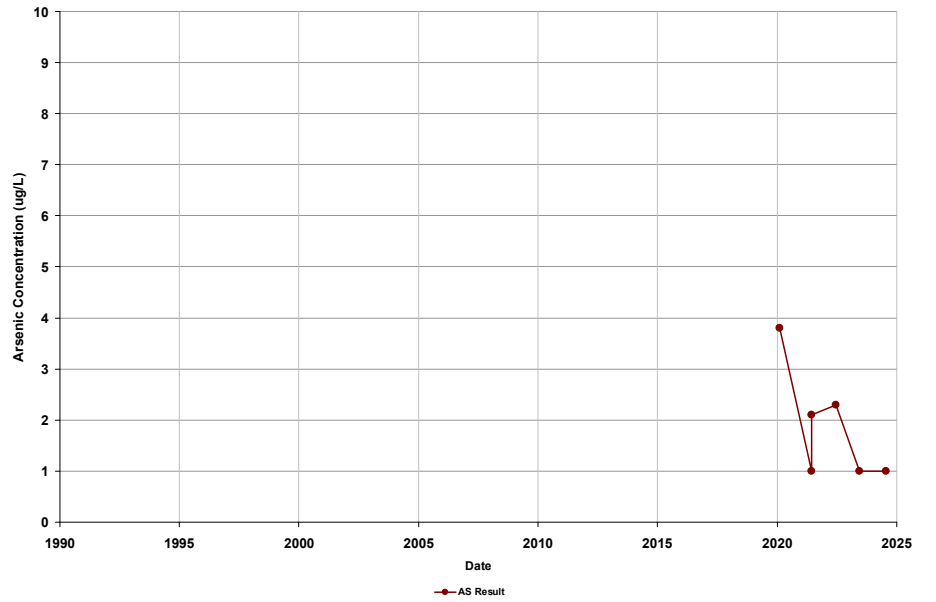
Total Depth (ft bgs): 510  
Perf. Top (ft bgs): 400  
Perf. Bottom (ft bgs): 500



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB10C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

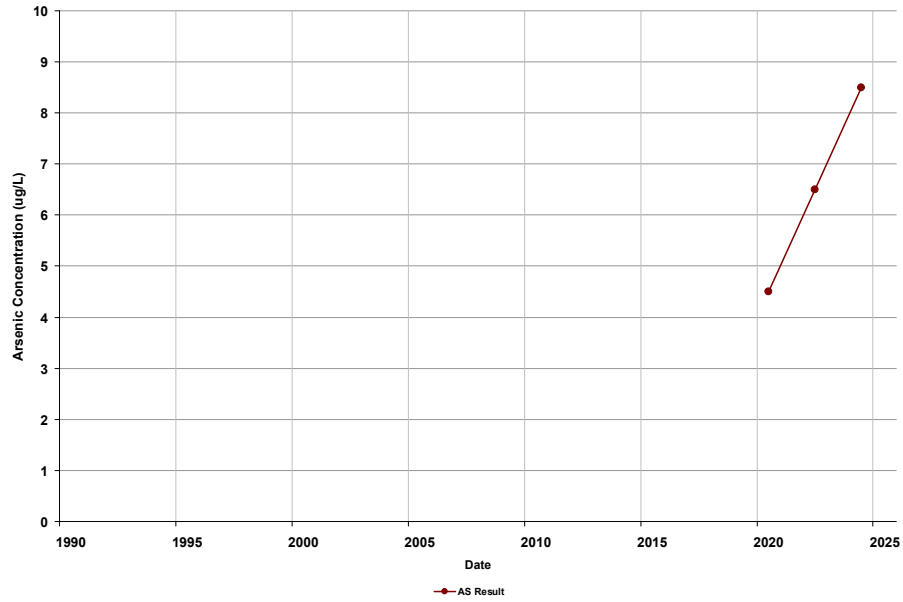
Total Depth (ft bgs): 880  
Perf. Top (ft bgs): 790  
Perf. Bottom (ft bgs): 870



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB11C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

Total Depth (ft bgs): 880  
Perf. Top (ft bgs): 775  
Perf. Bottom (ft bgs): 870



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB13A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Monitoring

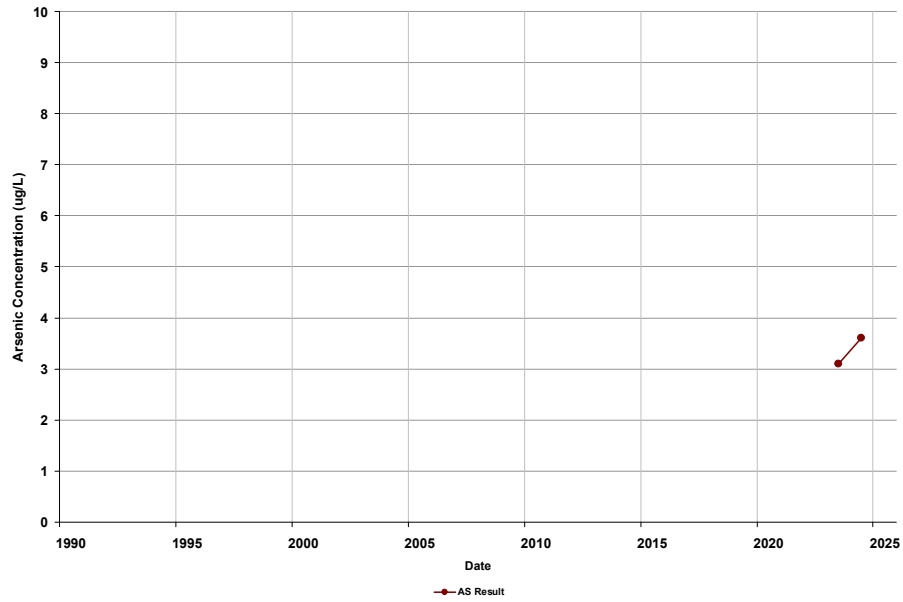
Total Depth (ft bgs): 290  
Perf. Top (ft bgs): 200  
Perf. Bottom (ft bgs): 280



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB13B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Monitoring

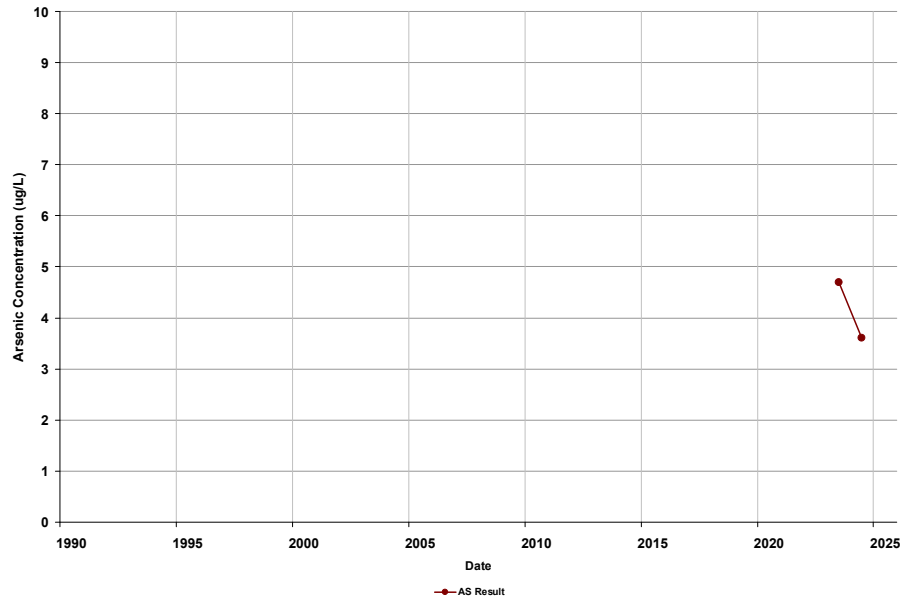
Total Depth (ft bgs): 446  
Perf. Top (ft bgs): 396  
Perf. Bottom (ft bgs): 436



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB13C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Monitoring

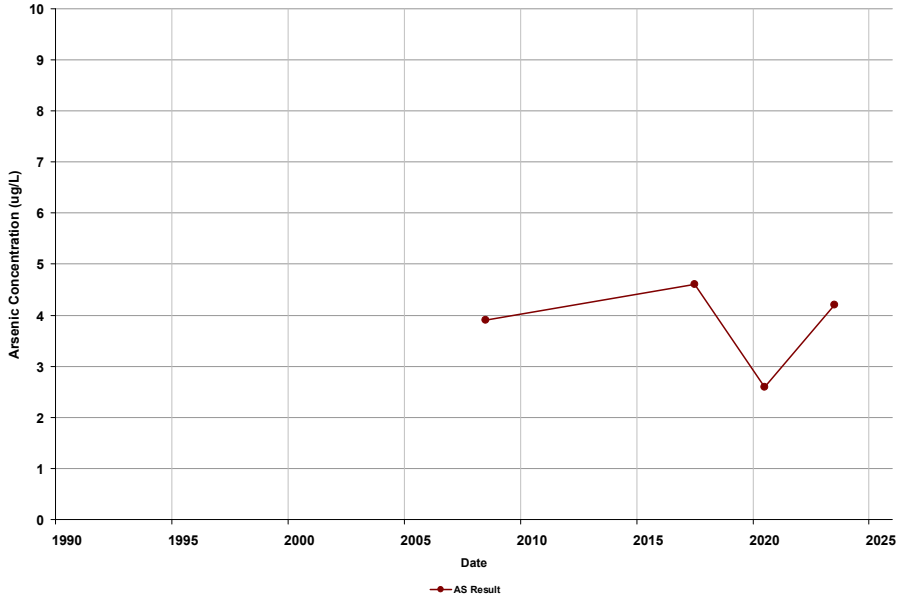
Total Depth (ft bgs): 532  
Perf. Top (ft bgs): 522  
Perf. Bottom (ft bgs): 532



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2000507-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

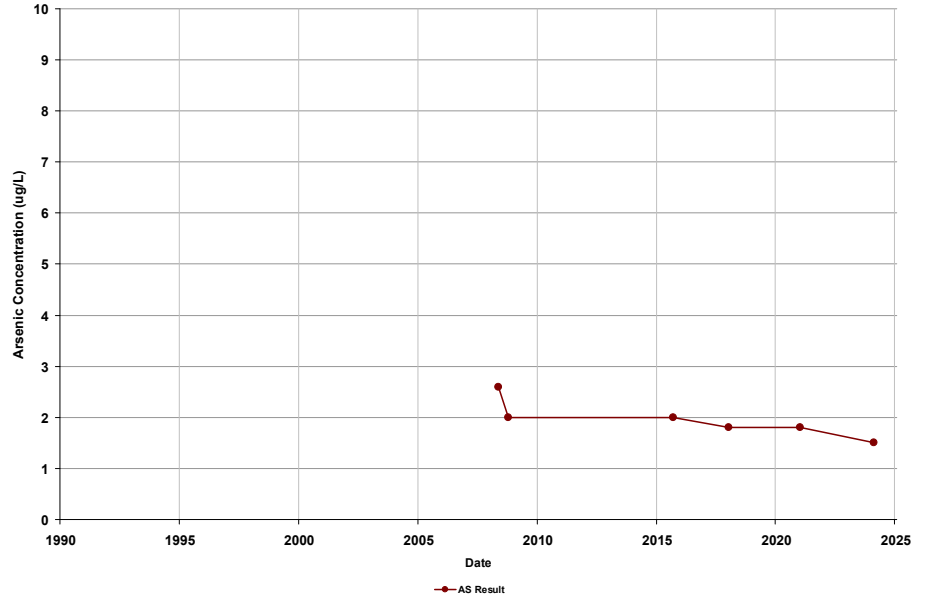
Total Depth (ft bgs):  
Perf. Top (ft bgs): 372  
Perf. Bottom (ft bgs): 372



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2000553-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

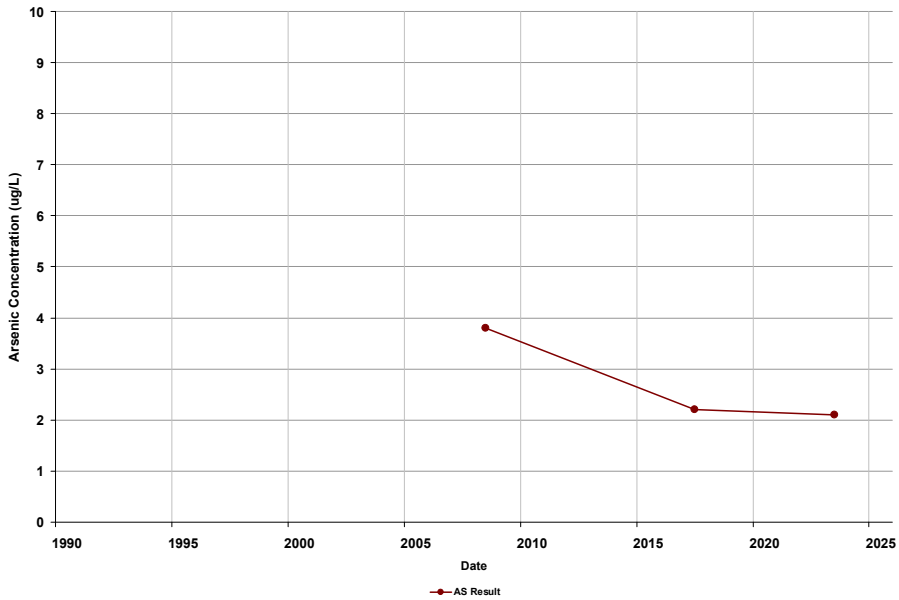
Total Depth (ft bgs):  
Perf. Top (ft bgs): 450  
Perf. Bottom (ft bgs): 500



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2000682-002  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

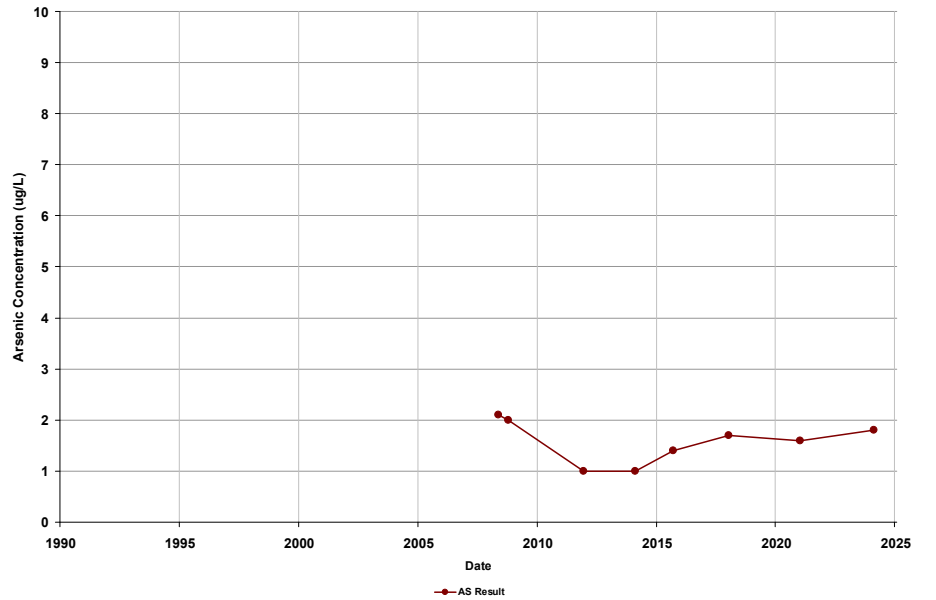
Total Depth (ft bgs):  
Perf. Top (ft bgs): 295  
Perf. Bottom (ft bgs): 420



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2000727-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

Total Depth (ft bgs):  
Perf. Top (ft bgs): 280  
Perf. Bottom (ft bgs): 360

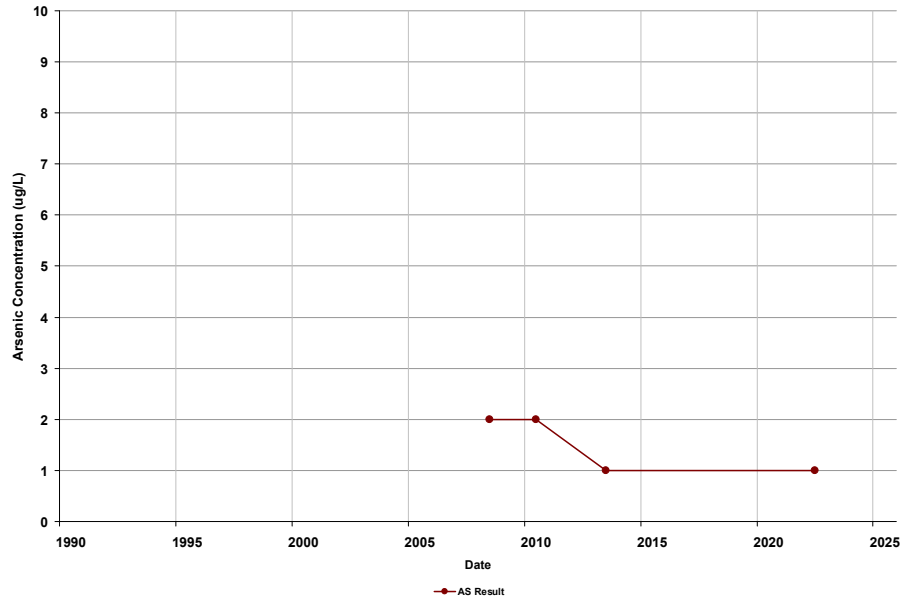


NOTE: Non-Detect results shown as half the reporting limit.



Well Name: 2000938-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

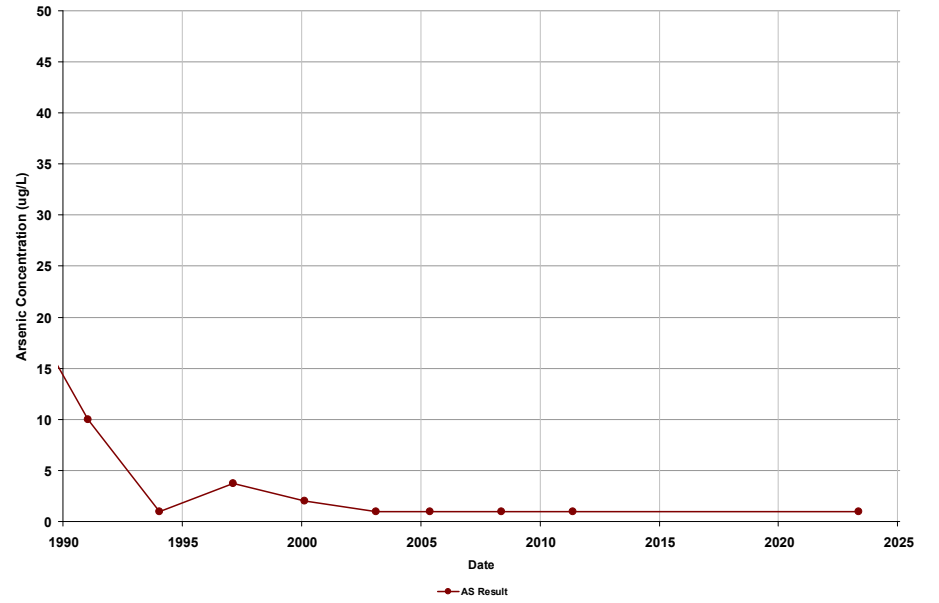
Total Depth (ft bgs):  
Perf. Top (ft bgs): 420  
Perf. Bottom (ft bgs): 560



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010002-014  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

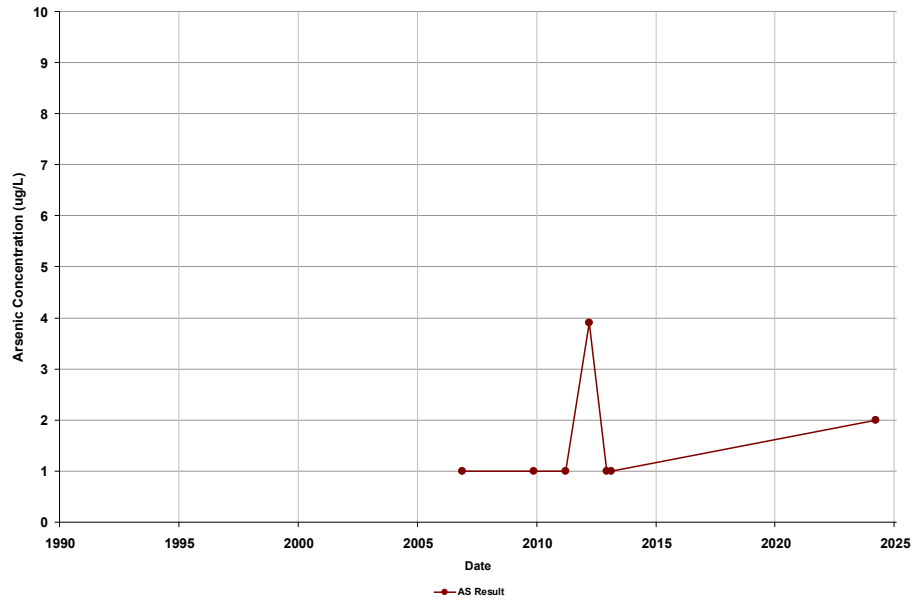
Total Depth (ft bgs):  
Perf. Top (ft bgs): 280  
Perf. Bottom (ft bgs): 610



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010002-032  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

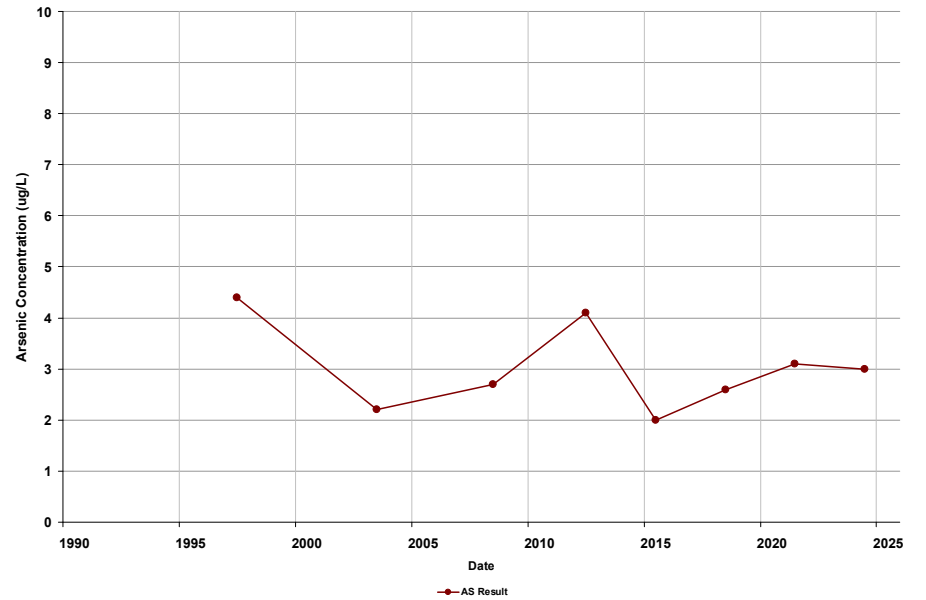
Total Depth (ft bgs):  
Perf. Top (ft bgs): 310  
Perf. Bottom (ft bgs): 600



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010008-005  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

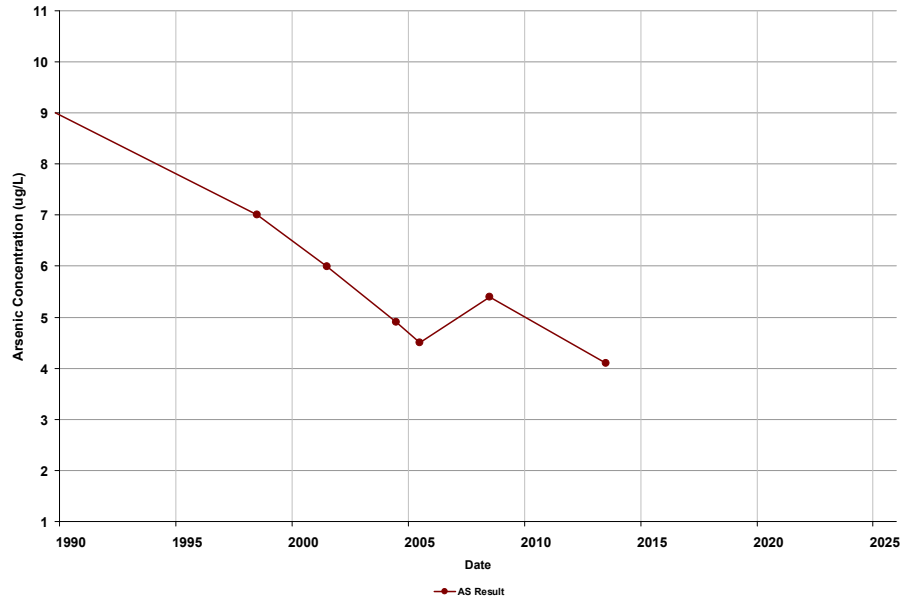
Total Depth (ft bgs):  
Perf. Top (ft bgs): 250  
Perf. Bottom (ft bgs): 465



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010009-002  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

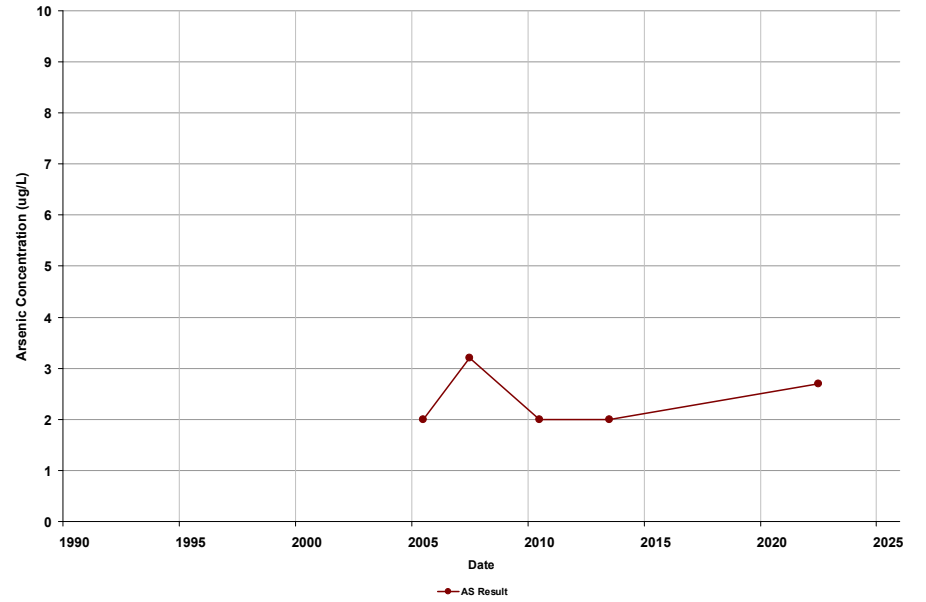
Total Depth (ft bgs):  
Perf. Top (ft bgs): 324  
Perf. Bottom (ft bgs): 369



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010010-007  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

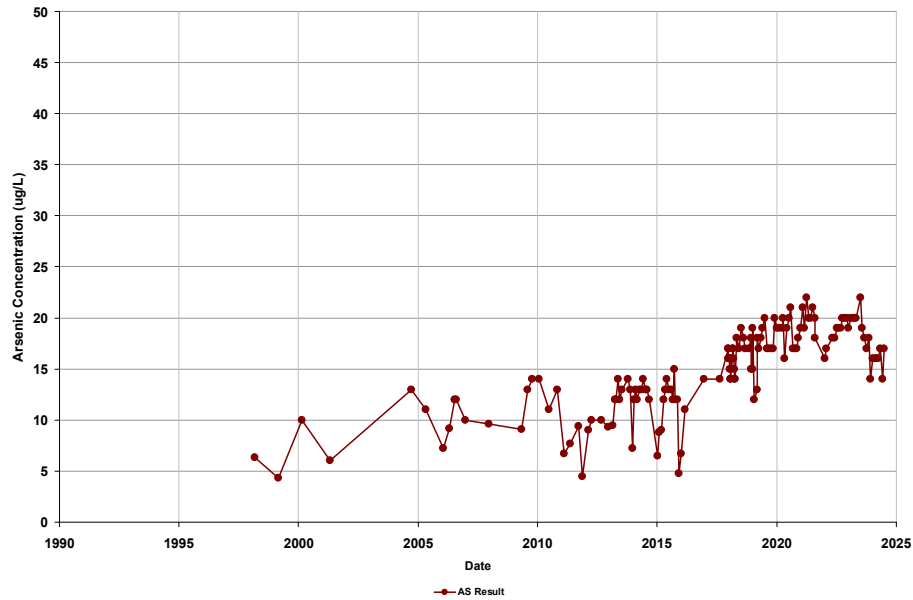
Total Depth (ft bgs):  
Perf. Top (ft bgs): 242  
Perf. Bottom (ft bgs): 374



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010801-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

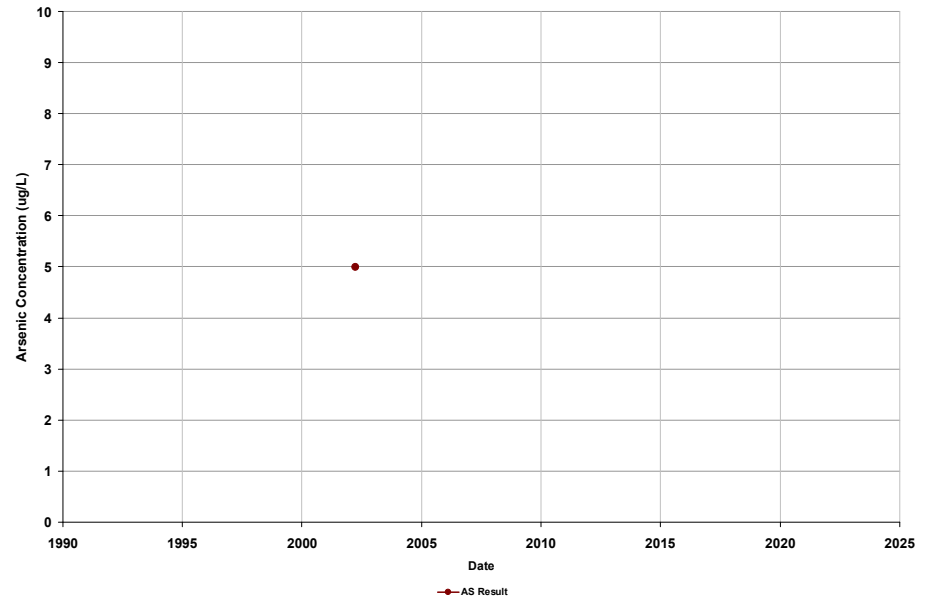
Total Depth (ft bgs):  
Perf. Top (ft bgs): 375  
Perf. Bottom (ft bgs): 760



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2801077-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

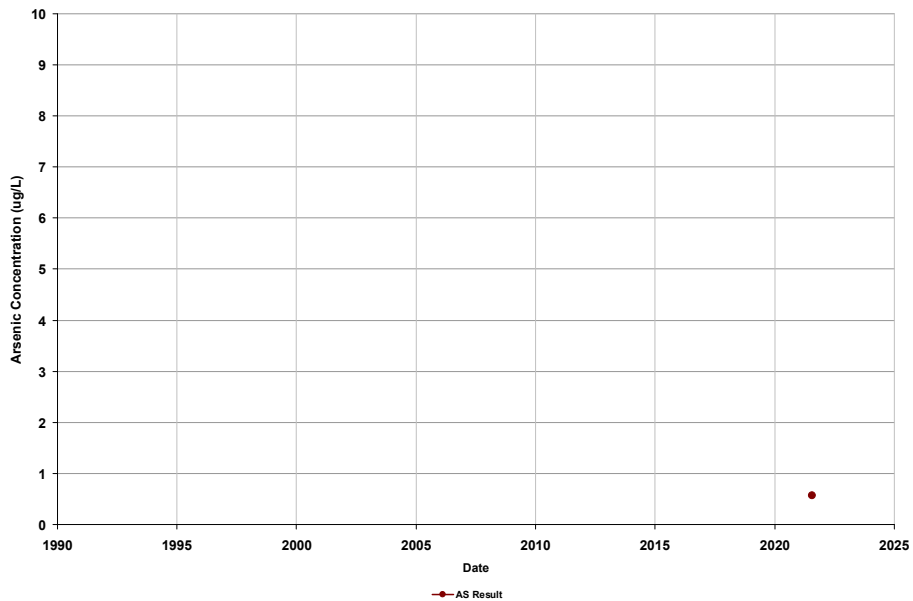
Total Depth (ft bgs):  
Perf. Top (ft bgs): 60  
Perf. Bottom (ft bgs): 500



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: ESJ12  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Domestic

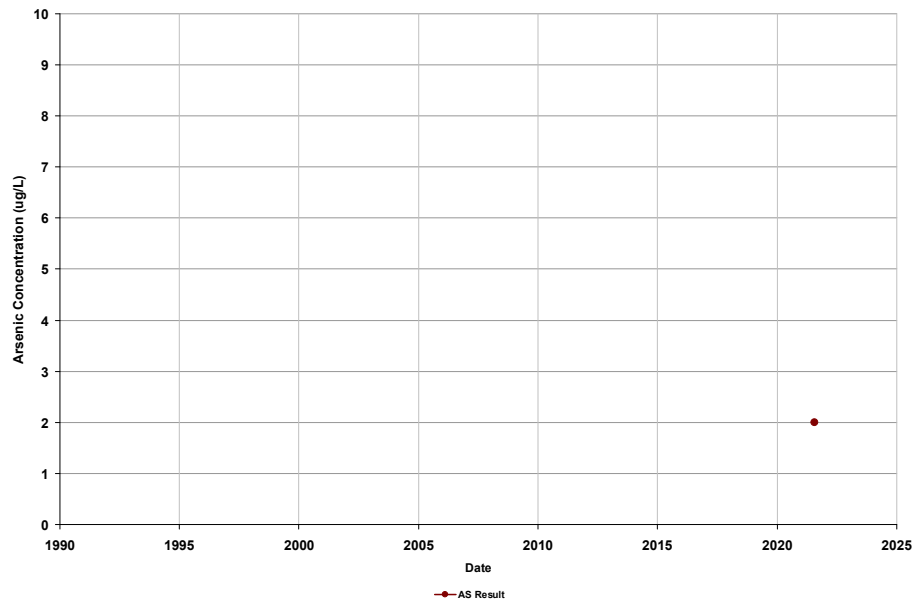
Total Depth (ft bgs): 276  
Perf. Top (ft bgs): 160  
Perf. Bottom (ft bgs): 172



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: ESJ17  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Domestic

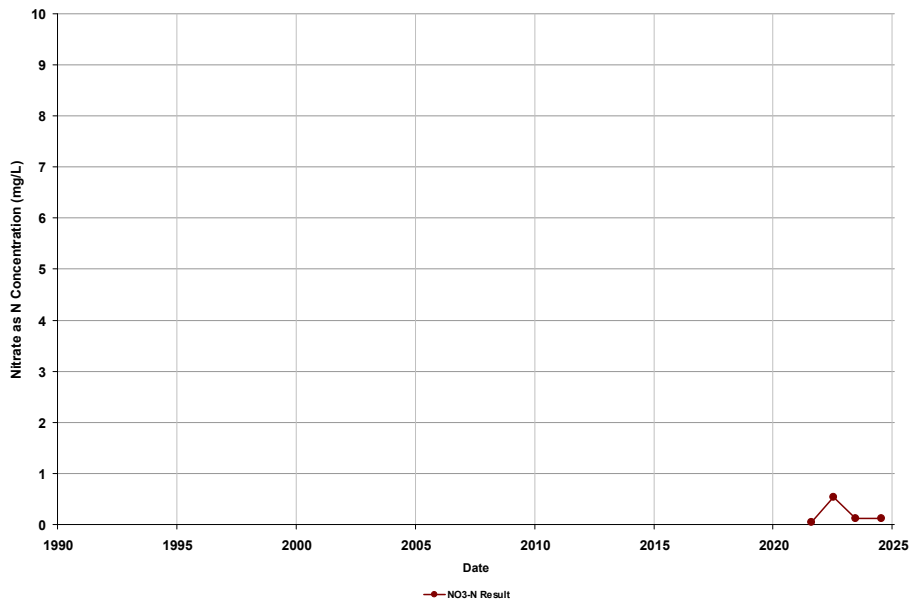
Total Depth (ft bgs):  
Perf. Top (ft bgs):  
Perf. Bottom (ft bgs):



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MCE RMS-3  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Unknown

Total Depth (ft bgs):  
Perf. Top (ft bgs):  
Perf. Bottom (ft bgs):



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-4  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

Total Depth (ft bgs): 698  
Perf. Top (ft bgs): 320  
Perf. Bottom (ft bgs): 667



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-5B  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

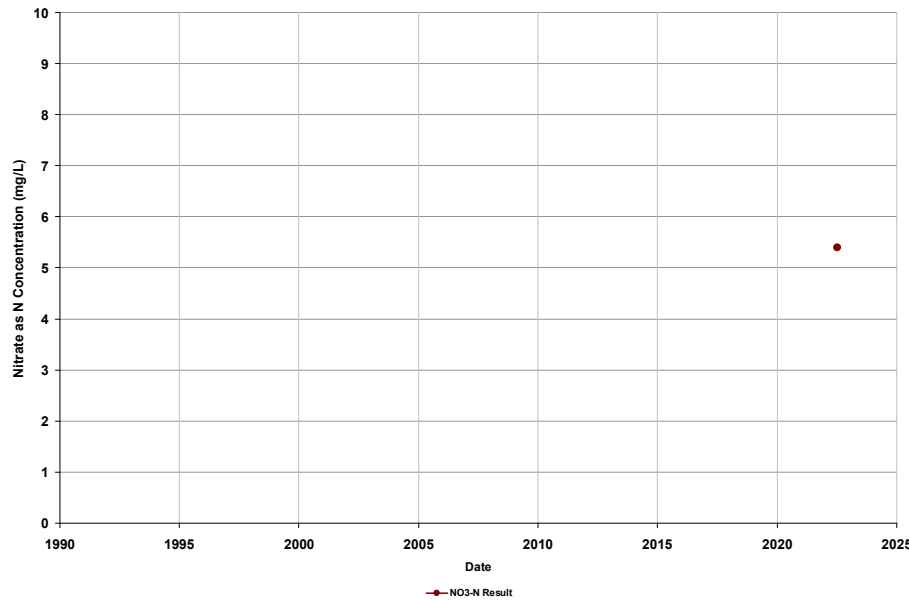
Total Depth (ft bgs): 514  
Perf. Top (ft bgs): 245  
Perf. Bottom (ft bgs): 496



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-6  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Industrial

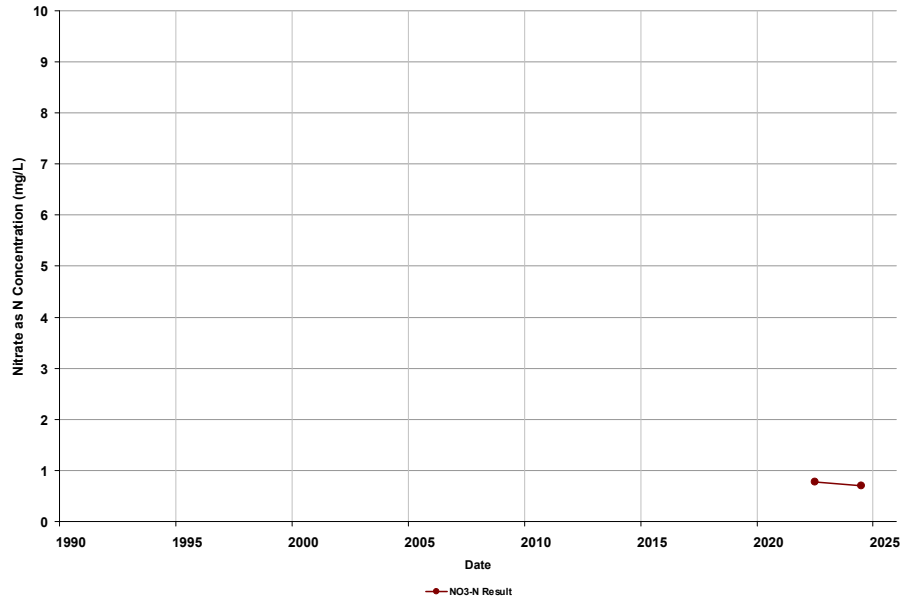
Total Depth (ft bgs): 680  
Perf. Top (ft bgs): 320  
Perf. Bottom (ft bgs): 680



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-7  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

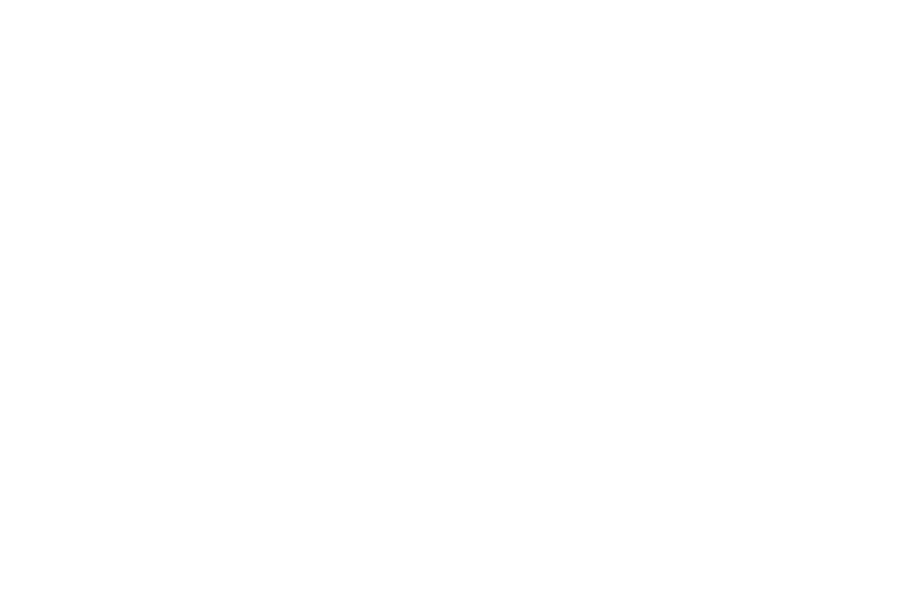
Total Depth (ft bgs): 656  
Perf. Top (ft bgs): 290  
Perf. Bottom (ft bgs): 635



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-13  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

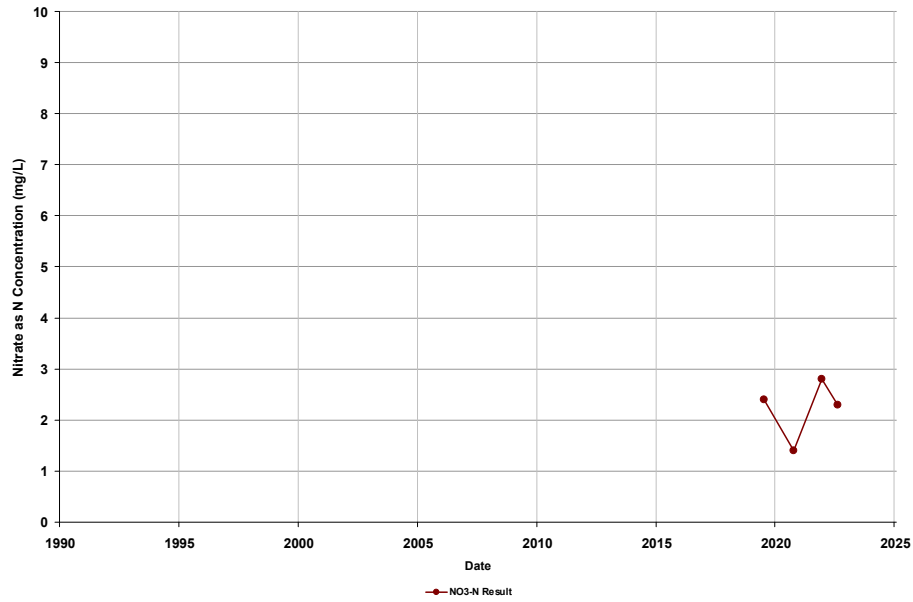
Total Depth (ft bgs): 600  
Perf. Top (ft bgs): 228  
Perf. Bottom (ft bgs): 552



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MWD RMS-1  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

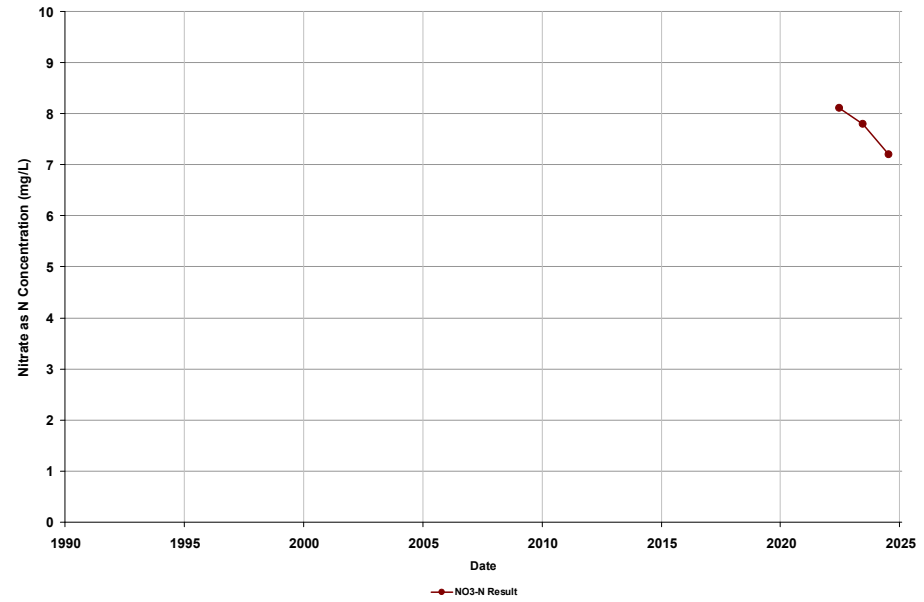
Total Depth (ft bgs): 504  
Perf. Top (ft bgs): 200  
Perf. Bottom (ft bgs): 500



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB03A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

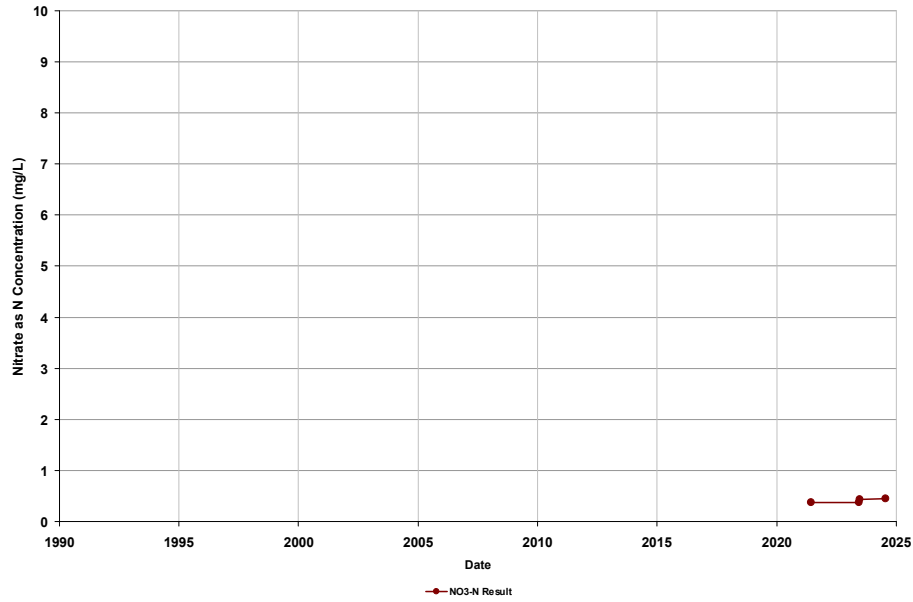
Total Depth (ft bgs): 139  
Perf. Top (ft bgs): 74  
Perf. Bottom (ft bgs): 134



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB03B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

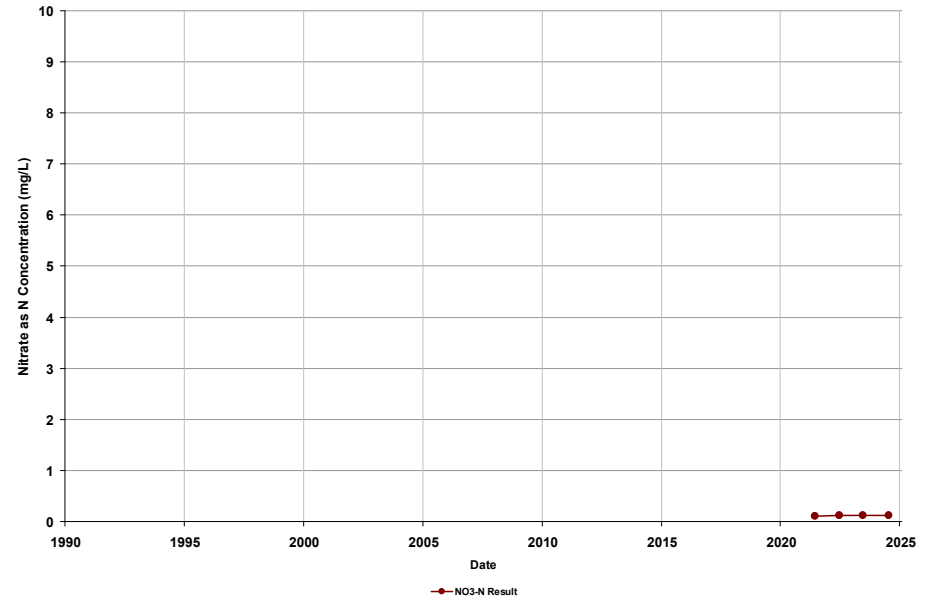
Total Depth (ft bgs): 295  
Perf. Top (ft bgs): 215  
Perf. Bottom (ft bgs): 285



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB03C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

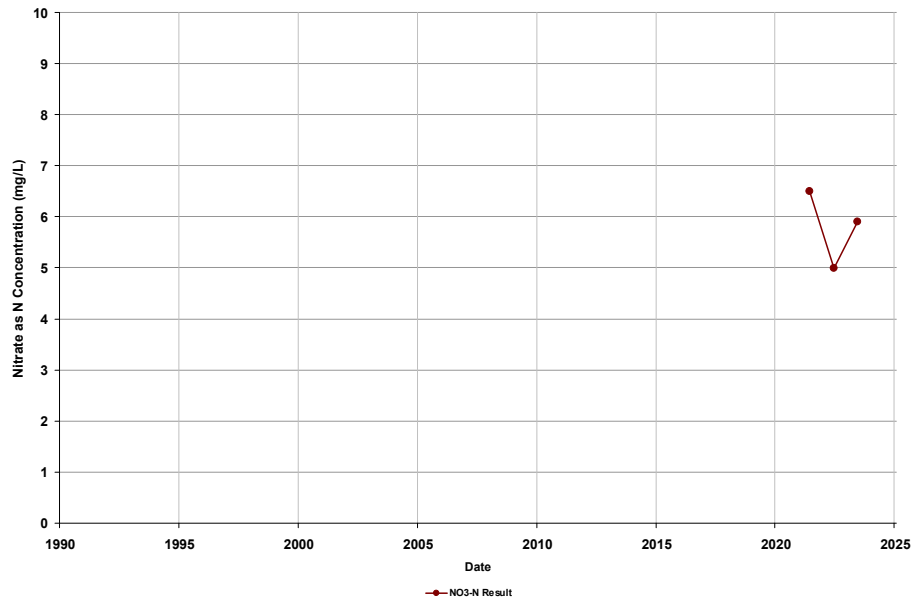
Total Depth (ft bgs): 430  
Perf. Top (ft bgs): 355  
Perf. Bottom (ft bgs): 420



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB04A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

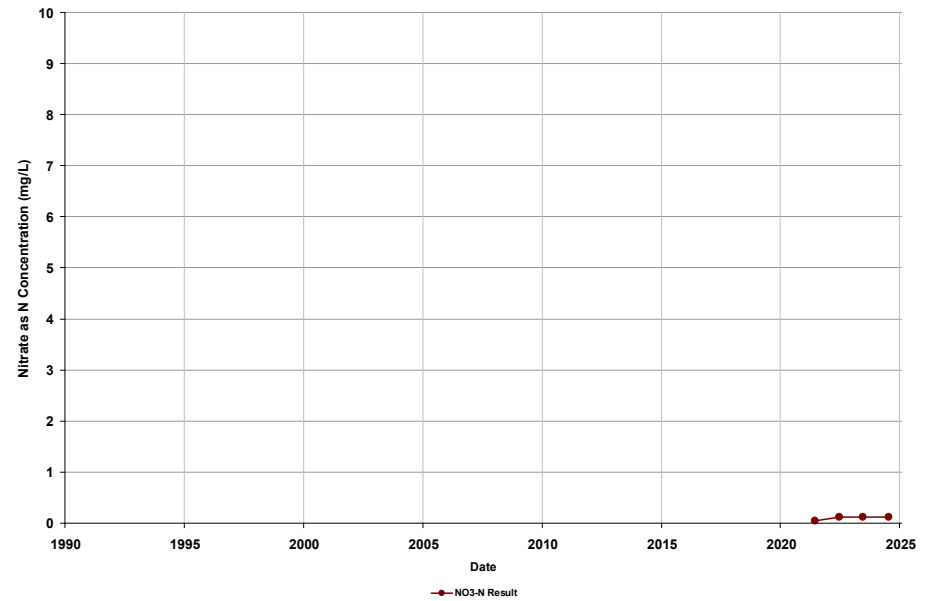
Total Depth (ft bgs): 375  
Perf. Top (ft bgs): 180  
Perf. Bottom (ft bgs): 365



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB04B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

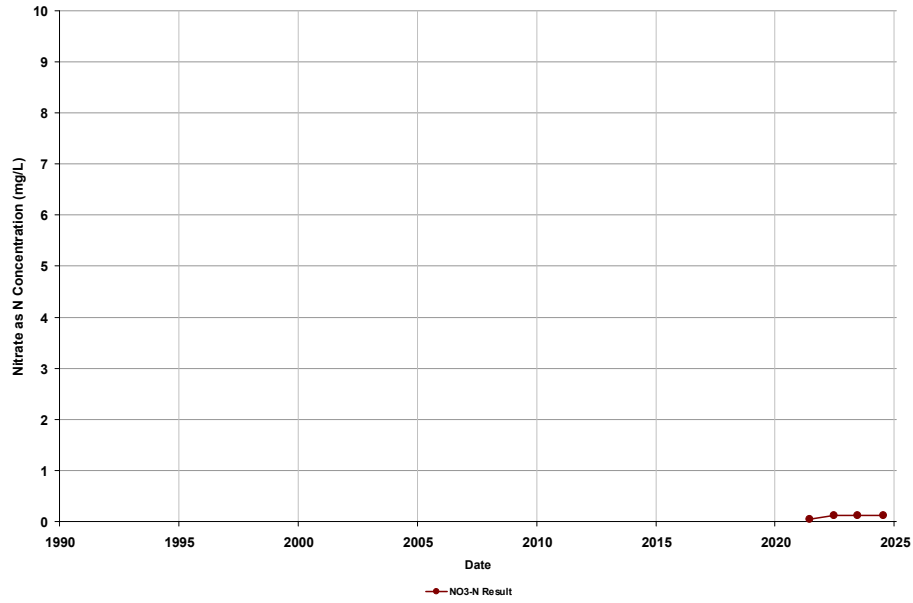
Total Depth (ft bgs): 695  
Perf. Top (ft bgs): 530  
Perf. Bottom (ft bgs): 685



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB04C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

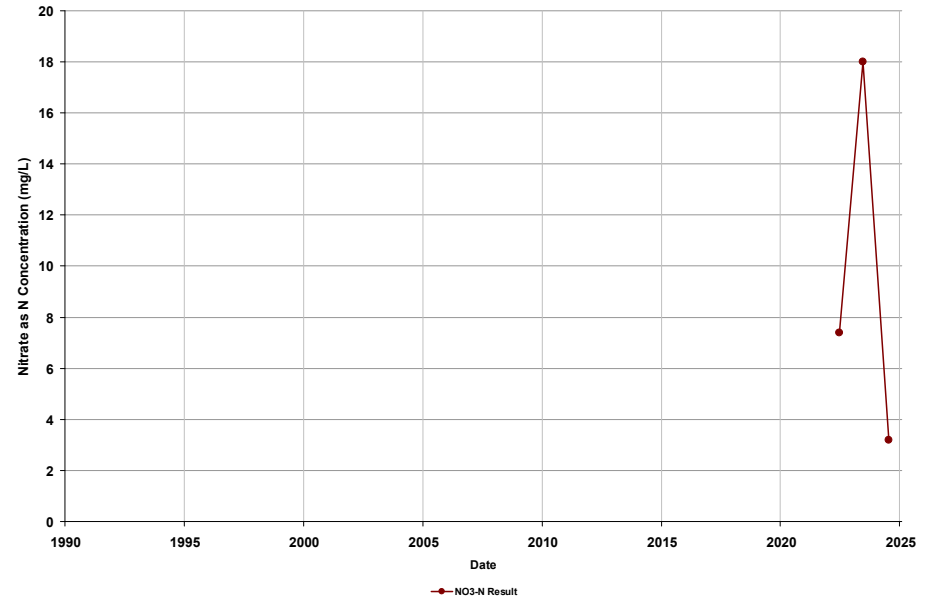
Total Depth (ft bgs): 905  
Perf. Top (ft bgs): 750  
Perf. Bottom (ft bgs): 895



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB05A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

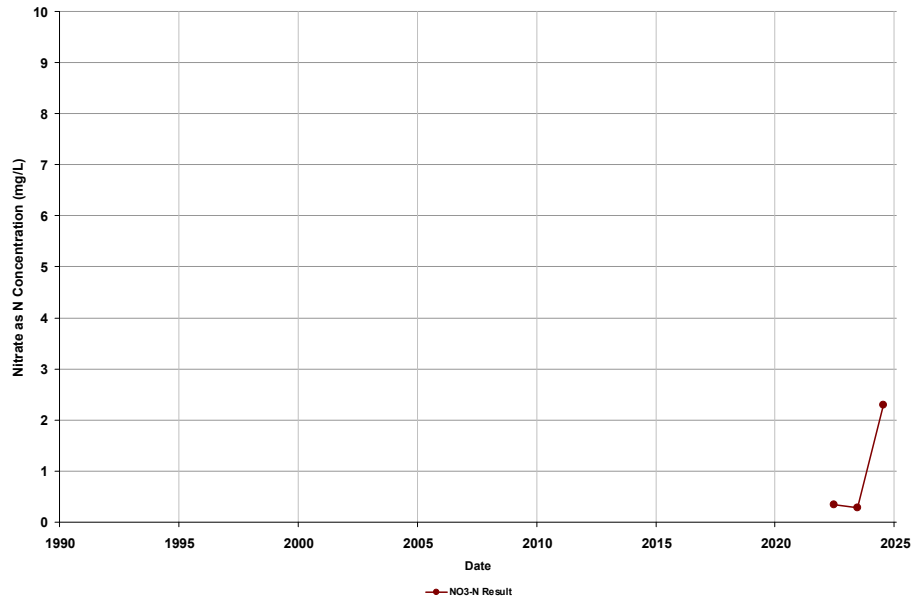
Total Depth (ft bgs): 210  
Perf. Top (ft bgs): 140  
Perf. Bottom (ft bgs): 200



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB05B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

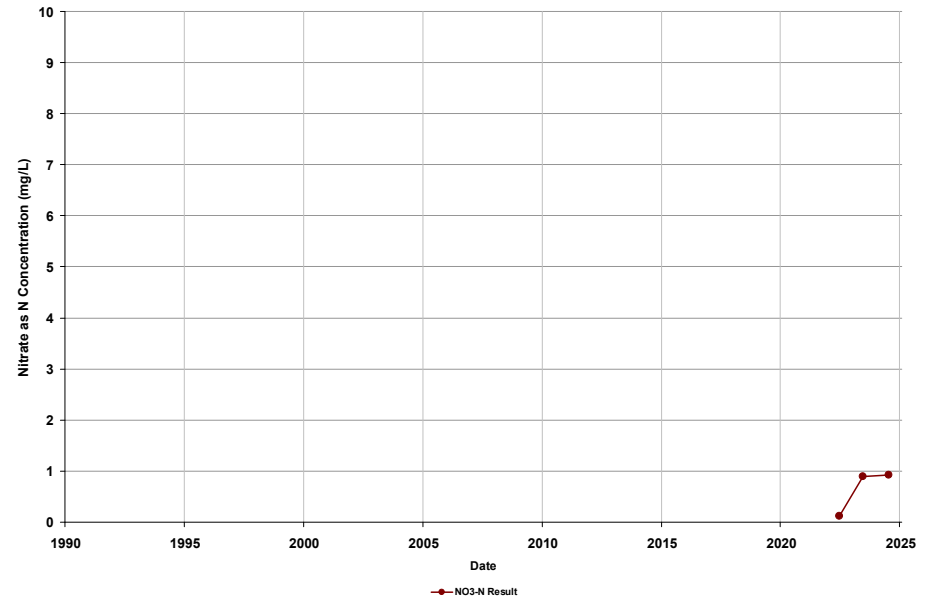
Total Depth (ft bgs): 375  
Perf. Top (ft bgs): 240  
Perf. Bottom (ft bgs): 365



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB05C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

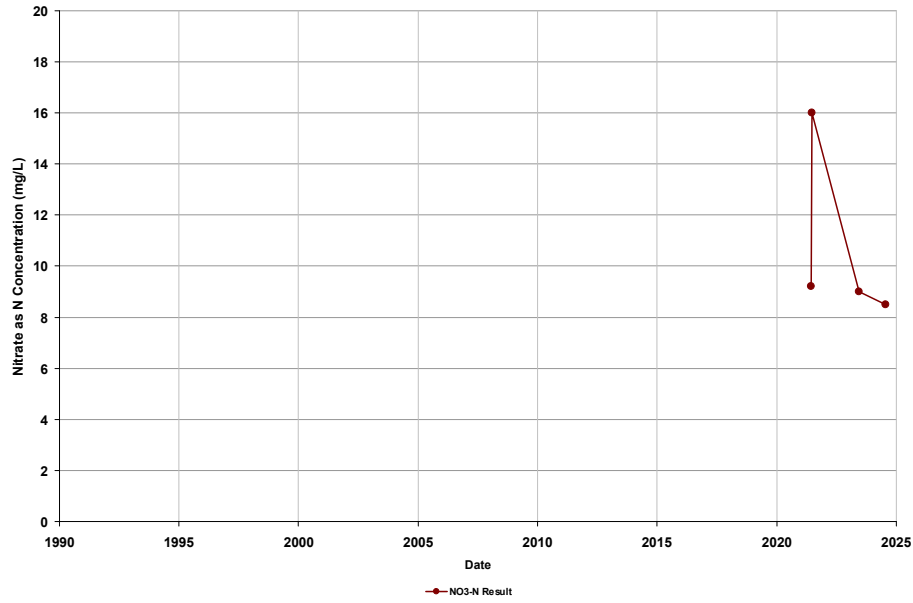
Total Depth (ft bgs): 585  
Perf. Top (ft bgs): 420  
Perf. Bottom (ft bgs): 585



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB06A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

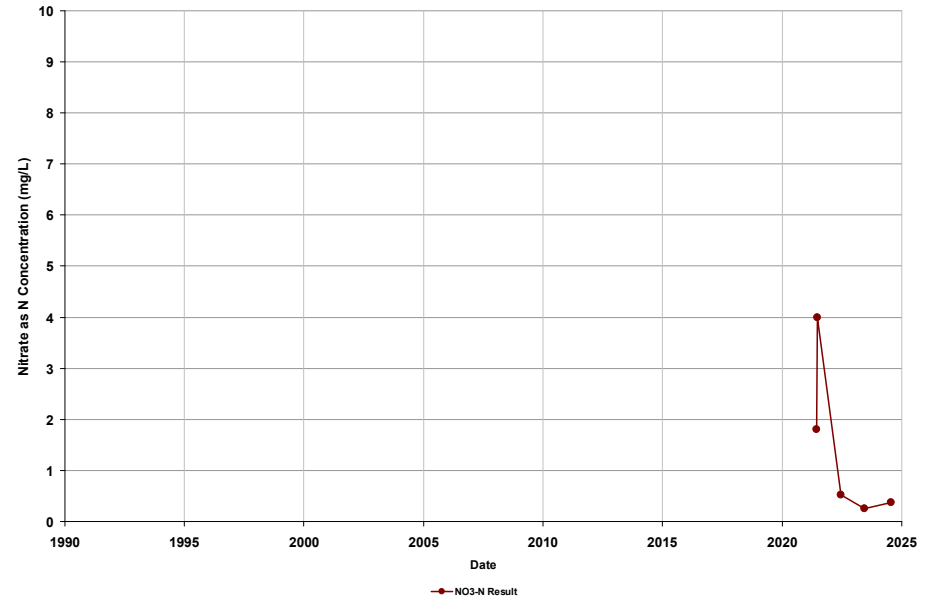
Total Depth (ft bgs): 350  
Perf. Top (ft bgs): 135  
Perf. Bottom (ft bgs): 340



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB06B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

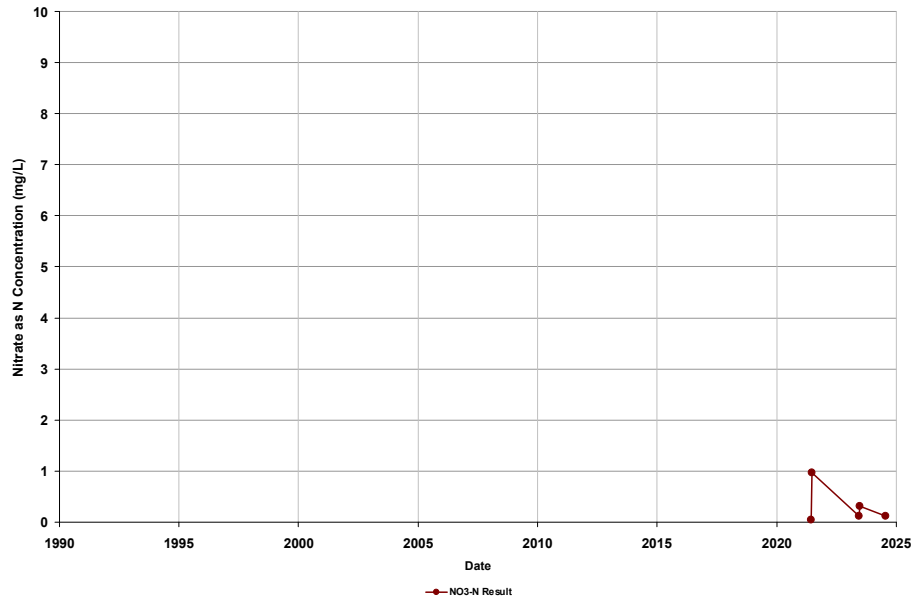
Total Depth (ft bgs): 520  
Perf. Top (ft bgs): 425  
Perf. Bottom (ft bgs): 510



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB06C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

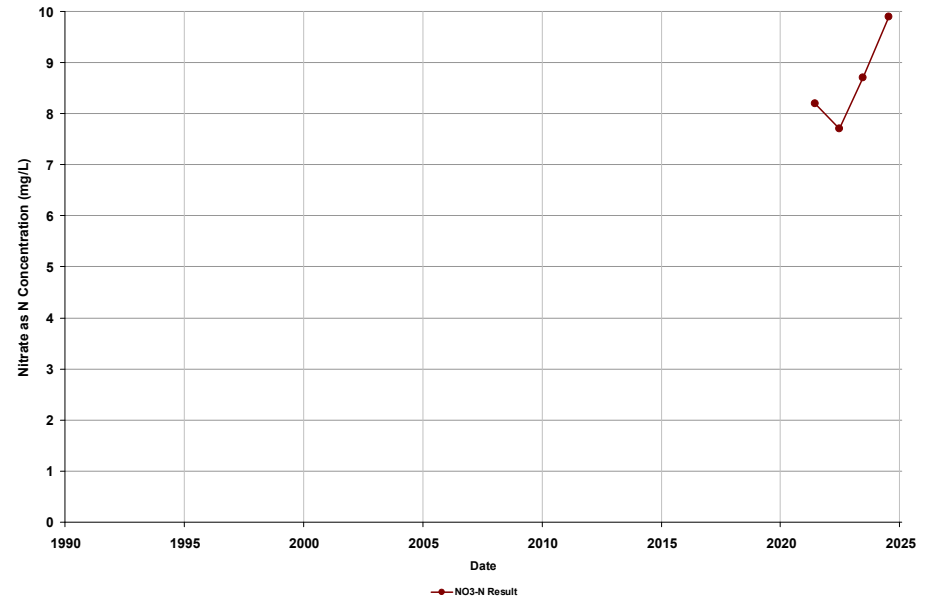
Total Depth (ft bgs): 715  
Perf. Top (ft bgs): 630  
Perf. Bottom (ft bgs): 705



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB09A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

Total Depth (ft bgs): 320  
Perf. Top (ft bgs): 200  
Perf. Bottom (ft bgs): 310

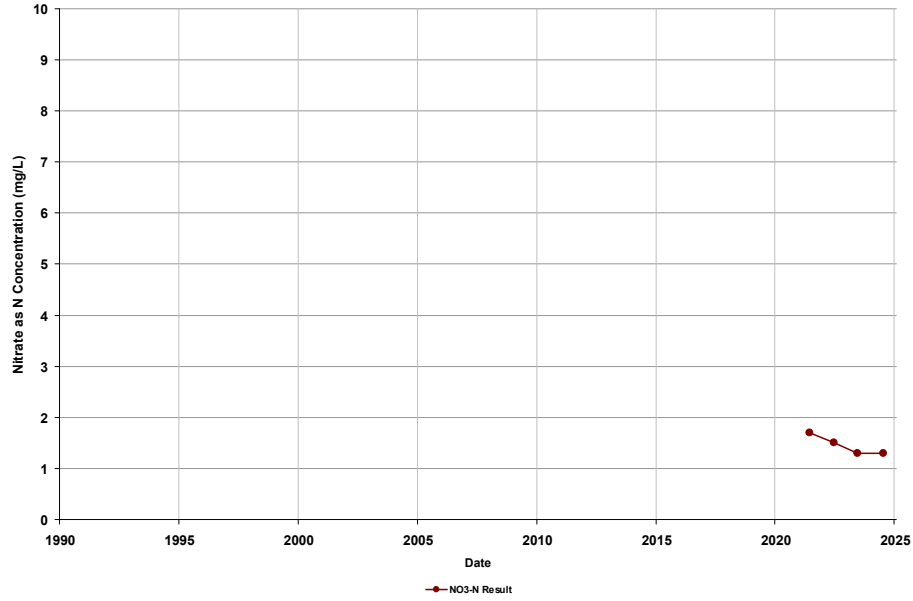


NOTE: Non-Detect results shown as half the reporting limit.



Well Name: MSB09B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

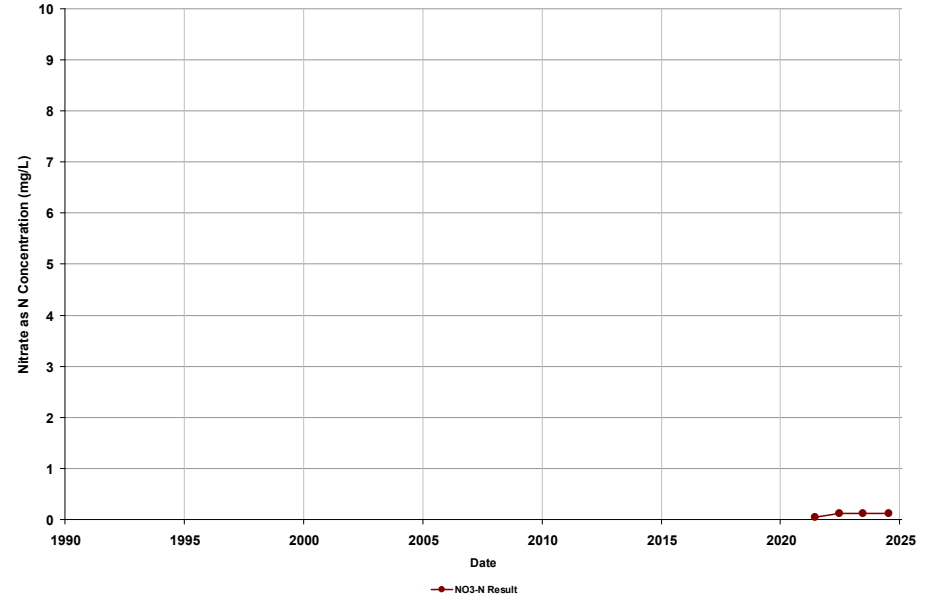
Total Depth (ft bgs): 725  
Perf. Top (ft bgs): 520  
Perf. Bottom (ft bgs): 715



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB09C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

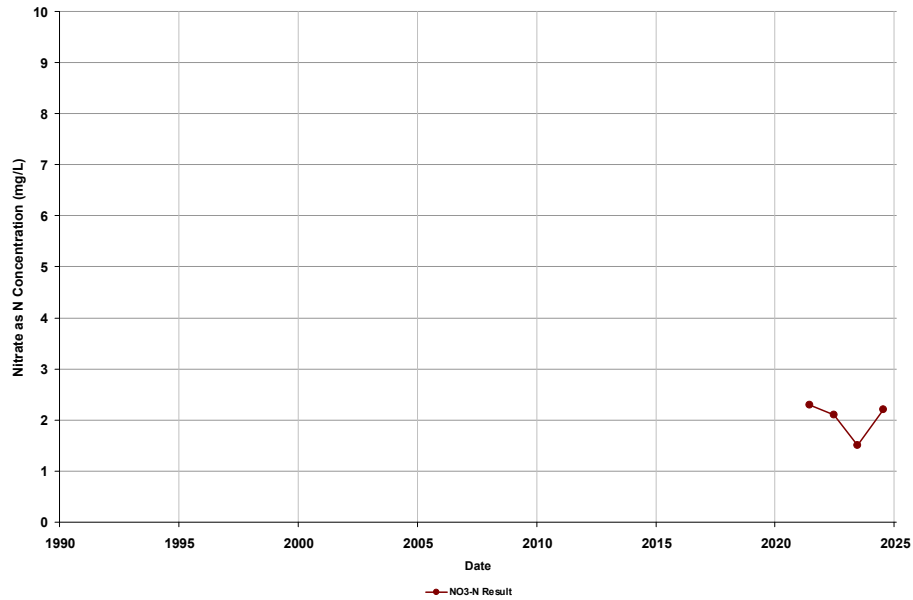
Total Depth (ft bgs): 955  
Perf. Top (ft bgs): 880  
Perf. Bottom (ft bgs): 945



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB10B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

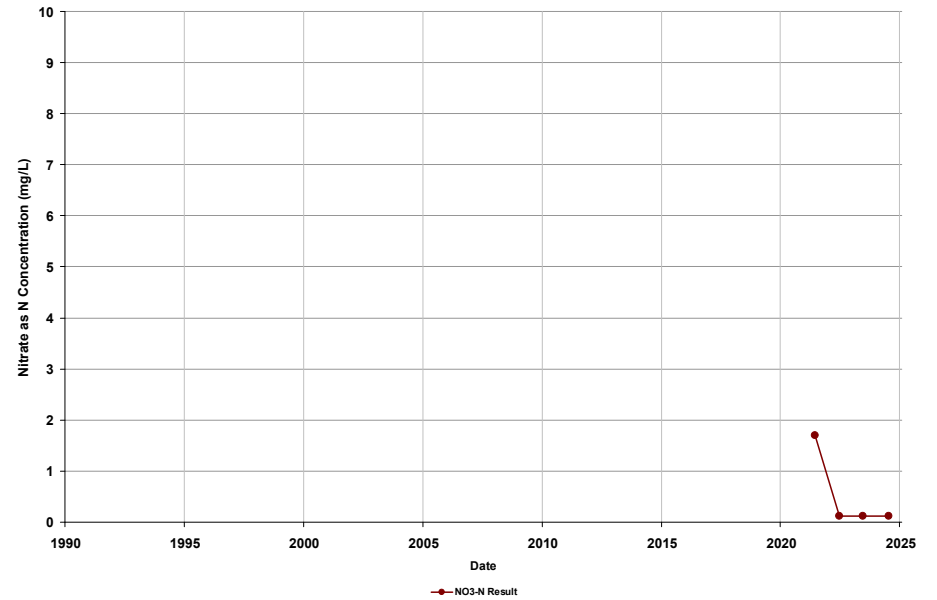
Total Depth (ft bgs): 510  
Perf. Top (ft bgs): 400  
Perf. Bottom (ft bgs): 500



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB10C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

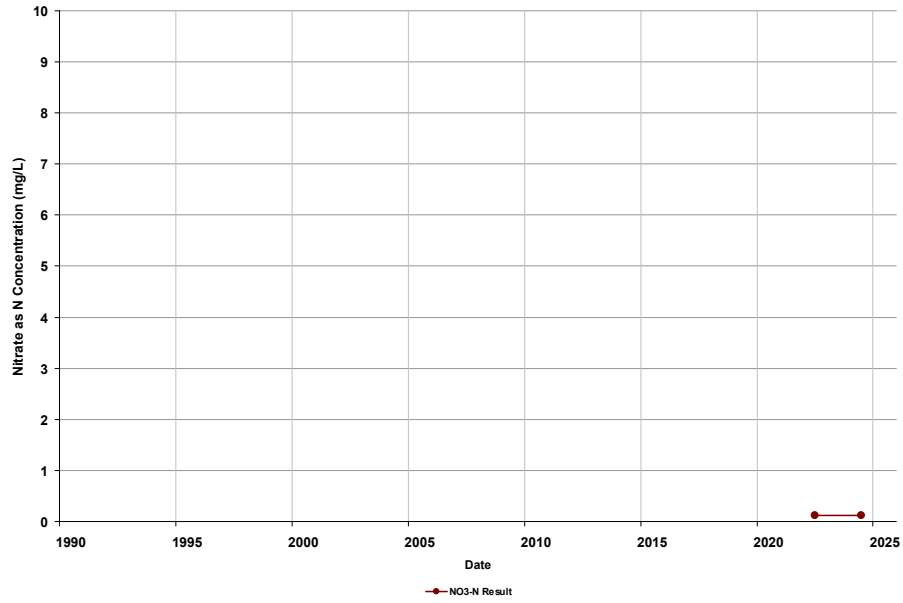
Total Depth (ft bgs): 880  
Perf. Top (ft bgs): 790  
Perf. Bottom (ft bgs): 870



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB11C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

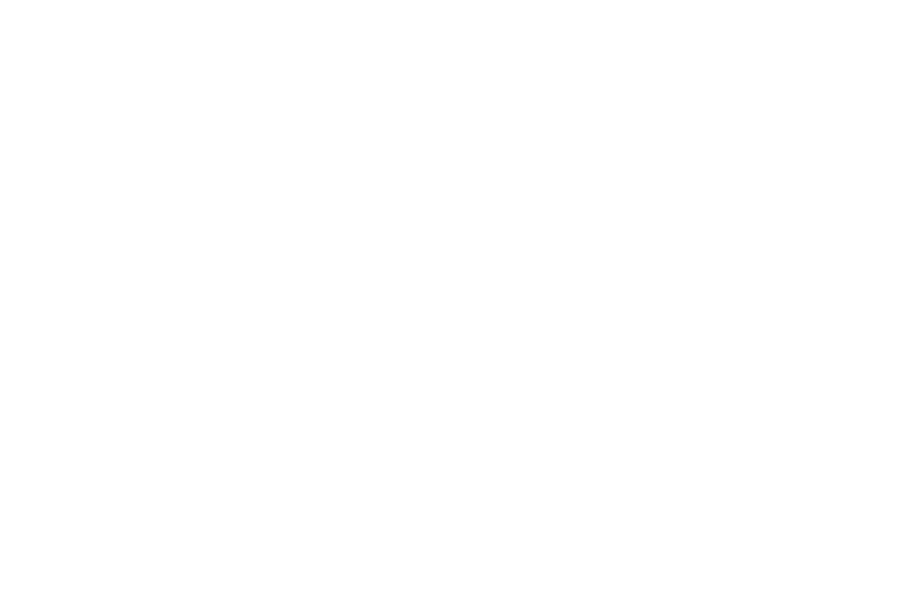
Total Depth (ft bgs): 880  
Perf. Top (ft bgs): 775  
Perf. Bottom (ft bgs): 870



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB13A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Monitoring

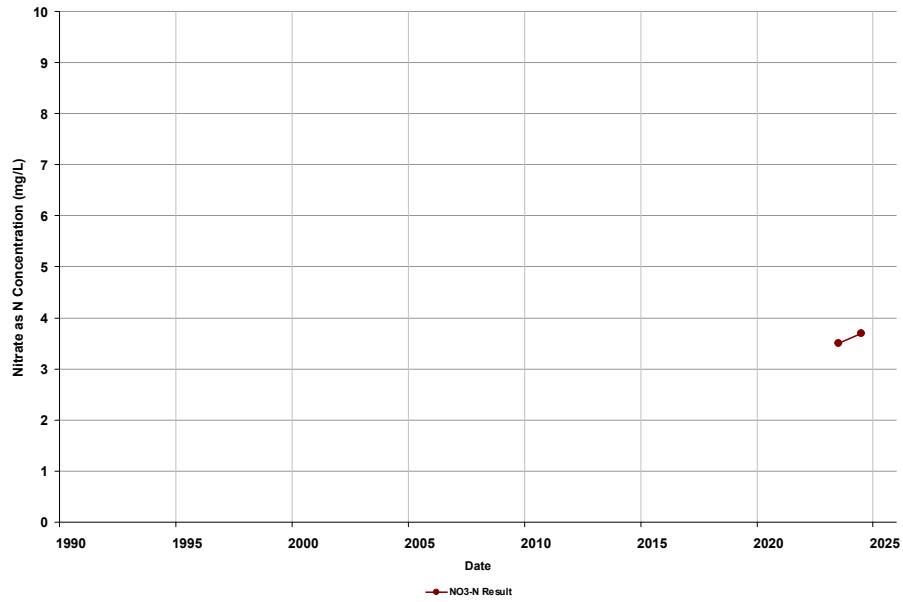
Total Depth (ft bgs): 290  
Perf. Top (ft bgs): 200  
Perf. Bottom (ft bgs): 280



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB13B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Monitoring

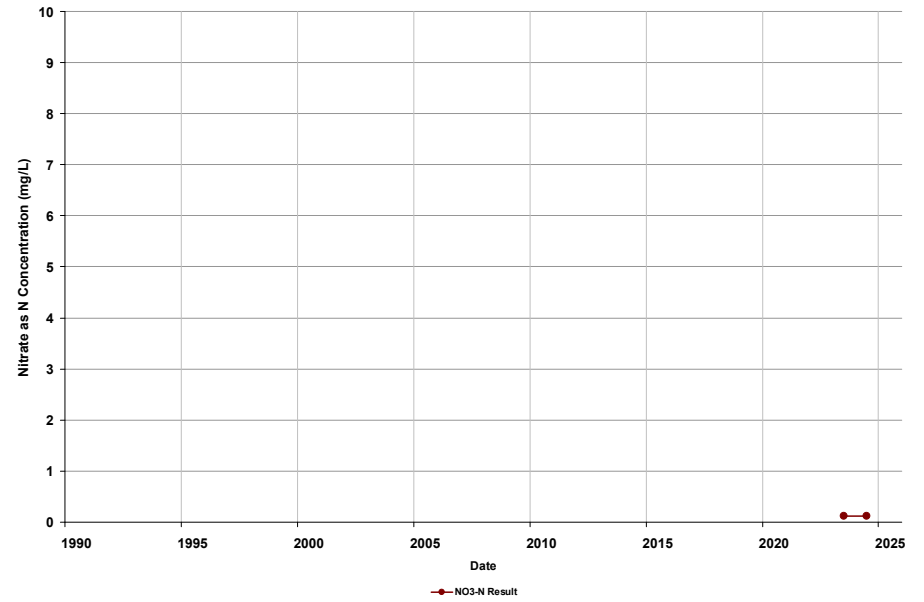
Total Depth (ft bgs): 446  
Perf. Top (ft bgs): 396  
Perf. Bottom (ft bgs): 436



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB13C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Monitoring

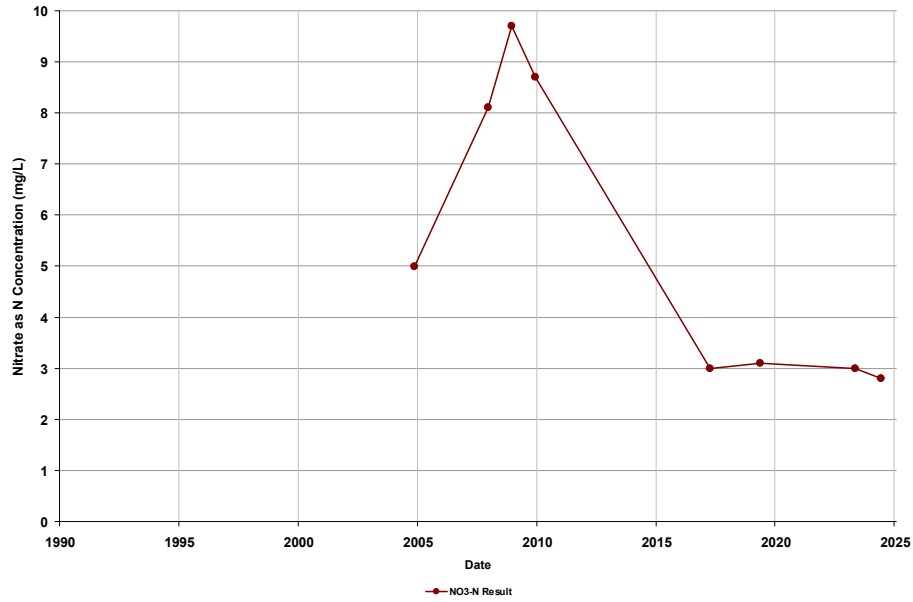
Total Depth (ft bgs): 532  
Perf. Top (ft bgs): 522  
Perf. Bottom (ft bgs): 532



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2000507-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

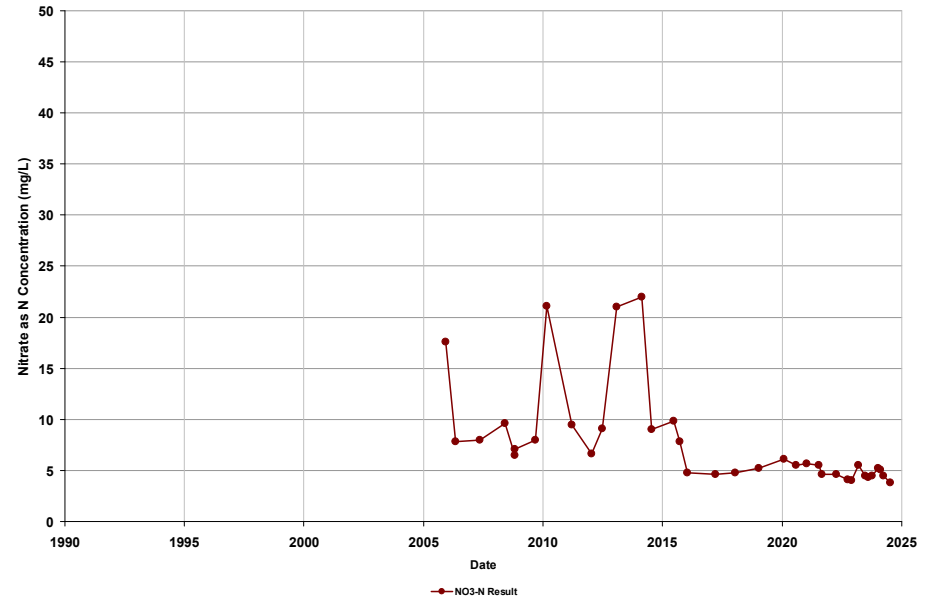
Total Depth (ft bgs):  
Perf. Top (ft bgs): 372  
Perf. Bottom (ft bgs): 372



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2000553-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

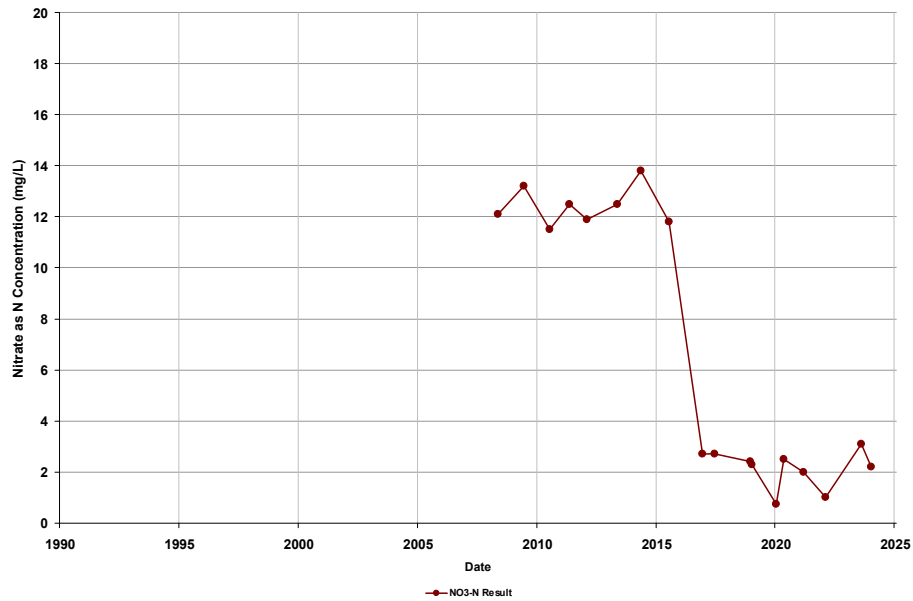
Total Depth (ft bgs):  
Perf. Top (ft bgs): 450  
Perf. Bottom (ft bgs): 500



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2000682-002  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

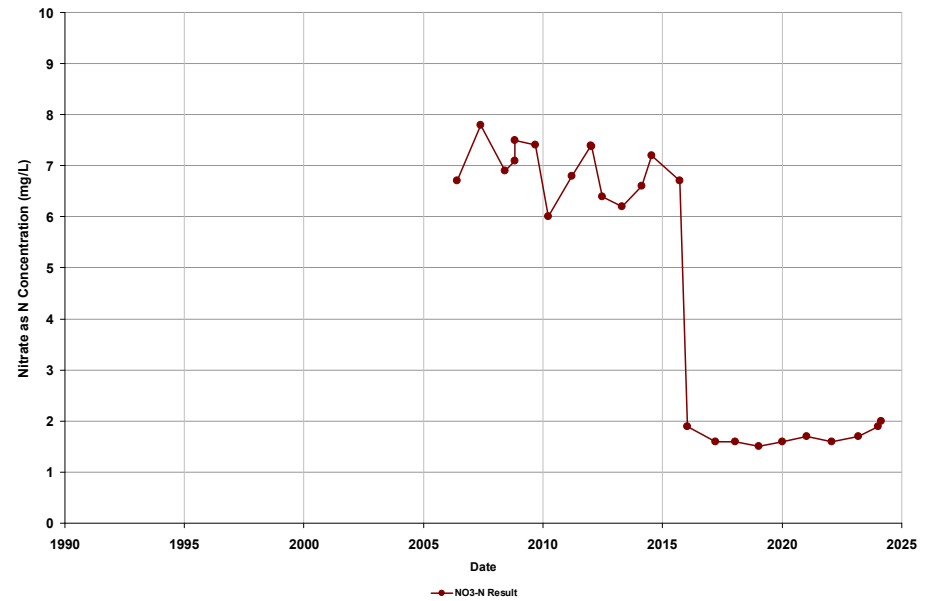
Total Depth (ft bgs):  
Perf. Top (ft bgs): 295  
Perf. Bottom (ft bgs): 420



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2000727-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

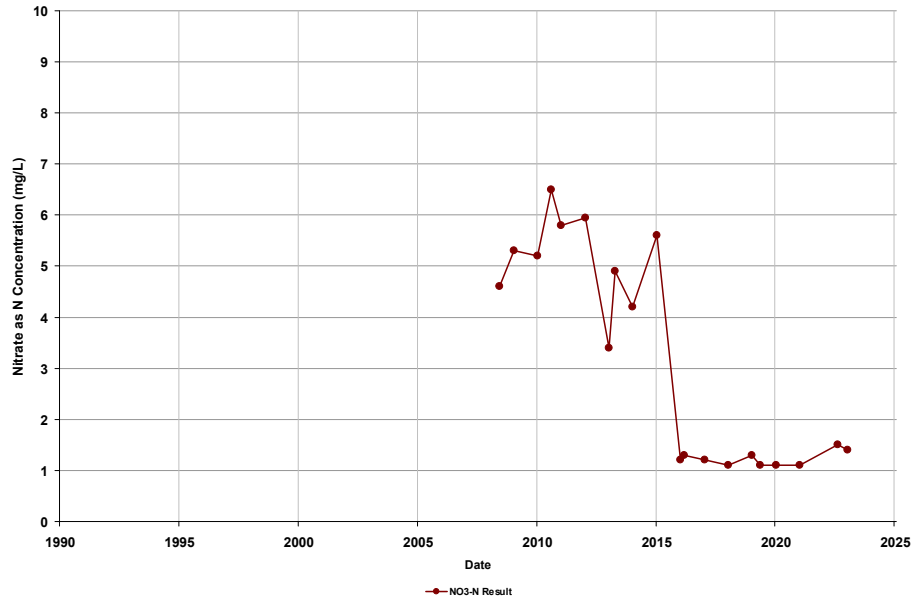
Total Depth (ft bgs):  
Perf. Top (ft bgs): 280  
Perf. Bottom (ft bgs): 360



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2000938-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

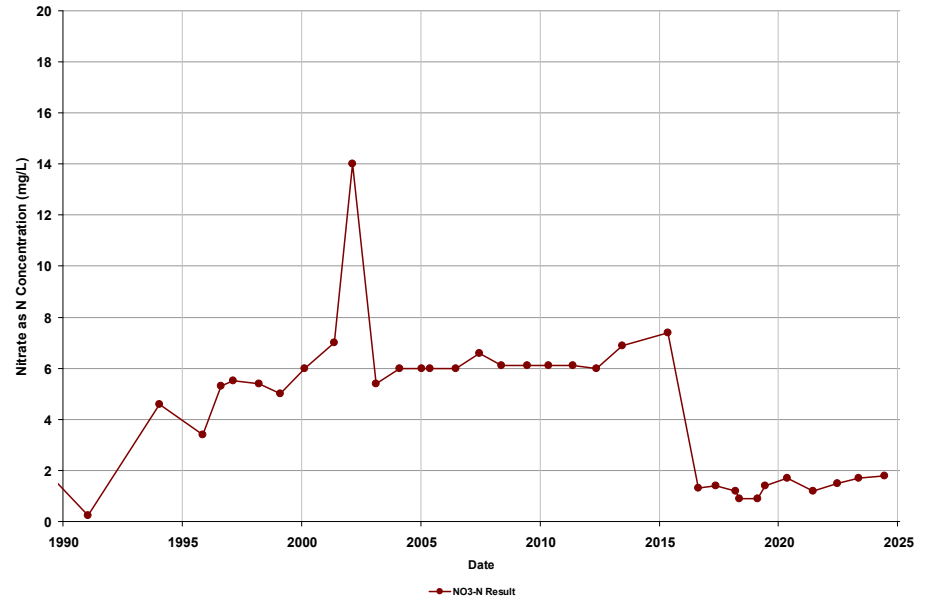
Total Depth (ft bgs):  
Perf. Top (ft bgs): 420  
Perf. Bottom (ft bgs): 560



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010002-014  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

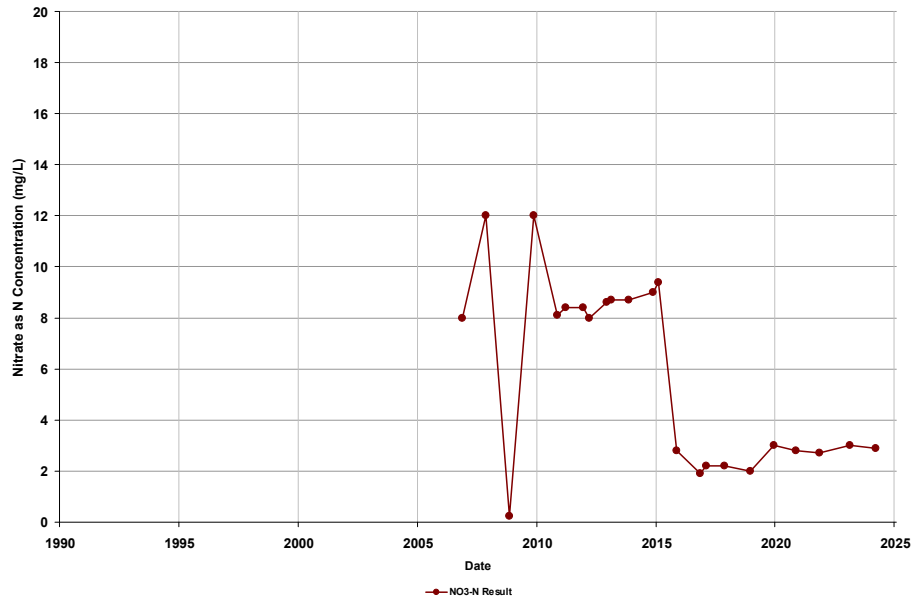
Total Depth (ft bgs):  
Perf. Top (ft bgs): 280  
Perf. Bottom (ft bgs): 610



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010002-032  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

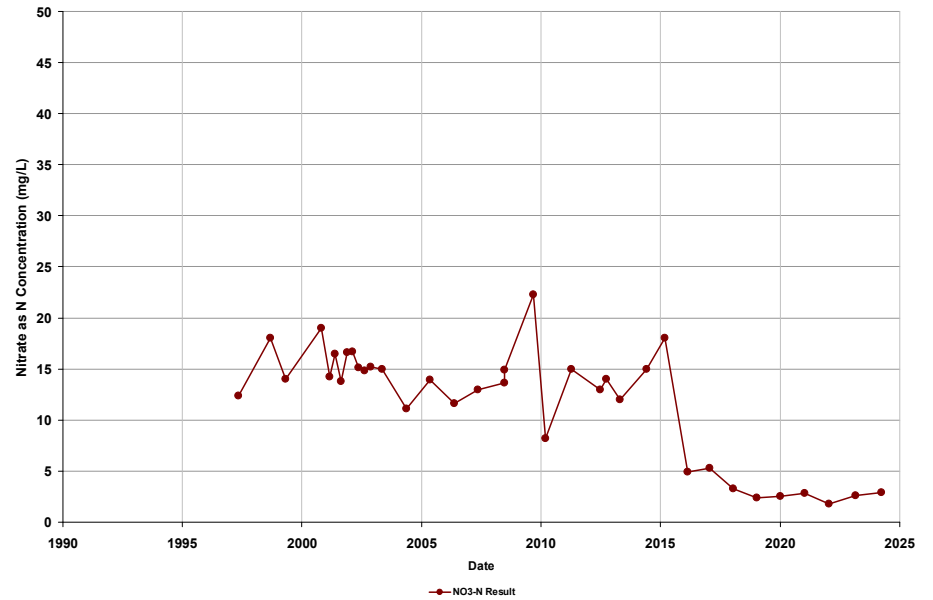
Total Depth (ft bgs):  
Perf. Top (ft bgs): 310  
Perf. Bottom (ft bgs): 600



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010008-005  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

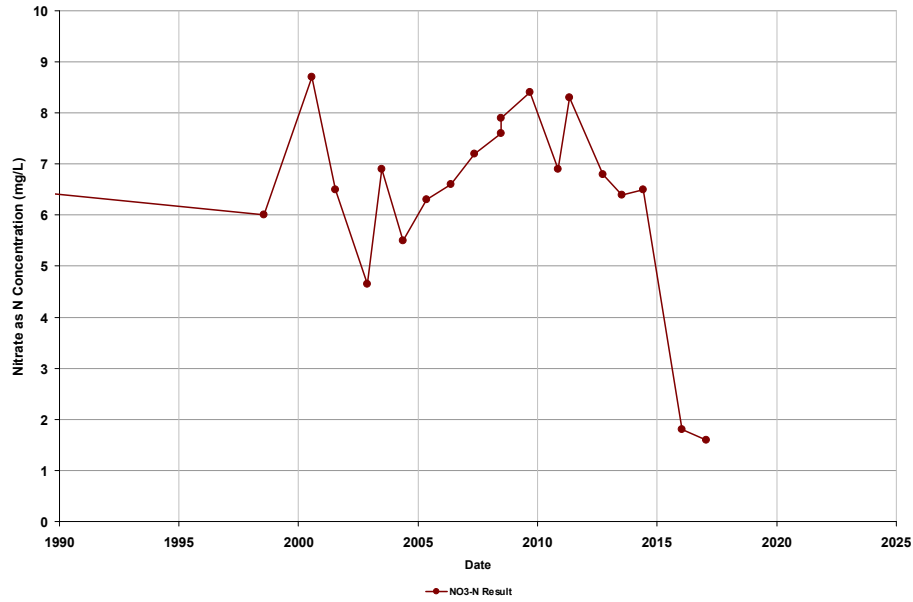
Total Depth (ft bgs):  
Perf. Top (ft bgs): 250  
Perf. Bottom (ft bgs): 465



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010009-002  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

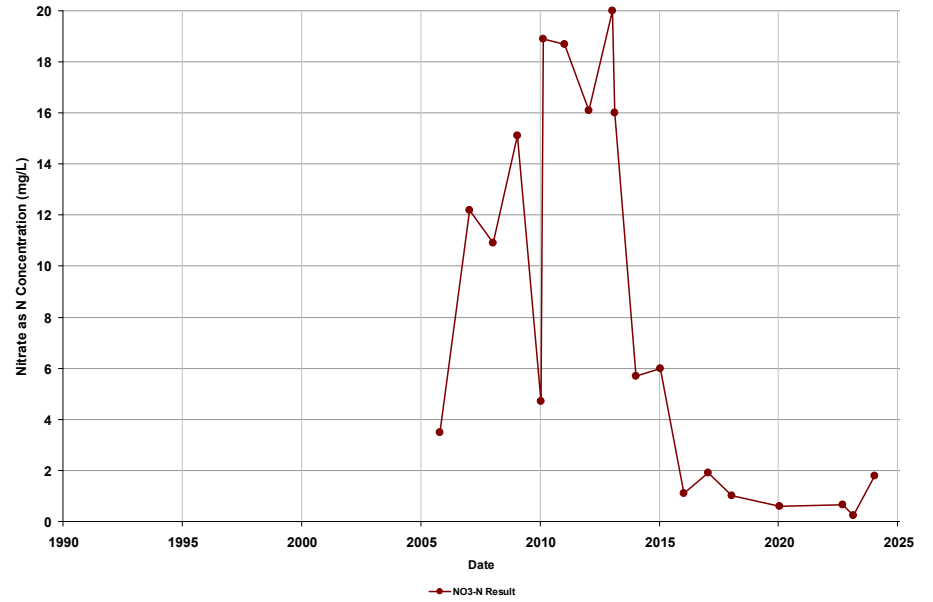
Total Depth (ft bgs):  
Perf. Top (ft bgs): 324  
Perf. Bottom (ft bgs): 369



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010010-007  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

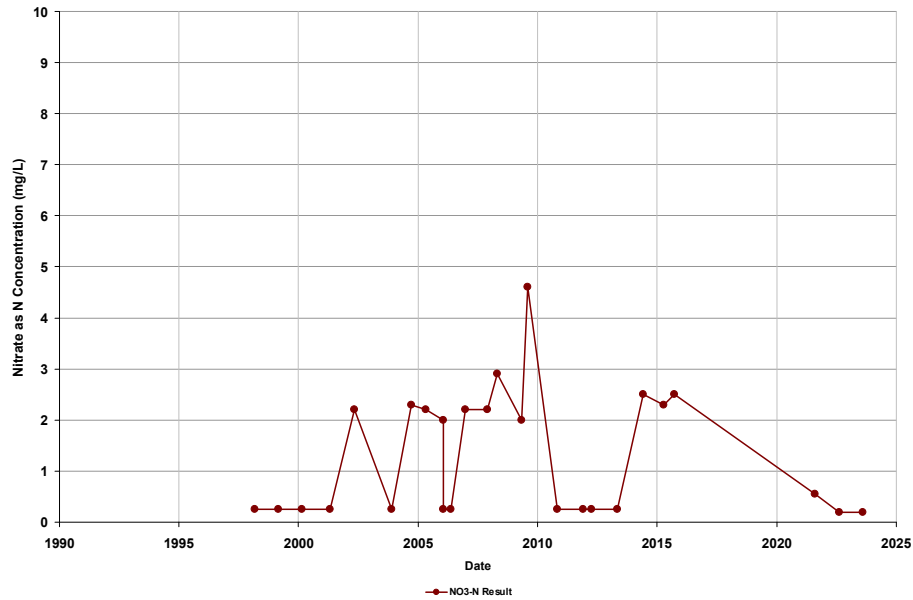
Total Depth (ft bgs):  
Perf. Top (ft bgs): 242  
Perf. Bottom (ft bgs): 374



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010801-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

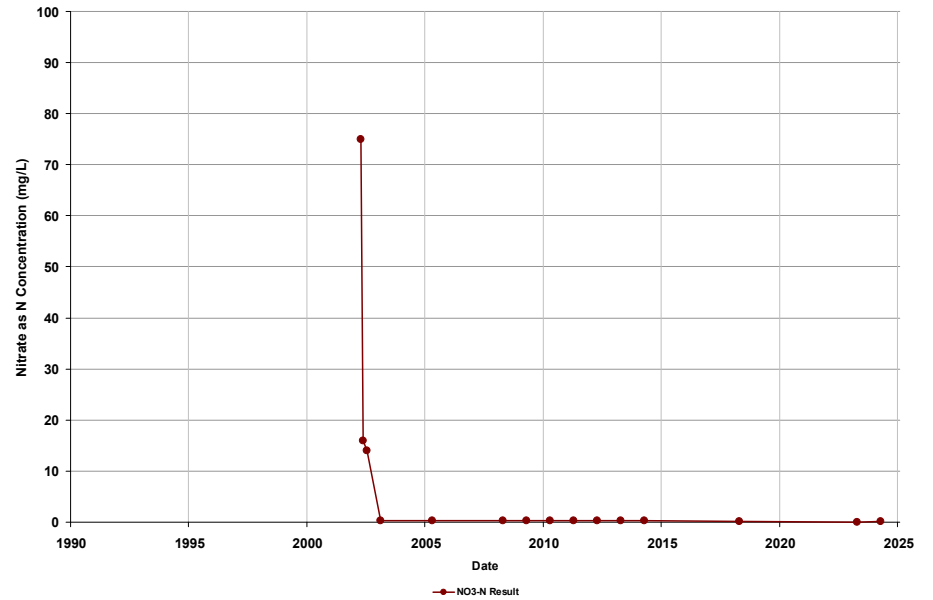
Total Depth (ft bgs):  
Perf. Top (ft bgs): 375  
Perf. Bottom (ft bgs): 760



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2801077-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

Total Depth (ft bgs):  
Perf. Top (ft bgs): 60  
Perf. Bottom (ft bgs): 500



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: ESJ12  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Domestic

Total Depth (ft bgs): 276  
Perf. Top (ft bgs): 160  
Perf. Bottom (ft bgs): 172

NOTE: Non-Detect results shown as half the reporting limit.

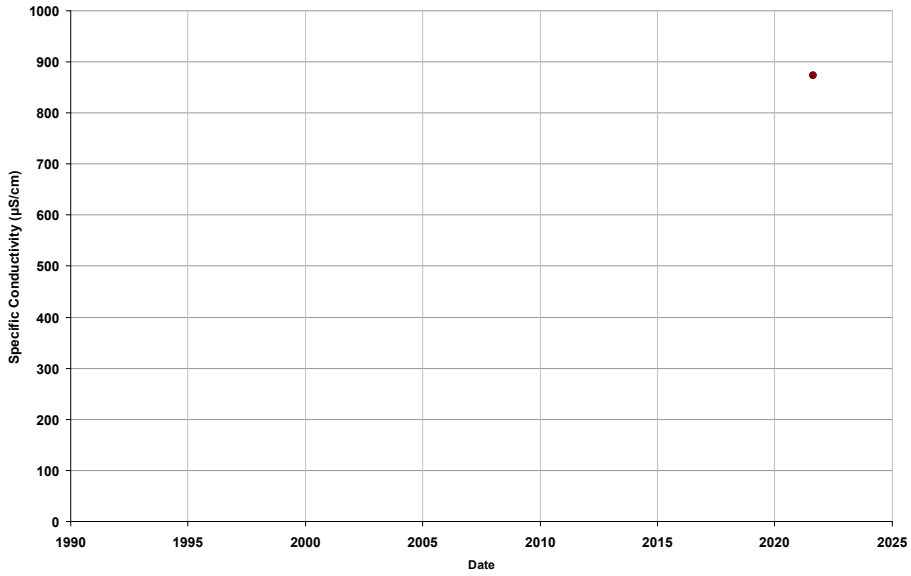
Well Name: ESJ17  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Domestic

Total Depth (ft bgs):  
Perf. Top (ft bgs):  
Perf. Bottom (ft bgs):

NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MCE RMS-3  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Unknown

Total Depth (ft bgs):  
Perf. Top (ft bgs):  
Perf. Bottom (ft bgs):



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-4  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

Total Depth (ft bgs): 698  
Perf. Top (ft bgs): 320  
Perf. Bottom (ft bgs): 667

NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-5B  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

Total Depth (ft bgs): 514  
Perf. Top (ft bgs): 245  
Perf. Bottom (ft bgs): 496

NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-6  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Industrial

Total Depth (ft bgs): 680  
Perf. Top (ft bgs): 320  
Perf. Bottom (ft bgs): 680

NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-7  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

Total Depth (ft bgs): 656  
Perf. Top (ft bgs): 290  
Perf. Bottom (ft bgs): 635

Well Name: MID RMS-13  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

Total Depth (ft bgs): 600  
Perf. Top (ft bgs): 228  
Perf. Bottom (ft bgs): 552

NOTE: Non-Detect results shown as half the reporting limit.

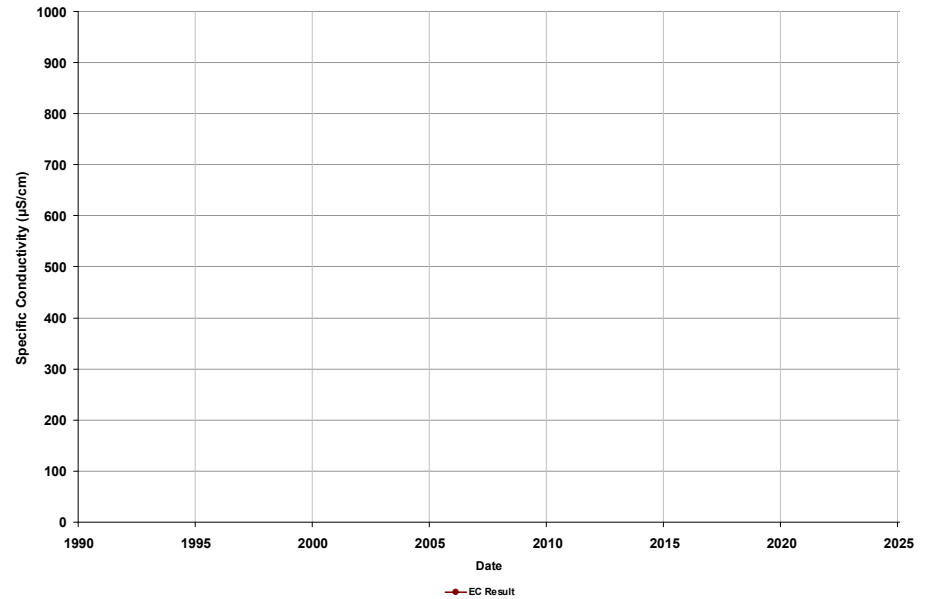
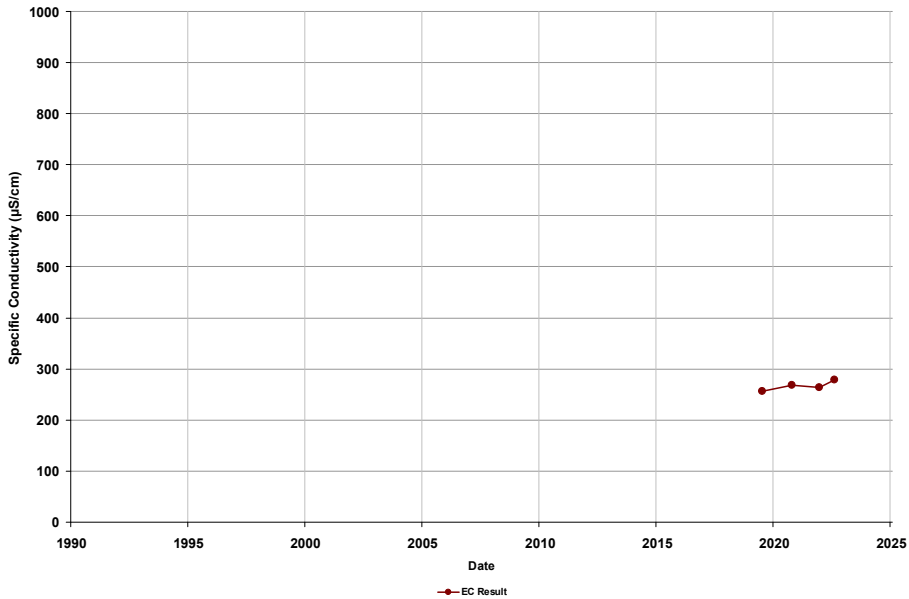
NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MWD RMS-1  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

Total Depth (ft bgs): 504  
Perf. Top (ft bgs): 200  
Perf. Bottom (ft bgs): 500

Well Name: MSB03A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

Total Depth (ft bgs): 139  
Perf. Top (ft bgs): 74  
Perf. Bottom (ft bgs): 134



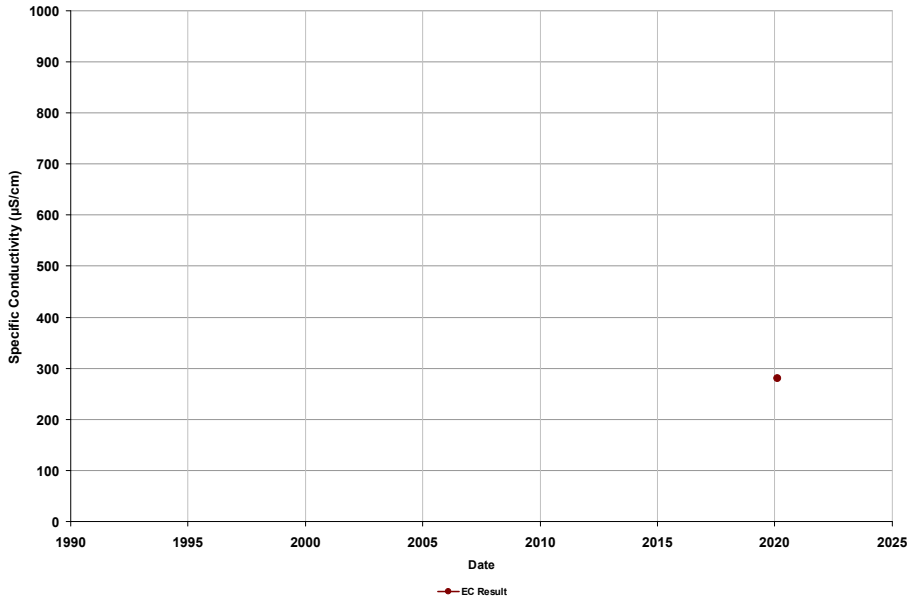
NOTE: Non-Detect results shown as half the reporting limit.

NOTE: Non-Detect results shown as half the reporting limit.



Well Name: MSB03B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

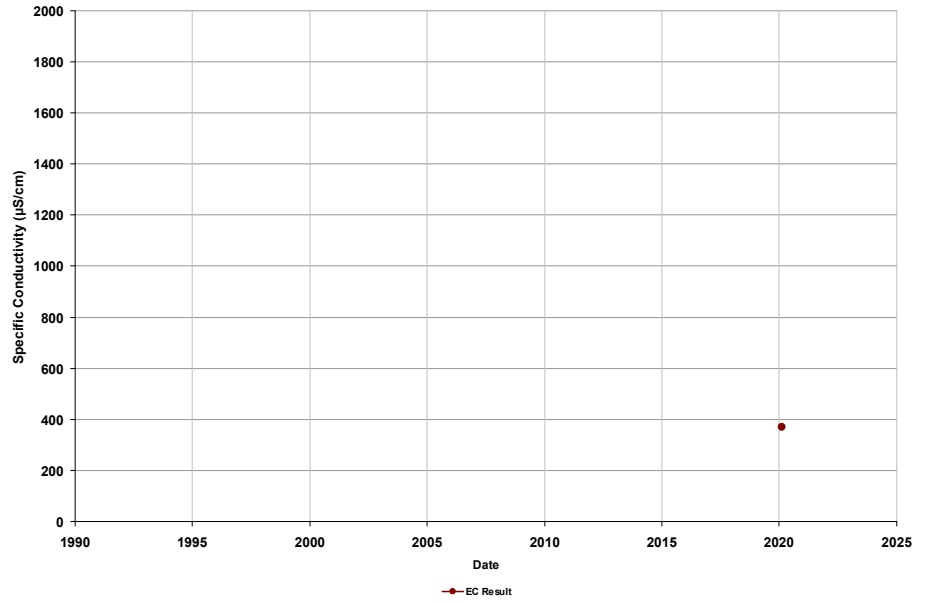
Total Depth (ft bgs): 295  
Perf. Top (ft bgs): 215  
Perf. Bottom (ft bgs): 285



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB03C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

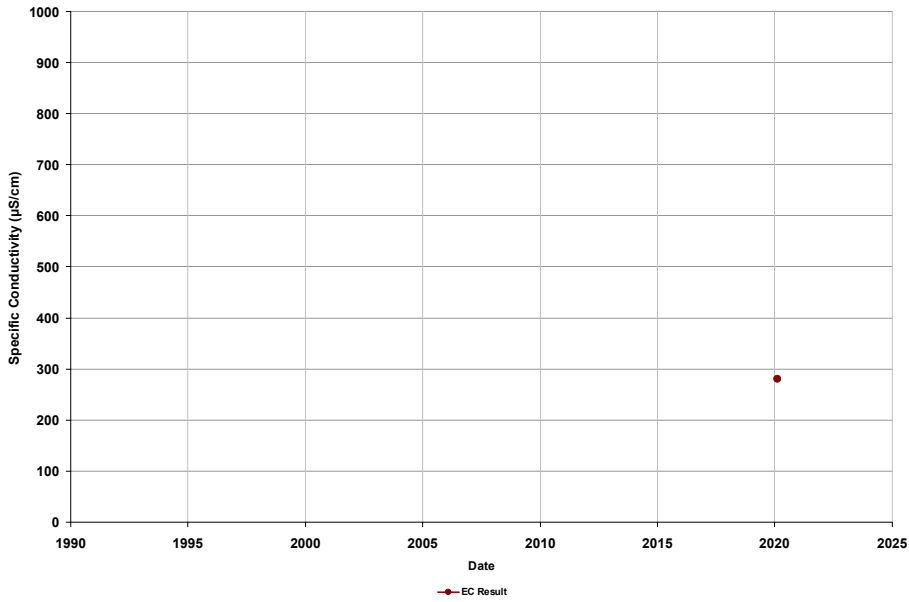
Total Depth (ft bgs): 430  
Perf. Top (ft bgs): 355  
Perf. Bottom (ft bgs): 420



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB04A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

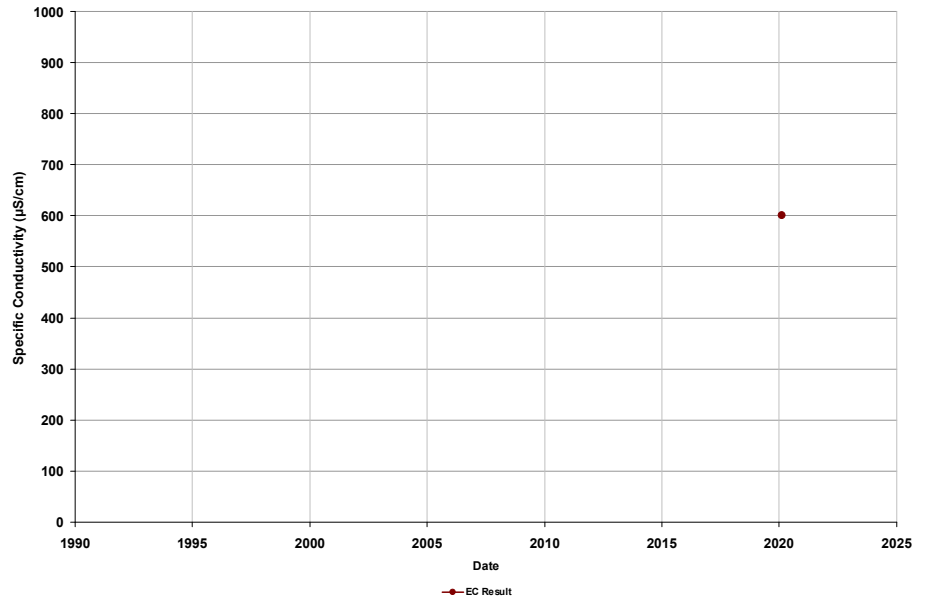
Total Depth (ft bgs): 375  
Perf. Top (ft bgs): 180  
Perf. Bottom (ft bgs): 365



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB04B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

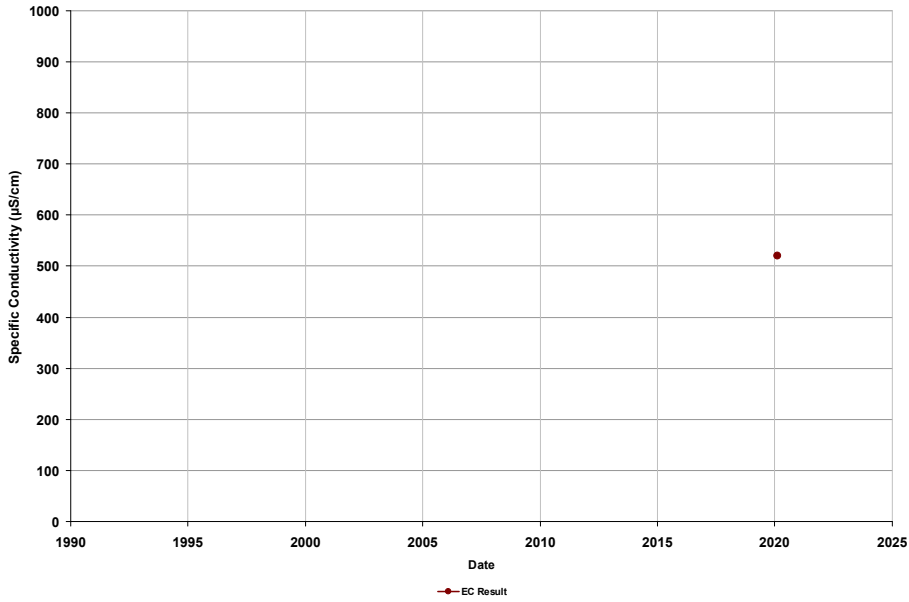
Total Depth (ft bgs): 695  
Perf. Top (ft bgs): 530  
Perf. Bottom (ft bgs): 685



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB04C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

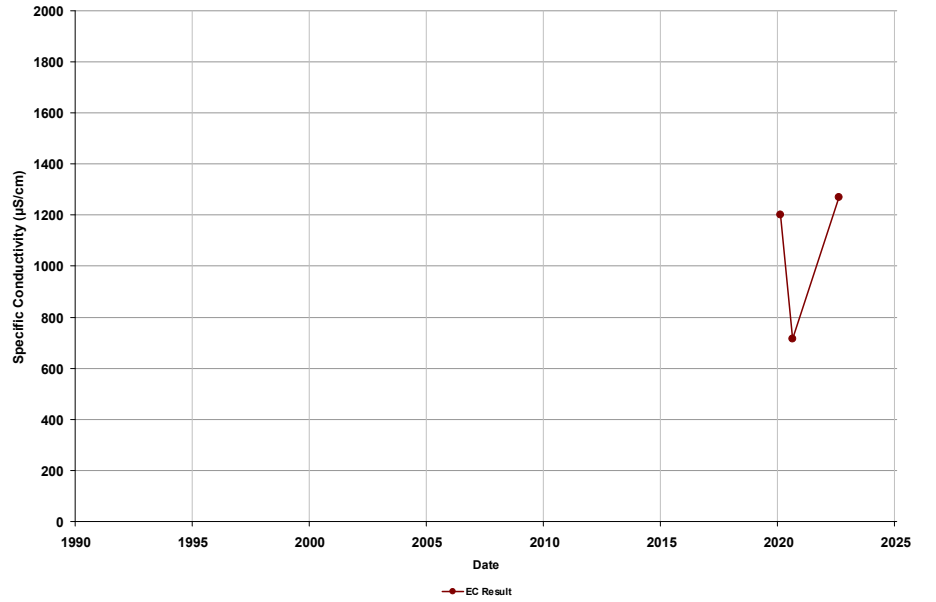
Total Depth (ft bgs): 905  
Perf. Top (ft bgs): 750  
Perf. Bottom (ft bgs): 895



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB05A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

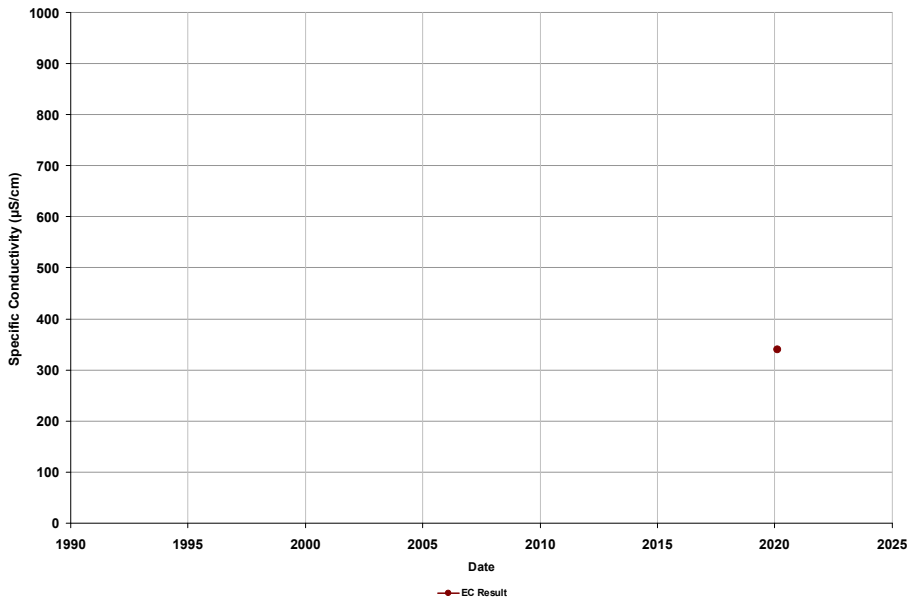
Total Depth (ft bgs): 210  
Perf. Top (ft bgs): 140  
Perf. Bottom (ft bgs): 200



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB05B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

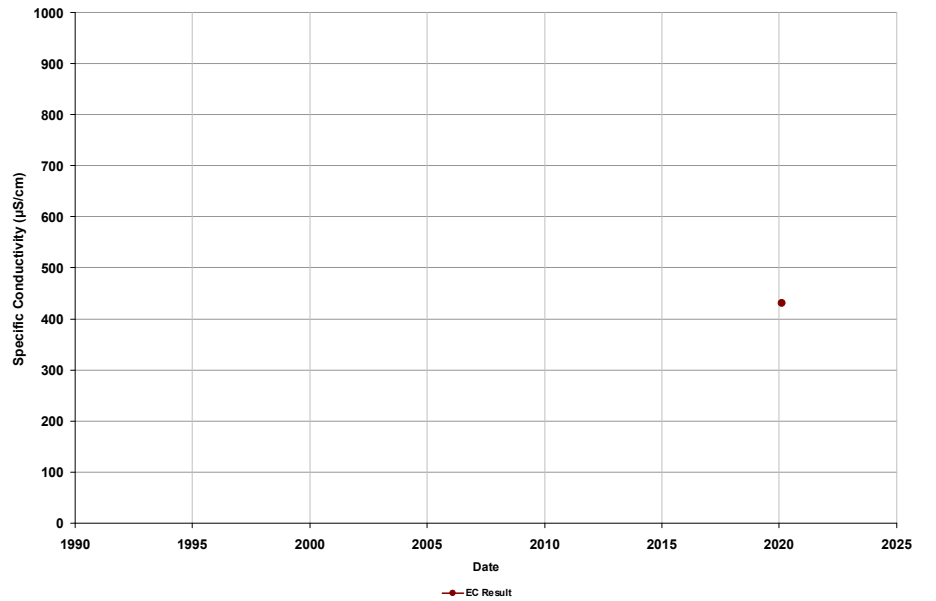
Total Depth (ft bgs): 375  
Perf. Top (ft bgs): 240  
Perf. Bottom (ft bgs): 365



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB05C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

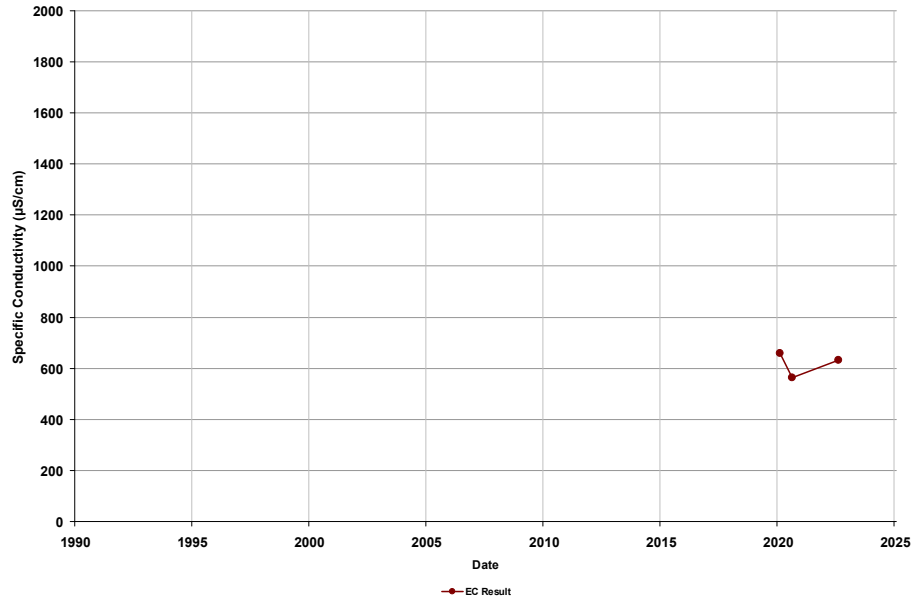
Total Depth (ft bgs): 585  
Perf. Top (ft bgs): 420  
Perf. Bottom (ft bgs): 585



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB06A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

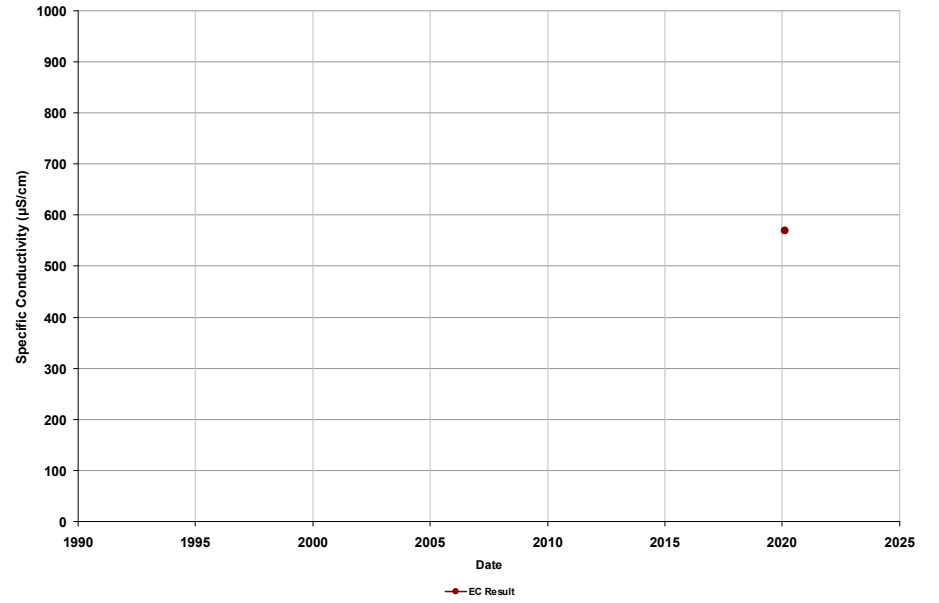
Total Depth (ft bgs): 350  
Perf. Top (ft bgs): 135  
Perf. Bottom (ft bgs): 340



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB06B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

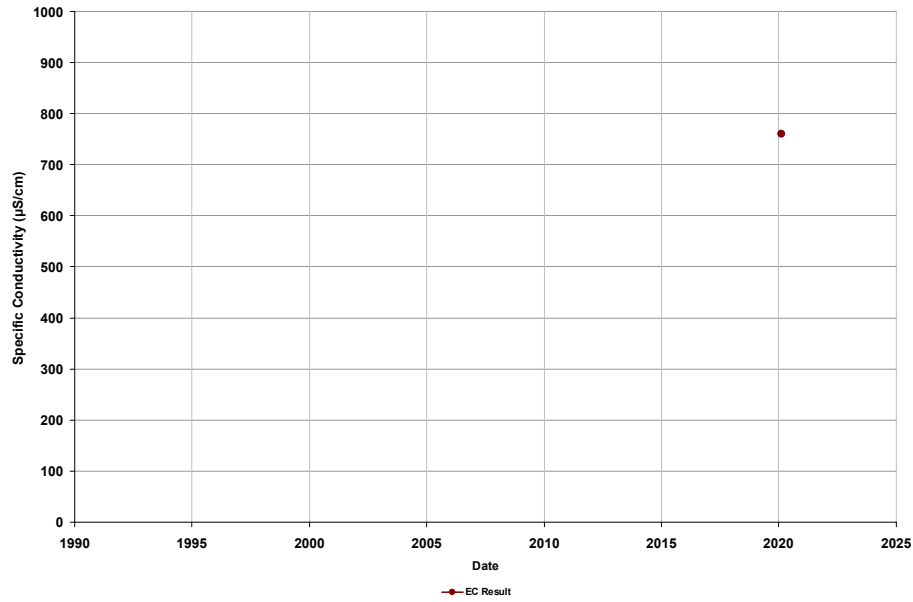
Total Depth (ft bgs): 520  
Perf. Top (ft bgs): 425  
Perf. Bottom (ft bgs): 510



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB06C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

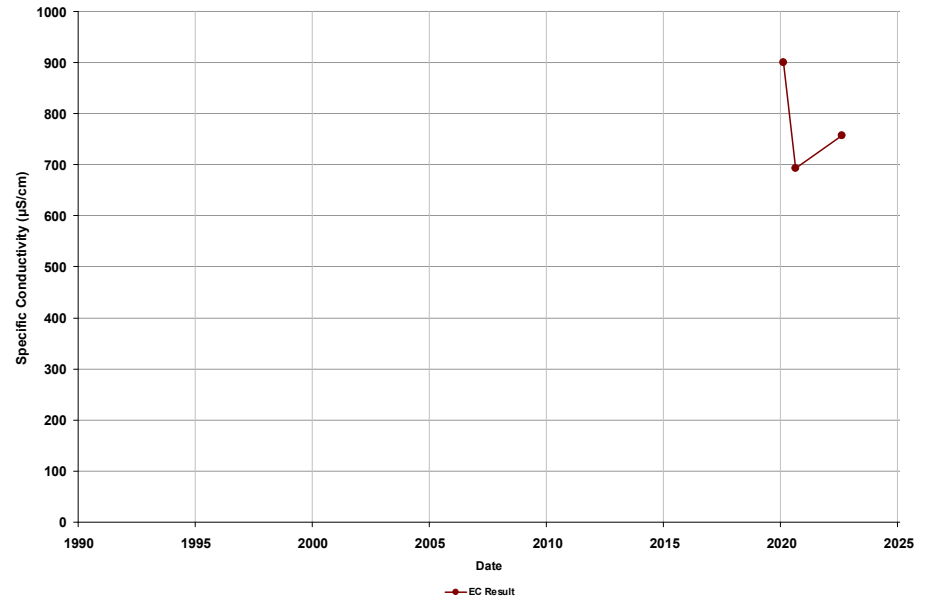
Total Depth (ft bgs): 715  
Perf. Top (ft bgs): 630  
Perf. Bottom (ft bgs): 705



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB09A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

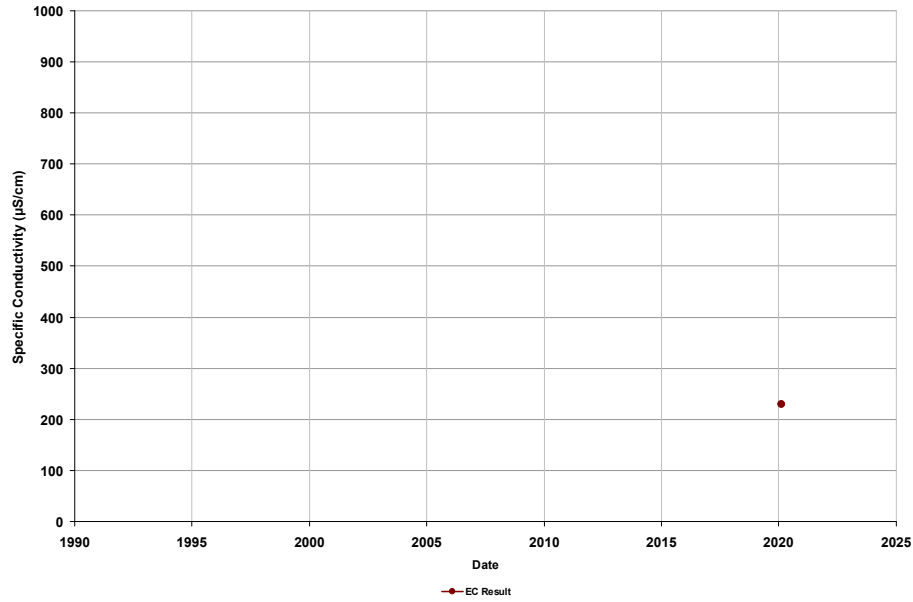
Total Depth (ft bgs): 320  
Perf. Top (ft bgs): 200  
Perf. Bottom (ft bgs): 310



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB09B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

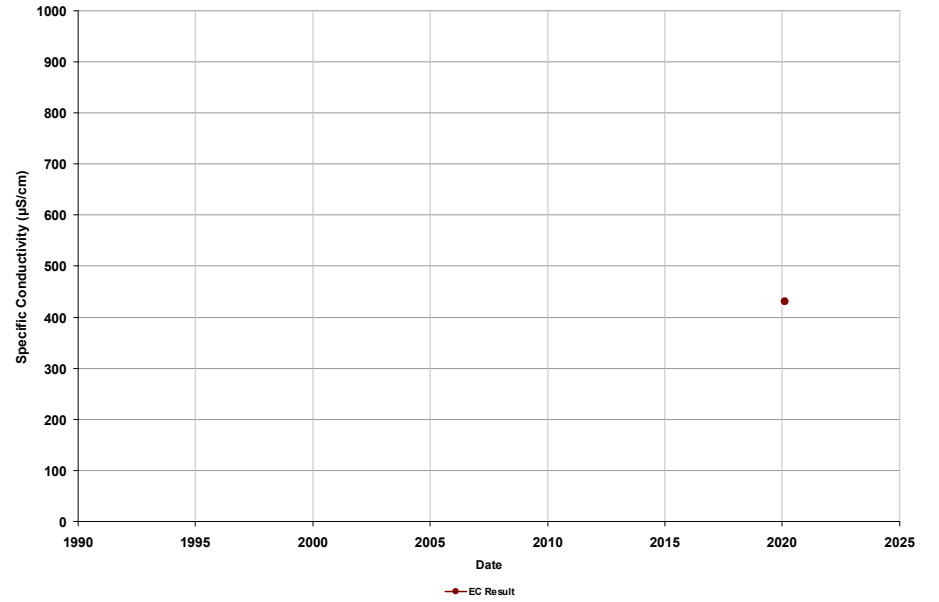
Total Depth (ft bgs): 725  
Perf. Top (ft bgs): 520  
Perf. Bottom (ft bgs): 715



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB09C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

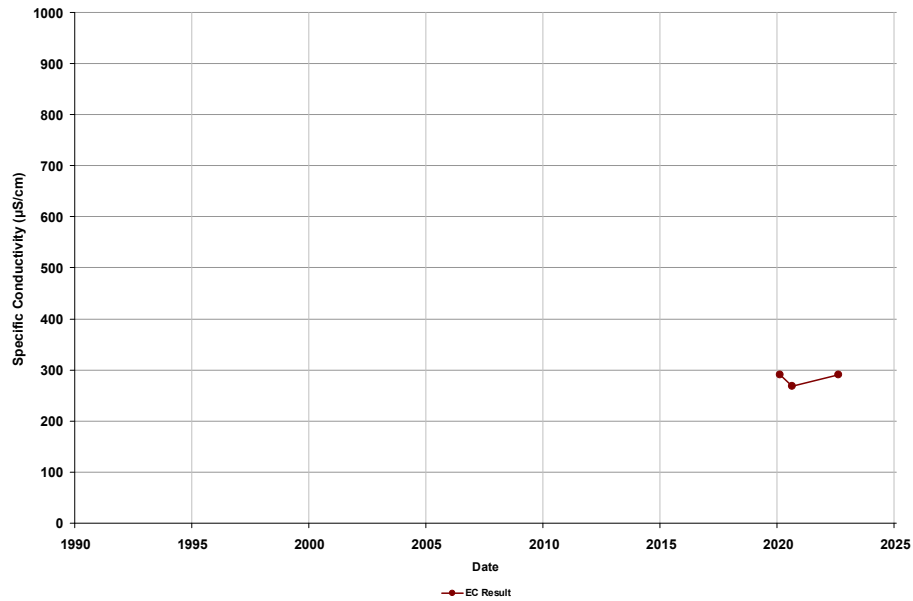
Total Depth (ft bgs): 955  
Perf. Top (ft bgs): 880  
Perf. Bottom (ft bgs): 945



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB10B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

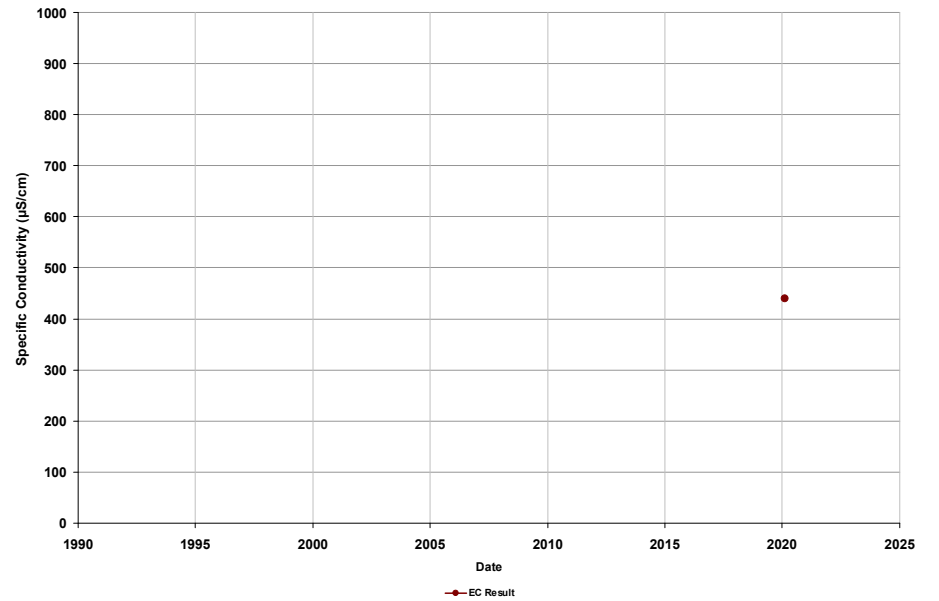
Total Depth (ft bgs): 510  
Perf. Top (ft bgs): 400  
Perf. Bottom (ft bgs): 500



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB10C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

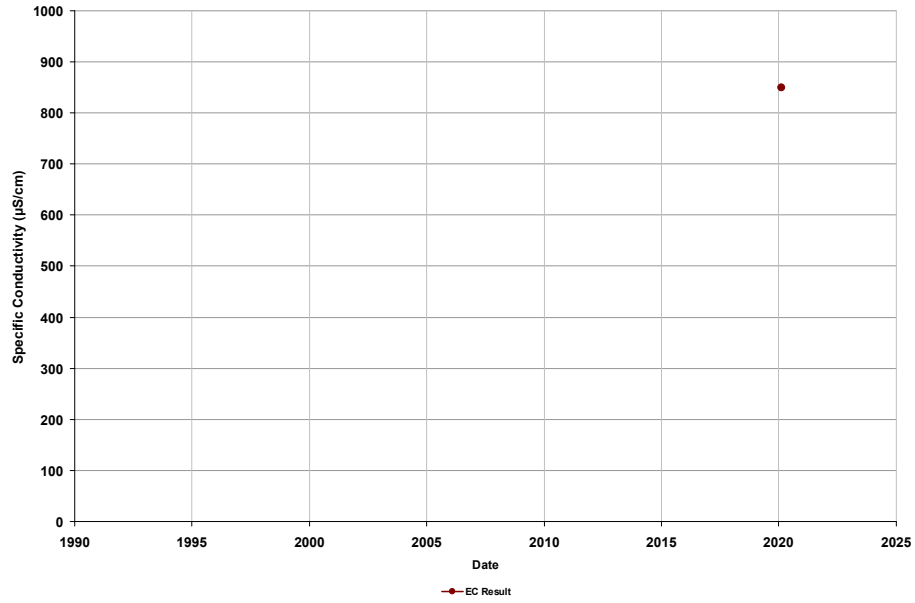
Total Depth (ft bgs): 880  
Perf. Top (ft bgs): 790  
Perf. Bottom (ft bgs): 870



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB11C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

Total Depth (ft bgs): 880  
Perf. Top (ft bgs): 775  
Perf. Bottom (ft bgs): 870



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB13A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Monitoring

Total Depth (ft bgs): 290  
Perf. Top (ft bgs): 200  
Perf. Bottom (ft bgs): 280

NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB13B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Monitoring

Total Depth (ft bgs): 446  
Perf. Top (ft bgs): 396  
Perf. Bottom (ft bgs): 436

NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB13C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Monitoring

Total Depth (ft bgs): 532  
Perf. Top (ft bgs): 522  
Perf. Bottom (ft bgs): 532

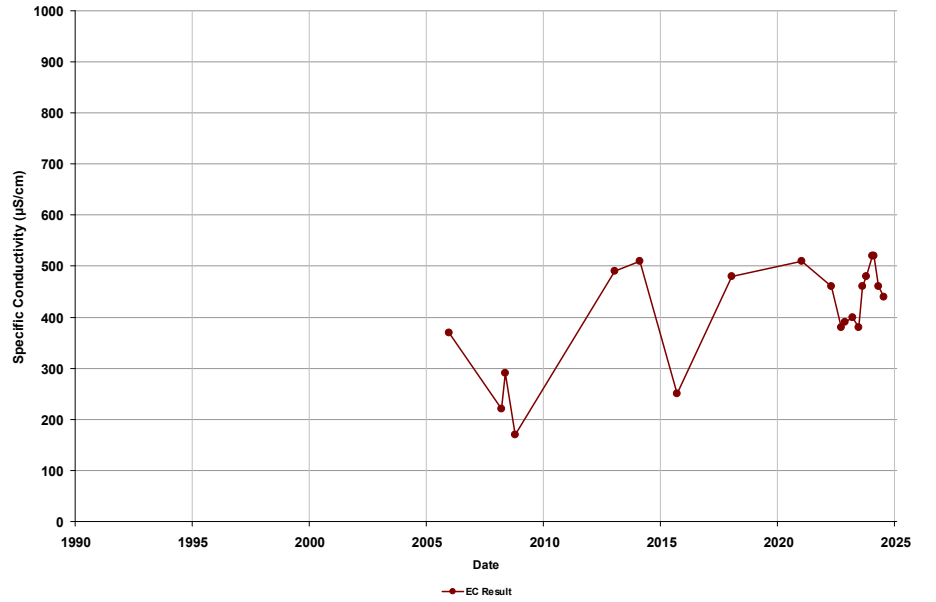
NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2000507-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

Total Depth (ft bgs):  
Perf. Top (ft bgs): 372  
Perf. Bottom (ft bgs): 372

Well Name: 2000553-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

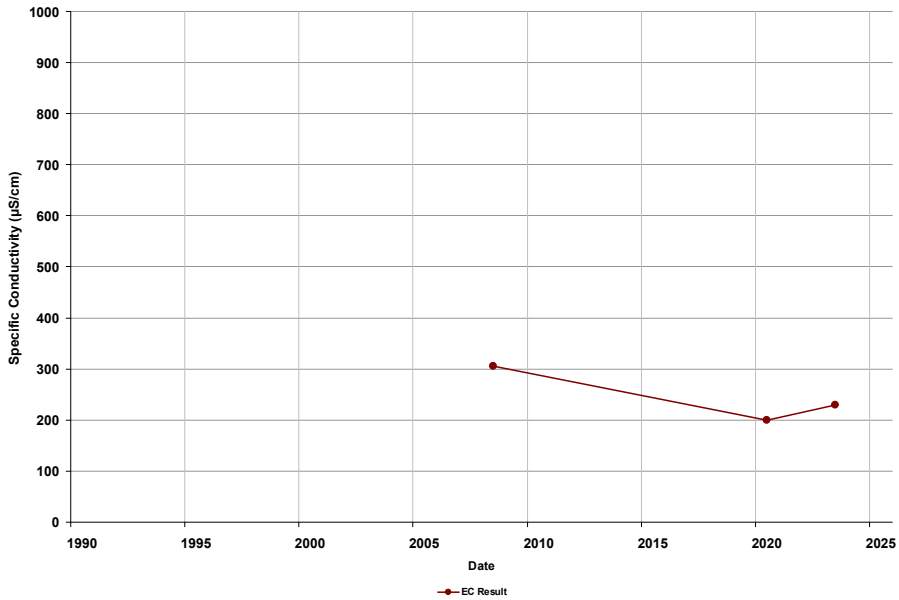
Total Depth (ft bgs):  
Perf. Top (ft bgs): 450  
Perf. Bottom (ft bgs): 500



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2000682-002  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

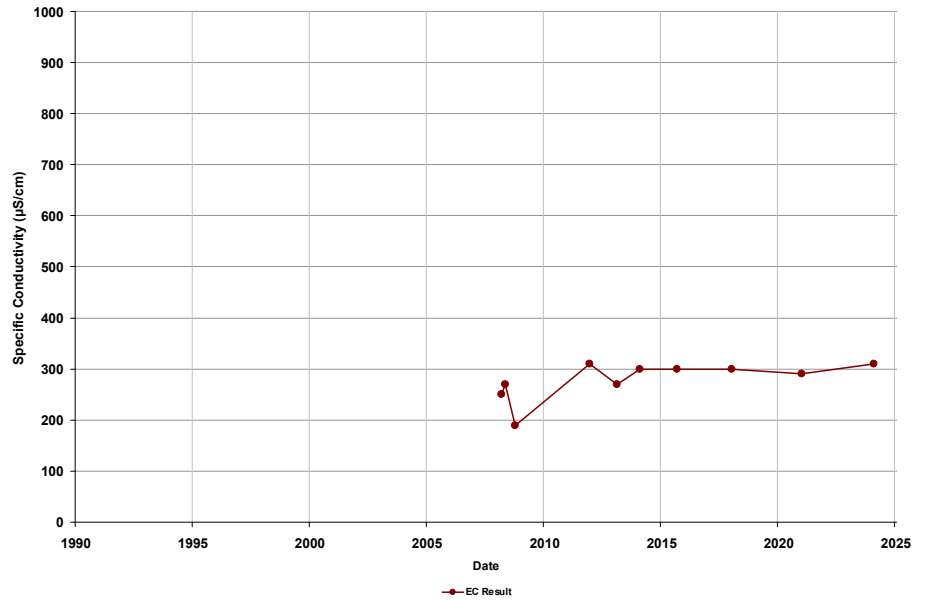
Total Depth (ft bgs):  
Perf. Top (ft bgs): 295  
Perf. Bottom (ft bgs): 420



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2000727-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

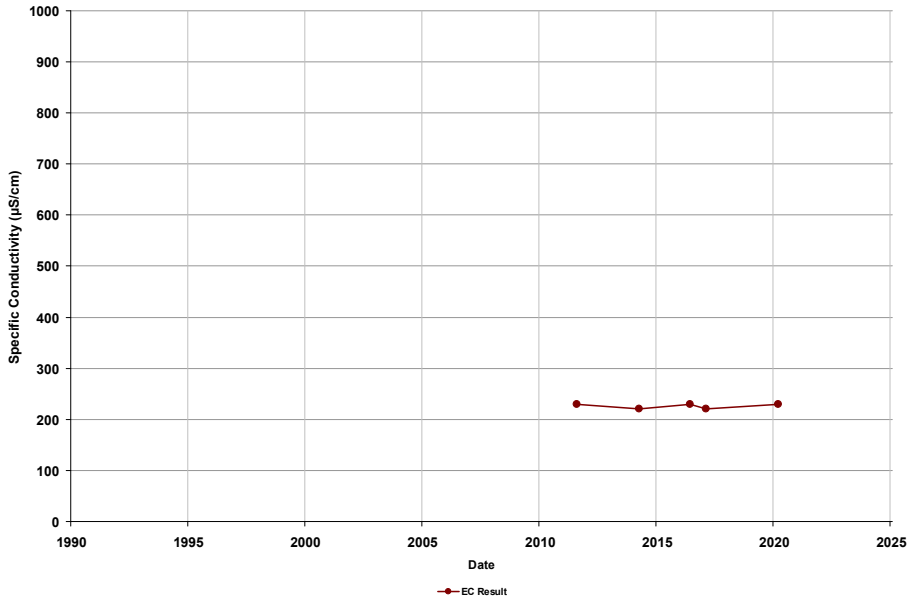
Total Depth (ft bgs):  
Perf. Top (ft bgs): 280  
Perf. Bottom (ft bgs): 360



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2000938-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

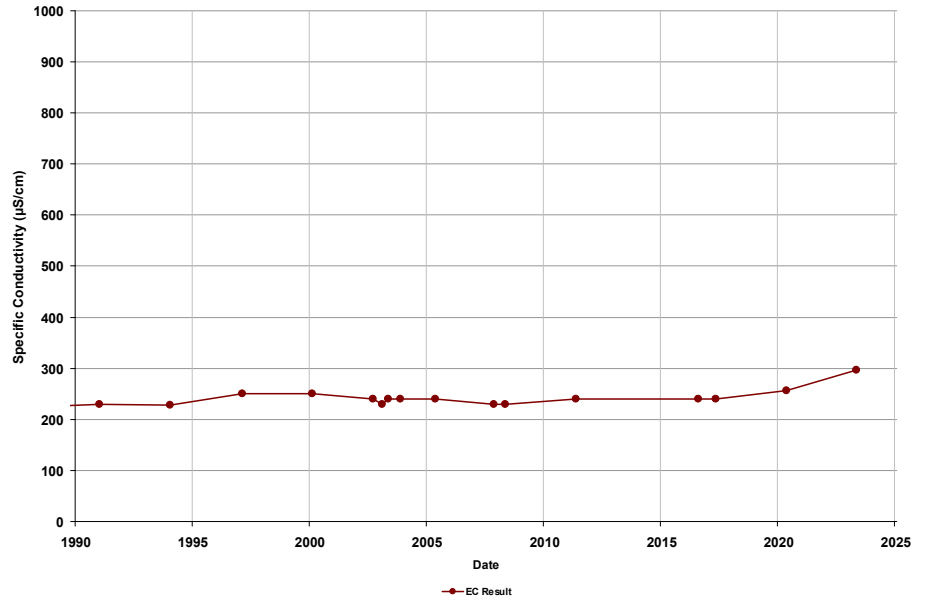
Total Depth (ft bgs):  
Perf. Top (ft bgs): 420  
Perf. Bottom (ft bgs): 560



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010002-014  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

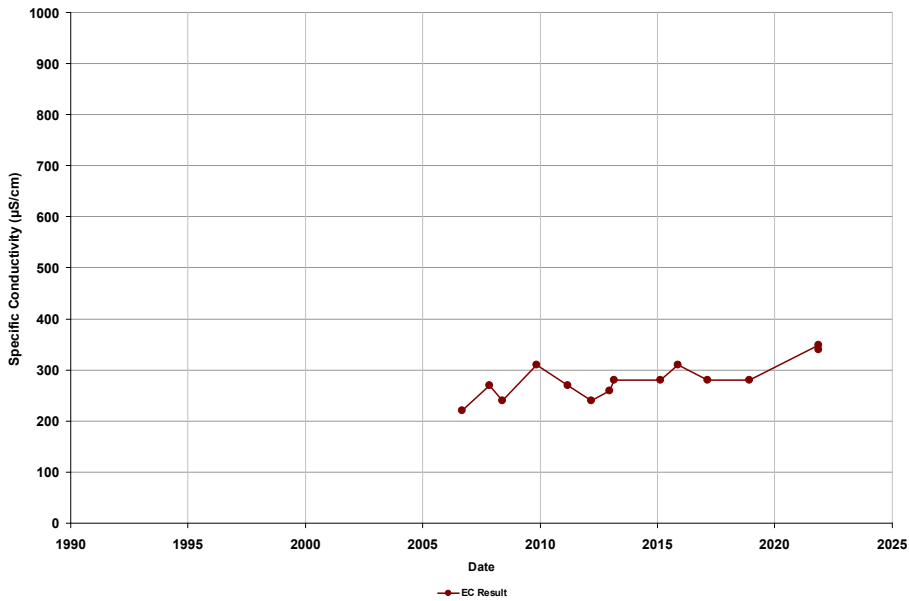
Total Depth (ft bgs):  
Perf. Top (ft bgs): 280  
Perf. Bottom (ft bgs): 610



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010002-032  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

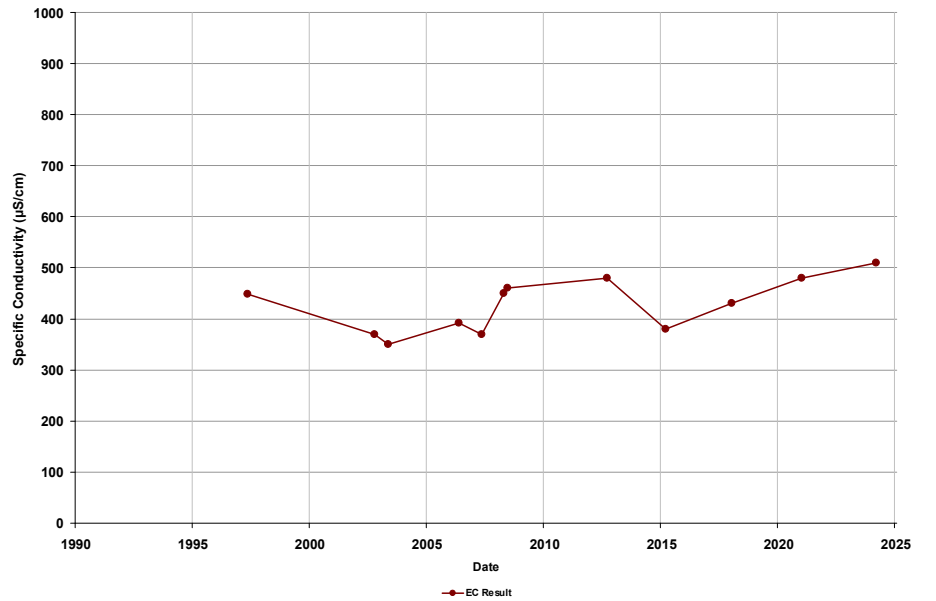
Total Depth (ft bgs):  
Perf. Top (ft bgs): 310  
Perf. Bottom (ft bgs): 600



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010008-005  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

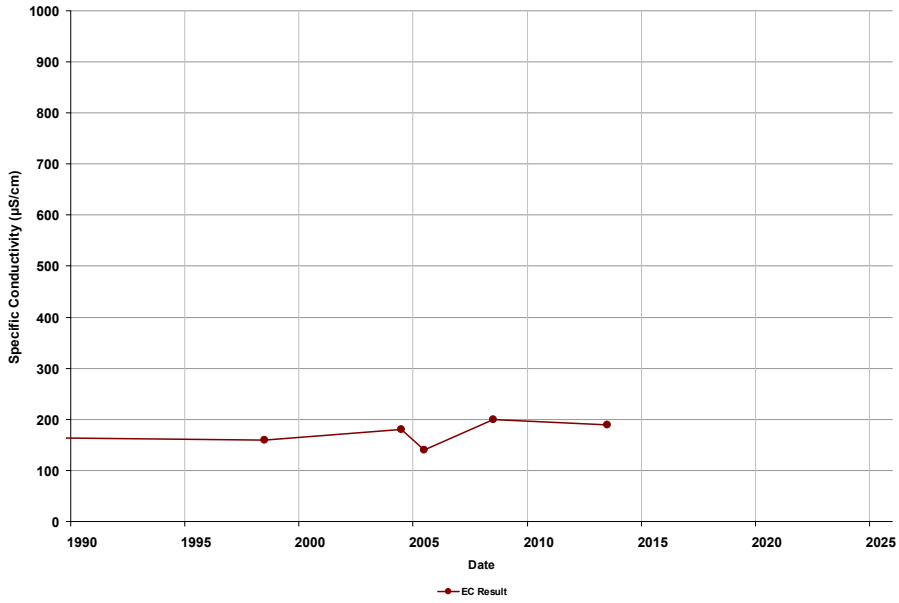
Total Depth (ft bgs):  
Perf. Top (ft bgs): 250  
Perf. Bottom (ft bgs): 465



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010009-002  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

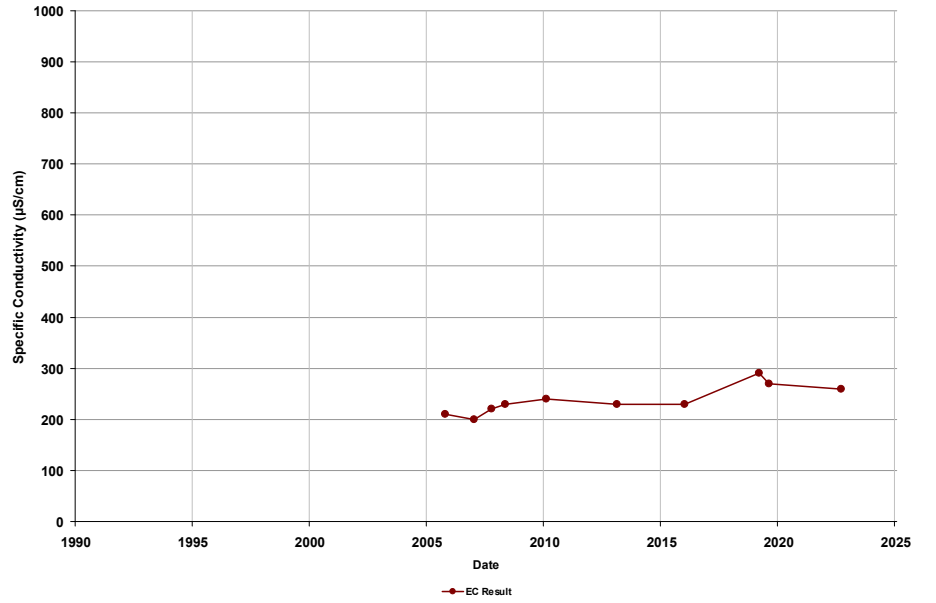
Total Depth (ft bgs):  
Perf. Top (ft bgs): 324  
Perf. Bottom (ft bgs): 369



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010010-007  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

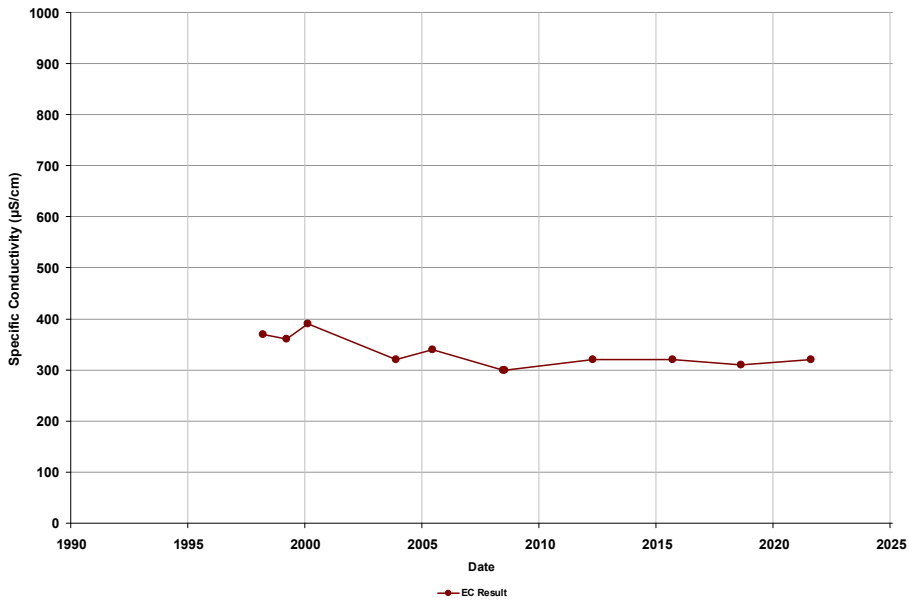
Total Depth (ft bgs):  
Perf. Top (ft bgs): 242  
Perf. Bottom (ft bgs): 374



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010801-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

Total Depth (ft bgs):  
Perf. Top (ft bgs): 375  
Perf. Bottom (ft bgs): 760



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2801077-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

Total Depth (ft bgs):  
Perf. Top (ft bgs): 60  
Perf. Bottom (ft bgs): 500

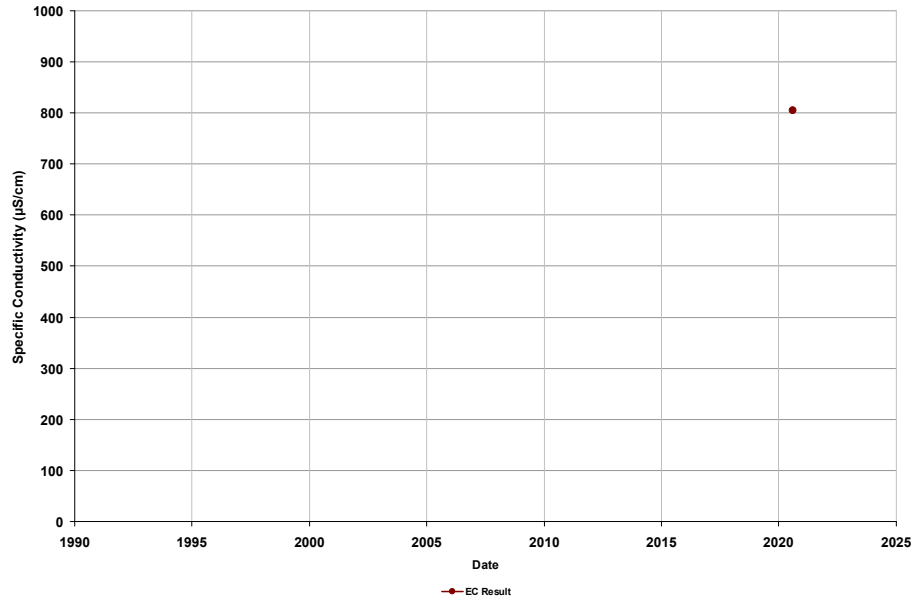


NOTE: Non-Detect results shown as half the reporting limit.



Well Name: ESJ12  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Domestic

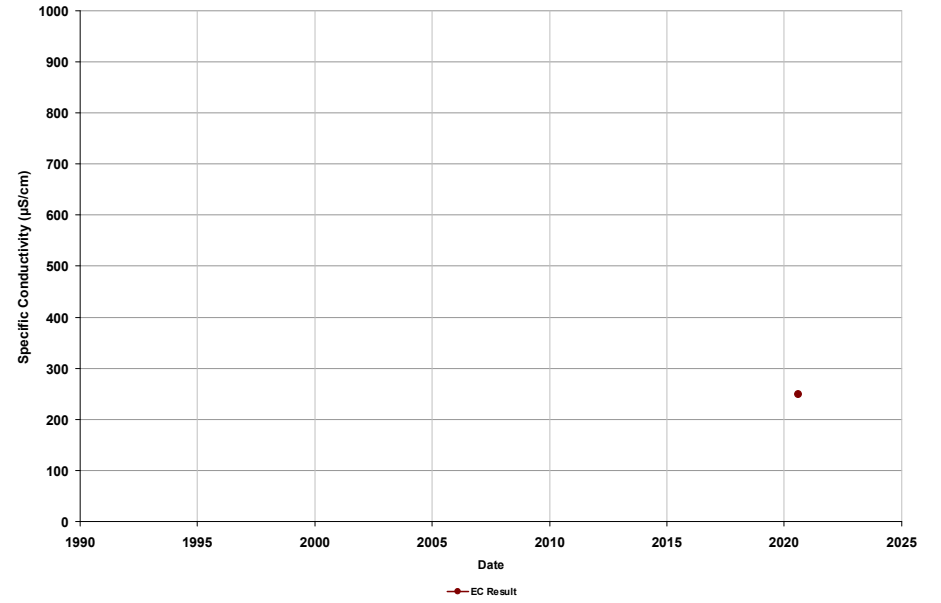
Total Depth (ft bgs): 276  
Perf. Top (ft bgs): 160  
Perf. Bottom (ft bgs): 172



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: ESJ17  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Domestic

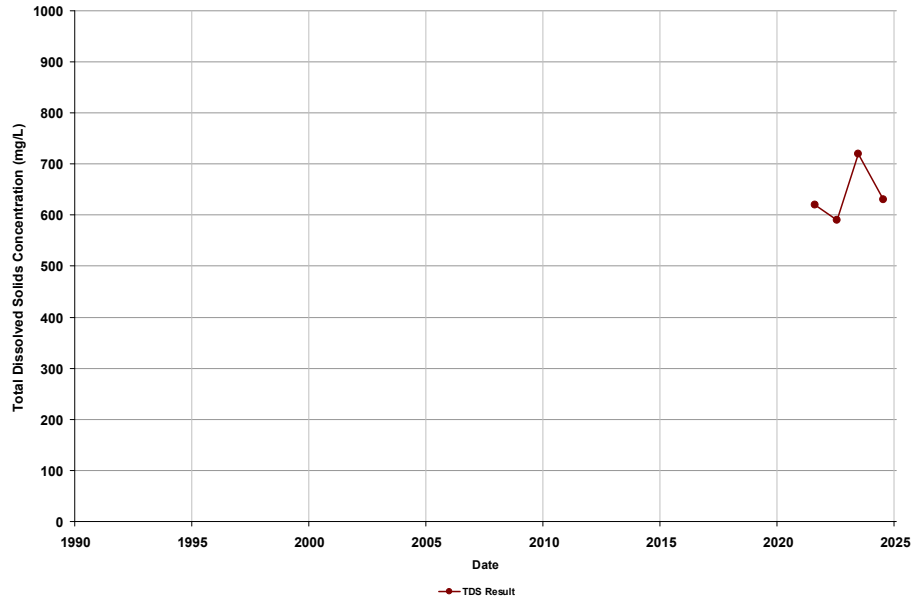
Total Depth (ft bgs):  
Perf. Top (ft bgs):  
Perf. Bottom (ft bgs):



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MCE RMS-3  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Unknown

Total Depth (ft bgs):  
Perf. Top (ft bgs):  
Perf. Bottom (ft bgs):



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-4  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

Total Depth (ft bgs): 698  
Perf. Top (ft bgs): 320  
Perf. Bottom (ft bgs): 667



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-5B  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

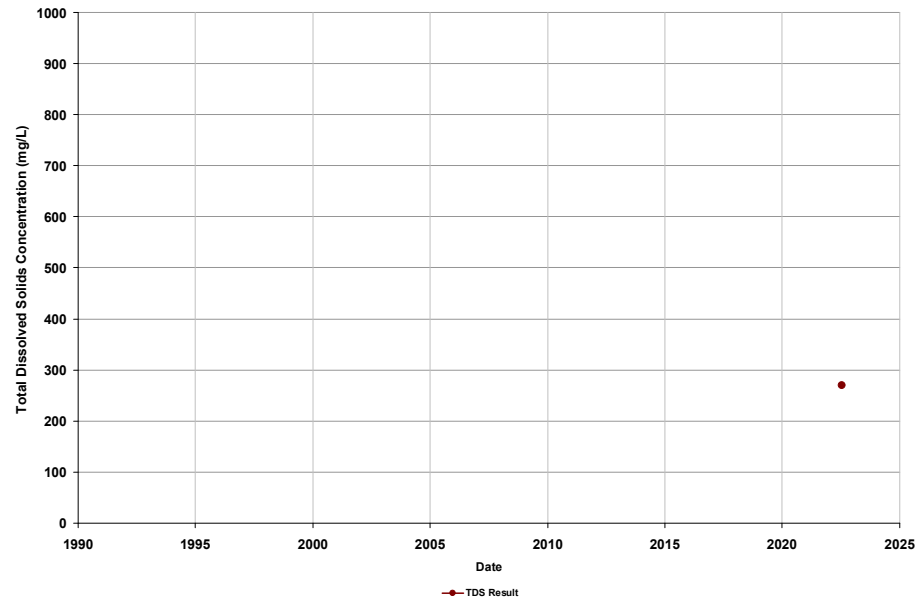
Total Depth (ft bgs): 514  
Perf. Top (ft bgs): 245  
Perf. Bottom (ft bgs): 496



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-6  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Industrial

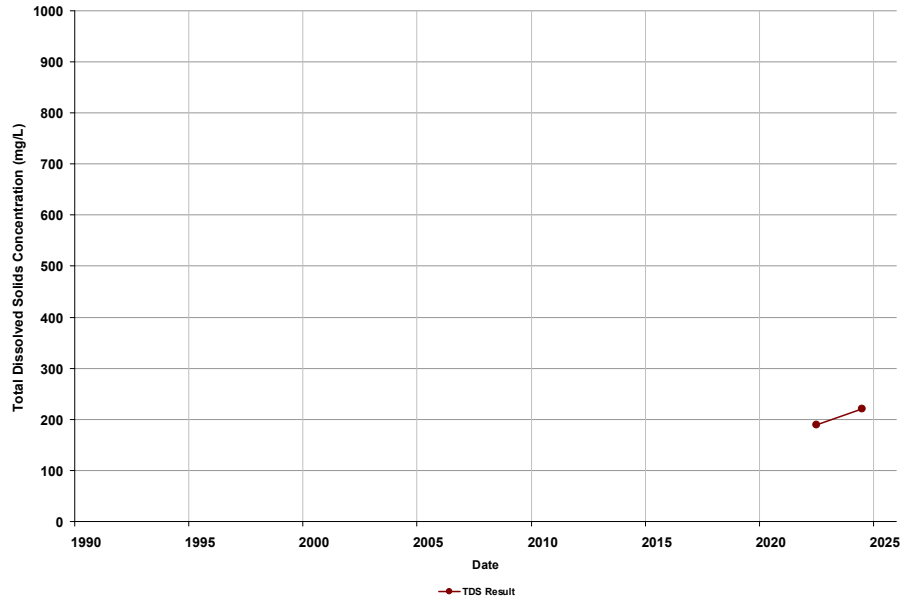
Total Depth (ft bgs): 680  
Perf. Top (ft bgs): 320  
Perf. Bottom (ft bgs): 680



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-7  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

Total Depth (ft bgs): 656  
Perf. Top (ft bgs): 290  
Perf. Bottom (ft bgs): 635



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MID RMS-13  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

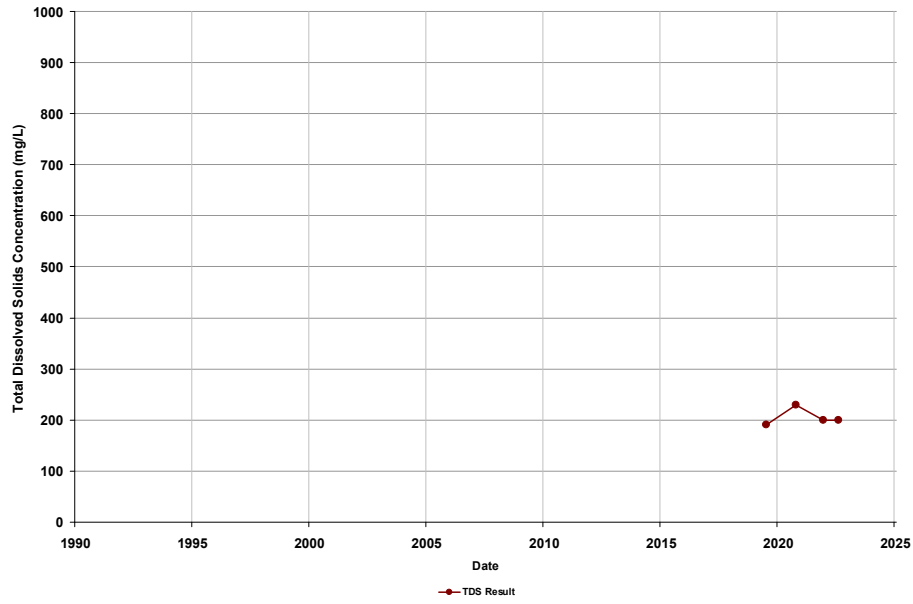
Total Depth (ft bgs): 600  
Perf. Top (ft bgs): 228  
Perf. Bottom (ft bgs): 552



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MWD RMS-1  
RMS Type: GSA-Current  
Subbasin: Madera  
Well Type: Irrigation

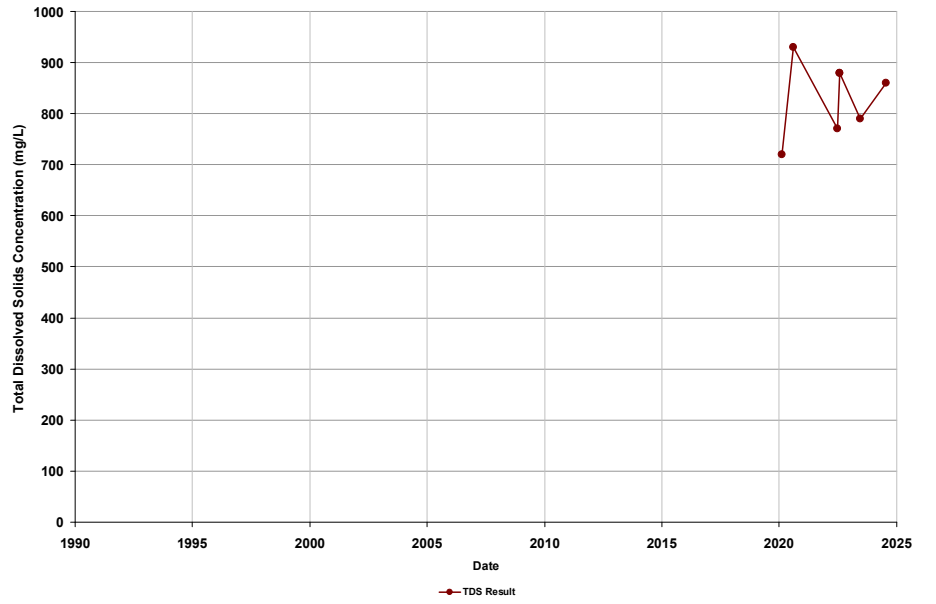
Total Depth (ft bgs): 504  
Perf. Top (ft bgs): 200  
Perf. Bottom (ft bgs): 500



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB03A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

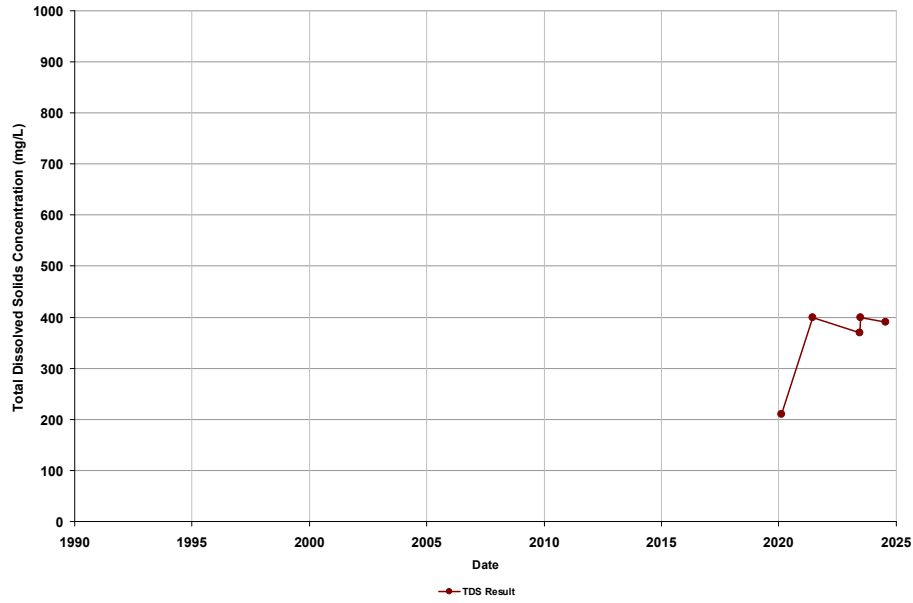
Total Depth (ft bgs): 139  
Perf. Top (ft bgs): 74  
Perf. Bottom (ft bgs): 134



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB03B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

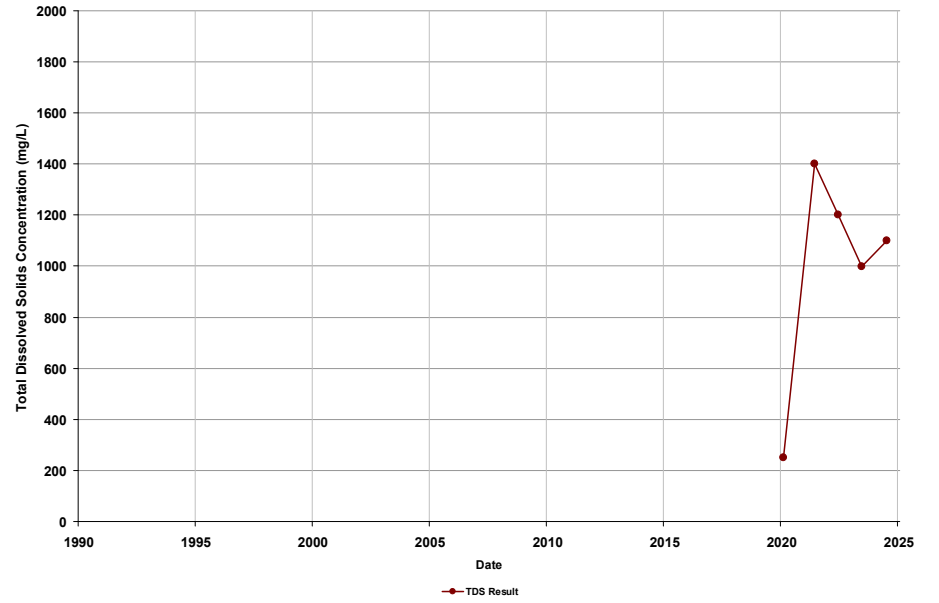
Total Depth (ft bgs): 295  
Perf. Top (ft bgs): 215  
Perf. Bottom (ft bgs): 285



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB03C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

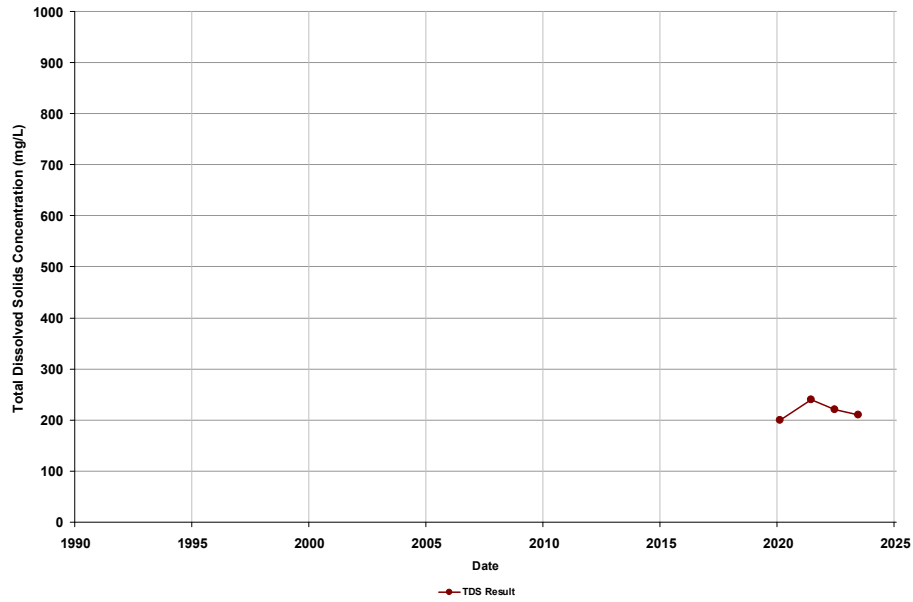
Total Depth (ft bgs): 430  
Perf. Top (ft bgs): 355  
Perf. Bottom (ft bgs): 420



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB04A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

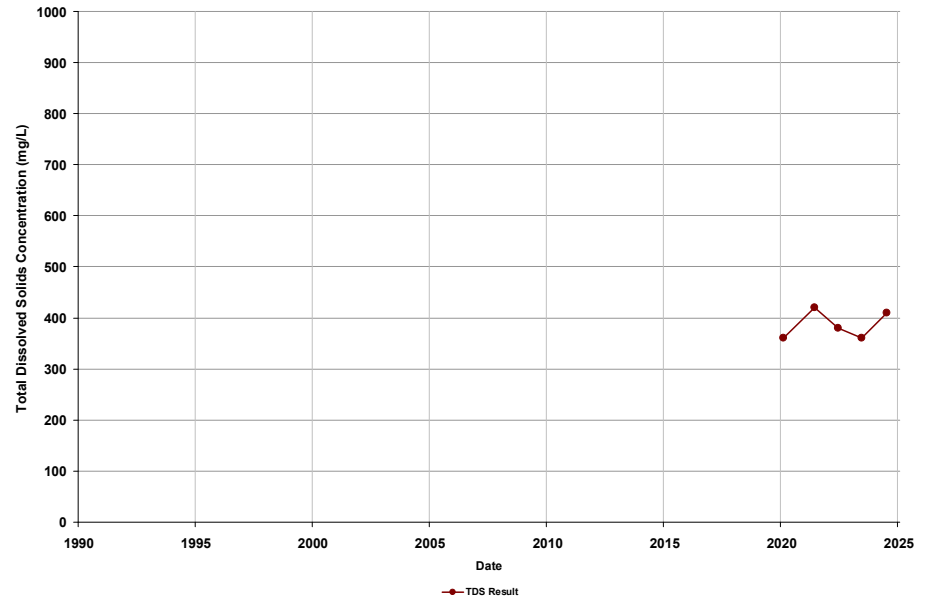
Total Depth (ft bgs): 375  
Perf. Top (ft bgs): 180  
Perf. Bottom (ft bgs): 365



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB04B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

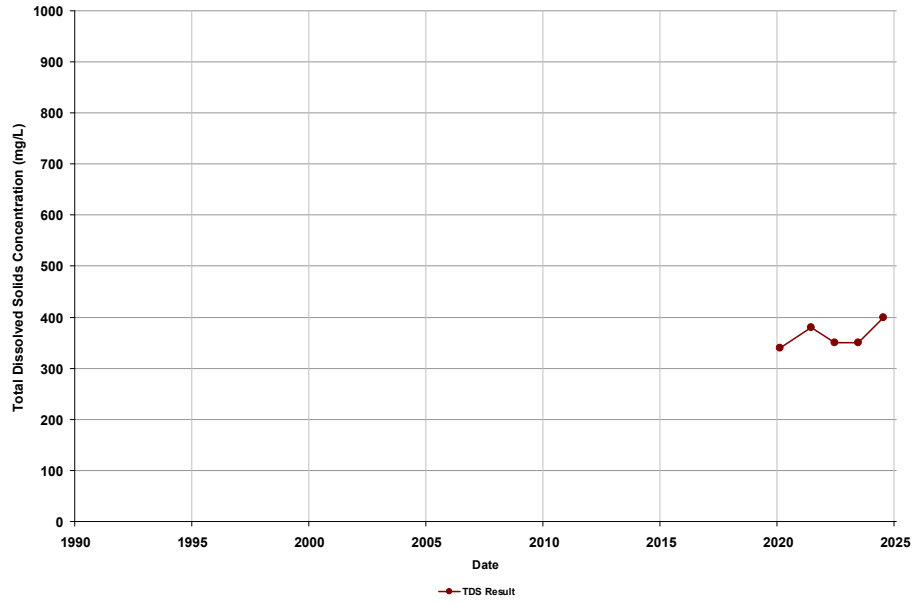
Total Depth (ft bgs): 695  
Perf. Top (ft bgs): 530  
Perf. Bottom (ft bgs): 685



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB04C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

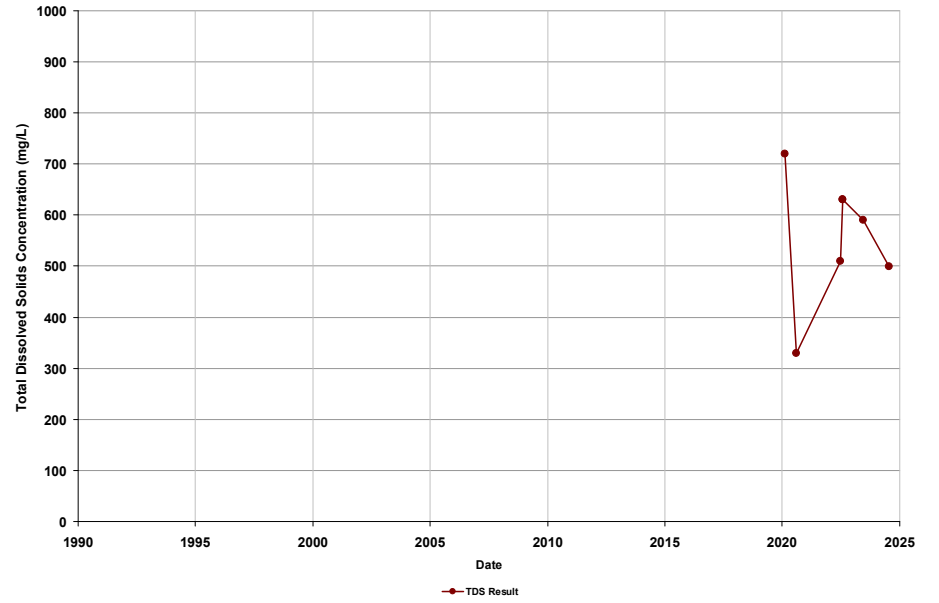
Total Depth (ft bgs): 905  
Perf. Top (ft bgs): 750  
Perf. Bottom (ft bgs): 895



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB05A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

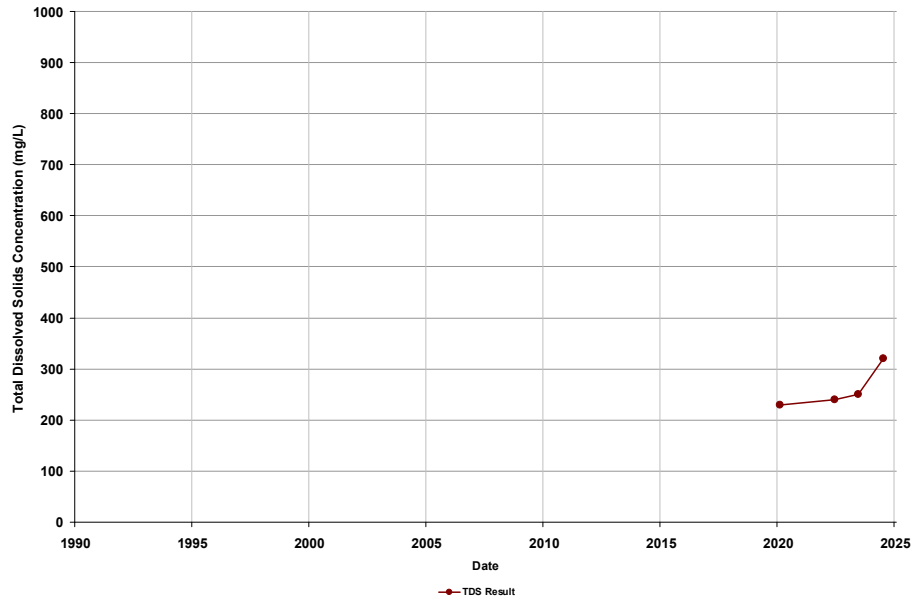
Total Depth (ft bgs): 210  
Perf. Top (ft bgs): 140  
Perf. Bottom (ft bgs): 200



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB05B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

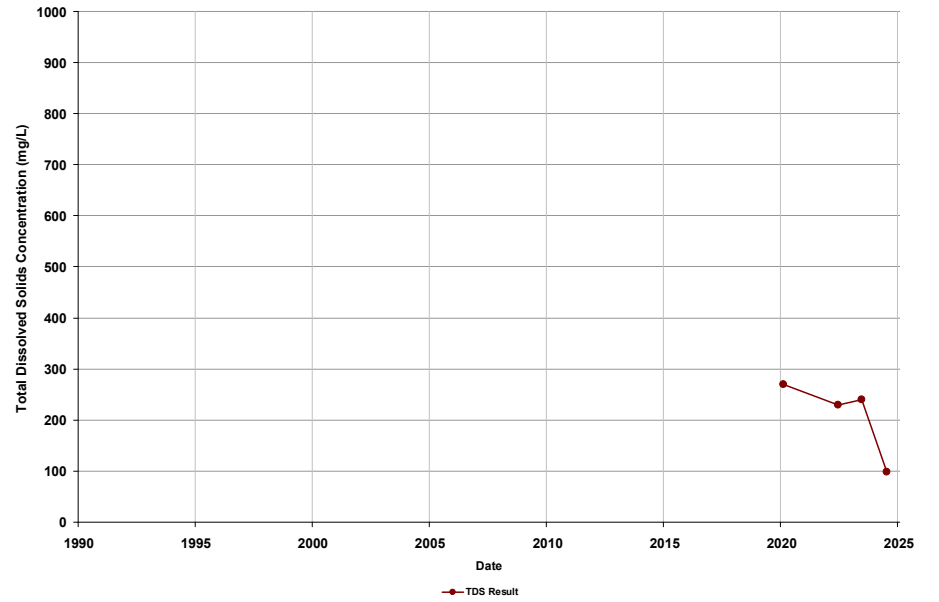
Total Depth (ft bgs): 375  
Perf. Top (ft bgs): 240  
Perf. Bottom (ft bgs): 365



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB05C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

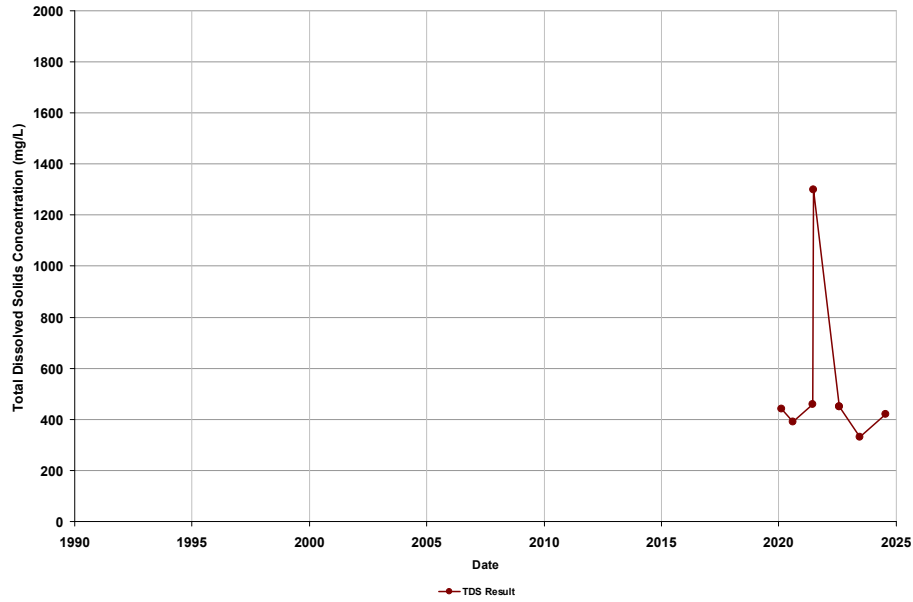
Total Depth (ft bgs): 585  
Perf. Top (ft bgs): 420  
Perf. Bottom (ft bgs): 585



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB06A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

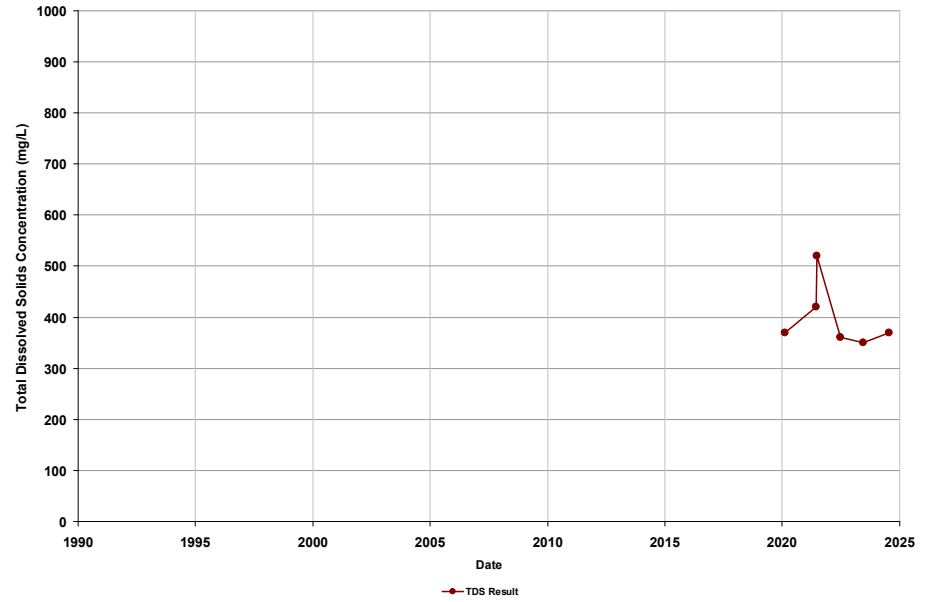
Total Depth (ft bgs): 350  
Perf. Top (ft bgs): 135  
Perf. Bottom (ft bgs): 340



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB06B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

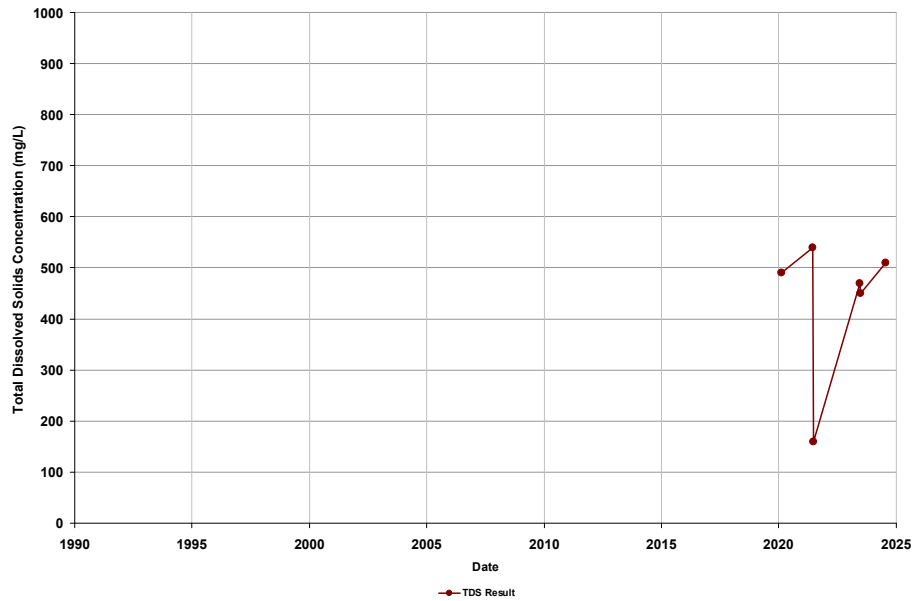
Total Depth (ft bgs): 520  
Perf. Top (ft bgs): 425  
Perf. Bottom (ft bgs): 510



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB06C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

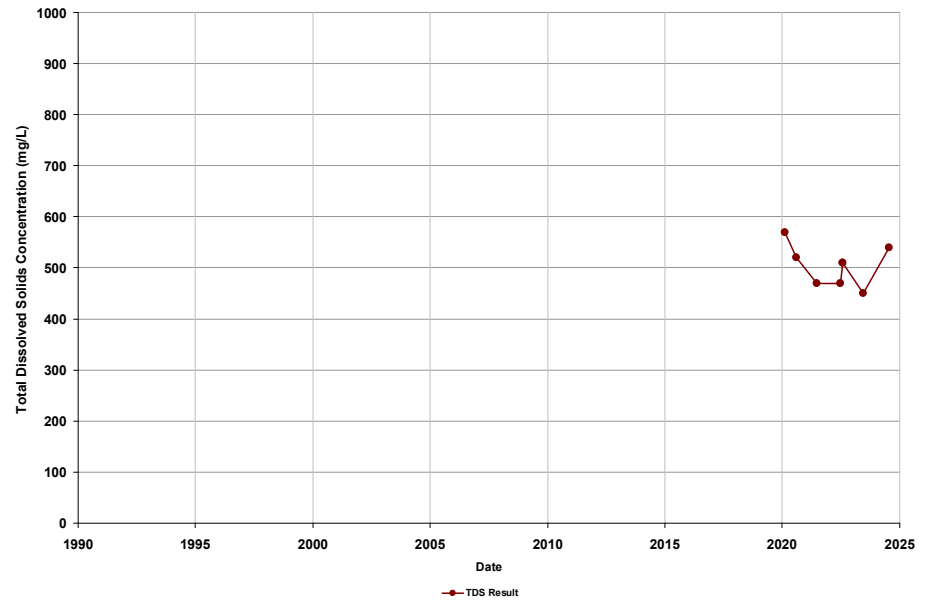
Total Depth (ft bgs): 715  
Perf. Top (ft bgs): 630  
Perf. Bottom (ft bgs): 705



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB09A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

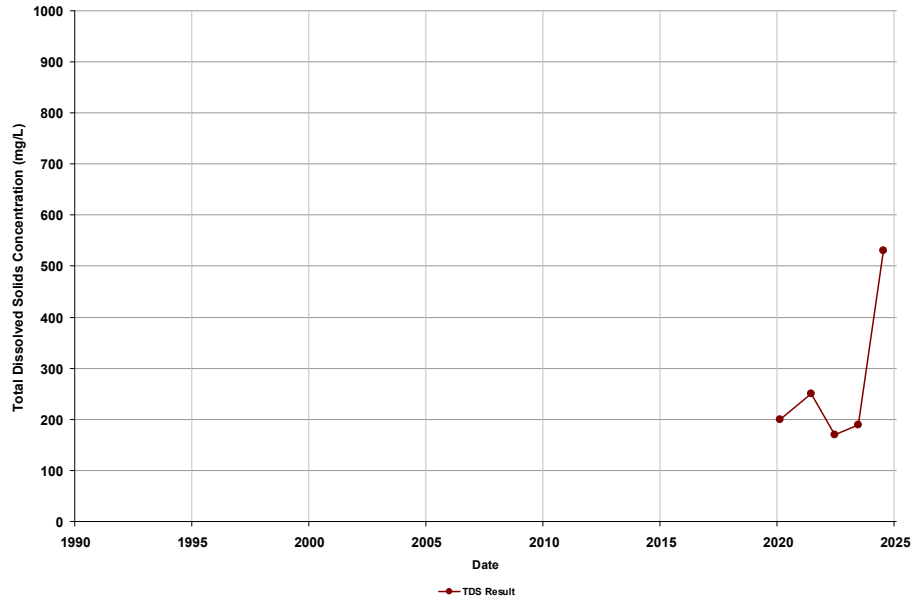
Total Depth (ft bgs): 320  
Perf. Top (ft bgs): 200  
Perf. Bottom (ft bgs): 310



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB09B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

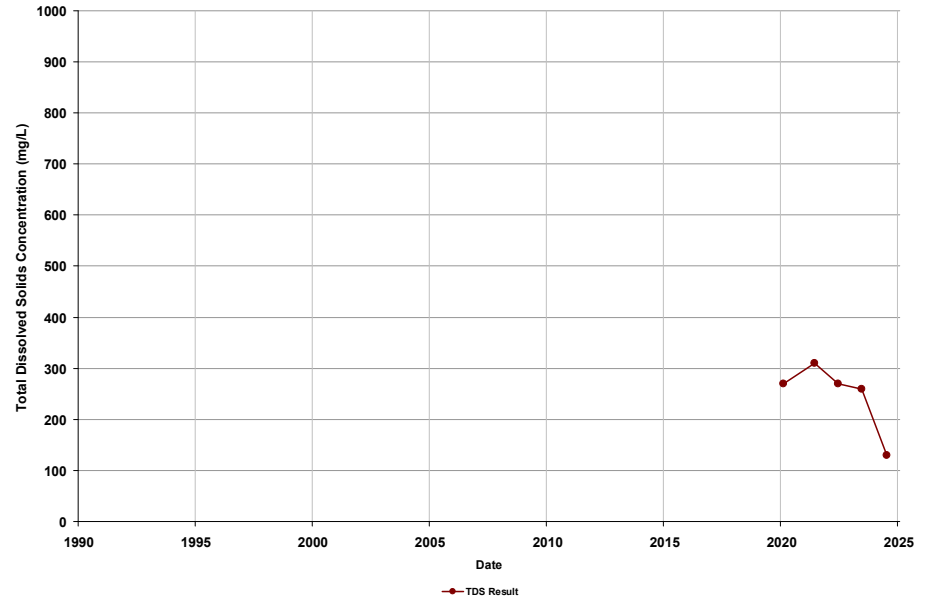
Total Depth (ft bgs): 725  
Perf. Top (ft bgs): 520  
Perf. Bottom (ft bgs): 715



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB09C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

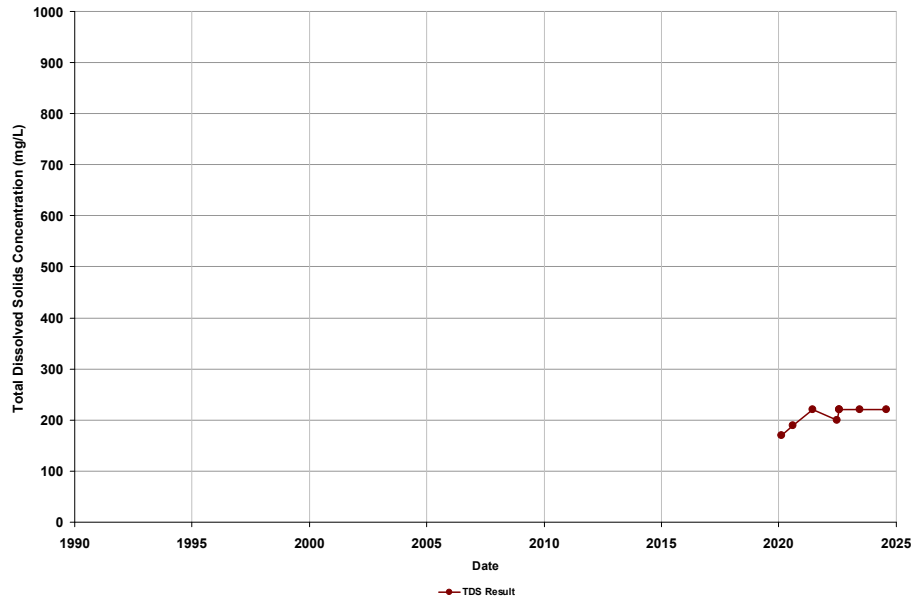
Total Depth (ft bgs): 955  
Perf. Top (ft bgs): 880  
Perf. Bottom (ft bgs): 945



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB10B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

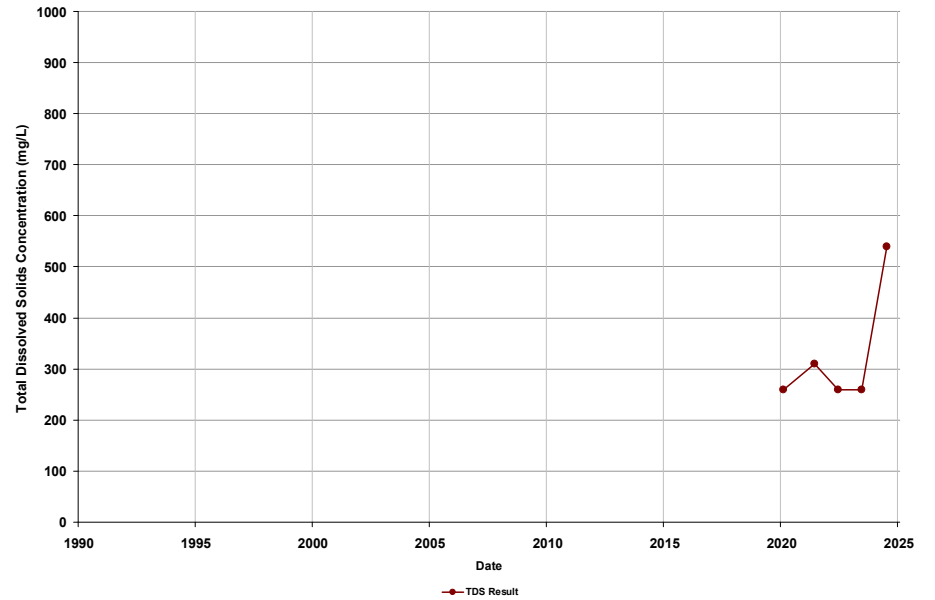
Total Depth (ft bgs): 510  
Perf. Top (ft bgs): 400  
Perf. Bottom (ft bgs): 500



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB10C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

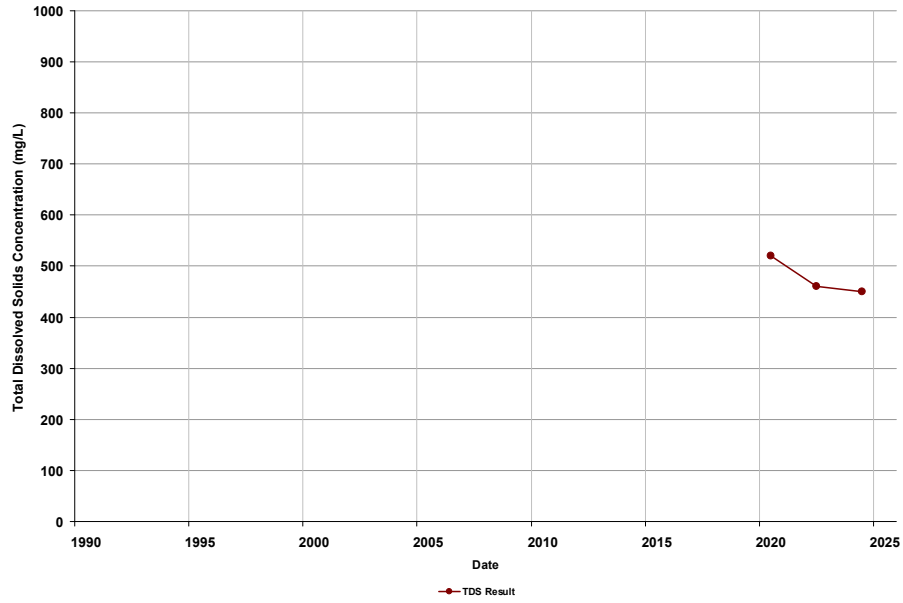
Total Depth (ft bgs): 880  
Perf. Top (ft bgs): 790  
Perf. Bottom (ft bgs): 870



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB11C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Observation

Total Depth (ft bgs): 880  
Perf. Top (ft bgs): 775  
Perf. Bottom (ft bgs): 870



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB13A  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Monitoring

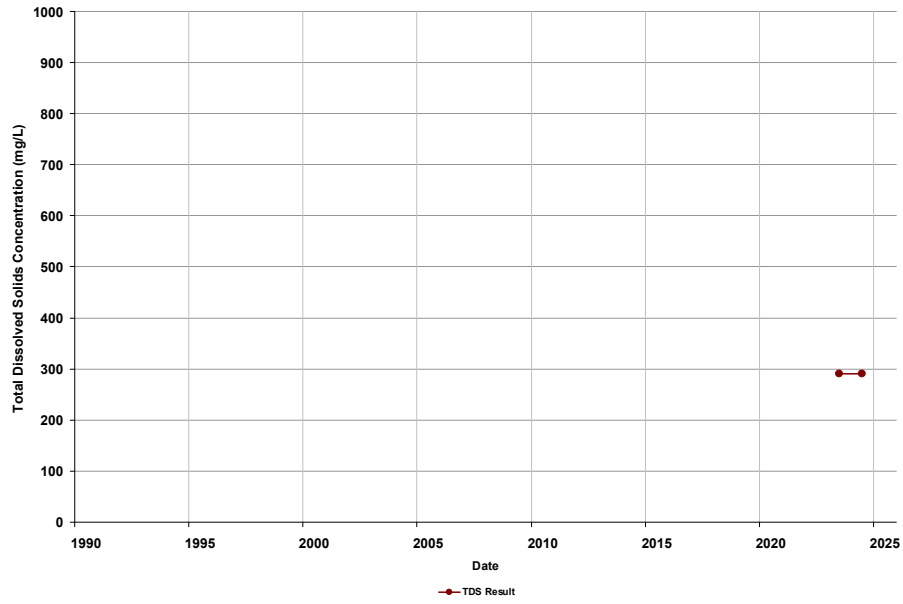
Total Depth (ft bgs): 290  
Perf. Top (ft bgs): 200  
Perf. Bottom (ft bgs): 280



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB13B  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Monitoring

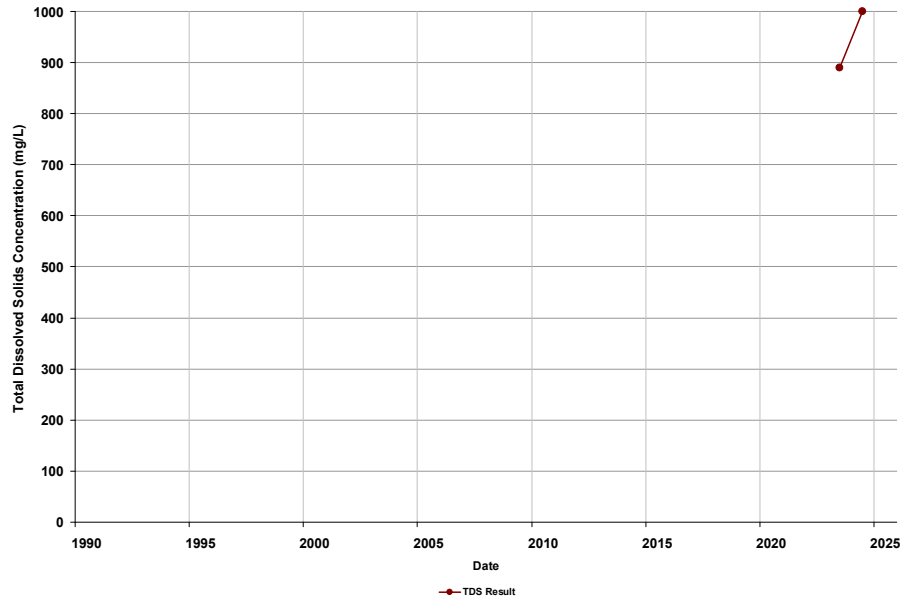
Total Depth (ft bgs): 446  
Perf. Top (ft bgs): 396  
Perf. Bottom (ft bgs): 436



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: MSB13C  
RMS Type: GSA-Future  
Subbasin: Madera  
Well Type: Monitoring

Total Depth (ft bgs): 532  
Perf. Top (ft bgs): 522  
Perf. Bottom (ft bgs): 532



NOTE: Non-Detect results shown as half the reporting limit.

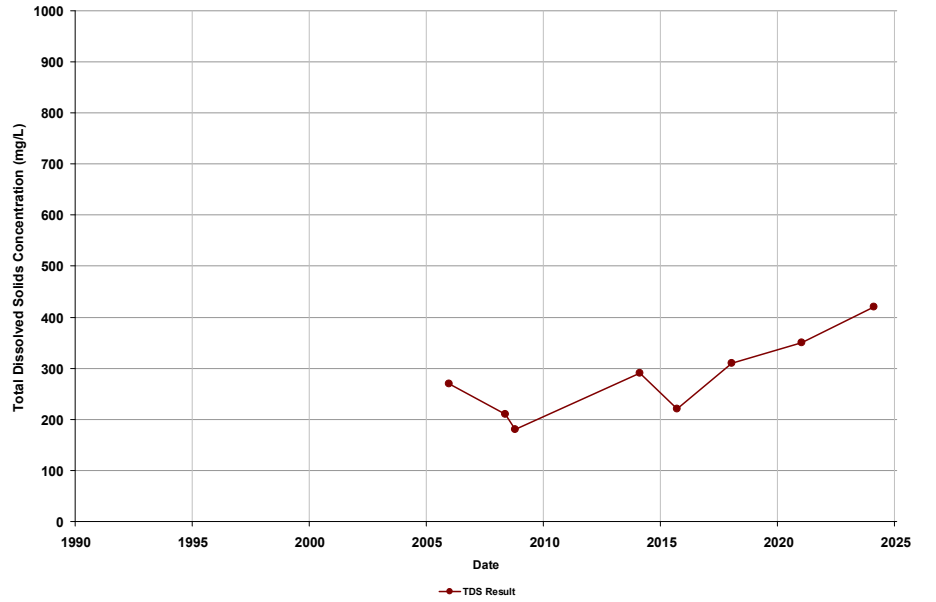


Well Name: 2000507-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

Total Depth (ft bgs):  
Perf. Top (ft bgs): 372  
Perf. Bottom (ft bgs): 372

Well Name: 2000553-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

Total Depth (ft bgs):  
Perf. Top (ft bgs): 450  
Perf. Bottom (ft bgs): 500



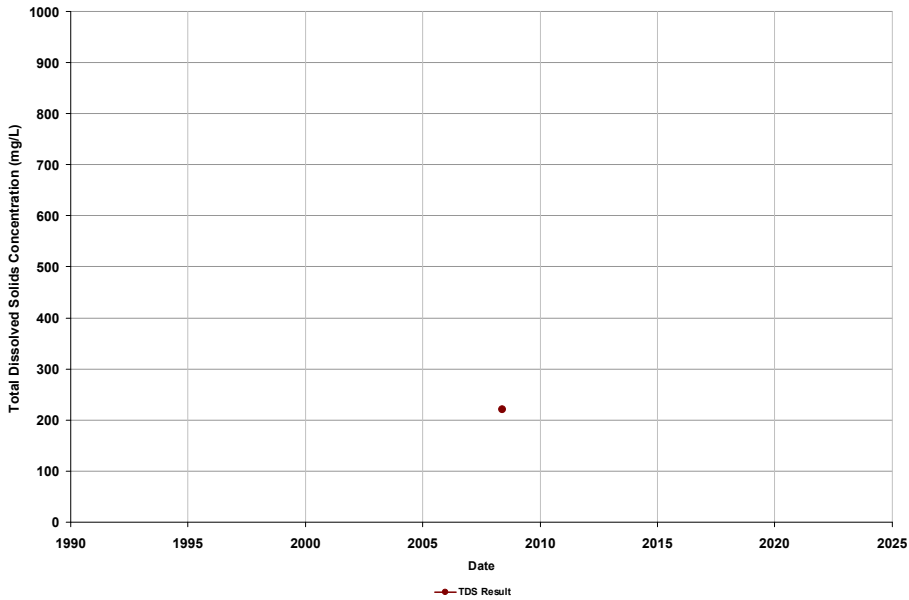
NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2000682-002  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

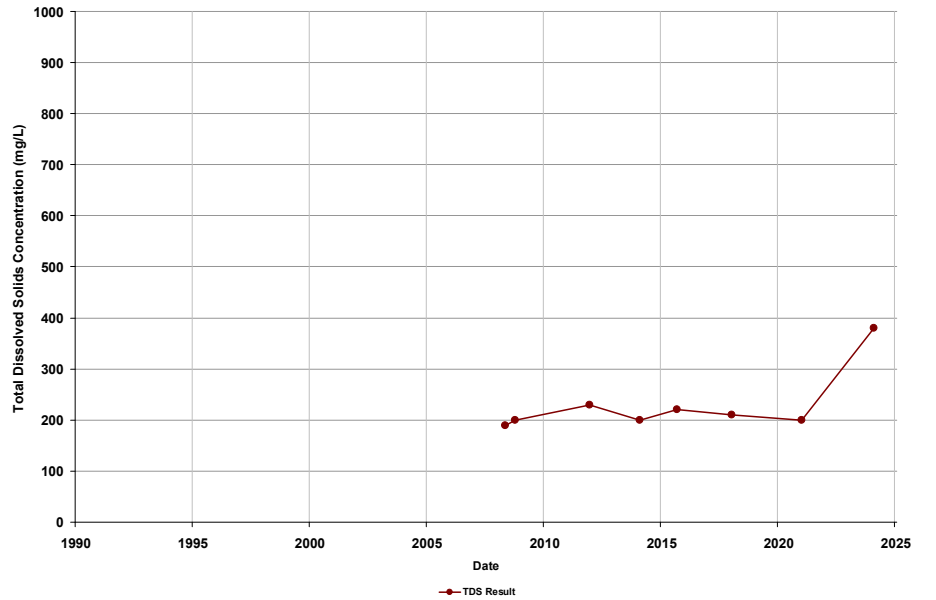
Total Depth (ft bgs):  
Perf. Top (ft bgs): 295  
Perf. Bottom (ft bgs): 420

Well Name: 2000727-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

Total Depth (ft bgs):  
Perf. Top (ft bgs): 280  
Perf. Bottom (ft bgs): 360



NOTE: Non-Detect results shown as half the reporting limit.



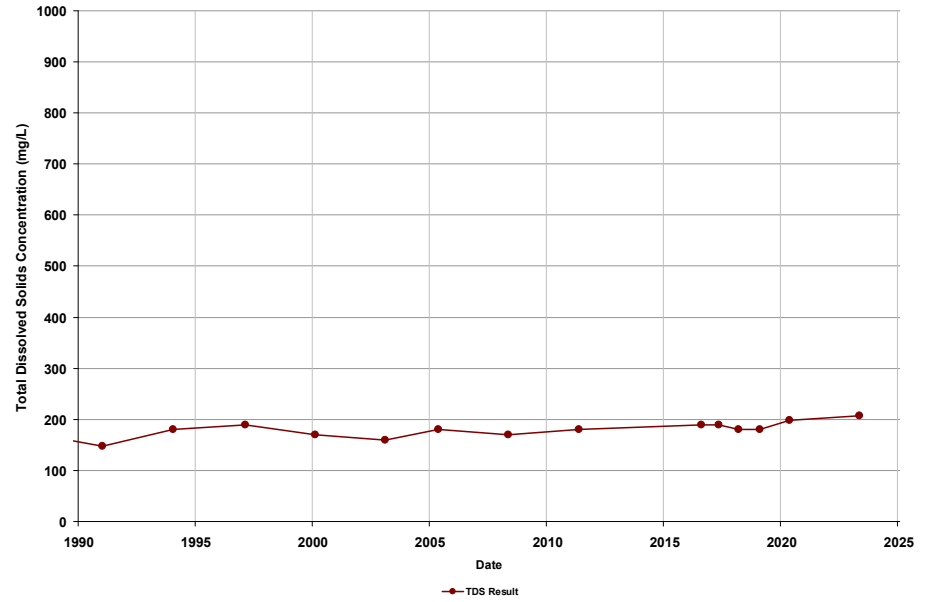
NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2000938-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

Total Depth (ft bgs):  
Perf. Top (ft bgs): 420  
Perf. Bottom (ft bgs): 560

Well Name: 2010002-014  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

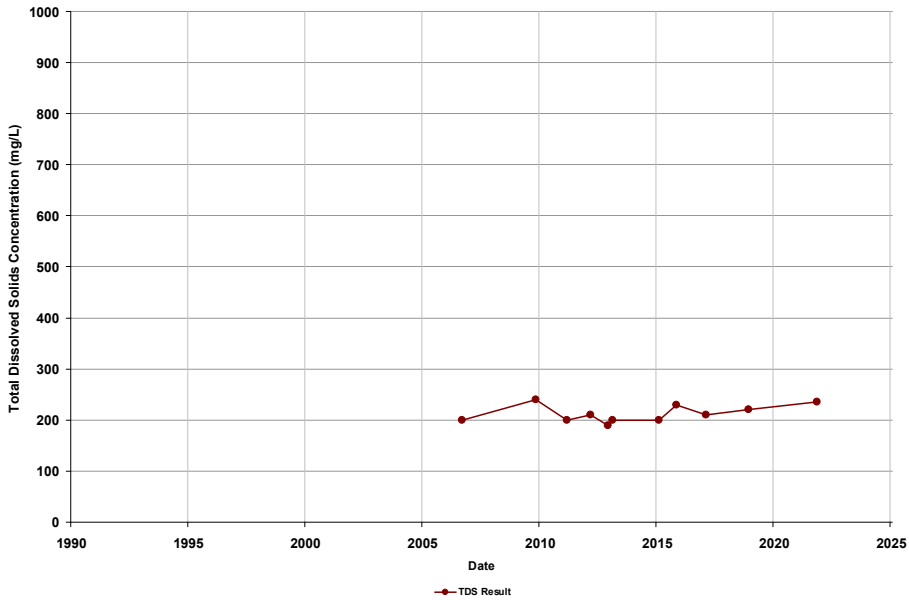
Total Depth (ft bgs):  
Perf. Top (ft bgs): 280  
Perf. Bottom (ft bgs): 610



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010002-032  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

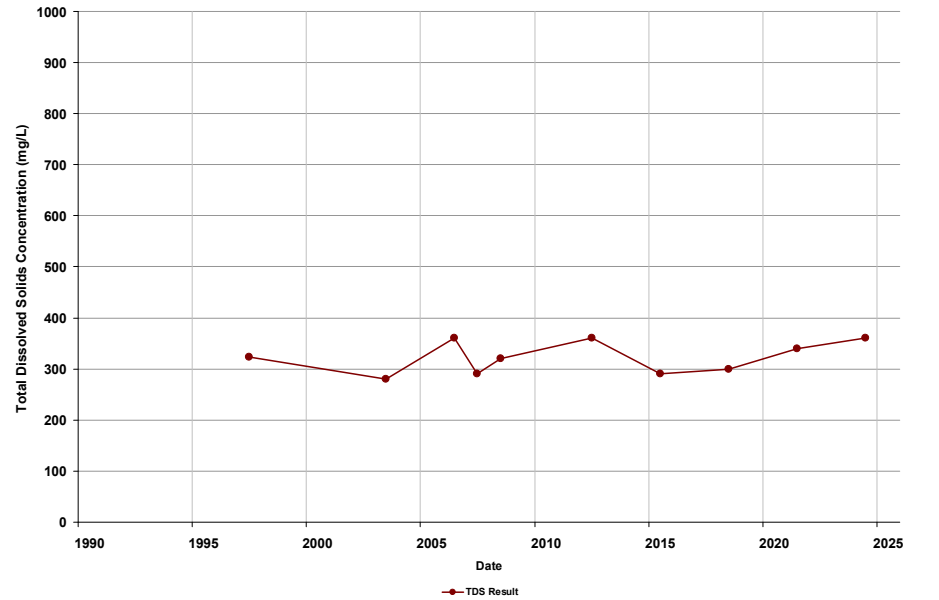
Total Depth (ft bgs):  
Perf. Top (ft bgs): 310  
Perf. Bottom (ft bgs): 600



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010008-005  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

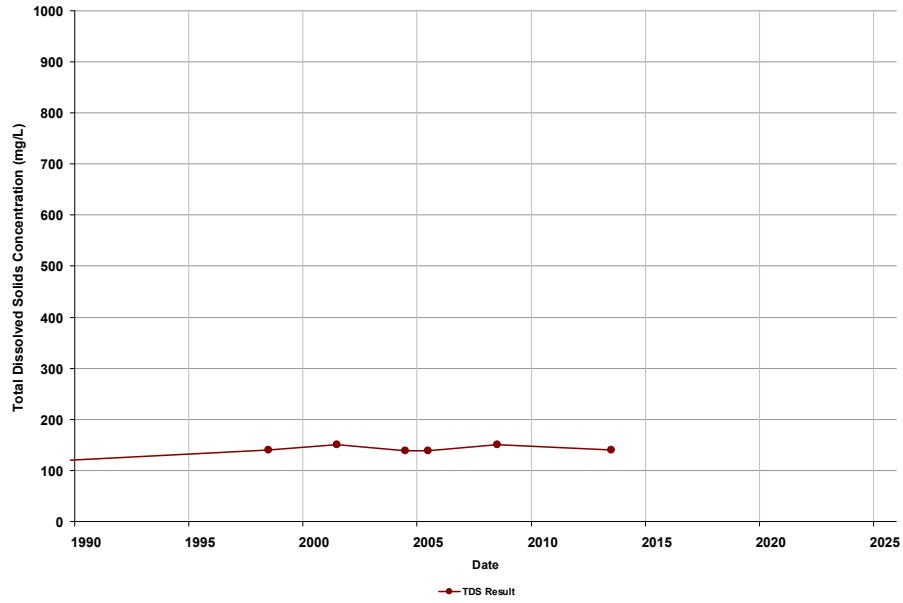
Total Depth (ft bgs):  
Perf. Top (ft bgs): 250  
Perf. Bottom (ft bgs): 465



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010009-002  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

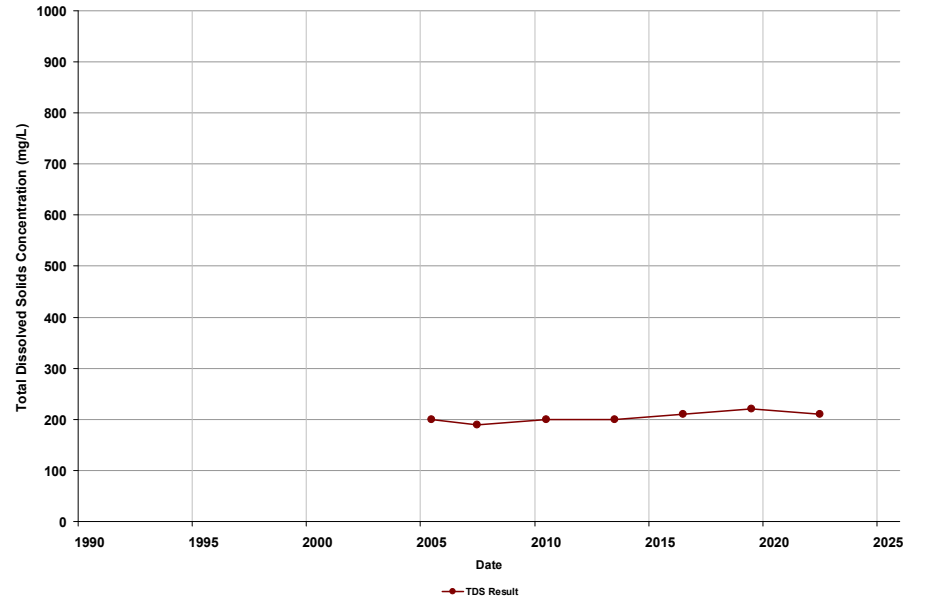
Total Depth (ft bgs):  
Perf. Top (ft bgs): 324  
Perf. Bottom (ft bgs): 369



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010010-007  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

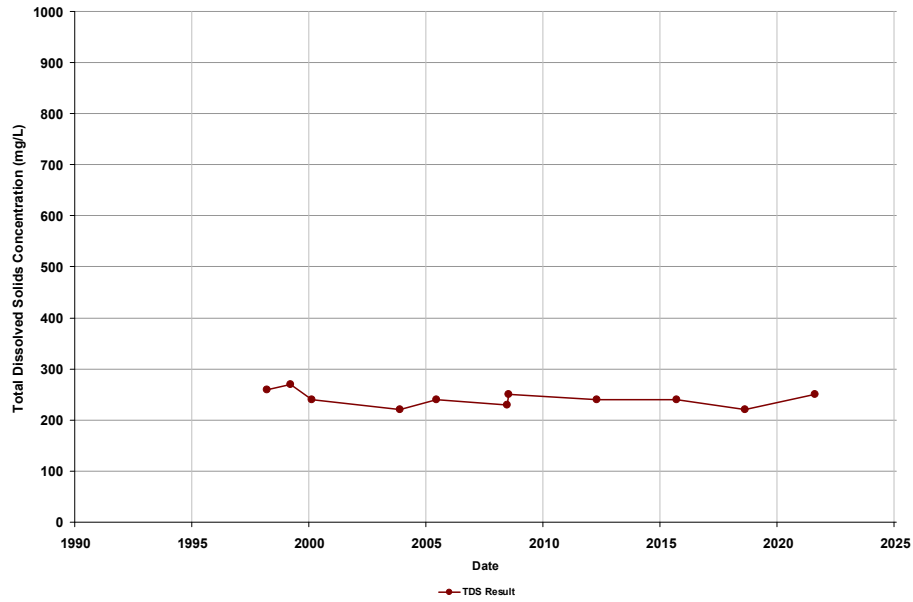
Total Depth (ft bgs):  
Perf. Top (ft bgs): 242  
Perf. Bottom (ft bgs): 374



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2010801-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

Total Depth (ft bgs):  
Perf. Top (ft bgs): 375  
Perf. Bottom (ft bgs): 760



NOTE: Non-Detect results shown as half the reporting limit.

Well Name: 2801077-001  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Public Supply

Total Depth (ft bgs):  
Perf. Top (ft bgs): 60  
Perf. Bottom (ft bgs): 500

NOTE: Non-Detect results shown as half the reporting limit.

Well Name: ESJ12  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Domestic

Total Depth (ft bgs): 276  
Perf. Top (ft bgs): 160  
Perf. Bottom (ft bgs): 172

NOTE: Non-Detect results shown as half the reporting limit.

Well Name: ESJ17  
RMS Type: Non-GSA  
Subbasin: Madera  
Well Type: Domestic

Total Depth (ft bgs):  
Perf. Top (ft bgs):  
Perf. Bottom (ft bgs):

NOTE: Non-Detect results shown as half the reporting limit.

# **APPENDIX 3.C. ECONOMIC IMPACTS OF ACCELERATED DEMAND REDUCTION PROGRAM**

Prepared as part of the  
**Joint Groundwater Sustainability Plan  
Madera Subbasin**

January 2020

**GSP Team:**

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Luhdorff & Scalmanini  
ERA Economics  
Stillwater Sciences and  
California State University, Sacramento

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Figure A3.C-2. Madera Subbasin Alternative GSP Implementation Timeline, 2020 – 2040

## 1 OVERVIEW

The Madera Subbasin GSAs and stakeholders have considered alternative implementation timelines to transition the Subbasin to sustainable groundwater conditions by 2040. The proposed implementation plan described in the GSP features a gradual transition to sustainability between now and 2040. This allows time for GSAs to study, develop, finance, and build an estimated \$250 million in capital projects to bring new water supplies into the Subbasin by 2040. It also allows time for GSAs to develop monitoring, metering, and enforcement programs to limit groundwater pumping (implement a demand reduction program) in significant portions of the Subbasin.

The GSP implementation plan balances the tradeoff between the benefits of sustainable groundwater management with the costs and practical limitations of more rapid implementation of projects and management actions needed to achieve sustainability. The benefit of transitioning the Subbasin to sustainability earlier would be avoiding further declines in groundwater levels across the Subbasin than expected under the current timeline. The cost would be the additional expenditure required to develop projects plus the cost of more rapid demand reduction (e.g., through fallowing) that would result in loss of jobs, tax revenue, and economic activity in Madera County. There are also practical limitations to more rapid GSP implementation. Projects take time to plan, finance, and build, and demand reduction requires measurement, metering, and enforcement mechanisms that are currently under development. Accelerating development of projects is not practical, but assuming that GSAs can measure and enforce groundwater pumping limits, the GSP implementation timeline could be accelerated by reducing groundwater pumping more rapidly than planned in the current GSP. Reductions in groundwater pumping would fall on agricultural users (currently accounting for over 95% of groundwater pumping in the Subbasin) and would require a combination of fallowing and changes in the crop mix toward lower water use crops.

This appendix does not evaluate the economic effects (impacts) of the proposed GSP itself. Rather, it evaluates the potential economic impact of accelerated demand reduction in the Madera Subbasin. Direct impacts are estimated for the Madera Subbasin, and indirect impacts are estimated for the broader County economy. The conclusions of the economic analyses are as follows:

- A conservative estimate (lower-bound) finds that approximately half of the Madera County economy and one in three jobs is a result of Madera County agriculture. This does not include some warehousing, transportation, storage, and other farm-related industries.
- Immediate implementation of demand reduction to avoid further lowering of groundwater levels would cause direct farm revenue losses of \$182 million per year and require fallowing an average of 40,000 acres per year within the Subbasin. This would result in the following County economic impacts:
  - The Madera County economy would contract by \$200 million per year, or about \$3 billion in present value over the 20-year GSP implementation period.
  - Madera County tax revenues would fall by approximately \$4.2 million per year (~10%), or about \$60 million in present value over the 2020 – 2040 implementation period. The loss in tax revenue reflects local, discretionary revenue to the County. This discretionary spending supports important services in the County that would be impacted as revenues fall.
  - Labor income (wages) would fall by \$76 million per year, including wages for many seasonal jobs that support County DACs. Full-time-equivalent jobs in Madera County

would decrease by 850 (or around 1,600 – 2,000 seasonal jobs), and many of these jobs generate income for DACs in the County.

The following section describes the general method, logic, and data underlying the economic analysis. This is followed by a summary of the contribution of agriculture to the Madera County economy to provide context for the subsequent economic impact analysis. The final section describes potential economic impacts to county farming, the regional economy, as well as potential fiscal (tax) impacts to Madera County.

## 2 ASSUMPTIONS AND METHODS OF ANALYSIS

An economic analysis is developed to evaluate the impact of an alternative GSP implementation plan (timeline) in which no further groundwater depletion would occur on average. The alternative assumes that GSAs would implement new supply and recharge projects in the amounts and at the times described in the proposed GSP implementation plan, plus additional reduction in the consumption of groundwater by irrigated agriculture (demand reduction) as required in each implementation year to avoid further lowering of groundwater levels (depletion of storage). This means that the Subbasin would begin implementing substantial demand reduction immediately in 2020. As new supply and recharge projects come on-line over time (as specified in the GSP), they would reduce the need for demand reduction, effectively allowing irrigated acreage to come back into production. The analysis does not evaluate the economic effects (impacts) of the proposed GSP itself.

Assumptions for the analysis of the alternative GSP implementation timeline are:

- Implementation of the GSP begins in 2020.
- All GSAs in the Madera Subbasin would be required to reduce pumping to prevent continued depletion of groundwater storage (lowering of groundwater levels) until additional projects can be built.
- The analysis is specific to implementation within the Madera Subbasin and does not consider the impact of additional demand management in the Chowchilla or Delta Mendota Subbasin portions of Madera County that may be required.
- New supply and recharge projects would occur in the amounts and at the times described in the proposed Madera Subbasin GSP implementation timeline. The analysis does not consider the additional cost of developing projects, which would primarily fall on agricultural water users in the County.
- Additional demand reduction would be implemented as needed to avoid any further long-term depletion of groundwater storage. The demand reduction needed is calculated from the water balance and groundwater analysis included in the GSP.
- Demand management is implemented as a reduction in the consumptive demand for irrigation water by crops. This includes crop switching and land fallowing. No specific mechanism for imposing or inducing demand reduction is assumed (and the analysis does not include any additional costs for developing/implementing such a program).
- An economic model of Madera Subbasin agricultural production, water use, and markets is used to predict how the agricultural sector would allocate the demand reduction among crops.
- This analysis does not compare all benefits and costs of GSP implementation. It shows the estimated costs of additional demand reduction required to prevent additional lowering of groundwater levels.



The direct impacts of the alternative implementation timeline for the Madera Subbasin are used to support additional analysis of the regional economic impacts on jobs, incomes, and total economic output in the County economy as a whole. For purposes of this analysis, impacts are estimated as a change from current (2019) conditions, not as an incremental change comparing the alternative implementation to the proposed GSP implementation. It is important to note that the Madera County GSA plans to implement significant demand reduction as a management action in the proposed GSP implementation plan. Therefore, a portion of the impact of demand reduction is also expected to occur under that proposed plan, although it would be substantially delayed as compared to the alternative (i.e., immediate) implementation plan. Under the proposed GSP, demand reduction would be scaled in slowly, allowing time for the agricultural sector, its workers, and related economic activities to adjust in order to minimize impacts to Madera County residents.

The economic analysis relies on the data and water supply information described in the Madera Subbasin GSP and presented at various stakeholder meetings in 2018 and 2019. The economic analysis uses two economic models calibrated to conditions in the Madera Subbasin. The first model is an economic optimization model<sup>1</sup> of Madera Subbasin agricultural production. The model quantifies the effect of changes in water supply availability and cost on farm income (e.g. net income and gross farm revenues) and simulates how the agricultural sector would respond to changes in water availability and cost. Responses include switching to higher value and/or lower water use crops and fallowing land. The decision to switch crops and/or idle land depends on agricultural market conditions in the Madera Subbasin simulated by the model under the alternative implementation plan. The economic analysis quantifies the direct economic cost of changing crops and idling land. The second model is a regional input-output model of Madera County developed using the Impacts for Planning and Analysis (IMPLAN<sup>2</sup>) data. The IMPLAN model translates changes in farming activity (direct impacts) in the Madera Subbasin to economic impacts (indirect and induced impacts) in other sectors of the Madera County economy (e.g. business that provide inputs to farming and farm jobs), as well as fiscal (tax) impacts.

The combined economic analysis quantifies:

- The current value of crops produced in Madera County and the contribution of farming to the regional economy
- Change in crop mix and fallowing within the Madera Subbasin under more aggressive implementation of demand reduction
- The direct economic impact to Madera Subbasin farmers (gross and net farm income)
- The regional (indirect and induced) economic impacts<sup>3</sup> to the Madera County economy (economic activity, jobs, and income)
- Fiscal impacts to Madera County (change in County tax revenues)

---

<sup>1</sup> The economic model of Madera Subbasin agriculture applies a similar economic methodology as the Statewide Agricultural Production Model (SWAP) that is widely applied by DWR, Reclamation, and various districts across the state to evaluate the effect of changes in water supply on agricultural operations. It is tailored to market conditions, costs, returns, and water supply in Madera Subbasin GSAs.

<sup>2</sup> This analysis applies the 2014 R3 IMPLAN model data for Madera County, with some adjustments to better reflect Madera County agriculture.

<sup>3</sup> Indirect and induced impacts are sometimes referred to as “multiplier” or “secondary” impacts. These are impacts that are in addition to the direct economic impact (in this case, loss of farm revenue).

### 3 ECONOMIC CONTRIBUTION OF AGRICULTURE TO MADERA COUNTY ECONOMY

The Madera County economy produces approximately \$6.1 billion per year in economic value added<sup>4</sup> and generates around 63,000 full-time-equivalent (FTE<sup>5</sup>) jobs. As of the 2010 U.S. Census, per-capita income was approximately \$20,435 (in current dollars), or about 35% below the U.S. average of \$31,895. Approximately 21% of the county population of 150,000 was at or below the poverty line, compared to the U.S. average of 12%. Over 75% of the county (by area) is classified as a Disadvantaged Community (DAC)<sup>6</sup>.

A significant share of the Madera County economy is from farming or agriculture-related industries. Table A3.C-1 summarizes the top 10 industry sectors<sup>7</sup> in Madera County by employment. These 10 sectors account for approximately half of the total FTE jobs in Madera County. Three of the top five industries are in farming, including support activities for agriculture (e.g. farm managers, consultants, crop advisers, and various input suppliers), fruit farming (e.g. vineyards), and tree nut farming (e.g. almonds and pistachios). Other top employers include local and state government, hospitals, and real estate. The total value added produced by these 10 industries is around \$3.1 billion per year, or a little more than half of the Madera County economy.

**Table A3.C-1. Top-Ten Madera County Industries by Employment**

| Rank         | Industry                           | FTE Jobs      | Annual Value Added (\$ in Millions) |
|--------------|------------------------------------|---------------|-------------------------------------|
| 1            | Support activities for agriculture | 8,060         | \$295                               |
| 2            | Local government, education        | 4,420         | \$350                               |
| 3            | Hospitals                          | 3,665         | \$350                               |
| 4            | Fruit farming                      | 3,180         | \$540                               |
| 5            | Tree nut farming                   | 2,615         | \$1,040                             |
| 6            | State government, non-education    | 2,355         | \$250                               |
| 7            | Real estate                        | 2,085         | \$120                               |
| 8            | Local government, non-education    | 1,650         | \$135                               |
| 9            | Individual and family services     | 1,480         | \$15                                |
| 10           | Limited-service restaurants        | 1,435         | \$55                                |
| <b>Total</b> |                                    | <b>30,945</b> | <b>\$3,150</b>                      |

Source: IMPLAN 2014 R3 data, current dollars

An economic contribution analysis is developed to quantify the proportion of the Madera County economy that is dependent on farming and agriculture-related businesses. The analysis quantifies the

<sup>4</sup> Value added is a measure of the size of the Madera County economy that is analogous to the commonly cited measure of the U.S. economy, Gross Domestic Product (GDP).

<sup>5</sup> An FTE job is approximately equivalent to 2,080 hours of work. An FTE typically includes multiple (2-3) seasonal jobs, which is an important consideration for the farming industry where most jobs are seasonal. The total number of seasonal jobs in Madera County is significantly greater than 63,000 FTE.

<sup>6</sup> Using the Department of Water Resources (DWR) DAC Mapping Tool.

<sup>7</sup> Industry sectors are defined using the default IMPLAN model sectors.

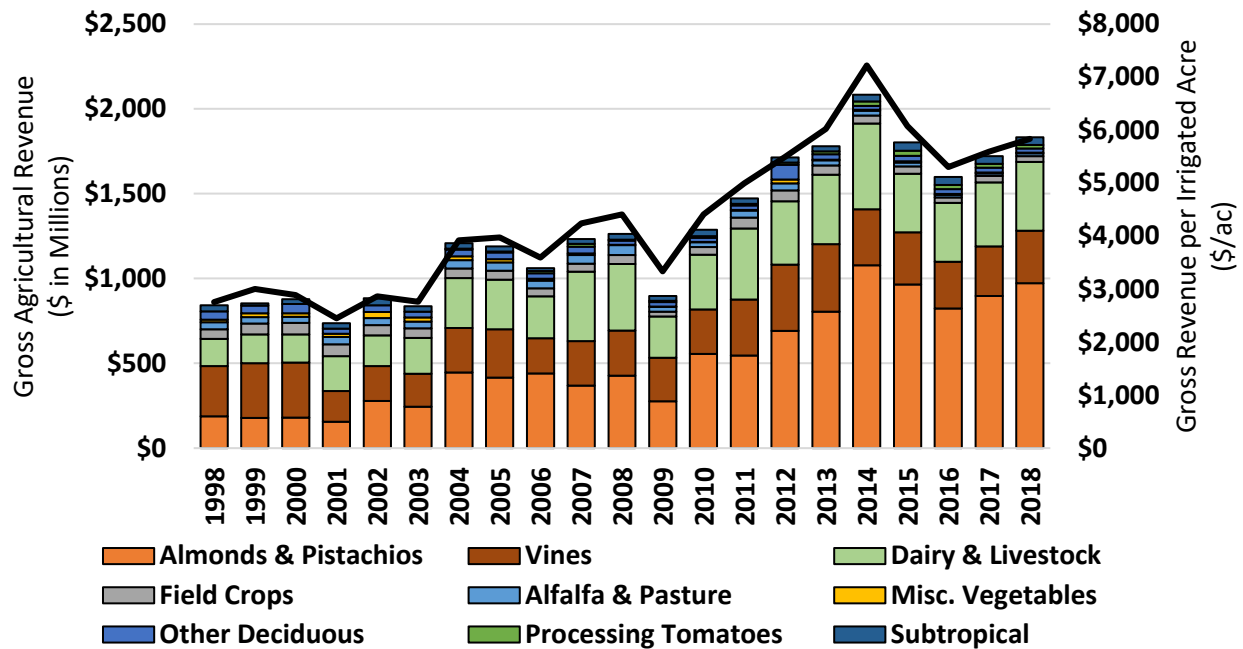
share of jobs and economic activity (value added) that are directly or indirectly related to agriculture. For the purposes of this analysis, primary farming industries, support industries (e.g. pest advisers, farm managers, fertilizer suppliers), and selected post-harvest industries (e.g. processing) are included. The contribution analysis should be interpreted as a conservative (lower bound) estimate of the share of the Madera County economy dependent on agriculture. The analysis does not include all warehousing, shipping, storage, and other farming-dependent businesses in Madera County because these businesses are not identifiable<sup>8</sup> in the default IMPLAN model data.

Farming and agriculture-related industries generate multiplier effects in the Madera County economy. Growers purchase inputs from regional suppliers, employ workers, and rely on local trucking, storage, processing, and related businesses for post-harvest activities. Transportation, storage, processing, and other businesses purchase trucks, warehouses, machines, and hire workers required for their operations. The economic cluster of agriculture-dependent industries generates jobs in farming and other industries, and employees in all these related industries purchase housing, consumer items, and other goods and services in Madera County. It follows that sustainable groundwater management objectives specified in the GSP have significant implications for farming in Madera County, and ancillary jobs, taxes, and businesses in the region.

The gross value (gross farm revenue) of the crops produced in Madera County currently exceeds \$1.8 billion dollars annually. Figure A3.C-1 illustrates trends in the gross value of the industry over the last 20 years. The industry has been growing in value in response to strong crop prices driven by a growing export market. As of 1998, approximately 35% of Madera County crop value was generated by grape production, 19% in dairy and livestock, and 22% in nuts (almonds and pistachios). As of 2018, approximately 53% of the gross value is generated by almond and pistachio production, 22% in dairy and livestock, and 16% in grapes. The trends in Madera County farming industries are consistent with trends seen across the Central Valley. Namely, movement toward higher value nut crops with strong market growth. As of 2018, approximately 75% of Madera County gross farm revenue is in permanent crops (vineyards and orchards). The average revenue per irrigated acre has decreased modestly since it peaked in 2014 (as a result of record nut prices) and is currently just under \$6,000 dollars per acre.

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<sup>8</sup> It is possible to prepare a more detailed economic contribution analysis by developing additional data for some of these agriculture-related industries in Madera County, and further modifying the IMPLAN model data. This is beyond the scope of this initial analysis.



Source: USDA.

**Figure A3.C-1. Madera County Gross Agricultural Revenues, 1998 – 2018 (in current dollars)**

The economic contribution analysis quantifies the total number of jobs, value added, and employee income that is attributable to farming in Madera County. Table A3.C-2 summarizes the results of the analysis. Madera County agriculture generates approximately 47% of the total Madera County economy, or approximately \$2.9 billion in value added annually. Agriculture creates over 15,100 full-time-equivalent (FTE) direct farm jobs and supports an additional 3,700 FTE jobs in other sectors of the economy. The 18,800 FTE jobs created by Madera County agriculture represent approximately 30% of the 63,000 jobs in the county. However, these jobs account for more than 46% of total labor income (wages) in the County. In summary, the contribution analysis finds that nearly half of the Madera County economy and one in three jobs is directly or indirectly linked to Madera County agriculture. This does not include some warehousing, transportation, storage, and other farming-related industries that were not possible to include in this initial analysis due to data limitations. Including these sectors would increase the share of the Madera County economy that is dependent on agriculture.

**Table A3.C-2. Madera County Agriculture Economic Contribution**

| Economy Indicator                 | Madera County Total | Madera County Agriculture | Share (%) Dependent on Agriculture |
|-----------------------------------|---------------------|---------------------------|------------------------------------|
| Employment (FTE)                  | 63,300              | 18,785                    | 30%                                |
| Annual Value Added (\$ Millions)  | \$6,100             | \$2,850                   | 47%                                |
| Annual Labor Income (\$ Millions) | \$2,700             | \$1,250                   | 46%                                |

Notes: The Economic Contribution includes both direct and multiplier (indirect and induced) effects.  
 The share dependent on agriculture should be interpreted as a conservative (lower bound) estimate.

Madera County includes portions of multiple groundwater subbasins. This analysis is concerned with the Madera Subbasin, which generates approximately 70% of annual gross agricultural revenues in Madera County. That is, farming in the Madera Subbasin portion of Madera County generates approximately \$1.2 billion in value added annually, contributes nearly \$2 billion in value added to the County economy, and supports approximately 12,800 FTE jobs.

#### **4 ECONOMIC IMPACT OF ALTERNATIVE MADERA SUBBASIN GSP IMPLEMENTATION TIMELINE**

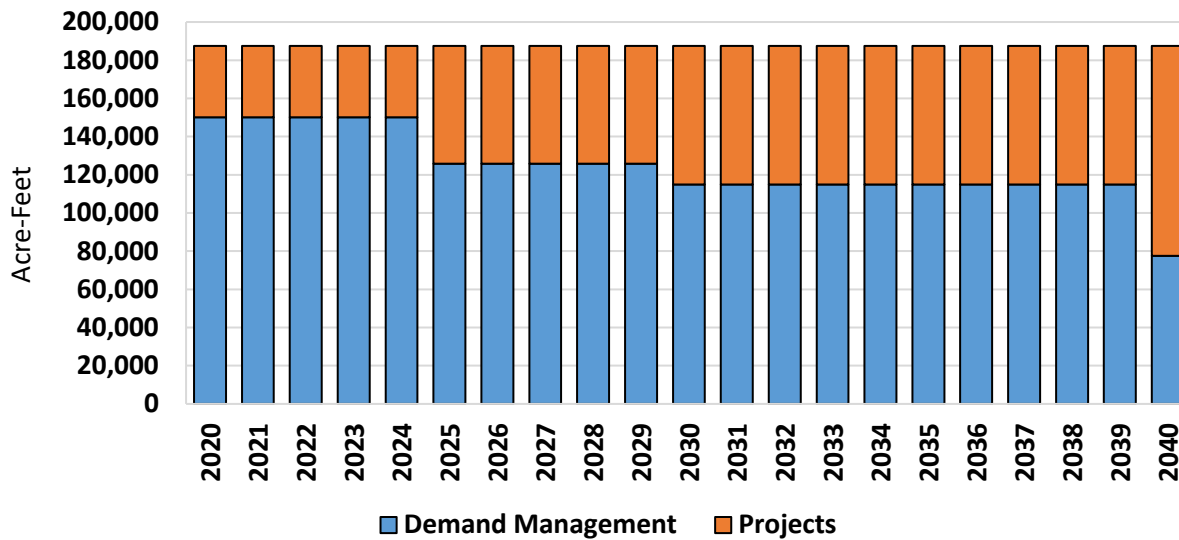
An economic analysis is developed to quantify impacts to farming, linked industries, and workers in Madera County from increasing demand reduction in the Madera Subbasin only. The analysis is specific to the Madera Subbasin portion of Madera County. Implementing demand reduction in the Chowchilla and Delta Mendota Subbasins would increase the economic impacts described below. As previously stated, the analysis does not evaluate the economic effects (impacts) of the proposed GSP itself.

The glide-path implementation timeline specified in the GSP helps minimize economic impacts by eliminating depletion of groundwater storage over a period of about twenty years as projects are developed, funded, and executed by GSAs. An alternative implementation plan is considered that would avoid further lowering of groundwater levels by implementing additional demand reduction in all GSAs starting in 2020. The alternative implementation plan assumes that all projects specified in the GSP are implemented by the respective GSAs. As projects are implemented, the required level of demand reduction is reduced. Figure A3.C-2 illustrates the level of demand reduction and projects over the alternative GSP implementation plan required to prevent additional lowering of groundwater levels. Demand reductions would be approximately 150,000 acre-feet per year starting in 2020, which would decrease as projects are implemented to approximately 90,000 acre-feet per year by 2040. If GSAs are not able to build some projects, or if the net benefit of projects is less than estimated, the level of demand reduction would increase.

The average annual direct economic impact (loss of crop revenue) attributable to implementing more rapid demand reduction in the Madera Subbasin would equal \$182 million, as summarized in Table A3.C-3. The average annual fallowing would equal 39,000 acres. This represents an approximate 13% decrease in gross revenue over current conditions. The impacts would be greatest to the nut industry (largest share of acreage) and hay/silage production sectors. Impacts to the nut sector are high because demand management requires all GSAs to reduce pumping immediately and the scenario does not allow for trading of water across GSA boundaries. Therefore, in some GSAs where projects will not be developed for several years there would be significant fallowing of permanent crops, including almond and pistachio orchards, in order to reduce pumping. The economic impact analysis does not include the additional cost of stranded investments (e.g. removal of orchards before the end of their productive life), which would be in addition to the impacts presented below.

The present value of the direct economic impact (loss in farm revenue) over the 20-year implementation timeline of the GSP (2020 – 2040) would equal \$2.8 billion dollars. That is, implementing immediate demand reduction to prevent any additional lowering of groundwater levels would result in a total impact of \$2.8 billion dollars to the farming industry in Madera Subbasin over the implementation period.

It is important to note that economic impacts would be greater than the annual average in 2020 because projects are not yet developed by GSAs. Immediate fallowing in 2020 required to prevent lowering of groundwater levels would equal approximately 50,000 acres. The direct impact to Madera Subbasin agriculture would equal \$220 million in 2020, representing an immediate 15% reduction in the Madera County farming industry.



Notes: Projects and Demand Management actions apply to all GSAs in the Madera Subbasin. Project and Demand Management action benefits (acre-feet) are approximate.

Figure A3.C-2. Madera Subbasin Alternative GSP Implementation Timeline, 2020 – 2040

Table A3.C-3. Average Annual Direct Economic Impact to Madera Subbasin Agriculture

| Agricultural Sector  | Current Value Gross Farm Revenue (\$ in Millions) | Average Annual Impact Gross Farm Revenue (\$ in Millions) | % change      |
|----------------------|---|---|---------------|
| Dairy & Livestock    | \$326   | (\$21.7)  | -6.7%         |
| Almonds & Pistachios | \$588   | (\$125.9)   | -21.4%        |
| Other Deciduous      | \$64  | (\$4.0)   | -6.3%         |
| Grapes               | \$380   | (\$9.6)   | -2.5%         |
| Misc. Row Crops      | \$30  | (\$2.0)   | -6.7%         |
| Hay & Misc. Forage   | \$61  | (\$18.2)  | -30.0%        |
| <b>Total</b>         | <b>\$1,449</b>                                    | <b>(\$181.5)</b>  | <b>-12.5%</b> |

## 5 ECONOMIC IMPACT TO MADERA COUNTY AND DACS

Changes in Madera Subbasin farming would have ripple effects in the Madera County economy and affect all County residents. Following cropland means that growers would purchase fewer inputs and this would affect industries that depend on farming activity. Farm jobs and jobs in other sectors of the County’s economy would decrease as a result. Table A3.C-4 summarizes the total economic impact to the Madera County economy. The average annual impact of \$182 million in lost crop revenue in the Madera Subbasin would cause total Madera County employment to fall by 840 FTE jobs. Most of these jobs are seasonal farm jobs. Converting loss in FTEs to the actual seasonal job loss means that total job impacts are likely to be closer to 1,600 – 2,000. Many of the jobs lost would be for farm workers who have few other employment options and are residents of the County’s DACs. The Madera County economy would contract by \$200 million per year. This includes a reduction of \$76 million in labor income (wages) in Madera County.

**Table A3.C-4. Average Annual Economic Impact to Madera County Economy**

| Impact              | Employment (FTE) | Labor Income (\$ in Millions) | Value Added (\$ in Millions) |
|---------------------|------------------|-------------------------------|------------------------------|
| Direct              | (535)            | (\$64.1)                      | (\$176.9)                    |
| Indirect            | (95)             | (\$3.3)                       | (\$4.9)                      |
| Induced             | (210)            | (\$9.0)                       | (\$17.5)                     |
| <b>Total Impact</b> | <b>(840)</b>     | <b>(\$76.3)</b>               | <b>(\$199.3)</b>             |

The impacts to Madera County agriculture would also create fiscal impacts to Madera County. A detailed analysis of Madera County tax impacts requires a careful analysis of Madera County fiscal positions that is beyond the scope of this initial analysis. The default IMPLAN model fiscal impact routine is used to approximate the average annual impact to County tax revenues. Since the IMPLAN model does not account for changes in land values and other agricultural market adjustments that would occur under the alternative GSP implementation plan, it is likely that the tax impacts presented below represent a lower-bound.

County tax revenues would fall as agricultural production falls and business activity slows across the region. The average annual impact of a \$200 million contraction in the Madera County economy would cause a decrease of approximately \$4.2 million dollars in local tax revenue, or approximately \$60 million dollars in present value over the 2020-2040 GSP implementation period. The loss in tax revenue reflects local, discretionary revenue to the County. This discretionary spending supports important services in the County that would be impacted as revenues fall. This does not include impacts to State and Federal taxes. A loss of \$4.2 million dollars per year in County tax revenues is approximately 10% of current local, discretionary County tax revenues. This would have significant effects on the ability of the County to cover operating costs for public services and would create additional ripple effects in the County economy that are not evaluated in this initial impact analysis.

The economy that supports all residents of Madera County is directly linked to the viability of the local farming industry. The analysis shows the likely impacts from crop switching or land fallowing to meet demand reduction targets to growers, other agriculture-related businesses, jobs and wages for all Madera County residents, and local tax revenues. Given that most of Madera County is classified as a DAC, a significant share of wage and job losses would fall on these communities.

## 6 SUMMARY

Implementing projects and management actions to achieve the sustainability objectives specified in the GSP will increase irrigation water costs and limit the quantity of water available for farming in some parts of the Madera Subbasin. However, the GSP implementation schedule allows time for the Madera County economy to adjust in order to minimize economic impacts to disadvantaged communities, businesses, and other individuals in the region. This Appendix evaluates an alternative GSP implementation that would accelerate demand reduction and would result in additional, significant, and immediate economic impacts to Madera County. This immediate impact would create ripple effects across all sectors of the Madera County economy, including county tax revenues and jobs that support many of the county's disadvantaged communities.

The conclusions of the economic contribution analysis are as follows:

- A conservative estimate (lower-bound) finds that approximately half of the Madera County economy and one in three jobs is a result of Madera County agriculture. This does not include some warehousing, transportation, storage, and other farm-related industries.
- Agriculture generates around 19,000 FTE jobs in Madera County. An FTE can include 2-3 seasonal farm jobs.
- Approximately 75% of Madera County (by area) is classified as a DAC, and more than half of wage income in these communities is from Madera County farming and agriculture-related businesses.

The conclusions of the economic impact analysis of an accelerated demand reduction program are as follows:

- Immediate implementation of demand reduction to avoid further lowering of groundwater levels would cause direct farm revenue losses of \$182 million per year and require fallowing an average of 40,000 acres per year.
- The Madera County economy would contract by \$200 million per year, or about \$3 billion in present value over the 20-year GSP implementation period.
- Madera County tax revenues would fall by approximately \$4.2 million per year (~10%), or about \$60 million in present value over the 2020 – 2040 implementation period. The loss in tax revenue reflects local, discretionary revenue to the County. This discretionary spending supports important services in the County that would be impacted as revenues fall.
- FTE jobs in Madera County would decrease by 850 (or 1,600 – 2,000 seasonal jobs), and many of these jobs generate income for DACs in the County.
- Labor income (wages) fall by \$76 million per year, including wages for many seasonal jobs that support County DACs.



## **APPENDIX 3.D. ECONOMIC ANALYSIS AND FRAMEWORK FOR THE DOMESTIC WELL MITIGATION PROGRAM**

Prepared as part of the  
**Joint Groundwater Sustainability Plan  
Madera Subbasin**

January 2020  
Revised March 2023

**GSP Team:**

Davids Engineering, Inc (Revised GSP Team)  
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Table 1. Demand Management vs. Domestic Well Replacement - Summary Results for Madera Subbasin, Present Value (PV) \$ in Millions

## 1 OVERVIEW

This appendix serves two purposes. The initial section, titled Benefits and Costs of Faster Implementation of Demand Management, assesses whether a faster trajectory toward sustainability during the implementation period would be economically justified. It compares the cost of implementing demand management more quickly against the benefits (avoided costs) of avoided well replacement and reduced pumping costs. The second section, titled Domestic Well Replacement Mitigation Program, estimates the total cost of replacing domestic wells potentially impacted by declining groundwater levels under the baseline conditions without SGMA and under the draft proposed SGMA implementation plan (with-SGMA). The second section can support discussions and consideration of potential mitigations for the cost of well replacement.

## 2 BENEFITS AND COSTS OF FASTER IMPLEMENTATION OF DEMAND MANAGEMENT

This section describes an initial analysis of how many domestic wells in the Madera Subbasin might be impacted by the continued overdraft of groundwater during the transition from 2020 until full implementation of projects and management actions specified in the (draft) GSP and thereafter through 50 years of sustainable management<sup>1</sup>. The purpose of this reconnaissance-level analysis is to assess the costs to different stakeholder groups (agricultural pumpers and domestic well users) and to consider if a faster trajectory to sustainable management at higher groundwater levels would be cost-effective in the aggregate. If the initial analysis indicates that avoiding well replacement costs might be warranted, a more detailed analysis could be conducted.

In order to provide an initial answer, this analysis uses data inputs for and results from the Madera Subbasin groundwater model. The units of analysis are domestic wells in each section (one square mile or 640 acres). Other key assumptions and simplifications for this initial analysis include:

- Projected depth to water simulated by the groundwater model for the 2020 – 2040 implementation period and subsequent 50-year sustainability period uses a scenario of hydrology developed based on historical hydrology.
- The cost analysis only considers the cost of replacing domestic wells. It does not consider replacement of agricultural wells or the cost of declining well yields before a well is replaced.
- Well Completion Report (WCR) from DWR are the basis for the quantity and characteristics of domestic wells in the Madera Subbasin used in the assessment. Wells not in DWR's WCR database are not included in the analysis. A sensitivity analysis is presented that evaluates how wells not in the WCR database may affect results of the analysis
- As a simplification, for all Public Land Survey System (PLSS) sections in the Subbasin, the analysis compares the minimum depth to the top of the perforated interval for domestic wells with the average simulated September depth to water (DTW) in the Lower Aquifer. The timing, quantity, and location of projects is the same as the with-GSP scenario and no other alternatives are considered.

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<sup>1</sup> For purposes of this memorandum, sustainable management means the state in which the long-term trend of declining groundwater levels has stabilized.

The analysis compares costs associated with groundwater pumping, well replacement, and management actions needed to reach sustainable management for two scenarios: 1) baseline conditions (without-SGMA) and 2) baseline conditions with the draft proposed GSP implementation plan (with-SGMA). Assuming that the GSP already includes implementation of water supply and recharge projects as soon as practical, the analysis focuses on demand management implementation as a possible means to speed the trajectory toward groundwater sustainability.

The following costs related to groundwater levels and management over time are considered:

- Costs to replace dewatered domestic wells.
- Changes in variable costs to pump groundwater, for both domestic and agricultural users.
- Costs to growers in foregone net return for demand management needed (if any) to achieve sustainable management after implementing supply and recharge projects.

## 2.1 Assumptions and Results

Assumptions and results below are summarized for each of the cost categories considered.

### 2.1.1 Costs to replace dewatered domestic wells.

For purposes of this analysis, a replacement cost of \$25,000<sup>2</sup> per well is used. This cost is triggered when a well is dewatered, defined as occurring when the groundwater level in the section the well is located in falls below the minimum depth to top perforation of the domestic wells in that cell. Once the wells in a section are replaced, that section is no longer tested against further changes in DTW. The simulated average September depth to water in the aquifer, by section, during each time period is used for each year's comparison, which typically reflects the lowest groundwater levels in a season.

The process for each scenario (without-SGMA and with-SGMA) is summarized as:

- For each section and year, compare the average DTW in the Lower Aquifer to the minimum depth to top of perforations of the domestic wells in that section.
- If DTW equals or exceeds the top perforation depth, all domestic wells in the section are assumed to be replaced.
- After a section's domestic wells are replaced, they are assumed to be drilled and screened deep enough to withstand any further increase in DTW (i.e., a section would not be replaced multiple times).
- If a section did not have the appropriate well construction information, it was not included in the analysis.

For the Madera Subbasin, the majority of wells are potentially impacted in the historical time period, prior to 2015. Between 2015 and 2090, 315 domestic wells are impacted in the without-SGMA analysis, but 87 of those appear to be impacted between 2015 and 2019, prior to the 2020 implementation start (DTW is greater than minimum depth to top perforation). After GSP implementation, 228 (315 minus 87) domestic wells are potentially affected in the comparison of scenarios. Most (218) of the replacements are estimated to occur between 2021 and 2067, and the present value (at 2020) of replacement costs for

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<sup>2</sup> The cost of well replacement used in the analysis is based on feedback from well drillers that work in the area: (i) drilling a domestic well costs \$35/foot, (ii) a sanitary seal for a domestic well is \$2,000, and (iii) a pump for a domestic well is \$4,500. This does not include permit costs. Assuming a well depth of approximately 500 feet results in an estimated cost of about \$25,000 per well.

these impacted domestic wells is \$3.39 million. In the with-SGMA analysis, the number of impacted domestic wells drops from 228 to 43, at a present value cost of \$0.77 million. Many of those 43 impacted domestic wells would stay in production longer than in the without-SGMA scenario, so the replacement cost is delayed, further reducing the present value of replacement. Most (185 out of 228) of the domestic wells impacted in the without-SGMA scenario would not require replacement in the draft GSP implementation plan, and the present value of avoided replacement cost is \$2.62 million (\$3.39 minus \$0.77). *Considering the cost of domestic well replacement relative to the cost of agricultural demand management (Table A3.D-1), it is fairly clear to conclude that accelerating the demand management (and so approaching sustainable management faster between now and 2040) would not avoid enough well replacement cost to be cost-effective from a subbasin-wide perspective.*

**Table A3.D-1. Demand Management vs. Domestic Well Replacement - Summary Results for Madera Subbasin, Present Value (PV) \$ in Millions**

|                                   | Without SGMA | With-SGMA | Difference |
|-----------------------------------|--------------|-----------|------------|
| Domestic Well Repl. Cost          |              |           |            |
| Number of Domestic Wells Replaced | 228          | 43        | -185       |
| PV of Cost                        | \$3.39       | \$0.77    | -\$2.62    |
| Pumping Cost (Savings), PV        |              |           |            |
| Domestic                          | NA           | -\$19.70  | -\$19.70   |
| Agricultural                      | NA           | -\$274.97 | -\$274.97  |
| Demand Mgmt. Cost, PV             | NA           | \$968.26  | \$968.26   |

Given the uncertainty in any analysis of domestic well impacts using the currently available database, a sensitivity analysis was conducted to consider the possibility of a greater number of domestic wells being impacted. The sensitivity analysis considered the replacement costs for 500 and 1,000 domestic wells during the 20-year Implementation Period. Based on the per well costs described above, the present value cost to replace 500 domestic wells is estimated to be \$7.78 million and the present value cost to replace 1,000 domestic wells is estimated to be \$15.55 million. The costs to replace 500 domestic wells is less than 1% and for 1,000 domestic wells less than 2% of the demand management costs cited in Table A3.D-1.

### 2.1.2 Changes in variable costs to pump groundwater, for both domestic and agricultural users.

This analysis applies an aggregate calculation of change in water depth and pumping cost, using an average depth over all sections (weighted by well count in each section). As DTW decreases in the with-SGMA scenario relative to without-SGMA, the benefit (reduced pumping lift and cost) grows year to year. Both domestic wells and agricultural users benefit from this, though the agricultural cost saving is many times greater simply due to volume pumped. A more precise estimate can be created using an estimate of agricultural and domestic pumping in each section.

For the Madera Subbasin, benefits after 10 years are about \$272,000 per year in total for all domestic well pumping and \$3.91 million per year for agricultural pumping. The present value of savings over the analysis period is about \$19.70 million for domestic pumping and \$274.97 million for agricultural pumping. *These savings are small relative to the loss of net return from demand management (Table 1), so the benefit of achieving them sooner does not appear to be justified by implementing demand management sooner.*

### 2.1.3 Costs to growers in foregone net return for demand management needed (if any) to achieve sustainable management after implementing supply and recharge projects.

This analysis uses the estimated demand reduction in acre-feet needed to achieve sustainable management after accounting for the yield of supply and recharge projects. The cost of that reduction is based on a separate economic analysis of net return lost from crop production developed for the GSP. This loss increases with the level of demand management, and ranges from about \$300 per AF to over \$1,000 per AF. In this example analysis, a constant cost of \$500 per AF of demand management is used, which represents the approximate cost of demand management in the Madera Subbasin.

For the Madera Subbasin, the current water balance shows pumping to be about 545,000 AF/year on average. After implementation of projects specified in the GSP, pumping during sustainable management is estimated to be about 440,000 AF/year. This analysis assumes that the difference – 105,000 AF per year – would be spread equally from 2021 to 2040 as a reduction of 5,250 AF per year (note this is a simplifying assumption, the actual demand reduction occurs unevenly in the GSP implementation plan). At \$500 per AF, this adds a demand management cost of about \$2.6 million per year, which accumulates, so that by 2040 the annual demand management cost is about \$52.5 million. These values are discounted back to the start of implementation, resulting in a present value in 2020 of about \$968.3 million (see Table 1).

## 2.2 Discussion

Results indicate that the cost of implementing demand management on a faster trajectory (sooner in the implementation period) would not be cost effective from a subbasin-wide perspective. The avoided costs (fewer domestic wells requiring replacement) would be small (\$0.77 million) relative to the lost agricultural net return \$996 million (0.08 percent) for the Madera subbasin,). The general conclusions are robust to the assumptions used – that is, results are not sensitive to reasonable ranges in key assumptions, including the loss in net return per AF of demand management, the total level of demand management, when demand management begins to scale in, or the cost of replacing a domestic well.

The analysis also considered different measures for comparing depth to water to well characteristics and different hydrologic sequences (one beginning with a wet period and one with a dry period), and the conclusions hold. Even doubling the number of affected wells (based on the possibility that some domestic wells in use are not logged in the WCR database) does not change the conclusion. The conclusions are strong enough that no further groundwater analysis is recommended for the sole purpose of evaluating whether more rapid demand management is justified by the aggregate avoided domestic well replacement.

Although the conclusion is that more rapid demand management is not cost-effective from a basin-wide or County-wide perspective, the distribution of the costs imposed on domestic well users should be acknowledged. Continued drawdown of groundwater levels during the GSP implementation period would be caused primarily by pumping for irrigation (because domestic wells are a smaller share of subbasin pumping), whereas the cost of domestic well replacement would be borne by domestic well users.

The above results use demand management as the policy variable to assess the tradeoff of its costs with the costs of domestic well replacement. Rather than use demand management for the cost comparison, another analysis could compare avoided well replacement and pumping costs with the cost of implementing supply or recharge projects sooner during the implementation period. However, that comparison is not possible with current information and the GSP implementation schedule already reflects an aggressive timeline for project implementation. The additional cost of accelerating a recharge project by, say 5 years, would be the increased present value of the capital and O&M cost stream. The

benefit would be the change in expected present value of avoided well replacement and pumping costs. This benefit would need to be calculated based on a groundwater model analysis of the resulting expected DTW over time under the accelerated project implementation.

### 3 DOMESTIC WELL MITIGATION PROGRAM

Some GSAs in the Madera Subbasin have discussed a program to replace domestic wells that are impacted by falling groundwater levels over the GSP implementation timeline. The May 29, 2019 GSP summary presentation outlined the general parameters of a domestic well mitigation program. The program is expected to be further developed during the first year of GSP implementation. Well owners would be required to sign up for the program and mitigation actions may include replacing or lowering existing wells, and in cases where it is feasible, connecting groups of wells to a community water system. The program would be funded by fees and external support including grants and low interest loans.

#### 3.1 Madera Subbasin Domestic Well Mitigation Program Costs

An analysis was developed to approximate the cost of a domestic well mitigation program in the Madera Subbasin. The example program/analysis assumes:

- All pumpers pay into the program to fund full replacement of impacted domestic wells (\$25,000/well).
- The number of affected wells is the total number affected under the with-SGMA scenario, including those potentially already impacted. One hundred and twenty wells are impacted in Madera Subbasin, based on the analysis described earlier in this memorandum (namely, uses the WCR data). The number of impacted domestic wells is doubled to account for potential under-reporting in the WCR data.
- The program cost (\$/af) is based on the sustainable level of pumping. Pumping fees cover admin, replacement, and contingency program costs and are charged to every acre foot of groundwater pumped. The fee is calculated as an annual amount that will raise the required total expected mitigation program cost (in present value terms). A cash flow analysis has not been prepared at this time. All costs are expressed in real dollars.
- An annual program administration cost is assumed to cover staff time to run the program, manage the fund, and conduct technical review of any applications. For this estimate a cost of \$150,000 per year (to account for the greater number of wells) plus \$5,000 per replaced well is assumed.
- An additional program cost contingency of 30% is added to the average annual well replacement cost to account for higher than expected costs per well and unexpected impacts (e.g. longer drought cycles).
- A sensitivity analysis of well replacement cost, admin cost, and contingency cost is used to develop a program fee range (\$/af). The actual program cost depends on the timing of well impacts, which depends on unknown future hydrologic sequences.

Summary results are as follows:

- Madera Subbasin
  - **# impacted domestic wells:** 120 (doubled to 240 for cost estimation purposes)
  - **Average annual program cost:** \$277,000



- **Domestic well mitigation program fee per acre-foot** of sustainable yield: \$1.03/AF (sensitivity range ~\$0.67 - \$4/AF)

### 3.2 Draft Outline for Madera Subbasin Domestic Well Mitigation Program

This section provides a general outline of a domestic well mitigation program for the Madera Subbasin.

#### 3.2.1 Domestic well mitigation program policy/purpose statement

Define the mission of the program. For example, the purpose of the Madera Subbasin Domestic Well Mitigation program is to a mitigate undesirable results on domestic wells due to GSP implementations.

#### 3.2.2 Definition of undesirable results

Program should clearly define the types of impacts to domestic wells that will, and will not, be mitigated.

#### 3.2.3 Inventory domestic wells

Develop a database and registration system and allow domestic well owners to sign up (if not already permitted/in the system)

#### 3.2.4 Mitigation measures

Define mitigation measures. Other well mitigation programs suggest the following potential mitigation measures:

- Deepen or replace well – for domestic wells where municipal water service is not expected to exist in the near future
- Connect to public water system – for domestic wells near existing public water system service
- Develop public water system to serve the impacted community – high density of domestic wells impacted within a small geographic area

The mitigation measures should consider and coordinate with any mitigation actions being undertaken by other programs such as the Nitrate Control Program and Salt Control Program being implemented by the State Water Resources Control Board and Regional Water Quality Control Board as part of the Central Valley's Water Quality Control Plans (i.e., Basin Plans). In areas of the Central Valley where drinking water supplies have been impacted by water quality, the Basin Plan includes new regulatory actions focused on managing nitrates locally while providing interim and long-term solutions for providing safe drinking water supplies.

#### 3.2.5 Define mitigation costs

Define how the mitigation fund will pay for each type of impacted domestic well. Other well programs suggest the following examples:

- Establish payment (e.g. \$/AF) to deepen wells. If well cannot be deepened, establish standard cost to replace well e.g. \$/well
- Decide how to compensate well owners that can connect to municipal system
- Establish "rapid response" approach for situations when wells go dry

### 3.2.6 Establish review process

Develop a board to review and approve domestic well mitigation claims consistent with the guidelines specified under (1 – 4). Establish process for expedient review.

### 3.2.7 Financing

Financing program through groundwater extraction fees (see above for estimated costs).

## 3.3 Domestic Well Mitigation Programs Reviewed

A review of existing domestic well mitigation programs identified two examples that could be used as a policy template:

### 3.3.1 Yuba County Water Agency

#### 3.3.1.1 Motivation

Potential groundwater substitution water transfers under the Yuba River Accord, or other transfers out of the Yuba County Water Agency area, could cause third-party impacts to other water users, including impacts to domestic wells.

#### 3.3.1.2 Program overview

The program goal is to compensate domestic well owners that are demonstrably impacted by groundwater substitution water transfers. It was specified as Mitigation Measure 6-2 in the Lower Yuba River Accord EIR/S. In general, well owners are required to report impacts and a process is established for validating each claim. Monitoring wells (specified in Mitigation Measure 6-1) measure groundwater elevations throughout the season which are used to assess whether water transfers resulted in third-party domestic well impacts. The program description includes provisions to compensate or fully replace affected wells.

<http://www.hdrprojects.com/engineering/ProposedLowerYubaRiverAccord/Chapter%206%20-%20MMRP-ECP.pdf>

#### 3.3.1.3 Program financing and implementation

No information on program financing was identified. No information on number of affected wells or if the program was ever fully implemented beyond being specified as a Mitigation Measure. (web search only – have not contacted YCWA).

#### 3.3.1.4 Applicability to Madera GSP

Limited applicability to the Madera Subbasin GSP. The YCWA program deals with short-term water transfer impacts, whereas the GSPs are concerned with long-term planned overdraft and cumulative impacts to domestic wells. The general program guidelines are applicable (compensate well owners that are impacted). However, the financing strategy is different. Compensation for third-party impacts can be included in the cost of a groundwater substitution transfer (the source of the impact), whereas the planned overdraft in the GSP is a benefit to all groundwater users in the subbasin.

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## 3.3.2 Truckee Meadows Water Authority

### 3.3.2.1 Motivation

Nevada Legislature identified a need to avoid, or mitigate, impacts to domestic wells and granted authority to the State Engineer to limit pumping in areas to avoid impacts. Impacts to domestic wells from several sources (too many wells in the same area, new deep wells, etc.) in Washoe County. TMWA eventually developed and approved the Mt. Rose/Galena Fan Domestic Well Mitigation Program.

### 3.3.2.2 Program overview

The program compensates domestic well owners who can demonstrate impacts to their well operation. It is the responsibility of the well owner to report impacts and request compensation from TMWA (<https://tmwa.com/doing-business-with-us/wellmitigation/>). A Board is established to review claims and approve/deny each application. If the application is approved, the home owner is compensated out of an existing fund to deepen their well.

### 3.3.2.3 Program financing and implementation

Compensation is specified by the program – wells can be deepened by 150 ft. Compensation (as of FY 2013) was \$66/ft – meaning ~\$10,000 for each well. Property owners are responsible for covering the cost of any other appurtenances (estimated around \$4,500/well). If a well cannot be deepened, then the program pays for a new well and covers the cost of all appurtenances.

### 3.3.2.4 Applicability to Madera GSP

Very applicable to the Madera GSP. The program is a result of similar issues identified in the GSP – continued pumping for the benefit of the entire region is causing impacts to some shallower domestic wells. A fund is established to pay for those impacts so that pumping can continue in other parts of the basin. All users fund the program and it is the responsibility of individual well owners to submit impact claims. An independent board reviews the claims and approves/denies payment. <https://www.leg.state.nv.us/Interim/76th2011/Exhibits/OverseeWRWC/E062812B.pdf>

**Domestic Well Replacement Economic Analysis  
for the Madera Subbasin**

**Updated January 2022**

As Part of the  
**Domestic Well Inventory for the  
Madera Subbasin**

*(See Appendix 2.G for the Complete  
Domestic Well Inventory for the  
Madera Subbasin)*

**APPENDIX 3.E. MADERA SUBBASIN DOMESTIC WELL MITIGATION  
PROGRAM MEMORANDUM OF UNDERSTANDING**

Prepared as part of the  
**Joint Groundwater Sustainability Plan  
Madera Subbasin**

January 2020  
Revised March 2023

**GSP Team:**

Davids Engineering, Inc. (Revised GSP Team)  
Luhdorff & Scalmanini (Revised GSP Team)  
ERA Economics  
Stillwater Sciences and  
California State University, Sacramento

**MEMORANDUM OF UNDERSTANDING ESTABLISHING A DOMESTIC WELL MITIGATION PROGRAM FOR THE MADERA SUBBASIN OF THE SAN JOAQUIN VALLEY GROUNDWATER BASIN**

This Memorandum of Understanding (“MOU”) is entered into this \_\_\_ day of \_\_\_\_\_ 2023 (the “Effective Date”), by and between the Groundwater Sustainability Agencies of the COUNTY OF MADERA (“COUNTY”), the CITY OF MADERA (“CITY”), the MADERA IRRIGATION DISTRICT (“MID”), , the MADERA WATER DISTRICT (“MWD”), and the GRAVELLY FORD WATER DISTRICT (“GFWD”), collectively hereinafter referred to as the “Parties,” or individually as the “Party.”

**RECITALS**

- A. **WHEREAS**, groundwater and surface water resources within the Madera Subbasin of the San Joaquin Valley Groundwater Basin (DWR Bulletin 118 No. 5-22.06) (Subbasin) are vitally important resources, in that they provide the foundation to maintain and fulfill current and future environmental, agricultural, domestic, municipal, and industrial needs, and to maintain the economic viability, prosperity, and sustainable management of the Subbasin; and
- B. **WHEREAS**, agriculture has been prominent in making Madera County one of the world’s foremost agricultural areas and plays a major role in the economy of Madera County; and
- C. **WHEREAS**, in 2014 the California Legislature passed a statewide framework for sustainable groundwater management, known as the Sustainable Groundwater Management Act, California Water Code § 10720-10737.8 (SGMA), pursuant to Senate Bill 1168, Senate Bill 1319, and Assembly Bill 1739, which was approved by the Governor on September 16, 2014. and went into effect on January 1, 2015; and
- D. **WHEREAS**, the Subbasin has been designated by the California Department of Water Resources (DWR) as a high-priority subbasin in a condition of critical groundwater overdraft and is subject to the requirements of SGMA; and
- E. **WHEREAS**, SGMA requires that all medium and high priority groundwater basins in California be managed by a Groundwater Sustainability Agency (GSA), or multiple GSAs, and that such management be implemented pursuant to an approved Groundwater Sustainability Plan (GSP), or multiple GSPs; and
- F. **WHEREAS**, there are seven GSAs within the Subbasin as set-forth in Exhibit A; and
- G. **WHEREAS**, County, City, MID, and MWD have developed one GSP; Root Creek Water District has developed one GSP; GFWD has developed one GSP; and New Stone Water District has developed one GSP, such that the Subbasin is governed by four separate GSPs unified through the Subbasin Coordination Agreement; and
- H. **WHEREAS**, in January 2020, the Parties submitted four GSPs to DWR; and

- I. **WHEREAS**, the Parties agree, and as SGMA allows, a transition to sustainability over the 20-year GSP Implementation Period is in the best overall interest of the Subbasin, although this approach is expected to result in some continued groundwater level declines during the GSP Implementation Period; and
- J. **WHEREAS**, the Parties agree that as a result of the continued decline in groundwater levels anticipated to occur over the GSP Implementation Period, there may be adverse impacts to some domestic and municipal wells in the Subbasin; and
- K. **WHEREAS**, the Parties acknowledge that the number of domestic and municipal wells dewatered during implementation of the GSP (prior to 2040) is heavily dependent on precipitation and snowpack during that time period; and
- L. **WHEREAS**, the Parties acknowledge that wet conditions may result in few dewatered wells; and
- M. **WHEREAS**, the Parties acknowledge that substantial numbers of domestic and municipal wells may be dewatered if prolonged drought occurs during implementation of the GSP, while project and management actions are still being developed and implemented; and
- N. **WHEREAS**, the Parties acknowledge that they cannot control groundwater conditions not caused by regional groundwater conditions; and
- O. **WHEREAS**, the Parties do not intend to resolve or otherwise mitigate for issues related to normal wear and tear; and
- P. **WHEREAS**, the Parties as part of their future analysis agree to review potential impacts to both domestic and municipal wells in the Subbasin; and
- Q. **WHEREAS**, the Parties have reviewed and considered the content and recommendations set-forth by Self-Help Enterprises, Leadership Counsel for Justice and Accountability, and the Community Water Center in their publication titled, "Framework for a Drinking Water Well Impact Mitigation Program."
- R. **NOW, THEREFORE**, in consideration of the mutual promises, covenants and conditions contained herein and these Recitals, which are hereby incorporated herein by this reference, the Parties agree to review and consider mitigation for domestic and municipal well impacts resulting from declining groundwater levels that occur from groundwater management activities outlined in the four GSPs through development of a Domestic Well Mitigation Program (Program) as follows:

## AGREEMENT

1. **POTENTIAL PROGRAM MITIGATION MEASURES.** Potential Program mitigation measures may include, but are not limited to:
  - a. Short-term solutions in emergencies, such as delivery of bottled water and/or water tanks.
  - b. Setting well pump at deeper depths, replacement of well pump, or well replacement.
  - c. Residential water treatment equipment.
  - d. Connection to or development of public water systems to serve impacted communities.
  - e. Municipal service connections.
  
2. **PROPORTIONATE RESPONSIBILITY.** The Parties agree to work cooperatively together to determine the proportionate responsibility of each Party.
  
3. **FUNDING.** The Parties agree to fund the Program on an annual basis consistent with the final determination of each Party's proportionate responsibility.
  
4. **PROGRAM DEVELOPMENT COMMITTEE.** The Parties shall establish a Program Development Committee (Committee) that will oversee Program development. The Committee shall include at least one technical staff representative from each of the Parties. The Committee will define the purpose, objectives, roles, responsibilities, requirements, and potential outcomes of the Program. Items for consideration and development by the Committee include, but are not limited to:
  - a. Definitions
  - b. Property eligibility
  - c. Property owner eligibility
  - d. Program application process
  - e. Preferred contractors
  - f. Preliminary inspection process
  - g. Program form development
  - h. Priority
  - i. Eligible mitigation
  - j. Non-eligible mitigation
  - k. Maximum mitigation award
  - l. Recordation of mitigation award
  
5. **PROGRAM ORGANIZATIONAL STRUCTURE.** To aid the Committee in Program development and implementation, a DRAFT Program organizational structure is as shown in Exhibit B. That shown in Exhibit B is only a DRAFT and shall not limit or otherwise constrain the Committee in their analysis.



6. **PROGRAM IMPLEMENTATION.** To aid the Committee in Program development and implementation, a DRAFT implementation flowchart is as shown in Exhibit C. That shown in Exhibit C is only a DRAFT and shall not limit or otherwise constrain the Committee in their analysis.
  
7. **TERM.** The Program shall be developed within the first 5 years of GSP implementation (by 2025) and upon implementation, shall continue for the duration of the GSP Implementation Period, until groundwater sustainability is achieved and/or as otherwise directed by the Parties.
  
8. **PROGRAM MANAGEMENT.** Program management shall be facilitated by one of the Parties. If one of the Parties doesn't elect to program management duties and through recommendation of the Coordination Workgroup and approval of the Parties, Program management shall be facilitated through a third party.
  
9. **ENVIRONMENTAL REVIEW.** The Parties agree to cooperatively complete any environmental review as may be determined necessary for Program implementation. Any costs associated with environmental review shall be per the proportionate share as set-forth in this MOU.
  
10. **NOTICES.** All notices required or permitted by the MOU shall be made in writing, and may be delivered in person (by hand or by courier) or may be sent regular, certified, or registered mail or U.S. Postal Service Express Mail, with postage prepaid, or by facsimile transmission, or by electronic transmission (email) and shall be deemed sufficiently given if served in a manner specified in this Section 16. The addresses and addressees noted below are the Party's designated address and addressee for deliver or mailing notices.

|                   |  |
|-------------------|--|
| To Madera County: | County of Madera<br>Stephanie Anagnoson<br>200 W 4 <sup>th</sup> Street, 4 <sup>th</sup> Floor<br>Madera, CA 93637 |
|-------------------|--|

|         |   |
|---------|---|
| To MID: | Madera Irrigation District<br>Thomas Greci<br>12152 Road 28 1/4<br>Madera, CA 93637 |
|---------|---|

|          |  |
|----------|--|
| To GFWD: | Gravelly Ford Water District<br>Don Roberts<br>18811 Road 27<br>Madera, CA 93638 |
|----------|--|

|          |                |
|----------|----------------|
| To City: | City of Madera |
|----------|----------------|

Keith Helmuth  
428 East Yosemite Avenue  
Madera, CA 93638

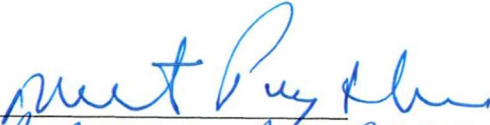
To MWD:

Madera Water District  
Melanie J. Aldridge  
1663 N. Schnoor Street, Suite 105  
Madera, CA 93638

Any Party may, by written notice to each of the other Parties, specify a different address for notice. Any notice sent by registered or certified mail, return receipt requested, shall be deemed given on the date of delivery shown on the receipt card, or if no delivery date is shown, three days after the postmark date. If sent by regular mail, the notice shall be deemed given 48 hours after it is addressed as required in this section and mailed with postage prepaid. Notices delivered by United States Express Mail or overnight courier that guarantee next day delivery shall be deemed given 24 hours after delivery to the Postal Service or overnight courier. Notices transmitted by facsimile transmission or similar means (including email) shall be deemed delivered upon telephone or similar confirmation of delivery (confirmation report from fax machine is sufficient), provided a copy is also delivered via personal delivery or mail. If notice is received after 4:00 p.m. or on a Saturday, Sunday or legal holiday, it shall be deemed received on the next business day.

**IN WITNESS WHEREOF**, the Parties have caused this MOU to be executed, each signatory hereto represents that he/she has been appropriately authorized to enter into this MOU on behalf of the Party whom he/she signs.

County of Madera

  
ROBERT L. POYTARESS  
CHAIRMAN PRO-TEM

3.21.23

Date

Madera Irrigation District

  
Thomas Greci

3/21/2023

Date

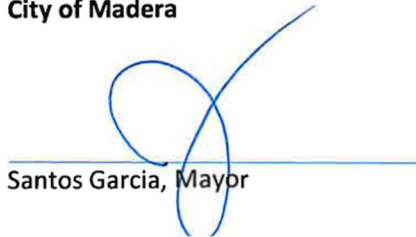
Gravelly Ford Water District

  
Don Roberts

3-21-23

Date

City of Madera

  
Santos Garcia, Mayor

March 21, 2023

Date

Madera Water District

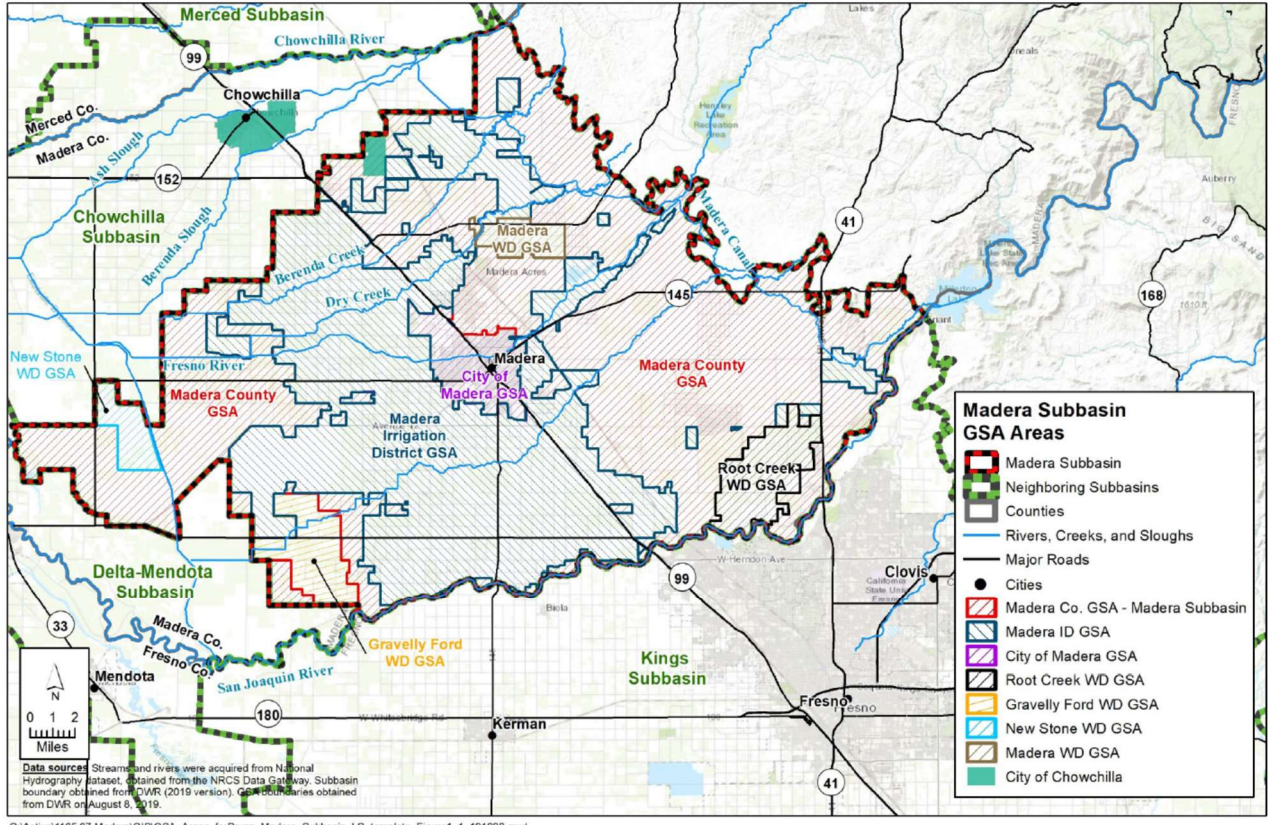
  
Phil Janzen

3-21-23

Date

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# EXHIBIT A



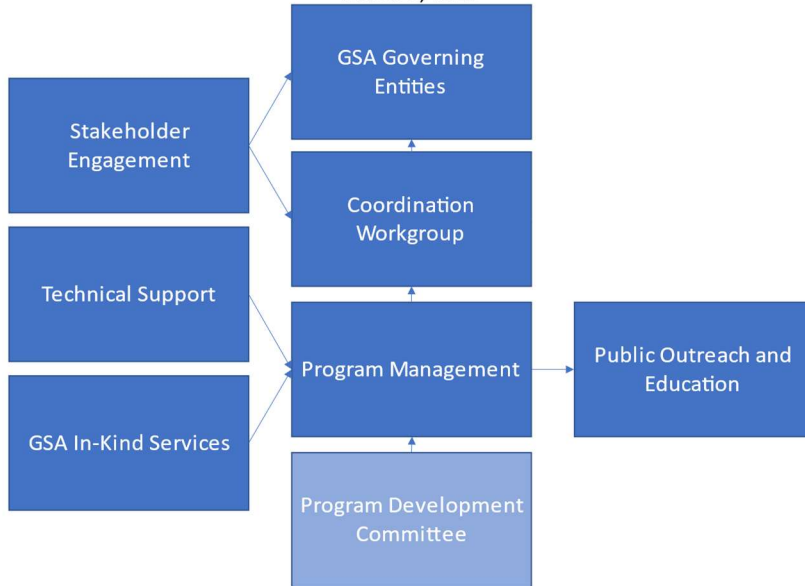
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## EXHIBIT B

DRAFT

### Madera Subbasin – Domestic Well Mitigation Program Organizational Structure March 5, 2023



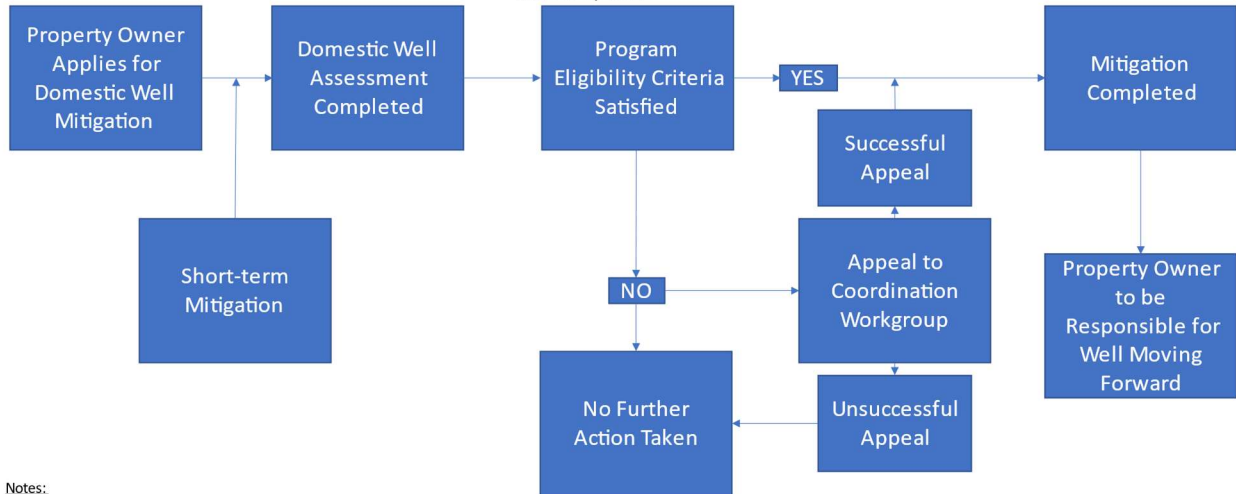
Notes:

1. That shown herein is subject to revision by the Parties.
2. Public Outreach and Engagement is a necessary component as outlined by Self-Help Enterprises, Leadership Counsel for Justice and Accountability, and the Community Water Center in their publication titled, "Framework for a Drinking Water Well Impact Mitigation Program."
3. The Madera Subbasin Coordination Workgroup is defined in the Madera Subbasin Coordination Agreement entered into January 22, 2020.

## EXHIBIT C

**DRAFT**

### Madera Subbasin – Domestic Well Mitigation Program Implementation Flowchart March 5, 2023



**Notes:**

1. Steps shown herein are intended to demonstrate critical decision points and is not intended to be indicative of all steps that may be required.
2. That shown herein is subject to revision by the Madera Subbasin GSAs.
3. The GSAs have reviewed and considered the content and recommendations set forth by Self-Help Enterprises, Leadership Counsel for Justice and Accountability, and the Community Water Center in their publication titled, "Framework for a Drinking Water Well Impact Mitigation Program."

## **APPENDIX 3.F. EMERGENCY TANK WATER PROGRAM FLYER**

Prepared as part of the  
**Joint Groundwater Sustainability Plan**  
**Madera Subbasin**

January 2020

**GSP Team:**  
Davids Engineering, Inc  
Luhdorff & Scalmanini  
ERA Economics  
Stillwater Sciences and  
California State University, Sacramento





## HAS YOUR WELL GONE DRY??

**THE EMERGENCY TANK WATER PROGRAM (TW) CAN HELP!**

The Madera County Sheriff's Office of Emergency Services has partnered with the Community Action Partnership of Madera County, Inc. and the Madera County Community and Economic Development Department to provide emergency water assistance!

**You may be eligible to receive a water storage tank, non-potable water and drinking water.**

- Homeowner whose well has gone dry
- Must meet eligibility requirements
- You must have a long-term solution in place

### How to Apply:

Please call the Madera County  
Department of Water and Natural Resources  
200 W. 4th Street, Suite 3100  
Madera, CA 93637  
559-675-7703 Ext. 3225

Emergency Funding has been made available by the California Office of Emergency Services through the Emergency Tank Water Program (TW) to help homeowner's whose private wells have gone dry.



# **APPENDIX 3.G. MADERA SUBBASIN INFRASTRUCTURE SENSITIVITY ASSESSMENT**

Prepared as part of the  
**Joint Groundwater Sustainability Plan  
Madera Subbasin**

January 2020  
Revised March 2023

**GSP Team:**  
Davids Engineering, Inc. (Revised GSP Team)  
Luhdorff & Scalmanini (Revised GSP Team)  
ERA Economics  
Stillwater Sciences and  
California State University, Sacramento

# Technical Memorandum

Date: 03/01/2023  
To: Madera Subbasin Joint GSP GSAs  
From: Davids Engineering, Inc.  
Topic: Madera Subbasin Infrastructure Assessment

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## 1 Introduction

This Infrastructure Assessment (Assessment) is intended to document insights about the characteristics of critical infrastructure in the Madera Subbasin, including the proximity, orientation, and relative vulnerability of infrastructure to adverse effects of land subsidence (referred to herein as “subsidence”). The assessment considers critical infrastructure and historical subsidence<sup>1</sup> throughout the entire Madera Subbasin, although the Assessment was prepared specifically to support development of the Madera Subbasin Revised Joint Groundwater Sustainability Plan (GSP). This information has been used by the Madera Subbasin Joint GSP Groundwater Sustainability Agencies (GSAs) to design subsidence-related Sustainable Management Criteria (SMC) with the goal of protecting this critical infrastructure from Undesirable Results (URs) of groundwater conditions during implementation of the Revised Joint GSP.

This Assessment first identifies the location and characteristics of critical infrastructure that must be considered when developing SMC in the Madera Subbasin, and then identifies recent subsidence conditions in areas of the Madera Subbasin that may create risks of adverse impacts to the beneficial uses and users of those critical infrastructure.

Critical infrastructure in the Madera Subbasin that were considered in this Assessment include:

- Roads and highway infrastructure
- Railroad infrastructure
- Waterways and surface water conveyance infrastructure
- Groundwater wells, including agricultural wells, domestic wells, and public supply wells
- Wastewater infrastructure

The Assessment considers how communities in and around the Madera Subbasin access and use critical infrastructure, how subsidence has or could affect those uses and users, and

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<sup>1</sup> This assessment reviews historical subsidence conditions from 2015-2022. However, the GSAs recognize that residual subsidence has been observed in many areas of the San Joaquin Valley and is likely to occur to some extent in the Madera Subbasin in areas where historical subsidence was observed. Residual subsidence is associated with delayed compaction that occurs after groundwater levels have declined to a low point (the preconsolidation head), following a lag time of several years to decades in some cases.



Water



Infrastructure



Technology

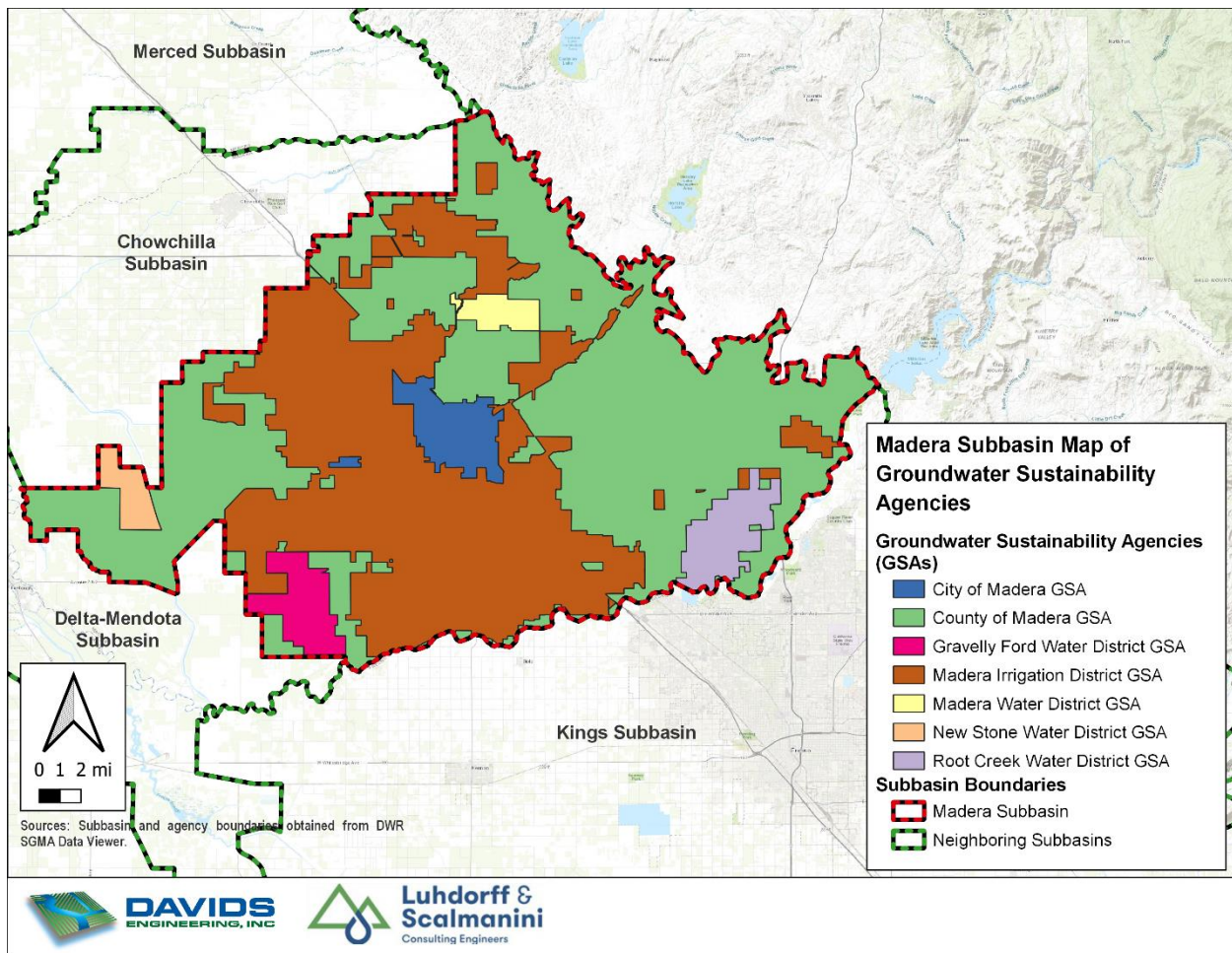
identifies areas where subsidence has recently occurred and where critical infrastructure may be vulnerable to URs from subsidence in the future.

This Assessment has been developed based on the information available during the GSP revisions process in 2022-2023. However, the GSAs have developed a work plan to fill subsidence-related data gaps between 2023-2026. The work plan is discussed in Section 2.2.2.7 of the Madera Subbasin Revised Joint GSP. The GSAs are pursuing proposition 68 grant funds through the California Department of Water Resources (DWR) Sustainable Groundwater Management (SGM) Grant Program that would help to support implementation of the work plan. As the GSAs implement the work plan and more is learned about subsidence conditions in the Madera Subbasin, those findings and implications for critical infrastructure will be documented in Annual Reports and GSP updates.

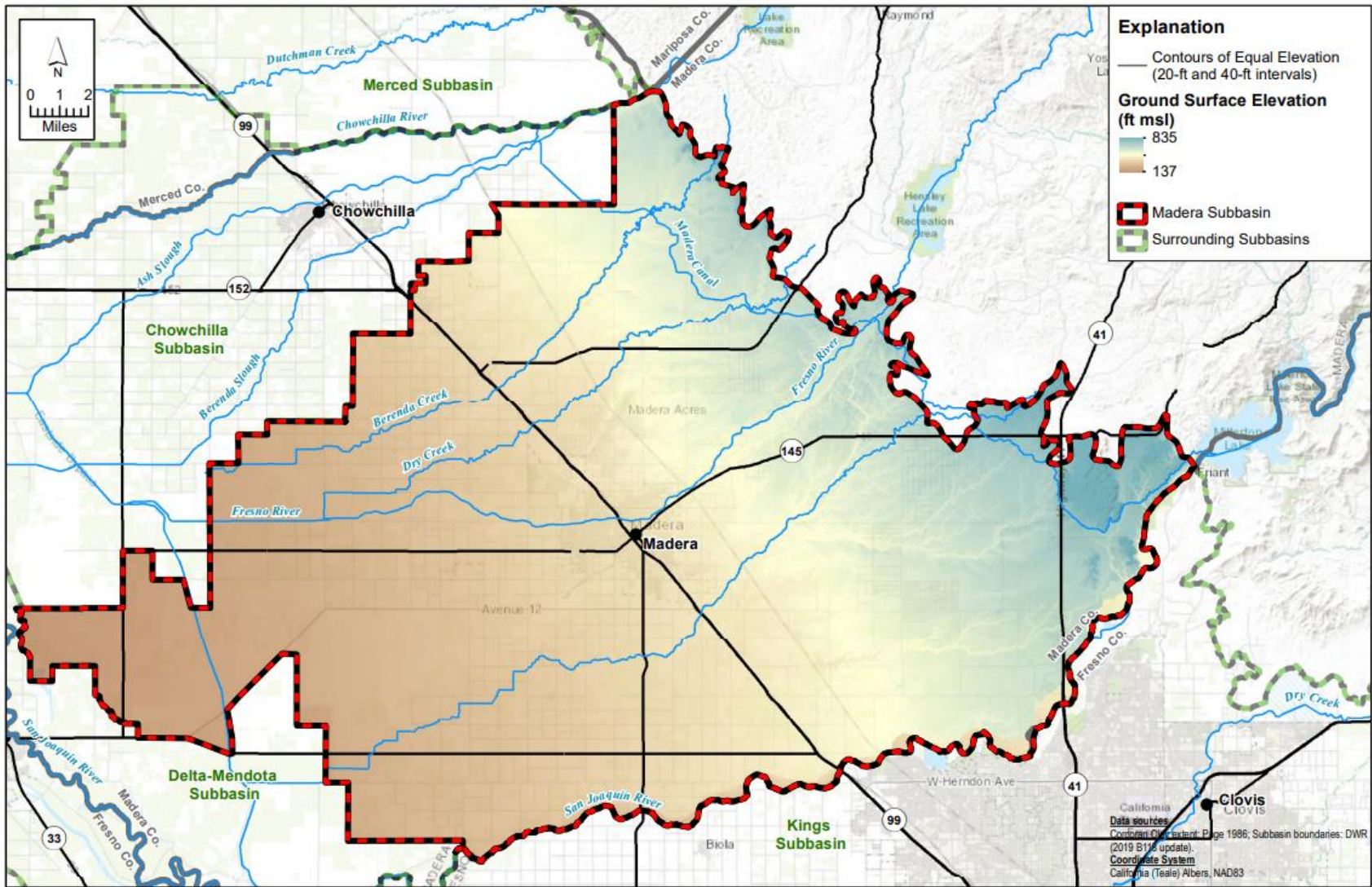
## 2 Overview of Critical Infrastructure in the Madera Subbasin

This section provides a brief overview of critical infrastructure categories that were considered when establishing subsidence-related SMC in the Madera Subbasin. The locations of all critical infrastructure categories were considered with respect to the Madera Subbasin boundaries and the GSAs' boundaries (**Figure 1**). The orientation of all critical infrastructure categories was also considered with respect to the overall topography of the Madera Subbasin (**Figure 2**), where the ground surface elevation generally slopes downward from northeast (highest elevation) to southwest (lowest elevation).

Each subsection below generally summarizes what is encompassed in each critical infrastructure category, the general location and characteristics of that critical infrastructure (including its structure and orientation), and other core considerations for the beneficial uses and users of that infrastructure. Maps referenced in these subsections are provided at the end of the Assessment.



*Figure 1. Map of Groundwater Sustainability Agencies in the Madera Subbasin.*



X:\2017\17-113 Madera Subbasin GSP Development\GIS\Map Files\REPORT map files\Chapter 2\Figure 2-10 Madera Subbasin Topographic Map.mxd



Figure 2. Madera Subbasin Topographic Map (Source: Madera Subbasin Revised Joint GSP, Figure 2-10).

## 2.1 Roads and Highway Infrastructure

Road and highway infrastructure considered when setting subsidence-related SMC in the Madera Subbasin primarily includes roadways and bridges within the boundaries of the Madera Subbasin. Maintaining the integrity of road and highway infrastructure is important for securing transportation and freight corridors within and through the Madera Subbasin.

**Figure 3** shows the locations of major highways and highway bridges in the Madera Subbasin, and **Figure 4** shows the annual average daily traffic volumes on those major highways. The largest highway corridors in the Madera Subbasin include California State Routes (SR) 99, 145, and 41. SR 99 crosses the center of the Madera Subbasin, passing through the City of Madera following a northwest-southeast path. SR 145 follows a north-south path to the south of the City of Madera, and follows a southwest-northeast path to the east of the City of Madera until it connects to SR 41 near the eastern edge of the Madera Subbasin. SR 41 crosses the eastern portion of the Madera Subbasin in a north-south path. Other smaller, local roadways are generally located in the City of Madera or traverse rural areas of the Madera Subbasin.

According to data available from the California Department of Transportation (Caltrans), SR 99 features the majority of highway bridges in the Madera Subbasin (29 of 43), and also experiences the majority of traffic (typically serving more than 40,000 vehicles per day, on average). Off of SR 99, traffic on SR 145 ranges from approximately 7,000-15,000 vehicles per day, on average, with higher volumes nearer to the City of Madera. On the eastern side of the Madera Subbasin, traffic on SR 41 ranges from approximately 16,000-18,000 vehicles per day.

## 2.2 Railroad Infrastructure

Railroad infrastructure was also considered in setting subsidence-related SMC in the Madera Subbasin. Like road and highway infrastructure, maintaining the integrity of railroad infrastructure is important for securing transportation and freight corridors through the Madera Subbasin. **Figure 5** shows the location of railroad infrastructure in the Madera Subbasin summarized from available Caltrans data. The Madera Subbasin contains two main railways: one that crosses the central portion of the Madera Subbasin and passes through the City of Madera following a northwest-southeast path, and the second following a roughly parallel path to the northeast of the first. A third short railway, the North Madera Industrial Lead, also branches off from the first railway within the City of Madera, following a short southwest-northeast path.

## 2.3 Waterways and Surface Water Conveyance Infrastructure

Waterways and surface water conveyance infrastructure considered when setting subsidence-related SMC in the Madera Subbasin are shown in **Figure 6**. Maintaining the integrity of waterways and surface water conveyance infrastructure is important for flood protection, irrigation, recharge, and other beneficial uses and users of surface water in and around the Madera Subbasin. More specific considerations for waterways and surface water conveyance infrastructure are described below.

### 2.3.1 General Flow Characteristics

Most waterways that flow into and through the Madera Subbasin begin in upslope lands east and northeast of the Madera Subbasin and flow downslope in a westerly direction. Besides the San Joaquin River, which flows along the southern edge of the Subbasin, waterways in the Madera Subbasin are considered intermittent or ephemeral streams, and have historically remained dry for at least several months each year.

The Madera Canal and reaches of the Fresno River, Berenda Creek, Cottonwood Creek, and Dry Creek within the Madera Subbasin are used for conveyance of surface water (generally in March-October at times when surface water supplies are available). Virtually all surface water flows on these waterways originate from either Hensley Lake releases at Hidden Dam or from Millerton Reservoir releases at Friant Dam that are delivered via the Madera Canal. These waterways are typically dry during the non-irrigation season except during storm runoff events and during periods when flood releases occur from the upstream reservoirs.

Flows on the San Joaquin River along the southern boundary of the Madera Subbasin originate from various upstream sources, including Millerton Reservoir releases at Friant Dam. Streamgage data from the United States Geological Survey (USGS)<sup>2</sup> shows flows along the San Joaquin River during most times of year, with greater flows typically occurring during spring months of wet water years.

### 2.3.2 Waterways within the Purview of the Central Valley Flood Protection Board

Core considerations for waterways within the purview of the Central Valley Flood Protection Board (CVFPB) are the freeboard and design profile, as defined in the corresponding Federal and State Operation and Maintenance Manuals (O&M Manuals).

In their comments to the Madera Subbasin GSAs, the CVFPB noted that any reduction in the freeboard or change to design profile, beyond the design criteria given in the O&M Manuals, may lead to increased flood risk and damage to Federal-State flood control facilities, and is considered unlawful for waterways in their purview.

The GSAs have recognized and considered the following design criteria of waterway reaches in the Madera Subbasin when establishing the subsidence-related SMC for the Madera Subbasin:

- Fresno River:
  - Bank levees freeboard of 3 feet
  - Design flows of 5,000 cubic feet per second (cfs)
- San Joaquin River:
  - Bank levees freeboard of 3 feet
  - Design flows of 8,000 cfs
- Chowchilla Bypass:
  - Bank levees freeboard of 4 feet

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<sup>2</sup> USGS 11251000 SAN JOAQUIN R BL FRIANT CA. [https://waterdata.usgs.gov/nwis/uv?site\\_no=11251000](https://waterdata.usgs.gov/nwis/uv?site_no=11251000).



- Design flows of 5,500 cfs

## 2.4 Groundwater Wells

Groundwater well infrastructure in the Madera Subbasin encompasses the infrastructure of multiple types of wells, including agricultural wells, domestic wells, and public supply wells. Sustaining access to groundwater is crucial to upholding the Human Right to Water (as set forth in California Water Code § 106.3) and is also important to maintaining the economic vitality of the Madera Subbasin.

**Figure 7** through **Figure 9** show the general locations of groundwater wells of each type (agricultural, domestic, and public supply), aggregated by section from Well Completion Report (WCR) data available from the California Department of Water Resources (DWR). WCR data includes only wells with well completion reports that have been submitted to DWR since 1970, and thus typically underestimates the total number of wells in each section. However, the data is expected to provide a reasonably accurate understanding of the relative location and distribution of wells in the Madera Subbasin. Agricultural wells are the most uniformly distributed across the entire Madera Subbasin, while domestic wells and public supply wells are distributed most densely in a strip generally following SR 99, especially in sections surrounding the City of Madera, and in sections around Bonadelle Ranchos-Madera Ranchos. Agricultural wells in the Madera Subbasin are typically deeper than domestic and public supply wells (see the Madera Subbasin Revised Joint GSP Figures 2-44 through 2-46).

## 2.5 Wastewater Infrastructure

Wastewater infrastructure in the Madera Subbasin primarily includes the wastewater treatment plant operated within the City of Madera. Like other municipal infrastructure, maintaining the integrity of wastewater infrastructure is important to maintaining sanitary conditions in urban communities. The importance of functional wastewater infrastructure is closely tied to the Human Right to Water.

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### 3 Relationship between Subsidence Conditions and Infrastructure Concerns

This section summarizes the potential URs to critical infrastructure that may result from subsidence, and then evaluates the relationship between recent historical subsidence that has occurred in the Madera Subbasin and the potential vulnerability of critical infrastructure in the Madera Subbasin. Maps referenced in these subsections are provided at the end of the Assessment. **It is noted that the Joint GSP GSAs have set the subsidence minimum thresholds (MTs) at 0 feet/year in 2040<sup>3</sup> (see Section 3.3.3 of the Revised Joint GSP). Subsidence conditions in 2040 and thereafter are not expected to trigger undesirable results for any of the critical infrastructure.**

**Figure 3** through **Figure 9** show the location of critical infrastructure and the historical cumulative subsidence between 2015-2020 in the Madera Subbasin. These figures show cumulative subsidence conditions (reported as total vertical displacement from InSAR<sup>4</sup> data) starting with the first available InSAR data (June 2015) and extending through June 2020. **Figure 10** through **Figure 16** similarly show the location of critical infrastructure and the historical cumulative subsidence between 2015-2022 in the Madera Subbasin, extending the summary of subsidence conditions through the most recently available InSAR data available at the time of this analysis (through June 2022). The subsections below summarize relevant findings related to each figure, in addition to other pertinent findings from other studies and surveys of subsidence impacts in the Madera Subbasin.

#### 3.1 Roads and Highway Infrastructure

In general, subsidence has the potential to cause URs to users of road and highway infrastructure by causing deterioration or loss of access and use of that infrastructure through fractures, unevenness, or other issues with structural integrity.

There is currently no known subsidence-related issue that has resulted in loss of access and use of road and highway infrastructure in the Madera Subbasin. As shown in **Figure 3**, **Figure 4**, **Figure 10**, and **Figure 11**, SR 99 – the roadway with the greatest number of bridges and the highest volume of traffic in the Madera Subbasin – is located in the central and eastern portion of the Madera Subbasin where subsidence rates have generally been lower. Between 2015-2020, the total cumulative subsidence along SR 99 ranged from virtually zero subsidence (southeast of the City of Madera) to, at most, approximately 2 feet of total cumulative subsidence (less than approximately 0.4 feet per year over approximately five years). Along SR

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<sup>3</sup> The land subsidence MT is set at a rate of 0 feet/year. However, compliance with this threshold will take into consideration the level of uncertainty associated with survey measurements. SJRRP has reported that survey measurements have a vertical accuracy of +/-2.5 centimeters. With two measurements necessary to calculate a rate (before and after), the total uncertainty in the subsidence rate value is 5 centimeters, or approximately -0.16 feet/year. Therefore, a rate of subsidence of less than -0.16 feet/year (values that are less negative) are considered to be within the uncertainty of the measurement and would be considered compliant with the MT of 0 feet/year.

<sup>4</sup> Interferometric Synthetic Aperture Radar (InSAR) data provides measurements of vertical ground surface displacement, and is available from the California Department of Water Resources (DWR) beginning in June 2015. <https://data.cnra.ca.gov/dataset/tre-altamira-insar-subsidence>.

145, the total cumulative subsidence from 2015-2020 was less than 1 foot (approximately 0.2 feet per year over approximately five years). Along SR 41, the total cumulative subsidence from 2015-2020 was less than approximately 0.5 feet (.1 feet per year over approximately five years).

As described in Section 3.4.3 of the Madera Subbasin Revised Joint GSP, the GSAs are planning to mitigate subsidence, as needed, in the Madera Subbasin and do not expect residual subsidence conditions to cause URs to beneficial uses and users of roads and highway infrastructure. However, the GSAs will continue to monitor conditions and will adapt GSP implementation if URs are found to occur. Future findings and adaptations to GSP implementation will be described in Annual Reports, as applicable.

### 3.2 Railroad Infrastructure

Similar to roads and highways, subsidence has the potential to cause URs to users of railroads by causing deterioration or loss of access and use of railways and related infrastructure through fractures, unevenness, or other issues with structural integrity.

There is currently no known subsidence-related issue that has resulted in loss of access and use of railroad infrastructure in the Madera Subbasin. As shown in **Figure 5** and **Figure 12**, railroads in the Madera Subbasin are located in the northern and eastern portions of the Madera Subbasin where the cumulative subsidence from 2015-2020 was between 0.0 to 2 feet (approximately 0.0 to 0.4 feet per year over approximately five years). As described in Section 3.4.3 of the Madera Subbasin Revised Joint GSP, the GSAs are planning to mitigate subsidence, as needed, in the Madera Subbasin and do not expect residual subsidence conditions to cause URs to beneficial uses and users of railroad infrastructure. However, the GSAs will continue to monitor conditions and will adapt GSP implementation if URs are found to occur. Future findings and adaptations to GSP implementation will be described in Annual Reports, as applicable.

### 3.3 Waterways and Conveyance Infrastructure

Subsidence in the Madera Subbasin has the potential to cause URs to uses and users of waterways and conveyance infrastructure by potentially causing changes in the design profile and slope of gravity flow channels, affecting freeboard and channel capacity. Changes that reduce capacity can impact the ability of surface water suppliers to use those conveyance channels to meet demands. Changes that reduce capacity and diminish freeboard can also cause flooding along waterways during times of peak flow. The GSAs considered potential impacts to waterways in the Madera Subbasin resulting from subsidence in relation to the channel design criteria described in the respective O&M Manuals, including the channel freeboard and design profile.

#### 3.3.1 East-West Oriented Waterways

As shown in **Figure 6** and **Figure 13**, the majority of waterways in the Madera Subbasin flow generally from east to west, in the same general direction as the cumulative “subsidence gradient” that has historically occurred in the Madera Subbasin. Along these “east-west”

oriented waterways – including the Fresno River, Berenda Creek, Cottonwood Creek, and Dry Creek – higher subsidence rates in the western portion of the Madera Subbasin have increased the existing slope of the ground surface (**Figure 2**), functionally increasing the capacity of those channels. Thus, despite there being higher rates of subsidence in the western portion of the Madera Subbasin where these waterways flow – as much as 3.0 feet in some areas between 2015-2020 (approximately 0.6 feet per year) and as much as 4.5 feet in some areas along the Chowchilla Subbasin boundary between 2015-2022 (approximately 0.9 feet per year) – the GSAs do not anticipate that subsidence conditions will cause URs to beneficial uses and users of these east-west oriented waterways in the Madera Subbasin in the near future.

For subsidence to substantially impact the freeboard and design profile of those east-west oriented waterways in opposition to the O&M Manuals, subsidence rates in the eastern portion of the Madera Subbasin would need to significantly increase relative to the western portion of the Madera Subbasin and reduce the existing ground surface slope. Considering historical subsidence conditions and differences in the underlying geologic structure of the Madera Subbasin from east-to-west, the GSAs consider URs to beneficial uses and users of the east-west oriented waterways to be unlikely. Nevertheless, as described in Section 3.4.3 of the Madera Subbasin Revised Joint GSP, the GSAs will continue to monitor conditions and will adapt GSP implementation if URs are found to occur. Future findings and adaptations to GSP implementation will be described in Annual Reports, as applicable.

### 3.3.2 Madera Canal

Besides those east-west oriented waterways that are used for conveyance of surface water supplies (Fresno River, Berenda Creek, Cottonwood Creek, Dry Creek), the primary conveyance infrastructure in the Madera Subbasin is the Madera Canal.

The Madera Canal flows along the far northeastern portion of the Madera Subbasin where the cumulative subsidence from 2015-2022 remained less than 0.5 feet in total (less than 0.1 feet per year). There is currently no known subsidence-related issue with capacity or flows along Madera Canal in the Madera Subbasin. The GSAs consider any future URs to the Madera Canal to be highly unlikely in view of the Madera Subbasin’s topography and the location of the Madera Canal relative to where subsidence has historically occurred.

### 3.3.3 Chowchilla Bypass and San Joaquin River

During development of the Madera Subbasin GSPs and the Revised GSPs, the Madera Subbasin GSAs reviewed past analyses of subsidence-related capacity concerns conducted by DWR in May 2018 for the San Joaquin River Restoration Program (SJRRP). These analyses are documented in a report titled “Evaluation of the Effect of Subsidence on Flow Capacity in the Chowchilla and Eastside Bypasses, and Reach 4A of the San Joaquin River” (DWR, 2018). The analyses were conducted to evaluate the subsidence-related impacts to the flow capacity of the Chowchilla Bypass, the Eastside Bypass, and the San Joaquin River under recent historical subsidence conditions (as of 2016) and projected future subsidence conditions through 2026. Flows under the different subsidence-related topography changes were simulated using HEC-

RAS<sup>5</sup> with consideration for the channel design criteria in the O&M Manuals (described in Section 2.3.2, above).

Table 3 of the analysis (shown in **Table 1**, below) summarizes the estimated flow capacity in:

- Chowchilla Bypass (segment from the bifurcation structure at the San Joaquin River to the Fresno River; this segment flows primarily within the Madera Subbasin),
- Eastside Bypass (four segments from the end of the Chowchilla Bypass to the Mariposa Bypass; these segments primarily flow outside the Madera Subbasin)
- San Joaquin River (Reach 4A, which flows along the boundaries of the Chowchilla Subbasin, and the San Slough Connector Channel; these segments primarily flow outside the Madera Subbasin)

Results of the analysis were calculated assuming a fixed freeboard set according to the design criteria in the O&M Manuals. The extent of each reach considered in the analysis is shown in **Figure 17**, below. These analyses found that:

- Flow capacity in all reaches of the Chowchilla Bypass (within the Madera Subbasin) and two reaches of the Eastside Bypass (from Fresno River to Ash Slough, directly downstream of the Madera Subbasin) were within design flows in all historical and projected scenarios considered.
- Flow capacity in the San Joaquin River Reach 4A (outside the Madera Subbasin) and in the Eastside Bypass from Ash Slough to Sand Slough (outside the Madera Subbasin) were already considered to be below the design capacity beginning in the scenario considering historical subsidence conditions as of 2016.

These findings suggest that:

- The design profile and freeboard of the Chowchilla Bypass (within the Madera Subbasin) and upstream reaches of the Eastside Bypass (directly downstream of the Madera Subbasin) were not adversely impacted by subsidence conditions as of 2016, and were not anticipated to be impacted by future subsidence through 2026 (under the assumptions given below).
- The design profile and freeboard of the San Joaquin River Reach 4A (outside the Madera Subbasin) and the Eastside Bypass from Ash Slough to Sand Slough (outside the Madera Subbasin) were already impaired relative to the design criteria given in the O&M Manuals as of 2016. These impairments are far outside the boundaries of the Madera Subbasin and are not understood to be directly impacted by subsidence conditions within the Madera Subbasin. Additionally, these impairments precede the formation of the GSAs and the GSP implementation period in both the Madera Subbasin and neighboring subbasins.

The GSAs do recognize certain assumptions and limitations given for these analyses (DWR, 2018), mainly:

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<sup>5</sup> United States Army Corps of Engineers Hydrologic Engineering Center's River Analysis System (HEC-RAS). Available at: <https://www.hec.usace.army.mil/software/hecras/>.

- Flows were modeled using HEC-RAS, and were validated by flows in 2017 (assuming that those flows were close to design flows). Flow capacities were evaluated for two conditions: a run-of-the-river condition in which there were no concurrent tributary flows, and a backwater condition in which there were concurrent flows in tributary channels that added to downstream flows. Tributary flows to the Chowchilla/Eastside Bypass from Ash Slough, Berenda Slough, and other waterways were assumed to concurrently reach their design flows (per the O&M Manuals) in backwater model scenarios. The GSAs cannot be sure of the validity of the model or these assumptions.
- Projected future subsidence rates through 2026 were estimated using the average annual subsidence rates reported by the United States Bureau of Reclamation from 2011 to 2017. Those subsidence rates may not accurately reflect the actual rates observed from InSAR data in 2017-2020 in the Madera Subbasin and neighboring areas of the Chowchilla Subbasin. For instance, certain landowners in the southwestern portion of the Chowchilla Subbasin (near the Madera and Delta-Mendota Subbasins) entered into a Subsidence Control Measures Agreement in 2017 and have since made significant progress to reduce subsidence by reducing pumping from the Lower Aquifer. Those efforts have resulted in significantly reduced subsidence rates in the vicinity of the Chowchilla Bypass, Eastside Bypass, and the San Joaquin River, as compared to rates prior to 2017 (see Section 3.3.3 of the Chowchilla Subbasin Revised GSP).
- The conclusions of DWR's study are planning-level modeled estimates that do not consider factors besides subsidence (e.g., sediment transport). Sediment deposition is another factor that affects capacity, although sediment management and maintenance of the Chowchilla Bypass, Eastside Bypass, and the San Joaquin River is not the responsibility of the GSAs.

Considering these findings, the GSAs do not expect that subsidence conditions in the Madera Subbasin will impair the design profile or freeboard of the Chowchilla Bypass in the Madera Subbasin during the GSP implementation period. The GSAs also do not expect subsidence conditions in the Madera Subbasin to impair the design profile or freeboard of the Eastside Bypass or the San Joaquin River directly downstream of the Madera Subbasin beyond what conditions were already present prior to 2016.

Nevertheless, as described in Section 3.4.3 of the Madera Subbasin Revised Joint GSP, the GSAs will continue to monitor conditions and will adapt GSP implementation if URs are found to occur. Future findings and adaptations to GSP implementation will be described in Annual Reports, as applicable.

### 3.4 Groundwater Wells

In general, subsidence has the potential to cause URs to users of groundwater well infrastructure by causing deterioration or loss of access and use of that infrastructure through casing damage, collapse, or other issues with structural integrity. These potential issues are also affected or exacerbated by other factors besides subsidence, such as well age, construction, and materials.

As shown in **Figure 7** and **Figure 14**, agricultural wells are generally distributed evenly throughout the Madera Subbasin, in areas where both higher and lower rates of subsidence have occurred. A survey of agricultural well owners in portions of Madera County in spring 2022 found that wells near the Madera/Chowchilla Subbasin border were beginning to collapse, particularly in areas that have experienced approximately 3 feet of subsidence or more. However, the agricultural well owners that were surveyed also indicated that these effects and the costs of well deepening and replacement were considered a necessary side effect of maintaining the economic viability of their businesses during the current drought and early GSP implementation efforts, while projects and management actions – including demand management – ramp up. Those agricultural well owners surveyed did not consider these effects to be “undesirable results.” The GSAs will continue to monitor conditions and engage with stakeholders, and will adapt GSP implementation if URs are found to occur. Future findings and adaptations to GSP implementation will be described in Annual Reports, as applicable.

As shown in **Figure 8**, **Figure 9**, **Figure 15**, and **Figure 16**, domestic wells and public supply wells in the Madera Subbasin are distributed most densely in the vicinity of SR 99, especially in sections surrounding the City of Madera, and in sections around Bonadelle Ranchos-Madera Ranchos. While these areas of the Madera Subbasin have historically experienced lower rates of subsidence, domestic wells in various parts of the Madera Subbasin have already experienced URs from loss of access to groundwater. SMC and GSP implementation efforts have been designed to directly address these issues and preserve the Human Right to Water, as described in Section 3.4.3 of the Madera Subbasin Revised Joint GSP.

Discussions and stakeholder input during public GSP development meetings indicated a clear desire to balance the water supply needs of all beneficial uses and users of groundwater to the greatest extent practicable. Stakeholders expressed clear intent to protect domestic well users that rely on groundwater, but also expressed a desire to protect the local agricultural economy – the economic lifeblood of the region – while GSP implementation ramps up. The GSAs considered many groundwater management approaches to achieve these goals of balancing diverse beneficial user interests. The minimum thresholds (MTs) established for groundwater levels in the Madera Subbasin reflect the outcome of this balanced approach, allowing groundwater use for agricultural production to continue, albeit at a gradually reducing rate, while GSP implementation ramps up, and recognizing that this would likely result in lowered groundwater levels impacting some well users in the Madera Subbasin. This approach was considered preferable to alternatives that would require immediate and substantial cutbacks in agricultural groundwater pumping in order to avoid significant and unreasonable adverse impacts on well users, especially domestic wells. Such an alternative would result in major economic impacts to the local communities and all stakeholders in the Madera Subbasin, including domestic well users and disadvantaged communities. The GSAs re-evaluated the economic tradeoffs of these alternatives in 2022 (Appendix 3.D of the Madera Subbasin Revised Joint GSP), and determined that the avoided costs resulting from immediate demand reduction (i.e., fewer domestic wells requiring replacement) would be comparatively small (\$38.64

million) relative to the additional lost agricultural net return (\$251.98 million) in the Madera Subbasin, even after accounting for the pumping cost savings (\$92.52 million). These analyses considered the impacts of immediate demand reduction only on agricultural net return, but in reality the economic impacts would spread to other county businesses and industries, significantly increasing the net effect on all beneficial uses and users of groundwater in the Madera Subbasin, including domestic well owners.

With these findings, the GSAs determined that implementing a Domestic Well Mitigation Program would provide the best and most economically reasonable outcome for beneficial uses and users of groundwater in the Madera Subbasin by preserving the local economy and protecting domestic well users' access to groundwater. For this reason, the GSAs have elected to mitigate for potential impacts to domestic well users during the GSP implementation period or until groundwater sustainability is achieved. Implementation of the Domestic Well Mitigation Program will allow the GSAs to establish lower MTs that avoid URs to other groundwater users, while still preserving access to critical water supplies for domestic well users.

The GSAs within the Madera Subbasin have proceeded with coordination and focused planning efforts to develop a Domestic Well Mitigation Program, including the development of a memorandum of understanding (MOU). The Domestic Well Mitigation Program could provide assistance to domestic and municipal wells adversely impacted by groundwater conditions that interfere with groundwater production or quality and will be coordinated with the Madera County SB 552 Drought Plan that is also under development.

### 3.5 Wastewater Infrastructure

Subsidence has the potential to cause URs to users of wastewater infrastructure by causing deterioration or loss of functionality of the gravity flow characteristics of those systems and by causing other issues with structural integrity.

There is currently no known subsidence-related issue that has resulted in loss of functionality of wastewater infrastructure in the Madera Subbasin. The cumulative subsidence in the City of Madera service area (**Figure 1**) was approximately 1.5 feet or less between 2015-2022 (approximately 0.2 feet per year or less over approximately seven years). As described in Section 3.4.3 of the Madera Subbasin Revised Joint GSP, the GSAs are planning to mitigate subsidence, as needed, in the Madera Subbasin and do not expect residual subsidence conditions to cause URs to beneficial uses and users of wastewater infrastructure. However, the GSAs will continue to monitor conditions and will adapt GSP implementation if URs are found to occur. Future findings and adaptations to GSP implementation will be described in Annual Reports, as applicable.



## 4 References

DWR. 2018. Evaluation of the Effect of Subsidence on Flow Capacity in the Chowchilla and Eastside Bypasses, and Reach 4A of the San Joaquin River. May 2018. In Technical Memorandum: Channel Capacity Report 2018 Restoration Year. San Joaquin River Restoration Program. January 2019.

## 5 Figures and Tables

**Figure 3** through **Figure 17** and **Table 1** are provided below.

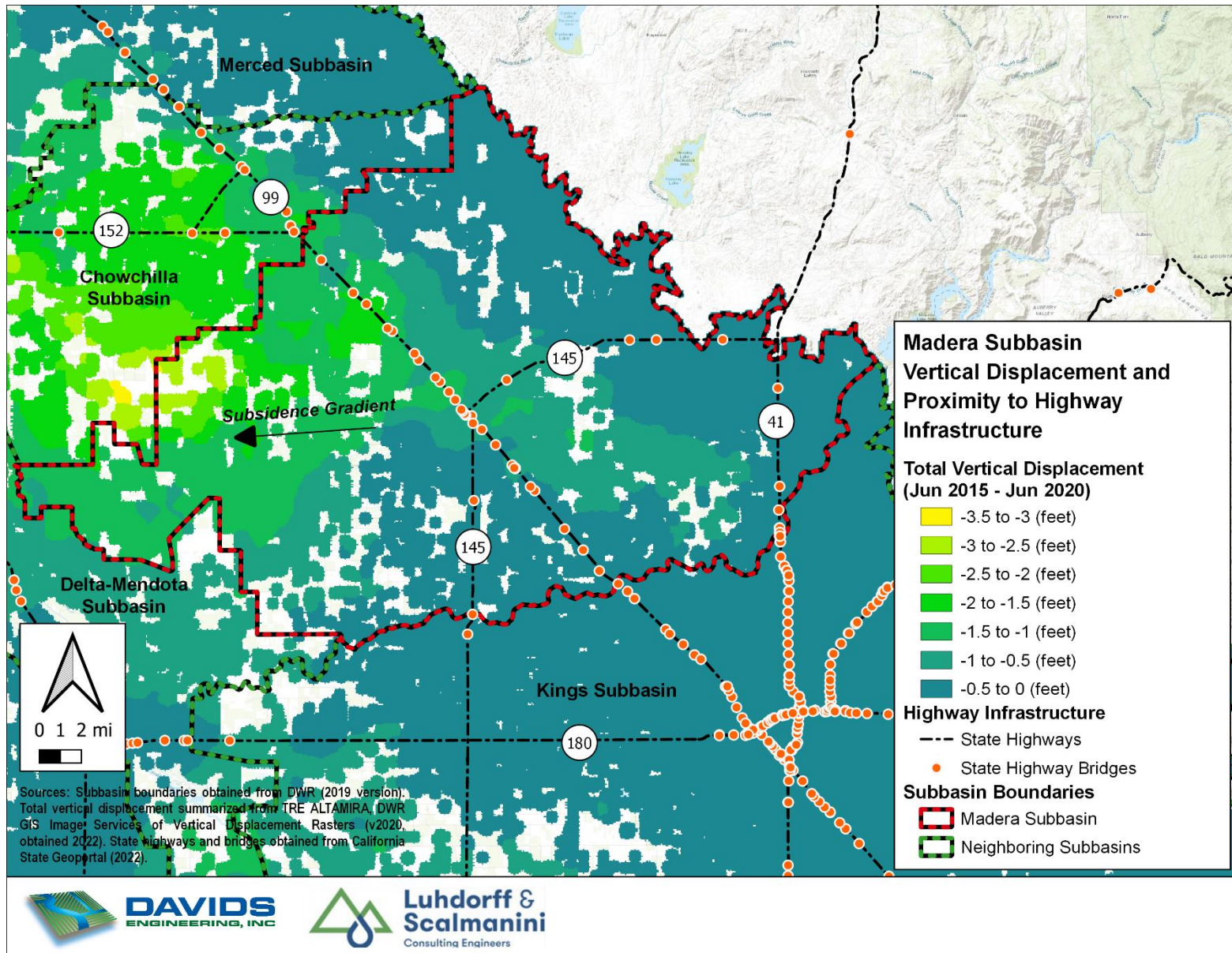


Figure 3. Vertical Displacement (June 2015 - June 2020) and Proximity to Highway Infrastructure.

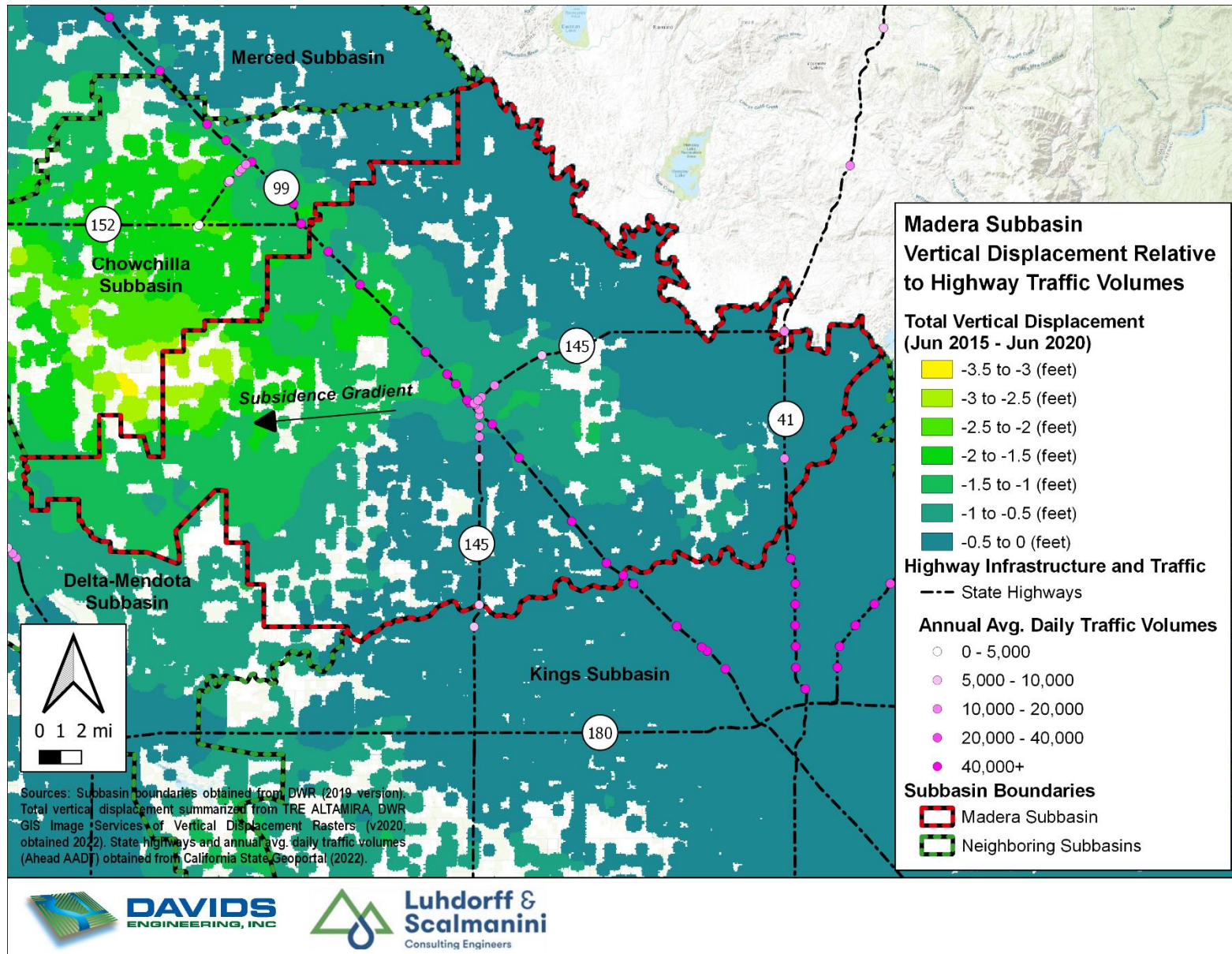


Figure 4. Vertical Displacement (June 2015 - June 2020) Relative to Highway Traffic Volumes.

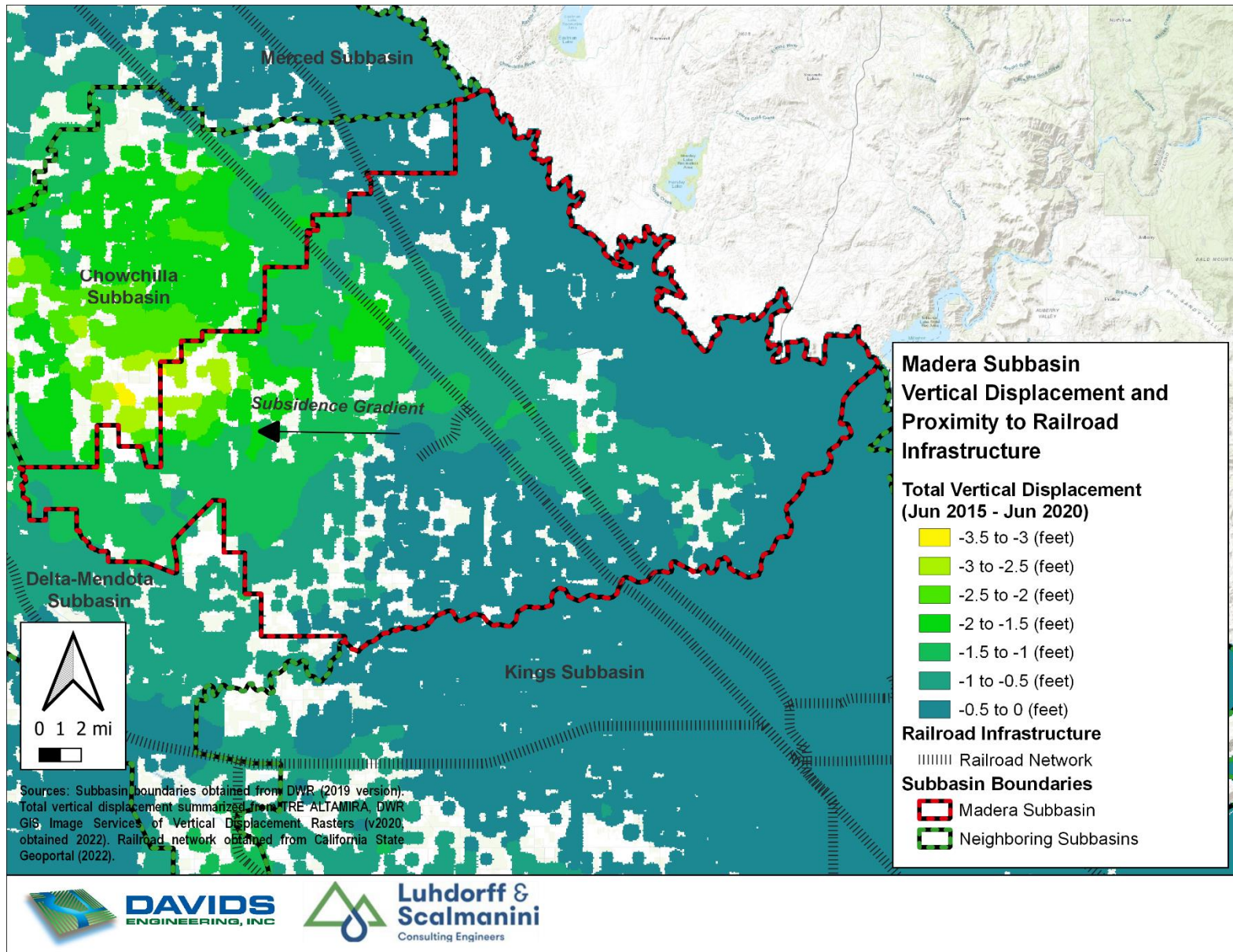


Figure 5. Vertical Displacement (June 2015 - June 2020) and Proximity to Railroad Infrastructure.

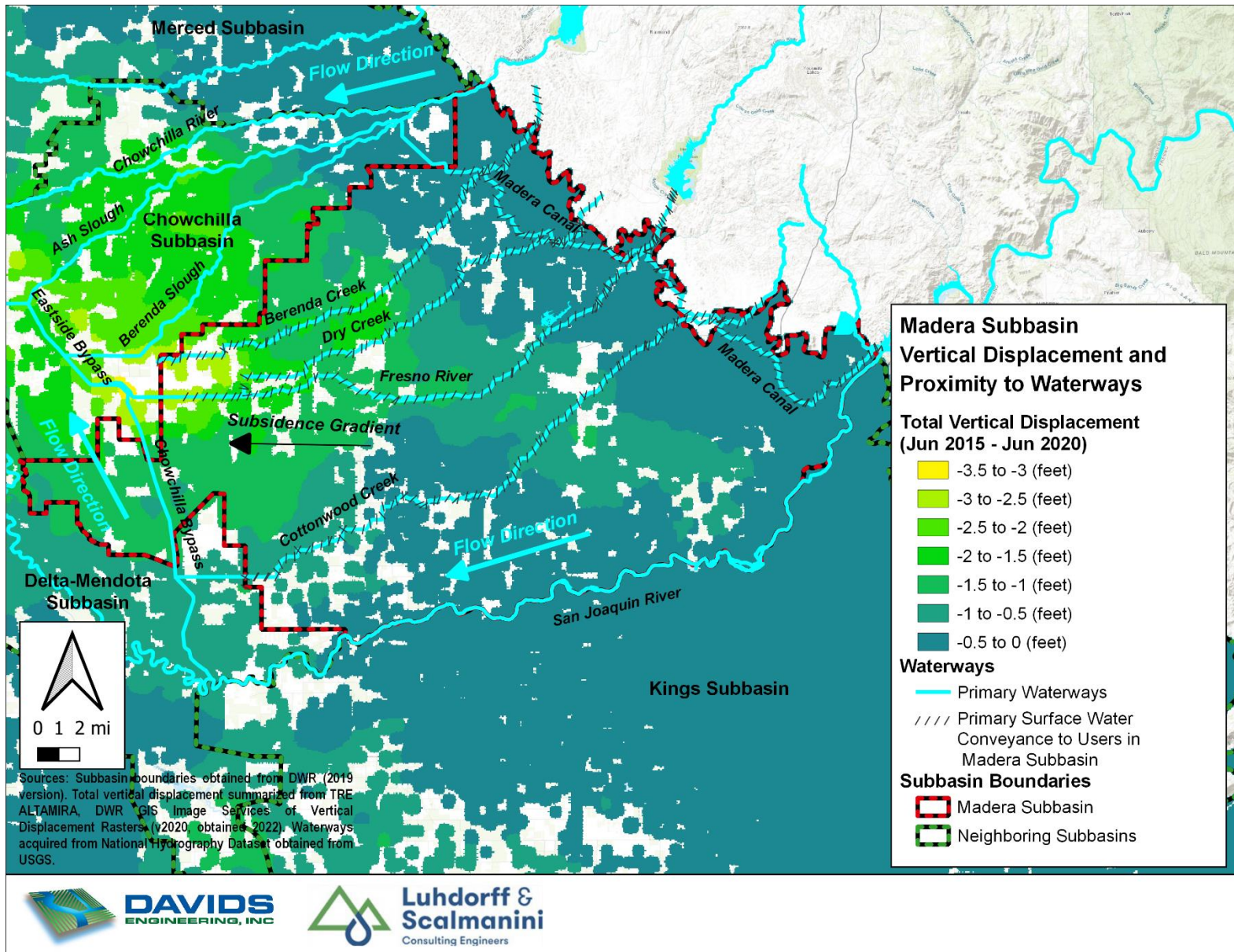


Figure 6. Vertical Displacement (June 2015 - June 2020) and Proximity to Waterways and Surface Water Conveyance Infrastructure.

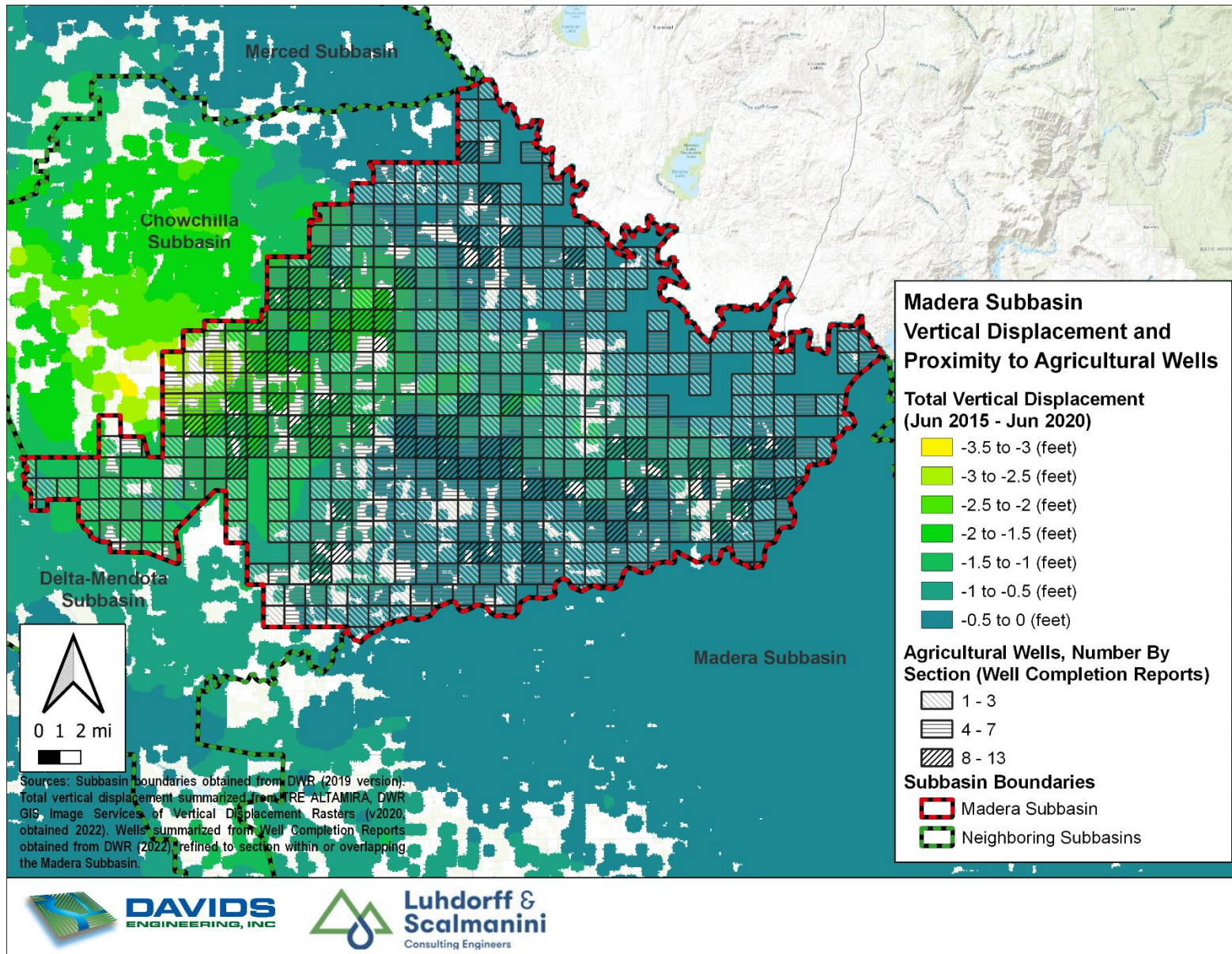


Figure 7. Vertical Displacement (June 2015 – June 2020) and Proximity to Agricultural Wells.

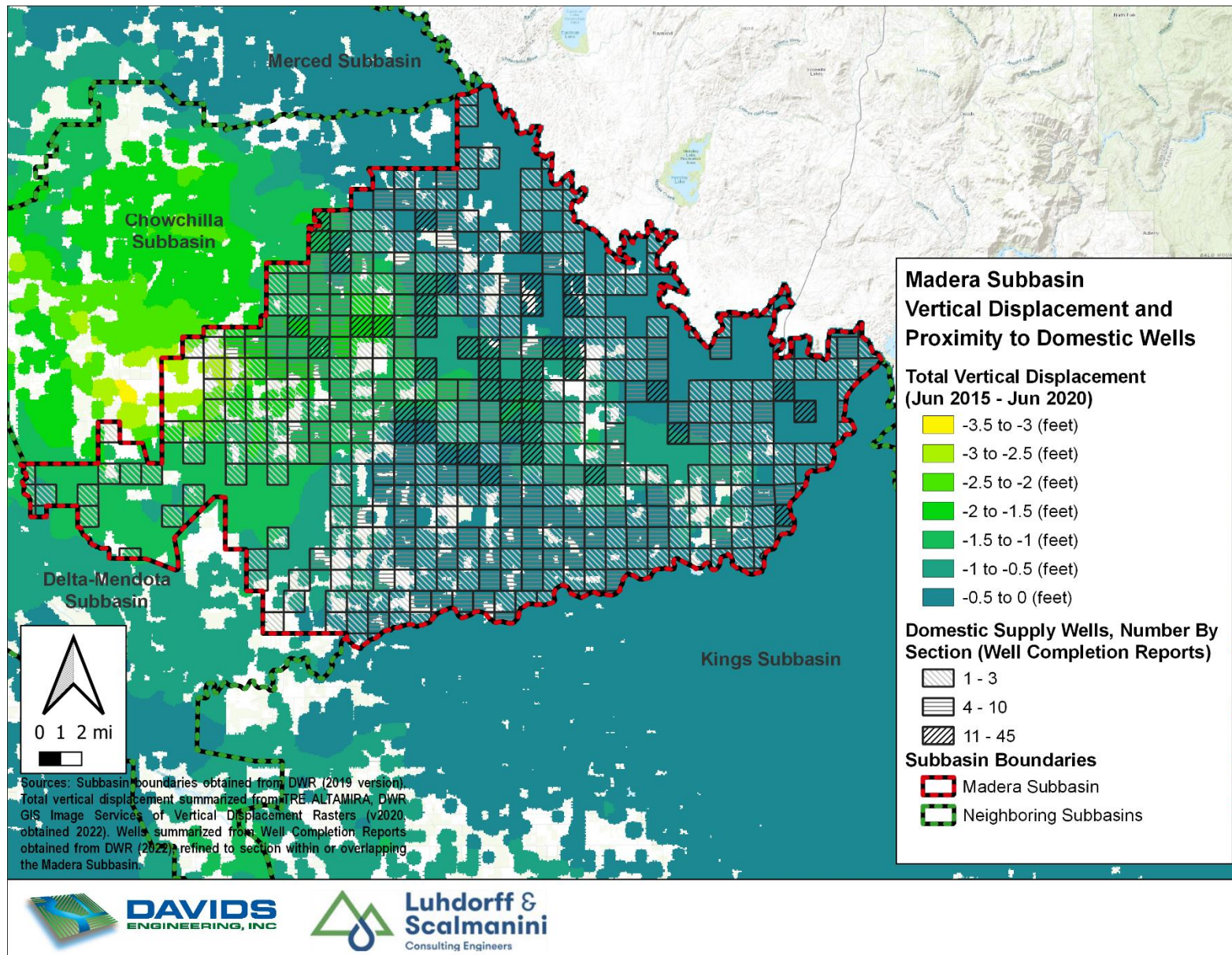


Figure 8. Vertical Displacement (June 2015 – June 2020) and Proximity to Domestic Wells.



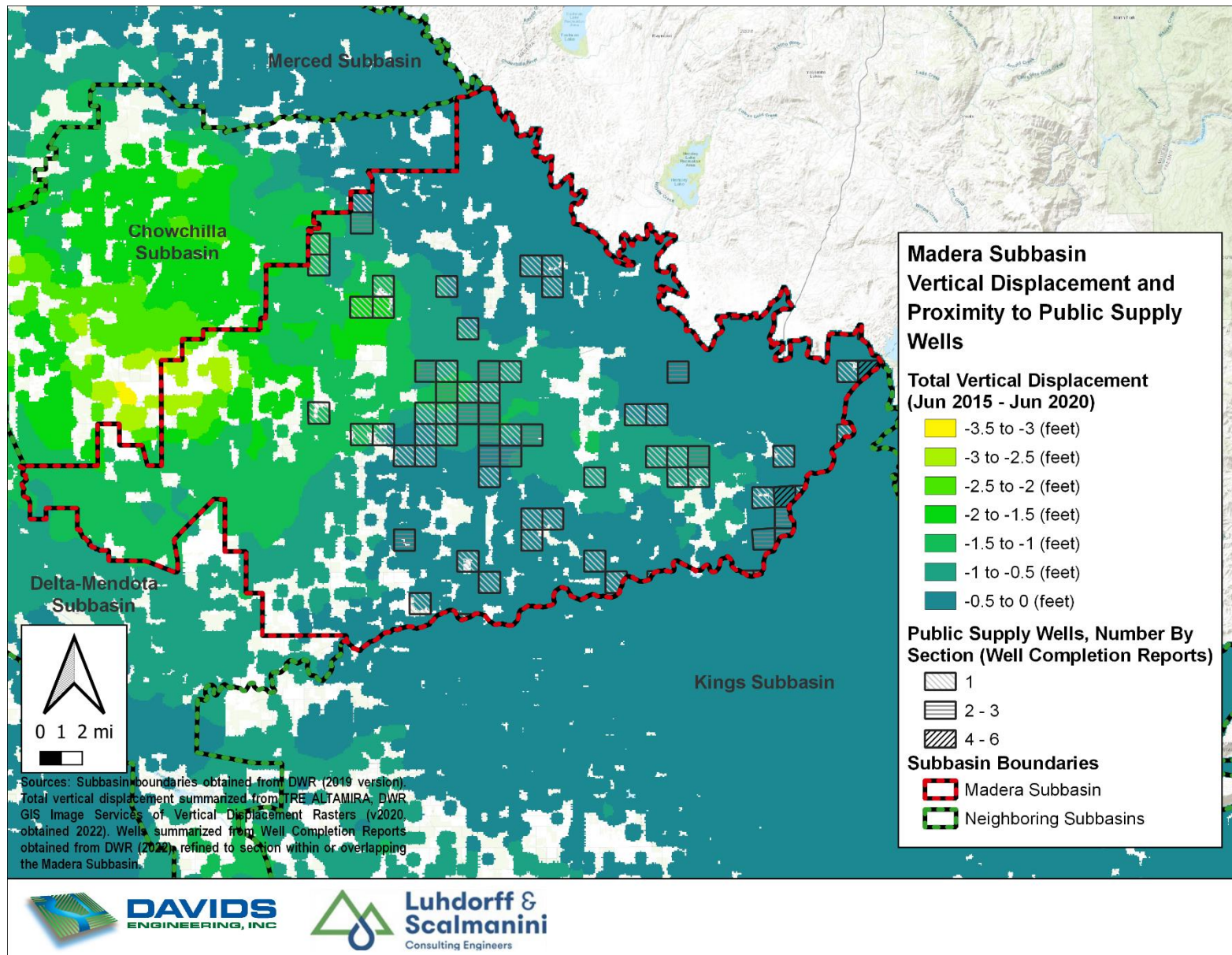


Figure 9. Vertical Displacement (June 2015 – June 2020) and Proximity to Public Supply Wells.

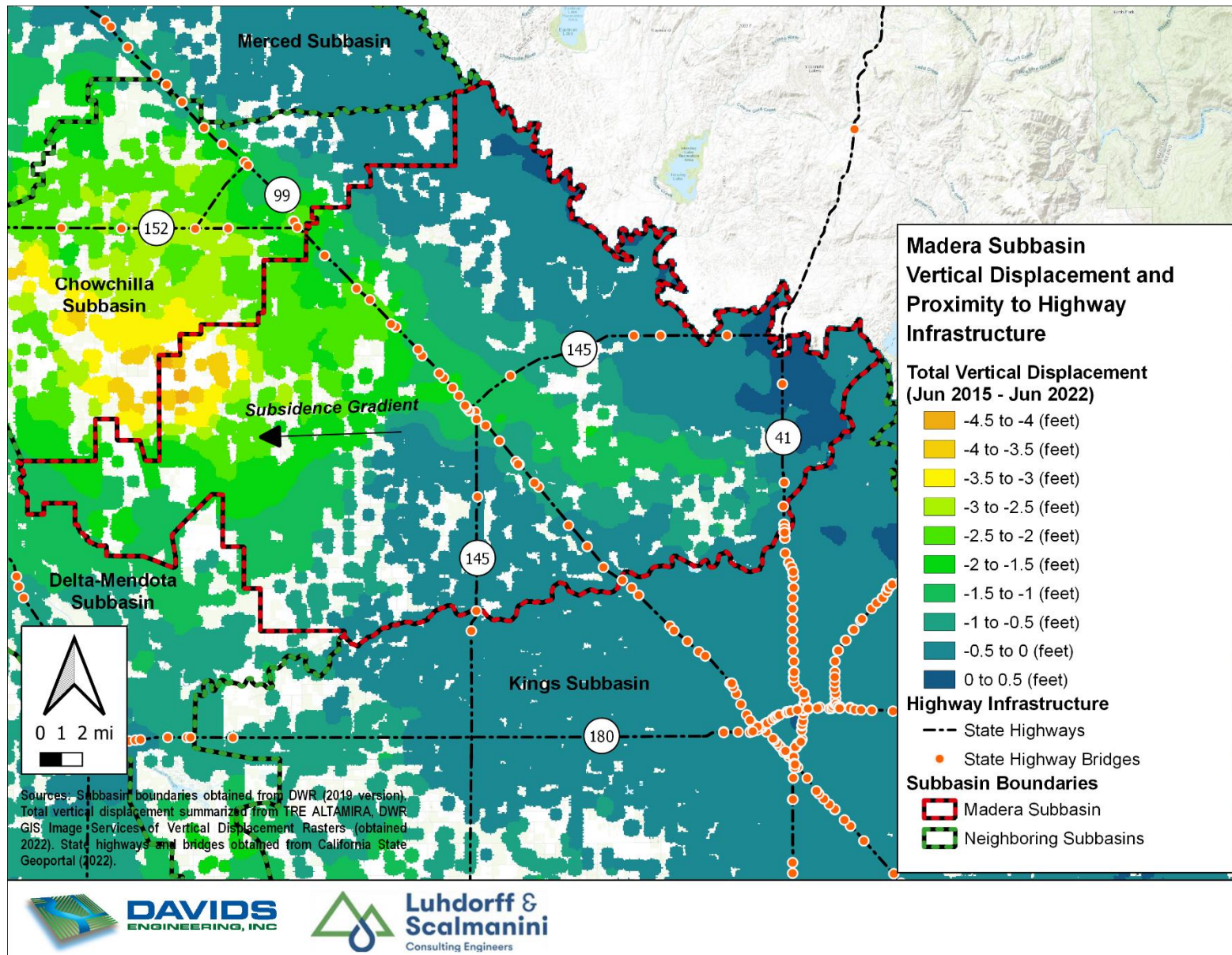


Figure 10. Vertical Displacement (June 2015 – June 2022) and Proximity to Highway Infrastructure.

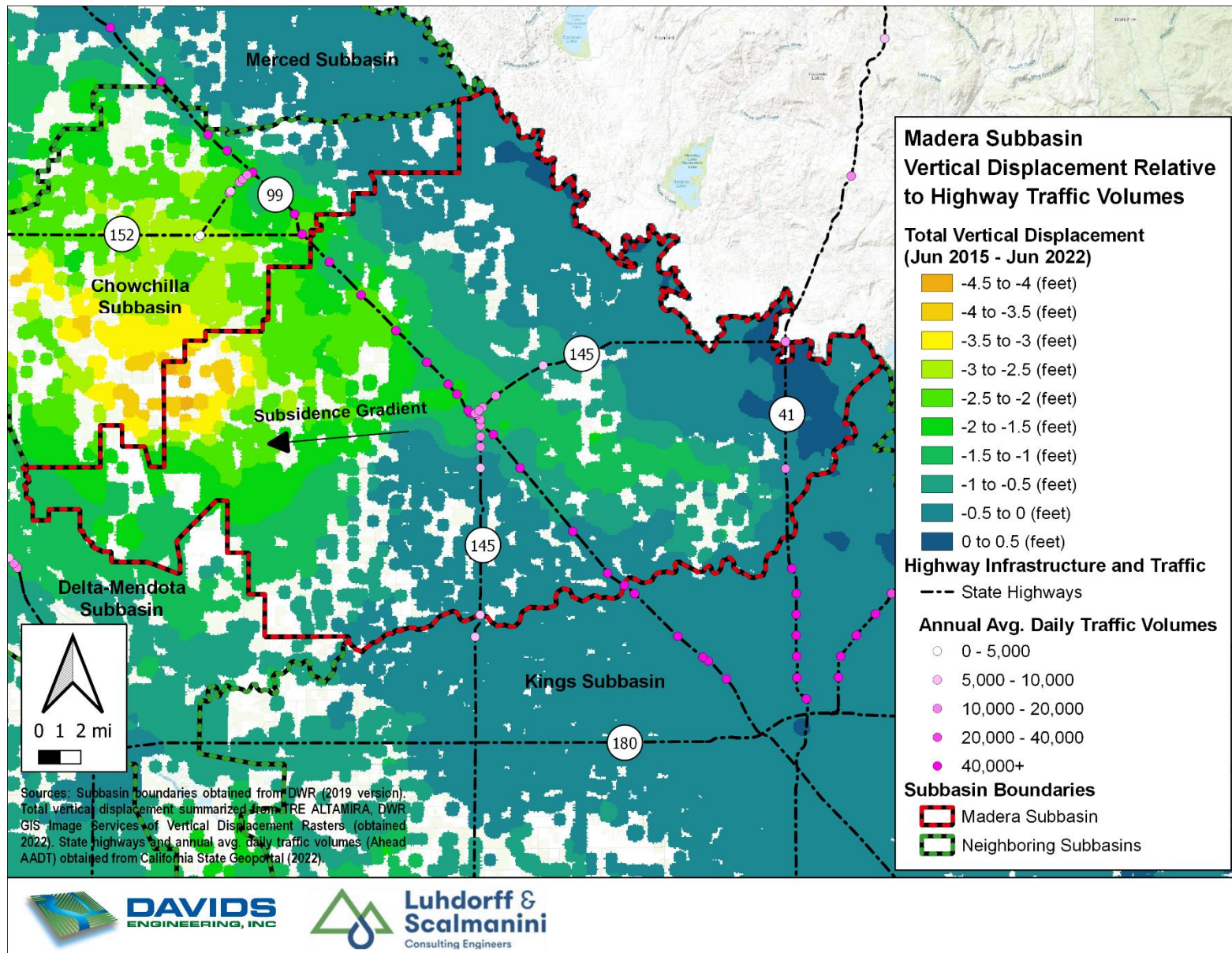


Figure 11. Vertical Displacement (June 2015 – June 2022) Relative to Highway Traffic Volumes.

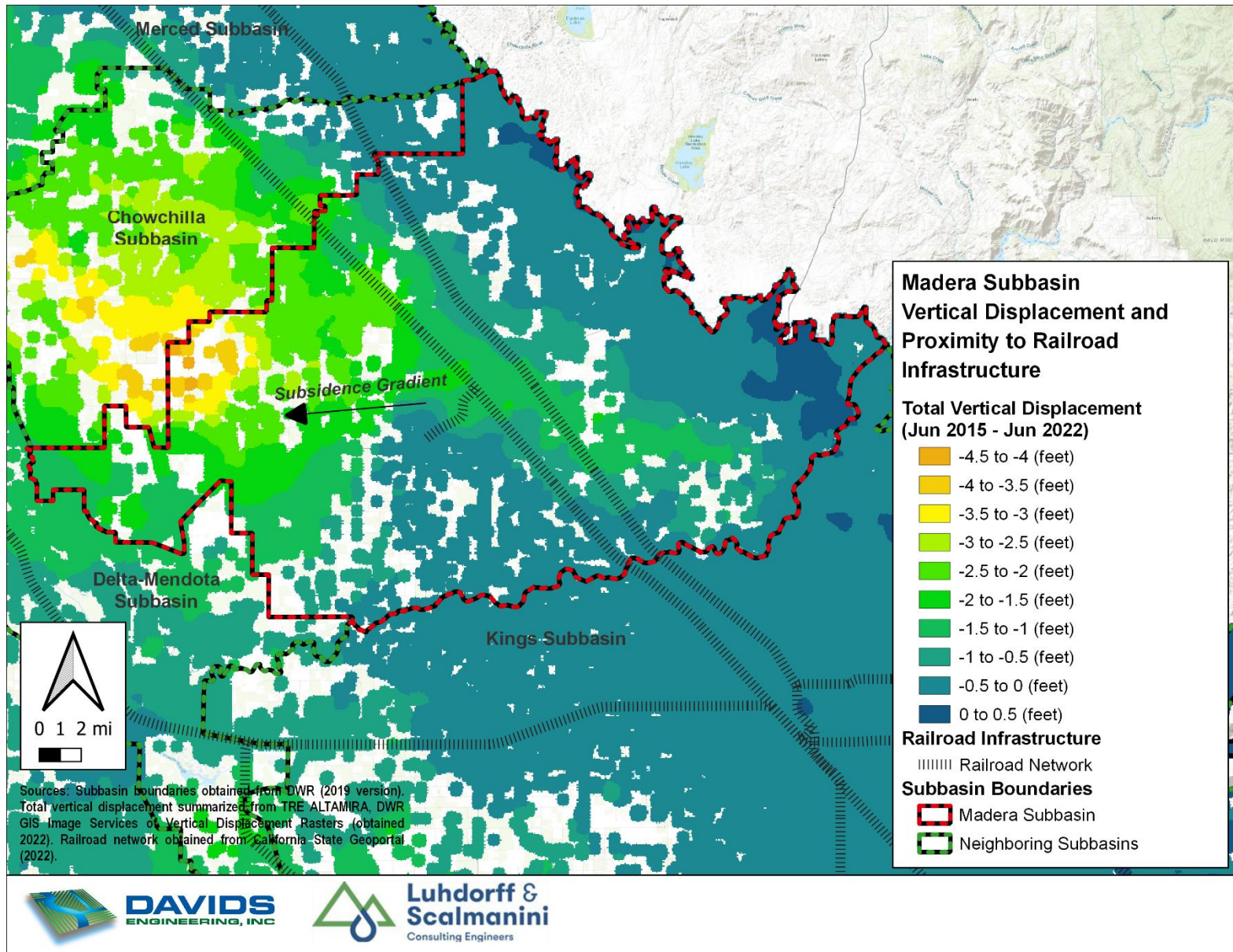


Figure 12. Vertical Displacement (June 2015 – June 2022) and Proximity to Railroad Infrastructure.

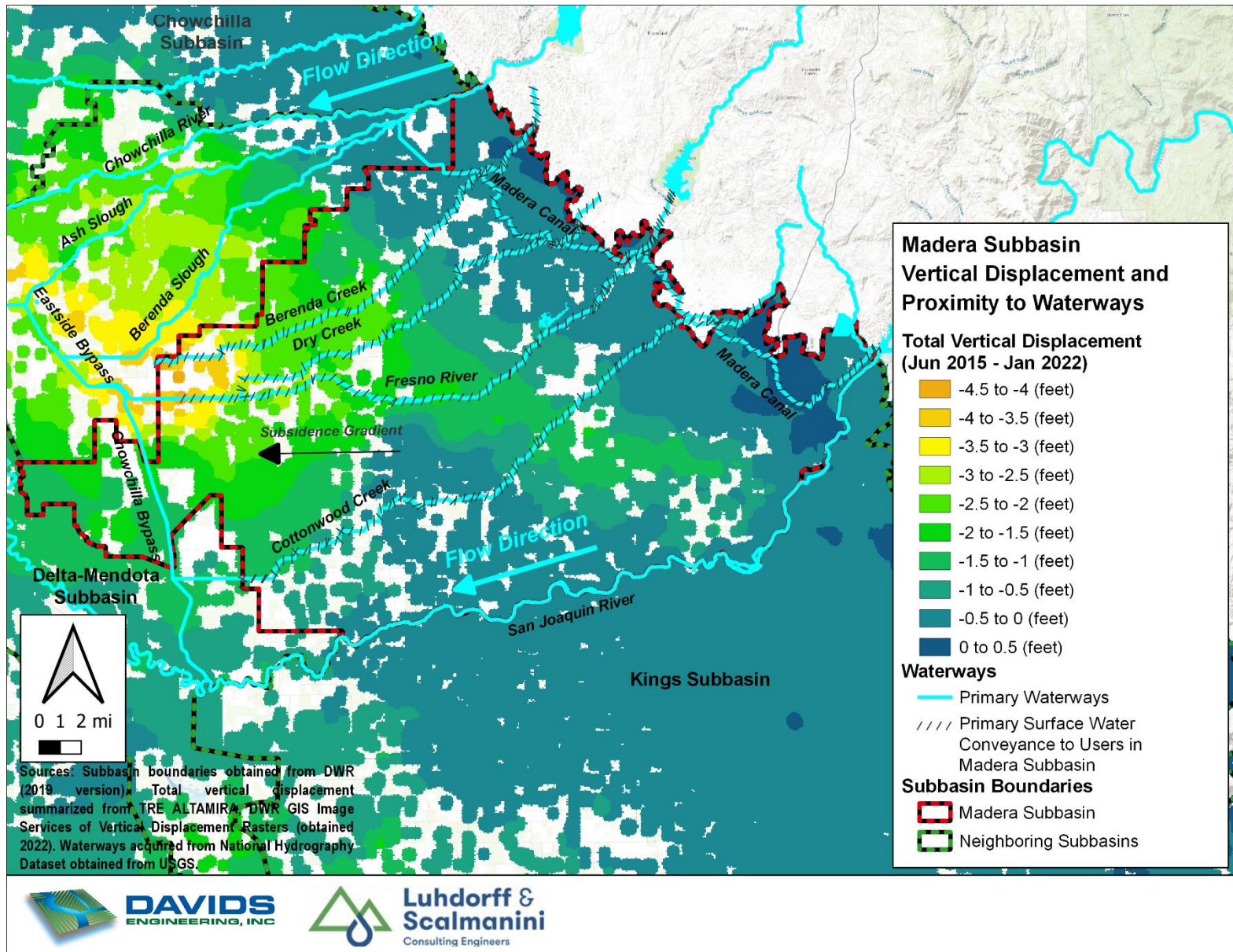


Figure 13. Vertical Displacement (June 2015 – June 2022) and Proximity to Waterways and Surface Water Conveyance Infrastructure.

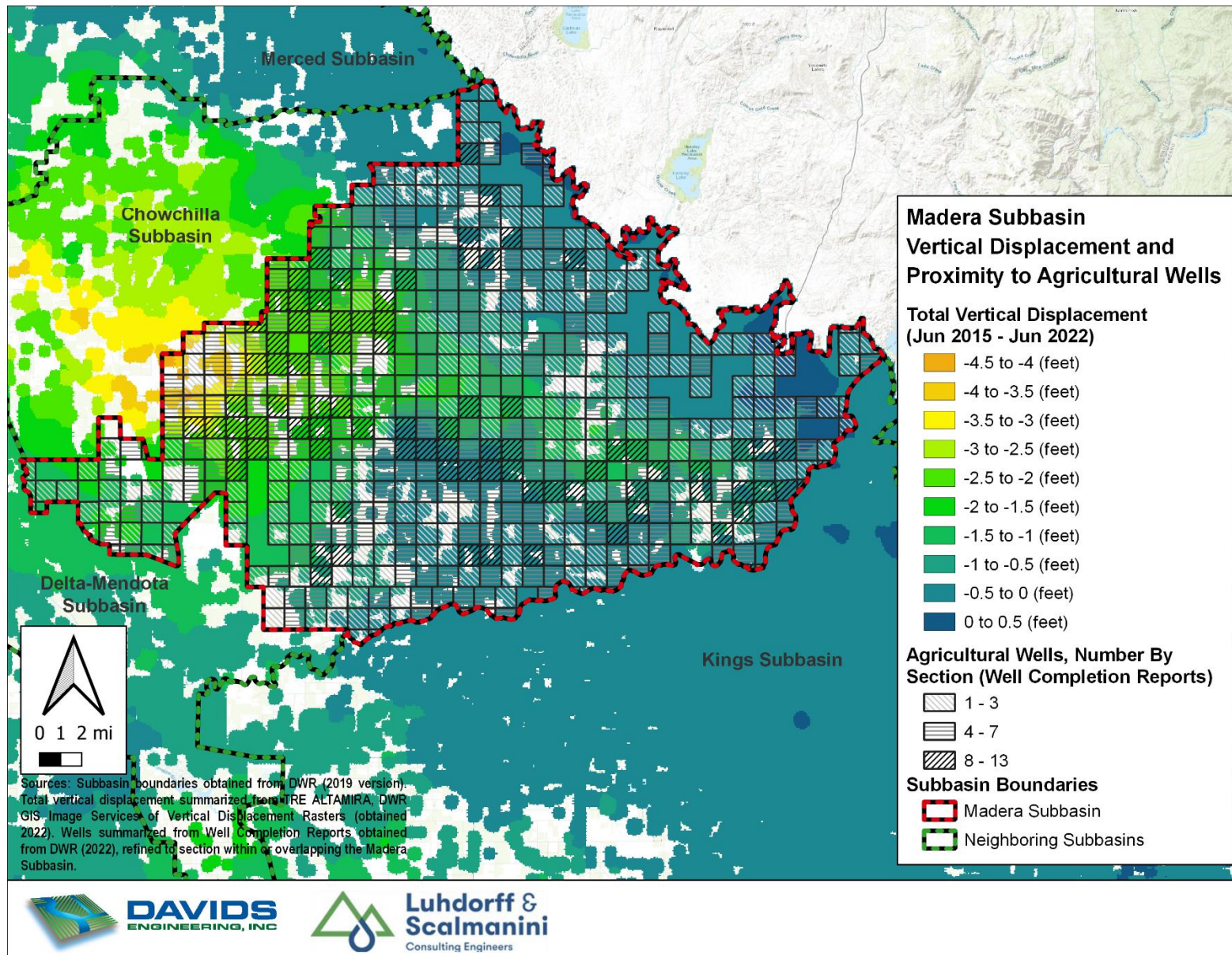


Figure 14. Vertical Displacement (June 2015 - June 2022) and Proximity to Agricultural Wells.

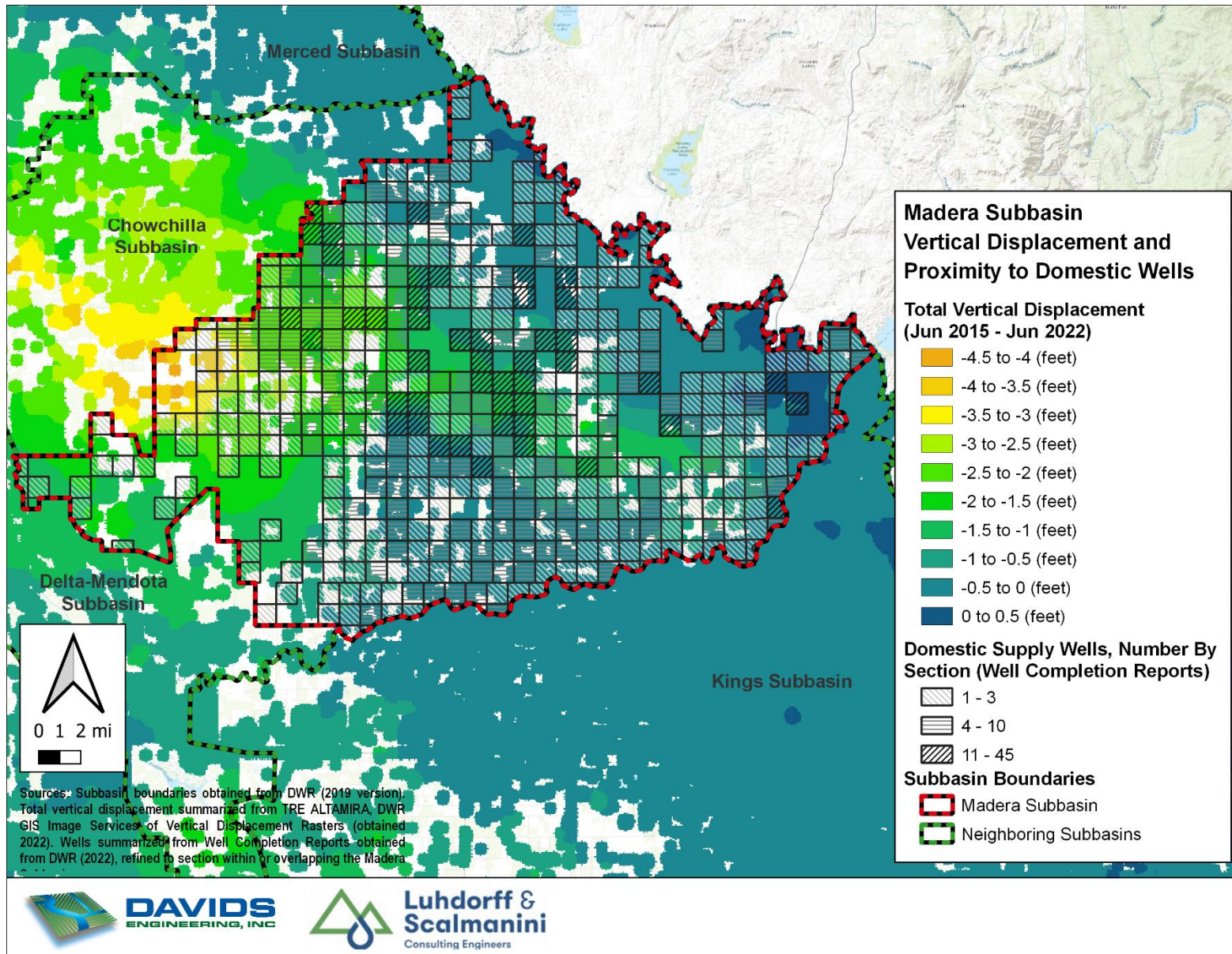


Figure 15. Vertical Displacement (June 2015 - June 2022) and Proximity to Domestic Wells.

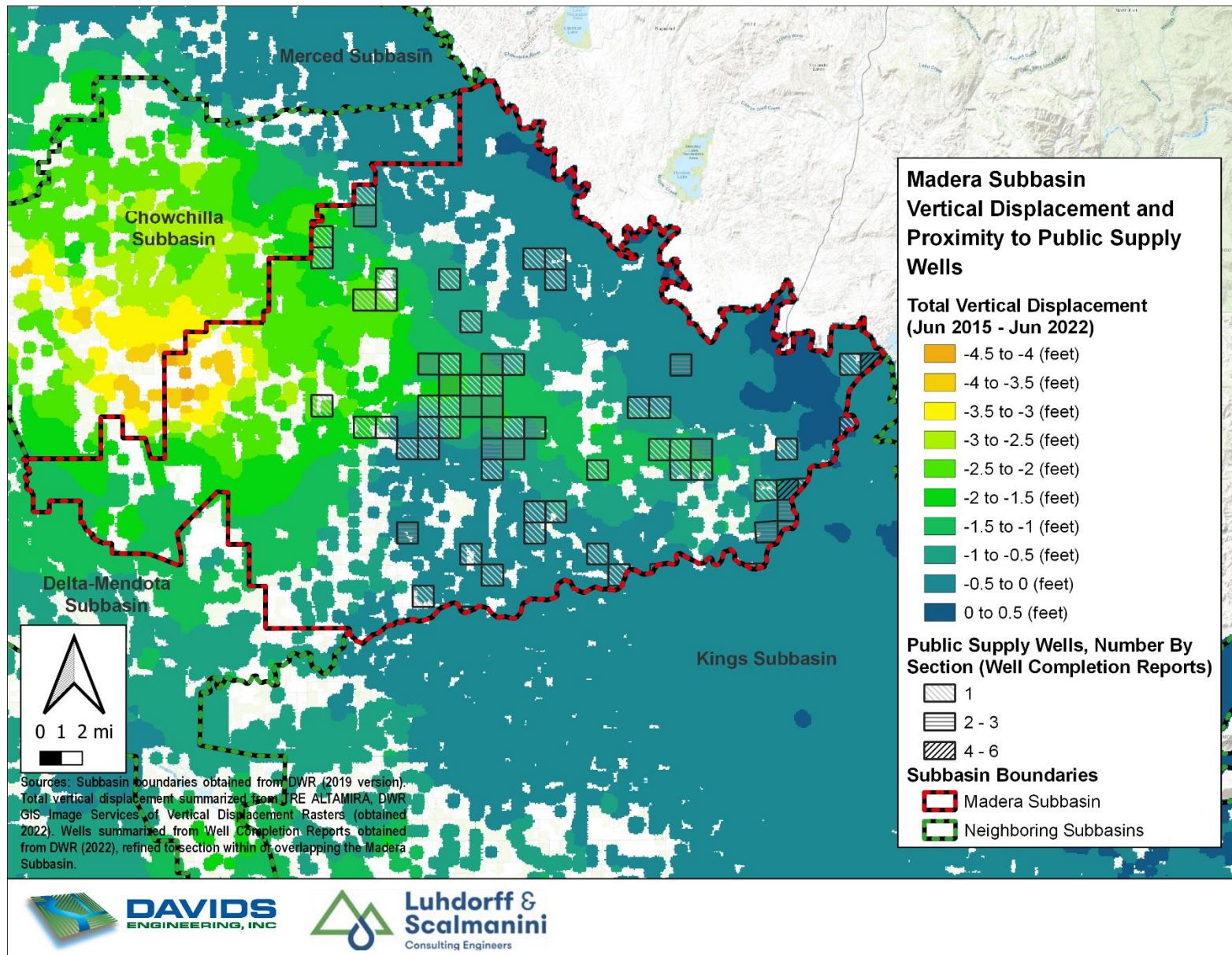
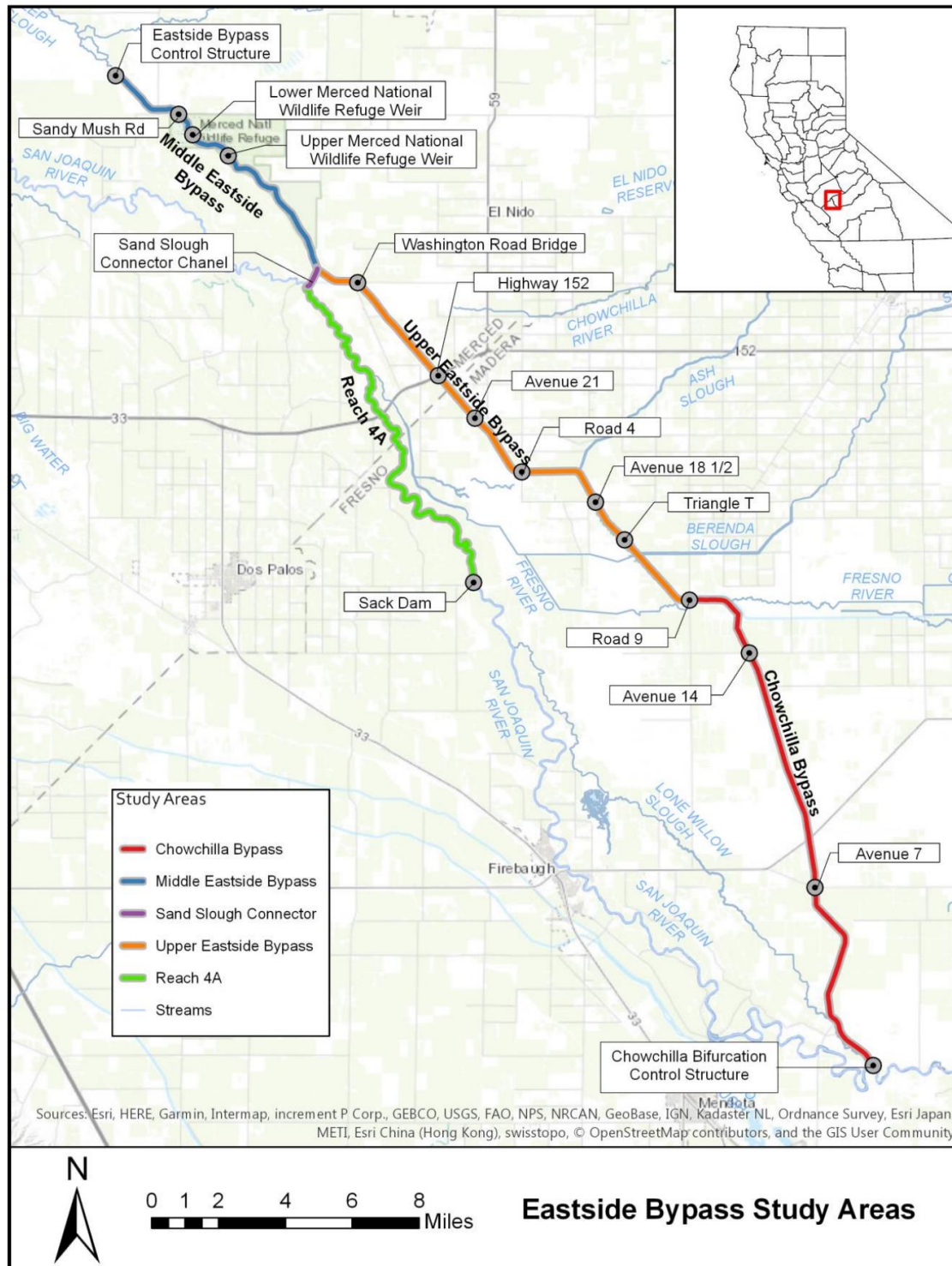


Figure 16. Vertical Displacement (June 2015 - June 2022) and Proximity to Public Supply Wells.



**Figure 1 Study Area**



**Figure 17. DWR Analysis Study Area, from “Evaluation of the Effect of Subsidence on Flow Capacity in the Chowchilla and Eastside Bypasses, and Reach 4A of the San Joaquin River” (DWR, 2018). A section of the Chowchilla Bypass flows through the eastern reach of the Madera Subbasin.**

**Table 1. DWR Analysis Results, from “Evaluation of the Effect of Subsidence on Flow Capacity in the Chowchilla and Eastside Bypasses, and Reach 4A of the San Joaquin River” (DWR, 2018). A portion of the Chowchilla Bypass flows through the eastern reach of the Madera Subbasin.**

**Table 3 Estimated Flow Capacity in Reach 4A and the Chowchilla and Eastside Bypasses based on Freeboard Criteria (in cfs)**

| Channel Segment                             | Flood Design Flow <sup>a</sup> | 2008 <sup>b</sup>           | 2011 <sup>b</sup>           | 2016                         | 2026                       |
|---|--------------------------------|-----------------------------|-----------------------------|------------------------------|----------------------------|
| <b>Chowchilla Bypass</b>                    |                                |                             |                             |                              |                            |
| Bifurcation Structure to Fresno River       | 5,500                          | >5,500                      | >5,500                      | >5,500                       | >5,500                     |
| <b>Eastside Bypass</b>                      |                                |                             |                             |                              |                            |
| Fresno River to Berenda Slough              | 10,000                         | >10,000                     | >10,000                     | >10,000                      | >10,000                    |
| Berenda Slough to Ash Slough                | 12,000                         | >12,000                     | >12,000                     | >12,000                      | >12,000                    |
| Ash Slough to Sand Slough                   | 17,500                         | 9,500 <sup>c</sup> – 12,500 | 7,500 <sup>c</sup> – 11,500 | 5,700 <sup>c</sup> – 9,500   | 3,400 <sup>c</sup> - 7,500 |
| Sand Slough to Mariposa Bypass <sup>d</sup> | 16,500                         | 16,000                      | 14,500                      | 12,500                       | 9,800                      |
| <b>San Joaquin River</b>                    |                                |                             |                             |                              |                            |
| Reach 4A                                    | 4,500                          | ND                          | ND                          | 3,700 <sup>e</sup> – 4,300   | 2,500 <sup>e</sup> – 3,800 |
| Sand Slough Connector Channel               | ND                             | ND                          | ND                          | 2,100 <sup>e</sup> – > 4,500 | 0 <sup>e</sup> – > 4,500   |

Notes: cfs = cubic feet per second, ND = not determined as part of this study

<sup>a</sup> Referenced from the Lower San Joaquin River Flood Control Project Operation and Maintenance Manual.

<sup>b</sup> Results obtained from a previous study done by DWR in 2013.

<sup>c</sup> Reduced capacity assumes contribution of 4,500 cfs from Reach 4A of the San Joaquin River (creating backwater conditions).

<sup>d</sup> Capacity assumes diversions into the Mariposa Bypass based on the O&M Manual operating rules.

<sup>e</sup> Reduced capacity assumes contribution of 12,000 cfs through the Bypass Channel (creating backwater conditions).

## **APPENDIX 3.H. SUBSIDENCE DATA GAPS WORKPLAN**

Prepared as part of the  
**Joint Groundwater Sustainability Plan**  
**Madera Subbasin**

January 2020  
Revised March 2023  
Amended January 2025

**GSP Team:**

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California State University, Sacramento

## TECHNICAL MEMORANDUM

DATE: October 4, 2024

Project No. 24-1-010

TO: Madera Subbasin Joint GSP GSAs

FROM: LSCE and DE

**SUBJECT: Madera Subbasin Joint GSP - Land Subsidence Draft Workplan**

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### Introduction and Background

Some areas of the Madera Subbasin (Subbasin) have experienced recent land subsidence, as documented in the Madera Subbasin Joint GSAs Groundwater Sustainability Plans (GSP) covering the Subbasin. The Joint GSP covers the largest fraction of the Subbasin and documents recent and historical land subsidence throughout the entire Subbasin. Much of the historical land subsidence in the Subbasin is believed to be caused by declining groundwater levels or piezometric head within the Lower Aquifer, mainly from areas below the Corcoran Clay<sup>1</sup>, and associated release of water from fine-grained sediments, ultimately resulting in compaction of these fine-grained sediments. In other areas of the San Joaquin Valley with long-term historical monitoring of both land subsidence and groundwater levels, land subsidence has been correlated with declining groundwater levels in the Lower Aquifer. Furthermore, considerable lag time between declining groundwater levels and land subsidence has been observed in other areas of the San Joaquin Valley.

Within the Subbasin, limited long-term data are available for land subsidence, including data to evaluate potential relationships between land subsidence and groundwater levels. As a result, there are gaps in the understanding of mechanisms and conditions related to land subsidence in the Subbasin, especially as it relates to how historical groundwater level decline may continue to cause ongoing residual land subsidence in the Subbasin, even as groundwater levels stabilize or rise in the future, as is planned for in the revised GSPs for the Subbasin.

The Joint GSP establishes sustainable management criteria (SMC) for land subsidence with consideration of DWR review and input received in the initial GSP consultation letter. The revised SMC for subsidence are all established as rates of subsidence, measured from subsidence benchmarks and continuous GPS stations, with consideration for the total rate of subsidence. Additional characterization of land

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<sup>1</sup> The Corcoran Clay (E-Clay of the Tulare Formation) is a laterally extensive and thick layer of clay present across large areas of the Subbasin and functions as a confining layer hydraulically separating the Upper Aquifer from the Lower Aquifer, where it exists.

subsidence conditions – including the relationship between groundwater levels and land subsidence and evaluation of mechanisms for mitigating future land subsidence are important for ensuring that the GSAs successfully achieve the Subbasin sustainability goal. This Workplan is intended to provide additional field data and technical analyses as input to facilitate implementation of projects and management actions (PMAs) and better characterizing land subsidence for future updates to the.

The Workplan outlines future efforts intended to address data gaps identified in the Joint GSP through enhanced monitoring and improving understanding of relationships between groundwater conditions and land subsidence in the Subbasin. The workplan also includes tasks to further evaluate sustainable management criteria (SMC) for land subsidence and support development of a coordinated approach to implementation of PMAs presented in the Joint GSP to address land subsidence and achieve sustainable groundwater management, as appropriate.

### Information Summarized in Revised GSP

As summarized in the Joint GSP, historical documentation of land subsidence in the Subbasin indicated limited land subsidence prior to the early 1970s. More recent monitoring using remote sensing information and data collected from benchmark surveys conducted for the San Joaquin River Restoration Program (SJRRP) has shown an increase in land subsidence in parts of the Subbasin since the mid-2000s. Over the period from 2007 through 2021, cumulative vertical displacement ranged from almost zero to more than five feet, with most land subsidence during this period focused in the western part of the Subbasin (see revised GSPs and **Figure 1**). The Joint GSP highlights where greater amounts of historical subsidence have occurred and where more focused monitoring and management of groundwater is planned to track and mitigate impacts to critical infrastructure from future land subsidence.

Although there is historical monitoring of land subsidence in the Subbasin, most of this monitoring has occurred at infrequent temporal intervals and with varying spatial resolution and distribution. Historical monitoring of groundwater levels, especially to support understanding of relationships between groundwater levels and land subsidence, has also been limited in most of the Subbasin. The Joint GSP summarizes historical groundwater level and land subsidence monitoring and available data to directly compare groundwater levels and land subsidence. The available data do not indicate clear and consistent relationships between groundwater levels and land subsidence in the Subbasin, largely because of limitations in the temporal and spatial distribution of available historical monitoring data, and also because of the ongoing occurrence of residual land subsidence, which is discussed more below.

Under the Joint GSP, the GSAs will evaluate land subsidence by monitoring the vertical displacement of the land surface. The land subsidence monitoring network is comprised of elevation benchmark survey points monitored by the United States Bureau of Reclamation (USBR) as part of the SJRRP and a continuous GPS station monitored as part of the UNAVCO Plate Boundary Observatory (PBO).

### Data Gaps Identified in the Joint GSP

As discussed in the Joint GSP, key aspects of land subsidence in the Subbasin that are not well understood or quantified relate to the mechanisms and conditions causing land subsidence in the Subbasin, including the relationship between land subsidence and declining groundwater levels, especially in the Lower Aquifer, within the local context of the Subbasin. Related to this is the need to collect additional field data

to better understand the portion of current and near-term future subsidence that may be related to ongoing groundwater level declines vs. residual subsidence that may be occurring even without further groundwater level declines (or even during periods of groundwater level recovery).

Robust land subsidence monitoring coupled with well-defined groundwater level monitoring will be important for tracking the different mechanisms related to land subsidence. Expansion of the land subsidence monitoring network will fill the temporal data gap noted in the Joint GSP and benefit the understanding and monitoring of potential subsidence in the Subbasin.

The Joint GSP notes the potential opportunities and benefits related to improving the understanding of relationships between groundwater levels and land subsidence from:

- Continued monitoring of existing benchmarks, including the many land subsidence benchmarks in the Subbasin that are monitored by the United States Bureau of Reclamation (USBR) as part of the SJRRP, and
- Potential establishment of additional land subsidence monitoring sites coupled with depth-specific monitoring of groundwater levels in the Upper Aquifer and also in the Lower Aquifer at key locations.

## Workplan Objectives and Overview

This Workplan outlines a proposed scope of work to compile and review additional data and reports pertaining to land subsidence in the Subbasin, improve understanding of active production wells, establish or construct additional monitoring facilities, and conduct additional technical analyses. The Workplan incorporates consideration of comments and guidance provided by DWR during the initial GSP review and consultation stages. The purpose of this scope of work is to provide sufficient data and analyses to:

- Enhance monitoring and understanding of relationships between land subsidence and groundwater levels at different depths throughout the Subbasin;
- Expand the land subsidence monitoring network throughout the Subbasin (i.e., new elevation benchmark survey points);
- Improve quantification of groundwater pumping within each of the principal aquifers (e.g., Upper vs. Lower Aquifer);
- Assess the adequacy of the PMAs and sustainable management criteria (SMC) included in the Joint GSP to address undesirable results related to land subsidence in the Subbasin; and
- Provide technical analyses to support the development of approaches to managing groundwater pumping and/or enhancing recharge to mitigate additional future land subsidence through implementation of PMAs, including consideration of transitioning of groundwater pumping from the Lower Aquifer to the Upper Aquifer performed in conjunction with enhanced recharge efforts.

## Scope of Work

The scope of work involved in completion of this Workplan includes six main tasks, including collection and analysis of existing data (beyond data compiled for the Joint GSP) and review of data gaps, installation of new monitoring facilities and collection of additional field data, completion of additional technical analyses, stakeholder outreach, and preparation of an updated assessment of the adequacy of the SMC

and PMAs in the revised GSPs to address land subsidence. The scope of work to implement the Workplan is described in more detail below. Implementation of the potential work set-forth herein is predicated on Groundwater Sustainability Agency (GSA) approval and allocation of the necessary funds as may be required (local funding and/or grants).

### ***Task 1: Compile Additional Existing Data and Update Assessment of Available Data***

#### **Compile and Synthesize Supplemental Existing Data**

In this task, data collected during preparation of the Joint GSP will be supplemented with other newly available data related to groundwater levels and land subsidence in the Subbasin and surrounding areas, with specific focus on the western part of the Subbasin. Available supplemental data that will be incorporated in this assessment may include the following:

- information presented in the GSPs for other subbasins and information presented in the different GSPs for the Madera Subbasin;
- new data from specific local landowners or entities previously not available for incorporation into the GSPs;
- DWR Well Completion Reports (WCRs) in key areas of the western Subbasin;
- additional data compiled by USBR for the SJRRP for areas in the Subbasin;
- additional data from coupled monitoring of groundwater levels and land subsidence at a site in the Mendota area with an extensometer, continuous GPS station, and dedicated monitoring wells;
- additional data from the United States Geological Survey (USGS) and modeling information for their study of the San Joaquin River; and
- other reports and data, including data or reports published as part of the implementation of the Subsidence Workplan planned for the Chowchilla Subbasin.

The available data will be compiled and reviewed to inform subsequent field work (Task 2) and used as inputs for technical analyses (Task 3). This task can be performed in coordination with similar efforts planned as part of implementation of the Interconnected Surface Water (ISW) Workplan proposed for the Subbasin.

#### **AEM Data**

Final data from airborne electromagnetic (AEM) surveys conducted in Spring 2022 to support additional characterization of subsurface conditions in the Subbasin and surrounding areas was made available from DWR in 2023. AEM data can provide helpful information on hydrogeologic conditions through measurements of the resistivity of subsurface materials. These surveys have the potential to improve the understanding of the configuration and composition of different subsurface materials. To the extent that AEM data were collected in the Subbasin, and specifically within the western part of the Subbasin, these data will be evaluated for their potential usefulness in helping to supplement the delineation of stratigraphy, especially within the Lower Aquifer where most of the historical and ongoing compaction is believed to occur. A quality assurance/quality control (QA/QC) analysis of the data will be conducted by

comparing AEM hydrostratigraphic interpretations to existing and new field data collected as described in this Workplan and in coordination with efforts related to implementation of the ISW Workplan developed for the Subbasin. Lithologic data from borehole logs along AEM section lines will be compared to evaluate if AEM interpretations are consistent with field data. If AEM data interpretations are found to be consistent and the resolution of stratigraphic interpretations from the AEM data are sufficient, the AEM data will be combined with field borehole lithologic data to develop refined characterization of subsurface geologic materials and stratigraphic configuration, including the depth and thickness of prominent clay layers, including the Corcoran Clay.

### ***Task 2: Complete Additional Field Work***

Enhancements to groundwater level monitoring facilities and activities, specifically within the western Subbasin and in proximity to sites with historical land subsidence monitoring (e.g., SJRRP or other subsidence benchmarks) and planned future land subsidence monitoring, are important for improving the understanding of the relationships between groundwater levels and land subsidence across the Subbasin. Developing continuous groundwater level monitoring at finer temporal scales and at different depths in key areas where land subsidence monitoring is conducted will support understanding of the relationship between groundwater levels at different depths and any associated land subsidence, and will help differentiate residual land subsidence caused by historical groundwater conditions from active land subsidence related to current and future conditions. Instrumentation of suitably-located existing wells and installation of additional dedicated monitoring wells are two approaches that will be pursued to enhance the groundwater level monitoring in key areas for relating with land subsidence. Use of existing wells provides a cost-effective approach to enhancing the groundwater monitoring program and can reduce the need for installation of new monitoring wells, which can be more costly.

Historical and current land subsidence monitoring in the Subbasin consists of periodic benchmark surveys, a continuous GPS station, and remote sensing data collection. These land subsidence monitoring techniques do not differentiate the depth interval at which land subsidence is occurring. Data from nearby land subsidence monitoring sites near Mendota conducted with a combination of extensometer readings and continuous GPS readings together with data from land subsidence monitoring across the San Joaquin Valley suggests the inelastic compaction that is leading to land subsidence is likely occurring in fine-grained materials within the Lower Aquifer. Field work to install land subsidence monitoring facilities at a key location in the Subbasin would benefit the understanding of how compaction at different depth zones (i.e., Upper and Lower Aquifer) contributes to the total land subsidence occurring in the Subbasin.

### **Identification and Instrumentation of Existing Wells**

This task will include identifying and prioritizing existing wells in key land subsidence monitoring locations for instrumentation with automated continuous groundwater level monitoring equipment. Potential use of existing wells to enhance groundwater level monitoring in key areas of interest, especially near SJRRP land subsidence monitoring benchmarks, will be considered as the first step in efforts to improve groundwater monitoring for developing information to inform the assessment of the dynamics between groundwater levels and land subsidence. Use of existing wells for groundwater level monitoring is a cost-effective way to monitor groundwater conditions for the purpose of relating to land subsidence. This task involves working to identify existing wells with suitable well construction characteristics (e.g., well depth,



screen interval) in key areas of interest for potential instrumentation and continuous groundwater level monitoring. Existing wells of interest for instrumentation in key areas will target wells completed (screened) within the Lower Aquifer since land subsidence in the Subbasin is believed to be primarily a result of lowered groundwater levels in the Lower Aquifer. However, wells representing conditions within the Upper Aquifer will also be considered as potential opportunities to evaluate any relationships between groundwater levels in the Upper Aquifer and observed land subsidence.

Additionally, existing wells should be evaluated for inclusion in the land subsidence monitoring network. Wells that would be beneficial for inclusion in this network should be surveyed on a bi-annual basis. The identification and instrumentation of existing wells will enhance the understanding of relationships between groundwater levels and land subsidence for the purpose of evaluating land subsidence SMC. Furthermore, this work will also support enhancements to the Subbasin's RMS network (if necessary and beneficial) and other ongoing groundwater level monitoring activities used to support GSP annual reporting efforts in the future.

## New Monitoring Facilities

This task will identify and install new monitoring wells and new land subsidence monitoring facilities in key areas of the Subbasin where data gaps exist. Providing robust coupled groundwater level and land subsidence monitoring is important in ensuring land subsidence metrics are appropriate and recognize the expected occurrence of some amount of residual subsidence, even if groundwater levels are stable. The presence of critical surface infrastructure in the western areas of the Subbasin also warrants enhanced monitoring of groundwater conditions in this area. Enhancements to existing land subsidence monitoring in the Subbasin also have the objective of differentiating land subsidence by depth zone, and would also benefit the understanding of relationships between groundwater levels and land subsidence. Current and continuing land subsidence monitoring being conducted by DWR using remote sensing and also as part of the SJRRP benchmark surveying provide broad spatial and temporal coverage of land subsidence, although they do not differentiate the depth where land subsidence is occurring and relationships to groundwater levels. Proposed field efforts related to addressing these objectives are described in more detail below.

## New Monitoring Wells

Monitoring wells are recommended for installation at five locations based on considerations related to locations of critical infrastructure, historical land subsidence, existing SJRRP benchmark survey sites, and existing groundwater level monitoring (especially groundwater level RMS and dedicated monitoring well locations). These monitoring wells will augment existing groundwater level monitoring for enhanced monitoring of groundwater conditions in key areas of the Subbasin and to support improved understanding of the dynamics between groundwater levels and land subsidence. The five proposed locations are in areas where the greatest amount of historical land subsidence has occurred in the Subbasin. New monitoring wells will be designed to include nested monitoring wells for independent monitoring of conditions in the Upper and Lower Aquifers. The new monitoring wells are anticipated to extend to depths of approximately 700 to 800 feet and consist of three independent casing strings screened at different depths, depending on unique site conditions. Additionally, new monitoring wells should be surveyed upon installation, and on a bi-annual basis, for inclusion in the land subsidence

monitoring network. Preliminarily identified priority locations for potential new nested wells are shown in **Figure 1** along with key information considered in preliminary site identification. Final site selection will consider the outcome from review of additional data and evaluation of site suitability relating to access for construction and ongoing monitoring.

The monitoring wells are planned to be drilled using the direct rotary drilling method with sediment samples collected every ten feet and downhole geophysical logging completed over the entire depth of the boreholes. A lithologic log of the borehole will be prepared based on samples collected and results from geophysical logging under the supervision and guidance of a Professional Geologist, who will also provide recommendations regarding well construction details such as depth intervals for placement of well screen, filter pack, blank casing, and surface sanitary seal. Preliminarily, the new monitoring wells are planned to be constructed using 2-inch diameter Schedule 40 PVC materials, which will enable installation of automated groundwater level monitoring instrumentation and also provide access for groundwater quality sampling equipment. The new monitoring wells, and any existing wells instrumented as described above, will be surveyed to a consistent elevation datum. Water quality samples will be collected from the new monitoring wells for the purpose of characterizing general geochemical conditions, and they will be outfitted with pressure transducers for ongoing automated collection of groundwater level data.

### *New Land Subsidence Monitoring Facilities*

The need and benefit of establishing new land subsidence benchmark monitoring sites for monitoring through periodic elevation surveys or alternatively by establishing sites for ongoing review of land surface elevation changes based on remote sensing InSAR data provided by DWR will be evaluated and implemented as determined appropriate. Any new land subsidence monitoring facilities would be intended to track land subsidence conditions at new monitoring well sites. The planning of any additional subsidence monitoring sites should be coordinated with other land subsidence monitoring efforts occurring in the area, including work being conducted as part of monitoring by the USGS, the California Department of Water Resources (DWR), USBR, and any other interested entities. There may be opportunities to support additional land subsidence monitoring through acquisition of grants or technical support services provided by DWR or through other avenues. The details of potential additional land subsidence monitoring sites should be developed in coordination with any cooperators and with consideration of any new data compiled and evaluated as part of implementation of this Workplan.

## Inventory of Production Wells

### *Desktop Well Inventory*

Documentation of active production wells in the western Subbasin is important for accurately assessing and planning groundwater management activities as they relate to mitigating land subsidence. Achieving groundwater sustainability in the Subbasin, especially in relation to land subsidence, involves ensuring that groundwater extractions do not cause chronic lowering of groundwater levels, especially in the Lower Aquifer. Accurately documenting the locations and construction characteristics of active production wells in the western areas of the Subbasin will provide important information for ensuring appropriate management actions are developed and implemented to address this issue. A desktop evaluation of available information on active production wells in the western Subbasin will seek to identify likely active

production wells and their construction characteristics, especially as they relate to screened interval and zone of production. The desktop well inventory will utilize data from WCRs, well permits, or other sources and will outline appropriate field work activities to refine information developed through the desktop inventory. To the extent possible, this task will coordinate with work being conducted for the ISW Workplan and will build on previous evaluations performed during the initial development and later revision of the GSPs and the domestic well inventory completed as part of a Proposition 68 grant project for the Subbasin along with ongoing mapping of wells conducted by the GSAs.

## Field Survey of Active Production Wells

The desktop inventory of active production wells in the western Subbasin will provide the basis for outlining field work efforts to refine or confirm the information developed from the desktop inventory. The surveying of active production wells in the western Subbasin is anticipated to include targeted efforts through utilizing outreach and field reconnaissance. The field survey will likely focus on areas with higher well densities and/or greater levels of uncertainty relating to existing well status and construction characteristics as informed by evaluation of available data and results from the desktop inventory. The field survey may include focused review of aerial photographs, personal communication with landowners, field visits or other field reconnaissance activities, and other approaches to refine information developed from the desktop inventory.

### ***Task 3: Technical Analyses***

In this task, technical analyses will be conducted to synthesize the available information on dynamics between groundwater levels and land subsidence focused on the western Subbasin by evaluating fluctuations in groundwater levels and land subsidence and by evaluating relationships between groundwater pumping and land subsidence. This task will be completed in coordination with and utilizing new information from compilation of additional available data (Task 1) and field work related to additional monitoring and characterization of groundwater conditions and land subsidence (Task 2). Data from nearby land subsidence monitoring sites near Mendota conducted with a combination of extensometer readings and continuous GPS readings will be incorporated in technical analyses together with interpretations from land subsidence monitoring across the San Joaquin Valley highlighting relationships between inelastic compaction and land subsidence related to lowering of water levels and piezometric head in fine-grained materials within the Lower Aquifer.

Field and monitoring data will be evaluated relative to the relationship between groundwater levels in both the Upper and Lower Aquifers and land subsidence and consideration of ongoing residual land subsidence. Available information suggests that the lack of clear and consistent relationships between groundwater levels and land subsidence may be partly a result of the continued residual land subsidence resulting from historical conditions. Analyses presented in the Revised GSPs based on the limited available historical data suggest that there is limited correlation between shorter-term groundwater level changes and land subsidence, although historical groundwater conditions and the persistence of conditions over longer periods may be the most important drivers related to land subsidence.

Technical analyses will also include conducting refinements to existing available information on the mapped extent and thickness of the Corcoran Clay and other clay layers. This task will involve review of

new lithologic information collected through construction of new monitoring wells, including new wells installed at key land subsidence monitoring sites as described in Task 2, and also wells constructed for the ISW Workplan and for other the Subbasin monitoring efforts conducted through Proposition 1 and Proposition 68 grant projects. The ability to incorporate any data developed from the AEM surveys conducted by DWR in the Subbasin will also be considered in these refinements.

#### ***Task 4: Stakeholder Outreach and Interbasin Coordination***

Implementation of the Workplan should involve outreach and coordination with key stakeholders and interested parties. This would include communication with stakeholders associated with critical infrastructure in and around the Subbasin. Outreach efforts should focus on efforts related to the need and benefit from additional groundwater level or land subsidence monitoring and prioritization of efforts to expand monitoring. An additional objective of outreach efforts includes coordination related to the understanding of critical land subsidence thresholds related to damage to infrastructure or other adverse impacts to infrastructure. Furthermore, outreach efforts may also benefit considerations related to the feasibility of potential PMAs to achieve sustainability. Outreach and coordination with adjacent subbasins about land subsidence issues will be a continuing aspect of tracking of groundwater level and land subsidence conditions.

#### ***Task 5: Assess the Adequacy of Revised GSP SMC***

An important outcome from efforts conducted as part of this Workplan will be an assessment of the adequacy of current land subsidence SMC and the need for any revisions to these SMCs as part of updates to the Joint GSP. The assessment will consider data and analyses developed through implementation of Tasks 1 through 4 of the Workplan and relationships between groundwater levels and land subsidence and the differentiation of residual land subsidence from new active subsidence established through that work. The continued occurrence of residual land subsidence is an important consideration related to how land subsidence SMC are established for the Subbasin, since impacts from residual land subsidence are largely unavoidable. The amount of residual land subsidence is something the Joint GSP cannot address or prevent, although the Joint GSP does outline approaches to minimize future land subsidence in an effort to avoid adverse impacts.

The review and assessment of SMC completed under this task will inform decisions on revisions to land subsidence SMC for incorporation in future updates to the Joint GSP. Future GSP updates will draw upon the most recent data and technical analyses developed through implementation of this Workplan with consideration for the complexities of the impacts of residual land subsidence resulting from historical conditions that preceded submittal or implementation of the Joint GSP. The outcomes from assessment of SMC will be summarized in deliverable documents to be prepared as part of Task 7. A deliverable document prepared after completion of all field work will include a summary of all Workplan activities.

#### ***Task 6: Technical Support for Development of a Strategy for Managing Groundwater Pumping and Recharge in the Western Subbasin***

An integral aspect of achieving sustainability in the Subbasin involves mitigating future land subsidence to the extent possible, which will require management of groundwater pumping in coordination with

enhancing groundwater recharge. Task 6 of the Workplan will involve efforts to refine the understanding of existing groundwater pumping and the vertical and lateral distribution of pumping as the foundation for developing management approaches to mitigate additional land subsidence caused by pumping. These efforts will rely on data from inventorying of existing active wells in the western Subbasin through desktop review and field verification coupled with technical analyses to support groundwater management planning in the Subbasin related to reducing pumping from the Lower Aquifer with the intent to mitigate future land subsidence. Key components of this effort are described below.

### Refined Analyses of Pumping Distribution in the Western Subbasin

Using information assembled through the well inventory tasks in conjunction with data related to groundwater demands derived from groundwater modeling and other water budget analyses, refinements to the assessments of the volumes and spatial distribution (laterally and vertically) of pumping in the western Subbasin will be conducted. The primary objective of this task will be to refine estimates of the amount of groundwater pumping that is occurring in the Lower Aquifer as it relates to the sustainability planning for the Subbasin. The results from this task will inform efforts related to assessing PMAs planned to achieve groundwater sustainability.

### Evaluation of Scenarios for PMA Implementation to Mitigate Land Subsidence

Task 6 will include conducting evaluations of approaches and mechanisms for redistributing pumping in the western Subbasin in a manner that is consistent with sustainability goals and metrics defined in the Revised GSPs, analysis of costs and other considerations relating to the feasibility of different approaches, and assessing the timing needs associated with implementation of potential management actions. These technical analyses will consider the lateral distribution of pumping within the western Subbasin and the vertical distribution between the Upper and Lower Aquifers. A key aspect of these technical analyses will involve consideration of management approaches that recognize the existing or planned groundwater recharge efforts, which focus on enhancing recharge in the Upper Aquifer, to achieve a distribution of groundwater pumping that is consistent with sustainability objectives defined in the Revised GSPs. Numerical groundwater modeling will be used to test PMA implementation scenarios and evaluate the effectiveness of different implementation strategies for mitigating land subsidence.

### Prepare a Technical Summary Document to Inform Policymaking

A technical summary document will be provided at the conclusion of this task for use by the GSAs in developing management strategies to mitigate future subsidence. This document will synthesize technical information developed through completion of the task (and information available from completion of other tasks outlined in the Workplan) relating to how much, where, and when PMAs may be appropriate to achieve necessary reductions of Lower Aquifer pumping and potential mechanisms to achieve these reductions. The goal is to provide the GSAs with a technical basis for their development of policies and a plan related to implementation of PMAs to avoid undesirable results related to land subsidence in the Subbasin. The assessment conducted under this task will consider the importance of developing a strategy that coordinates the management of groundwater pumping in conjunction with enhanced groundwater recharge efforts. The technical summary document for Task 6 will be provided as an interim deliverable

intended to support the GSA development of management policies, which may need to be implemented prior to the completion of the entire Workplan.

### ***Task 7: Prepare a Technical Memorandum or Report***

A technical memorandum (TM) or report will be prepared to document all the tasks completed as part of implementation of this Workplan. A Final TM/Report will be prepared and submitted at the time of completion of all field work outlined in the Workplan. For each of the deliverables prepared as part of Task 7, a draft TM/Report will be submitted to the GSAs (and their technical representatives) for review. Comments and suggested edits received from the GSAs will be reviewed and incorporated as appropriate into final versions of the deliverable documents. The deliverable documents will include documentation of all data compiled, field work completed, technical analyses performed, modeling results, and evaluation of the nature of relationships between groundwater levels and land subsidence, and recommended updates to the Joint GSP SMC and potential management actions to ensure sustainable groundwater management is maintained in the Subbasin. In addition, the deliverable documents will include a review and summary of any remaining data gaps and recommendations for future monitoring and assessment, as needed.

### **Schedule**

The overall implementation of this Workplan is envisioned as a longer-term effort to develop important monitoring data and facilities for tracking and understanding groundwater conditions related to land subsidence in the Subbasin. However, several tasks are intended to support shorter-term objectives, including the development of a plan for managing groundwater pumping and recharge to mitigate subsidence. Implementation of this workplan is underway and will likely continue through 2026. The longer-term tasks, including field work involving installation of monitoring facilities, will be phased with consideration of funding and cooperation from other entities needed to support these efforts. A general planned schedule for implementation of the Workplan is outlined below in **Table 1**.

| Table 1. Summary of Proposed Schedule for Implementation of the Land Subsidence Workplan |   |   |
|--|---|---|
| Task No.   | Task Description  | Task Completion Timeframe   |
| 1  | Compile Additional Existing Data and Update Assessment of Available Data  | Mid 2024 - Late 2024  |
| 2  | Complete Additional Field Work  | Late 2024 - 2026+ (field work may be phased depending on available funding) |
| 3  | Technical Analyses  | Mid 2024 - Late 2025  |
| 5  | Stakeholder Outreach and Interbasin Coordination  | Mid 2024 - Late 2025+   |
| 6  | Assess the Adequacy of Revised GSP SMC  | Ongoing   |
| 7  | Technical Support for Development of a Strategy for Managing Groundwater Pumping and Recharge in the Western Subbasin | Mid 2024 – Mid/Late 2025  |
| 8  | Prepare a Technical Memorandum or Report  | 2026+ for final deliverable   |

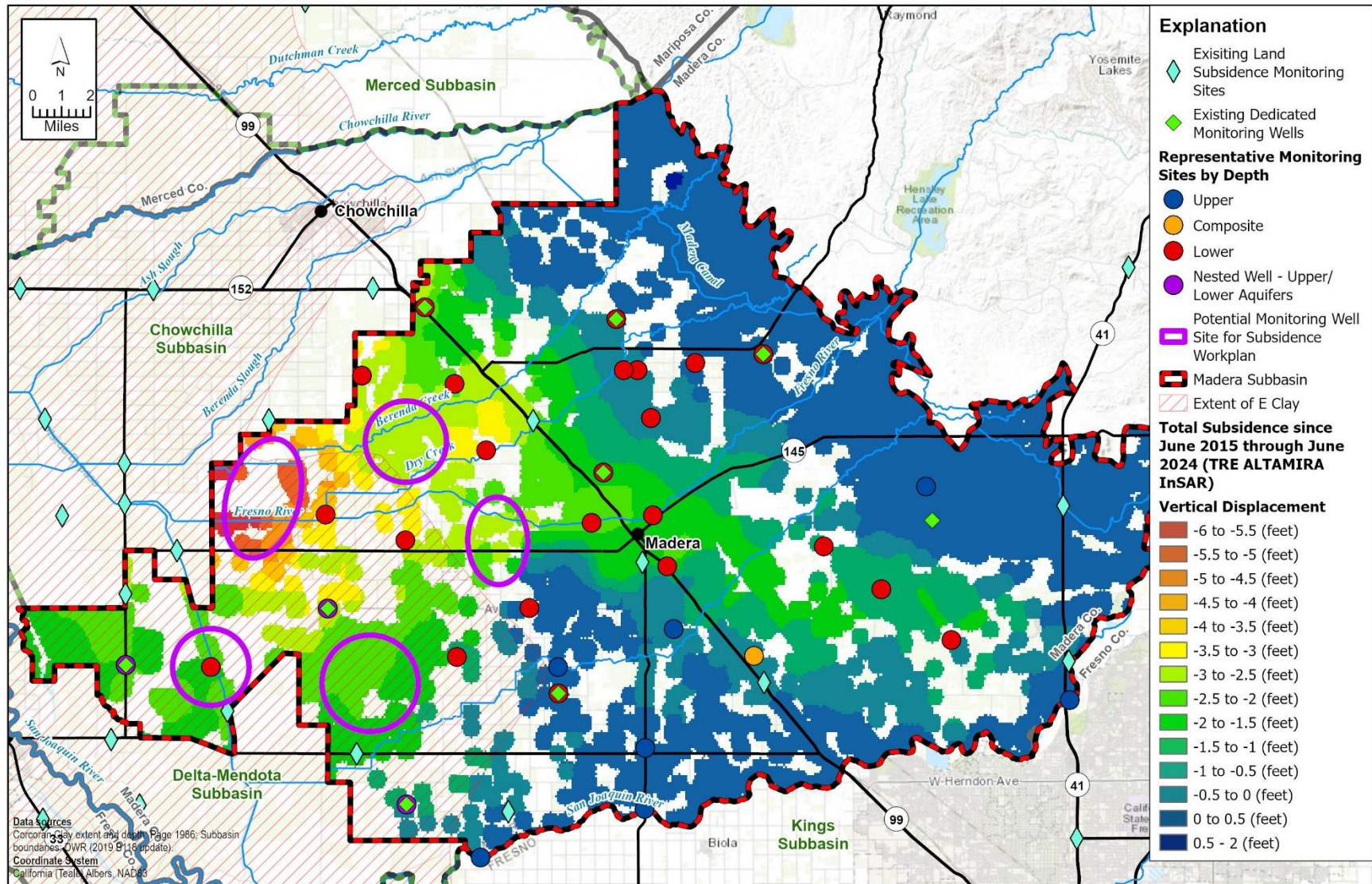


Figure 1. Potential New Nested Monitoring Well and Land Subsidence Monitoring Sites



## **APPENDIX 3.I. INTERCONNECTED SURFACE WATER UPDATES**

Prepared as part of the  
**Joint Groundwater Sustainability Plan**  
**Madera Subbasin**

January 2020  
Amended January 2025

**GSP Team:**

Davids Engineering, Inc. (Amended GSP Team)  
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ERA Economics  
Stillwater Sciences and  
California State University, Sacramento

## TECHNICAL MEMORANDUM

DATE: October 4, 2024

Project No. 24-1-010

TO: Madera Subbasin Joint GSP GSAs

FROM: LSCE and DE

**SUBJECT: Madera Subbasin Joint GSP – Interconnected Surface Water Draft Workplan**

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### Introduction and Background

The relationship between the San Joaquin River (SJ River) and shallow groundwater along the southern boundary of the Madera Subbasin (Subbasin) is complex and data to characterize the groundwater-surface water relationship in this area of the Subbasin are limited. Implementation of the Interconnected Surface Water Workplan (Workplan) is expected to better characterize the following conditions:

- Shallow subsurface conditions,
- The relationship between streamflow and fluctuations of shallow groundwater levels, and
- The relationship between groundwater pumping and streamflow.

Shallow monitoring wells (typically less than 30 feet deep, although some extend to greater depths) installed in areas along the SJ River as part of the San Joaquin River Restoration Program (SJRRP) provide much of the existing monitoring information related to shallow groundwater adjacent to the SJ River. These wells were initially installed to monitor for potential increases in shallow groundwater levels west of the river due to increased reservoir releases to and flows in the SJ River as part of implementing the San Joaquin River Restoration Program (SJRRP). Monitoring of these wells has been inconsistent since 2018, and part of implementation of this work plan will involve reengagement with well owners to restart monitoring of these wells. Additional field data collection and technical analyses will be completed at depths greater than 30 feet to better characterize the shallow subsurface along the SJ River along the southern boundary of the Subbasin, which is likely to improve overall understanding of the relationship between groundwater in the upper 30 feet, the zone between 30 and 100 feet below ground surface (bgs), and the remaining portion of the Upper Aquifer below a depth of 100 feet where most groundwater pumping currently occurs.

This Workplan outlines potential plans and a related scope of work to compile and review existing data and reports pertaining to the study area, construct/install new monitoring facilities, collect additional field data, and conduct additional technical analyses. The purpose of this scope of work is to provide sufficient data and analyses to:

- Make a more informed determination of whether or not ISW is present along the SJ River at the southern boundary of the Subbasin;
- Improve understanding of the relationship between streamflow and fluctuations in shallow groundwater levels;
- Improve understanding of the relationship between shallow groundwater and regional groundwater pumping from deeper zones within the Upper Aquifer that may be separated from shallowest groundwater by intervening clay layers;
- Improve understanding of the relationship between streamflow and regional groundwater pumping; and
- Provide an improved basis for setting sustainable management criteria (SMC) if it is determined that interconnected surface water conditions exist.

## Previous Work Summarized in GSP

As summarized in the Revised Joint Groundwater Sustainability Plan (GSP) for the Subbasin, comparison of historical maps of unconfined groundwater elevations prepared by the Department of Water Resources (DWR) and the SJ River thalweg elevation indicated a connection between groundwater and surface water likely existed from 1958 (and likely before) through 1984. Subsequent data appeared to indicate groundwater elevations below (and disconnected from) the SJ River thalweg from 1989 to 2016. This analysis was based on contour maps of unconfined groundwater elevation prepared by DWR for the following years: Spring 1958, Spring 1962, Spring 1969, Spring 1970, Spring 1976, Spring 1984, Spring 1989 through Spring 2011 (see Revised GSP Appendix 2.E), Spring 2014 (Revised GSP Figure 2-48), and Spring 2016 (Revised GSP Figure 2-49).

Maps of depths to shallowest groundwater (including perched groundwater) for 2014 and 2016 are displayed on Revised GSP Figures 2-71 and 2-72. These maps incorporate very shallow monitoring wells (i.e., less than 50 feet deep), including SJRRP wells (many of which have well screens in the upper 30 feet). Depth to shallow groundwater maps were generated by contouring groundwater surface elevation and subtracting the contoured groundwater surface from the ground surface elevation as represented by the United States Geological Survey (USGS) National Elevation Dataset Digital Elevation Model. Some of the areas on the southern and southwestern boundaries of Madera Subbasin and along/adjacent to the San Joaquin River may be underlain by shallow clay layers that are above principal aquifers in the area. These clay layers impede the vertical movement of water within the shallowest part of the groundwater system and shallow groundwater in these areas can be considered perched/mounded as a result of the shallow clay layers, although there may be no unsaturated zone beneath them as exists in what is conventionally considered a perched groundwater condition. It is likely that seepage from the SJ River is the source of water combined with presence of shallow clay layers, which serves to maintain shallow groundwater levels at these locations. While groundwater levels in this perched zone appear to be approximately 10 to 30 feet below ground surface, water levels in the underlying regional groundwater system are typically much deeper, in excess of 50 feet below ground surface.

The SJRRP involves augmenting flow releases from Friant Dam with restoration flows. SJRRP restoration flows were initiated in October 2009 and referred to as “Interim” flows, while SJRRP “Restoration” flows were initiated in January 2014. The commencement of the SJRRP flows complicates the historical review and understanding of surface water – groundwater interaction and the potential effects (or lack thereof)

on surface water flow from groundwater pumping. A more detailed assessment of the timing and magnitude of SJRRP flow releases and relationships to shallow groundwater levels is something that should be taken into consideration.

Review of Revised GSP Figures 2-71 and 2-72 indicates that the SJ River was disconnected from the shallow perched/mounded groundwater during these time periods (Spring 2014 and Spring 2016). The 2014 and 2016 water years were considered Critical and Dry water years, respectively, according to the San Joaquin Valley Hydrologic Index (although water year 2016 was on the border of being classified as a Below Normal year). The relationship between stream seepage in the SJ River along the southern boundary of Subbasin and groundwater pumping along this portion of the SJ River within the Subbasin (i.e., within approximately 0.75 miles of the SJ River) is shown in Revised GSP Figure 2-73. The relationship between groundwater pumping from the Upper Aquifer within five miles of the SJ River and stream seepage is shown in Revised GSP Figure 2-74. These figures suggest that at the highest end of the range of groundwater pumping (over 16,000 af/year in Revised GSP Figure 2-73 and over 200,000 AF/year in Revised GSP Figure 2-74), stream seepage increases with increased groundwater pumping. However, at the low to mid-range of groundwater pumping, the relationship is inconsistent. The highest amounts of groundwater pumping generally occur during drought periods when groundwater recharge is less, groundwater levels are lower, and groundwater would not be expected to be connected to the stream bed. In non-drought periods, when groundwater levels are higher and possibly connected to the streambed, there appears to be no strong relationship between groundwater pumping and stream seepage. This is supported by the relationship between streamflow entering the Subbasin at the upstream boundary of this river reach and stream seepage is shown in Revised GSP Figure 2-75. This figure indicates that stream seepage (i.e., infiltration) occurs during Critical, Dry, and Below Normal Years, and that the SJ River is a losing reach and likely not connected to groundwater at these times. During Above Normal and Wet Years, both stream seepage and groundwater discharge to streams occurs, indicating that the SJ River is connected to groundwater for some duration during these times. Additional evaluation of these relationships in the field and in the groundwater model will be conducted for the 2025 GSP Update.

Based on guidance received from DWR and because of limitations in available information to evaluate the interconnected nature of groundwater and surface water on the SJ River, for the Revised GSP it is assumed that conditions along the SJ River in the Subbasin constitute an ISW condition as defined by SGMA and under the GSP regulations. As a result, the Revised GSP established interim SMC for ISW until the shallow hydrogeologic conditions along the SJ River are more fully characterizing and a final determination regarding the presence/absence of ISW can be made.

In the Subbasin, an area identified as having a Groundwater Dependent Ecosystem (GDE) is located adjacent to the SJ River (see Revised GSP Figure 2-77). As noted above, the SJ River is in a net-losing condition and infiltrating surface water flows (stream seepage) likely contributes directly to the shallow groundwater system that supports the vegetation in the GDE unit (San Joaquin River GDE Unit). While it appears the source of shallow groundwater adjacent to the SJ River is stream seepage from the SJ River (when water is present) and shallow groundwater does not support surface water flows, there nevertheless is some potential for surface water flows and the shallow groundwater system supporting GDEs to be affected by regional pumping during certain times when shallow groundwater is present below the stream thalweg but within the root zone of GDEs. These GDEs/beneficial users include environmental

users such as riparian vegetation along the SJ River and the wildlife habitat and ecosystem functions it provides. The potential effects on the San Joaquin River Riparian GDE Unit are presented in Revised GSP Appendix 2.B.

As summarized above, the revised Madera Subbasin GSP established interim SMC for ISW based on DWR review/input received in the initial consultation letter. However, additional characterization of the relationship between groundwater and surface water along the SJ River is needed to provide an improved basis for making a final determination of the nature of the interconnection and appropriate SMC. Implementation of this Workplan is intended to provide additional field data and technical analyses as input to better characterizing ISW within the Subbasin.

## Proposed Scope of Work

The proposed scope of work involves seven main tasks including collection and analysis of existing data (beyond data compiled for the Revised GSP), installation of new monitoring facilities and collection of additional field data, completion of additional technical analyses, and completion of an updated assessment of presence/absence of ISW with recommendations for updated SMC (if necessary). The proposed scope of work is described in more detail below. It should be noted that implementation of the potential work set-forth herein is predicated on Groundwater Sustainability Agency (GSA) approval and allocation of the necessary funds as may be required (local funding and/or grants).

### ***Task 1. Compile Additional Existing Data/Analyses (Supplemental to GSP)***

This task includes several aspects involving compiling and reviewing of supplemental existing data for incorporation in analyses and characterization of conditions relating to ISW in the Subbasin. This task can be performed in coordination with similar efforts planned as part of implementation of the Subsidence Workplan proposed for the Subbasin.

### Compile and Review Supplemental Existing Data

In this task, data collected during preparation of the Revised GSP will be supplemented with other newly available data related to ISW along the SJ River including:

- information presented in GSPs for other subbasins adjacent to the SJ River in the area, such as the GSP prepared by the North Kings GSA;
- new data available from specific local landowners or entities previously not available for incorporation into the Revised GSP;
- DWR Well Completion Reports (WCRs) for the area immediately adjacent to the SJ River (i.e., a zone extending approximately one mile on either side of the River along the southern boundary of Madera Subbasin);
- additional data compiled by USBR for the SJRRP for areas in the Subbasin;
- additional data from USGS and modeling information for their study of the SJ River;
- and other reports and data that may now be available.

The available data will be compiled and reviewed to inform subsequent field work (Task 2) and as input for technical analyses (Task 3).

## AEM Data

Data from airborne electromagnetic (AEM) surveys conducted in Spring 2022 to support additional characterization of subsurface conditions in the Subbasin and surrounding areas are expected to be available in 2023. AEM data can provide helpful information on hydrogeologic conditions through measurements of the resistivity of subsurface materials. These surveys have the potential to improve the understanding of the configuration and composition of different subsurface materials. To the extent that AEM data was collected in the vicinity of the southern boundary of Subbasin along the SJ River, these data will be evaluated for their potential usefulness in helping to supplement the delineation of shallow stratigraphy along the portion of SJ River that forms a portion of the southern boundary of Subbasin. One potential application of AEM that is of particular interest related to potential interconnectedness of surface water is delineation of any shallow clay layers under and adjacent to the SJ River. A quality assurance/quality control (QA/QC) analysis of the data will be conducted by comparing AEM hydrostratigraphic interpretations to existing and new field data collected as described in this Workplan. Lithologic data from borehole logs along AEM section lines will be compared to evaluate if AEM interpretations are consistent with field data. If AEM data interpretations are found to be consistent and the resolution of shallow aquifer stratigraphy from AEM data interpretations is sufficient, the AEM data will be combined with field borehole lithologic data to develop refined hydrogeologic cross-sections along the SJ River (as described below in Task 3).

### ***Task 2. Complete Additional Field Work***

Enhancements to groundwater level and surface water monitoring facilities and activities, specifically along the SJ River, are important for improving the understanding of the relationships between groundwater levels and surface water in the Subbasin. Additional field work tasks fall into two categories: instrumentation of existing wells, and new monitoring facilities and field data collection.

### **Instrumentation of Existing Wells**

The monitoring frequency in some of the Representative Monitoring Site (RMS) wells designated for the ISW minimum thresholds (MTs) and measurable objectives (MOs) in the Revised GSP presents some limitations for characterizing groundwater level fluctuations and development of appropriate SMC. The RMS wells related to ISW include MCE RMS-9, MCW RMS-5, MID RMS-14, and MID RMS-17 (**Figure 1**). These wells do not currently have continuous and automated groundwater level monitoring with pressure transducers. This task involves working with the owners of key RMS wells to prioritize and implement instrumentation of wells with transducers for collecting continuous groundwater data. As part of this task, if the assessment and monitoring of ISW would benefit from more continuous monitoring at other RMS well locations, other RMS wells could be considered and prioritized for automated monitoring. If further characterization and evaluation of ISW during implementation of this Workplan determines there are important benefits to continuous monitoring of other (non-ISW SMC) RMS wells, and arrangements can be made with the well owner(s), additional well instrumentation could be prioritized for implementation. It is assumed for purposes of estimating the cost of implementing the Workplan that two additional RMS wells will be selected for instrumentation.

## New Monitoring Facilities and Field Data Collection.

Several key data gaps related to ISW in the Subbasin include coupled monitoring of groundwater levels at different depths within the Upper Aquifer (including very shallow groundwater and more regional groundwater zone) and stream conditions of stage, flow, and channel configuration at locations adjacent to the SJ River. Construction of new monitoring facilities and additional field data collection efforts are anticipated to focus on, but are not limited to: supplemental monitoring wells; stream stage and flow; stream elevation profile/thalweg profiles; and possible aquifer or well pump testing if cooperation can be obtained from landowners with wells at suitable locations near the SJ River. Potential field efforts are described in more detail below.

### Install New Monitoring Wells

Monitoring wells are recommended for installation at four locations near the SJ River to augment existing groundwater level monitoring to understand dynamics between surface water conditions in the SJ River, groundwater conditions at very shallow depths where there is greater potential for interconnection between groundwater and surface water, and groundwater conditions in the regional groundwater system where groundwater is extracted by wells for irrigation and other uses. Three locations will target sites near existing SJRRP monitoring wells MCE RMS-9, MCW RMS-5, and MID RMS-17, which are approximately 30 feet deep; the new monitoring wells at these three locations will be screened slightly deeper in a coarse-grained zone between depths of 50 to 90 feet below ground surface (bgs). In addition, one new location will be selected for installation of a nested monitoring well: one screened in the upper 30 feet and one screened at depths between 50 and 90 feet. Preliminarily identified locations for potential new nested wells are shown in **Figure 1**, pending the outcome from review of additional data and evaluation of site suitability relating to access for construction and ongoing monitoring. Target well locations may also include consideration of proximity to existing production wells that might be used in evaluating shallow groundwater level responses to pumping from deeper zones.

The monitoring wells are planned to be drilled using the hollow-stem auger drilling method with split spoon core sediment samples collected every five feet. A lithologic log of the borehole will be prepared based on samples collected and under the supervision and guidance of a Professional Geologist, who will also provide recommendations regarding well construction details such as depth intervals for placement of well screen, filter pack, blank casing, and surface sanitary seal. Preliminarily, the new monitoring wells are planned to be constructed using 2-inch diameter Schedule 40 PVC materials, which will enable installation of automated groundwater level monitoring instrumentation and also provide access for groundwater quality sampling equipment. The new monitoring wells and existing RMS wells listed above will be surveyed to a consistent elevation datum to ensure there are no recent changes in groundwater surface or reference point elevations related to any recent subsidence that may have occurred in the area. Water quality samples will be collected from the new monitoring wells, and they will be outfitted with pressure transducers for ongoing automated collection of groundwater level data.

### Install Stream Stage Recording Device(s)

Accurate assessment of dynamics related to surface water-groundwater interaction requires detailed information on river stage for relating to groundwater levels. There is currently a number of active stream

stage monitoring locations along the SJ River within the Madera Subbasin (**Figure 1**), including a number that are in close proximity to the sites preliminarily recommended for installation of additional monitoring wells. Installation of stream stage recorders are recommended at several additional locations corresponding to the locations of nested monitoring wells described in this Workplan (assuming permission/access can be obtained) and where existing stream gages are not sufficient for characterizing surface water conditions. Various options for instrumentation should be considered for these stage monitoring sites, but options include constructing the stream stage recorders from small-diameter (1- or 2-inch) PVC slotted pipe, which could be secured to the riverbank and extended into the low flow channel to enable the pipe to remain submerged during low-flow conditions and also provide access to monitoring instrumentation during higher flow conditions. A transducer would be installed in the PVC pipe for automated collection of river stage at all flow conditions. The river stage recorders will be coupled with a staff gage for periodic manual readings of stage to ensure accuracy of all data collected through automated instrumentation. The staff gage and stream stage recorder will be surveyed to the same elevation datum as the new monitoring wells.

### Complete Stream Profile Surveys

Stream channel elevation profiles will improve characterization of the SJ River channel elevation and shape, which relates to potential for interconnectivity between surface water and groundwater when compared with groundwater levels. To better characterize the potential surface water-groundwater interconnectivity along the SJ River, stream channel elevation profiles perpendicular to the river channel orientation will be obtained at key locations through surveying, using the same elevation datum used for the monitoring wells and river stage recorders. The stream channel profiles will be conducted near each of the four new nested monitoring well locations and will extend perpendicularly from the new/existing monitoring well locations on the east side of the river and across the SJ River to the opposite riverbank (and possibly to any existing nearby monitoring wells on the west side of the river). The stream channel surveys should be conducted at a time of low flow (or no flow) in the river in an effort to accurately survey as much of the streambed as possible.

### Complete Aquifer Testing

One of the key aspects related to ISW that is not well characterized in the areas along the SJ River includes understanding of how groundwater pumping from the regional aquifer may influence groundwater levels in the very shallow part of the groundwater system (and in turn surface water), especially in areas where the movement of water between the shallow part of the groundwater and the deeper regional groundwater system may be impeded to a great degree by the presence of clay layers. Aquifer testing conducted through pumping of existing production wells while monitoring conditions in the shallow part of the groundwater system and in the nearby SJ River would help understand the cross-communication between different depth zones of the groundwater system and potential communication between shallow groundwater and streamflow. One of the goals of the proposed aquifer testing is to evaluate how clay layers located between the top of the pumping well screen and bottom of the streambed do or do not impede a connection between groundwater pumping and streamflow. If cooperation can be obtained with one or more landowners having a suitable production well near the SJ River in Madera Subbasin, one or more pumping tests will be performed to evaluate pumping effects on shallow groundwater levels and



streamflow. A suitable production well for this testing would be screened in the Upper Aquifer at a location sufficiently close to the SJ River and to adjacent shallow monitoring wells to potentially have an effect on streamflow and shallow groundwater levels in close proximity to the River within the planned pumping duration (if there is a connection between groundwater and surface water). The timing of the test will also be important with considerations being given to performing the test at a time with higher shallow groundwater elevations (to maximize chances of having a connection between streamflow and shallow groundwater levels) while having a lower range of stream discharge (to maximize opportunity to see effects on streamflow).

If cooperation with existing production well owners cannot be obtained, consideration will be given to implementing “passive” aquifer testing. This type of testing would involve conducting continuous groundwater level monitoring in proximity to a production well to observe whether influences from normal pumping cycles can be discerned in nearby shallow groundwater and surface water. In this type of testing there will be no controlled/coordinated start and stop of pumping or attempts to maintain a consistent pumping rate, but rather the well would be operated in accordance with normal use without any coordinated pumping period.

### Complete GDE Evaluations

As part of GSP implementation, evaluation of groundwater-dependent ecosystems (GDEs) within the subbasin are planned periodically. These evaluations will include reconnaissance-level biological surveys and biological monitoring to evaluate potential beneficial or adverse effects on GDEs that may be related to changes in future groundwater conditions during the implementation and sustainability periods. Results of these GDE evaluations will be summarized and presented in subsequent Annual Reports.

### *Task 3. Technical Analyses*

In coordination with and utilizing new information from compilation of additional available data and field work related to additional monitoring and characterization of surface and subsurface conditions related to the potential for interconnectivity between groundwater and surface water, technical analyses involving construction of detailed hydrogeologic cross sections along the SJ River, evaluation of fluctuations in shallow groundwater levels and river stage/flow, and evaluating relationships between groundwater pumping and streamflow are also planned to synthesize the available information and groundwater-surface water dynamics along the River.

Hydrogeologic cross-sections will be constructed using geologic/lithologic logs, geophysical logs, and AEM data relating to the stratigraphy within the Upper Aquifer, with particular focus on the upper 100 feet where there is potential for interconnectivity between groundwater and surface water. These cross-sections will include the most recent available data on groundwater levels, stream thalweg elevation (stream profiles conducted for this Workplan and available LiDAR data), and stream stage in conjunction with subsurface stratigraphy. The specific locations and orientation of the cross-sections will depend on where available data exist, including new data collected through Tasks 1 and 2, but are expected to include cross-sections oriented both parallel to and perpendicular to the SJ River. The perpendicular cross-sections will focus on locations aligned with new monitoring well locations.

Field data will be evaluated relative to the dynamic relationship between surface water and groundwater levels within the Upper Aquifer (in both the shallow and deeper zones of the Upper Aquifer). Available information indicates these dynamics vary over time and space depending on climatic/hydrologic conditions within a year (seasonal fluctuations) and from year to year (variations from wet years to dry years). Analyses presented in the Revised GSP based on the limited available historical data suggest that stream seepage (i.e., infiltration) occurs during Critical, Dry, and Below Normal Years, and that the SJ River is a losing reach and likely not connected to groundwater at these times. During Above Normal and Wet Years, both stream seepage and groundwater discharge to streams occurs, indicating that the SJ River is connected to groundwater for some duration during these times.

These additional technical analyses will focus on providing further assessment of the surface water-groundwater dynamics along four key profiles perpendicular to the river (at new monitoring well locations) where the SJ River forms the boundary of Madera Subbasin to improve understanding of groundwater conditions in relation to surface water.

#### ***Task 4. Outreach***

Implementation of the Workplan will involve outreach and coordination with key stakeholders and interested parties. A key outreach effort is needed to restart consistent monitoring of SJRRP wells along the SJ River selected as RMS wells in the GSP. Additional outreach efforts will focus on efforts related to the need and benefit from additional groundwater level or surface water monitoring and prioritization of efforts to expand monitoring. In particular, there will be outreach and coordination with the adjacent Kings Subbasin, which is expected to be performing similar efforts related to ISW. In addition, it is anticipated there will be outreach to various entities that are likely to have interest in Madera Subbasin efforts related to ISW, including National Marine Fisheries Service (NMFS), United States Bureau of Reclamation (USBR), and The Nature Conservancy (TNC). The various outreach efforts may also benefit considerations related to the feasibility of potential PMAs to achieve sustainability.

#### ***Task 5. Groundwater Modeling***

The groundwater model developed for the GSP (MCSim) was updated and recalibrated as part of the 5<sup>th</sup> plan amendment to the Joint GSP. This updated modeling will be used to further evaluate ISW conditions, both historically as well as current and expected future conditions, with the objective of characterizing groundwater-surface water interaction at a broader spatial scale within the southern part of the Subbasin. The groundwater model will be used to assist in evaluation of the potential for ISW to be present along the SJ River, and to further evaluate the potential for connection between regional groundwater pumping and surface water flows. Additional modeling will occur following the release of DWR's planned guidance document on ISW in order to comply with best management practices for this sustainability indicator. These analyses will directly support the evaluation and determination of appropriate SMC related to ISW (as described in the Revised GSP) under Task 6.

### ***Task 6. Assessment of Presence of Interconnected Surface Water and Possible Revisions to SMC***

The ultimate outcome from efforts conducted as part of this Workplan will be an assessment and (if needed) establishment of appropriate SMC related to ISW. In conducting this assessment, the data and analyses developed through implementation of Tasks 1 through 5 of the Workplan will be used to evaluate whether ISW exists along the southern boundary of Madera Subbasin and if there is need to include SMC for ISW in a Revised GSP for the Madera Subbasin. This analysis will result in potential refinements or modifications to interim SMC established in the Revised GSP, if determined appropriate.

Establishing final SMC for ISW will draw upon the guidance to be released by DWR and the most recent data and technical analyses developed through implementation of this Workplan with consideration for the complexities of the dynamic relationship between groundwater and surface water along the SJ River in the Subbasin under conditions prior to and after initiation of the SJRRP.

### ***Task 7. Prepare a Technical Memorandum or Report***

A technical memorandum (TM) or report will be prepared to document all the tasks completed as part of implementation of the ISW Workplan. A Draft TM/Report will be submitted for review by the GSAs (and their technical representatives). Comments and suggested edits received from GSAs will be reviewed and incorporated as appropriate into a Final TM/Report. The Report will include documentation of all data compiled, field work completed, technical analyses performed, modeling results, and evaluation of the nature of groundwater – surface water interactions and recommended updates to SMC. In addition, the TM/Report will include a review and summary of any remaining data gaps and recommendations for future monitoring and assessment, as needed.

## **Schedule**

The overall implementation of this Workplan is envisioned as a longer-term effort to develop important monitoring data and facilities for tracking and understanding groundwater conditions related to ISW in the Subbasin. Task 1 and 4 are already underway with review of additional data and participation in coordination meeting with Kings Subbasin, USBR, and other relevant parties in the area. Opportunities to begin implementing the planned activities under Task 2 are being explored. The longer-term tasks, such as field work involving installation of monitoring facilities, will be phased with consideration of funding and cooperation from other entities needed to support these efforts. Additional technical analyses and modeling efforts, as described in Task 3 and 5, are dependent on the information gathered from other implementation efforts and subject to the release of DWR's guidance document on ISW. A general planned schedule for implementation of the Workplan is outlined below in **Table 1**.

| Table 1. Summary of Proposed Schedule for Implementation of the Interconnected Surface Water Workplan |  |   |
|---|--|---|
| Task No.  | Task Description   | Task Completion Timeframe   |
| 1   | Compile Additional Existing Data/Analyses (Supplemental to GSP)                      | Mid 2023 - Mid 2025   |
| 2   | Complete Additional Field Work   | Late 2024 - 2026+ (field work may be phased depending on available funding) |
| 3   | Technical Analyses   | Mid 2023 - Late 2025  |
| 4   | Outreach   | Early 2024 - Late 2025  |
| 5   | Groundwater Modeling   | Early 2024 - Late 2025+   |
| 6   | Assessment of Presence of Interconnected Surface Water and Possible Revisions to SMC | Mid 2025 - Late 2025  |
| 7   | Prepare a Technical Memorandum or Report   | Mid 2025- Late 2025 for interim deliverable; 2026+ for final deliverable    |

## MEMORANDUM OF UNDERSTANDING ESTABLISHING AN INTERCONNECTED SURFACE WATER WORKING GROUP

This Memorandum of Understanding (“MOU”) is entered into this \_\_\_\_ day of \_\_\_\_\_ 2024 (the “Effective Date”), by and between the UNITED STATES BUREAU OF RECLAMATION (“USBR”), the FRIANT WATER AUTHORITY (“FWA”), SAN JOAQUIN RIVER RESTORATION PROGRAM RESTORATION ADMINISTRATOR (“SJRRP RA”), and the Groundwater Sustainability Agencies of the COUNTY OF MADERA (“MCGSA”), the CITY OF MADERA (“CMGSA”), the MADERA IRRIGATION DISTRICT (“MIDGSA”), the MADERA WATER DISTRICT (“MWDGSA”), the GRAVELLY FORD WATER DISTRICT (“GFWDGSA”), the ROOT CREEK WATER DISTRICT (“RCWDGSA”), the NEW STONE WATER DISTRICT (“NSWDGSA”), the MCMULLIN AREA (“MAGSA”), and the NORTH KINGS (“NKGSA”), collectively hereinafter referred to as the “Parties,” or singularly herein referred to as the “Party.”

### RECITALS

- A. **WHEREAS**, groundwater and surface water resources within the Madera and Kings Subbasins of the San Joaquin Valley Groundwater Basin (DWR Bulletin 118 No. 5-22.06 and 5-22.08 respectively) (“Subbasins”) are vitally important resources, in that they provide the foundation to maintain and fulfill current and future environmental, agricultural, domestic, municipal, and industrial needs, and to maintain the economic viability, prosperity, and sustainable management of the Subbasins; and
- B. **WHEREAS**, agricultural production in Madera and Fresno Counties supports one of the world’s foremost agricultural areas and plays a major role in the economy of Madera and Fresno Counties; and
- C. **WHEREAS**, in 2014 the California Legislature passed a statewide framework for sustainable groundwater management, known as the Sustainable Groundwater Management Act, California Water Code § 10720-10737.8 (“SGMA”), pursuant to Senate Bill 1168, Senate Bill 1319, and Assembly Bill 1739, which was approved by the Governor on September 16, 2014, and went into effect on January 1, 2015; and
- D. **WHEREAS**, the Subbasins have been designated by the California Department of Water Resources (“DWR”) as high-priority subbasins in a condition of critical groundwater overdraft and subject to the requirements of SGMA; and
- E. **WHEREAS**, SGMA requires that all medium and high priority groundwater basins in California be managed by a Groundwater Sustainability Agency (“GSA”), or multiple GSAs, and that such management be implemented pursuant to an approved Groundwater Sustainability Plan (“GSP”), or multiple GSPs; and

- F. **WHEREAS**, the nine GSAs that are party to this MOU are as set-forth above and depicted in Exhibit A; and
- G. **WHEREAS**, GSPs for the Subbasins have been approved by DWR; and
- H. **WHEREAS**, the Subbasins are currently working on their first statutorily required Plan Amendments and/or Periodic Evaluations that are due to DWR in January 2025; and
- I. **WHEREAS**, the Parties have been meeting in good faith to discuss interconnected surface water-groundwater (“ISW”) since late 2023; and
- J. **WHEREAS**, USBR has interest in groundwater sustainability in the Kings Subbasin and Madera Subbasin as memorialized in correspondence dated May 14, 2020, December 16, 2020, September 30, 2022, and June 2, 2023; and
- K. **WHEREAS**, the Parties recognize that ISW and any resulting losses/gains in stream flow are impacted by numerous variables, many outside the control of the GSAs that are parties to this MOU; and
- L. **WHEREAS**, FWA is a public agency formed by its members to operate and maintain the Friant-Kern Canal as part of the Central Valley Project’s Friant Division; and
- M. **WHEREAS**, FWA has interest in groundwater sustainability in the Kings Subbasin and Madera Subbasin as memorialized in correspondence dated September 30, 2022, and June 2, 2023; and
- N. **WHEREAS**, both USBR and FWA member agencies are signatories to the Stipulation of Settlement dated September 13, 2006 with the plaintiff’s coalition led by Natural Resources Defense Council (collectively referred to as the “Settling Parties”); and
- O. **WHEREAS**, both USBR and FWA have certain obligations to maintain and protect flows in the San Joaquin River under the Stipulation of Settlement dated September 13, 2006; those flows are protected pursuant to California water code § 1707, and
- P. **WHEREAS**, the SJRRP RA is jointly selected by the Natural Resources Defense Council and the FWA and provides recommendations to the Secretary of Interior and the Governor of California regarding specific elements of the Stipulation of Settlement dated September 13, 2006 related to the San Joaquin River Restoration Program’s restoration goal, and

- Q. **WHEREAS**, Madera Irrigation District is a signatory to the Stipulation of Settlement dated September 13, 2006; and
- R. **WHEREAS**, the GSAs set-forth herein are not signatories to the Stipulation of Settlement dated September 13, 2006; and
- S. **WHEREAS**, nothing in this MOU changes, supersedes, or otherwise alters USBR and FWA obligations under the Stipulation of Settlement dated September 13, 2006; and
- T. **WHEREAS**, the Parties agree that nothing in this MOU changes, supersedes, or otherwise alters any existing agreements and/or rights held by the GSAs, their underlying landowners, FWA, and/or USBR; and
- U. **WHEREAS**, SGMA identifies undesirable results as the effects caused by groundwater conditions occurring throughout a subbasin related to six sustainability indicators, including depletions of interconnected surface water-groundwater that have significant and unreasonable adverse impacts on beneficial uses and users of the surface water; and
- V. **WHEREAS**, DWR has released three papers on ISW and depletions of ISW aimed at providing GSAs and the California water resources community with informational resources to help identify, understand, and communicate the nature, occurrence, and estimation of depletions of ISW; and
- W. **WHEREAS**, SGMA allows a transition to sustainability over the 20-year GSP implementation period and that such a transition is expected to result in some continued groundwater level declines during the GSP implementation period prior to achieving sustainable groundwater conditions in the Subbasins by or before 2040; and
- X. **WHEREAS**, the Parties agree that as a result of the continued groundwater level declines anticipated to occur during the GSP implementation period, there may be adverse impacts to ISW along the San Joaquin River along the southern boundary of the Madera Subbasin and the northern boundary of the Kings Subbasin; and
- Y. **WHEREAS**, the Parties acknowledge that the scope and magnitude of groundwater pumping activities resulting in potential adverse impacts to ISW is heavily dependent on precipitation and snowpack during the GSP implementation period; and
- Z. **WHEREAS**, the Parties acknowledge that potential adverse impacts to ISW could be substantially exacerbated if prolonged drought occurs during the implementation

period , while projects and management actions are still being developed and implemented; and

- AA. **WHEREAS**, the Parties agree that there are multiple contributing factors that could influence potential adverse impacts to ISW; and
- BB. **WHEREAS**, the GSAs party to this MOU acknowledge that they cannot control groundwater conditions not caused by groundwater management activities outside of the geographical boundaries for the GSAs set-forth herein; and
- CC. **WHEREAS**, the Parties, individually, have undertaken efforts to analyze ISW along the San Joaquin River from Millerton to the Mendota Pool as depicted in Exhibit B; and
- DD. **WHEREAS**, the Parties desire to collaboratively study, review, and analyze ISW in a cooperative and coordinated manner.
- EE. **NOW, THEREFORE**, in consideration of the mutual promises, covenants and conditions contained herein and these Recitals, which are hereby incorporated herein by this reference, the Parties agree to collectively analyze ISW along the San Joaquin River reaches depicted in Exhibit B for depletions of ISW as follows:

#### **AGREEMENT**

1. **WORK PLAN IMPLEMENTATION AND COLLABORATION.** The Parties agree to work collaboratively on potential refinement and subsequent implementation of separate but coordinated ISW Work Plans for the Subbasins.
2. **DATA SHARING.** The Parties agree that individual work products have been prepared and/or will be prepared as it relates to ISW along the San Joaquin River reaches depicted in Exhibit B. Such information may include, but is not limited to, groundwater levels, flow measurements, river channel bottom elevations, San Joaquin River stage data, estimate of river losses, analysis of existing Holding Contracts, and analysis of riparian diversions. The Parties agree to share such information as has been or will be prepared with each other. The Parties agree that sharing of such information does not waive any attorney-client or attorney work-produce privileges, and that such communications is in furtherance of such privileges; nor does such sharing waive information or materials that are otherwise confidential or non-disclosable under applicable law.
3. **FUNDING.** The Parties agree that funding of collaborative work efforts determined to be mutually beneficial to the Parties will be funded proportionately (including the express allowance for in-kind services as set-forth in Section 7) based on a Funding Agreement to be developed by the Technical Committee (described in



Section 4). Notwithstanding any other provision, the Parties agree until a Funding Agreement is approved that this MOU does not obligate any Party to provide a contribution, financial or otherwise, except to provide data for sharing as contemplated in Section 2 and associated in-kind services.

4. **TECHNICAL COMMITTEE.** The Parties shall establish a Technical Committee (“Committee”) that will assume various coordination and management responsibilities, potentially including, but not limited to:
  - a. Potential refinements to the ISW Work Plans (described in Section 1)
  - b. Facilitating data sharing and collaboration among the Parties
  - c. Coordinating implementation of the Work Plans among the Parties (described in Section 1).
  - d. Developing a Funding Agreement (described in Section 3).

The Committee shall include at least one technical staff representative from each of the Parties and shall meet no less than quarterly.

5. **TERM.** The Parties agree that the term of this MOU shall continue for the duration of the GSP implementation period until groundwater sustainability is achieved in the Subbasins by or before 2040 and/or until otherwise directed by the Parties. Any party may terminate this MOU by providing written notice to the other parties.
6. **RECOGNITION OF INTENT.** The Parties agree that execution of this MOU signals the mutual intent of the Parties to collaboratively work together and that such mutual intent shall be conveyed to DWR and/or the SWRCB as may be required.
7. **IN-KIND SERVICES.** Unless otherwise agreed to by the Committee, the Parties agree that time and resources associated with activities performed under this MOU shall be done so through in-kind services.
8. **ENVIRONMENTAL REVIEW.** The Parties agree to cooperatively complete any environmental review as may be determined necessary for activities contemplated and/or planned under this MOU. Any costs associated with environmental review shall be funded per the proportionate share as defined by a Funding Agreement to be developed by the Committee as set-forth herein. For any federal discretionary action taken pursuant to activities contemplated and/or planned under this MOU, the USBR shall be the primary federal implementing agency for the purposes of NEPA.
9. **NOTICES.** All notices required or permitted by the MOU shall be made in writing, and may be delivered in person (by hand or by courier) or may be sent by regular, certified, or registered mail or U.S. Postal Service Express Mail, with postage prepaid, or by facsimile transmission, or by electronic transmission (email) and

shall be deemed sufficiently given if served in a manner specified in this Section 9. The addresses and addressees noted below are the Party's designated address and addressee for delivery or mailing notices.

To MCGSA: County of Madera  
Stephanie Anagnoson  
200 W 4<sup>th</sup> Street, 4<sup>th</sup> Floor  
Madera, CA 93637

To MIDGSA: Madera Irrigation District  
Thomas Greci  
12152 Road 28 1/4  
Madera, CA 93637

To GFWDGSA: Gravelly Ford Water District  
Don Roberts  
18811 Road 27  
Madera, CA 93638

To CMGSA: City of Madera  
Keith Helmuth  
428 East Yosemite Avenue  
Madera, CA 93638

To MWDGSA: XXXXX

To NSWGSA: XXXXX

To RCWDGSA: XXXXX

To NKGSA: XXXXX

To MAGSA: XXXXX

To USBR: XXXXX

To FWA: XXXXX

To SJRRP RA: XXXXX

Any Party may, by written notice to each of the other Parties, specify a different address for notice. Any notice sent by registered or certified mail, return receipt requested, shall be deemed given on the date of delivery shown on the receipt card, or if no delivery date is shown, three days after the postmark date. If sent by regular mail, the notice shall be deemed given 48 hours after it is addressed as required in this section and mailed with postage prepaid. Notices delivered by United States Express Mail or overnight courier that guarantee next day delivery shall be deemed given 24 hours after delivery to the Postal Service or overnight courier. Notices transmitted by facsimile transmission or similar means (including email) shall be deemed delivered upon telephone or similar confirmation of delivery (confirmation report from fax machine is sufficient), provided a copy is also delivered via personal delivery or mail. If notice is received after 4:00 p.m. or on a Saturday, Sunday or legal holiday, it shall be deemed received on the next business day.

**10. REPRESENTATION OF SIGNATORY AUTHORITY.** All Parties to this MOU warrant and represent that they have the power and authority to enter into this MOU and the names, titles, and capacities herein stated on behalf of any entities, persons, states, or firms represented or purported to be represented by such entities, persons, states or firms and that all former requirements necessary or required by the state or federal law in order to enter into the MOU have been fully complied with. This MOU may be signed in counterparts, electronic or digital or otherwise, each of which will constitute an original. This MOU may only be amended or modified by a written instrument executed by all of the Parties.

**IN WITNESS WHEREOF**, the Parties have caused this MOU to be executed and agree to be bound by the terms herein, as of the Effective Date listed above

**County of Madera GSA**

\_\_\_\_\_  
XXXXXX

\_\_\_\_\_  
Date

**Madera Irrigation District GSA**

\_\_\_\_\_  
Thomas Greci

\_\_\_\_\_  
Date

**Gravelly Ford Water District GSA**

\_\_\_\_\_  
Don Roberts

\_\_\_\_\_  
Date

**City of Madera GSA**

\_\_\_\_\_  
XXXXXX

\_\_\_\_\_  
Date

**Madera Water District GSA**

\_\_\_\_\_  
Phil Janzen

\_\_\_\_\_  
Date

**Root Creek Water District GSA**

XXXXXX

Date

**New Stone Water District GSA**

XXXXXX

Date

**McMullin Area GSA**

XXXXXX

Date

**North Kings GSA**

XXXXXX

Date

**USBR**

XXXXXX

Date

**Friant Water Authority**

XXXXX

Date

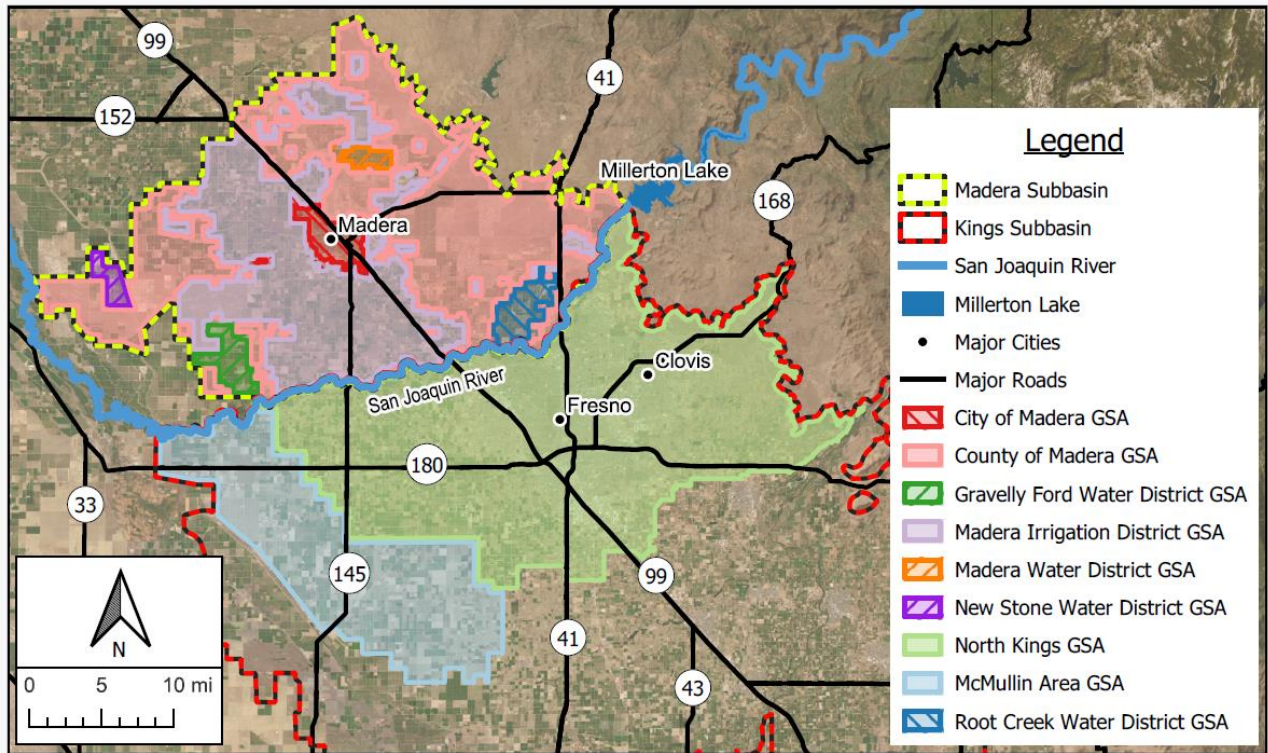
**San Joaquin River Restoration Program Restoration Administrator**

XXXXX

Date

DRAFT

EXHIBIT A



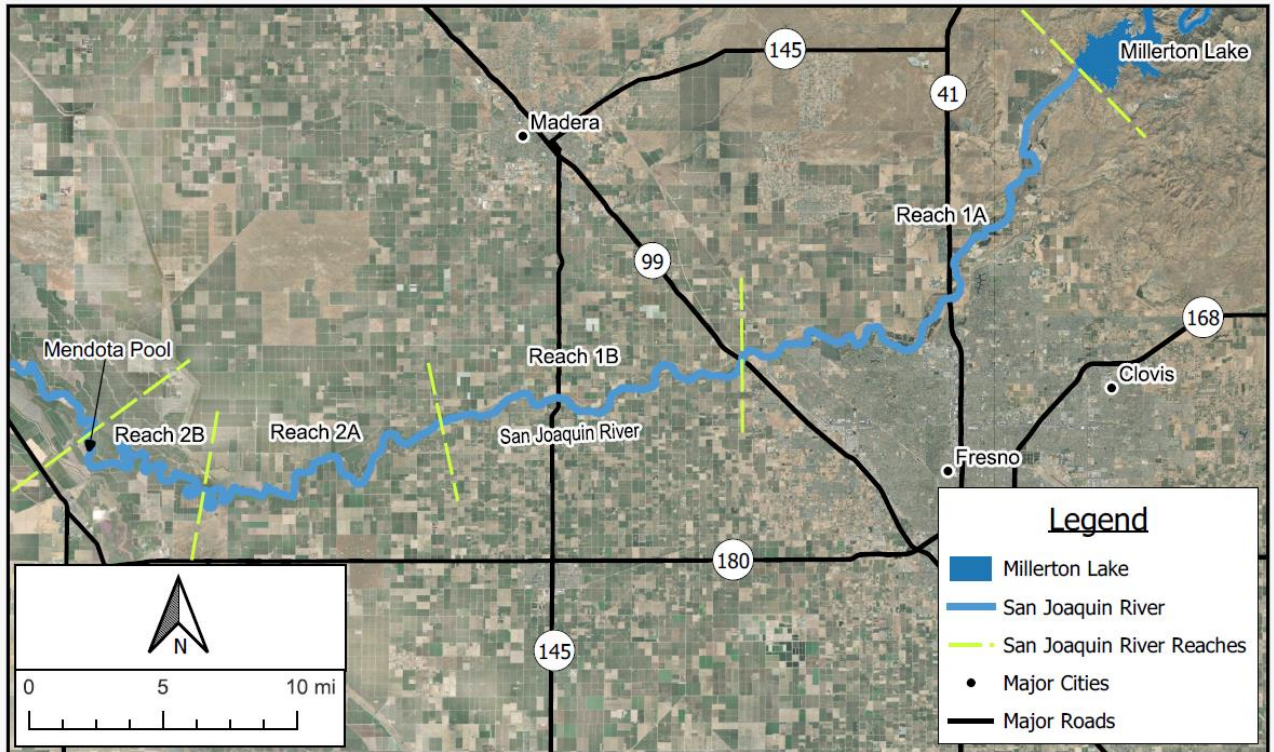
H:\\_Client\_Project\1165\_Madera\_County\1165.17\_Joint\_GSP\_5-Year\_Update\GIS\Maps\20240905 Madera Kings Subbasins.qgz

09/09/2024



Exhibit A  
Madera and Kings Subbasins - ISW MOU

**EXHIBIT B**



H:\\_Client\_Project\1165\_Madera\_County\1165.17\_Joint\_GSP\_5-Year\_Update\GIS\Maps\20240905 Madera Kings Subbasins.qgz

09/09/2024



Exhibit B  
San Joaquin River Reaches - ISW MOU



## **APPENDIX 3.J. SUPPLEMENT MONITORING NETWORKS**

Prepared as part of the  
**Joint Groundwater Sustainability Plan  
Madera Subbasin**

January 2020  
Amended January 2025

**GSP Team:**

Davids Engineering, Inc. (Amended GSP Team)  
Luhdorff & Scalmanini (Amended GSP Team)  
ERA Economics  
Stillwater Sciences and  
California State University, Sacramento

**Table 3.J-1 - Supplemental Groundwater Level Monitoring Network, Madera Subbasin**

| Well ID       | Monitoring Entity              | Well Type  | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Level Measurement Date | Most Recent Groundwater Level Measurement Date | Count of Groundwater Level Measurements |
|---------------|--------------------------------|------------|------------|------------|-----------------|---|--|---|
| 09S17E25B001M | DWR                            | Unknown    | 09S/17E/25 |            |                 | 3/6/1958                                    | 2/12/2009                                      | 85                                      |
| 09S17E26J001M | DWR                            | Unknown    | 09S/17E/26 |            |                 | 3/2/1948                                    | 9/27/1974                                      | 37                                      |
| 09S17E32A001M | DWR                            | Unknown    | 09S/17E/32 |            |                 | 10/7/1976                                   | 2/12/2009                                      | 41                                      |
| 09S17E34R     | Madera-Chowchilla CASGEM Group | Irrigation | 09S/17E/34 | 840        | 240-840         | 10/30/2015                                  | 10/17/2019                                     | 9                                       |
| 09S17E35J001M | DWR                            | Unknown    | 09S/17E/35 |            |                 | 10/10/1941                                  | 12/10/1977                                     | 59                                      |
| 09S17E35K001M | Madera County                  | Irrigation | 09S/17E/35 | 950        | 320-942         | 10/29/2015                                  | 3/30/2023                                      | 8                                       |
| 09S17E35L001M | DWR                            | Unknown    | 09S/17E/35 |            |                 | 10/7/1976                                   | 3/25/2019                                      | 52                                      |
| 09S18E19Q001M | DWR                            | Unknown    | 09S/18E/19 |            |                 | 12/7/1948                                   | 10/9/1957                                      | 14                                      |
| 09S18E28D001M | DWR                            | Unknown    | 09S/18E/28 |            |                 | 12/7/1948                                   | 2/17/1969                                      | 31                                      |
| 09S18E31G001M | Madera-Chowchilla CASGEM Group | Irrigation | 09S/18E/31 | 408        | 240-367         | 10/14/2015                                  | 10/24/2022                                     | 9                                       |
| 09S18E31H001M | Madera-Chowchilla CASGEM Group | Irrigation | 09S/18E/31 | 724        | 105-350         | 10/14/2015                                  | 10/24/2022                                     | 12                                      |
| 09S18E31L001M | Madera-Chowchilla CASGEM Group | Irrigation | 09S/18E/31 | 906        | 298-470         | 10/14/2015                                  | 10/24/2022                                     | 13                                      |
| 09S18E31M001M | Madera-Chowchilla CASGEM Group | Irrigation | 09S/18E/31 | 680        | 240-400         | 10/14/2015                                  | 10/20/2022                                     | 13                                      |
| 09S18E31M002M | Madera-Chowchilla CASGEM Group | Irrigation | 09S/17E/36 |            | 405-645         | 10/14/2015                                  | 10/24/2022                                     | 11                                      |
| 09S18E31M003M | Madera-Chowchilla CASGEM Group | Irrigation | 09S/18E/31 | 880        | 430-840         | 10/14/2015                                  | 10/12/2022                                     | 10                                      |
| 09S18E33C001M | DWR                            | Unknown    | 09S/18E/33 |            |                 | 12/7/1948                                   | 1/23/1987                                      | 60                                      |
| 09S18E33Q001M | DWR                            | Unknown    | 09S/18E/33 |            |                 | 3/22/1949                                   | 1/23/1987                                      | 67                                      |
| 10S16E01E001M | DWR                            | Unknown    | 10S/16E/01 |            |                 | 10/13/1954                                  | 2/20/2014                                      | 88                                      |
| 10S16E11G001M | DWR                            | Unknown    | 10S/16E/11 |            |                 | 12/3/1959                                   | 3/3/1962                                       | 3                                       |
| 10S16E12K001M | DWR                            | Unknown    | 10S/16E/12 |            |                 | 3/13/1952                                   | 2/20/2014                                      | 100                                     |
| 10S16E14J001M | DWR                            | Unknown    | 10S/16E/14 |            |                 | 12/2/1937                                   | 2/20/2014                                      | 115                                     |
| 10S16E21J001M | DWR                            | Unknown    | 10S/16E/21 |            |                 | 3/1/1956                                    | 2/20/2014                                      | 81                                      |
| 10S16E21N001M | Madera ID                      | Unknown    | 10S/16E/21 | 563        | 298-509         | 10/13/2015                                  | 10/16/2023                                     | 13                                      |
| 10S16E22A     | Madera-Chowchilla CASGEM Group | Irrigation | 10S/16E/22 | 628        | 305-596         | 10/30/2015                                  | 10/17/2019                                     | 9                                       |
| 10S16E22A001M | DWR                            | Unknown    | 10S/16E/22 |            |                 | 11/14/1945                                  | 1/26/1977                                      | 47                                      |
| 10S16E24J001M | DWR                            | Unknown    | 10S/16E/24 |            |                 | 10/22/1951                                  | 2/20/2014                                      | 98                                      |
| 10S16E25A001M | DWR                            | Unknown    | 10S/16E/25 |            |                 | 12/10/1948                                  | 2/13/2014                                      | 102                                     |
| 10S16E25F003M | Madera-Chowchilla CASGEM Group | Irrigation | 10S/16E/25 | 544        | 350-537         | 10/14/2015                                  | 10/12/2022                                     | 0                                       |
| 10S16E25F004M | Madera ID                      | Irrigation | 10S/16E/25 | 516        | 260-507         | 10/4/1954                                   | 10/18/2023                                     | 114                                     |
| 10S16E25J001M | DWR                            | Unknown    | 10S/16E/25 |            |                 | 12/10/1948                                  | 2/28/1962                                      | 14                                      |
| 10S16E25L001M | Madera-Chowchilla CASGEM Group | Irrigation | 10S/16E/25 | 800        | 400-800         | 10/14/2015                                  | 10/18/2022                                     | 14                                      |
| 10S16E25Q001M | DWR                            | Unknown    | 10S/16E/25 |            |                 | 12/5/1946                                   | 2/17/2011                                      | 105                                     |
| 10S16E26B001M | DWR                            | Unknown    | 10S/16E/26 |            |                 | 10/21/1939                                  | 2/13/2014                                      | 116                                     |
| 10S16E28D001M | DWR                            | Unknown    | 10S/16E/28 |            |                 | 3/18/1949                                   | 9/30/2009                                      | 86                                      |
| 10S16E33P001M | DWR                            | Unknown    | 10S/16E/33 |            |                 | 3/18/1949                                   | 1/27/1983                                      | 62                                      |
| 10S16E34H001M | DWR                            | Unknown    | 10S/16E/34 |            |                 | 10/8/1941                                   | 2/14/2014                                      | 117                                     |
| 10S16E35A002M | DWR                            | Unknown    | 10S/16E/35 |            |                 | 12/10/1948                                  | 7/2/1961                                       | 17                                      |
| 10S16E36A001M | DWR                            | Unknown    | 10S/16E/36 |            |                 | 3/8/1945                                    | 2/14/2014                                      | 89                                      |
| 10S16E36C002M | Madera-Chowchilla CASGEM Group | Other      | 10S/16E/36 | 440        | 360-440         | 10/13/2015                                  | 10/12/2022                                     | 14                                      |
| 10S16E36D001M | DWR                            | Unknown    | 10S/16E/36 |            |                 | 12/8/1961                                   | 2/17/2011                                      | 75                                      |
| 10S16E36E001M | Madera-Chowchilla CASGEM Group | Irrigation | 10S/16E/36 | 500        |                 | 10/14/2015                                  | 10/18/2022                                     | 14                                      |
| 10S17E03F001M | DWR                            | Unknown    | 10S/17E/03 |            |                 | 6/5/1957                                    | 2/14/2014                                      | 90                                      |
| 10S17E04E001M | DWR                            | Unknown    | 10S/17E/05 |            |                 | 2/18/1963                                   | 2/17/2011                                      | 68                                      |
| 10S17E04J001M | DWR                            | Unknown    | 10S/17E/04 |            |                 | 3/1/1927                                    | 9/11/1979                                      | 56                                      |
| 10S17E05H001M | DWR                            | Unknown    | 10S/17E/05 |            |                 | 1/10/1956                                   | 2/28/1962                                      | 13                                      |
| 10S17E06A001M | DWR                            | Unknown    | 10S/17E/06 |            |                 | 2/29/1960                                   | 9/21/1981                                      | 38                                      |
| 10S17E09A001M | DWR                            | Unknown    | 10S/17E/09 |            |                 | 11/16/1936                                  | 10/2/1984                                      | 79                                      |
| 10S17E12C001M | Madera-Chowchilla CASGEM Group | Unknown    | 10S/17E/12 |            |                 | 12/7/1948                                   | 10/24/2022                                     | 107                                     |
| 10S17E14C001M | DWR                            | Unknown    | 10S/17E/14 |            |                 | 3/1/1960                                    | 1/23/1980                                      | 25                                      |
| 10S17E17A001M | DWR                            | Unknown    | 10S/17E/17 |            |                 | 12/8/1961                                   | 9/21/1981                                      | 37                                      |
| 10S17E18H001M | DWR                            | Unknown    | 10S/17E/18 |            |                 | 11/27/1935                                  | 2/10/1964                                      | 50                                      |
| 10S17E21M001M | DWR                            | Unknown    | 10S/17E/21 |            |                 | 12/3/1959                                   | 2/14/2014                                      | 86                                      |
| 10S17E22D001M | Madera-Chowchilla CASGEM Group | Irrigation | 10S/17E/22 | 250        | 140-250         | 3/1/1960                                    | 2/14/2014                                      | 89                                      |
| 10S17E23A001M | DWR                            | Unknown    | 10S/17E/23 |            |                 | 3/2/1948                                    | 2/17/2011                                      | 109                                     |
| 10S17E27E001M | DWR                            | Unknown    | 10S/17E/27 |            |                 | 10/29/1923                                  | 2/28/1962                                      | 53                                      |
| 10S17E28R001M | DWR                            | Unknown    | 10S/17E/28 |            |                 | 2/18/1963                                   | 2/10/1964                                      | 2                                       |
| 10S17E30B002M | DWR                            | Unknown    | 10S/17E/30 |            |                 | 11/30/1943                                  | 2/14/2014                                      | 121                                     |
| 10S17E31N001M | DWR                            | Unknown    | 10S/17E/31 |            |                 | 12/13/1948                                  | 2/14/2014                                      | 101                                     |
| 10S17E32J001M | DWR                            | Unknown    | 10S/17E/32 |            |                 | 3/1/1960                                    | 2/14/1964                                      | 3                                       |
| 10S17E32K001M | Madera-Chowchilla CASGEM Group | Irrigation | 10S/17E/32 | 288        |                 | 10/14/2015                                  | 10/18/2022                                     | 13                                      |
| 10S17E32N001M | DWR                            | Unknown    | 10S/17E/32 |            |                 | 11/2/1944                                   | 12/2/1960                                      | 28                                      |
| 10S17E34A002M | DWR                            | Unknown    | 10S/17E/34 |            |                 | 2/9/1968                                    | 2/14/2014                                      | 88                                      |
| 10S17E34R001M | DWR                            | Unknown    | 10S/17E/34 |            |                 | 3/1/1960                                    | 2/6/1967                                       | 7                                       |
| 10S17E36E001M | DWR                            | Unknown    | 10S/17E/36 |            |                 | 3/2/1948                                    | 12/8/1961                                      | 22                                      |
| 10S18E08L001M | DWR                            | Unknown    | 10S/18E/08 |            |                 | 11/28/1941                                  | 1/25/1985                                      | 84                                      |
| 10S18E08L002M | DWR                            | Unknown    | 10S/18E/08 |            |                 | 2/11/1964                                   | 1/26/1987                                      | 34                                      |

**Table 3.J-1 - Supplemental Groundwater Level Monitoring Network, Madera Subbasin**

| Well ID       | Monitoring Entity              | Well Type  | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Level Measurement Date | Most Recent Groundwater Level Measurement Date | Count of Groundwater Level Measurements |
|---------------|--------------------------------|------------|------------|------------|-----------------|---|--|---|
| 10S18E09A001M | Madera-Chowchilla CASGEM Group | Irrigation | 10S/18E/09 | 890        | 400-716         | 10/15/2015                                  | 10/13/2022                                     | 7                                       |
| 10S18E09B001M | DWR                            | Unknown    | 10S/18E/09 |            |                 | 10/9/1957                                   | 2/3/2006                                       | 60                                      |
| 10S18E09C001M | DWR                            | Unknown    | 10S/18E/09 |            |                 | 2/11/1964                                   | 2/14/2014                                      | 74                                      |
| 10S18E10K001M | Madera-Chowchilla CASGEM Group | Irrigation | 10S/18E/10 |            |                 | 2/10/1964                                   | 2/14/2014                                      | 88                                      |
| 10S18E12D001M | DWR                            | Unknown    | 10S/18E/12 |            |                 | 2/10/1964                                   | 1/30/2001                                      | 66                                      |
| 10S18E17B001M | Madera-Chowchilla CASGEM Group | Irrigation | 10S/18E/17 | 481        | 260-408         | 10/14/2015                                  | 10/24/2022                                     | 8                                       |
| 10S18E20B001M | DWR                            | Unknown    | 10S/18E/20 |            |                 | 10/29/1920                                  | 2/16/1971                                      | 74                                      |
| 10S18E20G001M | DWR                            | Unknown    | 10S/18E/20 |            |                 | 9/18/1979                                   | 9/18/1979                                      | 1                                       |
| 10S18E20M001M | DWR                            | Unknown    | 10S/18E/20 |            |                 | 10/29/1920                                  | 1/7/1980                                       | 72                                      |
| 10S18E20M002M | DWR                            | Unknown    | 10S/18E/20 |            |                 | 2/11/1964                                   | 1/25/1985                                      | 31                                      |
| 10S18E21F001M | DWR                            | Unknown    | 10S/18E/21 |            |                 | 9/18/1979                                   | 9/18/1979                                      | 1                                       |
| 10S18E21G001M | Unknown                        | Unknown    | 10S/18E/21 |            |                 | 10/15/2015                                  | 3/15/2017                                      | 4                                       |
| 10S18E22B001M | DWR                            | Unknown    | 10S/18E/22 |            |                 | 2/11/1964                                   | 2/11/1964                                      | 1                                       |
| 10S18E27N001M | Madera ID                      | Unknown    | 10S/18E/34 |            |                 | 2/10/1969                                   | 3/15/2017                                      | 178                                     |
| 10S18E27N002M | Unknown                        | Unknown    | 10S/18E/27 |            |                 | 10/15/2015                                  | 3/15/2017                                      | 4                                       |
| 10S18E27R001M | DWR                            | Unknown    | 10S/18E/34 |            |                 | 2/10/1969                                   | 2/14/2014                                      | 80                                      |
| 10S18E29Q001M | DWR                            | Unknown    | 10S/18E/29 |            |                 | 2/11/1964                                   | 2/14/2014                                      | 43                                      |
| 10S18E31E001M | Unknown                        | Unknown    | 10S/18E/31 |            |                 | 10/15/2015                                  | 3/15/2017                                      | 4                                       |
| 10S18E34K001M | Unknown                        | Unknown    | 10S/18E/34 |            |                 | 10/15/2015                                  | 3/15/2017                                      | 4                                       |
| 10S18E34M001M | Unknown                        | Unknown    | 10S/18E/34 |            |                 | 10/15/2015                                  | 3/15/2017                                      | 4                                       |
| 10S19E16D001M | DWR                            | Unknown    | 10S/19E/16 |            |                 | 3/15/1950                                   | 2/14/2014                                      | 113                                     |
| 10S19E17H001M | Madera County                  | Irrigation | 10S/19E/17 | 92         | 32-92           | 10/13/1958                                  | 3/30/2023                                      | 98                                      |
| 10S19E32J001M | DWR                            | Unknown    | 10S/19E/32 |            |                 | 2/10/1964                                   | 1/25/1985                                      | 15                                      |
| 11S15E01A001M | DWR                            | Unknown    | 11S/15E/01 |            |                 | 12/4/1957                                   | 10/7/1988                                      | 45                                      |
| 11S15E01H002M | DWR                            | Unknown    | 11S/15E/01 |            |                 | 2/6/1980                                    | 2/13/2014                                      | 51                                      |
| 11S15E02C001M | DWR                            | Unknown    | 11S/15E/02 |            |                 | 2/2/1999                                    | 10/15/2009                                     | 16                                      |
| 11S15E02R001M | DWR                            | Unknown    | 11S/15E/02 |            |                 | 3/20/1959                                   | 2/14/2014                                      | 77                                      |
| 11S15E10J001M | DWR                            | Unknown    | 11S/15E/10 |            |                 | 3/20/1959                                   | 2/14/2014                                      | 85                                      |
| 11S15E14G001M | DWR                            | Unknown    | 11S/15E/14 |            |                 | 3/20/1959                                   | 2/1/2006                                       | 71                                      |
| 11S15E14R001M | DWR                            | Unknown    | 11S/15E/14 |            |                 | 12/2/1959                                   | 2/10/1967                                      | 6                                       |
| 11S15E24A001M | DWR                            | Unknown    | 11S/15E/24 |            |                 | 3/31/1942                                   | 3/5/1957                                       | 25                                      |
| 11S15E25A001M | DWR                            | Unknown    | 11S/15E/25 |            |                 | 12/2/1959                                   | 2/14/2014                                      | 88                                      |
| 11S15E26R001M | Madera-Chowchilla CASGEM Group | Irrigation | 11S/15E/35 | 425        | 190-418         | 10/11/1976                                  | 10/21/2019                                     | 53                                      |
| 11S15E27L001M | Madera County                  | Other      | 11S/15E/27 | 800        |                 | 10/8/2015                                   | 3/30/2023                                      | 8                                       |
| 11S15E30A001M | DWR                            | Unknown    | 11S/15E/30 | 216        | 174-212         | 2/14/1964                                   | 3/13/2019                                      | 62                                      |
| 11S15E31J001M | DWR                            | Unknown    | 11S/15E/31 |            |                 | 2/14/1964                                   | 2/28/2014                                      | 56                                      |
| 11S15E33E001M | DWR                            | Unknown    | 11S/15E/33 |            |                 | 10/17/1958                                  | 10/6/1977                                      | 25                                      |
| 11S15E33P003M | DWR                            | Unknown    | 11S/15E/33 |            |                 | 2/24/1961                                   | 10/6/1977                                      | 22                                      |
| 11S15E35P001M | DWR                            | Unknown    | 11S/15E/35 |            |                 | 3/10/1959                                   | 2/27/2014                                      | 70                                      |
| 11S16E01D001M | DWR                            | Unknown    | 11S/16E/01 |            |                 | 12/17/1936                                  | 2/21/1961                                      | 36                                      |
| 11S16E01D002M | DWR                            | Unknown    | 11S/16E/01 |            |                 | 12/18/1960                                  | 9/26/1980                                      | 31                                      |
| 11S16E01J001M | DWR                            | Unknown    | 11S/16E/01 |            |                 | 12/8/1947                                   | 3/24/1958                                      | 14                                      |
| 11S16E03A001M | DWR                            | Unknown    | 11S/16E/03 |            |                 | 10/25/1920                                  | 2/14/2014                                      | 149                                     |
| 11S16E03C001M | DWR                            | Unknown    | 11S/16E/03 |            |                 | 11/12/1931                                  | 2/14/2014                                      | 136                                     |
| 11S16E05H001M | DWR                            | Unknown    | 11S/16E/05 |            |                 | 10/19/1950                                  | 2/14/2014                                      | 101                                     |
| 11S16E06A001M | DWR                            | Unknown    | 11S/16E/06 |            |                 | 1/24/1934                                   | 6/1/1977                                       | 156                                     |
| 11S16E07D001M | DWR                            | Unknown    | 11S/16E/07 |            |                 | 3/15/1939                                   | 12/8/1961                                      | 37                                      |
| 11S16E08L001M | DWR                            | Unknown    | 11S/16E/08 |            |                 | 10/8/1941                                   | 2/14/2014                                      | 118                                     |
| 11S16E09F001M | DWR                            | Unknown    | 11S/16E/09 |            |                 | 10/3/1944                                   | 1/24/1980                                      | 52                                      |
| 11S16E10P001M | DWR                            | Unknown    | 11S/16E/10 |            |                 | 4/1/1927                                    | 2/3/1984                                       | 91                                      |
| 11S16E11E001M | DWR                            | Unknown    | 11S/16E/11 |            |                 | 4/1/1927                                    | 2/18/2014                                      | 137                                     |
| 11S16E12K001M | DWR                            | Unknown    | 11S/16E/12 |            |                 | 11/9/1937                                   | 2/18/2014                                      | 125                                     |
| 11S16E14A001M | DWR                            | Unknown    | 11S/16E/14 |            |                 | 12/2/1941                                   | 2/19/1963                                      | 36                                      |
| 11S16E14N001M | DWR                            | Unknown    | 11S/16E/14 |            |                 | 12/5/1961                                   | 2/7/1967                                       | 4                                       |
| 11S16E14R001M | DWR                            | Unknown    | 11S/16E/14 |            |                 | 2/9/1968                                    | 2/18/2014                                      | 82                                      |
| 11S16E15L001M | DWR                            | Unknown    | 11S/16E/15 |            |                 | 12/4/1959                                   | 2/18/2014                                      | 85                                      |
| 11S16E15P001M | Madera-Chowchilla CASGEM Group | Irrigation | 11S/16E/22 | 800        | 220-800         | 10/13/2015                                  | 10/12/2022                                     | 12                                      |
| 11S16E16D001M | DWR                            | Unknown    | 11S/16E/16 |            |                 | 3/2/1960                                    | 1/27/2006                                      | 51                                      |
| 11S16E16K001M | Madera-Chowchilla CASGEM Group | Irrigation | 11S/16E/16 | 474        | 204-474         | 10/13/2015                                  | 10/21/2022                                     | 11                                      |
| 11S16E17D001M | DWR                            | Unknown    | 11S/16E/17 |            |                 | 12/4/1959                                   | 2/18/2014                                      | 82                                      |
| 11S16E18D001M | DWR                            | Unknown    | 11S/16E/18 |            |                 | 3/20/1959                                   | 2/17/2011                                      | 71                                      |
| 11S16E18R002M | Madera ID                      | Irrigation | 11S/16E/18 | 698        | 320-667         | 10/13/2015                                  | 10/13/2023                                     | 16                                      |
| 11S16E19R001M | DWR                            | Unknown    | 11S/16E/19 |            |                 | 12/10/1947                                  | 2/18/2014                                      | 102                                     |
| 11S16E21A001M | Madera-Chowchilla CASGEM Group | Irrigation | 11S/16E/21 | 514        | 245-496         | 12/4/1959                                   | 10/12/2022                                     | 103                                     |
| 11S16E21H001M | Madera-Chowchilla CASGEM Group | Unknown    | 11S/16E/21 | 600        | 400-600         | 10/13/2015                                  | 10/20/2022                                     | 13                                      |
| 11S16E22K002M | Madera-Chowchilla CASGEM Group | Industrial | 11S/16E/22 | 570        | 270-570         | 3/24/1958                                   | 10/12/2023                                     | 120                                     |

**Table 3.J-1 - Supplemental Groundwater Level Monitoring Network, Madera Subbasin**

| Well ID       | Monitoring Entity              | Well Type  | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Level Measurement Date | Most Recent Groundwater Level Measurement Date | Count of Groundwater Level Measurements |
|---------------|--------------------------------|------------|------------|------------|-----------------|---|--|---|
| 11S16E24M001M | DWR                            | Unknown    | 11S/16E/24 |            |                 | 3/20/1959                                   | 2/18/2014                                      | 86                                      |
| 11S16E25L001M | DWR                            | Unknown    | 11S/16E/25 |            |                 | 12/1/1939                                   | 2/23/1961                                      | 37                                      |
| 11S16E26A001M | DWR                            | Unknown    | 11S/16E/26 |            |                 | 11/2/1944                                   | 2/18/2014                                      | 108                                     |
| 11S16E26L001M | DWR                            | Unknown    | 11S/16E/26 |            |                 | 11/6/1929                                   | 1/27/2006                                      | 101                                     |
| 11S16E27H001M | DWR                            | Unknown    | 11S/16E/27 |            |                 | 12/4/1959                                   | 2/18/2014                                      | 89                                      |
| 11S16E28C001M | DWR                            | Unknown    | 11S/16E/28 |            |                 | 11/3/1944                                   | 9/17/2009                                      | 94                                      |
| 11S16E29H001M | DWR                            | Unknown    | 11S/16E/29 |            |                 | 11/6/1929                                   | 2/18/2014                                      | 127                                     |
| 11S16E32R001M | DWR                            | Unknown    | 11S/16E/32 |            |                 | 4/14/1937                                   | 2/25/2011                                      | 131                                     |
| 11S16E34D001M | DWR                            | Unknown    | 11S/16E/34 |            |                 | 12/5/1961                                   | 2/18/2014                                      | 82                                      |
| 11S16E34F001M | DWR                            | Unknown    | 11S/16E/34 |            |                 | 3/3/1960                                    | 2/23/1961                                      | 1                                       |
| 11S16E35H001M | DWR                            | Unknown    | 11S/16E/35 |            |                 | 11/18/1937                                  | 2/18/2014                                      | 119                                     |
| 11S16E36J001M | DWR                            | Unknown    | 11S/16E/36 |            |                 | 10/15/1952                                  | 2/18/2014                                      | 98                                      |
| 11S16E36M001M | DWR                            | Unknown    | 11S/16E/36 |            |                 | 11/6/1929                                   | 3/1/1962                                       | 47                                      |
| 11S16E36Q001M | DWR                            | Unknown    | 11S/16E/36 |            |                 | 10/5/1955                                   | 2/18/2014                                      | 98                                      |
| 11S17E02Q001M | DWR                            | Unknown    | 11S/17E/02 |            |                 | 11/9/1944                                   | 2/10/1966                                      | 34                                      |
| 11S17E04R001M | DWR                            | Unknown    | 11S/17E/04 |            |                 | 12/7/1959                                   | 2/24/2011                                      | 76                                      |
| 11S17E05R001M | Madera-Chowchilla CASGEM Group | Irrigation | 11S/17E/04 | 700        | 265-696         | 10/14/2015                                  | 10/19/2022                                     | 14                                      |
| 11S17E06B001M | DWR                            | Unknown    | 11S/17E/06 |            |                 | 3/11/1952                                   | 3/3/1959                                       | 5                                       |
| 11S17E06C001M | DWR                            | Unknown    | 11S/17E/06 |            |                 | 12/11/1961                                  | 2/18/2014                                      | 85                                      |
| 11S17E06J001M | DWR                            | Unknown    | 11S/17E/06 |            |                 | 3/13/1956                                   | 2/18/2014                                      | 96                                      |
| 11S17E06K001M | DWR                            | Unknown    | 11S/17E/06 |            |                 | 12/8/1947                                   | 3/3/1960                                       | 20                                      |
| 11S17E06L001M | Madera ID                      | Irrigation | 11S/17E/06 | 680        | 320-680         | 3/7/1957                                    | 10/18/2023                                     | 12                                      |
| 11S17E06L001M | Madera ID                      | Unknown    | 11S/17E/06 |            |                 | 3/7/1957                                    | 10/18/2023                                     | 12                                      |
| 11S17E06L003M | Madera-Chowchilla CASGEM Group | Industrial | 11S/17E/06 | 680        | 320-680         | 10/14/2015                                  | 10/25/2022                                     | 10                                      |
| 11S17E07A001M | DWR                            | Unknown    | 11S/17E/07 |            |                 | 12/2/1941                                   | 2/1/1985                                       | 57                                      |
| 11S17E07D001M | DWR                            | Unknown    | 11S/17E/07 |            |                 | 12/21/1948                                  | 10/4/1977                                      | 45                                      |
| 11S17E08H001M | DWR                            | Unknown    | 11S/17E/08 |            |                 | 4/1/1928                                    | 1/27/2006                                      | 103                                     |
| 11S17E10Q001M | DWR                            | Unknown    | 11S/17E/10 |            |                 | 12/7/1959                                   | 2/19/1963                                      | 5                                       |
| 11S17E12E001M | DWR                            | Unknown    | 11S/17E/12 |            |                 | 12/3/1959                                   | 2/10/1964                                      | 7                                       |
| 11S17E14M001M | DWR                            | Unknown    | 11S/17E/14 |            |                 | 10/30/1925                                  | 3/3/1959                                       | 52                                      |
| 11S17E14M002M | DWR                            | Unknown    | 11S/17E/14 |            |                 | 3/3/1960                                    | 10/2/1986                                      | 42                                      |
| 11S17E16H001M | DWR                            | Unknown    | 11S/17E/16 |            |                 | 12/7/1959                                   | 2/18/2014                                      | 85                                      |
| 11S17E17C001M | Madera-Chowchilla CASGEM Group | Irrigation | 11S/17E/17 | 580        | 260-504         | 2/8/1968                                    | 2/13/2014                                      | 79                                      |
| 11S17E17J001M | DWR                            | Unknown    | 11S/17E/17 |            |                 | 5/27/1938                                   | 2/19/1963                                      | 44                                      |
| 11S17E18B001M | DWR                            | Unknown    | 11S/17E/18 |            |                 | 10/23/1951                                  | 2/18/2014                                      | 104                                     |
| 11S17E18N001M | DWR                            | Unknown    | 11S/17E/18 |            |                 | 10/17/1952                                  | 1/27/2006                                      | 63                                      |
| 11S17E19P001M | DWR                            | Unknown    | 11S/17E/19 |            |                 | 12/1/1941                                   | 2/18/2014                                      | 119                                     |
| 11S17E20A003M | DWR                            | Unknown    | 11S/17E/20 |            |                 | 4/11/1939                                   | 9/25/1980                                      | 65                                      |
| 11S17E21A001M | DWR                            | Unknown    | 11S/17E/21 |            |                 | 3/3/1960                                    | 10/8/1971                                      | 15                                      |
| 11S17E24D001M | DWR                            | Unknown    | 11S/17E/24 |            |                 | 11/9/1944                                   | 8/1/1977                                       | 36                                      |
| 11S17E24D002M | DWR                            | Unknown    | 11S/17E/23 |            |                 | 12/7/1960                                   | 2/28/2011                                      | 80                                      |
| 11S17E26A001M | DWR                            | Unknown    | 11S/17E/26 |            |                 | 10/23/1935                                  | 2/8/1967                                       | 45                                      |
| 11S17E27C001M | DWR                            | Unknown    | 11S/17E/27 |            |                 | 9/1/1928                                    | 2/28/2011                                      | 129                                     |
| 11S17E27H001M | DWR                            | Unknown    | 11S/17E/27 |            |                 | 3/1/1976                                    | 6/1/1977                                       | 4                                       |
| 11S17E28A001M | DWR                            | Unknown    | 11S/17E/28 |            |                 | 12/7/1960                                   | 2/18/2014                                      | 88                                      |
| 11S17E29C001M | DWR                            | Unknown    | 11S/17E/29 |            |                 | 11/1/1944                                   | 2/21/1961                                      | 26                                      |
| 11S17E30J001M | DWR                            | Unknown    | 11S/17E/30 |            |                 | 12/1/1939                                   | 2/8/1967                                       | 40                                      |
| 11S17E32C001M | DWR                            | Unknown    | 11S/17E/32 |            |                 | 5/25/1937                                   | 1/27/2006                                      | 102                                     |
| 11S17E32H001M | DWR                            | Unknown    | 11S/17E/32 |            |                 | 10/17/1952                                  | 1/24/1980                                      | 43                                      |
| 11S17E32R002M | Unknown                        | Irrigation | 11S/17E/32 | 656        | 290-635         | 11/18/1936                                  | 10/11/2023                                     | 142                                     |
| 11S17E33B001M | DWR                            | Unknown    | 11S/17E/33 |            |                 | 10/16/1920                                  | 3/9/1962                                       | 59                                      |
| 11S17E33H001M | DWR                            | Unknown    | 11S/17E/33 |            |                 | 10/16/1920                                  | 2/12/2014                                      | 139                                     |
| 11S17E33N002M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/17E/04 | 600        | 280-593         | 10/12/2015                                  | 10/20/2022                                     | 13                                      |
| 11S17E35C001M | DWR                            | Unknown    | 11S/17E/35 |            |                 | 12/10/1934                                  | 2/4/1988                                       | 93                                      |
| 11S17E35D001M | Madera-Chowchilla CASGEM Group | Irrigation | 11S/17E/35 | 460        | 200-460         | 10/12/2015                                  | 11/1/2018                                      | 2                                       |
| 11S17E36B001M | DWR                            | Unknown    | 11S/17E/36 |            |                 | 10/23/1935                                  | 10/7/1976                                      | 64                                      |
| 11S17E36R001M | DWR                            | Unknown    | 11S/17E/36 |            |                 | 11/21/1930                                  | 3/1/1962                                       | 50                                      |
| 11S18E01B001M | DWR                            | Unknown    | 11S/18E/01 |            |                 | 2/23/1960                                   | 2/1/1968                                       | 11                                      |
| 11S18E01M001M | DWR                            | Unknown    | 11S/18E/01 |            |                 | 9/18/1979                                   | 9/18/1979                                      | 1                                       |
| 11S18E02H001M | DWR                            | Unknown    | 11S/18E/02 |            |                 | 9/19/1979                                   | 9/19/1979                                      | 1                                       |
| 11S18E02M001M | Madera-Chowchilla CASGEM Group | Other      | 11S/18E/02 | 360        | 300-360         | 10/15/2015                                  | 10/13/2022                                     | 14                                      |
| 11S18E02M002M | Madera-Chowchilla CASGEM Group | Other      | 11S/18E/02 | 400        | 320-400         | 10/15/2015                                  | 10/13/2022                                     | 14                                      |
| 11S18E03J001M | Madera County                  | Other      | 11S/18E/03 | 500        | 420-500         | 10/15/2015                                  | 3/6/2024                                       | 5                                       |
| 11S18E04E001M | DWR                            | Unknown    | 11S/18E/04 |            |                 | 2/17/1964                                   | 1/23/2006                                      | 35                                      |
| 11S18E05G001M | DWR                            | Unknown    | 11S/18E/05 |            |                 | 10/17/1952                                  | 3/28/1958                                      | 2                                       |
| 11S18E05J001M | DWR                            | Unknown    | 11S/18E/05 |            |                 | 12/18/1960                                  | 10/3/1988                                      | 29                                      |

**Table 3.J-1 - Supplemental Groundwater Level Monitoring Network, Madera Subbasin**

| Well ID       | Monitoring Entity              | Well Type  | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Level Measurement Date | Most Recent Groundwater Level Measurement Date | Count of Groundwater Level Measurements |
|---------------|--------------------------------|------------|------------|------------|-----------------|---|--|---|
| 11S18E06P001M | DWR                            | Unknown    | 11S/18E/06 |            |                 | 3/4/1960                                    | 9/28/1965                                      | 4                                       |
| 11S18E07L001M | DWR                            | Unknown    | 11S/18E/07 |            |                 | 2/15/1965                                   | 2/28/2011                                      | 69                                      |
| 11S18E08Q001M | DWR                            | Unknown    | 11S/18E/08 |            |                 | 10/29/1959                                  | 2/21/2008                                      | 96                                      |
| 11S18E08Q002M | DWR                            | Unknown    | 11S/18E/08 |            |                 | 2/20/1961                                   | 2/21/2008                                      | 93                                      |
| 11S18E09A001M | DWR                            | Unknown    | 11S/18E/09 |            |                 | 10/7/1941                                   | 9/29/1986                                      | 78                                      |
| 11S18E10H001M | DWR                            | Unknown    | 11S/18E/10 |            |                 | 9/19/1979                                   | 9/19/1979                                      | 1                                       |
| 11S18E11A001M | DWR                            | Unknown    | 11S/18E/12 |            |                 | 9/19/1979                                   | 9/19/1979                                      | 1                                       |
| 11S18E13C001M | DWR                            | Unknown    | 11S/18E/13 |            |                 | 9/19/1979                                   | 9/19/1979                                      | 1                                       |
| 11S18E13P001M | DWR                            | Unknown    | 11S/18E/13 |            |                 | 2/10/1964                                   | 2/1/1968                                       | 6                                       |
| 11S18E16K001M | DWR                            | Unknown    | 11S/18E/16 |            |                 | 10/30/1920                                  | 12/1/1958                                      | 59                                      |
| 11S18E16L001M | DWR                            | Unknown    | 11S/18E/16 |            |                 | 12/11/1961                                  | 2/20/1963                                      | 2                                       |
| 11S18E17L001M | DWR                            | Unknown    | 11S/18E/17 |            |                 | 11/27/1934                                  | 3/9/1962                                       | 41                                      |
| 11S18E18A001M | DWR                            | Unknown    | 11S/18E/18 |            |                 | 12/3/1959                                   | 1/23/2006                                      | 81                                      |
| 11S18E20N001M | DWR                            | Unknown    | 11S/18E/20 |            |                 | 11/3/1920                                   | 2/15/2011                                      | 135                                     |
| 11S18E21E001M | DWR                            | Unknown    | 11S/18E/21 |            |                 | 11/28/1941                                  | 12/8/1961                                      | 32                                      |
| 11S18E24G001M | DWR                            | Unknown    | 11S/18E/24 |            |                 | 9/19/1979                                   | 9/19/1979                                      | 1                                       |
| 11S18E25D001M | DWR                            | Unknown    | 11S/18E/25 |            |                 | 9/19/1979                                   | 9/19/1979                                      | 1                                       |
| 11S18E25M001M | DWR                            | Unknown    | 11S/18E/25 |            |                 | 12/6/1948                                   | 2/20/1961                                      | 16                                      |
| 11S18E25M002M | DWR                            | Unknown    | 11S/18E/25 |            |                 | 9/19/1979                                   | 9/19/1979                                      | 1                                       |
| 11S18E27F001M | Madera ID                      | Unknown    | 11S/18E/27 |            |                 | 3/4/1960                                    | 2/14/2014                                      | 79                                      |
| 11S18E27M001M | DWR                            | Unknown    | 11S/18E/27 |            |                 | 3/3/1959                                    | 2/15/2011                                      | 151                                     |
| 11S18E27N002M | DWR                            | Unknown    | 11S/18E/27 |            |                 | 10/24/1956                                  | 3/28/1958                                      | 4                                       |
| 11S18E28P001M | DWR                            | Unknown    | 11S/18E/28 |            |                 | 2/17/1964                                   | 2/15/2011                                      | 76                                      |
| 11S18E29H001M | DWR                            | Unknown    | 11S/18E/29 |            |                 | 2/17/1964                                   | 2/15/2011                                      | 73                                      |
| 11S18E30D001M | DWR                            | Unknown    | 11S/18E/30 |            |                 | 3/4/1960                                    | 1/23/2006                                      | 68                                      |
| 11S18E30R001M | DWR                            | Unknown    | 11S/18E/30 |            |                 | 11/3/1920                                   | 1/25/1966                                      | 61                                      |
| 11S18E31A003M | DWR                            | Unknown    | 11S/18E/31 |            |                 | 2/8/1968                                    | 2/15/2011                                      | 72                                      |
| 11S18E31C001M | DWR                            | Unknown    | 11S/18E/31 |            |                 | 9/7/1925                                    | 2/10/1966                                      | 36                                      |
| 11S18E32J001M | DWR                            | Unknown    | 11S/18E/32 |            |                 | 11/7/1929                                   | 2/9/1966                                       | 49                                      |
| 11S18E33D001M | DWR                            | Unknown    | 11S/18E/33 |            |                 | 3/4/1960                                    | 2/15/2011                                      | 76                                      |
| 11S18E34B001M | DWR                            | Unknown    | 11S/18E/34 |            |                 | 3/4/1960                                    | 2/15/2011                                      | 86                                      |
| 11S18E35C001M | DWR                            | Unknown    | 11S/18E/35 |            |                 | 9/19/1979                                   | 9/19/1979                                      | 1                                       |
| 11S19E02M001M | DWR                            | Unknown    | 11S/19E/02 |            |                 | 9/19/1979                                   | 9/19/1979                                      | 1                                       |
| 11S19E03N001M | DWR                            | Unknown    | 11S/19E/10 |            |                 | 9/19/1979                                   | 9/19/1979                                      | 1                                       |
| 11S19E06F001M | DWR                            | Unknown    | 11S/19E/06 |            |                 | 10/7/1941                                   | 2/23/1960                                      | 34                                      |
| 11S19E10J002M | Madera County                  | Unknown    | 11S/19E/10 |            |                 | 1/19/1979                                   | 3/6/2024                                       | 43                                      |
| 11S19E17Q001M | DWR                            | Unknown    | 11S/19E/17 |            |                 | 9/2/1945                                    | 12/15/1960                                     | 25                                      |
| 11S19E19F001M | DWR                            | Unknown    | 11S/19E/19 |            |                 | 2/10/1964                                   | 2/15/2011                                      | 68                                      |
| 11S19E19N001M | Madera County                  | Unknown    | 11S/19E/19 |            |                 | 2/10/1964                                   | 3/6/2024                                       | 74                                      |
| 11S19E20G001M | DWR                            | Unknown    | 11S/19E/20 |            |                 | 10/12/1960                                  | 2/15/2011                                      | 72                                      |
| 11S19E28F001M | DWR                            | Unknown    | 11S/19E/28 |            |                 | 2/10/1964                                   | 1/24/2006                                      | 72                                      |
| 11S19E32P001M | DWR                            | Unknown    | 11S/19E/32 |            |                 | 1/20/1953                                   | 2/12/2014                                      | 105                                     |
| 11S19E32R001M | Madera-Chowchilla CASGEM Group | Irrigation | 11S/19E/32 |            |                 | 2/10/1964                                   | 10/17/2017                                     | 90                                      |
| 11S19E33J001M | DWR                            | Unknown    | 11S/19E/33 |            |                 | 2/10/1964                                   | 1/24/2006                                      | 73                                      |
| 11S20E11G001M | DWR                            | Unknown    | 11S/20E/11 |            |                 | 2/12/1964                                   | 9/30/1970                                      | 7                                       |
| 11S20E12E001M | DWR                            | Unknown    | 11S/20E/12 |            |                 | 2/12/1964                                   | 3/4/1983                                       | 34                                      |
| 11S20E18L001M | DWR                            | Unknown    | 11S/20E/18 |            |                 | 2/12/1964                                   | 3/21/2019                                      | 56                                      |
| 11S20E21P001M | DWR                            | Unknown    | 11S/20E/28 |            |                 | 10/20/1936                                  | 2/11/1969                                      | 51                                      |
| 11S20E22M001M | DWR                            | Unknown    | 11S/20E/22 |            |                 | 5/6/1936                                    | 2/3/1966                                       | 50                                      |
| 11S20E22M002M | DWR                            | Unknown    | 11S/20E/22 |            |                 | 2/8/1967                                    | 10/2/1969                                      | 2                                       |
| 11S20E23M001M | DWR                            | Unknown    | 11S/20E/23 |            |                 | 5/12/1936                                   | 9/30/1970                                      | 57                                      |
| 11S20E27N001M | DWR                            | Unknown    | 11S/20E/27 |            |                 | 5/6/1936                                    | 2/12/1964                                      | 43                                      |
| 11S20E27N002M | Madera County                  | Unknown    | 11S/20E/27 |            |                 | 10/7/1964                                   | 3/6/2024                                       | 69                                      |
| 11S20E29D001M | DWR                            | Unknown    | 11S/20E/29 |            |                 | 8/15/1978                                   | 1/24/2003                                      | 32                                      |
| 11S20E30F001M | DWR                            | Unknown    | 11S/20E/30 |            |                 | 2/12/1964                                   | 3/21/2019                                      | 52                                      |
| 11S20E31P001M | DWR                            | Unknown    | 11S/20E/31 |            |                 | 2/12/1964                                   | 3/21/2019                                      | 67                                      |
| 11S20E31R001M | DWR                            | Unknown    | 11S/20E/31 |            |                 | 5/6/1936                                    | 2/11/1963                                      | 52                                      |
| 11S20E33K001M | DWR                            | Unknown    | 11S/20E/33 |            |                 | 2/12/1964                                   | 3/21/2019                                      | 59                                      |
| 11S20E33Q001M | DWR                            | Unknown    | 11S/20E/33 |            |                 | 10/11/1961                                  | 2/10/1965                                      | 7                                       |
| 11S20E35L001M | DWR                            | Unknown    | 11S/20E/35 |            |                 | 9/24/1936                                   | 2/11/1969                                      | 54                                      |
| 12S14E01N001M | DWR                            | Unknown    | 12S/14E/01 |            |                 | 4/2/1941                                    | 2/18/2011                                      | 95                                      |
| 12S14E04P001M | DWR                            | Unknown    | 12S/14E/04 |            |                 | 2/13/1947                                   | 3/13/2017                                      | 114                                     |
| 12S14E10L001M | DWR                            | Unknown    | 12S/14E/10 |            |                 | 2/13/1964                                   | 10/3/1980                                      | 28                                      |
| 12S14E12N001M | DWR                            | Unknown    | 12S/14E/12 |            |                 | 10/16/1958                                  | 1/26/1990                                      | 49                                      |
| 12S14E13P001M | DWR                            | Unknown    | 12S/14E/13 |            |                 | 12/17/1941                                  | 3/9/1959                                       | 31                                      |
| 12S15E01R001M | DWR                            | Unknown    | 12S/15E/01 |            |                 | 10/6/1976                                   | 3/13/2019                                      | 53                                      |

**Table 3.J-1 - Supplemental Groundwater Level Monitoring Network, Madera Subbasin**

| Well ID       | Monitoring Entity              | Well Type  | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Level Measurement Date | Most Recent Groundwater Level Measurement Date | Count of Groundwater Level Measurements |
|---------------|--------------------------------|------------|------------|------------|-----------------|---|--|---|
| 12S15E02A001M | DWR                            | Unknown    | 12S/15E/02 |            |                 | 4/22/1940                                   | 3/10/1959                                      | 27                                      |
| 12S15E04Q001M | DWR                            | Unknown    | 12S/15E/04 |            |                 | 10/14/1952                                  | 2/24/1961                                      | 5                                       |
| 12S15E09J001M | DWR                            | Unknown    | 12S/15E/09 |            |                 | 1/12/1950                                   | 2/19/1963                                      | 14                                      |
| 12S15E11R001M | Madera County                  | Irrigation | 12S/15E/11 | 216        | 205-212         | 10/6/1976                                   | 3/7/2024                                       | 61                                      |
| 12S15E13R001M | DWR                            | Unknown    | 12S/15E/13 |            |                 | 10/12/1976                                  | 3/13/2019                                      | 54                                      |
| 12S15E14A001M | DWR                            | Unknown    | 12S/15E/14 |            |                 | 2/14/1964                                   | 9/28/1974                                      | 12                                      |
| 12S15E14L001M | DWR                            | Unknown    | 12S/15E/14 |            |                 | 10/17/1958                                  | 1/30/1981                                      | 32                                      |
| 12S15E15M001M | DWR                            | Unknown    | 12S/15E/15 |            |                 | 1/12/1950                                   | 9/30/1981                                      | 48                                      |
| 12S15E16A001M | New Stone WD                   | Unknown    | 12S/15E/16 |            |                 | 1/12/1950                                   | 3/7/2024                                       | 88                                      |
| 12S15E17E001M | DWR                            | Unknown    | 12S/15E/17 |            |                 | 3/17/1952                                   | 3/13/2019                                      | 77                                      |
| 12S15E22F001M | DWR                            | Unknown    | 12S/15E/22 |            |                 | 1/12/1950                                   | 1/23/1975                                      | 35                                      |
| 12S15E27C001M | DWR                            | Unknown    | 12S/15E/27 |            |                 | 1/12/1950                                   | 2/24/2011                                      | 91                                      |
| 12S15E29C001M | DWR                            | Unknown    | 12S/15E/29 |            |                 | 10/6/1976                                   | 3/13/2019                                      | 50                                      |
| 12S16E02N001M | DWR                            | Unknown    | 12S/16E/11 |            |                 | 4/22/1941                                   | 2/12/2014                                      | 128                                     |
| 12S16E04A001M | DWR                            | Unknown    | 12S/16E/04 |            |                 | 12/5/1961                                   | 2/17/2009                                      | 72                                      |
| 12S16E06A001M | DWR                            | Unknown    | 12S/16E/06 |            |                 | 4/20/1940                                   | 3/13/2017                                      | 100                                     |
| 12S16E12A001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/16E/12 | 600        | 300-600         | 10/22/1920                                  | 10/25/2022                                     | 7                                       |
| 12S16E12H001M | DWR                            | Unknown    | 12S/16E/12 |            |                 | 11/21/1932                                  | 2/12/2014                                      | 125                                     |
| 12S16E12L002M | Madera ID                      | Irrigation | 12S/16E/12 | 615        | 315-615         | 10/12/2015                                  | 10/23/2023                                     | 18                                      |
| 12S16E13A001M | DWR                            | Unknown    | 12S/16E/13 |            |                 | 12/9/1960                                   | 9/12/1979                                      | 6                                       |
| 12S16E13H002M | DWR                            | Unknown    | 12S/16E/13 |            |                 | 12/21/1937                                  | 2/24/1961                                      | 40                                      |
| 12S16E15P001M | DWR                            | Unknown    | 12S/16E/15 |            |                 | 7/28/1941                                   | 2/24/1961                                      | 32                                      |
| 12S16E16R001M | DWR                            | Unknown    | 12S/16E/21 |            |                 | 12/9/1960                                   | 2/12/2014                                      | 84                                      |
| 12S16E17D001M | DWR                            | Unknown    | 12S/16E/18 |            |                 | 4/25/1940                                   | 2/7/1974                                       | 59                                      |
| 12S16E17R001M | DWR                            | Unknown    | 12S/16E/20 |            |                 | 4/25/1940                                   | 10/4/1984                                      | 75                                      |
| 12S16E19P001M | DWR                            | Unknown    | 12S/16E/19 |            |                 | 10/12/1976                                  | 2/15/2011                                      | 45                                      |
| 12S16E23A001M | DWR                            | Unknown    | 12S/16E/23 |            |                 | 11/28/1938                                  | 2/19/2009                                      | 97                                      |
| 12S16E23H001M | DWR                            | Unknown    | 12S/16E/23 |            |                 | 12/21/1937                                  | 3/14/2019                                      | 122                                     |
| 12S16E24A002M | DWR                            | Unknown    | 12S/16E/24 |            |                 | 12/19/1940                                  | 1/30/1985                                      | 75                                      |
| 12S16E25A001M | DWR                            | Unknown    | 12S/16E/25 |            |                 | 4/2/1943                                    | 2/19/2009                                      | 83                                      |
| 12S16E25R001M | Madera County                  | Irrigation | 12S/16E/25 | 580        | 220-580         | 10/13/2015                                  | 10/31/2023                                     | 10                                      |
| 12S16E25R002M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/16E/25 | 580        | 220-580         | 10/9/2017                                   | 10/21/2022                                     | 9                                       |
| 12S16E26H001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/16E/26 | 286        | 228-284         | 11/9/1944                                   | 10/21/2019                                     | 129                                     |
| 12S16E26R001M | DWR                            | Unknown    | 12S/16E/26 |            |                 | 7/18/1949                                   | 3/14/2019                                      | 111                                     |
| 12S16E27R001M | DWR                            | Unknown    | 12S/16E/27 |            |                 | 3/27/1950                                   | 10/12/1961                                     | 21                                      |
| 12S16E27R002M | DWR                            | Unknown    | 12S/16E/27 |            |                 | 10/15/1958                                  | 10/8/1974                                      | 24                                      |
| 12S16E33H     | Unknown                        | Unknown    | 12S/16E/33 |            |                 | 9/15/2007                                   | 10/22/2014                                     | 57                                      |
| 12S16E34J001M | DWR                            | Unknown    | 12S/16E/34 |            |                 | 7/18/1949                                   | 2/21/1961                                      | 11                                      |
| 12S16E35J001M | DWR                            | Unknown    | 12S/16E/35 |            |                 | 1/10/1950                                   | 9/12/1979                                      | 24                                      |
| 12S16E35J002M | DWR                            | Unknown    | 12S/16E/35 |            |                 | 2/21/1961                                   | 10/8/1974                                      | 16                                      |
| 12S16E36A001M | DWR                            | Unknown    | 12S/16E/36 |            |                 | 10/5/1944                                   | 2/12/2014                                      | 112                                     |
| 12S17E01J002M | DWR                            | Unknown    | 12S/17E/01 |            |                 | 12/3/1941                                   | 2/12/2014                                      | 114                                     |
| 12S17E02C001M | DWR                            | Unknown    | 12S/17E/02 |            |                 | 10/23/1935                                  | 1/25/1983                                      | 73                                      |
| 12S17E02J001M | DWR                            | Unknown    | 12S/17E/02 |            |                 | 11/30/1932                                  | 2/12/2014                                      | 129                                     |
| 12S17E02P001M | DWR                            | Unknown    | 12S/17E/02 |            |                 | 12/7/1934                                   | 2/19/1963                                      | 47                                      |
| 12S17E03C001M | DWR                            | Unknown    | 12S/17E/03 |            |                 | 1/2/1934                                    | 2/12/2014                                      | 121                                     |
| 12S17E03D001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/17E/03 | 644        | 308-596         | 10/12/2015                                  | 10/12/2022                                     | 7                                       |
| 12S17E03F001M | DWR                            | Unknown    | 12S/17E/03 |            |                 | 12/31/1936                                  | 2/12/2014                                      | 122                                     |
| 12S17E04L001M | DWR                            | Unknown    | 12S/17E/04 |            |                 | 10/23/1935                                  | 2/1/2006                                       | 118                                     |
| 12S17E05B001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/17E/05 | 724        | 430-715         | 10/12/2015                                  | 10/11/2022                                     | 12                                      |
| 12S17E05N001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/17E/08 | 625        | 200-546         | 10/12/2015                                  | 10/11/2022                                     | 4                                       |
| 12S17E05P001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/17E/08 | 680        | 300-680         | 10/12/2015                                  | 10/11/2022                                     | 14                                      |
| 12S17E06A003M | DWR                            | Unknown    | 12S/17E/06 |            |                 | 12/10/1934                                  | 2/12/2014                                      | 126                                     |
| 12S17E06R001M | DWR                            | Unknown    | 12S/17E/07 |            |                 | 11/18/1937                                  | 2/12/2014                                      | 111                                     |
| 12S17E08B001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/17E/08 | 612        | 220-548         | 10/12/2015                                  | 10/11/2022                                     | 12                                      |
| 12S17E08G001M | DWR                            | Unknown    | 12S/17E/08 |            |                 | 10/30/1959                                  | 2/12/2014                                      | 163                                     |
| 12S17E08G002M | DWR                            | Unknown    | 12S/17E/08 |            |                 | 10/24/1961                                  | 2/12/2014                                      | 90                                      |
| 12S17E09J001M | DWR                            | Unknown    | 12S/17E/09 |            |                 | 12/19/1940                                  | 2/12/2014                                      | 109                                     |
| 12S17E10H001M | DWR                            | Unknown    | 12S/17E/10 |            |                 | 4/25/1935                                   | 2/12/2014                                      | 132                                     |
| 12S17E11D001M | DWR                            | Unknown    | 12S/17E/11 |            |                 | 12/6/1961                                   | 2/12/2014                                      | 79                                      |
| 12S17E11J001M | DWR                            | Unknown    | 12S/17E/11 |            |                 | 10/21/1952                                  | 2/28/2011                                      | 86                                      |
| 12S17E11P001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/17E/11 | 660        | 300-660         | 10/13/2015                                  | 10/11/2022                                     | 14                                      |
| 12S17E12A001M | DWR                            | Unknown    | 12S/17E/12 |            |                 | 12/6/1961                                   | 2/13/1969                                      | 9                                       |
| 12S17E12C001M | DWR                            | Unknown    | 12S/17E/12 |            |                 | 10/18/1920                                  | 12/18/1960                                     | 58                                      |
| 12S17E13J001M | DWR                            | Unknown    | 12S/17E/13 |            |                 | 12/11/1957                                  | 2/12/2014                                      | 82                                      |
| 12S17E13K001M | DWR                            | Unknown    | 12S/17E/13 |            |                 | 12/9/1959                                   | 2/28/2011                                      | 83                                      |

**Table 3.J-1 - Supplemental Groundwater Level Monitoring Network, Madera Subbasin**

| Well ID       | Monitoring Entity              | Well Type  | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Level Measurement Date | Most Recent Groundwater Level Measurement Date | Count of Groundwater Level Measurements |
|---------------|--------------------------------|------------|------------|------------|-----------------|---|--|---|
| 12S17E14F001M | DWR                            | Unknown    | 12S/17E/14 |            |                 | 11/7/1944                                   | 2/12/2014                                      | 124                                     |
| 12S17E15J001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/17E/15 |            |                 | 10/23/1935                                  | 2/12/2014                                      | 130                                     |
| 12S17E16A003M | Madera ID                      | Unknown    | 12S/17E/16 | 315        |                 | 3/13/1962                                   | 10/10/2023                                     | 106                                     |
| 12S17E16D001M | DWR                            | Unknown    | 12S/17E/16 |            |                 | 11/18/1937                                  | 2/14/1973                                      | 63                                      |
| 12S17E16D002M | DWR                            | Unknown    | 12S/17E/16 |            |                 | 10/2/1957                                   | 2/11/1964                                      | 14                                      |
| 12S17E16H001M | DWR                            | Unknown    | 12S/17E/16 |            |                 | 10/1/1928                                   | 2/20/1961                                      | 37                                      |
| 12S17E17M001M | DWR                            | Unknown    | 12S/17E/17 |            |                 | 12/9/1959                                   | 10/11/1972                                     | 18                                      |
| 12S17E18A002M | DWR                            | Unknown    | 12S/17E/18 |            |                 | 3/31/1942                                   | 2/2/2006                                       | 93                                      |
| 12S17E20A001M | DWR                            | Unknown    | 12S/17E/20 |            |                 | 12/9/1959                                   | 3/12/1962                                      | 2                                       |
| 12S17E20P001M | DWR                            | Unknown    | 12S/17E/20 |            |                 | 12/3/1958                                   | 2/12/2014                                      | 107                                     |
| 12S17E20Q001M | DWR                            | Unknown    | 12S/17E/20 |            |                 | 5/20/1937                                   | 3/24/1958                                      | 35                                      |
| 12S17E21H001M | DWR                            | Unknown    | 12S/17E/21 |            |                 | 3/23/1938                                   | 3/1/2011                                       | 108                                     |
| 12S17E21J001M | DWR                            | Unknown    | 12S/17E/21 |            |                 | 12/31/1936                                  | 2/8/1967                                       | 41                                      |
| 12S17E23C001M | DWR                            | Unknown    | 12S/17E/23 |            |                 | 10/8/1951                                   | 2/12/2014                                      | 97                                      |
| 12S17E24D001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/17E/24 | 510        | 240-510         | 10/13/2015                                  | 10/24/2022                                     | 12                                      |
| 12S17E24H001M | DWR                            | Unknown    | 12S/17E/24 |            |                 | 12/9/1959                                   | 2/12/2014                                      | 78                                      |
| 12S17E26A001M | DWR                            | Unknown    | 12S/17E/26 |            |                 | 10/1/1928                                   | 2/12/2014                                      | 122                                     |
| 12S17E26C001M | DWR                            | Unknown    | 12S/17E/26 |            |                 | 10/30/1959                                  | 2/12/2014                                      | 162                                     |
| 12S17E26N001M | DWR                            | Unknown    | 12S/17E/26 |            |                 | 9/4/1951                                    | 2/12/2014                                      | 100                                     |
| 12S17E28G001M | DWR                            | Unknown    | 12S/17E/28 |            |                 | 12/6/1961                                   | 2/9/1967                                       | 6                                       |
| 12S17E28H001M | DWR                            | Unknown    | 12S/17E/28 |            |                 | 12/6/1941                                   | 3/8/1960                                       | 25                                      |
| 12S17E29H002M | DWR                            | Unknown    | 12S/17E/29 |            |                 | 10/5/1944                                   | 3/1/2011                                       | 106                                     |
| 12S17E31A001M | DWR                            | Unknown    | 12S/17E/31 |            |                 | 12/13/1940                                  | 2/12/2014                                      | 114                                     |
| 12S17E32H001M | DWR                            | Unknown    | 12S/17E/32 |            |                 | 10/2/1937                                   | 2/12/2014                                      | 120                                     |
| 12S17E33K001M | Madera-Chowchilla CASGEM Group | Other      | 12S/17E/33 | 268        |                 | 10/13/2015                                  | 10/10/2022                                     | 12                                      |
| 12S17E33N001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/17E/33 | 580        | 230-580         | 10/13/2015                                  | 10/10/2022                                     | 13                                      |
| 12S17E34A001M | DWR                            | Unknown    | 12S/17E/34 |            |                 | 4/17/1922                                   | 2/12/2014                                      | 146                                     |
| 12S17E34D001M | DWR                            | Unknown    | 12S/17E/34 |            |                 | 5/8/1936                                    | 2/2/2006                                       | 111                                     |
| 12S17E34R001M | DWR                            | Unknown    | 12S/17E/34 |            |                 | 10/10/1951                                  | 2/12/2014                                      | 174                                     |
| 12S17E35B001M | DWR                            | Unknown    | 12S/17E/35 |            |                 | 12/4/1934                                   | 2/9/1967                                       | 41                                      |
| 12S17E35R001M | DWR                            | Unknown    | 12S/17E/35 |            |                 | 2/7/1968                                    | 2/12/2014                                      | 74                                      |
| 12S17E36A001M | DWR                            | Unknown    | 12S/17E/36 |            |                 | 10/20/1920                                  | 2/20/1961                                      | 50                                      |
| 12S17E36B001M | DWR                            | Unknown    | 12S/17E/36 |            |                 | 12/6/1961                                   | 1/25/2006                                      | 57                                      |
| 12S17E36K001M | DWR                            | Unknown    | 12S/17E/36 |            |                 | 9/1/1937                                    | 2/12/2014                                      | 124                                     |
| 12S17E36R001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/17E/36 | 299        | 200-293         | 10/15/2015                                  | 7/1/2019                                       | 4                                       |
| 12S18E01A001M | DWR                            | Unknown    | 12S/18E/01 |            |                 | 12/12/1944                                  | 1/25/2006                                      | 83                                      |
| 12S18E01P001M | DWR                            | Unknown    | 12S/18E/01 |            |                 | 12/5/1958                                   | 2/28/1962                                      | 5                                       |
| 12S18E03D001M | DWR                            | Unknown    | 12S/18E/04 |            |                 | 2/6/2012                                    | 2/12/2014                                      | 1                                       |
| 12S18E04C001M | DWR                            | Unknown    | 12S/18E/04 |            |                 | 10/14/1925                                  | 9/14/2009                                      | 112                                     |
| 12S18E04J001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/18E/04 | 560        | 272-556         | 10/12/2015                                  | 10/17/2022                                     | 13                                      |
| 12S18E04L001M | DWR                            | Unknown    | 12S/18E/04 |            |                 | 2/6/2012                                    | 2/12/2014                                      | 1                                       |
| 12S18E04R001M | DWR                            | Unknown    | 12S/18E/04 |            |                 | 6/9/1937                                    | 1/24/2006                                      | 88                                      |
| 12S18E05A001M | DWR                            | Unknown    | 12S/18E/05 |            |                 | 12/3/1940                                   | 2/12/2014                                      | 123                                     |
| 12S18E05C001M | DWR                            | Unknown    | 12S/18E/05 |            |                 | 12/16/1936                                  | 1/24/2006                                      | 101                                     |
| 12S18E05F001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/18E/05 | 570        | 240-570         | 10/12/2015                                  | 10/17/2022                                     | 11                                      |
| 12S18E06J001M | DWR                            | Unknown    | 12S/18E/06 |            |                 | 11/30/1932                                  | 3/13/1962                                      | 43                                      |
| 12S18E06J002M | Madera ID                      | Irrigation | 12S/18E/06 | 176        |                 | 2/7/2012                                    | 10/19/2023                                     | 9                                       |
| 12S18E06J002M | Madera ID                      | Unknown    | 12S/18E/06 |            |                 | 2/7/2012                                    | 10/19/2023                                     | 9                                       |
| 12S18E06J003M | Madera ID                      | Irrigation | 12S/18E/06 | 176        |                 | 10/15/2008                                  | 10/12/2022                                     | 24                                      |
| 12S18E07B001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/18E/07 | 660        | 300-600         | 10/12/2015                                  | 10/12/2022                                     | 13                                      |
| 12S18E07H001M | DWR                            | Unknown    | 12S/18E/07 |            |                 | 10/20/1920                                  | 2/12/2014                                      | 133                                     |
| 12S18E08Q001M | DWR                            | Unknown    | 12S/18E/08 |            |                 | 2/7/2012                                    | 2/12/2014                                      | 3                                       |
| 12S18E09P001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/18E/09 |            |                 | 12/10/1959                                  | 2/11/2014                                      | 89                                      |
| 12S18E10D001M | DWR                            | Unknown    | 12S/18E/10 |            |                 | 6/9/1937                                    | 2/12/2014                                      | 114                                     |
| 12S18E10K002M | Madera ID                      | Irrigation | 12S/18E/10 | 600        | 228-552         | 10/12/2015                                  | 10/9/2023                                      | 14                                      |
| 12S18E10R001M | DWR                            | Unknown    | 12S/18E/15 |            |                 | 4/1/1928                                    | 2/12/2014                                      | 122                                     |
| 12S18E12N001M | DWR                            | Unknown    | 12S/18E/12 |            |                 | 11/7/1929                                   | 2/12/2014                                      | 115                                     |
| 12S18E13K001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/18E/13 | 600        | 320-600         | 10/12/2015                                  | 10/12/2022                                     | 13                                      |
| 12S18E13L001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/18E/13 | 510        | 240-510         | 10/12/2015                                  | 10/12/2022                                     | 10                                      |
| 12S18E13R001M | DWR                            | Unknown    | 12S/18E/24 |            |                 | 10/30/1959                                  | 2/12/2014                                      | 165                                     |
| 12S18E13R002M | DWR                            | Unknown    | 12S/18E/24 |            |                 | 2/20/1961                                   | 2/12/2014                                      | 94                                      |
| 12S18E16A002M | Madera ID                      | Irrigation | 12S/18E/16 | 200        |                 | 10/31/1951                                  | 10/12/2022                                     | 116                                     |
| 12S18E16K002M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/18E/16 | 340        | 240-340         | 10/12/2015                                  | 10/17/2022                                     | 13                                      |
| 12S18E16Q001M | DWR                            | Unknown    | 12S/18E/16 |            |                 | 12/4/1940                                   | 1/23/2006                                      | 82                                      |
| 12S18E17C001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/18E/17 | 600        | 280-600         | 10/12/2015                                  | 10/10/2022                                     | 14                                      |
| 12S18E17L001M | DWR                            | Unknown    | 12S/18E/17 |            |                 | 12/10/1959                                  | 2/11/2014                                      | 77                                      |

**Table 3.J-1 - Supplemental Groundwater Level Monitoring Network, Madera Subbasin**

| Well ID       | Monitoring Entity              | Well Type  | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Level Measurement Date | Most Recent Groundwater Level Measurement Date | Count of Groundwater Level Measurements |
|---------------|--------------------------------|------------|------------|------------|-----------------|---|--|---|
| 12S18E19H001M | DWR                            | Unknown    | 12S/18E/19 |            |                 | 12/10/1959                                  | 2/13/2014                                      | 85                                      |
| 12S18E20P001M | DWR                            | Unknown    | 12S/18E/20 |            |                 | 12/2/1958                                   | 2/13/2014                                      | 79                                      |
| 12S18E21G001M | DWR                            | Unknown    | 12S/18E/21 |            |                 | 11/3/1920                                   | 2/13/2014                                      | 145                                     |
| 12S18E21H001M | DWR                            | Unknown    | 12S/18E/21 |            |                 | 10/8/1958                                   | 6/1/1977                                       | 108                                     |
| 12S18E21H002M | DWR                            | Unknown    | 12S/18E/21 |            |                 | 1/27/1999                                   | 2/13/2014                                      | 14                                      |
| 12S18E25A001M | DWR                            | Unknown    | 12S/18E/25 |            |                 | 10/12/1961                                  | 10/6/1964                                      | 6                                       |
| 12S18E25B001M | DWR                            | Unknown    | 12S/18E/25 |            |                 | 12/5/1958                                   | 2/13/2014                                      | 78                                      |
| 12S18E25L001M | DWR                            | Unknown    | 12S/18E/25 |            |                 | 12/5/1958                                   | 1/24/2006                                      | 72                                      |
| 12S18E25M001M | DWR                            | Unknown    | 12S/18E/25 |            |                 | 12/5/1958                                   | 2/13/2014                                      | 84                                      |
| 12S18E26D001M | DWR                            | Unknown    | 12S/18E/26 |            |                 | 12/5/1958                                   | 2/24/2011                                      | 79                                      |
| 12S18E26L001M | DWR                            | Unknown    | 12S/18E/26 |            |                 | 2/6/2012                                    | 2/13/2014                                      | 3                                       |
| 12S18E26R001M | DWR                            | Unknown    | 12S/18E/35 |            |                 | 2/7/2012                                    | 2/13/2014                                      | 0                                       |
| 12S18E28J001M | DWR                            | Unknown    | 12S/18E/28 |            |                 | 10/15/1958                                  | 2/13/2014                                      | 83                                      |
| 12S18E30C001M | DWR                            | Unknown    | 12S/18E/30 |            |                 | 10/15/1958                                  | 2/13/2014                                      | 82                                      |
| 12S18E30D001M | DWR                            | Unknown    | 12S/18E/30 |            |                 | 12/5/1958                                   | 1/25/2006                                      | 71                                      |
| 12S18E31J001M | DWR                            | Unknown    | 12S/18E/31 |            |                 | 12/7/1961                                   | 2/13/2014                                      | 80                                      |
| 12S18E33C001M | DWR                            | Unknown    | 12S/18E/33 |            |                 | 12/8/1958                                   | 2/13/2014                                      | 80                                      |
| 12S18E34L001M | DWR                            | Unknown    | 12S/18E/34 |            |                 | 12/8/1958                                   | 2/24/2011                                      | 84                                      |
| 12S18E35G001M | DWR                            | Unknown    | 12S/18E/35 |            |                 | 2/7/2012                                    | 2/13/2014                                      | 3                                       |
| 12S19E01M001M | DWR                            | Unknown    | 12S/19E/01 |            |                 | 10/13/1958                                  | 2/3/1966                                       | 15                                      |
| 12S19E01M002M | DWR                            | Unknown    | 12S/19E/01 |            |                 | 2/8/1967                                    | 10/1/1973                                      | 11                                      |
| 12S19E01M003M | DWR                            | Unknown    | 12S/19E/01 |            |                 | 1/24/1979                                   | 2/11/1985                                      | 3                                       |
| 12S19E02A001M | DWR                            | Unknown    | 12S/19E/02 |            |                 | 1/24/1979                                   | 3/21/2019                                      | 27                                      |
| 12S19E03B001M | DWR                            | Unknown    | 12S/19E/03 |            |                 | 10/29/1958                                  | 2/27/1959                                      | 2                                       |
| 12S19E03Q001M | DWR                            | Unknown    | 12S/19E/03 |            |                 | 9/27/1978                                   | 3/21/2019                                      | 47                                      |
| 12S19E04D001M | DWR                            | Unknown    | 12S/19E/04 |            |                 | 10/13/1958                                  | 1/24/1979                                      | 36                                      |
| 12S19E09H001M | DWR                            | Unknown    | 12S/19E/09 |            |                 | 10/13/1958                                  | 1/22/1980                                      | 38                                      |
| 12S19E11B001M | Madera County                  | Unknown    | 12S/19E/11 |            |                 | 8/14/1978                                   | 3/6/2024                                       | 55                                      |
| 12S19E13E001M | DWR                            | Unknown    | 12S/19E/14 |            |                 | 8/14/1978                                   | 3/21/2019                                      | 48                                      |
| 12S19E14R001M | DWR                            | Unknown    | 12S/19E/14 |            |                 | 10/8/1958                                   | 2/10/1965                                      | 14                                      |
| 12S19E16P001M | DWR                            | Unknown    | 12S/19E/21 |            |                 | 10/13/1958                                  | 2/13/1964                                      | 1                                       |
| 12S19E18P001M | DWR                            | Unknown    | 12S/19E/18 |            |                 | 10/13/1958                                  | 2/13/2014                                      | 101                                     |
| 12S19E20A001M | DWR                            | Unknown    | 12S/19E/20 |            |                 | 10/13/1958                                  | 2/18/2011                                      | 99                                      |
| 12S19E20D001M | DWR                            | Unknown    | 12S/19E/20 |            |                 | 10/13/1958                                  | 2/13/2014                                      | 96                                      |
| 12S19E21B001M | DWR                            | Unknown    | 12S/19E/21 |            |                 | 10/11/1961                                  | 2/18/2011                                      | 90                                      |
| 12S19E21N002M | DWR                            | Unknown    | 12S/19E/21 |            |                 | 10/13/1958                                  | 2/3/1966                                       | 17                                      |
| 12S19E23K001M | DWR                            | Unknown    | 12S/19E/23 |            |                 | 8/14/1978                                   | 3/20/2019                                      | 43                                      |
| 12S19E25E001M | DWR                            | Unknown    | 12S/19E/25 |            |                 | 10/13/1958                                  | 1/24/2006                                      | 72                                      |
| 12S19E26C001M | DWR                            | Unknown    | 12S/19E/26 |            |                 | 9/27/1978                                   | 3/20/2019                                      | 39                                      |
| 12S19E28A001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/19E/28 |            |                 | 10/26/1936                                  | 2/11/2014                                      | 139                                     |
| 12S19E28P001M | DWR                            | Unknown    | 12S/19E/28 |            |                 | 5/13/1958                                   | 2/13/2014                                      | 100                                     |
| 12S19E29A001M | DWR                            | Unknown    | 12S/19E/29 |            |                 | 6/29/1937                                   | 2/13/2014                                      | 147                                     |
| 12S19E31A001M | DWR                            | Unknown    | 12S/19E/31 |            |                 | 5/7/1936                                    | 2/11/1969                                      | 59                                      |
| 12S19E31M001M | DWR                            | Unknown    | 12S/19E/31 |            |                 | 9/27/1955                                   | 10/2/1974                                      | 5                                       |
| 12S19E31M002M | DWR                            | Unknown    | 12S/19E/31 |            |                 | 11/6/1932                                   | 3/12/1962                                      | 42                                      |
| 12S19E31M003M | DWR                            | Unknown    | 12S/19E/31 |            |                 | 10/12/1961                                  | 1/24/2006                                      | 72                                      |
| 12S20E04K001M | DWR                            | Unknown    | 12S/20E/04 |            |                 | 2/10/2014                                   | 3/21/2019                                      | 3                                       |
| 12S20E05P001M | DWR                            | Unknown    | 12S/20E/05 |            |                 | 1/24/1979                                   | 3/21/2019                                      | 32                                      |
| 12S20E07B001M | DWR                            | Unknown    | 12S/20E/07 |            |                 | 1/24/1979                                   | 10/5/1982                                      | 6                                       |
| 12S20E09C001M | DWR                            | Unknown    | 12S/20E/09 |            |                 | 10/6/1937                                   | 2/11/1969                                      | 46                                      |
| 12S20E16Q001M | DWR                            | Unknown    | 12S/20E/16 |            |                 | 8/30/1951                                   | 9/27/1974                                      | 38                                      |
| 12S20E17A001M | DWR                            | Unknown    | 12S/20E/17 |            |                 | 8/14/1978                                   | 3/20/2019                                      | 55                                      |
| 12S20E17H001M | DWR                            | Unknown    | 12S/20E/17 |            |                 | 11/1/1937                                   | 1/26/1987                                      | 93                                      |
| 12S20E17H002M | DWR                            | Unknown    | 12S/20E/17 |            |                 | 8/14/1978                                   | 3/20/2019                                      | 50                                      |
| 12S20E18B001M | DWR                            | Unknown    | 12S/20E/18 |            |                 | 2/12/1964                                   | 3/20/2019                                      | 59                                      |
| 12S20E18B002M | DWR                            | Unknown    | 12S/20E/18 |            |                 | 2/12/1964                                   | 2/10/1965                                      | 2                                       |
| 12S20E18N001M | DWR                            | Unknown    | 12S/20E/19 |            |                 | 1/24/1979                                   | 3/20/2019                                      | 41                                      |
| 12S20E19R001M | DWR                            | Unknown    | 12S/20E/19 |            |                 | 2/11/1969                                   | 10/1/1985                                      | 22                                      |
| 12S20E20A001M | Madera-Chowchilla CASGEM Group | Irrigation | 12S/20E/20 | 116        |                 | 9/25/1936                                   | 10/14/2019                                     | 132                                     |
| 12S20E30E001M | DWR                            | Unknown    | 12S/20E/30 |            |                 | 5/5/1936                                    | 9/30/1970                                      | 60                                      |
| 12S20E30J001M | DWR                            | Unknown    | 12S/20E/30 |            |                 | 5/5/1936                                    | 2/11/1969                                      | 54                                      |
| 13S16E01A001M | DWR                            | Unknown    | 13S/16E/01 |            |                 | 11/9/1944                                   | 2/7/1974                                       | 49                                      |
| 13S16E02C001M | DWR                            | Unknown    | 13S/16E/02 |            |                 | 10/12/1959                                  | 2/13/2014                                      | 158                                     |
| 13S16E02C003M | DWR                            | Unknown    | 13S/16E/02 |            |                 | 2/21/1961                                   | 2/13/2014                                      | 91                                      |
| 13S16E02F001M | DWR                            | Unknown    | 13S/16E/02 |            |                 | 3/27/1950                                   | 2/19/2014                                      | 79                                      |
| 13S16E03L001M | DWR                            | Unknown    | 13S/16E/03 |            |                 | 3/7/1952                                    | 3/14/2019                                      | 85                                      |



**Table 3.J-1 - Supplemental Groundwater Level Monitoring Network, Madera Subbasin**

| Well ID           | Monitoring Entity              | Well Type     | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Level Measurement Date | Most Recent Groundwater Level Measurement Date | Count of Groundwater Level Measurements |
|-------------------|--------------------------------|---------------|------------|------------|-----------------|---|--|---|
| 13S16E11C001M     | DWR                            | Unknown       | 13S/16E/11 |            |                 | 2/4/1947                                    | 2/21/1958                                      | 17                                      |
| 13S16E11C002M     | DWR                            | Unknown       | 13S/16E/11 |            |                 | 2/21/1957                                   | 2/10/1966                                      | 11                                      |
| 13S17E01D001M     | DWR                            | Unknown       | 13S/17E/01 |            |                 | 5/7/1936                                    | 2/2/1965                                       | 46                                      |
| 13S17E02M001M     | DWR                            | Unknown       | 13S/17E/02 |            |                 | 5/8/1936                                    | 1/25/2006                                      | 118                                     |
| 13S17E03H001M     | DWR                            | Unknown       | 13S/17E/03 |            |                 | 10/4/1937                                   | 2/13/2014                                      | 130                                     |
| 13S17E03J002M     | DWR                            | Unknown       | 13S/17E/03 |            |                 | 10/2/1937                                   | 2/19/1963                                      | 42                                      |
| 13S17E04A002M     | DWR                            | Unknown       | 13S/17E/04 |            |                 | 11/19/1940                                  | 2/19/1963                                      | 36                                      |
| 13S17E04R001M     | DWR                            | Unknown       | 13S/17E/04 |            |                 | 2/7/2012                                    | 2/13/2014                                      | 3                                       |
| 13S17E05C001M     | DWR                            | Unknown       | 13S/17E/05 |            |                 | 6/15/1936                                   | 2/10/1967                                      | 54                                      |
| 13S17E05L002M     | DWR                            | Unknown       | 13S/17E/05 |            |                 | 12/6/1961                                   | 1/25/2006                                      | 71                                      |
| 13S17E05P002M     | Madera-Chowchilla CASGEM Group | Irrigation    | 13S/17E/05 |            |                 | 10/29/1936                                  | 2/11/2014                                      | 135                                     |
| 13S17E06A001M     | DWR                            | Unknown       | 13S/17E/06 |            |                 | 12/13/1940                                  | 9/12/1979                                      | 36                                      |
| 13S17E06H001M     | Madera-Chowchilla CASGEM Group | Other         | 13S/17E/06 | 260        |                 | 10/13/2015                                  | 10/10/2022                                     | 13                                      |
| 13S17E07A001M     | DWR                            | Unknown       | 13S/17E/07 |            |                 | 12/2/1930                                   | 2/13/2014                                      | 122                                     |
| 13S17E07J003M     | DWR                            | Unknown       | 13S/17E/07 |            |                 | 12/2/1930                                   | 2/13/2014                                      | 124                                     |
| 13S17E08F001M     | Madera-Chowchilla CASGEM Group | Irrigation    | 13S/17E/08 | 310        | 202-300         | 10/15/2015                                  | 7/1/2019                                       | 5                                       |
| 13S17E08L001M     | DWR                            | Unknown       | 13S/17E/08 |            |                 | 2/21/1961                                   | 2/13/2014                                      | 91                                      |
| 13S17E08N001M     | DWR                            | Unknown       | 13S/17E/17 |            |                 | 5/12/1936                                   | 1/25/2006                                      | 98                                      |
| 13S17E08P001M     | Madera-Chowchilla CASGEM Group | Irrigation    | 13S/17E/08 | 320        | 160-320         | 10/13/2015                                  | 10/10/2022                                     | 14                                      |
| 13S17E09A001M     | DWR                            | Unknown       | 13S/17E/09 |            |                 | 12/8/1958                                   | 2/13/2014                                      | 94                                      |
| 13S17E09H001M     | DWR                            | Unknown       | 13S/17E/09 |            |                 | 1/20/1939                                   | 3/11/1960                                      | 37                                      |
| 13S17E10A001M     | DWR                            | Unknown       | 13S/17E/10 |            |                 | 3/10/1949                                   | 10/11/1972                                     | 46                                      |
| 13S18E03B001M     | DWR                            | Unknown       | 13S/18E/03 |            |                 | 11/5/1931                                   | 2/12/1962                                      | 36                                      |
| 13S18E03C002M     | DWR                            | Unknown       | 13S/18E/03 |            |                 | 10/24/1952                                  | 1/25/2006                                      | 82                                      |
| 13S18E04A001M     | DWR                            | Unknown       | 13S/18E/04 |            |                 | 5/7/1936                                    | 2/15/2008                                      | 122                                     |
| 13S18E04B001M     | DWR                            | Unknown       | 13S/18E/04 |            |                 | 11/28/1930                                  | 2/13/2014                                      | 137                                     |
| 13S18E05E001M     | Madera-Chowchilla CASGEM Group | Irrigation    | 13S/18E/05 |            |                 | 11/29/1930                                  | 2/11/2014                                      | 137                                     |
| 13S18E05J001M     | DWR                            | Unknown       | 13S/18E/05 |            |                 | 11/28/1930                                  | 2/13/2014                                      | 105                                     |
| 13S18E05Q001M     | DWR                            | Unknown       | 13S/18E/05 |            |                 | 11/28/1930                                  | 2/18/1963                                      | 36                                      |
| 13S18E06F001M     | DWR                            | Unknown       | 13S/18E/06 |            |                 | 12/7/1961                                   | 2/13/2014                                      | 83                                      |
| 13S18E06K001M     | DWR                            | Unknown       | 13S/18E/06 |            |                 | 3/26/1936                                   | 2/13/2014                                      | 133                                     |
| 13S18E06N001M     | DWR                            | Unknown       | 13S/18E/06 |            |                 | 5/27/1938                                   | 2/18/1963                                      | 38                                      |
| 13S18E10H001M     | Madera-Chowchilla CASGEM Group | Irrigation    | 13S/16E/10 | 360        | 245-340         | 10/15/2015                                  | 3/11/2019                                      | 3                                       |
| City_of_Madera_15 | City of Madera                 | Unknown       | 11S/17E/22 | 465        | 195-465         | 3/24/1978                                   | 11/16/2023                                     | 48                                      |
| City_of_Madera_16 | City of Madera                 | Public Supply | 11S/18E/18 | 520        | 190-504         | 5/9/1979                                    | 3/20/2012                                      | 24                                      |
| City_of_Madera_17 | City of Madera                 | Unknown       | 11S/18E/30 | 620        | 260-620         | 3/6/1990                                    | 11/1/2021                                      | 39                                      |
| City_of_Madera_18 | City of Madera                 | Public Supply | 11S/17E/13 | 610        | 285-605         | 1/20/1971                                   | 11/9/2023                                      | 30                                      |
| City_of_Madera_20 | City of Madera                 | Public Supply | 11S/17E/14 | 600        | 201-576         | 10/17/1980                                  | 11/9/2023                                      | 46                                      |
| City_of_Madera_21 | City of Madera                 | Unknown       | 11S/18E/30 | 600        | 230-600         | 3/9/1982                                    | 11/7/2023                                      | 44                                      |
| City_of_Madera_22 | City of Madera                 | Unknown       | 11S/17E/24 | 520        | 240-520         | 3/21/2015                                   | 11/7/2023                                      | 13                                      |
| City_of_Madera_23 | City of Madera                 | Public Supply | 11S/17E/12 | 790        | 210-770         | 1/7/1983                                    | 11/7/2023                                      | 43                                      |
| City_of_Madera_24 | City of Madera                 | Public Supply | 11S/18E/18 | 520        | 210-510         | 7/25/1983                                   | 11/9/2023                                      | 48                                      |
| City_of_Madera_25 | City of Madera                 | Public Supply | 11S/17E/14 | 513        | 275-505         | 5/24/1988                                   | 11/6/2023                                      | 42                                      |
| City_of_Madera_26 | City of Madera                 | Unknown       | 11S/17E/10 | 600        | 220-600         | 5/19/2000                                   | 11/14/2023                                     | 33                                      |
| City_of_Madera_27 | City of Madera                 | Unknown       | //         |            |                 | 6/1/1997                                    | 8/30/2012                                      | 0                                       |
| City_of_Madera_28 | City of Madera                 | Public Supply | 11S/18E/18 | 522        | 270-540         | 9/29/1993                                   | 11/8/2023                                      | 39                                      |
| City_of_Madera_29 | City of Madera                 | Public Supply | 11S/17E/23 | 590        | 370-590         | 4/2/1996                                    | 11/14/2023                                     | 36                                      |
| City_of_Madera_30 | City of Madera                 | Unknown       | 11S/17E/26 | 720        | 430-720         | 3/1/1994                                    | 11/7/2023                                      | 36                                      |
| City_of_Madera_31 | City of Madera                 | Unknown       | 11S/18E/19 | 520        | 265-500         | 7/28/2004                                   | 11/8/2023                                      | 32                                      |
| City_of_Madera_32 | City of Madera                 | Unknown       | 11S/17E/22 | 700        | 320-680         | 4/7/2008                                    | 11/14/2023                                     | 23                                      |
| City_of_Madera_33 | City of Madera                 | Public Supply | 11S/18E/31 | 620        | 310-600         | 12/15/2006                                  | 11/16/2023                                     | 27                                      |
| City_of_Madera_34 | City of Madera                 | Unknown       | 11S/18E/30 | 588        | 433-568         | 9/25/2009                                   | 11/8/2023                                      | 23                                      |
| City_of_Madera_38 | City of Madera                 | Unknown       | //         |            |                 | 12/1/2020                                   | 11/6/2023                                      | 0                                       |
| EO224174          | DWR                            | Domestic      | 11S/18E/10 |            | 480-600         | 11/4/2019                                   | 4/8/2024                                       | 8                                       |
| GFWD 201          | Gravelly Ford WD               | Irrigation    | 12S/16E/21 | 460        | 200-460         | 4/1/2015                                    | 3/1/2024                                       | 9                                       |
| GFWD 202          | Gravelly Ford WD               | Irrigation    | 12S/16E/27 | 300        | 150-300         | 4/1/2015                                    | 3/1/2024                                       | 6                                       |
| GFWD 203          | Gravelly Ford WD               | Unknown       | 12S/16E/26 |            |                 | 4/1/2015                                    | 3/1/2024                                       | 9                                       |
| GFWD 204          | Gravelly Ford WD               | Unknown       | 12S/16E/26 | 340        | 195-325         | 10/6/2020                                   | 10/25/2022                                     | 0                                       |
| GFWD 205          | Gravelly Ford WD               | Unknown       | 12S/16E/27 | 520        | 240-520         | 10/6/2020                                   | 10/26/2022                                     | 3                                       |
| GFWD 206          | Gravelly Ford WD               | Unknown       | 12S/16E/33 | 510        | 240-510         | 4/1/2015                                    | 3/1/2024                                       | 8                                       |
| GFWD 207          | Gravelly Ford WD               | Unknown       | 12S/16E/32 | 510        | 240-510         | 10/6/2020                                   | 10/26/2022                                     | 5                                       |
| GFWD 208          | Gravelly Ford WD               | Unknown       | 12S/16E/33 | 510        | 240-510         | 10/6/2020                                   | 10/26/2022                                     | 0                                       |
| GFWD 209          | Gravelly Ford WD               | Irrigation    | 12S/16E/34 | 456        | 216-456         | 10/6/2020                                   | 10/25/2022                                     | 5                                       |
| GFWD 210          | Gravelly Ford WD               | Unknown       | 12S/16E/35 | 648        | 250-635         | 10/6/2020                                   | 10/26/2022                                     | 2                                       |
| GFWD 211          | Gravelly Ford WD               | Unknown       | 13S/16E/01 |            |                 | 10/6/2020                                   | 10/25/2022                                     | 5                                       |
| GFWD 212          | Gravelly Ford WD               | Unknown       | 13S/16E/03 | 439        | 215-430         | 10/6/2020                                   | 10/26/2022                                     | 0                                       |

**Table 3.J-1 - Supplemental Groundwater Level Monitoring Network, Madera Subbasin**

| Well ID            | Monitoring Entity              | Well Type   | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Level Measurement Date | Most Recent Groundwater Level Measurement Date | Count of Groundwater Level Measurements |
|--------------------|--------------------------------|-------------|------------|------------|-----------------|---|--|---|
| GFWD 213           | Gravelly Ford WD               | Irrigation  | 13S/16E/04 | 423        | 240-423         | 4/1/2015                                    | 3/1/2024                                       | 8                                       |
| GFWD 214           | Gravelly Ford WD               | Unknown     | 13S/16E/03 | 690        | 300-680         | 10/6/2020                                   | 10/28/2022                                     | 4                                       |
| GFWD 215           | Gravelly Ford WD               | Unknown     | 13S/16E/10 |            |                 | 10/6/2020                                   | 10/25/2022                                     | 4                                       |
| GFWD 216           | Gravelly Ford WD               | Unknown     | 13S/16E/10 | 284        | 244-284         | 10/6/2020                                   | 10/25/2022                                     | 5                                       |
| GFWD 217           | Gravelly Ford WD               | Irrigation  | 13S/16E/11 |            |                 | 10/6/2020                                   | 10/25/2022                                     | 4                                       |
| GFWD 218           | Gravelly Ford WD               | Unknown     | 13S/16E/01 |            |                 | 10/6/2020                                   | 10/26/2022                                     | 2                                       |
| GFWD 219           | Gravelly Ford WD               | Unknown     | 13S/16E/12 |            |                 | 10/6/2020                                   | 10/25/2022                                     | 5                                       |
| GFWD 220           | Gravelly Ford WD               | Irrigation  | 13S/16E/11 |            |                 | 10/6/2020                                   | 10/26/2022                                     | 4                                       |
| GFWD 221           | Gravelly Ford WD               | Unknown     | 13S/16E/10 |            |                 | 10/6/2020                                   | 10/26/2022                                     | 3                                       |
| GFWD 222           | Gravelly Ford WD               | Unknown     | 13S/16E/11 |            |                 | 10/6/2020                                   | 10/26/2022                                     | 5                                       |
| GFWD 223           | Gravelly Ford WD               | Irrigation  | 13S/16E/12 | 284        | -284            | 10/6/2020                                   | 10/26/2022                                     | 4                                       |
| GFWD 224           | Gravelly Ford WD               | Unknown     | 13S/16E/12 |            |                 | 4/1/2015                                    | 3/1/2024                                       | 7                                       |
| MD10A Charlton     | Madera County                  | Other       | 11S/19E/34 | 610        | 250-600         | 2/5/2014                                    | 10/14/2019                                     | 133                                     |
| MD10A Dublin       | Madera County                  | Other       | 11S/19E/35 | 545        | 454-540         | 2/5/2014                                    | 11/30/2020                                     | 606                                     |
| MD10A Fender       | Madera-Chowchilla CASGEM Group | Other       | 12S/19E/03 | 670        | 275-660         | 10/19/2015                                  | 10/14/2019                                     | 8                                       |
| MD10A Kensington   | Madera County                  | Other       | 12S/19E/02 | 535        | 405-525         | 1/6/2014                                    | 1/24/2020                                      | 671                                     |
| MD19A #3 Parkwood  | Madera County                  | Other       | 11S/18E/31 | 456        | 240-456         | 7/9/2010                                    | 10/15/2019                                     | 26                                      |
| MD28 Ripperdan     | Madera County                  | Other       | 12S/17E/25 | 502        | 160-200         | 10/19/2015                                  | 10/25/2023                                     | 16                                      |
| MD33 Fairmead      | Madera County                  | Other       | 10S/16E/11 | 552        | 240-552         | 1/1/1900                                    | 11/18/2020                                     | 305                                     |
| MD36 Eastin Arcola | Madera County                  | Other       | 12S/18E/21 | 360        | 280-360         | 3/12/2014                                   | 12/27/2020                                     | 280                                     |
| MD37 EAST La Vina  | Madera County                  | Other       | 12S/17E/21 | 392        | 320-392         | 3/12/2014                                   | 12/23/2020                                     | 267                                     |
| MD37 WEST La Vina  | Madera County                  | Other       | 12S/17E/21 | 393        | 297-393         | 6/16/2013                                   | 12/23/2020                                     | 245                                     |
| MD95 Cont. Est. #1 | Madera County                  | Other       | 11S/19E/33 | 550        | 450-550         | 5/19/2014                                   | 11/3/2023                                      | 301                                     |
| MD95 Cont. Est. #4 | Madera County                  | Other       | 11S/19E/33 | 559        | 449-554         | 4/21/2015                                   | 10/21/2020                                     | 241                                     |
| MD95 Emergency     | Madera-Chowchilla CASGEM Group | Other       | 11S/19E/33 | 547        | 447-547         | 10/19/2015                                  | 10/19/2015                                     | 1                                       |
| MID 01             | Madera ID                      | Unknown     | //         |            |                 | 1/15/2004                                   | 10/21/2014                                     | 91                                      |
| MID 02             | Madera-Chowchilla CASGEM Group | Irrigation  | 09S/18E/19 | 818        | 300-818         | 10/20/2011                                  | 2/14/2014                                      | 4                                       |
| MID 03             | Madera ID                      | Unknown     | //         |            |                 | 1/15/2004                                   | 10/17/2014                                     | 76                                      |
| MID 04             | Madera ID                      | Unknown     | //         |            |                 | 1/15/2004                                   | 10/23/2014                                     | 94                                      |
| MID 05             | Madera ID                      | Unknown     | //         |            |                 | 1/15/2004                                   | 10/21/2014                                     | 102                                     |
| MID 06             | Madera ID                      | Unknown     | //         |            |                 | 1/15/2004                                   | 10/22/2014                                     | 75                                      |
| MID 07             | Madera ID                      | Unknown     | 10S/18E/09 |            | 527-667         | 1/15/2004                                   | 10/20/2014                                     | 100                                     |
| MID 08             | Madera-Chowchilla CASGEM Group | Observation | 10S/18E/21 | 1000       |                 | 10/15/2015                                  | 10/13/2022                                     | 12                                      |
| MID 09             | Madera ID                      | Domestic    | 10S/18E/31 | 452        | 348-388         | 10/20/2011                                  | 10/23/2023                                     | 15                                      |
| MID 10             | Madera ID                      | Unknown     | //         |            |                 | 1/15/2004                                   | 10/23/2014                                     | 57                                      |
| MID 11             | Madera ID                      | Unknown     | //         |            |                 | 1/15/2004                                   | 10/22/2014                                     | 53                                      |
| MID 12             | Madera ID                      | Unknown     | //         |            |                 | 1/15/2004                                   | 10/23/2014                                     | 97                                      |
| MID 13             | Madera ID                      | Unknown     | //         |            |                 | 1/15/2004                                   | 10/23/2014                                     | 71                                      |
| MID 14             | Madera ID                      | Unknown     | //         |            |                 | 1/15/2004                                   | 10/17/2014                                     | 107                                     |
| MID 15             | Madera-Chowchilla CASGEM Group | Irrigation  | 11S/18E/21 | 510        |                 | 10/20/2011                                  | 2/19/2014                                      | 3                                       |
| MID 16             | Madera ID                      | Unknown     | //         |            |                 | 1/15/2004                                   | 10/22/2014                                     | 30                                      |
| MID 17             | Madera ID                      | Unknown     | //         |            |                 | 1/15/2004                                   | 10/22/2014                                     | 100                                     |
| MID 18             | Madera ID                      | Unknown     | //         |            |                 | 1/15/2004                                   | 10/16/2014                                     | 70                                      |
| MID 19             | Madera ID                      | Unknown     | //         |            |                 | 1/15/2004                                   | 10/22/2014                                     | 99                                      |
| MID 20             | Madera ID                      | Unknown     | 12S/19E/04 |            |                 | 1/15/2004                                   | 10/22/2014                                     | 107                                     |
| MID 21             | Madera ID                      | Unknown     | //         |            |                 | 1/15/2004                                   | 10/15/2014                                     | 98                                      |
| MID 22             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/21/2014                                     | 69                                      |
| MID 23             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/22/2014                                     | 74                                      |
| MID 24             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/22/2014                                     | 75                                      |
| MID 25             | Madera ID                      | Unknown     | //         |            |                 | 12/15/2004                                  | 10/22/2014                                     | 77                                      |
| MID 26A            | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/23/2014                                     | 84                                      |
| MID 27             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/14/2014                                     | 95                                      |
| MID 28             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/23/2014                                     | 83                                      |
| MID 29             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/23/2014                                     | 97                                      |
| MID 30             | DWR                            | Unknown     | 11S/16E/10 |            |                 | 10/29/1959                                  | 2/18/2014                                      | 171                                     |
| MID 31             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/22/2014                                     | 69                                      |
| MID 32             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/23/2014                                     | 95                                      |
| MID 33             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/20/2014                                     | 79                                      |
| MID 34             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/20/2014                                     | 93                                      |
| MID 35             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/20/2014                                     | 93                                      |
| MID 36             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/23/2014                                     | 85                                      |
| MID 37             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/23/2014                                     | 96                                      |
| MID 38             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/22/2014                                     | 96                                      |
| MID 39             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/23/2014                                     | 78                                      |
| MID 40             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/22/2014                                     | 85                                      |
| MID 41             | Madera ID                      | Unknown     | //         |            |                 | 11/15/2004                                  | 10/23/2014                                     | 80                                      |

**Table 3.J-1 - Supplemental Groundwater Level Monitoring Network, Madera Subbasin**

| Well ID | Monitoring Entity | Well Type   | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Level Measurement Date | Most Recent Groundwater Level Measurement Date | Count of Groundwater Level Measurements |
|---------|-------------------|-------------|------------|------------|-----------------|---|--|---|
| MID 42  | Madera ID         | Unknown     | //         |            |                 | 11/15/2004                                  | 10/22/2014                                     | 97                                      |
| MID 43  | Madera ID         | Unknown     | //         |            |                 | 11/15/2004                                  | 10/16/2014                                     | 67                                      |
| MID 44  | Madera ID         | Unknown     | //         |            |                 | 11/15/2004                                  | 10/16/2014                                     | 86                                      |
| MID 45  | Madera ID         | Unknown     | //         |            |                 | 12/15/2004                                  | 10/16/2014                                     | 79                                      |
| MID 46  | Madera ID         | Unknown     | //         |            |                 | 11/15/2004                                  | 10/16/2014                                     | 93                                      |
| MID 47  | Madera ID         | Unknown     | //         |            |                 | 11/15/2004                                  | 10/23/2014                                     | 95                                      |
| MID 48  | Madera ID         | Unknown     | //         |            |                 | 11/15/2004                                  | 10/16/2014                                     | 77                                      |
| MID 49  | Madera ID         | Unknown     | //         |            |                 | 11/15/2004                                  | 10/15/2014                                     | 96                                      |
| MID 50  | Madera ID         | Unknown     | //         |            |                 | 11/15/2004                                  | 10/15/2014                                     | 85                                      |
| MID 52  | Madera ID         | Irrigation  | 10S/18E/26 | 800        | 360-800         | 1/15/2005                                   | 10/21/2014                                     | 59                                      |
| MID 53  | Madera ID         | Unknown     | //         |            |                 | 1/15/2005                                   | 10/21/2014                                     | 66                                      |
| MID 54  | Madera ID         | Unknown     | //         |            |                 | 1/15/2005                                   | 10/14/2014                                     | 0                                       |
| MID 55  | Madera ID         | Unknown     | //         |            |                 | 1/15/2005                                   | 10/14/2014                                     | 0                                       |
| MID 56  | Madera ID         | Unknown     | //         |            |                 | 1/15/2005                                   | 10/14/2014                                     | 0                                       |
| MID 57  | Madera ID         | Unknown     | //         |            |                 | 2/15/2005                                   | 10/22/2014                                     | 86                                      |
| MID 58  | Madera ID         | Unknown     | //         |            |                 | 6/15/2006                                   | 10/22/2014                                     | 71                                      |
| MID 59  | Madera ID         | Unknown     | //         |            |                 | 9/15/2006                                   | 10/22/2014                                     | 72                                      |
| MSB03A  | Madera County     | Observation | 12S/15E/18 | 139        | 74-134          | 11/1/2019                                   | 3/7/2024                                       | 17                                      |
| MSB03B  | Madera County     | Observation | 12S/15E/18 | 295        | 215-285         | 11/2/2019                                   | 3/7/2024                                       | 15                                      |
| MSB03C  | Madera County     | Observation | 12S/15E/18 | 430        | 355-420         | 11/2/2019                                   | 3/7/2024                                       | 15                                      |
| MSB04A  | Madera County     | Observation | 11S/17E/11 | 375        | 180-365         | 9/9/2019                                    | 3/6/2024                                       | 19                                      |
| MSB04B  | Madera County     | Observation | 11S/17E/11 | 695        | 530-685         | 9/9/2019                                    | 3/6/2024                                       | 19                                      |
| MSB04C  | Madera County     | Observation | 11S/17E/11 | 905        | 750-895         | 9/9/2019                                    | 3/6/2024                                       | 19                                      |
| MSB05A  | Madera County     | Observation | 12S/16E/05 | 210        | 140-200         | 9/9/2019                                    | 3/19/2024                                      | 18                                      |
| MSB05B  | Madera County     | Observation | 12S/16E/05 | 375        | 240-365         | 9/9/2019                                    | 3/19/2024                                      | 18                                      |
| MSB05C  | Madera County     | Observation | 12S/16E/05 | 585        | 420-585         | 9/9/2019                                    | 3/19/2024                                      | 18                                      |
| MSB06A  | Madera County     | Observation | 13S/16E/03 | 350        | 135-340         | 12/16/2019                                  | 3/7/2024                                       | 14                                      |
| MSB06B  | Madera County     | Observation | 13S/16E/03 | 520        | 425-510         | 12/16/2019                                  | 3/7/2024                                       | 14                                      |
| MSB06C  | Madera County     | Observation | 13S/16E/03 | 715        | 630-705         | 12/16/2019                                  | 3/7/2024                                       | 14                                      |
| MSB09A  | Madera County     | Observation | 12S/17E/16 | 320        | 200-310         | 12/16/2019                                  | 3/7/2024                                       | 14                                      |
| MSB09B  | Madera County     | Observation | 12S/17E/16 | 725        | 520-715         | 12/16/2019                                  | 3/7/2024                                       | 14                                      |
| MSB09C  | Madera County     | Observation | 12S/17E/16 | 955        | 880-945         | 12/16/2019                                  | 3/7/2024                                       | 14                                      |
| MSB10A  | Madera County     | Observation | 10S/16E/11 | 330        | 190-320         | 8/9/2019                                    | 3/19/2024                                      | 20                                      |
| MSB10B  | Madera County     | Observation | 10S/16E/11 | 510        | 400-500         | 8/9/2019                                    | 3/5/2024                                       | 21                                      |
| MSB10C  | Madera County     | Observation | 10S/16E/11 | 880        | 790-870         | 8/9/2019                                    | 3/5/2024                                       | 21                                      |
| MSB11A  | Madera County     | Observation | 10S/17E/11 | 345        | 185-335         | 10/18/2019                                  | 3/6/2024                                       | 9                                       |
| MSB11B  | Madera County     | Observation | 10S/17E/11 | 700        | 550-690         | 10/18/2019                                  | 3/30/2023                                      | 7                                       |
| MSB11C  | Madera County     | Observation | 10S/17E/11 | 880        | 775-870         | 10/18/2019                                  | 3/6/2024                                       | 10                                      |
| MSB12   | Madera County     | Observation | 10S/18E/23 | 465        | 355-465         | 11/15/2022                                  | 3/6/2024                                       | 5                                       |
| MSB13A  | Madera County     | Observation | 11S/19E/15 | 290        | 200-280         | 11/16/2022                                  | 3/6/2024                                       | 0                                       |
| MSB13B  | Madera County     | Observation | 11S/19E/15 | 446        | 396-436         | 11/17/2022                                  | 3/6/2024                                       | 5                                       |
| MSB13C  | Madera County     | Observation | 11S/19E/15 | 532        | 522-532         | 11/18/2022                                  | 3/6/2024                                       | 5                                       |
| MWD 01  | Madera WD         | Unknown     | 10S/18E/21 |            |                 | 6/27/1994                                   | 4/1/2019                                       | 18                                      |
| MWD 02  | Madera WD         | Unknown     | 10S/18E/28 | 500        | 200-500         | 10/20/1994                                  | 4/1/2019                                       | 18                                      |
| MWD 03  | Madera WD         | Unknown     | 10S/18E/28 |            |                 | 10/20/1994                                  | 4/1/2019                                       | 5                                       |
| MWD 04  | Madera WD         | Irrigation  | 10S/18E/20 | 504        | 200-500         | 10/20/1994                                  | 3/26/2024                                      | 31                                      |
| MWD 05  | Madera WD         | Unknown     | 10S/18E/20 |            |                 | 10/19/1994                                  | 4/1/2019                                       | 18                                      |
| MWD 06  | Madera WD         | Unknown     | 10S/18E/19 | 500        | 200-500         | 10/19/1994                                  | 4/1/2019                                       | 20                                      |
| MWD 07  | Madera WD         | Unknown     | 10S/18E/30 | 500        | 200-500         | 10/20/1994                                  | 4/1/2019                                       | 20                                      |
| MWD 08  | Madera WD         | Irrigation  | 10S/17E/24 | 537        | 200-537         | 9/12/2003                                   | 3/26/2024                                      | 29                                      |
| MWD 09  | Madera WD         | Unknown     | 10S/17E/24 | 536        | 200-536         | 10/19/1994                                  | 4/1/2019                                       | 20                                      |
| MWD 10  | Madera WD         | Unknown     | 10S/18E/19 |            |                 | 3/15/2011                                   | 4/1/2019                                       | 18                                      |
| MWD 11  | Madera WD         | Unknown     | //         |            |                 | 3/15/2011                                   | 4/1/2019                                       | 17                                      |
| MWD 12  | Madera WD         | Unknown     | //         |            |                 | 11/1/2017                                   | 11/1/2017                                      | 1                                       |
| MWD 13  | Madera WD         | Unknown     | 10S/18E/20 |            |                 | 10/19/1994                                  | 11/1/2017                                      | 2                                       |
| MWD 14  | Madera WD         | Unknown     | 10S/18E/19 | 780        | 300-770         | 7/8/2003                                    | 4/1/2019                                       | 17                                      |
| MWD 15  | Madera WD         | Unknown     | 10S/18E/20 | 680        | 300-670         | 10/19/1994                                  | 4/1/2019                                       | 20                                      |
| MWD 16  | Madera WD         | Unknown     | 10S/18E/21 |            |                 | 10/20/1994                                  | 4/1/2019                                       | 8                                       |
| MWD 17  | Madera WD         | Unknown     | 10S/18E/28 |            |                 | 3/15/2011                                   | 4/1/2019                                       | 18                                      |
| MWD 18  | Madera WD         | Unknown     | 10S/18E/21 |            |                 | 3/15/2011                                   | 4/1/2019                                       | 18                                      |
| MWD 19  | Madera WD         | Unknown     | 10S/18E/20 |            |                 | 3/15/2011                                   | 4/1/2019                                       | 18                                      |
| MWD 20  | Madera WD         | Irrigation  | 10S/17E/24 | 800        | 380-800         | 3/15/2011                                   | 3/26/2024                                      | 29                                      |
| MWD 21  | Madera WD         | Unknown     | 10S/18E/30 |            |                 | 10/15/2011                                  | 4/1/2019                                       | 16                                      |
| MWD 22  | Madera WD         | Unknown     | //         |            |                 | 8/15/2014                                   | 4/1/2019                                       | 3                                       |
| MWD 23  | Madera WD         | Unknown     | 10S/18E/20 |            |                 | 10/15/2011                                  | 4/1/2019                                       | 16                                      |
| MWD 24  | Madera WD         | Unknown     | //         |            |                 | 10/15/2013                                  | 4/1/2019                                       | 12                                      |

**Table 3.J-1 - Supplemental Groundwater Level Monitoring Network, Madera Subbasin**

| Well ID  | Monitoring Entity | Well Type  | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Level Measurement Date | Most Recent Groundwater Level Measurement Date | Count of Groundwater Level Measurements |
|----------|-------------------|------------|------------|------------|-----------------|---|--|---|
| MWD 25   | Madera WD         | Unknown    | //         |            |                 | 10/15/2013                                  | 4/1/2019                                       | 12                                      |
| MWD 26   | Madera WD         | Unknown    | //         |            |                 | 10/15/2013                                  | 4/1/2019                                       | 12                                      |
| MWD 27   | Madera WD         | Unknown    | //         |            |                 | 10/15/2015                                  | 4/1/2019                                       | 7                                       |
| MWD 28   | Madera WD         | Unknown    | //         |            |                 | 10/15/2015                                  | 4/1/2019                                       | 7                                       |
| MWD 29   | Madera WD         | Unknown    | //         |            |                 | 10/15/2015                                  | 4/1/2019                                       | 8                                       |
| MWD 30   | Madera WD         | Unknown    | //         |            |                 | 11/1/2016                                   | 4/1/2019                                       | 6                                       |
| NSWD 10  | New Stone WD      | Irrigation | 12S/15E/17 | 600        | 280-600         | 10/24/2019                                  | 2/14/2024                                      | 11                                      |
| NSWD 34  | New Stone WD      | Irrigation | 11S/15E/31 | 570        | 270-570         | 2/14/1964                                   | 2/14/2024                                      | 29                                      |
| NSWD 37  | New Stone WD      | Irrigation | 12S/15E/05 | 613        | 293-613         | 10/24/2019                                  | 2/14/2024                                      | 10                                      |
| RCWD 10  | Root Creek WD     | Irrigation | 12S/19E/25 |            | 100-148         | 10/17/2023                                  | 10/17/2023                                     | 1                                       |
| RCWD 103 | Root Creek WD     | Irrigation | 12S/20E/06 |            | 264-440         | 10/17/2023                                  | 10/17/2023                                     | 1                                       |
| RCWD 105 | Root Creek WD     | Irrigation | 12S/20E/08 | 476        | 212-476         | 1/28/1998                                   | 2/20/2019                                      | 42                                      |
| RCWD 107 | Root Creek WD     | Irrigation | 12S/19E/12 |            | 240-528         | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 113 | Root Creek WD     | Irrigation | 12S/20E/07 | 495        | 240-492         | 6/20/1976                                   | 2/22/2024                                      | 71                                      |
| RCWD 120 | Root Creek WD     | Irrigation | 12S/19E/14 |            | 260-600         | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 123 | Root Creek WD     | Irrigation | 12S/20E/07 |            | 330-755         | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 129 | Root Creek WD     | Irrigation | 12S/19E/12 |            | 310-750         | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 130 | Root Creek WD     | Irrigation | 12S/20E/06 | 760        | 370-750         | 1/28/1998                                   | 2/22/2024                                      | 53                                      |
| RCWD 14  | Root Creek WD     | Irrigation | 12S/19E/14 |            |                 | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 141 | Root Creek WD     | Irrigation | 12S/20E/07 |            | 280-580         | 11/9/2023                                   | 11/9/2023                                      | 0                                       |
| RCWD 142 | Root Creek WD     | Irrigation | 11S/20E/33 | 521        | 309-517         | 1/26/1998                                   | 11/9/2023                                      | 44                                      |
| RCWD 145 | Root Creek WD     | Irrigation | 12S/20E/18 | 452        | 224-244         | 3/10/2004                                   | 10/16/2023                                     | 32                                      |
| RCWD 146 | Root Creek WD     | Irrigation | 12S/19E/22 |            | 240-472         | 1/26/1998                                   | 10/17/2023                                     | 40                                      |
| RCWD 153 | Root Creek WD     | Unknown    | 12S/20E/05 |            |                 | 3/10/2004                                   | 1/15/2016                                      | 24                                      |
| RCWD 156 | Root Creek WD     | Irrigation | 12S/20E/08 |            | 374-796         | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 157 | Root Creek WD     | Irrigation | 12S/19E/12 |            | 588-788         | 10/16/2023                                  | 10/16/2023                                     | 0                                       |
| RCWD 16  | Root Creek WD     | Irrigation | 12S/20E/08 |            | 324-468         | 7/15/1975                                   | 10/16/2023                                     | 27                                      |
| RCWD 169 | Root Creek WD     | Irrigation | 12S/20E/05 |            | 450-780         | 5/11/2023                                   | 10/17/2023                                     | 161                                     |
| RCWD 17  | Root Creek WD     | Irrigation | 12S/20E/06 |            | 200-380         | 10/16/2023                                  | 10/16/2023                                     | 0                                       |
| RCWD 18  | Root Creek WD     | Irrigation | 12S/20E/19 |            |                 | 10/17/2023                                  | 10/17/2023                                     | 1                                       |
| RCWD 180 | Root Creek WD     | Irrigation | 12S/20E/18 |            | 340-485         | 11/9/2023                                   | 11/9/2023                                      | 1                                       |
| RCWD 182 | Root Creek WD     | Irrigation | 12S/20E/18 |            | 414-772         | 7/12/1974                                   | 10/16/2023                                     | 64                                      |
| RCWD 2   | Root Creek WD     | Irrigation | 12S/20E/18 |            |                 | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 203 | Root Creek WD     | Irrigation | 12S/19E/12 |            |                 | 11/9/2023                                   | 11/9/2023                                      | 1                                       |
| RCWD 204 | Root Creek WD     | Irrigation | 12S/19E/12 |            |                 | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 209 | Root Creek WD     | Irrigation | 12S/20E/19 |            |                 | 10/17/2023                                  | 10/17/2023                                     | 1                                       |
| RCWD 210 | Root Creek WD     | Irrigation | 12S/20E/19 |            | 500-644         | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 211 | Root Creek WD     | Irrigation | 12S/20E/17 |            | 256-468         | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 213 | Root Creek WD     | Irrigation | 12S/19E/13 |            |                 | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 215 | Root Creek WD     | Irrigation | 12S/19E/13 |            |                 | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 216 | Root Creek WD     | Irrigation | 12S/19E/13 |            |                 | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 217 | Root Creek WD     | Irrigation | 12S/19E/11 |            |                 | 11/9/2023                                   | 11/9/2023                                      | 1                                       |
| RCWD 22  | Root Creek WD     | Irrigation | 12S/20E/19 | 236        | 160-228         | 7/12/1974                                   | 2/22/2024                                      | 73                                      |
| RCWD 23  | Root Creek WD     | Irrigation | 12S/20E/19 | 236        | 160-228         | 7/12/1974                                   | 10/17/2023                                     | 67                                      |
| RCWD 24  | Root Creek WD     | Irrigation | 11S/20E/32 | 475        | 104-428         | 1/15/2007                                   | 10/16/2023                                     | 20                                      |
| RCWD 25  | Root Creek WD     | Unknown    | //         |            |                 | 1/1/2002                                    | 1/1/2002                                       | 2                                       |
| RCWD 266 | Root Creek WD     | Irrigation | 12S/19E/26 |            |                 | 10/17/2023                                  | 10/17/2023                                     | 1                                       |
| RCWD 268 | Root Creek WD     | Irrigation | 12S/20E/19 |            | 320-580         | 11/9/2023                                   | 11/9/2023                                      | 1                                       |
| RCWD 269 | Root Creek WD     | Irrigation | 12S/19E/24 |            | 300-440         | 11/9/2023                                   | 11/9/2023                                      | 1                                       |
| RCWD 270 | Root Creek WD     | Irrigation | 12S/20E/19 |            | 260-580         | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 271 | Root Creek WD     | Irrigation | 12S/20E/07 |            | 280-520         | 10/16/2023                                  | 10/16/2023                                     | 0                                       |
| RCWD 29  | Root Creek WD     | Irrigation | 11S/20E/31 |            | 124-454         | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 3   | Root Creek WD     | Irrigation | 12S/20E/18 |            | 261-503         | 1/26/1998                                   | 10/16/2023                                     | 27                                      |
| RCWD 30  | Root Creek WD     | Irrigation | 12S/19E/13 |            | 116-472         | 6/25/1974                                   | 10/16/2023                                     | 23                                      |
| RCWD 34  | Root Creek WD     | Irrigation | 12S/19E/13 |            | 180-240         | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 38  | Root Creek WD     | Irrigation | 12S/19E/13 |            | 238-486         | 8/14/1978                                   | 10/17/2023                                     | 40                                      |
| RCWD 39  | Root Creek WD     | Irrigation | 12S/19E/13 |            | 183-295         | 1/28/1998                                   | 10/17/2023                                     | 40                                      |
| RCWD 4   | Root Creek WD     | Irrigation | 12S/19E/24 |            | 254-650         | 11/9/2023                                   | 11/9/2023                                      | 1                                       |
| RCWD 5   | Root Creek WD     | Domestic   | 12S/20E/18 |            | 112-381         | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 50  | Root Creek WD     | Unknown    | 12S/20E/05 |            |                 | 3/10/2004                                   | 1/15/2017                                      | 27                                      |
| RCWD 65  | Root Creek WD     | Irrigation | 12S/20E/05 | 496        | 290-400         | 1/24/1979                                   | 2/22/2024                                      | 1392                                    |
| RCWD 66  | Root Creek WD     | Irrigation | 12S/20E/09 |            | 256-497         | 7/1/1974                                    | 10/16/2023                                     | 66                                      |
| RCWD 68  | Root Creek WD     | Irrigation | 11S/20E/32 | 448        | 230-415         | 1/15/2010                                   | 10/17/2023                                     | 17                                      |
| RCWD 70  | Root Creek WD     | Irrigation | 12S/20E/06 |            | 245-519         | 6/26/1974                                   | 11/9/2023                                      | 29                                      |
| RCWD 73  | Root Creek WD     | Irrigation | 11S/20E/32 | 470        | 260-440         | 1/15/2007                                   | 10/16/2023                                     | 25                                      |
| RCWD 76  | Root Creek WD     | Irrigation | 12S/19E/14 | 636        | 232-628         | 1/27/1998                                   | 10/16/2023                                     | 41                                      |

**Table 3.J-1 - Supplemental Groundwater Level Monitoring Network, Madera Subbasin**

| Well ID            | Monitoring Entity              | Well Type     | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Level Measurement Date | Most Recent Groundwater Level Measurement Date | Count of Groundwater Level Measurements |
|--------------------|--------------------------------|---------------|------------|------------|-----------------|---|--|---|
| RCWD 77            | Root Creek WD                  | Irrigation    | 12S/19E/01 |            | 210-410         | 7/3/1974                                    | 10/16/2023                                     | 34                                      |
| RCWD 78            | Root Creek WD                  | Unknown       | //         |            |                 | 7/3/1974                                    | 1/20/2005                                      | 35                                      |
| RCWD 8             | Root Creek WD                  | Irrigation    | 12S/19E/12 |            |                 | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| RCWD 83            | Root Creek WD                  | Irrigation    | 12S/19E/23 | 492        | 240-492         | 7/3/1975                                    | 2/22/2024                                      | 74                                      |
| RCWD 85            | Root Creek WD                  | Irrigation    | 12S/19E/11 | 412        | 250-420         | 6/25/1975                                   | 2/22/2024                                      | 78                                      |
| RCWD 86            | Root Creek WD                  | Irrigation    | 12S/19E/12 |            | 240-444         | 11/9/2023                                   | 11/9/2023                                      | 0                                       |
| RCWD 88            | Root Creek WD                  | Irrigation    | 12S/19E/14 |            | 258-480         | 10/28/1975                                  | 10/16/2023                                     | 61                                      |
| RCWD 91            | Root Creek WD                  | Irrigation    | 12S/19E/24 | 414        | 240-414         | 1/26/1998                                   | 10/17/2023                                     | 43                                      |
| RCWD 92            | Root Creek WD                  | Irrigation    | 12S/19E/26 |            | 240-450         | 9/15/1976                                   | 11/9/2023                                      | 28                                      |
| RCWD CO1           | Root Creek WD                  | Irrigation    | 12S/19E/25 |            | 98-152          | 10/17/2023                                  | 10/17/2023                                     | 0                                       |
| RCWD M5            | Root Creek WD                  | Public Supply | 11S/20E/32 |            |                 | 10/16/2023                                  | 10/16/2023                                     | 1                                       |
| SA19 Rolling Hills | Madera County                  | Other         | 12S/20E/09 | 840        | 370-820         | 10/19/2015                                  | 3/30/2023                                      | 5                                       |
| SA3 Parksdale      | Madera-Chowchilla CASGEM Group | Other         | 11S/18E/33 | 480        | 216-480         | 10/19/2015                                  | 10/16/2019                                     | 8                                       |
| SJRRP_MW-09-1      | USBR SJRRP                     | Observation   | 12S/20E/21 | 37         | 17-37           | 10/27/2009                                  | 12/6/2019                                      | 175                                     |
| SJRRP_MW-09-2      | USBR SJRRP                     | Monitoring    | 12S/20E/21 | 28.6       | 8-28            | 10/27/2009                                  | 12/6/2019                                      | 183                                     |
| SJRRP_MW-09-25     | USBR SJRRP                     | Observation   | 13S/18E/06 | 47         | 26-46           | 10/27/2009                                  | 6/14/2023                                      | 324                                     |
| SJRRP_MW-09-26     | USBR SJRRP                     | Monitoring    | 13S/18E/06 | 57.5       | 37-57           | 10/27/2009                                  | 6/14/2023                                      | 140                                     |
| SJRRP_MW-09-27     | USBR SJRRP                     | Monitoring    | 13S/18E/06 | 70         | 50-70           | 10/27/2009                                  | 6/14/2023                                      | 171                                     |
| SJRRP_MW-10-117    | USBR SJRRP                     | Monitoring    | 12S/15E/06 | 31.1       | 15.1-30.1       | 2/3/2012                                    | 10/18/2012                                     | 0                                       |
| SJRRP_MW-11-158    | USBR SJRRP                     | Observation   | 13S/17E/18 | 30         |                 | 2/10/2012                                   | 6/20/2018                                      | 144                                     |
| SJRRP_MW-11-159    | USBR SJRRP                     | Unknown       | 13S/17E/18 |            |                 | 2/10/2012                                   | 5/22/2024                                      | 54                                      |
| SJRRP_R1-1         | USBR SJRRP                     | Unknown       | 13S/18E/03 |            |                 | 3/19/2010                                   | 10/22/2010                                     | 16                                      |
| SJRRP_R1-2         | USBR SJRRP                     | Unknown       | 13S/18E/03 |            |                 | 3/19/2010                                   | 10/22/2010                                     | 25                                      |

**Table 3.J-2 - Supplemental Groundwater Quality Monitoring Network, Madera Subbasin**

| Well ID           | Data Source | Well Type | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Quality Measurement Date | Most Recent Groundwater Quality Measurement Date | Count of Groundwater Quality Measurements |
|-------------------|-------------|-----------|------------|------------|-----------------|---|--|---|
| CA0202503_002_002 | DDW         | Municipal | 12S/19E/09 |            | 62 - 142        | 1/22/2003                                     | 7/18/2023  | 140                                       |
| CA0202503_002_002 | DDW         | Municipal | 12S/19E/09 |            | 62 - 142        | 1/22/2003                                     | 7/18/2023  | 140                                       |
| CA1009256_002_002 | DDW         | Municipal | 11S/18E/03 |            |                 | 5/5/2015                                      | 5/5/2015   | 1   |
| CA2000150_001_001 | DDW         | Municipal | 12S/19E/04 |            |                 | 1/22/2010                                     | 6/21/2023  | 83  |
| CA2000150_002_002 | DDW         | Municipal | 12S/19E/03 |            |                 | 8/29/2007                                     | 12/27/2019                                       | 187                                       |
| CA2000206_001_001 | DDW         | Municipal | 11S/17E/13 |            |                 | 6/7/2006                                      | 7/6/2023   | 163                                       |
| CA2000220_001_001 | DDW         | Municipal | 11S/19E/28 |            |                 | 11/14/2001                                    | 3/5/2020   | 10  |
| CA2000245_001_001 | DDW         | Municipal | 12S/20E/21 |            | 140 - 200       | 1/19/2004                                     | 10/31/2023                                       | 34  |
| CA2000245_001_001 | DDW         | Municipal | 12S/20E/16 |            | 140 - 200       | 1/19/2004                                     | 10/31/2023                                       | 34  |
| CA2000275_001_001 | DDW         | Municipal | 12S/20E/21 |            |                 | 5/3/1996                                      | 7/22/2024  | 312                                       |
| CA2000275_001_001 | DDW         | Municipal | 12S/20E/16 |            |                 | 5/3/1996                                      | 7/22/2024  | 312                                       |
| CA2000275_002_002 | DDW         | Municipal | 12S/20E/21 |            |                 | 5/3/1996                                      | 7/10/2024  | 190                                       |
| CA2000275_002_002 | DDW         | Municipal | 12S/20E/16 |            |                 | 5/3/1996                                      | 7/10/2024  | 190                                       |
| CA2000275_004_004 | DDW         | Municipal | 12S/20E/21 |            |                 | 3/7/2019                                      | 7/10/2024  | 108                                       |
| CA2000275_004_004 | DDW         | Municipal | 12S/20E/16 |            |                 | 3/7/2019                                      | 7/10/2024  | 108                                       |
| CA2000286_001_001 | DDW         | Municipal | 12S/18E/15 |            |                 | 12/23/2004                                    | 12/28/2021                                       | 17  |
| CA2000294_001_001 | DDW         | Municipal | 12S/18E/31 |            |                 | 12/9/2009                                     | 2/7/2024   | 12  |
| CA2000294_001_001 | DDW         | Municipal | 12S/18E/31 |            |                 | 12/9/2009                                     | 2/7/2024   | 12  |
| CA2000315_001_001 | DDW         | Municipal | 11S/17E/14 |            |                 | 8/5/2002                                      | 3/23/2017  | 15  |
| CA2000315_007_007 | DDW         | Municipal | 11S/17E/13 |            |                 | 1/4/2017                                      | 1/3/2024   | 8   |
| CA2000320_001_001 | DDW         | Municipal | 12S/20E/02 |            |                 | 1/6/2002                                      | 10/25/2023                                       | 68  |
| CA2000320_001_001 | DDW         | Municipal | 11S/20E/35 |            |                 | 1/6/2002                                      | 10/25/2023                                       | 68  |
| CA2000352_001_001 | DDW         | Municipal | 12S/18E/05 |            |                 | 8/13/1998                                     | 7/11/2024  | 259                                       |
| CA2000370_002_002 | DDW         | Municipal | 11S/17E/05 |            | 240 - 240       | 1/19/2000                                     | 1/3/2024   | 366                                       |
| CA2000384_001_001 | DDW         | Municipal | 10S/16E/14 |            | 296 - 305       | 3/4/1999                                      | 1/8/2024   | 72  |
| CA2000384_001_001 | DDW         | Municipal | 10S/16E/14 |            | 296 - 305       | 3/4/1999                                      | 1/8/2024   | 72  |
| CA2000504_001_001 | DDW         | Municipal | 12S/17E/21 |            |                 | 3/3/2003                                      | 1/3/2024   | 54  |
| CA2000507_001_001 | DDW         | Municipal | 10S/17E/30 |            | 372 - 372       | 12/2/1999                                     | 6/28/2024  | 42  |
| CA2000507_002_002 | DDW         | Municipal | 10S/17E/30 |            |                 | 1/13/2017                                     | 6/28/2024  | 42  |
| CA2000531_001_001 | DDW         | Municipal | 11S/17E/33 |            |                 | 7/29/2002                                     | 8/24/2020  | 33  |
| CA2000531_004_004 | DDW         | Municipal | 11S/17E/34 |            |                 | 3/10/2015                                     | 4/9/2024   | 30  |
| CA2000531_004_004 | DDW         | Municipal | 11S/17E/33 |            |                 | 3/10/2015                                     | 4/9/2024   | 30  |
| CA2000545_001_001 | DDW         | Municipal | 11S/17E/14 |            | 0 - 10          | 7/11/2002                                     | 1/8/2024   | 21  |
| CA2000547_002_002 | DDW         | Municipal | 12S/18E/05 |            |                 | 1/3/2007                                      | 1/5/2024   | 19  |
| CA2000553_001_001 | DDW         | Municipal | 12S/18E/31 |            | 450 - 500       | 10/9/1986                                     | 7/9/2024   | 842                                       |
| CA2000553_001_001 | DDW         | Municipal | 12S/17E/25 |            | 450 - 500       | 10/9/1986                                     | 7/9/2024   | 842                                       |
| CA2000554_001_001 | DDW         | Municipal | 10S/16E/11 |            | 240 - 430       | 8/20/1986                                     | 2/21/2024  | 242                                       |
| CA2000554_005_005 | DDW         | Municipal | 10S/16E/11 |            |                 | 4/7/2021                                      | 2/21/2024  | 126                                       |
| CA2000554_005_005 | DDW         | Municipal | 10S/16E/11 |            |                 | 4/7/2021                                      | 2/21/2024  | 126                                       |
| CA2000595_001_001 | DDW         | Municipal | 11S/17E/11 |            |                 | 8/19/1986                                     | 3/1/2021   | 202                                       |
| CA2000595_004_004 | DDW         | Municipal | 11S/17E/14 |            |                 | 12/18/2007                                    | 5/7/2024   | 478                                       |
| CA2000595_004_004 | DDW         | Municipal | 11S/17E/10 |            |                 | 12/18/2007                                    | 5/7/2024   | 478                                       |
| CA2000597_001_001 | DDW         | Municipal | 11S/15E/02 |            | 300 - 300       | 9/3/1986                                      | 7/17/2024  | 254                                       |
| CA2000600_002_002 | DDW         | Municipal | 11S/17E/30 |            |                 | 11/3/1999                                     | 5/15/2024  | 182                                       |
| CA2000601_002_002 | DDW         | Municipal | 12S/17E/21 |            |                 | 11/3/1999                                     | 12/4/2023  | 123                                       |
| CA2000602_001_001 | DDW         | Municipal | 12S/17E/36 |            |                 | 8/20/1986                                     | 6/18/2024  | 128                                       |
| CA2000608_001_001 | DDW         | Municipal | 12S/20E/21 |            |                 | 8/21/1986                                     | 6/12/2024  | 205                                       |
| CA2000637_001_001 | DDW         | Municipal | 12S/18E/31 |            |                 | 8/12/2002                                     | 3/26/2024  | 8   |
| CA2000641_001_001 | DDW         | Municipal | 10S/17E/09 |            |                 | 9/3/1986                                      | 7/29/2021  | 47  |
| CA2000641_021_021 | DDW         | Municipal | 10S/17E/09 |            |                 | 9/2/2015                                      | 8/9/2023   | 13  |
| CA2000653_001_001 | DDW         | Municipal | 12S/18E/06 |            |                 | 7/2/2002                                      | 1/8/2024   | 41  |
| CA2000655_001_001 | DDW         | Municipal | 11S/18E/17 |            | 340 - 340       | 9/3/1986                                      | 12/16/2016                                       | 18  |
| CA2000655_002_002 | DDW         | Municipal | 11S/18E/17 |            |                 | 3/15/1999                                     | 6/27/2024  | 17  |
| CA2000655_003_003 | DDW         | Municipal | 11S/18E/17 |            |                 | 1/20/2021                                     | 6/27/2024  | 64  |
| CA2000655_003_003 | DDW         | Municipal | 11S/18E/17 |            |                 | 1/20/2021                                     | 6/27/2024  | 64  |
| CA2000659_001_001 | DDW         | Municipal | 11S/17E/34 |            |                 | 9/4/1986                                      | 4/16/2024  | 324                                       |
| CA2000659_001_001 | DDW         | Municipal | 11S/17E/34 |            |                 | 9/4/1986                                      | 4/16/2024  | 324                                       |
| CA2000659_003_003 | DDW         | Municipal | 11S/17E/34 |            |                 | 8/16/2001                                     | 4/16/2024  | 94  |
| CA2000659_003_003 | DDW         | Municipal | 11S/17E/34 |            |                 | 8/16/2001                                     | 4/16/2024  | 94  |
| CA2000659_004_004 | DDW         | Municipal | 11S/17E/34 |            |                 | 8/16/2001                                     | 1/21/2022  | 88  |
| CA2000659_006_006 | DDW         | Municipal | 11S/17E/34 |            | 244 - 484       | 2/8/2001                                      | 4/16/2024  | 208                                       |
| CA2000659_006_006 | DDW         | Municipal | 11S/17E/34 |            | 244 - 484       | 2/8/2001                                      | 4/16/2024  | 208                                       |
| CA2000660_007_007 | DDW         | Municipal | 12S/17E/03 |            |                 | 1/26/2012                                     | 6/5/2024   | 89  |
| CA2000672_001_001 | DDW         | Municipal | 12S/17E/36 |            |                 | 9/24/1986                                     | 2/26/2024  | 172                                       |
| CA2000675_001_001 | DDW         | Municipal | 12S/17E/24 |            |                 | 9/24/1986                                     | 11/24/2020                                       | 28  |

**Table 3.J-2 - Supplemental Groundwater Quality Monitoring Network, Madera Subbasin**

| Well ID                   | Data Source | Well Type | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Quality Measurement Date | Most Recent Groundwater Quality Measurement Date | Count of Groundwater Quality Measurements |
|---------------------------|-------------|-----------|------------|------------|-----------------|---|--|---|
| CA2000682_001_001         | DDW         | Municipal | 11S/17E/03 |            | 400 - 400       | 9/4/1986                                      | 1/16/2024  | 117                                       |
| CA2000682_002_002         | DDW         | Municipal | 11S/17E/03 |            | 295 - 420       | 7/15/1999                                     | 1/16/2024  | 94  |
| CA2000682_003_003         | DDW         | Municipal | 11S/17E/03 |            |                 | 2/22/2007                                     | 1/16/2024  | 168                                       |
| CA2000682_003_003         | DDW         | Municipal | 10S/17E/33 |            |                 | 2/22/2007                                     | 1/16/2024  | 168                                       |
| CA2000692_001_001         | DDW         | Municipal | 11S/19E/33 |            |                 | 9/11/1998                                     | 1/6/2021   | 398                                       |
| CA2000692_001_001         | DDW         | Municipal | 11S/19E/33 |            |                 | 9/11/1998                                     | 1/6/2021   | 398                                       |
| CA2000692_002_002         | DDW         | Municipal | 11S/19E/33 |            |                 | 9/11/1998                                     | 8/11/2015  | 59  |
| CA2000692_009_009         | DDW         | Municipal | 11S/19E/33 |            |                 | 2/23/2016                                     | 3/25/2024  | 122                                       |
| CA2000692_009_009         | DDW         | Municipal | 11S/19E/33 |            |                 | 2/23/2016                                     | 3/25/2024  | 122                                       |
| CA2000695_001_001         | DDW         | Municipal | 12S/18E/03 |            | 330 - 540       | 8/15/2001                                     | 5/7/2024   | 62  |
| CA2000695_001_001         | DDW         | Municipal | 11S/18E/34 |            | 330 - 540       | 8/15/2001                                     | 5/7/2024   | 62  |
| CA2000724_001_001         | DDW         | Municipal | 10S/18E/29 |            | 0 - 15          | 8/20/1986                                     | 12/10/2020                                       | 167                                       |
| CA2000724_002_002         | DDW         | Municipal | 10S/18E/29 |            |                 | 5/26/2016                                     | 2/21/2024  | 290                                       |
| CA2000724_002_002         | DDW         | Municipal | 10S/18E/29 |            |                 | 5/26/2016                                     | 2/21/2024  | 290                                       |
| CA2000727_001_001         | DDW         | Municipal | 12S/18E/28 |            | 280 - 360       | 9/9/1998                                      | 7/9/2024   | 462                                       |
| CA2000727_001_001         | DDW         | Municipal | 12S/18E/21 |            | 280 - 360       | 9/9/1998                                      | 7/9/2024   | 462                                       |
| CA2000727_002_002         | DDW         | Municipal | 12S/18E/27 |            |                 | 2/21/2006                                     | 7/9/2024   | 384                                       |
| CA2000727_002_002         | DDW         | Municipal | 12S/18E/21 |            |                 | 2/21/2006                                     | 7/9/2024   | 384                                       |
| CA2000728_001_001         | DDW         | Municipal | 12S/17E/22 |            |                 | 9/2/1998                                      | 6/20/2024  | 233                                       |
| CA2000728_002_002         | DDW         | Municipal | 12S/17E/22 |            |                 | 9/2/1998                                      | 6/20/2024  | 293                                       |
| CA2000760_002_002         | DDW         | Municipal | 11S/16E/02 |            |                 | 10/19/2000                                    | 12/4/2023  | 161                                       |
| CA2000770_001_001         | DDW         | Municipal | 12S/18E/05 |            | 349 - 379       | 11/15/2002                                    | 1/5/2023   | 130                                       |
| CA2000780_001_001         | DDW         | Municipal | 11S/17E/09 |            |                 | 12/14/2006                                    | 12/27/2023                                       | 22  |
| CA2000785_002_002         | DDW         | Municipal | 12S/19E/09 |            | 320 - 600       | 11/13/2000                                    | 6/6/2023   | 299                                       |
| CA2000794_001_001         | DDW         | Municipal | 12S/20E/17 |            |                 | 2/9/2001                                      | 4/9/2024   | 335                                       |
| CA2000811_002_002         | DDW         | Municipal | 10S/18E/23 |            |                 | 12/27/2012                                    | 9/19/2023  | 19  |
| CA2000846_003_003         | DDW         | Municipal | 11S/19E/15 |            |                 | 4/4/2017                                      | 1/22/2024  | 34  |
| CA2000850_001_001         | DDW         | Municipal | 11S/20E/21 |            | 240 - 320       | 9/2/2009                                      | 2/8/2023   | 7   |
| CA2000852_001_001         | DDW         | Municipal | 11S/18E/09 |            |                 | 11/15/2002                                    | 6/5/2015   | 6   |
| CA2000855_001_001         | DDW         | Municipal | 12S/18E/06 |            | 0 - 35          | 12/9/2014                                     | 8/5/2019   | 2   |
| CA2000855_002_002         | DDW         | Municipal | 12S/18E/06 |            | 0 - 75          | 12/15/2008                                    | 12/5/2023  | 94  |
| CA2000855_002_002         | DDW         | Municipal | 12S/18E/06 |            | 0 - 75          | 12/15/2008                                    | 12/5/2023  | 94  |
| CA2000855_005_005         | DDW         | Municipal | 12S/18E/06 |            |                 | 3/23/2009                                     | 6/13/2024  | 100                                       |
| CA2000855_005_005         | DDW         | Municipal | 12S/18E/06 |            |                 | 3/23/2009                                     | 6/13/2024  | 100                                       |
| CA2000855_007_007         | DDW         | Municipal | 12S/18E/06 |            |                 | 12/1/2015                                     | 12/5/2023  | 34  |
| CA2000855_007_007         | DDW         | Municipal | 12S/18E/06 |            |                 | 12/1/2015                                     | 12/5/2023  | 34  |
| CA2000866_001_001         | DDW         | Municipal | 10S/17E/10 |            |                 | 4/19/2001                                     | 7/8/2024   | 435                                       |
| CA2000885_001_001         | DDW         | Municipal | 13S/18E/06 |            |                 | 6/26/2006                                     | 7/22/2024  | 96  |
| CA2000920_005_005         | DDW         | Municipal | 11S/17E/17 |            |                 | 9/6/2016                                      | 7/8/2024   | 45  |
| CA2000931_001_001         | DDW         | Municipal | 12S/17E/27 |            |                 | 12/19/2012                                    | 12/11/2023                                       | 6   |
| CA2000932_002_002         | DDW         | Municipal | 10S/16E/14 |            |                 | 10/19/2018                                    | 4/11/2024  | 34  |
| CA2000938_001_001         | DDW         | Municipal | 12S/18E/02 |            | 420 - 560       | 6/25/2008                                     | 1/17/2023  | 82  |
| CA2000938_003_003         | DDW         | Municipal | 12S/18E/02 |            |                 | 12/6/2017                                     | 4/16/2024  | 98  |
| CA2000938_003_003         | DDW         | Municipal | 12S/18E/02 |            |                 | 12/6/2017                                     | 4/16/2024  | 98  |
| CA2000944_001_001         | DDW         | Municipal | 11S/16E/26 |            |                 | 7/7/2009                                      | 7/2/2024   | 330                                       |
| CA2000944_001_001         | DDW         | Municipal | 11S/16E/26 |            |                 | 7/7/2009                                      | 7/2/2024   | 330                                       |
| CA2000950_001_001         | DDW         | Municipal | 12S/20E/17 |            |                 | 10/3/2012                                     | 7/23/2024  | 13  |
| CA2000951_001_001         | DDW         | Municipal | 12S/18E/36 |            |                 | 3/6/2015                                      | 1/6/2022   | 35  |
| CA2000951_002_002         | DDW         | Municipal | 12S/18E/36 |            |                 | 9/13/2021                                     | 4/8/2024   | 68  |
| CA2000951_002_002         | DDW         | Municipal | 12S/18E/25 |            |                 | 9/13/2021                                     | 4/8/2024   | 68  |
| CA2000952_001_001         | DDW         | Municipal | 12S/19E/22 |            |                 | 12/26/2017                                    | 2/7/2024   | 7   |
| CA2000955_001_001         | DDW         | Municipal | 12S/19E/33 |            |                 | 3/4/2015                                      | 6/5/2024   | 39  |
| CA2000956_001_001         | DDW         | Municipal | 11S/17E/34 |            |                 | 7/15/2020                                     | 7/8/2024   | 36  |
| CA2000961_001_001         | DDW         | Municipal | 12S/18E/04 |            |                 | 3/19/2018                                     | 7/8/2024   | 48  |
| CA2000962_001_001         | DDW         | Municipal | 12S/19E/21 |            |                 | 10/4/2017                                     | 3/21/2022  | 9   |
| CA2000963_001_001         | DDW         | Municipal | 11S/17E/04 |            |                 | 8/23/2018                                     | 1/8/2024   | 7   |
| CA2000963_002_002         | DDW         | Municipal | 11S/17E/05 |            |                 | 8/23/2018                                     | 1/8/2024   | 8   |
| CA2000968_001_001         | DDW         | Municipal | 12S/18E/05 |            |                 | 3/10/2020                                     | 7/18/2024  | 68  |
| CA2000968_001_001         | DDW         | Municipal | 11S/18E/32 |            |                 | 3/10/2020                                     | 7/18/2024  | 68  |
| CA2000968_002_002         | DDW         | Municipal | 12S/18E/05 |            |                 | 10/16/2019                                    | 7/18/2024  | 74  |
| CA2000968_002_002         | DDW         | Municipal | 11S/18E/32 |            |                 | 10/16/2019                                    | 7/18/2024  | 74  |
| CA2000969_2000969-001_001 | DDW         | Municipal | 11S/17E/21 |            |                 | 7/7/2021                                      | 7/7/2021   | 9   |
| CA2010002_001_001         | DDW         | Municipal | 11S/17E/10 |            | 0 - 360         | 7/10/1984                                     | 6/3/2024   | 664                                       |
| CA2010002_001_001         | DDW         | Municipal | 11S/17E/10 |            | 0 - 360         | 7/10/1984                                     | 6/3/2024   | 664                                       |
| CA2010002_011_011         | DDW         | Municipal | 11S/17E/26 |            | 195 - 465       | 3/4/1986                                      | 6/3/2024   | 758                                       |

**Table 3.J-2 - Supplemental Groundwater Quality Monitoring Network, Madera Subbasin**

| Well ID           | Data Source | Well Type | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Quality Measurement Date | Most Recent Groundwater Quality Measurement Date | Count of Groundwater Quality Measurements |
|-------------------|-------------|-----------|------------|------------|-----------------|---|--|---|
| CA2010002_011_011 | DDW         | Municipal | 11S/17E/22 |            | 195 - 465       | 3/4/1986                                      | 6/3/2024   | 758                                       |
| CA2010002_013_013 | DDW         | Municipal | 11S/18E/30 |            | 0 - 360         | 7/10/1984                                     | 6/3/2024   | 345                                       |
| CA2010002_014_014 | DDW         | Municipal | 11S/17E/24 |            | 280 - 610       | 7/10/1984                                     | 6/3/2024   | 628                                       |
| CA2010002_014_014 | DDW         | Municipal | 11S/17E/13 |            | 280 - 610       | 7/10/1984                                     | 6/3/2024   | 628                                       |
| CA2010002_016_016 | DDW         | Municipal | 11S/17E/13 |            | 0 - 370         | 7/10/1984                                     | 3/25/2024  | 600                                       |
| CA2010002_016_016 | DDW         | Municipal | 11S/17E/14 |            | 0 - 370         | 7/10/1984                                     | 3/25/2024  | 600                                       |
| CA2010002_017_017 | DDW         | Municipal | 11S/18E/30 |            | 0 - 370         | 7/10/1984                                     | 3/25/2024  | 896                                       |
| CA2010002_017_017 | DDW         | Municipal | 11S/18E/30 |            | 0 - 370         | 7/10/1984                                     | 3/25/2024  | 896                                       |
| CA2010002_018_018 | DDW         | Municipal | 11S/17E/24 |            | 0 - 280         | 3/4/1986                                      | 6/3/2024   | 814                                       |
| CA2010002_018_018 | DDW         | Municipal | 11S/17E/24 |            | 0 - 280         | 3/4/1986                                      | 6/3/2024   | 814                                       |
| CA2010002_019_019 | DDW         | Municipal | 11S/17E/13 |            | 0 - 560         | 3/4/1986                                      | 11/9/2023  | 886                                       |
| CA2010002_019_019 | DDW         | Municipal | 11S/17E/12 |            | 0 - 560         | 3/4/1986                                      | 11/9/2023  | 886                                       |
| CA2010002_020_020 | DDW         | Municipal | 11S/18E/18 |            | 0 - 300         | 3/4/1986                                      | 6/3/2024   | 708                                       |
| CA2010002_020_020 | DDW         | Municipal | 11S/18E/18 |            | 0 - 300         | 3/4/1986                                      | 6/3/2024   | 708                                       |
| CA2010002_021_021 | DDW         | Municipal | 11S/17E/14 |            | 0 - 230         | 3/4/1986                                      | 6/3/2024   | 734                                       |
| CA2010002_021_021 | DDW         | Municipal | 11S/17E/14 |            | 0 - 230         | 3/4/1986                                      | 6/3/2024   | 734                                       |
| CA2010002_023_023 | DDW         | Municipal | 11S/18E/17 |            | 0 - 750         | 8/20/1992                                     | 6/3/2024   | 576                                       |
| CA2010002_023_023 | DDW         | Municipal | 11S/18E/18 |            | 0 - 750         | 8/20/1992                                     | 6/3/2024   | 576                                       |
| CA2010002_024_024 | DDW         | Municipal | 11S/17E/23 |            | 370 - 575       | 2/27/1995                                     | 3/25/2024  | 462                                       |
| CA2010002_024_024 | DDW         | Municipal | 11S/17E/23 |            | 370 - 575       | 2/27/1995                                     | 3/25/2024  | 462                                       |
| CA2010002_025_025 | DDW         | Municipal | 11S/17E/26 |            | 430 - 720       | 2/7/1995                                      | 3/25/2024  | 550                                       |
| CA2010002_025_025 | DDW         | Municipal | 11S/17E/26 |            | 430 - 720       | 2/7/1995                                      | 3/25/2024  | 550                                       |
| CA2010002_030_030 | DDW         | Municipal | 11S/18E/29 |            | 265 - 500       | 3/8/2001                                      | 3/25/2024  | 354                                       |
| CA2010002_030_030 | DDW         | Municipal | 11S/18E/19 |            | 265 - 500       | 3/8/2001                                      | 3/25/2024  | 354                                       |
| CA2010002_031_031 | DDW         | Municipal | 11S/17E/22 |            | 0 - 360         | 9/22/2004                                     | 3/25/2024  | 268                                       |
| CA2010002_031_031 | DDW         | Municipal | 11S/17E/22 |            | 0 - 360         | 9/22/2004                                     | 3/25/2024  | 268                                       |
| CA2010002_032_032 | DDW         | Municipal | 11S/18E/31 |            | 310 - 600       | 11/18/2005                                    | 3/25/2024  | 474                                       |
| CA2010002_032_032 | DDW         | Municipal | 11S/18E/31 |            | 310 - 600       | 11/18/2005                                    | 3/25/2024  | 474                                       |
| CA2010002_033_033 | DDW         | Municipal | 11S/18E/30 |            | 433 - 568       | 9/10/2009                                     | 9/21/2023  | 308                                       |
| CA2010002_033_033 | DDW         | Municipal | 11S/18E/30 |            | 433 - 568       | 9/10/2009                                     | 9/21/2023  | 308                                       |
| CA2010002_050_050 | DDW         | Municipal | 11S/17E/10 |            |                 | 1/11/2024                                     | 4/30/2024  | 15  |
| CA2010004_002_002 | DDW         | Municipal | 11S/18E/31 |            | 0 - 60          | 11/19/1984                                    | 2/2/2018   | 361                                       |
| CA2010004_003_003 | DDW         | Municipal | 11S/18E/31 |            | 240 - 456       | 11/8/1985                                     | 7/9/2024   | 1,344                                     |
| CA2010004_003_003 | DDW         | Municipal | 11S/18E/31 |            | 240 - 456       | 11/8/1985                                     | 7/9/2024   | 1,344                                     |
| CA2010006_001_001 | DDW         | Municipal | 11S/18E/29 |            | 0 - 15          | 11/19/1984                                    | 1/21/2022  | 423                                       |
| CA2010006_002_002 | DDW         | Municipal | 11S/18E/28 |            | 0 - 15          | 11/8/1985                                     | 3/11/2024  | 630                                       |
| CA2010006_002_002 | DDW         | Municipal | 11S/18E/28 |            | 0 - 15          | 11/8/1985                                     | 3/11/2024  | 630                                       |
| CA2010006_003_003 | DDW         | Municipal | 11S/18E/33 |            |                 | 12/15/2005                                    | 4/17/2024  | 626                                       |
| CA2010006_003_003 | DDW         | Municipal | 11S/18E/33 |            |                 | 12/15/2005                                    | 4/17/2024  | 626                                       |
| CA2010006_004_004 | DDW         | Municipal | 11S/18E/33 |            | 235 - 490       | 9/3/2009                                      | 2/26/2024  | 386                                       |
| CA2010006_004_004 | DDW         | Municipal | 11S/18E/33 |            | 235 - 490       | 9/3/2009                                      | 2/26/2024  | 386                                       |
| CA2010008_004_004 | DDW         | Municipal | 12S/19E/03 |            | 306 - 389       | 9/19/1997                                     | 3/25/2024  | 838                                       |
| CA2010008_004_004 | DDW         | Municipal | 12S/19E/03 |            | 306 - 389       | 9/19/1997                                     | 3/25/2024  | 838                                       |
| CA2010008_005_005 | DDW         | Municipal | 11S/19E/34 |            | 250 - 465       | 5/1/1997                                      | 3/25/2024  | 884                                       |
| CA2010008_005_005 | DDW         | Municipal | 11S/19E/34 |            | 250 - 465       | 5/1/1997                                      | 3/25/2024  | 884                                       |
| CA2010008_006_006 | DDW         | Municipal | 12S/19E/02 |            | 0 - 120         | 2/3/2010                                      | 1/21/2022  | 164                                       |
| CA2010008_007_007 | DDW         | Municipal | 11S/19E/35 |            |                 | 12/16/2013                                    | 3/25/2024  | 246                                       |
| CA2010008_007_007 | DDW         | Municipal | 11S/19E/35 |            |                 | 12/16/2013                                    | 3/25/2024  | 246                                       |
| CA2010008_008_008 | DDW         | Municipal | 11S/19E/35 |            |                 | 4/1/2024                                      | 6/27/2024  | 4   |
| CA2010009_002_002 | DDW         | Municipal | 12S/20E/04 |            | 324 - 369       | 11/19/1984                                    | 4/18/2018  | 427                                       |
| CA2010009_003_003 | DDW         | Municipal | 12S/20E/16 |            | 240 - 526       | 10/22/1985                                    | 4/9/2024   | 886                                       |
| CA2010009_003_003 | DDW         | Municipal | 12S/20E/09 |            | 240 - 526       | 10/22/1985                                    | 4/9/2024   | 886                                       |
| CA2010009_007_007 | DDW         | Municipal | 12S/20E/16 |            |                 | 11/10/2009                                    | 7/8/2024   | 782                                       |
| CA2010009_007_007 | DDW         | Municipal | 12S/20E/09 |            |                 | 11/10/2009                                    | 7/8/2024   | 782                                       |
| CA2010009_010_010 | DDW         | Municipal | 12S/20E/09 |            |                 | 7/28/2020                                     | 4/9/2024   | 204                                       |
| CA2010009_010_010 | DDW         | Municipal | 12S/20E/09 |            |                 | 7/28/2020                                     | 4/9/2024   | 204                                       |
| CA2010010_001_001 | DDW         | Municipal | 11S/17E/11 |            | 0 - 300         | 11/14/1985                                    | 1/2/2024   | 1,274                                     |
| CA2010010_001_001 | DDW         | Municipal | 11S/17E/11 |            | 0 - 300         | 11/14/1985                                    | 1/2/2024   | 1,274                                     |
| CA2010010_002_002 | DDW         | Municipal | 10S/17E/35 |            | 0 - 200         | 11/14/1985                                    | 1/5/2015   | 582                                       |
| CA2010010_003_003 | DDW         | Municipal | 10S/17E/36 |            | 0 - 238         | 8/9/1985                                      | 1/5/2015   | 586                                       |
| CA2010010_004_004 | DDW         | Municipal | 11S/17E/02 |            | 0 - 250         | 7/20/1990                                     | 5/13/2024  | 1,144                                     |
| CA2010010_004_004 | DDW         | Municipal | 10S/17E/35 |            | 0 - 250         | 7/20/1990                                     | 5/13/2024  | 1,144                                     |
| CA2010010_005_005 | DDW         | Municipal | 11S/17E/01 |            | 0 - 136         | 12/30/1993                                    | 5/13/2024  | 1,156                                     |
| CA2010010_005_005 | DDW         | Municipal | 10S/17E/36 |            | 0 - 136         | 12/30/1993                                    | 5/13/2024  | 1,156                                     |
| CA2010010_006_006 | DDW         | Municipal | 11S/17E/01 |            | 230 - 409       | 8/21/2002                                     | 5/13/2024  | 784                                       |



**Table 3.J-2 - Supplemental Groundwater Quality Monitoring Network, Madera Subbasin**

| Well ID                     | Data Source | Well Type  | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Quality Measurement Date | Most Recent Groundwater Quality Measurement Date | Count of Groundwater Quality Measurements |
|-----------------------------|-------------|------------|------------|------------|-----------------|---|--|---|
| CA2010010_006_006           | DDW         | Municipal  | 11S/17E/02 |            | 230 - 409       | 8/21/2002                                     | 5/13/2024  | 784                                       |
| CA2010010_007_007           | DDW         | Municipal  | 11S/18E/06 |            | 242 - 374       | 10/18/2005                                    | 1/2/2024   | 588                                       |
| CA2010010_007_007           | DDW         | Municipal  | 10S/17E/36 |            | 242 - 374       | 10/18/2005                                    | 1/2/2024   | 588                                       |
| CA2010016_001_001           | DDW         | Municipal  | 12S/20E/05 |            |                 | 5/27/2016                                     | 6/4/2024   | 226                                       |
| CA2010016_001_001           | DDW         | Municipal  | 12S/20E/06 |            |                 | 5/27/2016                                     | 6/4/2024   | 226                                       |
| CA2010016_002_002           | DDW         | Municipal  | 12S/20E/05 |            |                 | 5/27/2016                                     | 7/9/2024   | 618                                       |
| CA2010016_002_002           | DDW         | Municipal  | 12S/20E/06 |            |                 | 5/27/2016                                     | 7/9/2024   | 618                                       |
| CA2010016_003_003           | DDW         | Municipal  | 12S/20E/05 |            |                 | 6/27/2016                                     | 7/6/2021   | 73  |
| CA2010016_007_007           | DDW         | Municipal  | 11S/20E/32 |            |                 | 1/8/2024                                      | 4/8/2024   | 30  |
| CA2010018_001_001           | DDW         | Municipal  | 11S/21E/06 |            |                 | 10/28/2019                                    | 5/21/2024  | 164                                       |
| CA2010018_001_001           | DDW         | Municipal  | 11S/21E/06 |            |                 | 10/28/2019                                    | 5/21/2024  | 164                                       |
| CA2010018_002_002           | DDW         | Municipal  | 11S/21E/06 |            |                 | 7/30/2019                                     | 5/21/2024  | 164                                       |
| CA2010018_002_002           | DDW         | Municipal  | 11S/21E/06 |            |                 | 7/30/2019                                     | 5/21/2024  | 164                                       |
| CA2010018_003_003           | DDW         | Municipal  | 11S/21E/06 |            |                 | 8/28/2020                                     | 8/28/2020  | 20  |
| CA2010018_004_004           | DDW         | Municipal  | 11S/21E/06 |            |                 | 11/14/2019                                    | 5/21/2024  | 174                                       |
| CA2010018_004_004           | DDW         | Municipal  | 11S/21E/06 |            |                 | 11/14/2019                                    | 5/21/2024  | 174                                       |
| CA2010800_001_001           | DDW         | Municipal  | 10S/17E/06 |            | 0 - 290         | 12/27/1989                                    | 8/4/2015   | 241                                       |
| CA2010800_002_002           | DDW         | Municipal  | 10S/17E/05 |            | 0 - 375         | 1/6/1990                                      | 7/30/2024  | 756                                       |
| CA2010800_002_002           | DDW         | Municipal  | 10S/17E/06 |            | 0 - 375         | 1/6/1990                                      | 7/30/2024  | 756                                       |
| CA2010800_003_003           | DDW         | Municipal  | 10S/17E/05 |            | 0 - 280         | 12/6/1989                                     | 7/2/2024   | 684                                       |
| CA2010800_003_003           | DDW         | Municipal  | 10S/17E/06 |            | 0 - 280         | 12/6/1989                                     | 7/2/2024   | 684                                       |
| CA2010801_001_001           | DDW         | Municipal  | 09S/17E/31 |            | 375 - 760       | 3/4/1998                                      | 7/2/2024   | 782                                       |
| CA2010801_001_001           | DDW         | Municipal  | 09S/17E/31 |            | 375 - 760       | 3/4/1998                                      | 7/2/2024   | 782                                       |
| CA2010801_002_002           | DDW         | Municipal  | 09S/17E/31 |            | 410 - 800       | 3/4/1998                                      | 8/15/2023  | 712                                       |
| CA2010801_002_002           | DDW         | Municipal  | 09S/17E/31 |            | 410 - 800       | 3/4/1998                                      | 8/15/2023  | 712                                       |
| CA2010801_007_007           | DDW         | Municipal  | 10S/17E/06 |            |                 | 3/8/2016                                      | 7/2/2024   | 456                                       |
| CA2010801_007_007           | DDW         | Municipal  | 10S/17E/06 |            |                 | 3/8/2016                                      | 7/2/2024   | 456                                       |
| CA2801077_001_001           | DDW         | Municipal  | 11S/18E/17 |            | 60 - 500        | 4/3/2002                                      | 4/24/2024  | 18  |
| CA2801077_001_001           | DDW         | Municipal  | 11S/18E/17 |            | 60 - 500        | 4/3/2002                                      | 4/24/2024  | 18  |
| 113580                      | DPR         | Domestic   | 12S/17E/34 |            |                 | 6/5/2017                                      | 6/5/2017   | 0   |
| 113589                      | DPR         | Domestic   | 12S/17E/35 | 184        |                 | 6/5/2017                                      | 6/5/2017   | 0   |
| AGC100012331-ESJQC00012     | GeoTracker  | Domestic   | 12S/17E/02 | 276        |                 | 10/30/2018                                    | 7/25/2022  | 116                                       |
| AGC100012331-ESJQC00012     | GeoTracker  | Domestic   | 11S/17E/35 | 276        |                 | 10/30/2018                                    | 7/25/2022  | 116                                       |
| AGC100012331-ESJQC00017     | GeoTracker  | Domestic   | 12S/18E/17 |            |                 | 7/22/2019                                     | 7/27/2021  | 27  |
| AGC100012331-ESJQC00027     | GeoTracker  | Monitoring | 12S/15E/18 | 139        |                 | 8/4/2020                                      | 8/3/2022   | 68  |
| AGC100012331-ESJQC00027     | GeoTracker  | Monitoring | 12S/15E/18 | 139        |                 | 8/4/2020                                      | 8/3/2022   | 68  |
| AGC100012331-ESJQC00033     | GeoTracker  | Monitoring | 11S/16E/06 | 375        |                 | 8/4/2020                                      | 8/3/2022   | 34  |
| AGC100012331-ESJQC00035     | GeoTracker  | Monitoring | 12S/16E/05 | 210        |                 | 8/4/2020                                      | 8/3/2022   | 68  |
| AGC100012331-ESJQC00035     | GeoTracker  | Monitoring | 12S/16E/05 | 210        |                 | 8/4/2020                                      | 8/3/2022   | 68  |
| AGC100012331-ESJQC00036     | GeoTracker  | Monitoring | 13S/16E/11 | 350        |                 | 8/4/2020                                      | 8/3/2022   | 68  |
| AGC100012331-ESJQC00036     | GeoTracker  | Monitoring | 13S/16E/03 | 350        |                 | 8/4/2020                                      | 8/3/2022   | 68  |
| AGC100012331-ESJQC00037     | GeoTracker  | Monitoring | 12S/17E/22 | 320        |                 | 8/4/2020                                      | 8/3/2022   | 86  |
| AGC100012331-ESJQC00037     | GeoTracker  | Monitoring | 12S/17E/16 | 320        |                 | 8/4/2020                                      | 8/3/2022   | 86  |
| AGC100012331-ESJQC00039     | GeoTracker  | Monitoring | 10S/16E/11 | 510        |                 | 8/4/2020                                      | 8/2/2022   | 68  |
| AGC100012331-ESJQC00039     | GeoTracker  | Monitoring | 10S/16E/11 | 510        |                 | 8/4/2020                                      | 8/2/2022   | 68  |
| AGW080010122-ALMOND_PLANT   | GeoTracker  | Domestic   | 11S/17E/04 |            |                 | 12/19/2018                                    | 12/19/2018                                       | 1   |
| AGW080010123-R4_SHOP        | GeoTracker  | Domestic   | 11S/17E/18 |            |                 | 12/19/2018                                    | 12/14/2022                                       | 6   |
| AGW080010123-R4_SHOP        | GeoTracker  | Domestic   | 11S/17E/18 |            |                 | 12/19/2018                                    | 12/14/2022                                       | 6   |
| AGW080010124-R5_SHOP        | GeoTracker  | Domestic   | 11S/17E/17 |            |                 | 12/19/2018                                    | 12/19/2022                                       | 4   |
| AGW080010124-R5_SHOP        | GeoTracker  | Domestic   | 11S/17E/17 |            |                 | 12/19/2018                                    | 12/19/2022                                       | 4   |
| AGW080010125-R20_OLIVE      | GeoTracker  | Domestic   | 12S/18E/25 |            |                 | 12/19/2018                                    | 11/29/2022                                       | 6   |
| AGW080010125-R20_OLIVE      | GeoTracker  | Domestic   | 12S/18E/25 |            |                 | 12/19/2018                                    | 11/29/2022                                       | 6   |
| AGW080010126-HOME_DOM       | GeoTracker  | Domestic   | 13S/17E/18 |            |                 | 1/3/2019                                      | 1/3/2019   | 1   |
| AGW080010127-GARCIA_DOM     | GeoTracker  | Domestic   | 12S/17E/36 |            |                 | 1/10/2019                                     | 1/10/2019  | 1   |
| AGW080010128-SHOP_DOM       | GeoTracker  | Domestic   | 13S/17E/18 |            |                 | 1/3/2019                                      | 1/3/2019   | 1   |
| AGW080010131-HOME_DOM       | GeoTracker  | Domestic   | 13S/17E/07 |            |                 | 1/3/2019                                      | 1/3/2019   | 1   |
| AGW080010132-NICHOLAS       | GeoTracker  | Domestic   | 13S/17E/08 |            |                 | 1/3/2019                                      | 1/3/2019   | 1   |
| AGW080010208-AV6_WELL1_PUMP | GeoTracker  | Domestic   | 12S/17E/31 |            |                 | 1/21/2019                                     | 3/18/2020  | 2   |
| AGW080010209-AV6_WELL2      | GeoTracker  | Domestic   | 13S/17E/05 |            |                 | 1/10/2019                                     | 11/15/2022                                       | 8   |
| AGW080010209-AV6_WELL2      | GeoTracker  | Domestic   | 12S/17E/31 |            |                 | 1/10/2019                                     | 11/15/2022                                       | 8   |
| AGW080010213-7558ROAD25     | GeoTracker  | Domestic   | 12S/17E/26 |            |                 | 1/10/2019                                     | 1/28/2021  | 3   |
| AGW080010214-25697AVE7      | GeoTracker  | Domestic   | 12S/17E/26 |            |                 | 1/10/2019                                     | 1/28/2021  | 3   |
| AGW080010220-HOUSE_WELL     | GeoTracker  | Domestic   | 10S/18E/04 |            |                 | 1/9/2019                                      | 1/9/2019   | 0   |
| AGW080010244-SR1WELL        | GeoTracker  | Domestic   | 12S/18E/30 |            |                 | 1/10/2019                                     | 3/19/2020  | 2   |
| AGW080010245-SR2WELL        | GeoTracker  | Domestic   | 12S/17E/25 |            |                 | 3/4/2019                                      | 3/4/2019   | 1   |

**Table 3.J-2 - Supplemental Groundwater Quality Monitoring Network, Madera Subbasin**

| Well ID                  | Data Source | Well Type | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Quality Measurement Date | Most Recent Groundwater Quality Measurement Date | Count of Groundwater Quality Measurements |
|--------------------------|-------------|-----------|------------|------------|-----------------|---|--|---|
| AGW080010255-R-28        | GeoTracker  | Domestic  | 12S/18E/17 |            |                 | 1/11/2019                                     | 12/2/2021  | 4   |
| AGW080010256-R-17        | GeoTracker  | Domestic  | 10S/16E/28 |            |                 | 1/11/2019                                     | 12/2/2021  | 4   |
| AGW080010257-R-31        | GeoTracker  | Domestic  | 12S/18E/27 |            |                 | 1/11/2019                                     | 11/11/2020                                       | 3   |
| AGW080010270-HOME_DOM    | GeoTracker  | Domestic  | 12S/17E/27 |            |                 | 1/21/2019                                     | 12/6/2021  | 3   |
| AGW080010271-AVE6_WELL   | GeoTracker  | Domestic  | 13S/18E/05 |            |                 | 1/24/2019                                     | 1/24/2019  | 1   |
| AGW080010272-MD_WELL     | GeoTracker  | Domestic  | 13S/18E/05 |            |                 | 1/24/2019                                     | 1/24/2019  | 1   |
| AGW080010273-HOUSE_PUMP  | GeoTracker  | Domestic  | 12S/18E/28 |            |                 | 1/24/2019                                     | 12/21/2020                                       | 2   |
| AGW080010278-HOUSE_PUMP  | GeoTracker  | Domestic  | 12S/18E/28 |            |                 | 1/24/2019                                     | 1/24/2019  | 1   |
| AGW080010309-BPERKHOME   | GeoTracker  | Domestic  | 12S/19E/09 |            |                 | 1/25/2019                                     | 2/18/2020  | 2   |
| AGW080010342-20286AVE14  | GeoTracker  | Domestic  | 11S/16E/01 |            |                 | 2/5/2019                                      | 2/5/2019   | 1   |
| AGW080010343-20540AVE14  | GeoTracker  | Domestic  | 11S/17E/28 |            |                 | 2/5/2019                                      | 2/5/2019   | 1   |
| AGW080010348-WELL 1      | GeoTracker  | Domestic  | 11S/17E/27 |            |                 | 2/5/2019                                      | 2/5/2019   | 2   |
| AGW080010377-GINA_80_AC  | GeoTracker  | Domestic  | 11S/17E/19 |            |                 | 2/7/2019                                      | 2/7/2019   | 1   |
| AGW080010378-GARY_40_AC  | GeoTracker  | Domestic  | 11S/17E/19 |            |                 | 2/7/2019                                      | 2/7/2019   | 1   |
| AGW080010403-RIVER_RCH   | GeoTracker  | Domestic  | 13S/18E/04 |            |                 | 2/14/2019                                     | 2/14/2019  | 1   |
| AGW080010404-RANCH_28    | GeoTracker  | Domestic  | 13S/18E/06 |            |                 | 2/14/2019                                     | 2/14/2019  | 1   |
| AGW080010405-7468_RD_23  | GeoTracker  | Domestic  | 12S/17E/28 |            |                 | 2/14/2019                                     | 2/14/2019  | 1   |
| AGW080010406-10671_RD_29 | GeoTracker  | Domestic  | 12S/18E/16 |            |                 | 2/14/2019                                     | 2/14/2019  | 1   |
| AGW080010407-18713_RD22  | GeoTracker  | Domestic  | 10S/17E/32 |            |                 | 2/14/2019                                     | 2/14/2019  | 1   |
| AGW080010408-HOME DOM    | GeoTracker  | Domestic  | 11S/18E/03 |            |                 | 1/24/2019                                     | 3/17/2021  | 4   |
| AGW080010422-5423_RD_26  | GeoTracker  | Domestic  | 13S/17E/01 |            |                 | 2/21/2019                                     | 10/21/2021                                       | 3   |
| AGW080010423-5349_RD_26  | GeoTracker  | Domestic  | 13S/17E/01 |            |                 | 2/21/2019                                     | 10/21/2021                                       | 3   |
| AGW080010424-HOUSEWELL   | GeoTracker  | Domestic  | 12S/18E/19 |            |                 | 2/14/2019                                     | 2/14/2019  | 2   |
| AGW080010425-5444_RD_26  | GeoTracker  | Domestic  | 13S/17E/01 |            |                 | 2/21/2019                                     | 10/21/2021                                       | 3   |
| AGW080010426-5348_RD_26  | GeoTracker  | Domestic  | 13S/17E/01 |            |                 | 2/21/2019                                     | 10/21/2021                                       | 3   |
| AGW080010427-26493_AV_5  | GeoTracker  | Domestic  | 13S/17E/01 |            |                 | 2/21/2019                                     | 10/21/2021                                       | 3   |
| AGW080010435-BASILA_1    | GeoTracker  | Domestic  | 12S/17E/27 |            |                 | 2/19/2019                                     | 2/19/2019  | 1   |
| AGW080010436-BASILA_2    | GeoTracker  | Domestic  | 12S/17E/28 |            |                 | 2/19/2019                                     | 2/19/2019  | 1   |
| AGW080010447-TRT_H_WELL  | GeoTracker  | Domestic  | 12S/17E/27 |            |                 | 2/21/2019                                     | 4/7/2021   | 3   |
| AGW080010448-WELL_ONE    | GeoTracker  | Domestic  | 12S/18E/31 |            |                 | 2/19/2019                                     | 2/19/2019  | 1   |
| AGW080010449-HOUSE WELL  | GeoTracker  | Domestic  | 12S/16E/26 |            |                 | 3/1/2019                                      | 3/1/2019   | 2   |
| AGW080010450-WELL_#17    | GeoTracker  | Domestic  | 11S/16E/13 |            |                 | 2/13/2019                                     | 1/10/2022  | 4   |
| AGW080010451-WELL_#18    | GeoTracker  | Domestic  | 11S/16E/12 |            |                 | 2/13/2019                                     | 1/6/2021   | 3   |
| AGW080010452-WELL_#19    | GeoTracker  | Domestic  | 11S/16E/12 |            |                 | 2/13/2019                                     | 1/10/2022  | 4   |
| AGW080010453-WELL_#20    | GeoTracker  | Domestic  | 11S/16E/12 |            |                 | 2/13/2019                                     | 1/10/2022  | 4   |
| AGW080010454-WELL_#21    | GeoTracker  | Domestic  | 11S/16E/11 |            |                 | 2/13/2019                                     | 1/10/2022  | 4   |
| AGW080010455-WELL_#24    | GeoTracker  | Domestic  | 11S/16E/16 |            |                 | 2/13/2019                                     | 1/10/2022  | 32  |
| AGW080010455-WELL_#24    | GeoTracker  | Domestic  | 11S/16E/11 |            |                 | 2/13/2019                                     | 1/10/2022  | 32  |
| AGW080010456-WELL_#25    | GeoTracker  | Domestic  | 11S/17E/21 |            |                 | 2/13/2019                                     | 1/10/2022  | 4   |
| AGW080010458-DOM_WELL    | GeoTracker  | Domestic  | 10S/17E/21 |            |                 | 2/20/2019                                     | 2/20/2019  | 1   |
| AGW080010462-DW_SHOP     | GeoTracker  | Domestic  | 11S/18E/05 |            |                 | 2/25/2019                                     | 12/15/2021                                       | 3   |
| AGW080010463-DW_124      | GeoTracker  | Domestic  | 11S/18E/04 |            |                 | 2/25/2019                                     | 12/15/2021                                       | 3   |
| AGW080010490-NO HOME #1  | GeoTracker  | Domestic  | 12S/18E/19 |            |                 | 3/12/2019                                     | 3/12/2019  | 2   |
| AGW080010491-SO SHOP #1  | GeoTracker  | Domestic  | 12S/18E/19 |            |                 | 3/12/2019                                     | 3/12/2019  | 2   |
| AGW080010497-FRONT_DOM   | GeoTracker  | Domestic  | 12S/19E/21 |            |                 | 3/5/2019                                      | 9/27/2021  | 3   |
| AGW080010498-SHOP_DOM    | GeoTracker  | Domestic  | 12S/19E/28 |            |                 | 3/5/2019                                      | 9/27/2021  | 3   |
| AGW080010499-DOM WELL    | GeoTracker  | Domestic  | 12S/18E/25 |            |                 | 3/14/2019                                     | 3/14/2019  | 2   |
| AGW080010502-GRAPES      | GeoTracker  | Domestic  | 12S/18E/26 |            |                 | 3/5/2019                                      | 3/5/2019   | 1   |
| AGW080010503-PISTACHIOS  | GeoTracker  | Domestic  | 13S/17E/01 |            |                 | 3/5/2019                                      | 3/5/2019   | 1   |
| AGW080010506-DOM_WELL    | GeoTracker  | Domestic  | 11S/17E/28 |            |                 | 3/5/2019                                      | 12/28/2023                                       | 3   |
| AGW080010508-7.5_HP_BK   | GeoTracker  | Domestic  | 10S/17E/31 |            |                 | 3/7/2019                                      | 2/12/2021  | 2   |
| AGW080010510-PUMP_2      | GeoTracker  | Domestic  | 12S/17E/11 |            |                 | 2/28/2019                                     | 2/28/2019  | 1   |
| AGW080010511-A2_SOUTH    | GeoTracker  | Domestic  | 12S/18E/22 |            |                 | 3/7/2019                                      | 2/25/2020  | 2   |
| AGW080010512-JB_HOME     | GeoTracker  | Domestic  | 11S/17E/35 |            |                 | 3/11/2019                                     | 3/11/2019  | 1   |
| AGW080010516-30_7        | GeoTracker  | Domestic  | 12S/17E/36 |            |                 | 3/15/2019                                     | 3/15/2019  | 1   |
| AGW080010549-DM_95       | GeoTracker  | Domestic  | 13S/17E/09 |            |                 | 3/21/2019                                     | 11/14/2023                                       | 6   |
| AGW080010549-DM_95       | GeoTracker  | Domestic  | 13S/17E/09 |            |                 | 3/21/2019                                     | 11/14/2023                                       | 6   |
| AGW080010551-SHOP        | GeoTracker  | Domestic  | 10S/16E/12 |            |                 | 3/21/2019                                     | 6/2/2021   | 2   |
| AGW080010552-HOUSE       | GeoTracker  | Domestic  | 10S/16E/01 |            |                 | 3/21/2019                                     | 6/2/2021   | 2   |
| AGW080010597-OLDAGWELL   | GeoTracker  | Domestic  | 11S/17E/21 |            |                 | 2/14/2019                                     | 2/14/2019  | 2   |
| AGW080010620-5394        | GeoTracker  | Domestic  | 13S/18E/05 |            |                 | 2/4/2019                                      | 2/4/2019   | 2   |
| AGW080010622-5592        | GeoTracker  | Domestic  | 13S/18E/05 |            |                 | 2/4/2019                                      | 2/4/2019   | 0   |
| AGW080010623-28573       | GeoTracker  | Domestic  | 13S/18E/05 |            |                 | 2/4/2019                                      | 2/4/2019   | 2   |
| AGW080010628-DOMESTIC    | GeoTracker  | Domestic  | 11S/19E/31 |            |                 | 2/22/2019                                     | 2/22/2019  | 2   |
| AGW080010648-RD20        | GeoTracker  | Domestic  | 10S/16E/26 |            |                 | 3/6/2019                                      | 3/10/2021  | 4   |

**Table 3.J-2 - Supplemental Groundwater Quality Monitoring Network, Madera Subbasin**

| Well ID                 | Data Source | Well Type | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Quality Measurement Date | Most Recent Groundwater Quality Measurement Date | Count of Groundwater Quality Measurements |
|-------------------------|-------------|-----------|------------|------------|-----------------|---|--|---|
| AGW080010649-MARTINELLI | GeoTracker  | Domestic  | 10S/16E/34 |            |                 | 3/6/2019                                      | 3/10/2021  | 4   |
| AGW080010650-PISTACHIOE | GeoTracker  | Domestic  | 10S/16E/34 |            |                 | 3/6/2019                                      | 3/10/2021  | 5   |
| AGW080010651-PISTACHIOV | GeoTracker  | Domestic  | 10S/16E/34 |            |                 | 3/6/2019                                      | 3/6/2019   | 2   |
| AGW080010652-BLECH      | GeoTracker  | Domestic  | 10S/16E/21 |            |                 | 3/6/2019                                      | 3/10/2021  | 5   |
| AGW080010653-SIMPSON    | GeoTracker  | Domestic  | 11S/16E/02 |            |                 | 3/6/2019                                      | 3/10/2021  | 4   |
| AGW080010654-BIANCHI    | GeoTracker  | Domestic  | 12S/18E/14 |            |                 | 3/7/2019                                      | 3/10/2021  | 4   |
| AGW080010655-10-5 WELL  | GeoTracker  | Domestic  | 12S/19E/07 |            |                 | 3/12/2019                                     | 1/13/2022  | 3   |
| AGW080010681-25121A12.5 | GeoTracker  | Domestic  | 11S/17E/35 |            |                 | 3/27/2019                                     | 3/27/2019  | 1   |
| AGW080010682-25235A12.5 | GeoTracker  | Domestic  | 11S/17E/35 |            |                 | 3/27/2019                                     | 3/27/2019  | 1   |
| AGW080010683-25348A12.5 | GeoTracker  | Domestic  | 11S/17E/35 |            |                 | 3/27/2019                                     | 3/27/2019  | 1   |
| AGW080010689-HOME #11   | GeoTracker  | Domestic  | 11S/18E/20 |            |                 | 4/10/2019                                     | 3/10/2021  | 3   |
| AGW080010690-FRED #3    | GeoTracker  | Domestic  | 11S/17E/33 |            |                 | 4/10/2019                                     | 2/11/2020  | 2   |
| AGW080010691-POLLOS #10 | GeoTracker  | Domestic  | 12S/18E/10 |            |                 | 4/10/2019                                     | 3/10/2021  | 3   |
| AGW080010702-HOUSE WELL | GeoTracker  | Domestic  | 11S/17E/35 |            |                 | 4/29/2019                                     | 4/29/2019  | 1   |
| AGW080010703-DOM_WELL   | GeoTracker  | Domestic  | 11S/16E/34 |            |                 | 4/29/2019                                     | 4/29/2019  | 1   |
| AGW080010711-WELL_1     | GeoTracker  | Domestic  | 10S/16E/02 |            |                 | 5/15/2019                                     | 12/10/2020                                       | 2   |
| AGW080010712-GOMES      | GeoTracker  | Domestic  | 11S/18E/16 |            |                 | 5/14/2019                                     | 1/26/2021  | 3   |
| AGW080010713-BEAVERS    | GeoTracker  | Domestic  | 11S/17E/15 |            |                 | 5/14/2019                                     | 1/26/2021  | 3   |
| AGW080010714-COWGER     | GeoTracker  | Domestic  | 11S/18E/16 |            |                 | 5/14/2019                                     | 1/26/2021  | 3   |
| AGW080010725-DOM-WELL-1 | GeoTracker  | Domestic  | 12S/17E/31 |            |                 | 5/17/2019                                     | 1/20/2021  | 2   |
| AGW080010734-DOM_18_AC  | GeoTracker  | Domestic  | 13S/18E/08 |            |                 | 5/22/2019                                     | 5/22/2019  | 1   |
| AGW080010747-WELL #2    | GeoTracker  | Domestic  | 13S/17E/06 |            |                 | 5/28/2019                                     | 5/28/2019  | 1   |
| AGW080010748-WELL #7    | GeoTracker  | Domestic  | 13S/17E/06 |            |                 | 5/28/2019                                     | 5/28/2019  | 1   |
| AGW080010749-WELL #33   | GeoTracker  | Domestic  | 12S/17E/19 |            |                 | 5/28/2019                                     | 5/28/2019  | 1   |
| AGW080010750-WELL #24   | GeoTracker  | Domestic  | 12S/17E/19 |            |                 | 5/28/2019                                     | 5/28/2019  | 1   |
| AGW080010751-WELL #81   | GeoTracker  | Domestic  | 12S/17E/21 |            |                 | 5/28/2019                                     | 5/28/2019  | 1   |
| AGW080010752-WELL #83   | GeoTracker  | Domestic  | 12S/17E/21 |            |                 | 5/28/2019                                     | 5/28/2019  | 1   |
| AGW080010753-WELL #73   | GeoTracker  | Domestic  | 12S/17E/22 |            |                 | 5/28/2019                                     | 5/28/2019  | 1   |
| AGW080010754-WELL #91   | GeoTracker  | Domestic  | 12S/17E/27 |            |                 | 5/28/2019                                     | 5/28/2019  | 1   |
| AGW080010847-DOM_1      | GeoTracker  | Domestic  | 11S/16E/13 |            |                 | 8/2/2019                                      | 11/29/2022                                       | 8   |
| AGW080010847-DOM_1      | GeoTracker  | Domestic  | 11S/16E/11 |            |                 | 8/2/2019                                      | 11/29/2022                                       | 8   |
| AGW080010848-DOM-2      | GeoTracker  | Domestic  | 11S/16E/11 |            |                 | 8/2/2019                                      | 8/2/2019   | 1   |
| AGW080010849-DOM-3 (X2) | GeoTracker  | Domestic  | 11S/16E/12 |            |                 | 8/2/2019                                      | 11/29/2022                                       | 8   |
| AGW080010849-DOM-3 (X2) | GeoTracker  | Domestic  | 11S/16E/11 |            |                 | 8/2/2019                                      | 11/29/2022                                       | 8   |
| AGW080010866-HOME RANCH | GeoTracker  | Domestic  | 13S/17E/01 |            |                 | 8/23/2019                                     | 12/27/2023                                       | 5   |
| AGW080010912-MADERA 1   | GeoTracker  | Domestic  | 12S/17E/26 |            |                 | 8/5/2019                                      | 8/5/2019   | 2   |
| AGW080010913-MADERA 2   | GeoTracker  | Domestic  | 12S/17E/23 |            |                 | 8/5/2019                                      | 8/5/2019   | 2   |
| AGW080010914-MADERA 3   | GeoTracker  | Domestic  | 12S/17E/23 |            |                 | 8/5/2019                                      | 8/5/2019   | 2   |
| AGW080010915-HEADQUARTE | GeoTracker  | Domestic  | 12S/18E/29 |            |                 | 8/5/2019                                      | 8/5/2019   | 2   |
| AGW080010926-DIX 3      | GeoTracker  | Domestic  | 11S/16E/24 |            |                 | 5/31/2019                                     | 5/31/2019  | 1   |
| AGW080010927-MERLOT     | GeoTracker  | Domestic  | 11S/17E/27 |            |                 | 5/10/2019                                     | 5/10/2019  | 1   |
| AGW080010928-DONNA      | GeoTracker  | Domestic  | 11S/16E/24 |            |                 | 5/10/2019                                     | 5/10/2019  | 1   |
| AGW080010929-HOME       | GeoTracker  | Domestic  | 11S/16E/24 |            |                 | 5/10/2019                                     | 5/10/2019  | 1   |
| AGW080010950-HOUSE WELL | GeoTracker  | Domestic  | 12S/18E/30 |            |                 | 9/3/2019                                      | 9/3/2019   | 1   |
| AGW080010994-GRAPE FARM | GeoTracker  | Domestic  | 12S/17E/08 |            |                 | 2/28/2019                                     | 2/28/2019  | 1   |
| AGW080011122-HOME RANCH | GeoTracker  | Domestic  | 12S/18E/10 |            |                 | 8/15/2019                                     | 12/15/2021                                       | 8   |
| AGW080011135-D&D HOME   | GeoTracker  | Domestic  | 13S/17E/08 |            |                 | 10/8/2019                                     | 1/3/2023   | 4   |
| AGW080011135-D&D HOME   | GeoTracker  | Domestic  | 13S/17E/06 |            |                 | 10/8/2019                                     | 1/3/2023   | 4   |
| AGW080011136-D&D GRAPES | GeoTracker  | Domestic  | 13S/17E/07 |            |                 | 10/8/2019                                     | 1/3/2023   | 8   |
| AGW080011136-D&D GRAPES | GeoTracker  | Domestic  | 13S/17E/06 |            |                 | 10/8/2019                                     | 1/3/2023   | 8   |
| AGW080011137-RIVER RCH  | GeoTracker  | Domestic  | 13S/17E/07 |            |                 | 10/8/2019                                     | 12/20/2021                                       | 3   |
| AGW080011138-HELMUTH    | GeoTracker  | Domestic  | 13S/17E/06 |            |                 | 10/8/2019                                     | 12/20/2021                                       | 3   |
| AGW080011139-BALDRICA   | GeoTracker  | Domestic  | 12S/17E/33 |            |                 | 10/8/2019                                     | 1/3/2023   | 8   |
| AGW080011139-BALDRICA   | GeoTracker  | Domestic  | 12S/17E/28 |            |                 | 10/8/2019                                     | 1/3/2023   | 8   |
| AGW080011140-AVE 7 WEST | GeoTracker  | Domestic  | 12S/17E/28 |            |                 | 10/8/2019                                     | 12/20/2021                                       | 3   |
| AGW080011141-AVE 7 EAST | GeoTracker  | Domestic  | 12S/17E/28 |            |                 | 10/8/2019                                     | 12/20/2021                                       | 3   |
| AGW080011142-AVE 8 RENT | GeoTracker  | Domestic  | 12S/17E/25 |            |                 | 10/8/2019                                     | 12/20/2021                                       | 3   |
| AGW080011143-AVE 8 HOME | GeoTracker  | Domestic  | 12S/17E/25 |            |                 | 10/8/2019                                     | 10/8/2019  | 1   |
| AGW080011148-MAIN_DOM   | GeoTracker  | Domestic  | 12S/18E/31 |            |                 | 10/10/2019                                    | 12/13/2021                                       | 3   |
| AGW080011166-DOSANJH    | GeoTracker  | Domestic  | 11S/16E/24 |            |                 | 10/4/2019                                     | 10/4/2019  | 2   |
| AGW080011176-HOME       | GeoTracker  | Domestic  | 11S/18E/03 |            |                 | 10/15/2019                                    | 10/15/2019                                       | 1   |
| AGW080011177-JENKINS    | GeoTracker  | Domestic  | 11S/16E/02 |            |                 | 10/15/2019                                    | 10/20/2020                                       | 2   |
| AGW080011178-CLAY       | GeoTracker  | Domestic  | 11S/16E/02 |            |                 | 10/15/2019                                    | 10/20/2020                                       | 2   |
| AGW080011200-HOME_WELL  | GeoTracker  | Domestic  | 11S/18E/36 |            |                 | 10/15/2019                                    | 11/11/2020                                       | 2   |
| AGW080011207-SEVEN_K    | GeoTracker  | Domestic  | 10S/16E/27 |            |                 | 10/17/2019                                    | 11/2/2021  | 3   |

**Table 3.J-2 - Supplemental Groundwater Quality Monitoring Network, Madera Subbasin**

| Well ID                 | Data Source | Well Type | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Quality Measurement Date | Most Recent Groundwater Quality Measurement Date | Count of Groundwater Quality Measurements |
|-------------------------|-------------|-----------|------------|------------|-----------------|---|--|---|
| AGW080011208-FIELD #4   | GeoTracker  | Domestic  | 12S/19E/16 |            |                 | 10/17/2019                                    | 11/3/2021  | 3   |
| AGW080011209-HOME       | GeoTracker  | Domestic  | 11S/18E/27 |            |                 | 10/17/2019                                    | 6/12/2024  | 10  |
| AGW080011209-HOME       | GeoTracker  | Domestic  | 11S/18E/22 |            |                 | 10/17/2019                                    | 6/12/2024  | 10  |
| AGW080011210-A1_RD_22   | GeoTracker  | Domestic  | 10S/17E/07 |            |                 | 10/17/2019                                    | 1/14/2022  | 3   |
| AGW080011211-RIVER      | GeoTracker  | Domestic  | 12S/19E/31 |            |                 | 10/17/2019                                    | 11/3/2021  | 3   |
| AGW080011212-KISMET     | GeoTracker  | Domestic  | 10S/17E/22 |            |                 | 10/17/2019                                    | 10/26/2020                                       | 2   |
| AGW080011213-CROW       | GeoTracker  | Domestic  | 10S/18E/20 |            |                 | 10/17/2019                                    | 11/2/2021  | 3   |
| AGW080011214-GRAPES     | GeoTracker  | Domestic  | 10S/16E/34 |            |                 | 10/17/2019                                    | 11/2/2021  | 3   |
| AGW080011215-10134_WELL | GeoTracker  | Domestic  | 12S/17E/13 |            |                 | 10/17/2019                                    | 3/1/2021   | 3   |
| AGW080011216-HOME_WELL  | GeoTracker  | Domestic  | 10S/16E/22 |            |                 | 10/17/2019                                    | 9/30/2021  | 3   |
| AGW080011218-RD_19_WELL | GeoTracker  | Domestic  | 13S/16E/03 |            |                 | 10/17/2019                                    | 8/31/2021  | 3   |
| AGW080011219-RD_20_WELL | GeoTracker  | Domestic  | 13S/16E/11 |            |                 | 10/17/2019                                    | 8/31/2021  | 3   |
| AGW080011220-RD_23_WELL | GeoTracker  | Domestic  | 13S/17E/05 |            |                 | 10/17/2019                                    | 8/31/2021  | 3   |
| AGW080011221-AVE_12_WEL | GeoTracker  | Domestic  | 12S/15E/12 |            |                 | 10/17/2019                                    | 8/31/2021  | 3   |
| AGW080011245-18M        | GeoTracker  | Domestic  | 10S/16E/35 |            |                 | 12/26/2018                                    | 12/26/2018                                       | 0   |
| AGW080011249-MADERA     | GeoTracker  | Domestic  | 12S/18E/08 |            |                 | 12/26/2018                                    | 12/26/2018                                       | 1   |
| AGW080011255-LINKS      | GeoTracker  | Domestic  | 11S/17E/16 |            |                 | 12/26/2018                                    | 12/26/2018                                       | 1   |
| AGW080011269-HOME_RANCH | GeoTracker  | Domestic  | 12S/19E/13 |            |                 | 10/23/2019                                    | 11/16/2022                                       | 6   |
| AGW080011269-HOME_RANCH | GeoTracker  | Domestic  | 12S/19E/13 |            |                 | 10/23/2019                                    | 11/16/2022                                       | 6   |
| AGW080011271-DOM1       | GeoTracker  | Domestic  | 12S/17E/17 |            |                 | 10/25/2019                                    | 11/15/2021                                       | 5   |
| AGW080011285-HOME_WELL  | GeoTracker  | Domestic  | 10S/16E/23 |            |                 | 10/28/2019                                    | 9/9/2021   | 3   |
| AGW080011334-DOM WELL   | GeoTracker  | Domestic  | 11S/17E/27 |            |                 | 11/1/2019                                     | 12/8/2023  | 20  |
| AGW080011334-DOM WELL   | GeoTracker  | Domestic  | 11S/17E/27 |            |                 | 11/1/2019                                     | 12/8/2023  | 20  |
| AGW080011352-CCHM_OF    | GeoTracker  | Domestic  | 11S/18E/11 |            |                 | 10/31/2019                                    | 4/21/2022  | 3   |
| AGW080011353-CC_MOBILE  | GeoTracker  | Domestic  | 11S/18E/13 |            |                 | 10/31/2019                                    | 4/21/2022  | 3   |
| AGW080011355-WELL_1     | GeoTracker  | Domestic  | 11S/17E/28 |            |                 | 11/1/2019                                     | 11/5/2021  | 3   |
| AGW080011356-WELL_2     | GeoTracker  | Domestic  | 11S/17E/28 |            |                 | 11/1/2019                                     | 11/5/2021  | 3   |
| AGW080011359-HOME_WELL  | GeoTracker  | Domestic  | 11S/18E/28 |            |                 | 11/1/2019                                     | 11/3/2021  | 3   |
| AGW080011360-ALMA_WELL  | GeoTracker  | Domestic  | 11S/18E/20 |            |                 | 11/1/2019                                     | 10/28/2020                                       | 2   |
| AGW080011361-MCK_DOM    | GeoTracker  | Domestic  | 11S/19E/06 |            |                 | 10/31/2019                                    | 4/21/2022  | 3   |
| AGW080011394-10517_AV24 | GeoTracker  | Domestic  | 10S/16E/15 |            |                 | 11/6/2019                                     | 9/9/2021   | 3   |
| AGW080011395-12200_AV26 | GeoTracker  | Domestic  | 10S/16E/11 |            |                 | 11/6/2019                                     | 9/10/2021  | 3   |
| AGW080011398-12694_AV26 | GeoTracker  | Domestic  | 10S/16E/11 |            |                 | 11/6/2019                                     | 9/9/2021   | 3   |
| AGW080011399-12180_AV25 | GeoTracker  | Domestic  | 10S/16E/14 |            |                 | 11/6/2019                                     | 9/9/2021   | 3   |
| AGW080011400-12192_AV26 | GeoTracker  | Domestic  | 10S/16E/11 |            |                 | 11/6/2019                                     | 11/6/2019  | 1   |
| AGW080011401-11494_AV26 | GeoTracker  | Domestic  | 10S/16E/11 |            |                 | 11/6/2019                                     | 9/9/2021   | 3   |
| AGW080011403-10397_AV24 | GeoTracker  | Domestic  | 10S/16E/15 |            |                 | 11/6/2019                                     | 9/9/2021   | 3   |
| AGW080011407-HOME_WELL  | GeoTracker  | Domestic  | 11S/16E/21 |            |                 | 11/6/2019                                     | 11/6/2019  | 1   |
| AGW080011408-FARM_WELL  | GeoTracker  | Domestic  | 11S/16E/21 |            |                 | 11/6/2019                                     | 11/6/2019  | 1   |
| AGW080011441-18558_AV16 | GeoTracker  | Domestic  | 11S/16E/10 |            |                 | 11/6/2019                                     | 9/8/2021   | 3   |
| AGW080011443-18484_RD17 | GeoTracker  | Domestic  | 10S/16E/32 |            |                 | 11/6/2019                                     | 11/6/2019  | 1   |
| AGW080011444-18616_AV20 | GeoTracker  | Domestic  | 10S/16E/22 |            |                 | 11/6/2019                                     | 9/8/2021   | 3   |
| AGW080011445-20759_RD19 | GeoTracker  | Domestic  | 10S/16E/23 |            |                 | 11/6/2019                                     | 9/8/2021   | 3   |
| AGW080011446-16417_AV18 | GeoTracker  | Domestic  | 10S/16E/32 |            |                 | 11/6/2019                                     | 11/6/2019  | 1   |
| AGW080011447-20720_RD19 | GeoTracker  | Domestic  | 10S/16E/22 |            |                 | 11/6/2019                                     | 9/8/2021   | 3   |
| AGW080011448-15788_AV18 | GeoTracker  | Domestic  | 10S/16E/31 |            |                 | 11/6/2019                                     | 9/8/2021   | 3   |
| AGW080011449-15432_AV18 | GeoTracker  | Domestic  | 11S/16E/06 |            |                 | 11/6/2019                                     | 11/6/2019  | 1   |
| AGW080011450-11400_AV25 | GeoTracker  | Domestic  | 10S/16E/14 |            |                 | 11/6/2019                                     | 9/9/2021   | 3   |
| AGW080011451-11564_AV26 | GeoTracker  | Domestic  | 10S/16E/11 |            |                 | 11/6/2019                                     | 9/9/2021   | 3   |
| AGW080011452-24749_RD11 | GeoTracker  | Domestic  | 10S/16E/14 |            |                 | 11/6/2019                                     | 12/14/2022                                       | 4   |
| AGW080011453-26230_RD12 | GeoTracker  | Domestic  | 10S/16E/11 |            |                 | 11/6/2019                                     | 9/9/2021   | 3   |
| AGW080011454-11403_AV25 | GeoTracker  | Domestic  | 10S/16E/14 |            |                 | 11/6/2019                                     | 9/9/2021   | 3   |
| AGW080011455-DOMESTIC   | GeoTracker  | Domestic  | 11S/16E/04 |            |                 | 11/6/2019                                     | 11/6/2019  | 1   |
| AGW080011513-MADERA     | GeoTracker  | Domestic  | 13S/17E/02 |            |                 | 11/14/2019                                    | 11/2/2021  | 3   |
| AGW080011515-HOME_1     | GeoTracker  | Domestic  | 10S/16E/26 |            |                 | 11/12/2019                                    | 11/12/2019                                       | 1   |
| AGW080011516-DAIRY_1    | GeoTracker  | Domestic  | 10S/16E/26 |            |                 | 11/12/2019                                    | 11/12/2019                                       | 1   |
| AGW080011517-HOME_1     | GeoTracker  | Domestic  | 10S/16E/23 |            |                 | 11/12/2019                                    | 11/12/2019                                       | 1   |
| AGW080011518-HOME_2     | GeoTracker  | Domestic  | 10S/16E/23 |            |                 | 11/12/2019                                    | 11/12/2019                                       | 1   |
| AGW080011519-CLARK_1    | GeoTracker  | Domestic  | 10S/16E/26 |            |                 | 11/12/2019                                    | 11/12/2019                                       | 1   |
| AGW080011525-HOME_1     | GeoTracker  | Domestic  | 10S/16E/26 |            |                 | 11/12/2019                                    | 11/12/2019                                       | 1   |
| AGW080011526-CLAYTON_1  | GeoTracker  | Domestic  | 10S/16E/22 |            |                 | 11/12/2019                                    | 11/12/2019                                       | 1   |
| AGW080011550-ROAD 25    | GeoTracker  | Domestic  | 12S/17E/27 |            |                 | 11/14/2019                                    | 11/4/2021  | 6   |
| AGW080011551-YARD/HOUSE | GeoTracker  | Domestic  | 12S/19E/16 |            |                 | 11/14/2019                                    | 11/4/2021  | 6   |
| AGW080011552-FRANK DALE | GeoTracker  | Domestic  | 12S/19E/30 |            |                 | 11/14/2019                                    | 11/4/2021  | 3   |
| AGW080011682-HOME_1     | GeoTracker  | Domestic  | 13S/17E/10 |            |                 | 12/3/2019                                     | 12/3/2019  | 1   |

**Table 3.J-2 - Supplemental Groundwater Quality Monitoring Network, Madera Subbasin**

| Well ID                 | Data Source | Well Type | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Quality Measurement Date | Most Recent Groundwater Quality Measurement Date | Count of Groundwater Quality Measurements |
|-------------------------|-------------|-----------|------------|------------|-----------------|---|--|---|
| AGW080011684-DOM_WELL   | GeoTracker  | Domestic  | 12S/18E/17 |            |                 | 11/21/2019                                    | 11/5/2020  | 2   |
| AGW080011687-BL_8_GOTO  | GeoTracker  | Domestic  | 12S/18E/32 |            |                 | 11/21/2019                                    | 11/21/2019                                       | 1   |
| AGW080011688-BL_5_NIJNO | GeoTracker  | Domestic  | 12S/18E/31 |            |                 | 11/21/2019                                    | 11/21/2019                                       | 1   |
| AGW080011689-FLD_1_HSE  | GeoTracker  | Domestic  | 12S/19E/08 |            |                 | 12/2/2019                                     | 12/2/2019  | 1   |
| AGW080011690-BOB_WELL   | GeoTracker  | Domestic  | 12S/19E/17 |            |                 | 11/26/2019                                    | 10/27/2020                                       | 2   |
| AGW080011691-STE_8_WELL | GeoTracker  | Domestic  | 11S/18E/33 |            |                 | 11/26/2019                                    | 10/27/2020                                       | 2   |
| AGW080011692-ESTER_WELL | GeoTracker  | Domestic  | 12S/19E/08 |            |                 | 11/26/2019                                    | 10/27/2020                                       | 2   |
| AGW080011693-BRIAN_WELL | GeoTracker  | Domestic  | 12S/19E/17 |            |                 | 11/26/2019                                    | 10/27/2020                                       | 2   |
| AGW080011694-STE_11_WEL | GeoTracker  | Domestic  | 12S/19E/20 |            |                 | 11/26/2019                                    | 10/27/2020                                       | 2   |
| AGW080011695-AVE_12     | GeoTracker  | Domestic  | 11S/16E/36 |            |                 | 12/2/2019                                     | 12/6/2021  | 2   |
| AGW080011696-RICKS      | GeoTracker  | Domestic  | 11S/16E/36 |            |                 | 12/2/2019                                     | 12/6/2021  | 2   |
| AGW080011697-HOME       | GeoTracker  | Domestic  | 11S/16E/14 |            |                 | 12/2/2019                                     | 10/26/2023                                       | 6   |
| AGW080011697-HOME       | GeoTracker  | Domestic  | 11S/16E/15 |            |                 | 12/2/2019                                     | 10/26/2023                                       | 6   |
| AGW080011698-RYAN       | GeoTracker  | Domestic  | 11S/16E/15 |            |                 | 12/2/2019                                     | 12/6/2021  | 2   |
| AGW080011699-N_18       | GeoTracker  | Domestic  | 12S/16E/04 |            |                 | 12/2/2019                                     | 12/6/2021  | 2   |
| AGW080011700-A_16.5     | GeoTracker  | Domestic  | 11S/16E/10 |            |                 | 12/2/2019                                     | 2/25/2021  | 2   |
| AGW080011704-VR_16      | GeoTracker  | Domestic  | 11S/16E/18 |            |                 | 12/2/2019                                     | 12/6/2021  | 2   |
| AGW080011789-34307_AV_9 | GeoTracker  | Domestic  | 12S/19E/17 |            |                 | 12/6/2019                                     | 12/6/2019  | 1   |
| AGW080011790-34545_AV_9 | GeoTracker  | Domestic  | 12S/19E/17 |            |                 | 12/6/2019                                     | 12/6/2019  | 1   |
| AGW080011791-10266_RT_C | GeoTracker  | Domestic  | 12S/19E/09 |            |                 | 12/6/2019                                     | 12/6/2019  | 1   |
| AGW080011804-HOME_DOM   | GeoTracker  | Domestic  | 12S/18E/09 |            |                 | 12/5/2019                                     | 12/15/2021                                       | 3   |
| AGW080011805-CABATIA_D  | GeoTracker  | Domestic  | 12S/18E/04 |            |                 | 12/5/2019                                     | 12/15/2021                                       | 3   |
| AGW080011806-FISHER_DOM | GeoTracker  | Domestic  | 12S/18E/04 |            |                 | 12/5/2019                                     | 12/15/2021                                       | 3   |
| AGW080011807-WEBER_DOM  | GeoTracker  | Domestic  | 12S/18E/09 |            |                 | 12/5/2019                                     | 12/15/2021                                       | 3   |
| AGW080011808-HIRAHARA   | GeoTracker  | Domestic  | 12S/18E/17 |            |                 | 12/5/2019                                     | 12/5/2019  | 1   |
| AGW080011810-MITCHELL   | GeoTracker  | Domestic  | 12S/18E/04 |            |                 | 12/5/2019                                     | 12/15/2021                                       | 3   |
| AGW080011811-HOUSLEY    | GeoTracker  | Domestic  | 12S/18E/08 |            |                 | 12/5/2019                                     | 12/15/2021                                       | 3   |
| AGW080011812-MADERA_DOM | GeoTracker  | Domestic  | 10S/17E/28 |            |                 | 12/5/2019                                     | 12/15/2021                                       | 3   |
| AGW080011813-CHOWCHILLA | GeoTracker  | Domestic  | 10S/16E/23 |            |                 | 12/5/2019                                     | 12/15/2021                                       | 3   |
| AGW080011821-POMONA_DOM | GeoTracker  | Domestic  | 12S/18E/05 |            |                 | 12/5/2019                                     | 12/15/2021                                       | 3   |
| AGW080011864-ALMOND     | GeoTracker  | Domestic  | 11S/16E/12 |            |                 | 12/9/2019                                     | 12/9/2019  | 1   |
| AGW080011866-21504_WELL | GeoTracker  | Domestic  | 11S/17E/19 |            |                 | 12/9/2019                                     | 12/9/2019  | 1   |
| AGW080011867-20841_WELL | GeoTracker  | Domestic  | 11S/16E/13 |            |                 | 12/9/2019                                     | 12/9/2019  | 1   |
| AGW080011868-20435_WELL | GeoTracker  | Domestic  | 11S/16E/13 |            |                 | 12/9/2019                                     | 12/9/2019  | 1   |
| AGW080011869-14484_WELL | GeoTracker  | Domestic  | 11S/16E/24 |            |                 | 12/9/2019                                     | 12/9/2019  | 1   |
| AGW080011870-11514_WELL | GeoTracker  | Domestic  | 12S/17E/01 |            |                 | 12/9/2019                                     | 12/9/2019  | 1   |
| AGW080011871-CARODEN_FM | GeoTracker  | Domestic  | 11S/17E/21 |            |                 | 12/10/2019                                    | 11/23/2021                                       | 3   |
| AGW080011872-6382_GOLD  | GeoTracker  | Domestic  | 12S/19E/31 |            |                 | 12/9/2019                                     | 11/17/2021                                       | 3   |
| AGW080011873-19290_AV13 | GeoTracker  | Domestic  | 11S/16E/35 |            |                 | 12/9/2019                                     | 11/17/2021                                       | 3   |
| AGW080011874-22649_AV12 | GeoTracker  | Domestic  | 11S/17E/32 |            |                 | 12/9/2019                                     | 11/17/2021                                       | 3   |
| AGW080011875-SHOP_WELL  | GeoTracker  | Domestic  | 11S/18E/25 |            |                 | 12/9/2019                                     | 12/14/2020                                       | 2   |
| AGW080011885-BURLEYS    | GeoTracker  | Domestic  | 12S/17E/25 |            |                 | 12/6/2019                                     | 12/6/2019  | 2   |
| AGW080011887-SKIPS      | GeoTracker  | Domestic  | 12S/17E/27 |            |                 | 12/6/2019                                     | 12/6/2019  | 2   |
| AGW080011888-GINOS      | GeoTracker  | Domestic  | 12S/17E/27 |            |                 | 12/6/2019                                     | 12/6/2019  | 2   |
| AGW080012038-D&D_NORTH  | GeoTracker  | Domestic  | 13S/17E/06 |            |                 | 12/11/2019                                    | 12/20/2021                                       | 3   |
| AGW080012039-AV12_NORTH | GeoTracker  | Domestic  | 12S/17E/06 |            |                 | 12/11/2019                                    | 12/20/2021                                       | 3   |
| AGW080012040-AV12_SOUTH | GeoTracker  | Domestic  | 12S/17E/06 |            |                 | 12/11/2019                                    | 12/20/2021                                       | 3   |
| AGW080012066-6425       | GeoTracker  | Domestic  | 12S/18E/33 |            |                 | 11/12/2019                                    | 11/11/2021                                       | 7   |
| AGW080012067-DW1        | GeoTracker  | Domestic  | 11S/19E/35 |            |                 | 11/30/2020                                    | 6/15/2021  | 6   |
| AGW080012072-HM WELL 1  | GeoTracker  | Domestic  | 12S/18E/32 |            |                 | 12/11/2019                                    | 12/21/2022                                       | 16  |
| AGW080012072-HM WELL 1  | GeoTracker  | Domestic  | 12S/18E/31 |            |                 | 12/11/2019                                    | 12/21/2022                                       | 16  |
| AGW080012073-HM WELL 2  | GeoTracker  | Domestic  | 12S/18E/31 |            |                 | 12/11/2019                                    | 12/13/2021                                       | 6   |
| AGW080012074-HM WELL 3  | GeoTracker  | Domestic  | 11S/17E/31 |            |                 | 12/11/2019                                    | 12/21/2022                                       | 16  |
| AGW080012074-HM WELL 3  | GeoTracker  | Domestic  | 11S/17E/31 |            |                 | 12/11/2019                                    | 12/21/2022                                       | 16  |
| AGW080012075-HM WELL 4  | GeoTracker  | Domestic  | 12S/18E/06 |            |                 | 12/11/2019                                    | 12/13/2021                                       | 6   |
| AGW080012076-HM WELL 5  | GeoTracker  | Domestic  | 12S/18E/06 |            |                 | 12/11/2019                                    | 12/13/2021                                       | 6   |
| AGW080012077-HM WELL 6  | GeoTracker  | Domestic  | 12S/18E/05 |            |                 | 12/11/2019                                    | 12/13/2021                                       | 6   |
| AGW080012078-HM WELL 7  | GeoTracker  | Domestic  | 12S/18E/03 |            |                 | 12/11/2019                                    | 12/13/2021                                       | 6   |
| AGW080012079-HM WELL 8  | GeoTracker  | Domestic  | 12S/18E/11 |            |                 | 12/11/2019                                    | 12/13/2021                                       | 6   |
| AGW080012080-HM WELL 9  | GeoTracker  | Domestic  | 12S/18E/29 |            |                 | 12/11/2019                                    | 12/13/2021                                       | 6   |
| AGW080012081-HM WELL 10 | GeoTracker  | Domestic  | 12S/18E/32 |            |                 | 12/11/2019                                    | 12/13/2021                                       | 6   |
| AGW080012123-HOUSE_BLK5 | GeoTracker  | Domestic  | 12S/17E/31 |            |                 | 12/16/2019                                    | 10/27/2020                                       | 2   |
| AGW080012124-HOUSE_BLK4 | GeoTracker  | Domestic  | 12S/17E/32 |            |                 | 12/12/2019                                    | 8/31/2021  | 3   |
| AGW080012127-HOME_WELL  | GeoTracker  | Domestic  | 12S/18E/21 |            |                 | 12/13/2019                                    | 12/13/2019                                       | 1   |
| AGW080012128-AV_8.5 RCH | GeoTracker  | Domestic  | 12S/17E/23 |            |                 | 12/12/2019                                    | 12/12/2019                                       | 1   |

**Table 3.J-2 - Supplemental Groundwater Quality Monitoring Network, Madera Subbasin**

| Well ID                 | Data Source | Well Type | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Quality Measurement Date | Most Recent Groundwater Quality Measurement Date | Count of Groundwater Quality Measurements |
|-------------------------|-------------|-----------|------------|------------|-----------------|---|--|---|
| AGW080012129-AV_4.5_RCH | GeoTracker  | Domestic  | 13S/16E/12 |            |                 | 12/12/2019                                    | 12/12/2019                                       | 1   |
| AGW080012131-TREVINO    | GeoTracker  | Domestic  | 10S/16E/12 |            |                 | 12/12/2019                                    | 9/2/2021   | 3   |
| AGW080012132-ROSS5      | GeoTracker  | Domestic  | 10S/16E/14 |            |                 | 12/12/2019                                    | 9/2/2021   | 3   |
| AGW080012133-ALS40      | GeoTracker  | Domestic  | 10S/16E/23 |            |                 | 12/12/2019                                    | 9/2/2021   | 3   |
| AGW080012134-ROSSHOME   | GeoTracker  | Domestic  | 10S/16E/14 |            |                 | 12/12/2019                                    | 9/2/2021   | 3   |
| AGW080012135-SHOP       | GeoTracker  | Domestic  | 10S/16E/14 |            |                 | 12/12/2019                                    | 9/2/2021   | 3   |
| AGW080012363-HOUSE      | GeoTracker  | Domestic  | 12S/17E/01 |            |                 | 12/16/2019                                    | 11/30/2021                                       | 3   |
| AGW080012425-AVE_9_HSE  | GeoTracker  | Domestic  | 12S/19E/18 |            |                 | 12/2/2019                                     | 12/2/2019  | 1   |
| AGW080012435-SITE_2_WEL | GeoTracker  | Domestic  | 10S/16E/25 |            |                 | 11/18/2020                                    | 12/13/2022                                       | 6   |
| AGW080012435-SITE_2_WEL | GeoTracker  | Domestic  | 10S/16E/25 |            |                 | 11/18/2020                                    | 12/13/2022                                       | 6   |
| AGW080012436-SITE_3_WEL | GeoTracker  | Domestic  | 10S/16E/26 |            |                 | 10/19/2020                                    | 8/30/2021  | 2   |
| AGW080012437-SITE_6_WEL | GeoTracker  | Domestic  | 10S/16E/36 |            |                 | 10/19/2020                                    | 12/13/2022                                       | 6   |
| AGW080012437-SITE_6_WEL | GeoTracker  | Domestic  | 10S/16E/25 |            |                 | 10/19/2020                                    | 12/13/2022                                       | 6   |
| AGW080012444-HOUSE      | GeoTracker  | Domestic  | 12S/19E/19 |            |                 | 12/30/2019                                    | 4/3/2023   | 4   |
| AGW080012444-HOUSE      | GeoTracker  | Domestic  | 12S/19E/18 |            |                 | 12/30/2019                                    | 4/3/2023   | 4   |
| AGW080012493-HOME WELL  | GeoTracker  | Domestic  | 12S/17E/25 |            |                 | 12/27/2019                                    | 12/27/2019                                       | 2   |
| AGW080012546-AVE 18     | GeoTracker  | Domestic  | 11S/16E/02 |            |                 | 12/2/2019                                     | 3/16/2023  | 14  |
| AGW080012546-AVE 18     | GeoTracker  | Domestic  | 10S/16E/34 |            |                 | 12/2/2019                                     | 3/16/2023  | 14  |
| AGW080012548-WELL       | GeoTracker  | Domestic  | 11S/18E/28 |            |                 | 12/9/2019                                     | 11/30/2020                                       | 4   |
| AGW080012551-14286      | GeoTracker  | Domestic  | 11S/17E/19 |            |                 | 12/12/2019                                    | 12/12/2019                                       | 2   |
| AGW080012552-21333      | GeoTracker  | Domestic  | 11S/17E/19 |            |                 | 12/12/2019                                    | 12/12/2019                                       | 2   |
| AGW080012553-HOME PLACE | GeoTracker  | Domestic  | 12S/18E/29 |            |                 | 12/17/2019                                    | 12/9/2021  | 7   |
| AGW080012558-JUDY       | GeoTracker  | Domestic  | 11S/17E/35 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080012559-DEBBIE     | GeoTracker  | Domestic  | 12S/17E/09 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080012560-JIM        | GeoTracker  | Domestic  | 12S/17E/08 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080012561-01-873-1   | GeoTracker  | Domestic  | 10S/17E/14 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080012562-03-847-2   | GeoTracker  | Domestic  | 09S/17E/34 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080012564-09-905-1   | GeoTracker  | Domestic  | 10S/18E/14 |            |                 | 12/17/2019                                    | 12/17/2019                                       | 2   |
| AGW080012565-04-531-0   | GeoTracker  | Domestic  | 10S/18E/20 |            |                 | 12/17/2019                                    | 12/17/2019                                       | 2   |
| AGW080012566-AFC OFFICE | GeoTracker  | Domestic  | 10S/17E/04 |            |                 | 12/17/2019                                    | 12/17/2019                                       | 0   |
| AGW080012578-WELL 1     | GeoTracker  | Domestic  | 11S/16E/05 |            |                 | 12/31/2019                                    | 12/31/2019                                       | 2   |
| AGW080012579-WELL 2     | GeoTracker  | Domestic  | 11S/16E/05 |            |                 | 12/31/2019                                    | 12/28/2021                                       | 4   |
| AGW080012580-WELL 3     | GeoTracker  | Domestic  | 11S/16E/06 |            |                 | 12/31/2019                                    | 12/31/2019                                       | 2   |
| AGW080012581-WELL 4     | GeoTracker  | Domestic  | 11S/16E/05 |            |                 | 12/31/2019                                    | 12/31/2019                                       | 2   |
| AGW080012582-WELL 5     | GeoTracker  | Domestic  | 11S/16E/05 |            |                 | 12/31/2019                                    | 12/28/2021                                       | 4   |
| AGW080012584-SW AVE 82  | GeoTracker  | Domestic  | 12S/17E/25 |            |                 | 12/26/2019                                    | 12/26/2019                                       | 2   |
| AGW080012585-7824 H145  | GeoTracker  | Domestic  | 12S/17E/25 |            |                 | 12/26/2019                                    | 12/26/2019                                       | 2   |
| AGW080012586-7598 H145  | GeoTracker  | Domestic  | 12S/17E/25 |            |                 | 12/26/2019                                    | 12/26/2019                                       | 2   |
| AGW080012587-7328 R26.5 | GeoTracker  | Domestic  | 12S/17E/25 |            |                 | 12/26/2019                                    | 12/26/2019                                       | 2   |
| AGW080012592-VOLCAN     | GeoTracker  | Domestic  | 11S/19E/31 |            |                 | 12/27/2019                                    | 12/27/2019                                       | 2   |
| AGW080012629-B/P ALMOND | GeoTracker  | Domestic  | 11S/16E/10 |            |                 | 12/29/2020                                    | 12/29/2020                                       | 2   |
| AGW080012630-NP-C       | GeoTracker  | Domestic  | 10S/16E/33 |            |                 | 12/29/2020                                    | 12/29/2020                                       | 2   |
| AGW080012631-INDP       | GeoTracker  | Domestic  | 10S/16E/33 |            |                 | 12/29/2020                                    | 12/29/2020                                       | 2   |
| AGW080012711-BULLDOG    | GeoTracker  | Domestic  | 12S/16E/34 |            |                 | 12/30/2019                                    | 11/21/2022                                       | 12  |
| AGW080012711-BULLDOG    | GeoTracker  | Domestic  | 12S/16E/27 |            |                 | 12/30/2019                                    | 11/21/2022                                       | 12  |
| AGW080012723-QUALLS     | GeoTracker  | Domestic  | 11S/16E/16 |            |                 | 12/17/2019                                    | 12/17/2019                                       | 2   |
| AGW080012731-10668      | GeoTracker  | Domestic  | 12S/17E/12 |            |                 | 12/30/2020                                    | 12/30/2020                                       | 2   |
| AGW080012900-HOME WELL  | GeoTracker  | Domestic  | 12S/17E/03 |            |                 | 12/26/2019                                    | 12/26/2019                                       | 1   |
| AGW080012922-SHOP       | GeoTracker  | Domestic  | 10S/16E/33 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080012923-AVE 15     | GeoTracker  | Domestic  | 11S/16E/22 |            |                 | 12/19/2019                                    | 12/15/2022                                       | 20  |
| AGW080012923-AVE 15     | GeoTracker  | Domestic  | 11S/16E/16 |            |                 | 12/19/2019                                    | 12/15/2022                                       | 20  |
| AGW080012924-N. SAHOTA  | GeoTracker  | Domestic  | 10S/16E/33 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080012925-GUNTER     | GeoTracker  | Domestic  | 10S/16E/36 |            |                 | 12/19/2019                                    | 10/14/2021                                       | 7   |
| AGW080012972-22334 ROAD | GeoTracker  | Domestic  | 10S/18E/07 |            |                 | 12/27/2019                                    | 12/27/2019                                       | 1   |
| AGW080012973-21863AVE12 | GeoTracker  | Domestic  | 11S/17E/31 |            |                 | 12/27/2019                                    | 12/27/2019                                       | 1   |
| AGW080012974-8492ROAD20 | GeoTracker  | Domestic  | 12S/16E/23 |            |                 | 12/27/2019                                    | 12/27/2019                                       | 1   |
| AGW080012975-7890ROAD21 | GeoTracker  | Domestic  | 12S/16E/25 |            |                 | 12/27/2019                                    | 12/27/2019                                       | 1   |
| AGW080012976-20555 AVE8 | GeoTracker  | Domestic  | 12S/16E/24 |            |                 | 12/27/2019                                    | 12/27/2019                                       | 1   |
| AGW080012977-20290 AVE9 | GeoTracker  | Domestic  | 12S/16E/24 |            |                 | 12/27/2019                                    | 12/27/2019                                       | 1   |
| AGW080012991-SCHAFFER   | GeoTracker  | Domestic  | 11S/17E/08 |            |                 | 12/9/2019                                     | 5/10/2021  | 7   |
| AGW080013025-145RANCHHW | GeoTracker  | Domestic  | 12S/17E/12 |            |                 | 12/26/2019                                    | 12/26/2019                                       | 1   |
| AGW080013027-BERENDA HW | GeoTracker  | Domestic  | 10S/17E/05 |            |                 | 12/26/2019                                    | 12/26/2019                                       | 1   |
| AGW080013087-BROOKE     | GeoTracker  | Domestic  | 12S/17E/09 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080013088-DELLO      | GeoTracker  | Domestic  | 12S/17E/01 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080013089-KYLE       | GeoTracker  | Domestic  | 11S/17E/29 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |

**Table 3.J-2 - Supplemental Groundwater Quality Monitoring Network, Madera Subbasin**

| Well ID                 | Data Source | Well Type | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Quality Measurement Date | Most Recent Groundwater Quality Measurement Date | Count of Groundwater Quality Measurements |
|-------------------------|-------------|-----------|------------|------------|-----------------|---|--|---|
| AGW080013090-DENIS      | GeoTracker  | Domestic  | 12S/17E/01 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080013091-JUAN       | GeoTracker  | Domestic  | 12S/17E/01 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080013092-DAN        | GeoTracker  | Domestic  | 12S/17E/16 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080013093-BILL       | GeoTracker  | Domestic  | 12S/17E/16 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080013094-NORMA      | GeoTracker  | Domestic  | 12S/17E/22 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080013095-STAGERANCH | GeoTracker  | Domestic  | 12S/17E/16 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080013115-RANCH 1    | GeoTracker  | Domestic  | 11S/18E/09 |            |                 | 12/17/2019                                    | 12/15/2021                                       | 4   |
| AGW080013116-RANCH 6    | GeoTracker  | Domestic  | 12S/17E/01 |            |                 | 12/17/2019                                    | 12/15/2021                                       | 7   |
| AGW080013119-33379_AV_8 | GeoTracker  | Domestic  | 12S/19E/30 |            |                 | 12/6/2019                                     | 12/13/2022                                       | 4   |
| AGW080013119-33379_AV_8 | GeoTracker  | Domestic  | 12S/19E/19 |            |                 | 12/6/2019                                     | 12/13/2022                                       | 4   |
| AGW080013167-F12-HS1    | GeoTracker  | Domestic  | 12S/17E/12 |            |                 | 2/4/2020                                      | 2/4/2020   | 2   |
| AGW080013168-KREPS      | GeoTracker  | Domestic  | 11S/18E/03 |            |                 | 2/5/2020                                      | 2/5/2020   | 2   |
| AGW080013211-HOUSE_WELL | GeoTracker  | Domestic  | 13S/18E/01 |            |                 | 1/8/2020                                      | 2/17/2021  | 2   |
| AGW080013212-VINEYARD   | GeoTracker  | Domestic  | 13S/18E/01 |            |                 | 1/8/2020                                      | 2/17/2021  | 2   |
| AGW080013215-AVE_10_DOM | GeoTracker  | Domestic  | 12S/18E/10 |            |                 | 1/15/2020                                     | 3/3/2022   | 3   |
| AGW080013217-NS_SHOP    | GeoTracker  | Domestic  | 11S/15E/31 |            |                 | 1/15/2020                                     | 3/3/2022   | 3   |
| AGW080013218-NS_REDBARN | GeoTracker  | Domestic  | 12S/15E/04 |            |                 | 1/15/2020                                     | 3/3/2022   | 3   |
| AGW080013224-RIVER_RCH  | GeoTracker  | Domestic  | 13S/18E/04 |            |                 | 1/14/2020                                     | 1/4/2021   | 2   |
| AGW080013225-AVE_9_DOM  | GeoTracker  | Domestic  | 12S/19E/24 |            |                 | 1/15/2020                                     | 3/3/2022   | 3   |
| AGW080013250-NORTH_HSE  | GeoTracker  | Domestic  | 13S/18E/06 |            |                 | 1/28/2020                                     | 1/28/2020  | 1   |
| AGW080013251-SOUTH_HSE  | GeoTracker  | Domestic  | 11S/18E/31 |            |                 | 1/28/2020                                     | 1/28/2020  | 1   |
| AGW080013261-WELL 1     | GeoTracker  | Domestic  | 12S/19E/19 |            |                 | 2/12/2020                                     | 2/12/2020  | 2   |
| AGW080013264-DW WELL    | GeoTracker  | Domestic  | 12S/18E/14 |            |                 | 2/13/2020                                     | 7/20/2021  | 5   |
| AGW080013311-DP122-1    | GeoTracker  | Domestic  | 12S/18E/25 |            |                 | 2/24/2020                                     | 2/24/2020  | 2   |
| AGW080013312-DP125-1    | GeoTracker  | Domestic  | 12S/18E/26 |            |                 | 2/24/2020                                     | 2/24/2020  | 2   |
| AGW080013313-DP121-1    | GeoTracker  | Domestic  | 12S/18E/15 |            |                 | 2/24/2020                                     | 2/24/2020  | 2   |
| AGW080013315-DP188-1    | GeoTracker  | Domestic  | 12S/18E/01 |            |                 | 2/24/2020                                     | 2/24/2020  | 2   |
| AGW080013348-DOMESTIC   | GeoTracker  | Domestic  | 10S/17E/31 |            |                 | 2/18/2020                                     | 2/18/2020  | 2   |
| AGW080013354-HOME       | GeoTracker  | Domestic  | 12S/17E/15 |            |                 | 2/7/2020                                      | 2/7/2020   | 3   |
| AGW080013355-RENT       | GeoTracker  | Domestic  | 12S/17E/15 |            |                 | 2/7/2020                                      | 2/7/2020   | 3   |
| AGW080013361-JASON_HSE  | GeoTracker  | Domestic  | 10S/18E/15 |            |                 | 1/30/2020                                     | 1/30/2020  | 1   |
| AGW080013362-JOE_HOUSE  | GeoTracker  | Domestic  | 10S/18E/15 |            |                 | 1/30/2020                                     | 1/30/2020  | 1   |
| AGW080013363-SHOP       | GeoTracker  | Domestic  | 10S/18E/15 |            |                 | 1/30/2020                                     | 1/30/2020  | 1   |
| AGW080013364-HOUSE_WELL | GeoTracker  | Domestic  | 12S/19E/18 |            |                 | 2/3/2020                                      | 2/3/2020   | 1   |
| AGW080013390-NONIS_HSE  | GeoTracker  | Domestic  | 12S/18E/04 |            |                 | 2/11/2020                                     | 2/19/2021  | 2   |
| AGW080013391-MAX_RANCH  | GeoTracker  | Domestic  | 12S/18E/04 |            |                 | 2/11/2020                                     | 2/11/2020  | 1   |
| AGW080013392-MASTER_R   | GeoTracker  | Domestic  | 12S/18E/26 |            |                 | 3/17/2020                                     | 3/17/2020  | 1   |
| AGW080013393-MASTER_T   | GeoTracker  | Domestic  | 12S/18E/26 |            |                 | 2/11/2020                                     | 3/8/2022   | 2   |
| AGW080013394-JOES_40    | GeoTracker  | Domestic  | 12S/17E/22 |            |                 | 3/17/2020                                     | 3/17/2020  | 1   |
| AGW080013395-HOME_RANCH | GeoTracker  | Domestic  | 12S/17E/28 |            |                 | 2/11/2020                                     | 2/19/2021  | 2   |
| AGW080013396-JOES_20    | GeoTracker  | Domestic  | 12S/17E/28 |            |                 | 2/11/2020                                     | 2/19/2021  | 2   |
| AGW080013397-SIMI       | GeoTracker  | Domestic  | 12S/17E/22 |            |                 | 2/11/2020                                     | 2/19/2021  | 2   |
| AGW080013398-ISLAND_DR  | GeoTracker  | Domestic  | 11S/18E/04 |            |                 | 2/11/2020                                     | 3/8/2022   | 3   |
| AGW080013399-BERTOZZI   | GeoTracker  | Domestic  | 12S/17E/21 |            |                 | 2/11/2020                                     | 3/8/2022   | 3   |
| AGW080013400-TOCHANNI   | GeoTracker  | Domestic  | 12S/17E/27 |            |                 | 2/11/2020                                     | 3/8/2022   | 3   |
| AGW080013402-HOAG       | GeoTracker  | Domestic  | 10S/16E/16 |            |                 | 11/19/2019                                    | 3/8/2022   | 2   |
| AGW080013403-GUILLERMOS | GeoTracker  | Domestic  | 11S/18E/33 |            |                 | 3/17/2020                                     | 3/17/2020  | 1   |
| AGW080013404-ARCO       | GeoTracker  | Domestic  | 11S/17E/06 |            |                 | 3/17/2020                                     | 3/17/2020  | 1   |
| AGW080013405-LAKE_ST    | GeoTracker  | Domestic  | 11S/18E/06 |            |                 | 11/19/2019                                    | 3/8/2022   | 2   |
| AGW080013407-REDTOP     | GeoTracker  | Domestic  | 11S/17E/06 |            |                 | 3/17/2020                                     | 3/17/2020  | 1   |
| AGW080013409-DOM_WELL   | GeoTracker  | Domestic  | 11S/17E/17 |            |                 | 2/15/2020                                     | 3/16/2022  | 3   |
| AGW080013410-TOM_13D    | GeoTracker  | Domestic  | 12S/18E/34 |            |                 | 2/17/2020                                     | 12/16/2022                                       | 3   |
| AGW080013411-REIMER_4D  | GeoTracker  | Domestic  | 12S/18E/35 |            |                 | 2/17/2020                                     | 12/16/2022                                       | 6   |
| AGW080013411-REIMER_4D  | GeoTracker  | Domestic  | 12S/18E/34 |            |                 | 2/17/2020                                     | 12/16/2022                                       | 6   |
| AGW080013412-HENRY_8D   | GeoTracker  | Domestic  | 12S/18E/36 |            |                 | 2/17/2020                                     | 12/16/2022                                       | 6   |
| AGW080013412-HENRY_8D   | GeoTracker  | Domestic  | 12S/18E/35 |            |                 | 2/17/2020                                     | 12/16/2022                                       | 6   |
| AGW080013413-AVE13_7D   | GeoTracker  | Domestic  | 11S/17E/35 |            |                 | 2/17/2020                                     | 12/16/2022                                       | 6   |
| AGW080013413-AVE13_7D   | GeoTracker  | Domestic  | 11S/17E/35 |            |                 | 2/17/2020                                     | 12/16/2022                                       | 6   |
| AGW080013437-7701_RD29  | GeoTracker  | Domestic  | 12S/18E/28 |            |                 | 2/12/2020                                     | 2/12/2020  | 1   |
| AGW080013438-10290_RD28 | GeoTracker  | Domestic  | 12S/18E/08 |            |                 | 2/12/2020                                     | 2/12/2020  | 1   |
| AGW080013444-HOUSE_WELL | GeoTracker  | Domestic  | 11S/16E/27 |            |                 | 2/12/2020                                     | 2/12/2020  | 1   |
| AGW080013480-9689       | GeoTracker  | Domestic  | 12S/18E/15 |            |                 | 2/20/2020                                     | 3/3/2021   | 6   |
| AGW080013481-HOMEWELL   | GeoTracker  | Domestic  | 11S/17E/36 |            |                 | 2/24/2020                                     | 2/24/2020  | 1   |
| AGW080013499-DOM_WELL   | GeoTracker  | Domestic  | 11S/19E/31 |            |                 | 2/25/2020                                     | 10/1/2021  | 2   |
| AGW080013503-WELL_1     | GeoTracker  | Domestic  | 12S/17E/08 |            |                 | 2/27/2020                                     | 2/27/2020  | 1   |

**Table 3.J-2 - Supplemental Groundwater Quality Monitoring Network, Madera Subbasin**

| Well ID                 | Data Source | Well Type | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Quality Measurement Date | Most Recent Groundwater Quality Measurement Date | Count of Groundwater Quality Measurements |
|-------------------------|-------------|-----------|------------|------------|-----------------|---|--|---|
| AGW080013504-WELL_2     | GeoTracker  | Domestic  | 12S/17E/05 |            |                 | 2/27/2020                                     | 2/27/2020  | 1   |
| AGW080013505-WELL_3     | GeoTracker  | Domestic  | 11S/16E/24 |            |                 | 2/27/2020                                     | 2/27/2020  | 1   |
| AGW080013685-WELL_1     | GeoTracker  | Domestic  | 11S/18E/16 |            |                 | 5/14/2019                                     | 5/14/2019  | 1   |
| AGW080013685-WELL_NO1   | GeoTracker  | Domestic  | 11S/18E/16 |            |                 | 4/22/2020                                     | 1/26/2021  | 2   |
| AGW080013686-WELL_2     | GeoTracker  | Domestic  | 11S/18E/16 |            |                 | 5/14/2019                                     | 5/14/2019  | 1   |
| AGW080013686-WELL_NO2   | GeoTracker  | Domestic  | 11S/18E/16 |            |                 | 4/22/2020                                     | 1/26/2021  | 2   |
| AGW080013726-R11B1      | GeoTracker  | Domestic  | 12S/19E/22 |            |                 | 5/18/2020                                     | 11/29/2022                                       | 4   |
| AGW080013726-R11B1      | GeoTracker  | Domestic  | 12S/19E/22 |            |                 | 5/18/2020                                     | 11/29/2022                                       | 4   |
| AGW080013727-R11B3      | GeoTracker  | Domestic  | 12S/19E/15 |            |                 | 5/18/2020                                     | 5/18/2020  | 1   |
| AGW080013728-R11B9      | GeoTracker  | Domestic  | 12S/19E/10 |            |                 | 5/18/2020                                     | 5/18/2020  | 1   |
| AGW080013729-R11B10     | GeoTracker  | Domestic  | 12S/19E/15 |            |                 | 5/18/2020                                     | 5/18/2020  | 1   |
| AGW080013815-6372       | GeoTracker  | Domestic  | 12S/18E/34 |            |                 | 6/12/2020                                     | 7/18/2022  | 2   |
| AGW080013816-6558       | GeoTracker  | Domestic  | 12S/18E/34 |            |                 | 6/12/2020                                     | 7/18/2022  | 2   |
| AGW080013817-31296      | GeoTracker  | Domestic  | 12S/18E/35 |            |                 | 6/12/2020                                     | 7/18/2022  | 6   |
| AGW080013818-30850      | GeoTracker  | Domestic  | 12S/18E/34 |            |                 | 6/12/2020                                     | 7/18/2022  | 2   |
| AGW080014692-DOMESTIC   | GeoTracker  | Domestic  | 12S/19E/23 |            |                 | 10/27/2020                                    | 10/27/2020                                       | 1   |
| AGW080015181-MADERA1    | GeoTracker  | Domestic  | 12S/17E/26 |            |                 | 11/13/2020                                    | 10/26/2022                                       | 6   |
| AGW080015181-MADERA1    | GeoTracker  | Domestic  | 12S/17E/26 |            |                 | 11/13/2020                                    | 10/26/2022                                       | 6   |
| AGW080015182-HEADQTR    | GeoTracker  | Domestic  | 12S/18E/32 |            |                 | 11/13/2020                                    | 10/25/2022                                       | 6   |
| AGW080015182-HEADQTR    | GeoTracker  | Domestic  | 12S/18E/29 |            |                 | 11/13/2020                                    | 10/25/2022                                       | 6   |
| AGW080015183-MADERA2    | GeoTracker  | Domestic  | 12S/17E/23 |            |                 | 11/13/2020                                    | 7/27/2021  | 2   |
| AGW080015184-MADERA3    | GeoTracker  | Domestic  | 12S/17E/24 |            |                 | 11/13/2020                                    | 10/19/2023                                       | 8   |
| AGW080015184-MADERA3    | GeoTracker  | Domestic  | 12S/17E/23 |            |                 | 11/13/2020                                    | 10/19/2023                                       | 8   |
| AGW080015185-SCHMALL    | GeoTracker  | Domestic  | 12S/18E/30 |            |                 | 11/13/2020                                    | 11/13/2020                                       | 1   |
| AGW080015428-7890 RD 21 | GeoTracker  | Domestic  | 12S/16E/25 |            |                 | 11/24/2020                                    | 11/24/2020                                       | 2   |
| AGW080015429-8492 RD 20 | GeoTracker  | Domestic  | 12S/16E/23 |            |                 | 11/24/2020                                    | 11/24/2020                                       | 2   |
| AGW080015430-21863 AV12 | GeoTracker  | Domestic  | 11S/17E/31 |            |                 | 11/24/2020                                    | 11/24/2020                                       | 2   |
| AGW080015431-22334 RD28 | GeoTracker  | Domestic  | 10S/18E/08 |            |                 | 11/24/2020                                    | 11/24/2020                                       | 2   |
| AGW080015432-20555 AV 8 | GeoTracker  | Domestic  | 12S/16E/24 |            |                 | 11/24/2020                                    | 11/24/2020                                       | 2   |
| AGW080015434-20290 AV 9 | GeoTracker  | Domestic  | 12S/16E/24 |            |                 | 11/24/2020                                    | 11/24/2020                                       | 2   |
| AGW080015446-8493       | GeoTracker  | Domestic  | 12S/18E/21 |            |                 | 11/13/2020                                    | 11/13/2020                                       | 1   |
| AGW080015778-MOORE WELL | GeoTracker  | Domestic  | 10S/16E/11 |            |                 | 12/8/2020                                     | 11/28/2023                                       | 5   |
| AGW080015785-AVE 5      | GeoTracker  | Domestic  | 13S/17E/07 |            |                 | 12/8/2020                                     | 12/8/2020  | 2   |
| AGW080015786-MADERARNCH | GeoTracker  | Domestic  | 12S/18E/21 |            |                 | 12/1/2020                                     | 3/10/2023  | 6   |
| AGW080015786-MADERARNCH | GeoTracker  | Domestic  | 12S/18E/16 |            |                 | 12/1/2020                                     | 3/10/2023  | 6   |
| AGW080015989-MADERA5    | GeoTracker  | Domestic  | 10S/16E/35 |            |                 | 12/15/2020                                    | 12/15/2020                                       | 2   |
| AGW080015990-J+L FARMS  | GeoTracker  | Domestic  | 11S/16E/03 |            |                 | 12/15/2020                                    | 12/15/2020                                       | 2   |
| AGW080015991-MADERA6    | GeoTracker  | Domestic  | 11S/16E/03 |            |                 | 12/15/2020                                    | 12/15/2020                                       | 2   |
| AGW080016012-#1 MF SHOP | GeoTracker  | Domestic  | 11S/17E/29 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080016013-#2 MF HOME | GeoTracker  | Domestic  | 11S/17E/29 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080016014-#3 MF20-14 | GeoTracker  | Domestic  | 11S/16E/24 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080016015-#4 SPF     | GeoTracker  | Domestic  | 11S/17E/29 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080016016-#5 AM74    | GeoTracker  | Domestic  | 11S/16E/24 |            |                 | 12/19/2019                                    | 12/19/2019                                       | 2   |
| AGW080016141-FREEMAN    | GeoTracker  | Domestic  | 12S/17E/06 |            |                 | 12/4/2020                                     | 12/13/2022                                       | 6   |
| AGW080016141-FREEMAN    | GeoTracker  | Domestic  | 12S/17E/06 |            |                 | 12/4/2020                                     | 12/13/2022                                       | 6   |
| AGW080016198-DOM_WELL   | GeoTracker  | Domestic  | 12S/17E/08 |            |                 | 12/11/2018                                    | 12/15/2021                                       | 3   |
| AGW080016315-TAYLOR 7   | GeoTracker  | Domestic  | 11S/16E/01 |            |                 | 12/29/2020                                    | 12/29/2020                                       | 1   |
| AGW080016577-JOHN       | GeoTracker  | Domestic  | 12S/17E/28 |            |                 | 12/21/2020                                    | 12/21/2020                                       | 2   |
| AGW080016578-NONI       | GeoTracker  | Domestic  | 12S/17E/27 |            |                 | 12/21/2020                                    | 12/21/2020                                       | 2   |
| AGW080016671-20841SHOP  | GeoTracker  | Domestic  | 11S/17E/18 |            |                 | 12/21/2020                                    | 2/8/2022   | 8   |
| AGW080016672-20435GUNI  | GeoTracker  | Domestic  | 11S/16E/13 |            |                 | 12/21/2020                                    | 12/16/2021                                       | 5   |
| AGW080016673-14481OLD   | GeoTracker  | Domestic  | 11S/16E/24 |            |                 | 12/21/2020                                    | 12/16/2021                                       | 5   |
| AGW080016674-21504RAM   | GeoTracker  | Domestic  | 11S/17E/19 |            |                 | 12/21/2020                                    | 12/16/2021                                       | 5   |
| AGW080016675-11514MOMS  | GeoTracker  | Domestic  | 12S/17E/01 |            |                 | 12/21/2020                                    | 12/16/2021                                       | 5   |
| AGW080016875-HOME RANCH | GeoTracker  | Domestic  | 11S/16E/25 |            |                 | 12/29/2020                                    | 12/19/2022                                       | 10  |
| AGW080016875-HOME RANCH | GeoTracker  | Domestic  | 11S/16E/24 |            |                 | 12/29/2020                                    | 12/19/2022                                       | 10  |
| AGW080016876-HOME 2     | GeoTracker  | Domestic  | 11S/16E/25 |            |                 | 12/29/2020                                    | 12/19/2022                                       | 10  |
| AGW080016876-HOME 2     | GeoTracker  | Domestic  | 11S/16E/24 |            |                 | 12/29/2020                                    | 12/19/2022                                       | 10  |
| AGW080016877-DIXIELAND3 | GeoTracker  | Domestic  | 11S/16E/02 |            |                 | 12/29/2020                                    | 12/19/2022                                       | 8   |
| AGW080016877-DIXIELAND3 | GeoTracker  | Domestic  | 11S/16E/03 |            |                 | 12/29/2020                                    | 12/19/2022                                       | 8   |
| AGW080016878-MERLOT     | GeoTracker  | Domestic  | 11S/17E/27 |            |                 | 12/29/2020                                    | 12/19/2022                                       | 10  |
| AGW080016878-MERLOT     | GeoTracker  | Domestic  | 11S/17E/27 |            |                 | 12/29/2020                                    | 12/19/2022                                       | 10  |
| AGW080017006-R2_DOM     | GeoTracker  | Domestic  | 11S/17E/03 |            |                 | 12/11/2020                                    | 12/14/2022                                       | 4   |
| AGW080017006-R2_DOM     | GeoTracker  | Domestic  | 11S/17E/04 |            |                 | 12/11/2020                                    | 12/14/2022                                       | 4   |
| AGW080017007-HULLER     | GeoTracker  | Domestic  | 11S/17E/04 |            |                 | 12/11/2020                                    | 12/11/2020                                       | 1   |



**Table 3.J-2 - Supplemental Groundwater Quality Monitoring Network, Madera Subbasin**

| Well ID                 | Data Source | Well Type  | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Quality Measurement Date | Most Recent Groundwater Quality Measurement Date | Count of Groundwater Quality Measurements |
|-------------------------|-------------|------------|------------|------------|-----------------|---|--|---|
| AGW080017008-R4_SHOP    | GeoTracker  | Domestic   | 11S/17E/18 |            |                 | 12/11/2020                                    | 12/11/2020                                       | 1   |
| AGW080017009-R5_HOUSE   | GeoTracker  | Domestic   | 11S/17E/16 |            |                 | 12/11/2020                                    | 12/14/2022                                       | 4   |
| AGW080017009-R5_HOUSE   | GeoTracker  | Domestic   | 11S/17E/17 |            |                 | 12/11/2020                                    | 12/14/2022                                       | 4   |
| AGW080017012-R11_SHOP   | GeoTracker  | Domestic   | 12S/19E/15 |            |                 | 12/14/2020                                    | 12/14/2020                                       | 1   |
| AGW080017013-R18_SHOP   | GeoTracker  | Domestic   | 12S/19E/28 |            |                 | 12/14/2020                                    | 12/14/2020                                       | 1   |
| AGW080017014-MILL       | GeoTracker  | Domestic   | 12S/18E/25 |            |                 | 12/14/2020                                    | 12/14/2020                                       | 1   |
| AGW080017030-145 MADERA | GeoTracker  | Domestic   | 13S/18E/06 |            |                 | 12/16/2020                                    | 12/16/2020                                       | 1   |
| AGW080017097-DOM WELL 1 | GeoTracker  | Domestic   | 12S/17E/28 |            |                 | 12/31/2020                                    | 12/28/2022                                       | 12  |
| AGW080017097-DOM WELL 1 | GeoTracker  | Domestic   | 12S/17E/21 |            |                 | 12/31/2020                                    | 12/28/2022                                       | 12  |
| AGW080017260-R-62       | GeoTracker  | Domestic   | 12S/18E/08 |            |                 | 11/10/2020                                    | 11/10/2020                                       | 3   |
| AGW080017261-R-78       | GeoTracker  | Domestic   | 12S/18E/17 |            |                 | 12/29/2020                                    | 12/29/2020                                       | 3   |
| AGW080017262-R-59       | GeoTracker  | Domestic   | 12S/18E/21 |            |                 | 11/10/2020                                    | 11/10/2020                                       | 3   |
| AGW080017322-RD_22      | GeoTracker  | Domestic   | 12S/17E/30 |            |                 | 12/7/2020                                     | 12/7/2020  | 1   |
| AGW080017323-MARTIN     | GeoTracker  | Domestic   | 12S/17E/29 |            |                 | 12/7/2020                                     | 12/7/2020  | 1   |
| AGW080017324-M_MOM      | GeoTracker  | Domestic   | 12S/17E/29 |            |                 | 12/7/2020                                     | 12/7/2020  | 1   |
| AGW080017325-GEORGE     | GeoTracker  | Domestic   | 12S/17E/29 |            |                 | 12/7/2020                                     | 12/7/2020  | 1   |
| AGW080017326-SCHOOL     | GeoTracker  | Domestic   | 12S/17E/20 |            |                 | 12/7/2020                                     | 12/7/2020  | 1   |
| AGW080017330-GUY_HOUSE  | GeoTracker  | Domestic   | 11S/19E/36 |            |                 | 12/17/2020                                    | 12/17/2020                                       | 1   |
| AGW080017331-FOREMAN_HS | GeoTracker  | Domestic   | 11S/20E/31 |            |                 | 12/17/2020                                    | 12/17/2020                                       | 1   |
| AGW080017428-HOME       | GeoTracker  | Domestic   | 11S/18E/20 |            |                 | 12/18/2020                                    | 11/29/2022                                       | 6   |
| AGW080017428-HOME       | GeoTracker  | Domestic   | 11S/18E/17 |            |                 | 12/18/2020                                    | 11/29/2022                                       | 6   |
| AGW080017429-BURSEY     | GeoTracker  | Domestic   | 12S/18E/17 |            |                 | 12/18/2020                                    | 11/29/2022                                       | 6   |
| AGW080017429-BURSEY     | GeoTracker  | Domestic   | 12S/18E/08 |            |                 | 12/18/2020                                    | 11/29/2022                                       | 6   |
| AGW080017430-SHAMP      | GeoTracker  | Domestic   | 12S/18E/21 |            |                 | 12/18/2020                                    | 12/18/2020                                       | 1   |
| AGW080017453-DV         | GeoTracker  | Domestic   | 12S/18E/28 |            |                 | 12/21/2020                                    | 12/21/2020                                       | 1   |
| AGW080017454-DM         | GeoTracker  | Domestic   | 12S/18E/28 |            |                 | 12/21/2020                                    | 12/21/2020                                       | 1   |
| AGW080017640-DOMESTIC   | GeoTracker  | Domestic   | 12S/18E/27 |            |                 | 12/29/2020                                    | 1/10/2023  | 6   |
| AGW080017640-DOMESTIC   | GeoTracker  | Domestic   | 12S/18E/22 |            |                 | 12/29/2020                                    | 1/10/2023  | 6   |
| AGW080017760-AVE17      | GeoTracker  | Domestic   | 11S/16E/10 |            |                 | 1/4/2021                                      | 12/20/2022                                       | 4   |
| AGW080017760-AVE17      | GeoTracker  | Domestic   | 11S/16E/09 |            |                 | 1/4/2021                                      | 12/20/2022                                       | 4   |
| AGW080017853-HOBE_145   | GeoTracker  | Domestic   | 12S/17E/36 |            |                 | 1/14/2021                                     | 1/14/2021  | 1   |
| AGW080017889-HOME       | GeoTracker  | Domestic   | 12S/18E/05 |            |                 | 1/26/2021                                     | 1/26/2021  | 1   |
| AGW080017948-COUNTRYCLB | GeoTracker  | Domestic   | 10S/17E/25 |            |                 | 2/11/2021                                     | 1/12/2022  | 2   |
| AGW080018034-NELSON_RCH | GeoTracker  | Domestic   | 13S/17E/09 |            |                 | 12/4/2020                                     | 11/15/2022                                       | 3   |
| AGW080018371-17632      | GeoTracker  | Domestic   | 11S/18E/03 |            |                 | 3/17/2021                                     | 3/17/2021  | 1   |
| AGW080018372-RENTER     | GeoTracker  | Domestic   | 11S/18E/03 |            |                 | 3/17/2021                                     | 3/17/2021  | 1   |
| AGW080018696-NORTH      | GeoTracker  | Domestic   | 10S/17E/33 |            |                 | 6/11/2021                                     | 6/11/2021  | 1   |
| AGW080018697-MULTICROP  | GeoTracker  | Domestic   | 10S/17E/21 |            |                 | 6/11/2021                                     | 6/11/2021  | 1   |
| AGW080018748-BJR-1      | GeoTracker  | Domestic   | 12S/17E/04 |            |                 | 12/15/2020                                    | 12/15/2020                                       | 2   |
| AGW080019869-B_HOME     | GeoTracker  | Domestic   | 12S/19E/31 |            |                 | 12/6/2021                                     | 5/10/2023  | 2   |
| AGW080020230-WELL_#1    | GeoTracker  | Domestic   | 09S/17E/27 |            |                 | 12/16/2021                                    | 12/16/2021                                       | 1   |
| AGW080020704-DW2        | GeoTracker  | Domestic   | 11S/18E/17 |            |                 | 6/15/2020                                     | 3/23/2022  | 18  |
| AGW080020704-DW2        | GeoTracker  | Domestic   | 11S/18E/17 |            |                 | 6/15/2020                                     | 3/23/2022  | 18  |
| AGW080020707-DW3        | GeoTracker  | Domestic   | 11S/20E/32 |            |                 | 6/15/2020                                     | 4/23/2021  | 6   |
| AGW080020803-HOME RANCH | GeoTracker  | Domestic   | 12S/17E/23 |            |                 | 12/8/2021                                     | 11/28/2022                                       | 6   |
| AGW080020804-BLOCK 6    | GeoTracker  | Domestic   | 12S/17E/27 |            |                 | 12/8/2021                                     | 11/28/2022                                       | 12  |
| AGW080020804-BLOCK 6    | GeoTracker  | Domestic   | 12S/17E/22 |            |                 | 12/8/2021                                     | 11/28/2022                                       | 12  |
| AGW080020805-BLOCK 7    | GeoTracker  | Domestic   | 12S/17E/22 |            |                 | 12/8/2021                                     | 11/28/2022                                       | 6   |
| AGW080020806-BLOCK 8    | GeoTracker  | Domestic   | 12S/17E/22 |            |                 | 12/8/2021                                     | 11/28/2022                                       | 6   |
| AGW080024228-RD_28      | GeoTracker  | Domestic   | 13S/18E/05 |            |                 | 12/28/2023                                    | 12/28/2023                                       | 1   |
| SL205184269-MW-11-SR    | GeoTracker  | Monitoring | 11S/17E/35 |            | 165 - 195       | 2/27/2016                                     | 5/25/2022  | 44  |
| SL205184269-MW-11-SR    | GeoTracker  | Monitoring | 11S/17E/34 |            | 165 - 195       | 2/27/2016                                     | 5/25/2022  | 44  |
| SL205184269-MW-17R      | GeoTracker  | Monitoring | 11S/17E/35 |            | 165 - 195       | 2/27/2016                                     | 8/9/2023   | 42  |
| SL205184269-MW-17R      | GeoTracker  | Monitoring | 11S/17E/26 |            | 165 - 195       | 2/27/2016                                     | 8/9/2023   | 42  |
| SL205184269-MW-19R      | GeoTracker  | Monitoring | 11S/17E/35 |            | 195 - 225       | 2/26/2016                                     | 5/24/2022  | 54  |
| SL205184269-MW-19R      | GeoTracker  | Monitoring | 11S/17E/34 |            | 195 - 225       | 2/26/2016                                     | 5/24/2022  | 54  |
| SL205184269-MW-22       | GeoTracker  | Monitoring | 11S/17E/35 |            | 210 - 220       | 8/31/2005                                     | 8/9/2023   | 130                                       |
| SL205184269-MW-22       | GeoTracker  | Monitoring | 11S/17E/34 |            | 210 - 220       | 8/31/2005                                     | 8/9/2023   | 130                                       |
| SL205184269-MW-28       | GeoTracker  | Monitoring | 11S/17E/35 |            | 199.48 - 229.48 | 9/29/2021                                     | 2/14/2024  | 60  |
| SL205184269-MW-28       | GeoTracker  | Monitoring | 11S/17E/34 |            | 199.48 - 229.48 | 9/29/2021                                     | 2/14/2024  | 60  |
| SL205184269-MW-29       | GeoTracker  | Monitoring | 11S/17E/35 |            | 191.94 - 221.94 | 9/28/2021                                     | 2/14/2024  | 82  |
| SL205184269-MW-29       | GeoTracker  | Monitoring | 11S/17E/34 |            | 191.94 - 221.94 | 9/28/2021                                     | 2/14/2024  | 82  |
| SL205184269-MW-30       | GeoTracker  | Monitoring | 11S/17E/35 |            | 189.53 - 219.53 | 9/28/2021                                     | 2/15/2024  | 72  |
| SL205184269-MW-30       | GeoTracker  | Monitoring | 11S/17E/34 |            | 189.53 - 219.53 | 9/28/2021                                     | 2/15/2024  | 72  |
| SL205184269-MW-31       | GeoTracker  | Monitoring | 11S/17E/35 |            | 192.39 - 222.39 | 9/29/2021                                     | 2/14/2024  | 66  |

**Table 3.J-2 - Supplemental Groundwater Quality Monitoring Network, Madera Subbasin**

| Well ID              | Data Source | Well Type    | T/R/S      | Well Depth | Screen Interval | Earliest Groundwater Quality Measurement Date | Most Recent Groundwater Quality Measurement Date | Count of Groundwater Quality Measurements |
|----------------------|-------------|--------------|------------|------------|-----------------|---|--|---|
| SL205184269-MW-31    | GeoTracker  | Monitoring   | 11S/17E/34 |            | 192.39 - 222.39 | 9/29/2021                                     | 2/14/2024  | 66  |
| SL205184269-MW-8-SR  | GeoTracker  | Monitoring   | 11S/17E/35 |            | 165 - 195       | 2/26/2016                                     | 5/24/2022  | 50  |
| SL205184269-MW-8-SR  | GeoTracker  | Monitoring   | 11S/17E/34 |            | 165 - 195       | 2/26/2016                                     | 5/24/2022  | 50  |
| T10000012877-MW-1    | GeoTracker  | Monitoring   | 11S/18E/30 |            | 115 - 135       | 6/26/2020                                     | 6/16/2022  | 34  |
| T10000012877-MW-1    | GeoTracker  | Monitoring   | 11S/18E/30 |            | 115 - 135       | 6/26/2020                                     | 6/16/2022  | 34  |
| T10000012877-MW-2    | GeoTracker  | Monitoring   | 11S/18E/30 |            | 115 - 135       | 6/26/2020                                     | 6/16/2022  | 74  |
| T10000012877-MW-2    | GeoTracker  | Monitoring   | 11S/18E/30 |            | 115 - 135       | 6/26/2020                                     | 6/16/2022  | 74  |
| T10000012877-MW-3    | GeoTracker  | Monitoring   | 11S/18E/30 |            | 115 - 135       | 6/26/2020                                     | 6/16/2022  | 64  |
| T10000012877-MW-3    | GeoTracker  | Monitoring   | 11S/18E/30 |            | 115 - 135       | 6/26/2020                                     | 6/16/2022  | 64  |
| T10000012877-MW-4    | GeoTracker  | Monitoring   | 11S/18E/30 |            | 124 - 144       | 6/26/2020                                     | 6/16/2022  | 66  |
| T10000012877-MW-4    | GeoTracker  | Monitoring   | 11S/18E/30 |            | 124 - 144       | 6/26/2020                                     | 6/16/2022  | 66  |
| T10000012877-MW-5    | GeoTracker  | Monitoring   | 11S/18E/30 |            | 130 - 150       | 6/16/2021                                     | 6/16/2022  | 34  |
| T10000012877-MW-5    | GeoTracker  | Monitoring   | 11S/18E/30 |            | 130 - 150       | 6/16/2021                                     | 6/16/2022  | 34  |
| T10000012877-SB-3    | GeoTracker  | Monitoring   | 11S/18E/30 |            |                 | 8/29/2019                                     | 8/29/2019  | 6   |
| ESJQC00012           | ILRP        | Monitoring   | 11S/17E/35 | 276        | 160 - 172       | 8/4/2020                                      | 7/27/2021  | 11  |
| ESJQC00027           | ILRP        | Monitoring   | 12S/15E/18 | 139        | 74 - 134        | 8/4/2020                                      | 8/3/2022   | 31  |
| ESJQC00035           | ILRP        | Monitoring   | 12S/16E/05 | 210        | 140 - 200       | 8/4/2020                                      | 8/3/2022   | 31  |
| ESJQC00036           | ILRP        | Monitoring   | 13S/16E/03 | 350        | 135 - 340       | 8/4/2020                                      | 8/3/2022   | 32  |
| ESJQC00037           | ILRP        | Monitoring   | 12S/17E/16 | 320        | 200 - 310       | 8/4/2020                                      | 8/3/2022   | 31  |
| ESJQC00037-DUP       | ILRP        | Monitoring   | 12S/17E/16 | 320        | 200 - 310       | 8/4/2020                                      | 8/4/2020   | 12  |
| ESJQC00039           | ILRP        | Monitoring   | 10S/16E/11 | 510        | 400 - 500       | 8/4/2020                                      | 8/2/2022   | 31  |
| 11S17E32R002M        | LSCE        | Irrigation   | 11S/17E/32 | 656        | 290 - 635       | 7/25/2024                                     | 7/25/2024  | 10  |
| 11S19E19N001M        | LSCE        | Monitoring   | 11S/19E/19 |            |                 | 8/18/2021                                     | 6/20/2023  | 30  |
| MSB03A               | LSCE        | Monitoring   | 12S/15E/18 | 139        | 74 - 134        | 2/12/2020                                     | 7/23/2024  | 40  |
| MSB03B               | LSCE        | Monitoring   | 12S/15E/18 | 295        | 215 - 285       | 2/12/2020                                     | 7/23/2024  | 41  |
| MSB03C               | LSCE        | Monitoring   | 12S/15E/18 | 430        | 355 - 420       | 2/12/2020                                     | 7/23/2024  | 36  |
| MSB04A               | LSCE        | Monitoring   | 11S/17E/11 | 375        | 180 - 365       | 2/13/2020                                     | 6/15/2023  | 75  |
| MSB04B               | LSCE        | Monitoring   | 11S/17E/11 | 695        | 530 - 685       | 2/13/2020                                     | 7/24/2024  | 37  |
| MSB04C               | LSCE        | Monitoring   | 11S/17E/11 | 905        | 750 - 895       | 2/13/2020                                     | 7/24/2024  | 36  |
| MSB05A               | LSCE        | Monitoring   | 12S/16E/05 | 210        | 140 - 200       | 2/12/2020                                     | 7/23/2024  | 34  |
| MSB05B               | LSCE        | Monitoring   | 12S/16E/05 | 375        | 240 - 365       | 2/12/2020                                     | 7/23/2024  | 35  |
| MSB05C               | LSCE        | Monitoring   | 12S/16E/05 | 585        | 420 - 585       | 2/12/2020                                     | 7/23/2024  | 30  |
| MSB06A               | LSCE        | Monitoring   | 13S/16E/03 | 350        | 135 - 340       | 2/12/2020                                     | 7/23/2024  | 70  |
| MSB06B               | LSCE        | Monitoring   | 13S/16E/03 | 520        | 425 - 510       | 2/12/2020                                     | 7/23/2024  | 48  |
| MSB06C               | LSCE        | Monitoring   | 13S/16E/03 | 715        | 630 - 705       | 2/12/2020                                     | 7/23/2024  | 47  |
| MSB09A               | LSCE        | Monitoring   | 12S/17E/16 | 320        | 200 - 310       | 2/11/2020                                     | 7/25/2024  | 39  |
| MSB09B               | LSCE        | Monitoring   | 12S/17E/16 | 725        | 520 - 715       | 2/11/2020                                     | 7/25/2024  | 38  |
| MSB09C               | LSCE        | Monitoring   | 12S/17E/16 | 955        | 880 - 945       | 2/11/2020                                     | 7/25/2024  | 33  |
| MSB10B               | LSCE        | Monitoring   | 10S/16E/11 | 510        | 400 - 500       | 2/13/2020                                     | 7/26/2024  | 40  |
| MSB10C               | LSCE        | Monitoring   | 10S/16E/11 | 880        | 790 - 870       | 2/13/2020                                     | 7/26/2024  | 36  |
| MSB11A               | LSCE        | Monitoring   | 10S/17E/11 | 345        | 185 - 335       | 2/11/2020                                     | 2/11/2020  | 24  |
| MSB11B               | LSCE        | Monitoring   | 10S/17E/11 | 700        | 550 - 690       | 2/11/2020                                     | 2/11/2020  | 20  |
| MSB11C               | LSCE        | Monitoring   | 10S/17E/11 | 880        | 775 - 870       | 2/11/2020                                     | 7/31/2024  | 28  |
| MSB12                | LSCE        | Monitoring   | 10S/18E/23 | 465        | 355 - 465       | 6/15/2023                                     | 7/24/2024  | 5   |
| MSB13B               | LSCE        | Monitoring   | 11S/19E/15 | 446        | 396 - 436       | 6/15/2023                                     | 7/24/2024  | 6   |
| MSB13C               | LSCE        | Monitoring   | 11S/19E/15 | 532        | 522 - 532       | 6/15/2023                                     | 7/24/2024  | 4   |
| MWD 04               | MWD         | Irrigation   | 10S/18E/20 | 504        | 200 - 500       | 7/18/2019                                     | 8/19/2022  | 43  |
| RCWD MW1             | RCWD        | Monitoring   | 12S/19E/23 |            |                 | 6/1/2017                                      | 6/1/2023   | 29  |
| RCWD MW2             | RCWD        | Monitoring   | 12S/19E/14 |            |                 | 6/1/2017                                      | 6/1/2023   | 33  |
| RCWD MW3             | RCWD        | Monitoring   | 12S/19E/12 |            |                 | 6/1/2017                                      | 6/1/2023   | 35  |
| RCWD MW4             | RCWD        | Monitoring   | 12S/20E/07 |            |                 | 6/1/2017                                      | 6/1/2023   | 38  |
| RCWD MW5             | RCWD        | Monitoring   | 12S/20E/07 |            |                 | 6/1/2017                                      | 6/1/2023   | 38  |
| MADCHOW-03           | USGS        | Municipal    | 11S/17E/24 | 635        | 240 - 520       | 4/15/2008                                     | 6/5/2018   | 405                                       |
| MADCHOW-05           | USGS        | Municipal    | 10S/18E/15 | 350        |                 | 4/16/2008                                     | 6/5/2018   | 406                                       |
| S3-MACK-M09          | USGS        | Domestic     | 11S/16E/08 | 500        |                 | 11/21/2013                                    | 2/6/2019   | 206                                       |
| S3-MACK-M11          | USGS        | Domestic     | 12S/17E/27 | 300        | 240 - 300       | 12/3/2013                                     | 2/6/2019   | 204                                       |
| S3-MACK-M24          | USGS        | Domestic     | 11S/20E/21 | 320        | 200 - 320       | 12/9/2013                                     | 2/5/2019   | 208                                       |
| S3-MACK-M28          | USGS        | Domestic     | 09S/17E/26 |            |                 | 4/9/2014                                      | 2/4/2019   | 206                                       |
| USGS_365100120060001 | USGS_NWIS   | Water Supply | 12S/17E/27 | 300        |                 | 12/3/2013                                     | 2/6/2019   | 215                                       |
| USGS_365700119470002 | USGS_NWIS   | Water Supply | 11S/20E/21 | 320        |                 | 12/9/2013                                     | 2/5/2019   | 214                                       |
| USGS_365747120034901 | USGS_NWIS   | Water Supply | 11S/17E/24 | 540        |                 | 4/15/2008                                     | 6/5/2018   | 407                                       |
| USGS_365900120140001 | USGS_NWIS   | Water Supply | 11S/16E/08 | 500        |                 | 11/21/2013                                    | 2/6/2019   | 213                                       |
| USGS_370039120053102 | USGS_NWIS   | Water Supply | 11S/17E/03 | 340        |                 | 6/20/1995                                     | 8/13/2015  | 368                                       |
| USGS_370300119590001 | USGS_NWIS   | Water Supply | 10S/18E/15 | 350        |                 | 4/16/2008                                     | 6/5/2018   | 405                                       |
| USGS_370700120040001 | USGS_NWIS   | Water Supply | 09S/17E/26 | 340        |                 | 5/22/2008                                     | 2/4/2019   | 377                                       |

**Table 3.J-3 - Supplemental Subsidence Monitoring Network, Madera Subbasin**

| Station ID  | Data Source | Station Type   | Latitude | Longitude  | Subbasin      | Earliest Elevation Measurement Date | Most Recent Elevation Measurement Date | Count of Elevation Measurements |
|-------------|-------------|----------------|----------|------------|---------------|-------------------------------------|--|---------------------------------|
| P307        | UNAVCO PBO  | Continuous GPS | 36.94727 | -120.05792 | Madera        | 10/18/2005                          | 9/30/2024                              | 6,908                           |
| SJRRP_1007R | USBR SJRRP  | GPS Station    | 36.93077 | -120.38220 | Madera        | 7/1/2012                            | 7/22/2024                              | 24                              |
| SJRRP_127   | USBR SJRRP  | GPS Station    | 36.85100 | -120.23691 | Madera        | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_141   | USBR SJRRP  | GPS Station    | 36.88701 | -119.98164 | Madera        | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_142   | USBR SJRRP  | GPS Station    | 36.97544 | -119.79377 | Madera        | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_160R  | USBR SJRRP  | GPS Station    | 36.82212 | -120.14183 | Madera        | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_165   | USBR SJRRP  | GPS Station    | 36.89749 | -119.79053 | Madera        | 12/1/2017                           | 7/22/2024                              | 13                              |
| SJRRP_201R  | USBR SJRRP  | GPS Station    | 36.87225 | -120.31803 | Madera        | 7/1/2017                            | 7/22/2024                              | 14                              |
| SJRRP_29    | USBR SJRRP  | GPS Station    | 37.01818 | -120.12658 | Madera        | 7/1/2012                            | 7/22/2024                              | 24                              |
| SJRRP_1053R | USBR SJRRP  | GPS Station    | 36.97608 | -120.38299 | Chowchilla    | 7/1/2012                            | 7/22/2024                              | 24                              |
| SJRRP_1054R | USBR SJRRP  | GPS Station    | 36.99619 | -120.38326 | Chowchilla    | 7/1/2012                            | 7/22/2024                              | 24                              |
| SJRRP_1055R | USBR SJRRP  | GPS Station    | 37.04002 | -120.47371 | Chowchilla    | 7/1/2012                            | 7/22/2024                              | 24                              |
| SJRRP_123   | USBR SJRRP  | GPS Station    | 36.95262 | -120.35002 | Chowchilla    | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_124   | USBR SJRRP  | GPS Station    | 37.08372 | -120.44934 | Chowchilla    | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_135   | USBR SJRRP  | GPS Station    | 37.08448 | -120.22754 | Chowchilla    | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_2062  | USBR SJRRP  | GPS Station    | 36.96987 | -120.42216 | Chowchilla    | 7/1/2012                            | 7/22/2024                              | 21                              |
| SJRRP_2076  | USBR SJRRP  | GPS Station    | 37.08357 | -120.36553 | Chowchilla    | 7/1/2012                            | 7/22/2024                              | 24                              |
| SJRRP_2362  | USBR SJRRP  | GPS Station    | 37.01822 | -120.43323 | Chowchilla    | 7/1/2012                            | 7/22/2024                              | 24                              |
| SJRRP_2378  | USBR SJRRP  | GPS Station    | 37.01833 | -120.29258 | Chowchilla    | 7/1/2012                            | 7/22/2024                              | 24                              |
| SJRRP_1009  | USBR SJRRP  | GPS Station    | 36.95265 | -120.50341 | Delta-Mendota | 7/1/2012                            | 7/22/2024                              | 24                              |
| SJRRP_101   | USBR SJRRP  | GPS Station    | 36.89756 | -120.46507 | Delta-Mendota | 12/1/2011                           | 7/22/2024                              | 23                              |
| SJRRP_104   | USBR SJRRP  | GPS Station    | 36.77409 | -120.28435 | Delta-Mendota | 12/1/2011                           | 7/22/2024                              | 15                              |
| SJRRP_121   | USBR SJRRP  | GPS Station    | 36.98302 | -120.50085 | Delta-Mendota | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_122   | USBR SJRRP  | GPS Station    | 36.77004 | -120.39229 | Delta-Mendota | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_129   | USBR SJRRP  | GPS Station    | 36.85731 | -120.46283 | Delta-Mendota | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_132R  | USBR SJRRP  | GPS Station    | 36.99631 | -120.50329 | Delta-Mendota | 12/1/2018                           | 7/22/2024                              | 11                              |
| SJRRP_147   | USBR SJRRP  | GPS Station    | 36.96627 | -120.56497 | Delta-Mendota | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_153   | USBR SJRRP  | GPS Station    | 36.81756 | -120.43338 | Delta-Mendota | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_157   | USBR SJRRP  | GPS Station    | 37.03363 | -120.57224 | Delta-Mendota | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_158   | USBR SJRRP  | GPS Station    | 36.85771 | -120.39086 | Delta-Mendota | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_159   | USBR SJRRP  | GPS Station    | 36.82489 | -120.37282 | Delta-Mendota | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_2348  | USBR SJRRP  | GPS Station    | 37.01496 | -120.63601 | Delta-Mendota | 7/1/2012                            | 7/22/2024                              | 24                              |
| SJRRP_2562  | USBR SJRRP  | GPS Station    | 36.95188 | -120.47906 | Delta-Mendota | 7/1/2012                            | 7/22/2024                              | 23                              |
| SJRRP_145   | USBR SJRRP  | GPS Station    | 36.86675 | -119.56148 | Kings         | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_154   | USBR SJRRP  | GPS Station    | 36.72607 | -120.02467 | Kings         | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_202   | USBR SJRRP  | GPS Station    | 36.80869 | -119.78571 | Kings         | 12/1/2017                           | 7/22/2024                              | 13                              |
| SJRRP_131   | USBR SJRRP  | GPS Station    | 37.22832 | -120.27054 | Merced        | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_133   | USBR SJRRP  | GPS Station    | 37.06187 | -120.54343 | Merced        | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_156   | USBR SJRRP  | GPS Station    | 37.11342 | -120.58832 | Merced        | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_162   | USBR SJRRP  | GPS Station    | 37.09214 | -120.51024 | Merced        | 12/1/2011                           | 7/22/2024                              | 25                              |
| SJRRP_2065  | USBR SJRRP  | GPS Station    | 37.19817 | -120.48806 | Merced        | 7/1/2012                            | 7/22/2024                              | 24                              |
| P725        | UNAVCO PBO  | Continuous GPS | 37.08889 | -119.74559 |               | 10/20/2006                          | 9/30/2024                              | 6,429                           |
| SJRRP_120   | USBR SJRRP  | GPS Station    | 36.99646 | -119.70151 |               | 12/1/2011                           | 7/22/2024                              | 22                              |
| SJRRP_143   | USBR SJRRP  | GPS Station    | 37.09489 | -119.75235 |               | 12/1/2011                           | 7/22/2024                              | 22                              |

Additional subsidence monitoring data is downloaded and reviewed periodically from DWR's TRE ALTAMIRA InSAR Subsidence Dataset:

<https://data.cnra.ca.gov/dataset/tre-altamira-insar-subsidence>

**APPENDIX 3.K. Madera Subbasin Joint GSP First Periodic  
Update – Groundwater Level Representative Monitoring Site  
(RMS) Network Update.**

Prepared as part of the  
**Joint Groundwater Sustainability Plan  
Madera Subbasin**

January 2020  
Amended January 2025

**GSP Team:**

Davids Engineering, Inc. (Amended GSP Team)  
Luhdorff & Scalmanini (Amended GSP Team)  
ERA Economics  
Stillwater Sciences and  
California State University, Sacramento

## TECHNICAL MEMORANDUM

DATE: October 4, 2024

Project No. 24-1-010

TO: Madera Subbasin Joint GSP GSAs

FROM: LSCE and DE

**SUBJECT: Madera Subbasin Joint GSP First Periodic Update – Groundwater Level Representative Monitoring Site (RMS) Network Update**

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### Introduction and Background

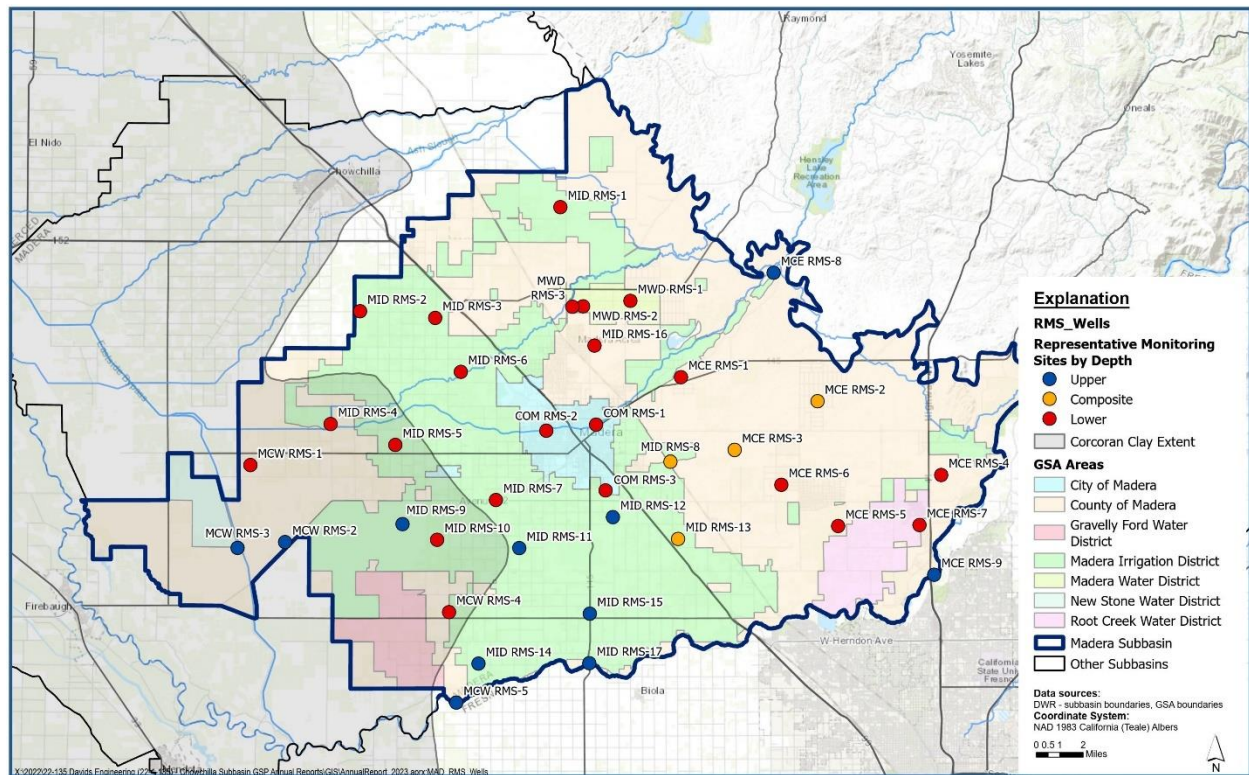
The Joint Groundwater Sustainability Agencies (GSAs) (City of Madera GSA, County of Madera GSA – Madera, Madera Irrigation District GSA, and Madera Water District GSA) developed a Groundwater Level Representative Monitoring Sites (RMS) network as part of the development of a Groundwater Sustainability Plan (GSP) for the Madera Subbasin that was originally submitted in January 2020. During the implementation of the GSP, various issues have arisen that have affected the consistency of groundwater level measurements at a number of these RMS. As part of the first periodic update to the GSP, the groundwater level RMS network was evaluated and updated to ensure consistent measurements that will satisfy Sustainable Groundwater Management Act (SGMA) monitoring requirements and support GSP activities in the Subbasin. This TM describes the comprehensive review of the monitoring network that was conducted as part of the 2025 GSP Plan Amendment and the development of a revised monitoring network.

### January 2020 Groundwater Level RMS Network Evaluation

The first iteration of the Joint GSP Groundwater Level RMS network in Madera Subbasin (**Figure 1**), developed as part of the January 2020 GSP submission, consisted of 37 wells: 11 screened in the Upper Aquifer, 22 screened in the Lower Aquifer, and 4 screened across both aquifers (composite). The monitoring network was initially developed using existing wells in the GSP Area. The database for existing wells was reviewed with the following criteria in mind:

- CASGEM wells preferred;
- Known construction (screen intervals, depth) preferred;
- Long histories of water level data (including recent data) preferred;

- Relatively good match between observed and modeled water levels preferred;
- Good spatial distribution preferred;
- Representation of both Upper (where present in western portion of Plan Area) and Lower Aquifers preferred.



**Figure 1. January 2020 Groundwater Level Representative Monitoring Sites (RMS) Network**

As required by SGMA, groundwater level RMS are to be measured on a semi-annual basis at a minimum during periods which will capture seasonal highs and lows (i.e., spring and fall). A summary of annual monitoring activities is provided in each year’s Annual Report for the Joint GSP. As part of the comprehensive monitoring network evaluation, the monitoring history of each RMS well was reviewed and wells with no recent measurements or inconsistent measurements were identified for removal from the network. **Table 1** provides a summary of this network review and lists the wells identified for removal and rationale for removal from the network.

| <b>Table 1. Summary of Review of January 2020 Madera Subbasin Joint GSP Groundwater Level Representative Monitoring Site (RMS) Network Evaluation</b> |               |                |                       |   |
|---|---------------|----------------|-----------------------|---|
| <b>GSA</b>  | <b>RMS ID</b> | <b>AQUIFER</b> | <b>NETWORK STATUS</b> | <b>RATIONALE FOR REMOVAL</b>  |
| City of Madera  | COM RMS-1     | Lower          | Remain in Network     |   |
| City of Madera  | COM RMS-2     | Lower          | Remain in Network     |   |
| City of Madera  | COM RMS-3     | Lower          | Remove from Network   | No Recent Measurements; unable to sound   |
| County of Madera  | MCE RMS-1     | Lower          | Remove from Network   | No Recent Measurements; unable to obtain access from owner                      |
| County of Madera  | MCE RMS-2     | Composite      | Remain in Network     |   |
| County of Madera  | MCE RMS-3     | Composite      | Remain in Network     |   |
| County of Madera  | MCE RMS-4     | Lower          | Remove from Network   | Inconsistent Measurements   |
| County of Madera  | MCE RMS-5     | Lower          | Remain in Network     |   |
| County of Madera  | MCE RMS-6     | Lower          | Remain in Network     |   |
| County of Madera  | MCE RMS-7     | Lower          | Remove from Network   | No Recent Measurements; well has been destroyed                                 |
| County of Madera  | MCE RMS-8     | Upper          | Remove from Network   | No Recent Measurements; owner will not allow access                             |
| County of Madera  | MCE RMS-9     | Upper          | Remain in Network     |   |
| County of Madera  | MCW RMS-1     | Lower          | Remove from Network   | No Recent Measurements; well has been destroyed                                 |
| County of Madera  | MCW RMS-2     | Upper          | Remove from Network   | No Recent Measurements; well covered by steel plate and unable to obtain access |
| County of Madera  | MCW RMS-3     | Upper          | Remain in Network     |   |
| County of Madera  | MCW RMS-4     | Lower          | Remove from Network   | Inconsistent Measurements; unable to obtain access from owner                   |
| County of Madera  | MCW RMS-5     | Upper          | Remain in Network     |   |
| Madera Irrigation District  | MID RMS-1     | Lower          | Remove from Network   | No Recent Measurements; no well at this site                                    |

| <b>Table 1. Summary of Review of January 2020 Madera Subbasin Joint GSP Groundwater Level Representative Monitoring Site (RMS) Network Evaluation</b> |               |                |                       |  |
|---|---------------|----------------|-----------------------|--|
| <b>GSA</b>  | <b>RMS ID</b> | <b>AQUIFER</b> | <b>NETWORK STATUS</b> | <b>RATIONALE FOR REMOVAL</b>                               |
| Madera Irrigation District  | MID RMS-2     | Lower          | Remain in Network     |  |
| Madera Irrigation District  | MID RMS-3     | Lower          | Remain in Network     |  |
| Madera Irrigation District  | MID RMS-4     | Lower          | Remain in Network     |  |
| Madera Irrigation District  | MID RMS-5     | Lower          | Remain in Network     |  |
| Madera Irrigation District  | MID RMS-6     | Lower          | Remain in Network     |  |
| Madera Irrigation District  | MID RMS-7     | Lower          | Remain in Network     |  |
| Madera Irrigation District  | MID RMS-8     | Composite      | Remove from Network   | No Recent Measurements; unable to obtain access from owner |
| Madera Irrigation District  | MID RMS-9     | Upper          | Remove from Network   | No Recent Measurements; unable to obtain access from owner |
| Madera Irrigation District  | MID RMS-10    | Lower          | Remain in Network     |  |
| Madera Irrigation District  | MID RMS-11    | Upper          | Remain in Network     |  |
| Madera Irrigation District  | MID RMS-12    | Upper          | Remain in Network     |  |
| Madera Irrigation District  | MID RMS-13    | Composite      | Remain in Network     |  |
| Madera Irrigation District  | MID RMS-14    | Upper          | Remove from Network   | No Recent Measurements; unable to obtain access from owner |
| Madera Irrigation District  | MID RMS-15    | Upper          | Remain in Network     |  |
| Madera Irrigation District  | MID RMS-16    | Lower          | Remain in Network     |  |
| Madera Irrigation District  | MID RMS-17    | Upper          | Remain in Network     |  |
| Madera Water District   | MWD RMS-1     | Lower          | Remain in Network     |  |
| Madera Water District   | MWD RMS-2     | Lower          | Remain in Network     |  |



| Table 1. Summary of Review of January 2020 Madera Subbasin Joint GSP Groundwater Level Representative Monitoring Site (RMS) Network Evaluation |           |         |                   |                       |
|--|-----------|---------|-------------------|-----------------------|
| GSA  | RMS ID    | AQUIFER | NETWORK STATUS    | RATIONALE FOR REMOVAL |
| Madera Water District  | MWD RMS-3 | Lower   | Remain in Network |                       |

## September 2024 Groundwater Level RMS Network Update

A total of 12 wells have been selected for addition to the Madera Subbasin Joint GSP Groundwater Level RMS network. These wells have been selected for inclusion in the network to either replace RMS wells removed from network, fill spatial data gaps, and/or fill vertical data gaps. **Table 2** provides a summary of the wells identified for inclusion and rationale for inclusion from the network.

| Table 2. Summary of Wells Proposed for Inclusion in the Madera Subbasin Joint GSP Groundwater Level Representative Monitoring Site (RMS) Network |           |         |                     |                             |
|--|-----------|---------|---------------------|-----------------------------|
| GSA  | RMS ID    | AQUIFER | NETWORK STATUS      | RATIONALE FOR REMOVAL       |
| City of Madera   | COM RMS-4 | Lower   | Addition to Network | RMS Replacement             |
| County of Madera   | MSB03B    | Upper   | Addition to Network | RMS Replacement             |
| County of Madera   | MSB03C    | Lower   | Addition to Network | Lower Aquifer Data Gap Fill |
| County of Madera   | MSB04B    | Lower   | Addition to Network | Lower Aquifer Data Gap Fill |
| County of Madera   | MSB05A    | Upper   | Addition to Network | Upper Aquifer Data Gap Fill |
| County of Madera   | MSB05B    | Lower   | Addition to Network | RMS Replacement             |
| County of Madera   | MSB06A    | Upper   | Addition to Network | Upper Aquifer Data Gap Fill |
| County of Madera   | MSB06C    | Lower   | Addition to Network | RMS Replacement             |
| County of Madera   | MSB10C    | Lower   | Addition to Network | Lower Aquifer Data Gap Fill |
| County of Madera   | MSB11C    | Lower   | Addition to Network | RMS Replacement             |
| County of Madera   | MSB12     | Lower   | Addition to Network | Data Gap Fill               |
| Madera Irrigation District   | MSB09C    | Lower   | Addition to Network | Lower Aquifer Data Gap Fill |

The updated water level RMS network will include a total of 37 wells: 10 upper aquifer wells, 26 lower aquifer wells, and 1 composite well. The updated Madera Subbasin Joint GSP Groundwater Level RMS network is shown in **Figure 2** and summarized in **Table 3**.

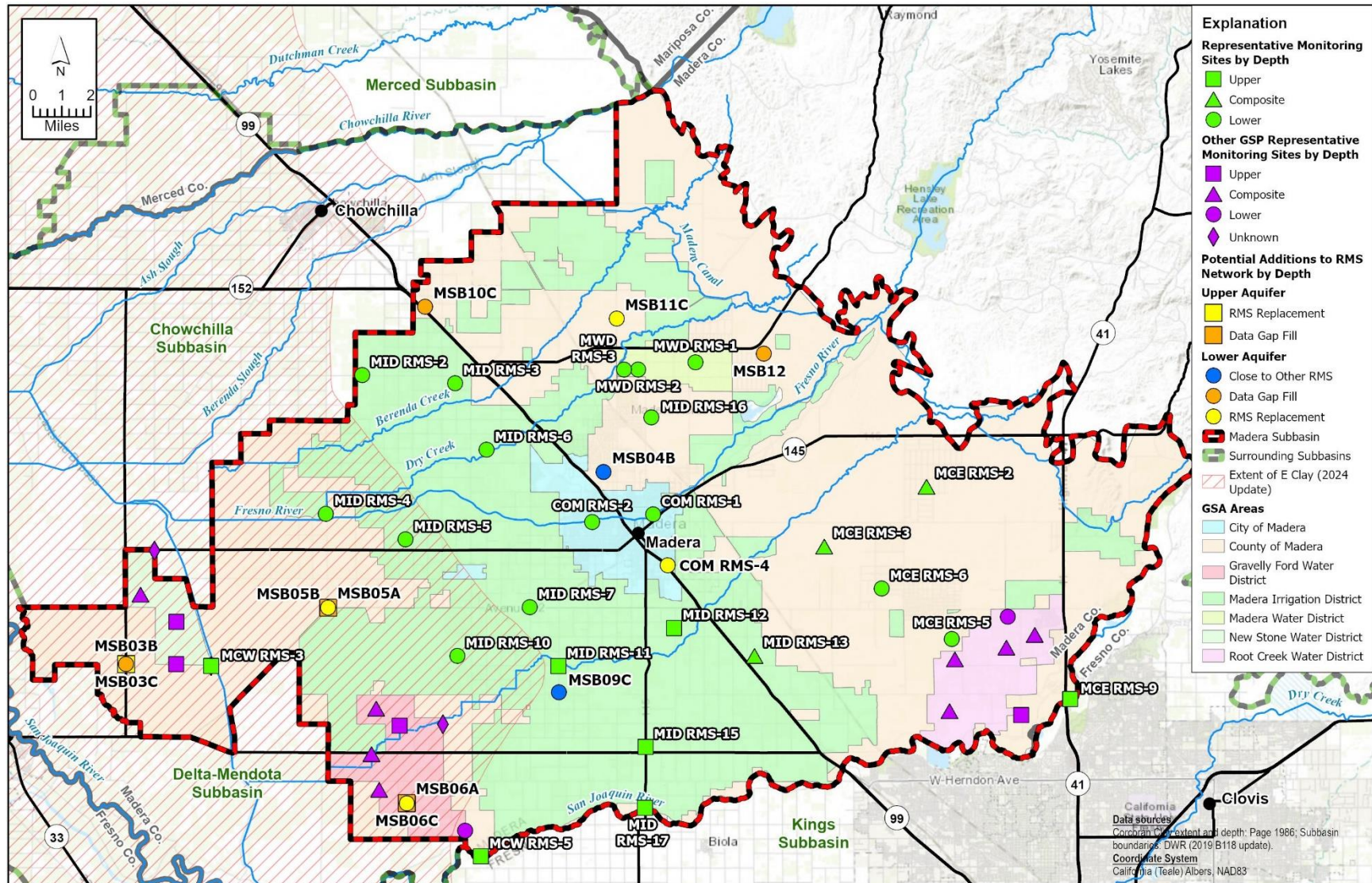


Figure 2. Updated Madera Subbasin Joint GSP Groundwater Level RMS Network (September 2024)

**Table 3. Summary of Updated Madera Subbasin Joint GSP Groundwater Level Representative Monitoring Site (RMS) Network**

| GSA              | RMS ID    | Aquifer            | Well Type     | Ground Surface Elevation (feet msl) | Total Depth (feet bgs) | Top of Well Screen (feet bgs) | Bottom of Well Screen (feet bgs) | Latitude | Longitude |
|------------------|-----------|--------------------|---------------|-------------------------------------|------------------------|-------------------------------|----------------------------------|----------|-----------|
| City of Madera   | COM RMS-1 | Lower <sup>2</sup> | Public Supply | 278                                 | 520                    | 210                           | 510                              | 36.9708  | -120.0513 |
| City of Madera   | COM RMS-2 | Lower <sup>2</sup> | Public Supply | 262                                 | 590                    | 370                           | 590                              | 36.9670  | -120.0898 |
| City of Madera   | COM RMS-4 | Lower <sup>2</sup> | Public Supply | 268                                 | 588                    | 433                           | 568                              | 36.9452  | -120.0423 |
| County of Madera | MCE RMS-2 | Upper <sup>2</sup> | Public Supply | 378                                 |                        |                               |                                  | 36.9852  | -119.8799 |
| County of Madera | MCE RMS-3 | Lower <sup>2</sup> | Irrigation    | 325                                 |                        |                               |                                  | 36.9552  | -119.9441 |
| County of Madera | MCE RMS-5 | Lower <sup>2</sup> | Irrigation    | 340                                 |                        |                               |                                  | 36.9082  | -119.8641 |
| County of Madera | MCE RMS-6 | Lower <sup>2</sup> | Domestic      | 328                                 | 550                    | 450                           | 550                              | 36.9337  | -119.9080 |
| County of Madera | MCE RMS-9 | Upper <sup>2</sup> | Observation   | 271                                 | 37                     | 17                            | 37                               | 36.8780  | -119.7900 |
| County of Madera | MCW RMS-3 | Lower <sup>1</sup> | Irrigation    | 162                                 |                        |                               |                                  | 36.8943  | -120.3285 |
| County of Madera | MCW RMS-5 | Upper <sup>2</sup> | Observation   | 202                                 | 30                     |                               |                                  | 36.7991  | -120.1592 |
| County of Madera | MSB03B    | Upper <sup>1</sup> | Observation   | 148                                 | 295                    | 215                           | 285                              | 36.8951  | -120.3818 |
| County of Madera | MSB03C    | Lower <sup>1</sup> | Observation   | 148                                 | 430                    | 355                           | 420                              | 36.8951  | -120.3818 |
| County of Madera | MSB04B    | Lower <sup>2</sup> | Observation   | 271                                 | 695                    | 530                           | 685                              | 36.9922  | -120.0825 |
| County of Madera | MSB05A    | Upper <sup>1</sup> | Observation   | 177                                 | 210                    | 140                           | 200                              | 36.9238  | -120.2552 |
| County of Madera | MSB05B    | Lower <sup>1</sup> | Observation   | 177                                 | 375                    | 240                           | 365                              | 36.9238  | -120.2552 |

**Table 3. Summary of Updated Madera Subbasin Joint GSP Groundwater Level Representative Monitoring Site (RMS) Network**

| GSA                        | RMS ID     | Aquifer                | Well Type   | Ground Surface Elevation (feet msl) | Total Depth (feet bgs) | Top of Well Screen (feet bgs) | Bottom of Well Screen (feet bgs) | Latitude | Longitude |
|----------------------------|------------|------------------------|-------------|-------------------------------------|------------------------|-------------------------------|----------------------------------|----------|-----------|
| County of Madera           | MSB06A     | Upper <sup>1</sup>     | Observation | 192                                 | 350                    | 135                           | 340                              | 36.8257  | -120.2057 |
| County of Madera           | MSB06C     | Lower <sup>1</sup>     | Observation | 192                                 | 715                    | 630                           | 705                              | 36.8257  | -120.2057 |
| County of Madera           | MSB10C     | Lower <sup>2</sup>     | Observation | 233                                 | 880                    | 790                           | 870                              | 37.0750  | -120.1948 |
| County of Madera           | MSB11C     | Lower <sup>2</sup>     | Observation | 251                                 | 880                    | 775                           | 870                              | 37.0692  | -120.0745 |
| County of Madera           | MSB12      | Lower <sup>2</sup>     | Observation | 306                                 | 465                    | 355                           | 465                              | 37.0516  | -119.9820 |
| Madera Irrigation District | MID RMS-2  | Lower <sup>2</sup>     | Unknown     | 350                                 | 563                    | 298                           | 509                              | 37.0407  | -120.2342 |
| Madera Irrigation District | MID RMS-3  | Lower <sup>2</sup>     | Irrigation  | 218                                 | 516                    | 260                           | 507                              | 37.0366  | -120.1760 |
| Madera Irrigation District | MID RMS-4  | Lower <sup>1</sup>     | Irrigation  | 241                                 | 698                    | 320                           | 667                              | 36.9709  | -120.2568 |
| Madera Irrigation District | MID RMS-5  | Lower <sup>1</sup>     | Industrial  | 190                                 | 570                    | 270                           | 570                              | 36.9581  | -120.2067 |
| Madera Irrigation District | MID RMS-6  | Lower <sup>2</sup>     | Industrial  | 204                                 | 680                    | 320                           | 680                              | 37.0033  | -120.1561 |
| Madera Irrigation District | MID RMS-7  | Lower <sup>2</sup>     | Irrigation  | 237                                 | 656                    | 290                           | 635                              | 36.9243  | -120.1288 |
| Madera Irrigation District | MID RMS-10 | Lower <sup>1</sup>     | Irrigation  | 237                                 | 615                    | 315                           | 615                              | 36.8996  | -120.1742 |
| Madera Irrigation District | MID RMS-11 | Upper <sup>2</sup>     | Unknown     | 213                                 | 315                    |                               |                                  | 36.8946  | -120.1108 |
| Madera Irrigation District | MID RMS-12 | Upper <sup>2</sup>     | Irrigation  | 232                                 | 176                    |                               |                                  | 36.9138  | -120.0383 |
| Madera Irrigation District | MID RMS-13 | Composite <sup>2</sup> | Irrigation  | 262                                 | 600                    | 228                           | 552                              | 36.9003  | -119.9879 |

**Table 3. Summary of Updated Madera Subbasin Joint GSP Groundwater Level Representative Monitoring Site (RMS) Network**

| GSA                        | RMS ID     | Aquifer            | Well Type     | Ground Surface Elevation (feet msl) | Total Depth (feet bgs) | Top of Well Screen (feet bgs) | Bottom of Well Screen (feet bgs) | Latitude | Longitude |
|----------------------------|------------|--------------------|---------------|-------------------------------------|------------------------|-------------------------------|----------------------------------|----------|-----------|
| Madera Irrigation District | MID RMS-15 | Upper <sup>2</sup> | Public Supply | 271                                 | 502                    | 160                           | 200                              | 36.8541  | -120.0561 |
| Madera Irrigation District | MID RMS-16 | Lower <sup>2</sup> | Domestic      | 247                                 | 452                    | 348                           | 388                              | 37.0196  | -120.0526 |
| Madera Irrigation District | MID RMS-17 | Upper <sup>2</sup> | Observation   | 308                                 | 47                     | 26                            | 46                               | 36.8235  | -120.0565 |
| Madera Irrigation District | MSB09C     | Lower <sup>2</sup> | Observation   | 224                                 | 955                    | 880                           | 945                              | 36.8814  | -120.1105 |
| Madera Water District      | MWD RMS-1  | Lower <sup>2</sup> | Irrigation    | 330                                 | 504                    | 200                           | 500                              | 37.0472  | -120.0248 |
| Madera Water District      | MWD RMS-2  | Lower <sup>2</sup> | Irrigation    | 310                                 | 537                    | 200                           | 537                              | 37.0436  | -120.0610 |
| Madera Water District      | MWD RMS-3  | Lower <sup>2</sup> | Irrigation    | 295                                 | 800                    | 380                           | 800                              | 37.0436  | -120.0697 |

<sup>1</sup> Well is located within the Corcoran Clay Extent

<sup>2</sup> Well is located outside of the Corcoran Clay Extent

**APPENDIX 3.L. Madera Subbasin Joint GSP First Periodic Update –  
Groundwater Quality Representative Monitoring Site (RMS) Network  
Update**

Prepared as part of the  
**Joint Groundwater Sustainability Plan  
Madera Subbasin**

January 2020  
Amended January 2025

**GSP Team:**

Davids Engineering, Inc. (Amended GSP Team)  
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ERA Economics  
Stillwater Sciences and  
California State University, Sacramento

## TECHNICAL MEMORANDUM

DATE: October 4, 2024

Project No. 24-1-010

TO: Madera Subbasin Joint GSP GSAs

FROM: LSCE and DE

**SUBJECT: Madera Subbasin Joint GSP First Periodic Update – Groundwater Quality Representative Monitoring Site (RMS) Network Update**

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### Introduction and Background

The Joint Groundwater Sustainability Agencies (GSAs) (City of Madera GSA, County of Madera GSA – Madera, Madera Irrigation District GSA, and Madera Water District GSA) developed a Groundwater Quality Representative Monitoring Sites (RMS) network as part of the development of a Groundwater Sustainability Plan (GSP) for the Madera Subbasin that was originally submitted in January 2020. During the implementation of the GSP, various issues have arisen that have affected the consistency of groundwater quality sampling at a number of these RMS. As part of the first periodic update to the GSP, the groundwater quality RMS network was evaluated and updated to ensure consistent sampling that will satisfy Sustainable Groundwater Management Act (SGMA) monitoring requirements and support GSP activities in the Subbasin. This TM describes the comprehensive review of the monitoring network that was conducted as part of the 2025 GSP Plan Amendment and the development of a revised monitoring network.

### January 2020 Groundwater Quality RMS Network Evaluation

The first iteration of the Joint GSP Groundwater Quality RMS network in Madera Subbasin (**Figure 1**), developed as part of the January 2020 GSP submission, consisted of 48 wells: 8 screened in the Upper Aquifer, 35 screened in the Lower Aquifer, and 5 screened across both aquifers (composite). The monitoring network was initially developed using existing wells in the GSP Area, including those monitored as part of existing groundwater quality networks, and planned dedicated monitoring wells.



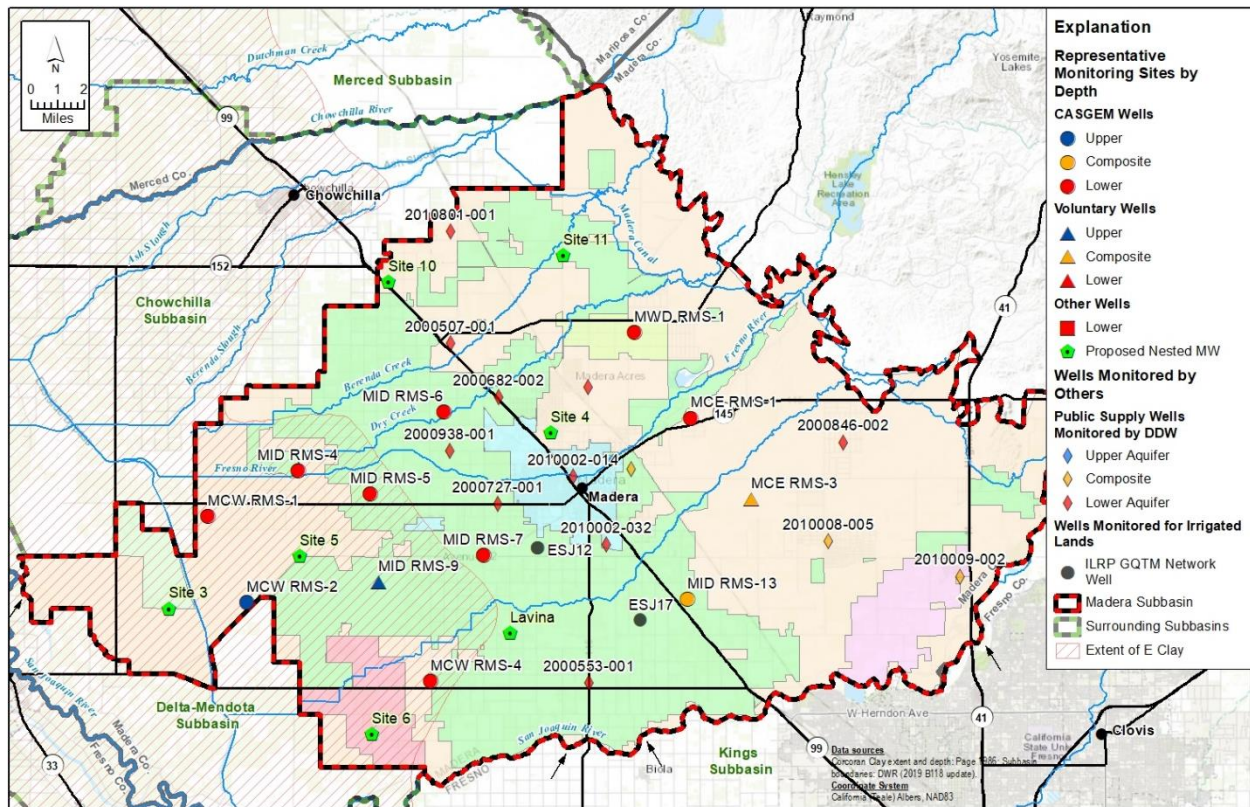


Figure 1. January 2020 Groundwater Quality Representative Monitoring Sites (RMS) Network

As required by SGMA, groundwater quality RMS are to be measured on an annual basis at a minimum. As part of the comprehensive monitoring network evaluation, the monitoring history of each RMS well was reviewed and wells with no recent samples or inconsistent sample collection were identified for removal from the network. **Table 1** provides a summary of this network review and lists the wells identified for removal and rationale for removal from the network.

| Table 1. Summary of Review of January 2020 Madera Subbasin Joint GSP Groundwater Quality Representative Monitoring Site (RMS) Network Evaluation |           |         |                     |  |
|--|-----------|---------|---------------------|--|
| GSA  | RMS ID    | AQUIFER | NETWORK STATUS      | RATIONALE FOR REMOVAL                                    |
| GSA-Current  | MCE RMS-1 | Lower   | Remove from Network | Well is inaccessible; unable to obtain access from owner |
| GSA-Current  | MCE RMS-3 | Lower   | Remain in Network   |  |
| GSA-Current  | MCW RMS-1 | Lower   | Remove from Network | Well has been destroyed                                  |
| GSA-Current  | MCW RMS-2 | Upper   | Remove from Network | Well is inaccessible; well covered by steel plate and    |

| <b>Table 1. Summary of Review of January 2020 Madera Subbasin Joint GSP Groundwater Quality Representative Monitoring Site (RMS) Network Evaluation</b> |               |                |                       |   |
|---|---------------|----------------|-----------------------|---|
| <b>GSA</b>  | <b>RMS ID</b> | <b>AQUIFER</b> | <b>NETWORK STATUS</b> | <b>RATIONALE FOR REMOVAL</b>                                  |
|   |               |                |                       | unable to obtain access                                       |
| GSA-Current   | MCW RMS-4     | Composite      | Remove from Network   | Well is inaccessible; unable to obtain access from owner      |
| GSA-Current   | MID RMS-4     | Lower          | Remain in Network     |   |
| GSA-Current   | MID RMS-5     | Lower          | Remove from Network   | Well is inaccessible; unable to obtain access from owner      |
| GSA-Current   | MID RMS-6     | Lower          | Remain in Network     |   |
| GSA-Current   | MID RMS-7     | Lower          | Remain in Network     |   |
| GSA-Current   | MID RMS-9     | Lower          | Remove from Network   | Inconsistent measurements; unable to obtain access from owner |
| GSA-Current   | MID RMS-13    | Composite      | Remain in Network     |   |
| GSA-Current   | MWD RMS-1     | Lower          | Remain in Network     |   |
| GSA-Future  | MSB03A        | Upper          | Remain in Network     |   |
| GSA-Future  | MSB03B        | Upper          | Remain in Network     |   |
| GSA-Future  | MSB03C        | Lower          | Remain in Network     |   |
| GSA-Future  | MSB04A        | Lower          | Remain in Network     |   |
| GSA-Future  | MSB04B        | Lower          | Remain in Network     |   |
| GSA-Future  | MSB04C        | Lower          | Remain in Network     |   |
| GSA-Future  | MSB05A        | Upper          | Remain in Network     |   |
| GSA-Future  | MSB05B        | Lower          | Remain in Network     |   |
| GSA-Future  | MSB05C        | Lower          | Remain in Network     |   |
| GSA-Future  | MSB06A        | Upper          | Remain in Network     |   |

| <b>Table 1. Summary of Review of January 2020 Madera Subbasin Joint GSP Groundwater Quality Representative Monitoring Site (RMS) Network Evaluation</b> |               |                |                       |                              |
|---|---------------|----------------|-----------------------|------------------------------|
| <b>GSA</b>  | <b>RMS ID</b> | <b>AQUIFER</b> | <b>NETWORK STATUS</b> | <b>RATIONALE FOR REMOVAL</b> |
| GSA-Future  | MSB06B        | Lower          | Remain in Network     |                              |
| GSA-Future  | MSB06C        | Lower          | Remain in Network     |                              |
| GSA-Future  | MSB09A        | Upper          | Remain in Network     |                              |
| GSA-Future  | MSB09B        | Lower          | Remain in Network     |                              |
| GSA-Future  | MSB09C        | Lower          | Remain in Network     |                              |
| GSA-Future  | MSB10A        | Lower          | Remove from Network   | Well has gone dry            |
| GSA-Future  | MSB10B        | Lower          | Remain in Network     |                              |
| GSA-Future  | MSB10C        | Lower          | Remain in Network     |                              |
| GSA-Future  | MSB11A        | Lower          | Remove from Network   | Well has gone dry            |
| GSA-Future  | MSB11B        | Lower          | Remove from Network   | Well has been abandoned      |
| GSA-Future  | MSB11C        | Lower          | Remain in Network     |                              |
| Non-GSA   | 2000507-001   | Lower          | Remain in Network     |                              |
| Non-GSA   | 2000553-001   | Lower          | Remain in Network     |                              |
| Non-GSA   | 2000682-002   | Lower          | Remain in Network     |                              |
| Non-GSA   | 2000727-001   | Lower          | Remain in Network     |                              |
| Non-GSA   | 2000846-002   | Lower          | Remove from Network   | Well is no longer monitored  |
| Non-GSA   | 2000938-001   | Lower          | Remain in Network     |                              |
| Non-GSA   | 2010002-014   | Lower          | Remain in Network     |                              |
| Non-GSA   | 2010002-032   | Lower          | Remain in Network     |                              |

| Table 1. Summary of Review of January 2020 Madera Subbasin Joint GSP Groundwater Quality Representative Monitoring Site (RMS) Network Evaluation |             |           |                   |                       |
|--|-------------|-----------|-------------------|-----------------------|
| GSA  | RMS ID      | AQUIFER   | NETWORK STATUS    | RATIONALE FOR REMOVAL |
| Non-GSA  | 2010008-005 | Composite | Remain in Network |                       |
| Non-GSA  | 2010009-002 | Composite | Remain in Network |                       |
| Non-GSA  | 2010010-007 | Lower     | Remain in Network |                       |
| Non-GSA  | 2010801-001 | Lower     | Remain in Network |                       |
| Non-GSA  | 2801077-001 | Composite | Remain in Network |                       |
| Non-GSA  | ESJ12       | Upper     | Remain in Network |                       |
| Non-GSA  | ESJ17       | Upper     | Remain in Network |                       |

## September 2024 Groundwater Quality RMS Network Update

A total of 4 wells have been selected for addition to the Madera Subbasin Joint GSP Groundwater Quality RMS network to replace RMS wells removed from network. **Table 2** provides a summary of the wells identified for inclusion and rationale for inclusion from the network.

| Table 2. Summary of Wells Proposed for Inclusion in the Madera Subbasin Joint GSP Groundwater Quality Representative Monitoring Site (RMS) Network |            |         |                     |                             |
|--|------------|---------|---------------------|-----------------------------|
| GSA  | RMS ID     | AQUIFER | NETWORK STATUS      | RATIONALE FOR REMOVAL       |
| GSA-Current  | MID RMS-5B | Lower   | Addition to Network | Replacement for MID RMS-5   |
| GSA-Future   | MSB13A     | Upper   | Addition to Network | Replacement for 2000846-002 |
| GSA-Future   | MSB13B     | Lower   | Addition to Network | Replacement for 2000846-002 |
| GSA-Future   | MSB13C     | Lower   | Addition to Network | Replacement for 2000846-002 |

The updated water quality RMS network will include a total of 42 wells: 8 upper aquifer wells, 30 lower aquifer wells, and 4 composite wells. The updated Madera Subbasin Joint GSP Groundwater Quality RMS network is shown in **Figure 2** and summarized in **Table 3**.

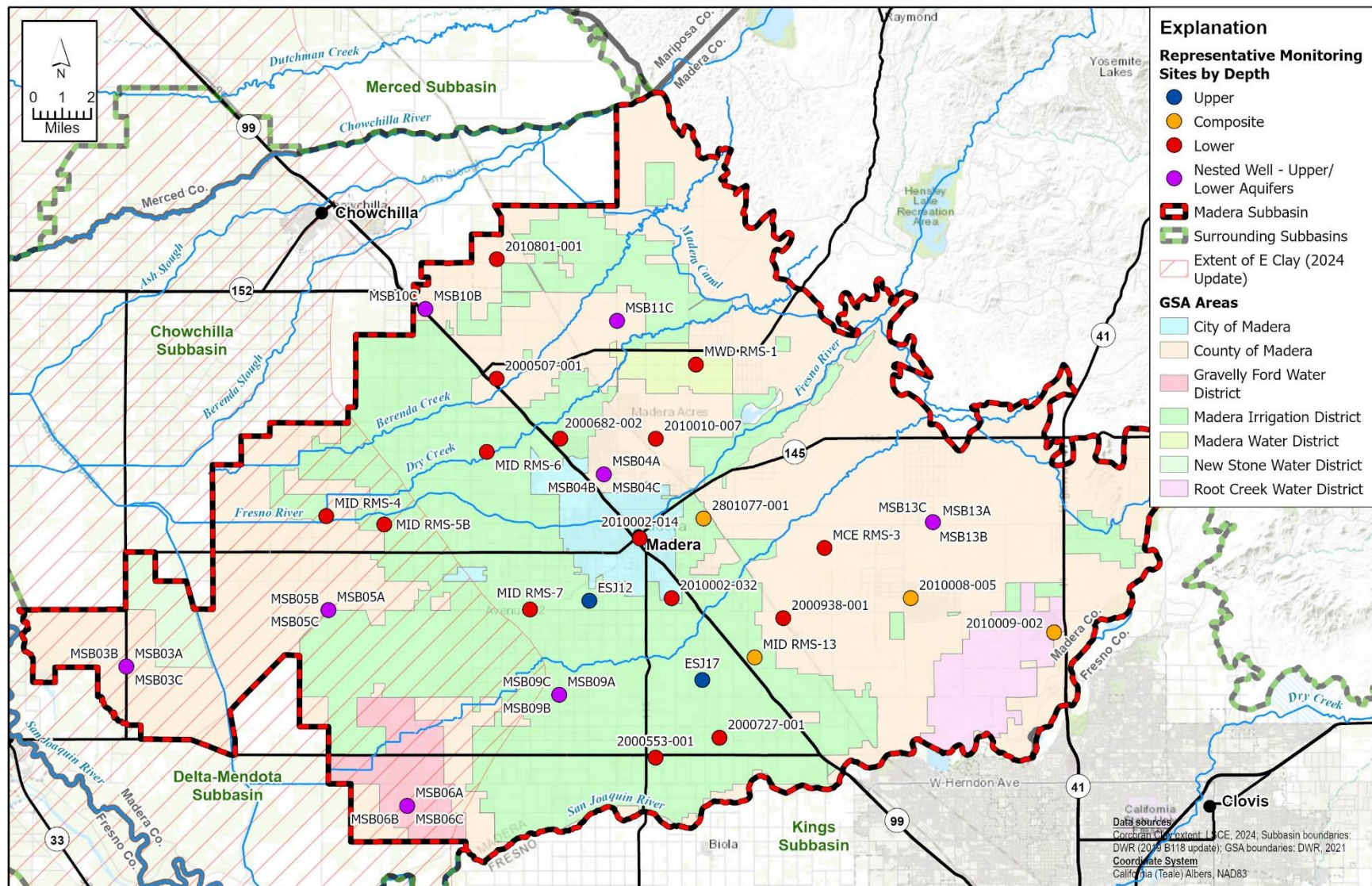


Figure 2. Updated Madera Subbasin Joint GSP Groundwater Quality RMS Network (September 2024)

**Table 3. Summary of Updated Madera Subbasin Joint GSP Groundwater Quality Representative Monitoring Site (RMS) Network**

| GSA         | RMS ID     | Aquifer                | Well Type  | Total Depth (feet bgs) | Top of Well Screen (feet bgs) | Bottom of Well Screen (feet bgs) | Latitude | Longitude |
|-------------|------------|------------------------|------------|------------------------|-------------------------------|----------------------------------|----------|-----------|
| GSA-Current | MCE RMS-3  | Lower <sup>2</sup>     | Unknown    |                        |                               |                                  | 36.9552  | -119.9441 |
| GSA-Current | MID RMS-4  | Lower <sup>1</sup>     | Irrigation | 698                    | 320                           | 667                              | 36.9709  | -120.2568 |
| GSA-Current | MID RMS-5B | Lower <sup>1</sup>     | Irrigation | 514                    | 245                           | 496                              | 36.9668  | -120.2204 |
| GSA-Current | MID RMS-6  | Lower <sup>2</sup>     | Industrial | 680                    | 320                           | 680                              | 37.0033  | -120.1561 |
| GSA-Current | MID RMS-7  | Lower <sup>2</sup>     | Irrigation | 656                    | 290                           | 635                              | 36.9243  | -120.1288 |
| GSA-Current | MID RMS-13 | Composite <sup>2</sup> | Irrigation | 600                    | 228                           | 552                              | 36.9003  | -119.9879 |
| GSA-Current | MWD RMS-1  | Lower <sup>2</sup>     | Irrigation | 500                    | 200                           | 500                              | 37.0472  | -120.0248 |
| GSA-Future  | MSB03A     | Upper <sup>1</sup>     | Monitoring | 139                    | 74                            | 134                              | 36.8951  | -120.3818 |
| GSA-Future  | MSB03B     | Upper <sup>1</sup>     | Monitoring | 295                    | 215                           | 285                              | 36.8951  | -120.3818 |
| GSA-Future  | MSB03C     | Lower <sup>1</sup>     | Monitoring | 430                    | 355                           | 420                              | 36.8951  | -120.3818 |
| GSA-Future  | MSB04A     | Lower <sup>2</sup>     | Monitoring | 375                    | 180                           | 365                              | 36.9922  | -120.0825 |
| GSA-Future  | MSB04B     | Lower <sup>2</sup>     | Monitoring | 695                    | 530                           | 685                              | 36.9922  | -120.0825 |
| GSA-Future  | MSB04C     | Lower <sup>2</sup>     | Monitoring | 905                    | 750                           | 895                              | 36.9922  | -120.0825 |
| GSA-Future  | MSB05A     | Upper <sup>1</sup>     | Monitoring | 210                    | 140                           | 200                              | 36.9238  | -120.2552 |
| GSA-Future  | MSB05B     | Lower <sup>1</sup>     | Monitoring | 375                    | 240                           | 365                              | 36.9238  | -120.2552 |
| GSA-Future  | MSB05C     | Lower <sup>1</sup>     | Monitoring | 585                    | 420                           | 585                              | 36.9238  | -120.2552 |

**Table 3. Summary of Updated Madera Subbasin Joint GSP Groundwater Quality Representative Monitoring Site (RMS) Network**

| GSA        | RMS ID      | Aquifer            | Well Type     | Total Depth (feet bgs) | Top of Well Screen (feet bgs) | Bottom of Well Screen (feet bgs) | Latitude | Longitude |
|------------|-------------|--------------------|---------------|------------------------|-------------------------------|----------------------------------|----------|-----------|
| GSA-Future | MSB06A      | Upper <sup>1</sup> | Monitoring    | 350                    | 135                           | 340                              | 36.8257  | -120.2057 |
| GSA-Future | MSB06B      | Lower <sup>1</sup> | Monitoring    | 520                    | 425                           | 510                              | 36.8257  | -120.2057 |
| GSA-Future | MSB06C      | Lower <sup>1</sup> | Monitoring    | 715                    | 630                           | 705                              | 36.8257  | -120.2057 |
| GSA-Future | MSB09A      | Upper <sup>2</sup> | Monitoring    | 320                    | 200                           | 310                              | 36.8814  | -120.1105 |
| GSA-Future | MSB09B      | Lower <sup>2</sup> | Monitoring    | 725                    | 520                           | 715                              | 36.8814  | -120.1105 |
| GSA-Future | MSB09C      | Lower <sup>2</sup> | Monitoring    | 955                    | 880                           | 945                              | 36.8814  | -120.1105 |
| GSA-Future | MSB10B      | Lower <sup>2</sup> | Monitoring    | 510                    | 400                           | 500                              | 37.0750  | -120.1948 |
| GSA-Future | MSB10C      | Lower <sup>2</sup> | Monitoring    | 880                    | 790                           | 870                              | 37.0750  | -120.1948 |
| GSA-Future | MSB11C      | Lower <sup>2</sup> | Monitoring    | 880                    | 775                           | 870                              | 37.0692  | -120.0745 |
| GSA-Future | MSB13A      | Upper <sup>2</sup> | Monitoring    | 290                    | 200                           | 280                              | 36.9682  | -119.8760 |
| GSA-Future | MSB13B      | Lower <sup>2</sup> | Monitoring    | 446                    | 396                           | 436                              | 36.9682  | -119.8760 |
| GSA-Future | MSB13C      | Lower <sup>2</sup> | Monitoring    | 532                    | 522                           | 532                              | 36.9682  | -119.8760 |
| Non-GSA    | 2000507-001 | Lower <sup>2</sup> | Public Supply |                        | 372                           |                                  | 37.0400  | -120.1500 |
| Non-GSA    | 2000553-001 | Lower <sup>2</sup> | Public Supply |                        | 450                           | 500                              | 36.8500  | -120.0500 |
| Non-GSA    | 2000682-002 | Lower <sup>2</sup> | Public Supply |                        | 295                           | 420                              | 37.0100  | -120.1100 |
| Non-GSA    | 2000727-001 | Lower <sup>2</sup> | Public Supply |                        | 280                           | 360                              | 36.8600  | -120.0100 |
| Non-GSA    | 2000938-001 | Lower <sup>2</sup> | Public Supply |                        | 420                           | 560                              | 36.9200  | -119.9700 |

| Table 3. Summary of Updated Madera Subbasin Joint GSP Groundwater Quality Representative Monitoring Site (RMS) Network |             |                        |               |                        |                               |                                  |          |           |
|--|-------------|------------------------|---------------|------------------------|-------------------------------|----------------------------------|----------|-----------|
| GSA  | RMS ID      | Aquifer                | Well Type     | Total Depth (feet bgs) | Top of Well Screen (feet bgs) | Bottom of Well Screen (feet bgs) | Latitude | Longitude |
| Non-GSA  | 2010002-014 | Lower <sup>2</sup>     | Public Supply |                        | 280                           | 610                              | 36.9600  | -120.0600 |
| Non-GSA  | 2010002-032 | Lower <sup>2</sup>     | Public Supply |                        | 310                           | 600                              | 36.9300  | -120.0400 |
| Non-GSA  | 2010008-005 | Composite <sup>2</sup> | Public Supply |                        | 250                           | 465                              | 36.9300  | -119.8900 |
| Non-GSA  | 2010009-002 | Composite <sup>2</sup> | Public Supply |                        | 324                           | 369                              | 36.9127  | -119.8001 |
| Non-GSA  | 2010010-007 | Lower <sup>2</sup>     | Public Supply |                        | 242                           | 374                              | 37.0100  | -120.0500 |
| Non-GSA  | 2010801-001 | Lower <sup>2</sup>     | Public Supply |                        | 375                           | 760                              | 37.1000  | -120.1500 |
| Non-GSA  | 2801077-001 | Composite <sup>2</sup> | Public Supply |                        | 60                            | 500                              | 36.9700  | -120.0200 |
| Non-GSA  | ESJ12       | Upper <sup>2</sup>     | Domestic      | 276                    | 160                           | 172                              | 36.9287  | -120.0916 |
| Non-GSA  | ESJ17       | Upper <sup>2</sup>     | Domestic      |                        |                               |                                  | 36.8890  | -120.0208 |

<sup>1</sup> Well is located within the Corcoran Clay Extent

<sup>2</sup> Well is located outside of the Corcoran Clay Extent