



Groundwater Report

Spring 2022

San Joaquin County

Flood Control and Water Conservation District



San Joaquin County

Flood Control and Water Conservation District

Board of Supervisors

Miguel Villapudua, District 1

Katherine Miller, District 2

Tom Patti, District 3

Chuck Winn, District 4, Chair

Robert Rickman, District 5, Vice-Chair

Director of Public Works

Fritz Buchman

Report Prepared by:

DISTRICT STAFF

Matt Zidar, Water Resources Manager

Justin Padilla, Engineering Assistant II

This report was published in October 2022.

Copies of the 2022 Annual Groundwater Report may be available upon request from:

San Joaquin County Department of Public Works
P.O. Box 1810 Stockton, California 95201

Acknowledgements

This Groundwater Report is a product of the commitment that the San Joaquin County Flood Control and Water Conservation District together with many other interested agencies made to sustain and enhance the groundwater resources of the Eastern San Joaquin Groundwater Basin. The District extends thanks to...

California Water Service

City of Lathrop

City of Lodi

City of Manteca

City of Stockton Municipal Utilities Department

East Bay Municipal Utility District

Morada Area Association Pacific Gas and Electric Company

San Joaquin County Department of Public Works

State of California, Department of Water Resources,

Central District Stockton East Water District

United States Bureau of Reclamation

United States Geological Survey

Most of all, we would like to thank all the individual well owners, who give us access to their wells and in some cases, their time.

Table of Contents

1	Introduction	1-1
1.1	Purpose	1-1
1.2	Procedure	1-2
2	Rainfall Distribution	2-1
3	Surface Water Levels and Storage	3-1
4	Groundwater Elevation Monitoring	4-1
4.1	Groundwater Levels in San Joaquin County	4-1
4.2	Hydrographs	4-2
4.3	Groundwater Level Profiles	4-2
4.4	Groundwater Level Changes	4-2

Tables

Table 3-1	Flow Gages	3-1
Table 3-2	Reservoir Storage	3-2
Table 4-1	Comparison of CSJWCD Groundwater Elevations	4-3
Table 4-2	Comparison of NSJWCD Groundwater Elevations	4-4
Table 4-3	Comparison of OID Groundwater Elevations	4-5
Table 4-4	Comparison of SEWD Groundwater Elevations	4-6
Table 4-5	Comparison of SSJID Groundwater Elevations	4-8
Table 4-6	Comparison of Southwest County Area in Tracy Subbasin Groundwater Elevations	4-9
Table 4-7	Comparison of WID Groundwater Elevations	4-10

Figures

Figure 2-1	Precipitation Station Locations	2-2
Figure 2-2	Total Annual Rainfall (Tracy Carbona Station)	2-3
Figure 2-3	Monthly Rainfall Distribution (Tracy Carbona Station)	2-3
Figure 2-4	Total Annual Rainfall (Stockton Fire Station)	2-4
Figure 2-5	Monthly Rainfall Distribution (Stockton Fire Station)	2-4
Figure 2-6	Total Annual Rainfall (Camp Pardee Station)	2-5
Figure 2-7	Monthly Rainfall Distribution (Camp Pardee Station)	2-5
Figure 3-1	Surface Water Station Locations	3-3
Figure 3-2	Camanche Reservoir	3-4
Figure 3-3	New Hogan Dam & Mormon Slough at Bellota	3-4
Figure 3-4	New Melones Dam & Orange Blossom Bridge	3-5
Figure 3-5	Mokelumne River Flow (Woodbridge Station) Monthly Average	3-5
Figure 3-6	San Joaquin River Flow (Vernalis Station) Monthly Average	3-6
Figure 4-1	Selected Hydrograph Well Locations	4-13
Figure 4-2	Hydrograph Well A - East of Thornton Rd & South of Benson Ferry Rd.	4-14
Figure 4-3	Hydrograph Well B - East of Lower Sac Rd. & South of Acampo Rd.	4-15
Figure 4-4	Hydrograph Well C - North of Liberty Rd. & West of North Cherokee Ln.	4-16
Figure 4-5	Hydrograph Well D - West of Elliotto Rd. & North of Jahant Rd.	4-17
Figure 4-6	Hydrograph Well E - East of Davis R. & South of Armstrong Rd.	4-18

Figure 4-7 Hydrograph Well F - West of Route 88 & North of Eight Mile Rd.	4-19
Figure 4-8 Hydrograph Well G - West of Route 26 & South of Shelton Rd.	4-20
Figure 4-9 Hydrograph Well H - East of Ijams Rd. & North of McAllen Rd.	4-21
Figure 4-10 Hydrograph Well I - West of Gogna Rd. & North of Route 26	4-22
Figure 4-11 Hydrograph Well J - East of Duncan Rd. & South of Milton Rd.	4-23
Figure 4-12 Hydrograph Well K - East of Ash Rd. & North of Carpenter Rd.	4-24
Figure 4-13 Hydrograph Well L - West of Jack Tone Rd. & North of Mariposa Rd.	4-25
Figure 4-14 Hydrograph Well M - West of Hewitt Rd. & South of Hwy. 4	4-26
Figure 4-15 Hydrograph Well N - West of Wright Rd. & North of Kasson Rd.	4-27
Figure 4-16 Hydrograph Well O - West of Austin Rd. & North of French Camp Rd.	4-28
Figure 4-17 Hydrograph Well P - West of Campbell Ave. & North of Hwy 120.	4-29
Figure 4-18 Hydrograph Well Q - East of McArthur Rd. & North of Darlene Rd.	4-30
Figure 4-19 Hydrograph Well R - West of Tully Rd. & North of Brandt Rd.	4-31
Figure 4-20 Hydrograph Well S - East of Hays Rd. & North of Mullin Rd.	4-32
Figure 4-21 Hydrograph Well T - West of Murphy Rd. & South of Avena Rd.	4-33
Figure 4-22 Hydrograph Well U - East of Airport Rd. & South of Perrin Rd.	4-34
Figure 4-23 Hydrograph Well V - East of Murphy Rd. & South of Cedar Ln.	4-35
Figure 4-24 Hydrograph Well W - West of Henry Rd. & South of Sonora Rd.	4-36
Figure 4-25 Hydrograph Well X - East of Wolfe Rd. & South of Howard Rd.	4-37
Figure 4-26 Hydrograph Well Y - East of Bruella Rd. & North of Schmiedt Rd.	4-38
Figure 4-27 Hydrograph Well Z - East of Johnson Rd. & South of Route 1	4-39
Figure 4-28 Water Surface Cross Sections	4-40
Figure 4-29 Highway 99 Cross Section Spring 2022	4-41
Figure 4-30 Highway 4 & Highway 26 Cross Section Spring 2022	4-42
Figure 4-31 Jack Tone Rd Cross Section Spring 2022	4-43
Figure 4-32 Change in Groundwater Elevation – Spring 2021 to Spring 2022	4-44
Figure 4-33 Depth to Groundwater – Spring 2022	4-45
Figure 4-34 Groundwater Surface Elevation – Spring 2022	4-46

1 Introduction

Since the fall of 1971, the San Joaquin County Flood Control and Water Conservation District (District) has monitored groundwater levels and groundwater quality and has published the data in Semi-annual Groundwater Reports. This report utilizes data from federal, state, and local government agencies as well as non-governmental sources.

This report represents data from the Eastern San Joaquin Subbasin (5-022.01) and Tracy Subbasin (5-022.15). The Eastern San Joaquin Subbasin including portions of Calaveras County, Stanislaus County, and San Joaquin County east of the San Joaquin River. The Tracy Subbasin is located primarily in San Joaquin County west of the San Joaquin River. Water level data is collected on a semi-annual basis, during the months of April and October, to observe groundwater levels before and after peak groundwater pumping conditions. Over 250 wells, most of which are measured by County staff, are included in the Monitoring Program. The exact number of wells varies from year to year, depending on circumstances such as destructions, new well construction, well accessibility, and well condition.

1.1 Purpose

The purpose of the annual Groundwater Reports is to provide information on groundwater conditions in San Joaquin County (County) and to publish the results of the groundwater monitoring program which consists of the following:

1. Measure groundwater levels on a County-wide basis.
2. Monitor groundwater quality along a North-South line from the north of the City of Stockton to the City of Lathrop.

In general, water quality data is more meaningful after peak production which usually occurs during the summer months. Therefore, groundwater quality data is only published for the fall months. The groundwater depth and elevation data are published for both the spring and fall.

Saline intrusion from the west is a continuing concern affecting the quality of groundwater in the San Joaquin Groundwater Subbasins. Groundwater quality analysis is completed on an annual basis, from approximately twelve (12) municipal and domestic supply wells (exact number varies from year to year) located in proximity to the saline front. These analyses will be available in the Fall 2022 Groundwater Report.

1.2 Procedure

Water level measurements are performed using either a steel chain or sounder. Data is then immediately recorded in field books and then stored in a database for accessibility and reporting requirements.

Groundwater quality sampling is conducted on an annual basis during the month of October, along with the Fall measurements. This data will be available in the Fall 2022 Groundwater Report.

2 Rainfall Distribution

The two groundwater basins in the County (Tracy and Eastern San Joaquin) respond in part to changes in annual precipitation. There are four stations throughout the county which track rainfall throughout the year; however, rainfall records for one of these stations (Lodi Station) has not been updated since 2017.

Figure 2-1 shows the locations of the stations currently providing data. The precipitation from west to east, is presented on Figures 2-2 through 2-7. These graphs reflect areas located across the County and one area in neighboring Calaveras County. These stations have been collecting rainfall data since the 1950's. In water year 2022, rainfall was less than one-half of average.

A Water Year (WY) is the period between October 1st and ends on September 30th, the year in which the period ends denote the water year, e.g. September 30th 2022, is the end of the 2022 Water Year. The WY type is based on unimpaired river water runoff observed during the WY for the San Joaquin area is defined by the Four Rivers Index. The Four Rivers Index is the sum of unimpaired flow in million acre-feet at:

- Stanislaus River below Goodwin Reservoir (aka inflow to New Melones Res.)
- Tuolumne River below La Grange (aka inflow to New Don Pedro Reservoir)
- Merced River below Merced Falls (aka inflow to Lake McClure)
- San Joaquin River inflow to Millerton Lake

The water year types are described as follows.

Wet Year	Equal to or greater than 3.8 maf
Above Normal	Greater than 3.1, and less than 3.8 maf
Below Normal	Greater than 2.5, and equal to or less than 3.1 maf
Dry	Greater than 2.1, and equal to or less than 2.5 maf
Critical	Equal to or less than 2.1 maf

The 2022 Water Year was classified as a Critical Year with 1.4 maf. However, at the time of this report, the 2022 data is provisional and may be subject to change.



2-2

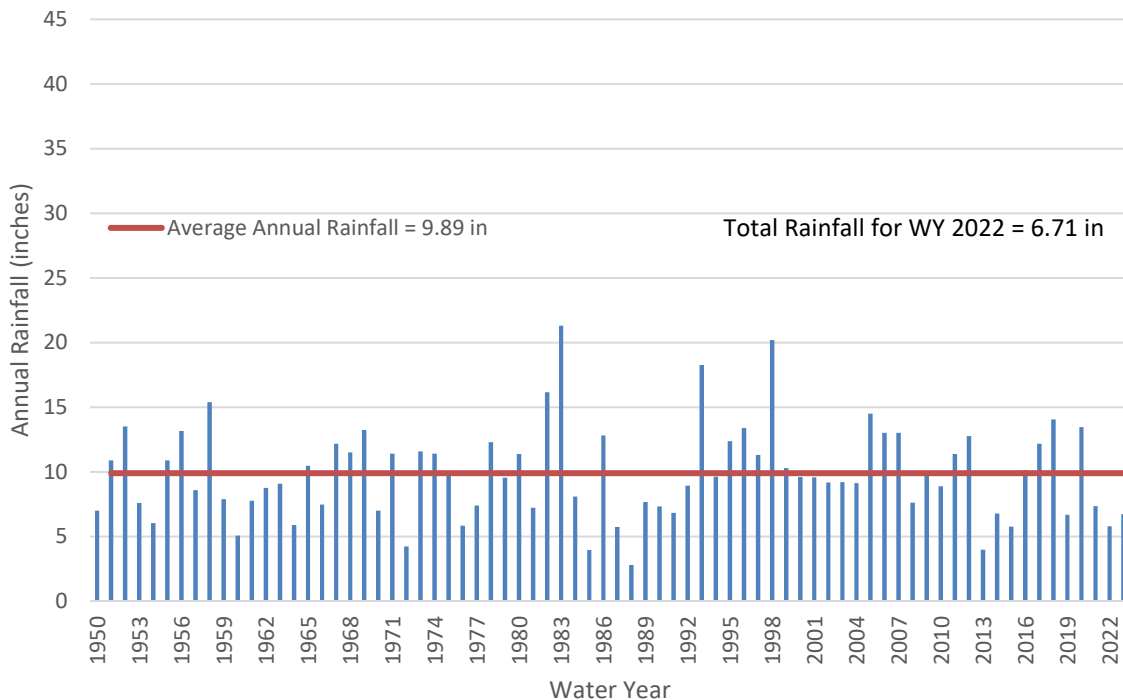


Figure 2-2 Total Annual Rainfall (Tracy Carbona Station)



Figure 2-3 Monthly Rainfall Distribution (Tracy Carbona Station)

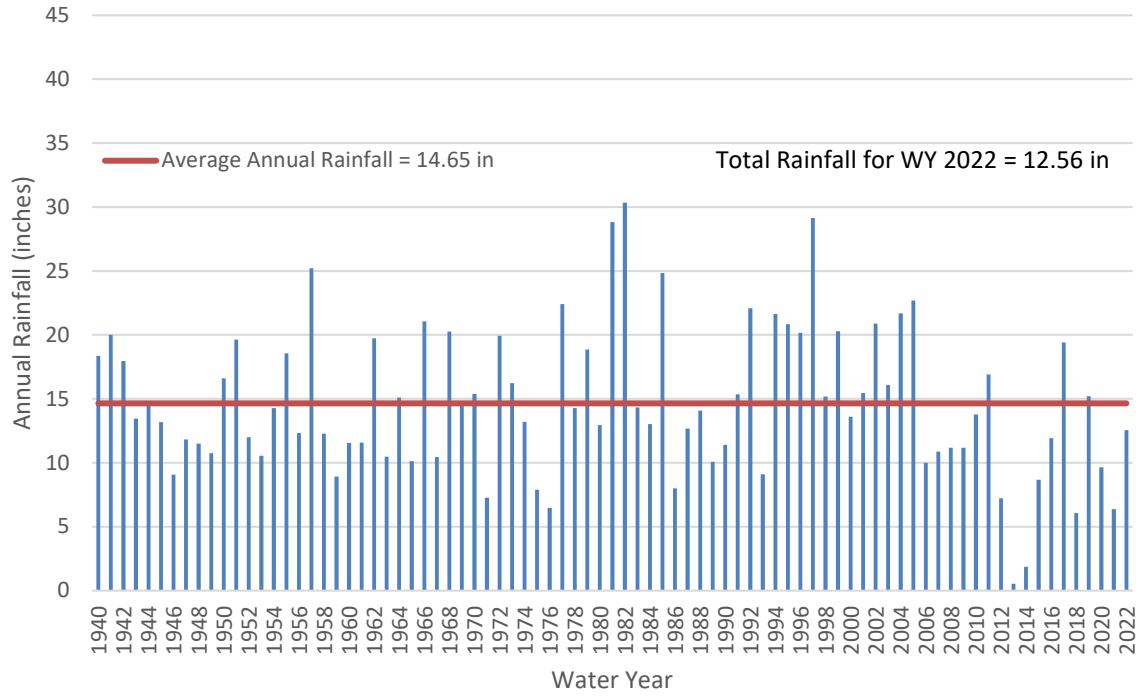


Figure 2-4 Total Annual Rainfall (Stockton Fire Station)

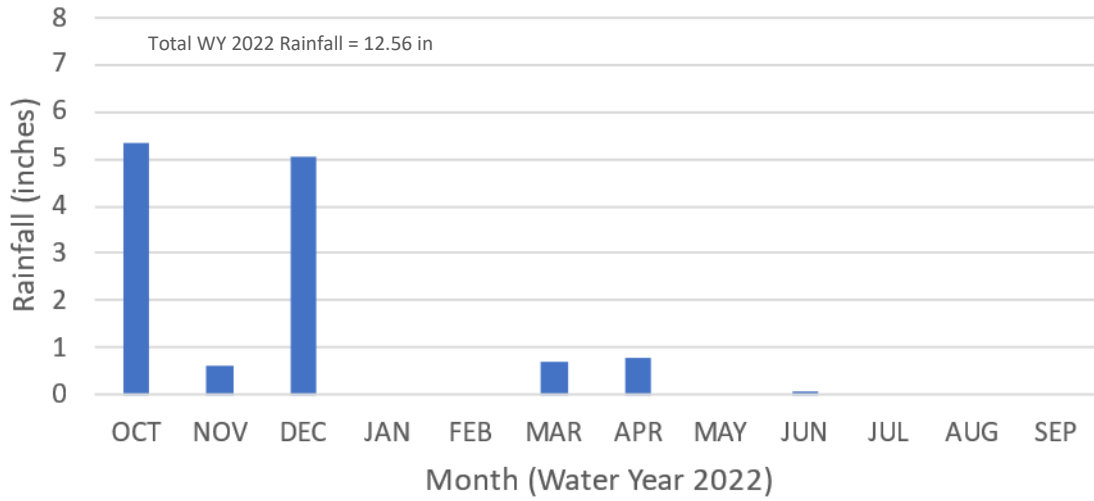


Figure 2-5 Monthly Rainfall Distribution (Stockton Fire Station)

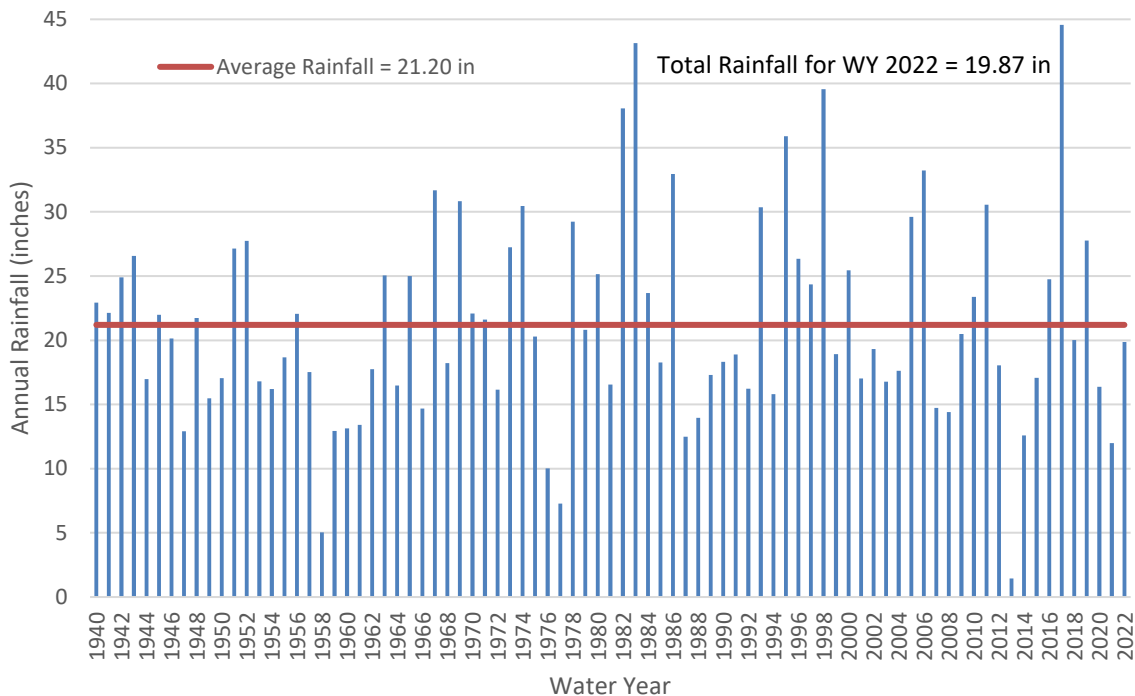


Figure 2-6 Total Annual Rainfall (Camp Pardee Station)

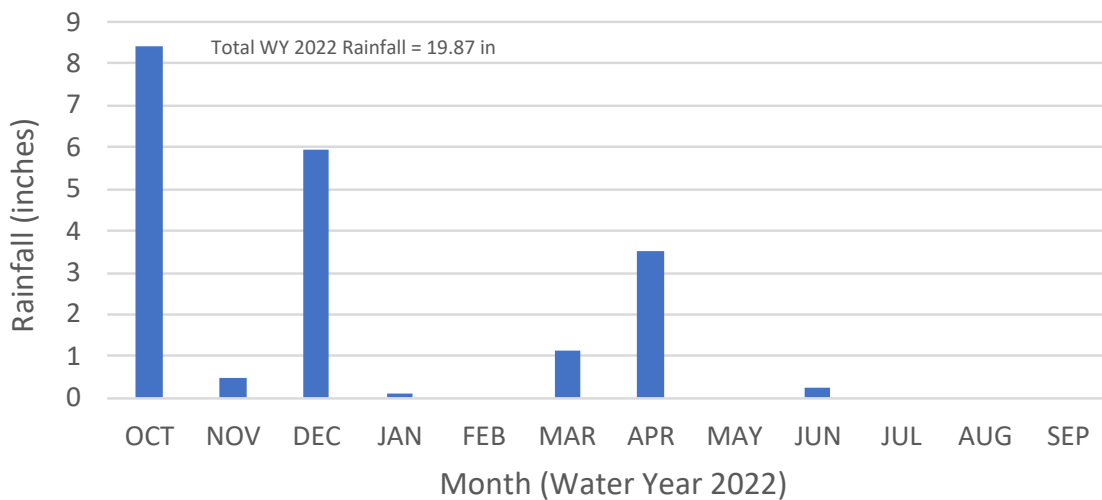


Figure 2-7 Monthly Rainfall Distribution (Camp Pardee Station)

3 Surface Water Levels and Storage

The groundwater levels in the County respond to not only changes in annual precipitation, but also to the amount of surface water in storage and flow in the rivers. Typically, lower amounts of surface water in storage indicates higher amounts of groundwater pumping. Four river gaging stations were selected along the rivers and three reservoir storage stations to represent these conditions.

Figure 3-1 shows the location of these gages and Figures 3-2 through 3-6 provide the historic stages. Rain events are shown in river flow spikes before the release of reservoir waters for irrigation diversions in the summer months.

Figures 3-5 and 3-6 show monthly average flow data from water year 2021, the data for water year 2022 is not yet available and will be updated for the Fall 2022 Groundwater Report.

Tables 3-1 & 3-2 detail the Station info for each of the flow gages and reservoir storage totals used for Figures 3-1 through 3-6.

Table 3-1 Flow Gages

Station Name	River Basin	Station Code	Station Type	WY 2022 Average Flow	Unit of Measurement	Historic Average Flow ¹	WY 2022 % of Historic Average
San Joaquin River near Vernalis	San Joaquin	11303500	USGS River flow, Discharge 00060	12455	cubic feet per second	52510	23.72%
Mokelumne River at Woodbridge	Mokelumne River	11325500	USGS River flow, Discharge 00060	1530	cubic feet per second	6912	22.14%
New Melones Dam Releases	Stanislaus River	NML	USACE Outflow, Discharge	1093	cubic feet per second	1592	68.66%
Stanislaus River at Orange Blossom Bridge	Stanislaus River	NML	USACE River flow, Discharge	471	cubic feet per second	1029	45.77%
New Hogan Dam Releases	Calaveras River	NHG	USACE Outflow, Discharge	133	cubic feet per second	208	63.94%
Calaveras River, Bellota at Mormon Slough	Calaveras River	NHG	USACE River flow, Discharge	44	cubic feet per second	126	34.92%
Camanche Reservoir Releases	Mokelumne River	CMN	USACE Outflow, Discharge	267	cubic feet per second	574	46.52%

Notes: ¹ Historic Monthly Average Flow data for USACE gages is not available, averages are derived from previous 4 years of data.

Table 3-2 Reservoir Storage

Station Name	River Basin	Station Code	Station Type	Total Capacity	Unit of Measurement	Total Storage Start of WY 2022	Total Storage End of WY 2022	Peak Storage WY 2022
New Melones Dam & Reservoir	Stanislaus River	NML	USACE Storage	2.5 Million	Acre-feet	0.84 Million AF	0.62 Million AF	0.99 Million AF
New Hogan Dam & Reservoir	Calaveras River	NHG	USACE Storage	317 Thousand	Acre-feet	89 Thousand AF	56 Thousand AF	133 Thousand AF
Camanche Reservoir	Mokelumne River	CMN	USACE Storage	417 Thousand	Acre-feet	178 Thousand AF	202 Thousand AF	243 Thousand AF

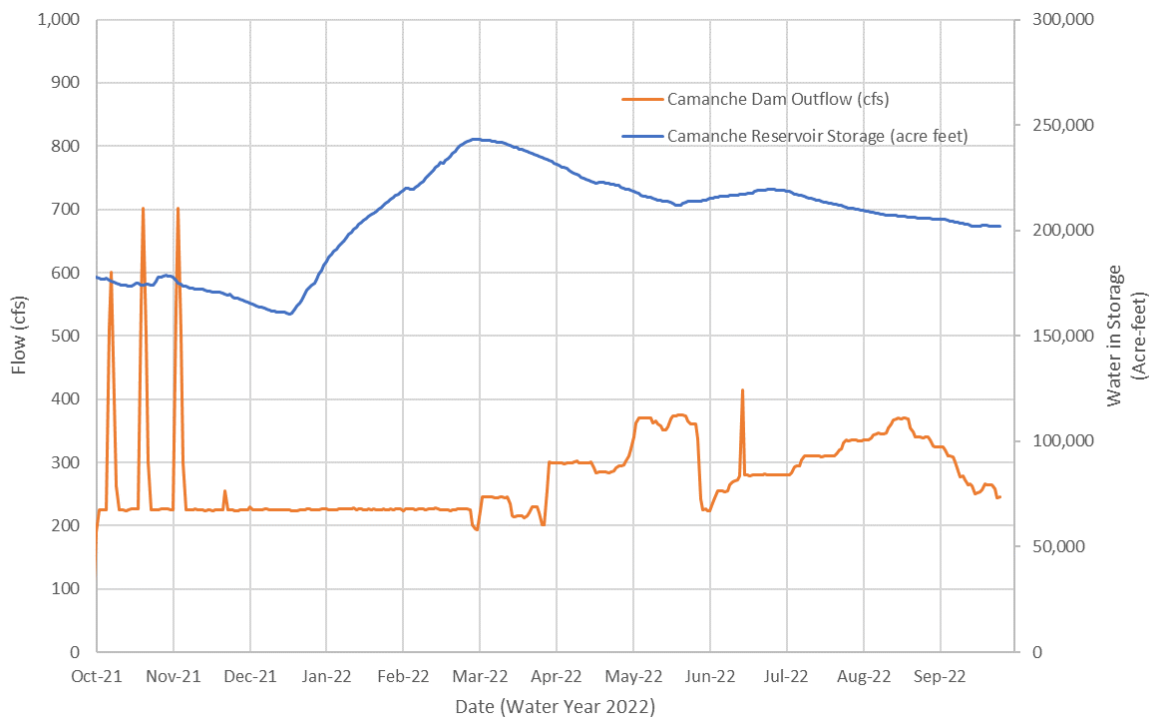


Figure 3-2 Camanche Reservoir

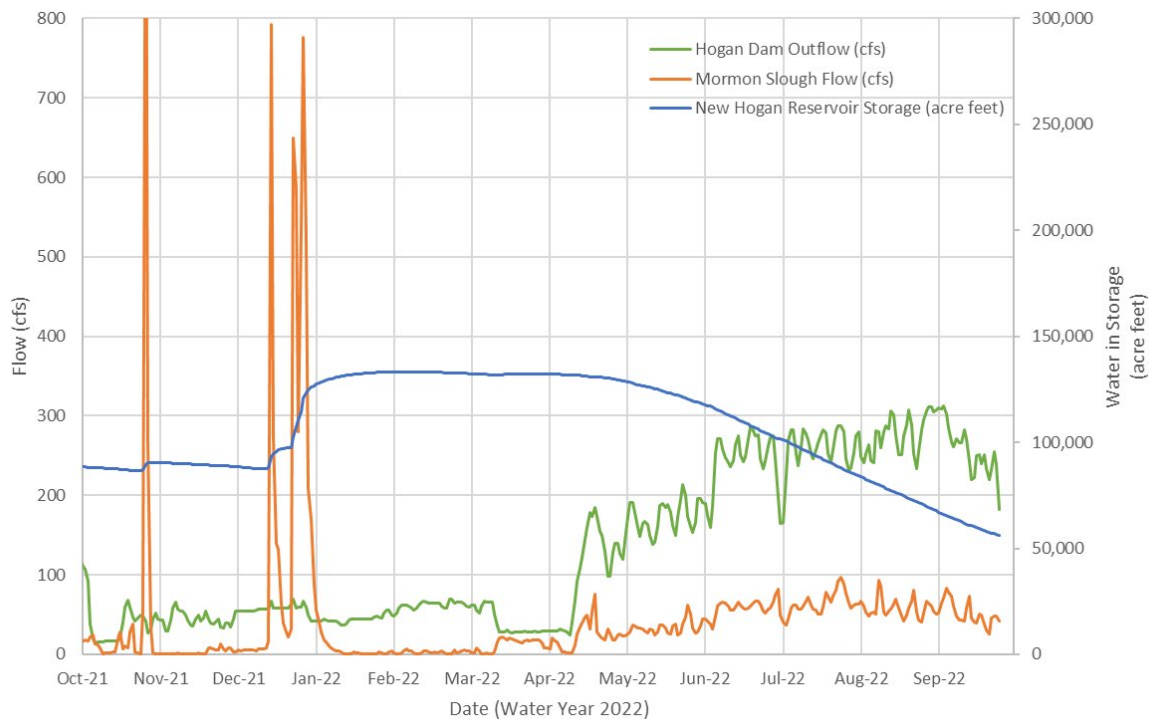


Figure 3-3 New Hogan Dam & Mormon Slough at Bellota

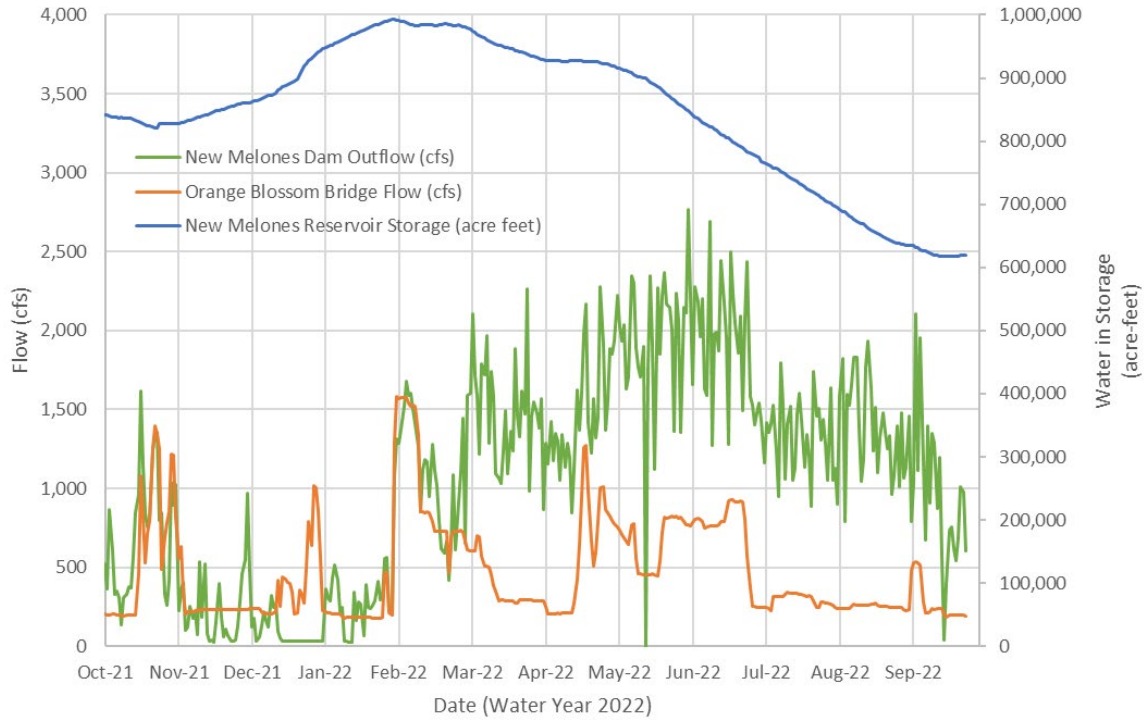


Figure 3-4 New Melones Dam & Orange Blossom Bridge

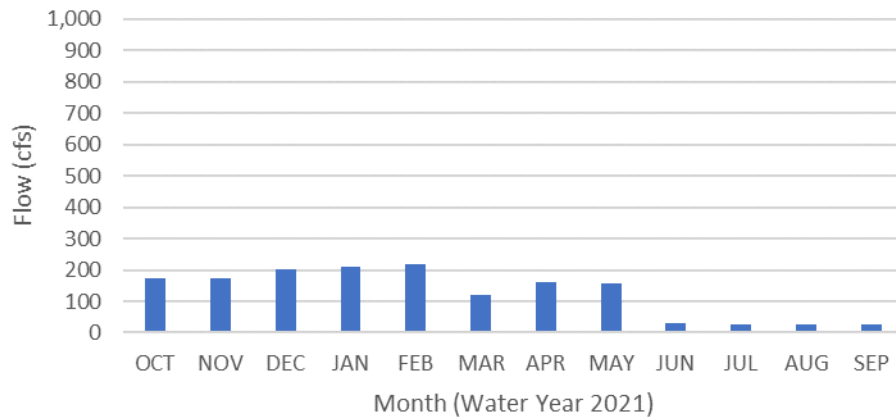


Figure 3-5 Mokelumne River Flow (Woodbridge Station) Monthly Average

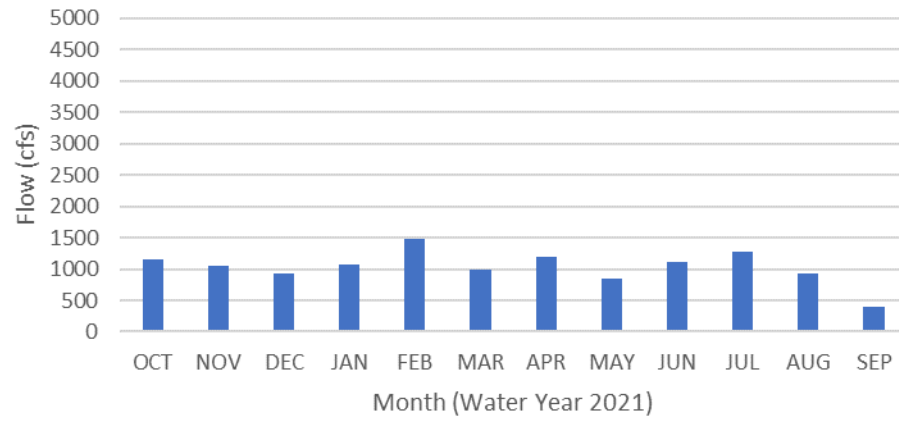


Figure 3-6 San Joaquin River Flow (Vernalis Station) Monthly Average

4 Groundwater Elevation Monitoring

Groundwater level data was provided by the County and supplemented with data available through the Department of Water Resources California Statewide Groundwater Elevation Monitoring (CASGEM) program. Groundwater levels were gathered by the County for the Eastern San Joaquin Subbasin (5-022.01) while the data for the Tracy Subbasin, and portions of Calaveras & Stanislaus County were sourced from the CASGEM website.

4.1 Groundwater Levels in San Joaquin County

Wells included in previous reports that had no available construction details, or discontinued measurements have been removed from Tables 4-1 to 4-9. Wells with comparable data are those wells with groundwater level measurements in both Spring 2021 and Spring 2022.

Measurements included in the tables are from two sources. County collected data is prioritized over CASGEM data for consistency as CASGEM data may not be measured within the same timeframe. If County data is not available or the well could not be monitored, CASGEM data was used. CASGEM data is highlighted blue in the tables. If a well was not measured by as part of the county data, it is reported as no measurement (NM). If CASGEM data was not available, it is reported as “—.”

Due to well access issues; several monitoring wells were not able to be sampled in the spring of 2022, which affects the total amount of comparable wells for this report.

The information gathered is summarized as follows:

Central San Joaquin Water Conservation District (CSJWCD) – Thirty-three (33) wells were monitored, with twenty-two (22) wells were comparable (Table 4-1). In the Spring, twenty (20) wells show decreases in groundwater levels while two (2) wells show an increase. There were no (0) wells with no change in groundwater elevations from Spring 2021 to Spring 2022.

North San Joaquin Water Conservation District (NSJWCD) – Thirty-three (33) wells were monitored, twenty-six (26) wells were compared in NSJWCD (Table 4-2). In the Spring, twenty-four (24) wells decreased in groundwater levels and two (2) wells increased.

Oakdale Irrigation District (OID) – Out of the two (2) wells in OID, neither were measured for Spring 2022, so no change in elevation data is available. (Table 4-3).

Stockton East Water District (SEWD) – Seventy-eight (78) wells were monitored, with forty-one (41) wells comparable (Table 4-4). In the Spring, twenty-nine (29) wells decreased in groundwater levels, while ten (10) increased, two (2) wells with no change.

South San Joaquin Irrigation District (SSJID) – Twenty-six (26) wells were monitored, fifteen (15) wells could be compared (Table 4-5). In Spring, thirteen (13) wells had decreased water levels, and two (2) had increased and no wells had no change.

Southwest County Area in the Tracy Subbasin – Out of twenty-five (25) wells monitored, twenty-two (22) were comparable in the southwestern portion of the County (Table 4-6). During Spring, all twenty-two (22) wells declined in groundwater elevation.

Woodbridge Irrigation District (WID) – Eighteen (18) total wells were monitored, with fourteen (14) comparable (Table 4-7). During the Spring, eleven (11) wells decreased in groundwater levels, while the other three (3) wells increased.

Calaveras County well data was not uploaded to the CASGEM data system and therefore were not able to be compared at the time of this report, a summary table of comparisons for the data will be available in the Fall 2022 report, in addition to the Fall 2022 data comparisons.

Stanislaus County – Eight (8) wells were monitored, and all eight (8) wells could be compared in the Spring (Table 4-9). In the spring, seven (7) wells showed a decrease in groundwater levels and one (1) increased.

4.2 Hydrographs

Twenty-six (26) wells were selected to represent groundwater conditions throughout the basin (A through Z), these wells have historically consistent water level measurements. A map of these wells is shown on Figure 4-1. Hydrographs of these selected wells within the County are provided on Figures 4-2 through 4-27 to illustrate the changes in groundwater levels with time. Trend lines are plotted on each figure using data from 1980 to present (or shorter period if measurements are not available) to illustrate current groundwater levels, whether they are increasing or decreasing.

Wells N and Q are provided but monitoring at these wells has been prevented due to ongoing well access issues. Work is being done to resolve these measurements and will be available in the Fall 2022 report.

4.3 Groundwater Level Profiles

Groundwater level profiles were developed to illustrate the relationship of where groundwater levels were increasing or decreasing in relationship to Spring 1986, the historic high groundwater levels, and Fall 1992, historic low groundwater levels. Figure 4-28 shows the location of the profiles and Figures 4-29 through 4-31 provide the profiles.

4.4 Groundwater Level Changes

Changes in groundwater levels from Spring 2021 through to Spring 2022 throughout the County are summarized on Figure 4-32. Figures 4-33 and 4-34 show depths to groundwater along with groundwater elevation maps that were used to develop Figure 4-32.

Table 4-1 Comparison of CSJWCD Groundwater Elevations

State Well ID	Spring 2021	Spring 2022	Change Spring (Feet)
01N07E11L001	-53	NM	--
01N07E14J002	-56.6	-62.6	-6
01N07E24R001	-55.5	-52.5	3
01N07E26H003	--	--	--
01N07E32A001	-16.69	-18.09	-1.4
01N08E11L001	-53.7	-57.7	-4
01N08E13J001	-39.8	--	--
01N08E16G001	-53.1	-56.5	-3.4
01N08E16H002	-50.8	-55.3	-4.5
01N08E27R002	NM	--	--
01N08E29M002	-46	NM	--
01N08E35F001	-54.9	-67.9	-13
01N08E36F001	-31	-42	-11
01N09E13D001	NM	--	--
01N09E17D001	-43.5	NM	--
01N09E17M001	-37.1	-40.4	-3.3
01N09E19C001	-53	--	--
01N09E22G002	-14.3	--	--
01N09E29R001	-32.5	-37.5	-5
01N09E30C005	-32.7	-43.7	-11
01S07E01J001	-48.6	-41.6	7
01S08E04R001	-35.8	-60	-24.2
01S08E05A001	-62.4	-63.4	-1
01S08E05R001	-59.8	-63.8	-4
01S08E06D001	NM	--	--
01S08E09Q001	-29.9	-48.9	-19
01S08E11F001	-26.7	-39.9	-13.2
01S08E14B001	-27.7	-29.7	-2
01S09E05H002	-11.6	-21	-9.4
01S09E07A001	-15.4	-24.3	-8.9
01S09E07N001	-10.9	-13.3	-2.4
01S09E09R001	-3.7	NM	--
01S09E19Q002	4.7	-7	-11.7

County Certified NM = Measurement not able to be taken

CASGEM Data -- = No Data Available

County Data takes precedence over CASGEM due to the date proximity of all county recorded data.

CASGEM Data was used if no county measured data was recorded, and generally within the same season e.g. Spring or Fall
Elevations in Feet above mean sea level (ft msl)

Number of Wells Spring 2021-2022					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
33	22	20	2	0	-24.2 to 7	-6.75

Table 4-2 Comparison of NSJWCD Groundwater Elevations

State Well ID	Spring 2021	Spring 2022	Change Spring (Feet)
03N06E04C001	--	--	--
03N07E02G003	--	--	--
03N07E03R001	-29.8	-33.8	-4
03N07E08E002	-25.5	-29	-3.5
03N07E09C001	-26.7	-31.7	-5
03N07E15C004	-39.5	-44.5	-5
03N07E17D004	-27.9	-32.4	-4.5
03N07E18D012	-27	-31.6	-4.6
03N07E19J004	NM	--	--
03N07E23C002	-58	-60	-2
03N08E07D002	--	--	--
03N08E22A001	NM	--	--
04N06E12C004	-34	-38.7	-4.7
04N06E12N002	-28.3	NM	--
04N06E15B002	-2.7	-14.1	-11.4
04N06E23K00	-7	-8	-1
04N06E24F001	-24	-31	-7
04N06E25R001	-4	-6.4	-2.4
04N06E27D002	5.2	2.2	-3
04N07E12E001	-46.5	-61	-14.5
04N07E17N001	-40.3	--	--
04N07E19K001	-25.6	-28.6	-3
04N07E20H003	-32.04	-33.44	-1.4
04N07E21F001	-39.8	-36.4	3.4
04N07E27C002	-28.5	-37	-8.5
04N07E28J002	-25.7	-28.7	-3
04N07E33H001	24	22.6	-1.4
04N07E36L001	-30.9	-38.7	-7.8
04N08E14K001	-15.1	-22.1	-7
04N08E17J001	-38.5	-42.5	-4
04N08E21M001	-40.1	-52.1	-12
04N08E32N001	-46.1	-50.6	-4.5
05N07E34G001	-55.1	-49.1	6

County Certified NM = Measurement not able to be taken

CASGEM Data -- = No Data Available

County Data takes precedence over CASGEM due to the date proximity of all county recorded data.

CASGEM Data was used if no county measured data was recorded, and generally within the same season e.g. Spring or Fall
Elevations in Feet above mean sea level (ft msl)

Number of Wells Spring 2021-2022					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
33	26	24	2	0	-14.5 to 6	-4.45

Table 4-3 Comparison of OID Groundwater Elevations

State Well ID	Spring 2021	Spring 2022	Change Spring (feet)
01S09E21J002	24.1	NM	--
01S09E24R001	51.1	NM	--

County Certified NM = Measurement not able to be taken

CASGEM Data -- = No Data Available

County Data takes precedence over CASGEM due to the date proximity of all county recorded data.

CASGEM Data was used if no county measured data was recorded, and generally within the same season e.g. Spring or Fall

Elevations in Feet above mean sea level (ft msl)

Number of Wells Spring 2021-2022					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
2	0	0	0	0	--	--

Table 4-4 Comparison of SEWD Groundwater Elevations

State Well ID	Spring 2021	Spring 2022	Change Spring (feet)
01N06E02C001	-10.63	30	40.63
01N06E04J003	NM	--	--
01N06E04J004	NM	--	--
01N06E04J005	NM	--	--
01N06E05M004	NM	NM	--
01N06E36C003	NM	--	--
01N06E36C004	NM	--	--
01N06E36C005	NM	--	--
01N07E01M002	-50.7	-125	-74.3
01N07E02G001	NM	-44.5	--
01N07E04R001	-6.7	-14	-7.3
01N07E09E004	-15	NM	--
01N07E09H001	-29.5	NM	--
01N07E09Q003	-35	-34	1
01N07E10D001	-22	-23	-1
01N07E20G001	-17	-17	0
01S06E01C002	-6	-1	5
01S06E02G002	-10.67	-6.77	3.9
01S06E10G001	NM	-13.8	--
01S07E06M002	-6	-10	-4
01S07E08J002	-8	-10	-2
02N06E01A001	--	--	--
02N06E08N001	-23.78	--	--
02N06E08N002	-22.92	--	--
02N06E08N003	-22.01	--	--
02N06E12H001	--	--	--
02N06E20E001	-15.9	--	--
02N06E24F001	NM	-30.5	--
02N06E24J002	NM	NM	--
02N06E24J003	--	--	--
02N07E03D001	-52.5	-59	-6.5
02N07E08D001	--	--	--
02N07E08K003	-51.6	-59.5	-7.9
02N07E08R002	-48.84	-55.34	-6.5
02N07E11F001	-71.5	-97	-25.5
02N07E11R002	-61	-66	-5
02N07E16F002	-70.44	-59.14	11.3
02N07E16L001	-49.8	-76.3	-26.5
02N07E20N002	-40	-48	-8
02N07E21A002	-55.31	-60.91	-5.6
02N07E21K002	-47.4	-52.6	-5.2
02N07E21N001	-61	-46.9	14.1
02N07E23B001	-74	-72.4	1.6
02N07E24Q001	-64.3	-69.4	-5.1
02N07E26N001	-49.2	-65.2	-16
02N07E28K002	NM	-64	--
02N07E28N004	NM	-40	--
02N07E28P001	NM	NM	--

County Certified

NM = Measurement not able to be taken

CASGEM Data

-- = No Data Available

County Data takes precedence over CASGEM due to the date proximity of all county recorded data.

CASGEM Data was used if no county measured data was recorded, and generally within the same season e.g. Spring or Fall

Elevations in Feet above mean sea level (ft msl)

Comparison of SEWD Groundwater Elevations (continued)

State Well ID	Spring 2021	Spring 2022	Change Spring (feet)
02N07E29B001	-37.8	NM	--
02N07E29M002	-27.1	-33.2	-6.1
02N07E30H001	-27.7	-33.7	-6
02N07E31M001	-6.8	10.2	17
02N07E32J002	-15.1	-24.1	-9
02N07E32M002	-14.2	-21.3	-7.1
02N07E32R001	-12.6	-21.6	-9
02N07E33L001	-18	-18	0
02N07E34R001	-42	-56	-14
02N08E03G002	NM	NM	--
02N08E04C001	NM	NM	--
02N08E05C001	-81	-85.5	-4.5
02N08E08N001	NM	-69.5	--
02N08E09G002	NM	-74	--
02N08E10H002	-59	-63.6	-4.6
02N08E14C001	-67	-68	-1
02N08E16D001	-70.1	-83.1	-13
02N08E18C001	NM	-98.7	--
02N08E20F001	NM	NM	--
02N08E24J001	NM	NM	--
02N08E28H002	NM	NM	--
02N08E33E001	-81.6	-64.6	17
02N09E05N001	-34.29	-37.69	-3.4
02N09E09D001	-31.8	NM	--
02N09E28N001	-29.1	-24.1	5
03N06E35P002	--	--	--
03N07E35C002	NM	-59.9	--
03N07E35L001	-93	NM	--
03N07E36J001	-66.3	-73.3	-7
03N09E25R001	81	71.5	-9.5

County Certified NM = Measurement not able to be taken

CASGEM Data -- = No Data Available

County Data takes precedence over CASGEM due to the date proximity of all county recorded data.

CASGEM Data was used if no county measured data was recorded, and generally within the same season e.g. Spring or Fall

Elevations in Feet above mean sea level (ft msl)

Number of Wells Spring 2021-2022					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
78	41	29	10	2	-74.3 to 17	-4.49

Table 4-5 Comparison of SSJID Groundwater Elevations

State Well ID	Spring 2021	Spring 2022	Change Spring (feet)
01S07E14M001	NM	NM	--
01S07E14P003	NM	NM	--
01S07E15F002	-14.6	-24.6	-10
01S07E18L001	-0.63	-2.93	-2.3
01S07E21G001	3.55	1.05	-2.5
01S07E25E001	-3	NM	--
01S07E26G001	-4	NM	--
01S07E27K001	0.1	-3.5	-3.6
01S07E30R001	8.16	6.16	-2
01S07E36D001	6.25	2.95	-3.3
01S08E30C002	-10	NM	--
01S09E29M002	NM	NM	--
01S09E33J002	41.62	40.12	-1.5
01S09E33P001	39.51	35.71	-3.8
02S07E07D002	9	7	-2
02S07E11N002	NM	NM	--
02S07E19H001	NM	20	--
02S08E04M001	7.5	8.5	1
02S08E06J001	6	2	-4
02S08E07R001	NM	NM	--
02S08E08A001	18	15	-3
02S08E08E001	11.2	12.2	1
02S08E09J001	--	--	--
02S08E12D001	31.67	28.47	-3.2
02S08E14E001	--	--	--
02S09E12R001	62.95	57.55	-5.4

County Certified NM = Measurement not able to be taken

CASGEM Data -- = No Data Available

County Data takes precedence over CASGEM due to the date proximity of all county recorded data.

CASGEM Data was used if no county measured data was recorded, and generally within the same season e.g. Spring or Fall

Elevations in Feet above mean sea level (ft msl)

Number of Wells Spring 2021-2022					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
26	15	13	2	0	-10 to 1	-2.97

Table 4-6 Comparison of Southwest County Area in Tracy Subbasin Groundwater Elevations

State Well ID	Spring 2021	Spring 2022	Change Spring (feet)
01S05E31R002	0.2	NM	--
02S04E15R001	53	50	-3
02S05E08B001	-0.7	NM	--
02S06E25J001	12.4	10.5	-1.9
02S06E31N001	48	44	-4
03S06E27N001	61.8	55.8	-6
03S07E06Q001	--	--	--
MW-1A	-11.17	-18.35	-7.18
MW-1B	-23.72	-31.2	-7.48
MW-1C	-25.92	-32.65	-6.73
MW-2A	-16.01	-25.14	-9.13
MW-2B	-21.87	-30.56	-8.69
MW-2C	-22.05	-30.38	-8.33
MW-3A	-15.64	-22.24	-6.6
MW-3B	-21.84	-30.83	-8.99
MW-3C	-22.42	-31.41	-8.99
MW-4A	-15.37	-26.13	-10.76
MW-4B	-21.54	-30.27	-8.73
MW-4C	-21.2	-30.01	-8.81
MW-5A	-14.44	-24.92	-10.48
MW-5B	-17.34	-25.84	-8.5
MW-5C	-16.49	-23.7	-7.21
MW-6A	-14.56	-21.13	-6.57
MW-6B	-24.4	-29.87	-5.47
MW-6C	-21.32	-25.15	-3.83

County Certified

NM = Measurement not able to be taken

CASGEM Data

-- = No Data Available

County Data takes precedence over CASGEM due to the date proximity of all county recorded data.

CASGEM Data was used if no county measured data was recorded, and generally within the same season e.g. Spring or Fall

Elevations in Feet above mean sea level (ft msl)

Number of Wells Spring 2021-2022					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
25	22	22	0	0	-10.76 to -1.9	-7.15

Table 4-7 Comparison of WID Groundwater Elevations

State Well ID	Spring 2021	Spring 2022	Change Spring (feet)
03N05E14C001	NM	NM	--
03N06E05N003	-5.5	-11.5	-6
03N06E07H003	-11	-13.6	-2.6
03N06E17A004	-16.7	-21.3	-4.6
03N06E18M003	-11.1	-13.6	-2.5
03N06E20D002	-14	-23.5	-9.5
03N06E32R001	NM	-27	--
04N05E10K001	-5.5	NM	--
04N05E13H001	-3.5	-3	0.5
04N05E13R004	-4.5	-5.8	-1.3
04N05E14B002	-3.9	-2.4	1.5
04N05E24J004	-1.6	NM	--
04N05E36H003	-2	-6.5	-4.5
04N06E17G004	-0.5	-2	-1.5
04N06E29N002	-4	-9	-5
04N06E30E001	0.7	-1.3	-2
04N06E34J002	21.4	17.4	-4
05N05E28L003	-4.5	-3.5	1

County Certified

NM = Measurement not able to be taken

CASGEM Data

-- = No Data Available

County Data takes precedence over CASGEM due to the date proximity of all county recorded data.

CASGEM Data was used if no county measured data was recorded, and generally within the same season e.g. Spring or Fall
Elevations in Feet above mean sea level (ft msl)

Number of Wells Spring 2021-2022					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
18	14	11	3	0	-9.5 to 1.5	-2.89

Table 4-8 Comparison of Calaveras County Groundwater Elevations

Local Well ID	Spring 2021	Spring 2022	Change Spring (feet)
CCWD 001	74.67	No Data	--
CCWD 002	77.33	No Data	--
CCWD 003	NM	No Data	--
CCWD 004	85.61	No Data	--
CCWD 005	83.99	No Data	--
CCWD 006	102.48	No Data	--
CCWD 007	DRY	No Data	--
CCWD 008	60.85	No Data	--
CCWD 009	110.39	No Data	--
CCWD 010	82.56	No Data	--
CCWD 011	82.19	No Data	--
CCWD 012	148.07	No Data	--
CCWD 014	130.16	No Data	--
CCWD 015	144.97	No Data	--

County Certified NM = Measurement not able to be taken

CASGEM Data -- = No Data Available

County Data takes precedence over CASGEM due to the date proximity of all county recorded data.

CASGEM Data was used if no county measured data was recorded, and generally within the same season e.g. Spring or Fall

Elevations in Feet above mean sea level (ft msl)

Number of Wells Spring 2021-2022					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
14	0	--	--	--	--	--

*Calaveras County Spring 2022 data has not been uploaded to DWR databases as of October 2022.

Table 4-9 Comparison of Stanislaus Groundwater Elevations

State Well ID	Spring 2021	Spring 2022	Change Spring (feet)
01S10E04C001	65.32	65.32	0
01S10E21A001	87.155	84.815	-2.34
01S10E26J001	83.4	79.12	-4.28
01S10E27Q001	73.48	70.63	-2.85
01S10E34R001	75.09	71.17	-3.92
01S11E25N001	126.11	109.31	-16.8
02S10E02P001	87.62	82.13	-5.49
02S10E10M002	75	70.58	-4.42

County Certified NM = Measurement not able to be taken

CASGEM Data -- = No Data Available

County Data takes precedence over CASGEM due to the date proximity of all county recorded data.

CASGEM Data was used if no county measured data was recorded, and generally within the same season e.g. Spring or Fall
Elevations in Feet above mean sea level (ft msl)

Number of Wells Spring 2021-2022					Change in Elevation	
Total	Comparable	Decrease	Increase	No Change	Range	Average
8	8	7	0	1	-16.8 to 0	-5.01

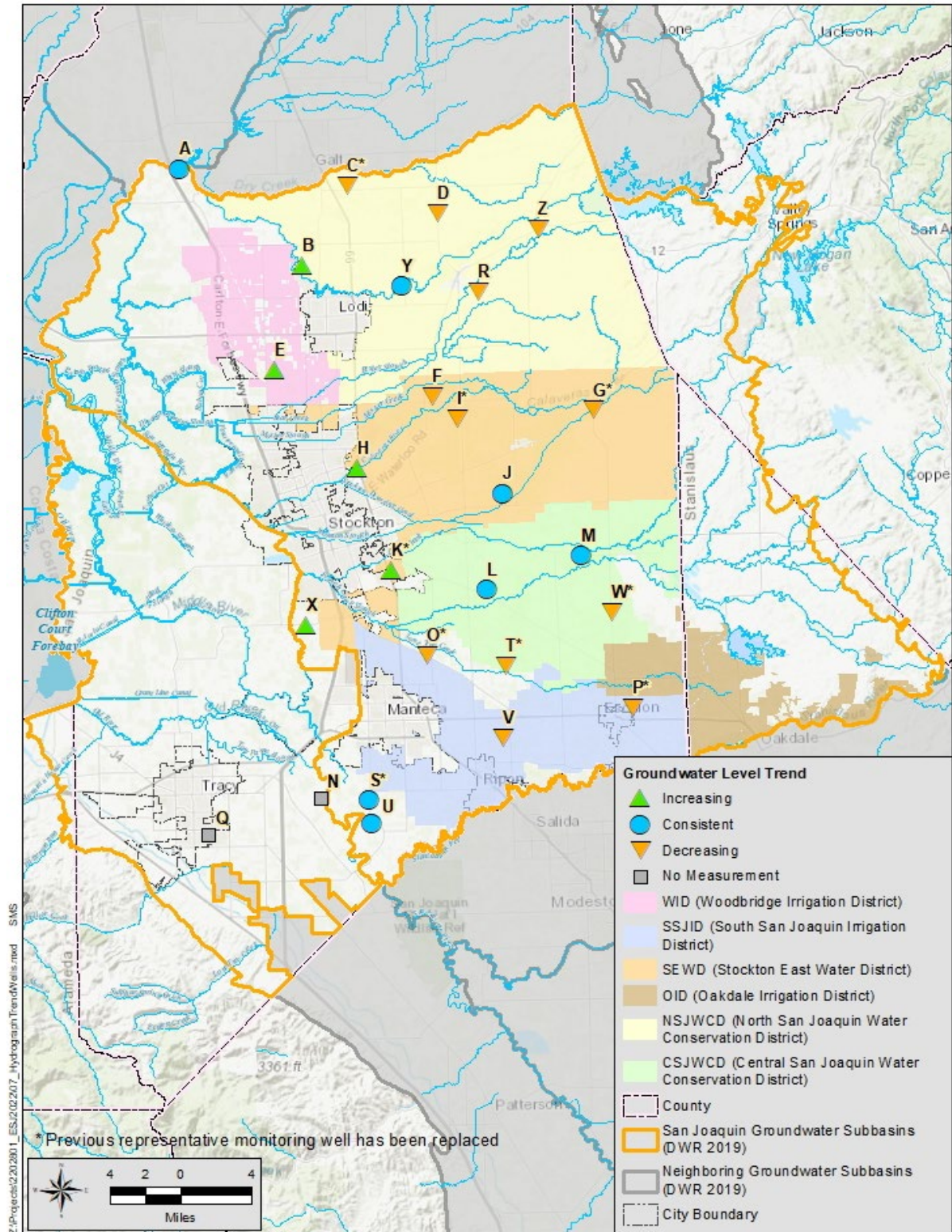


Figure 4-1 Selected Hydrograph Well Locations

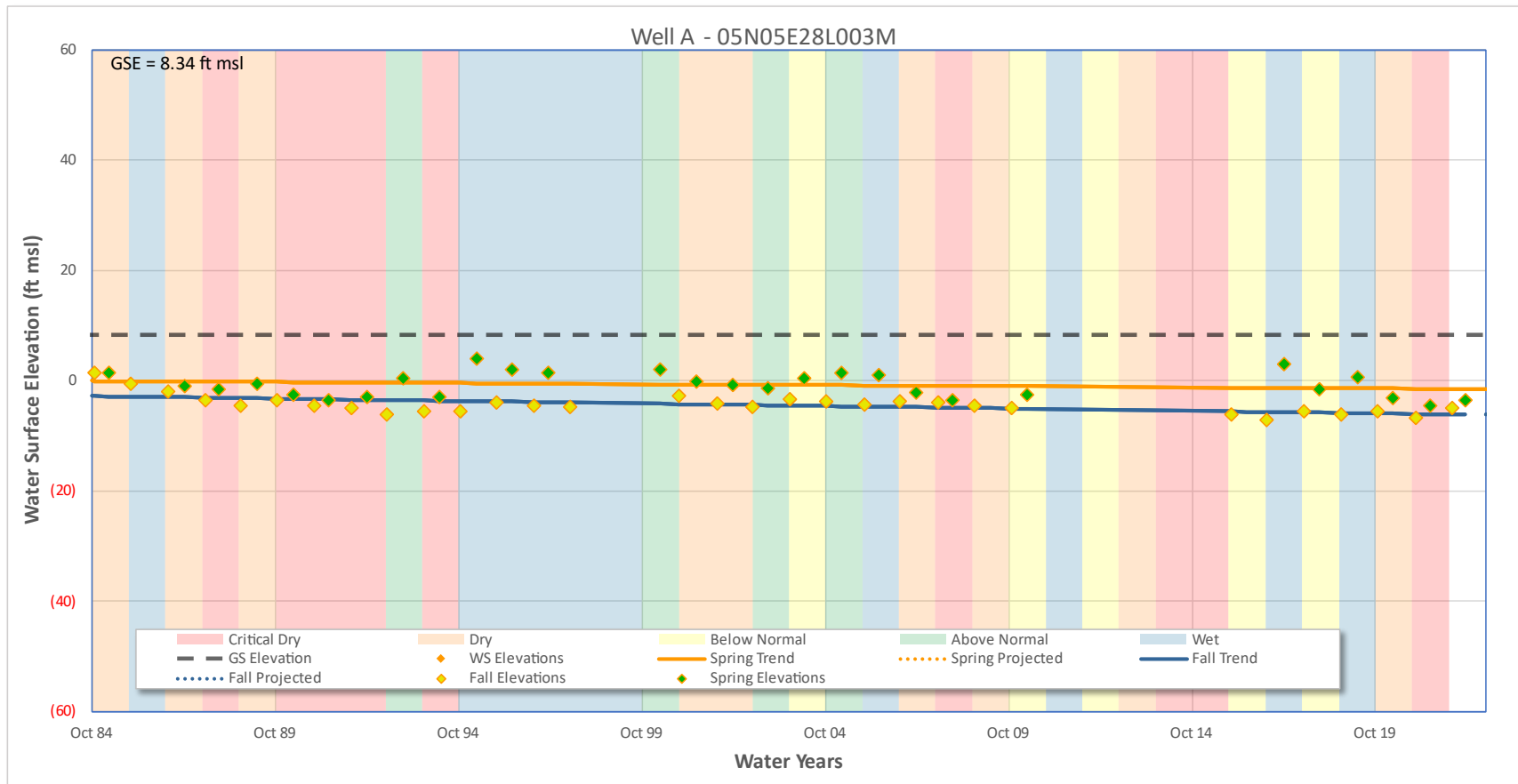


Figure 4-2 Hydrograph Well A - East of Thornton Rd & South of Benson Ferry Rd.

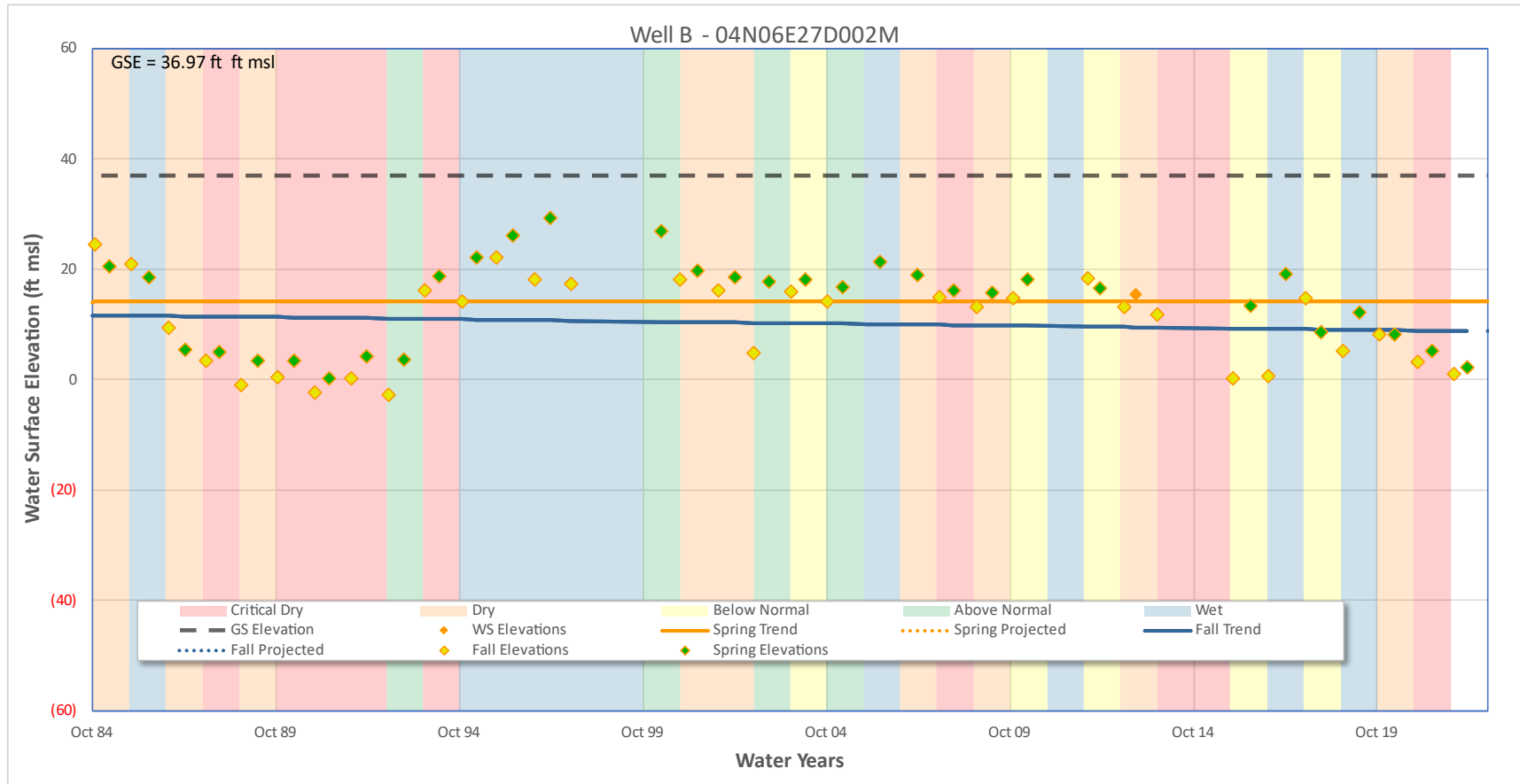


Figure 4-3 Hydrograph Well B - East of Lower Sac Rd. & South of Acampo Rd.



Figure 4-4 Hydrograph Well C - North of Liberty Rd. & West of North Cherokee Ln.

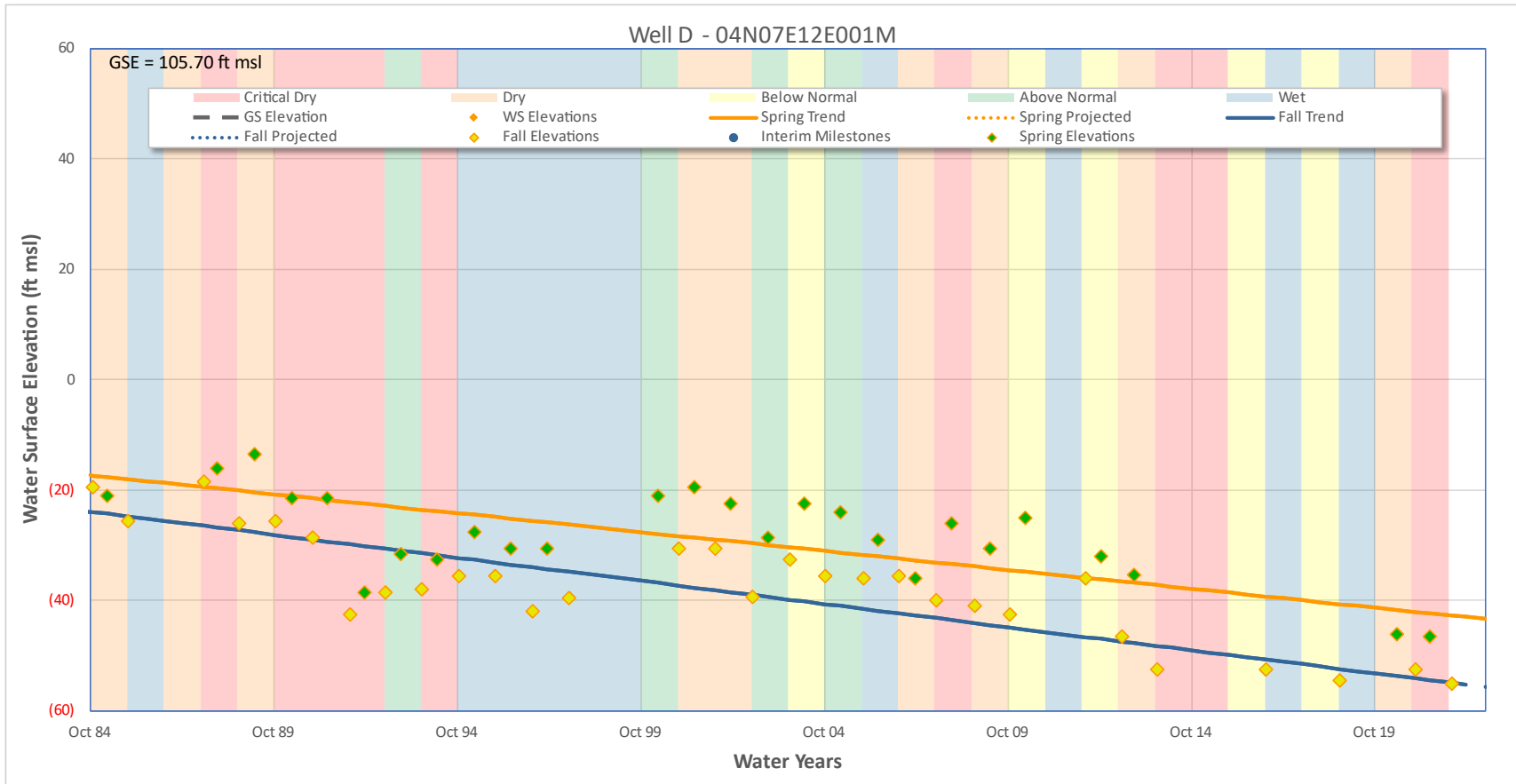


Figure 4-5 Hydrograph Well D - West of Elliotto Rd. & North of Jahant Rd.

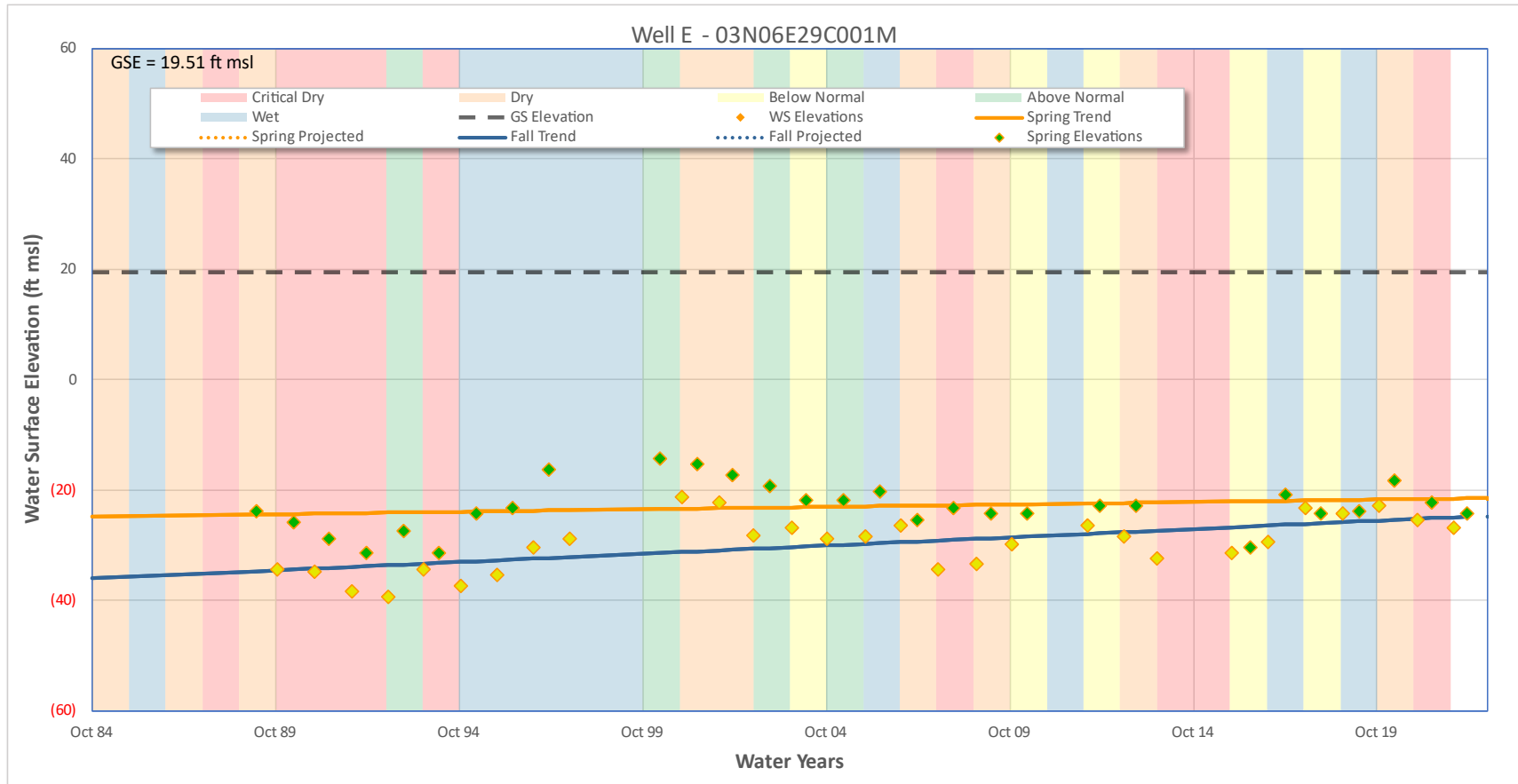


Figure 4-6 Hydrograph Well E - East of Davis R. & South of Armstrong Rd.

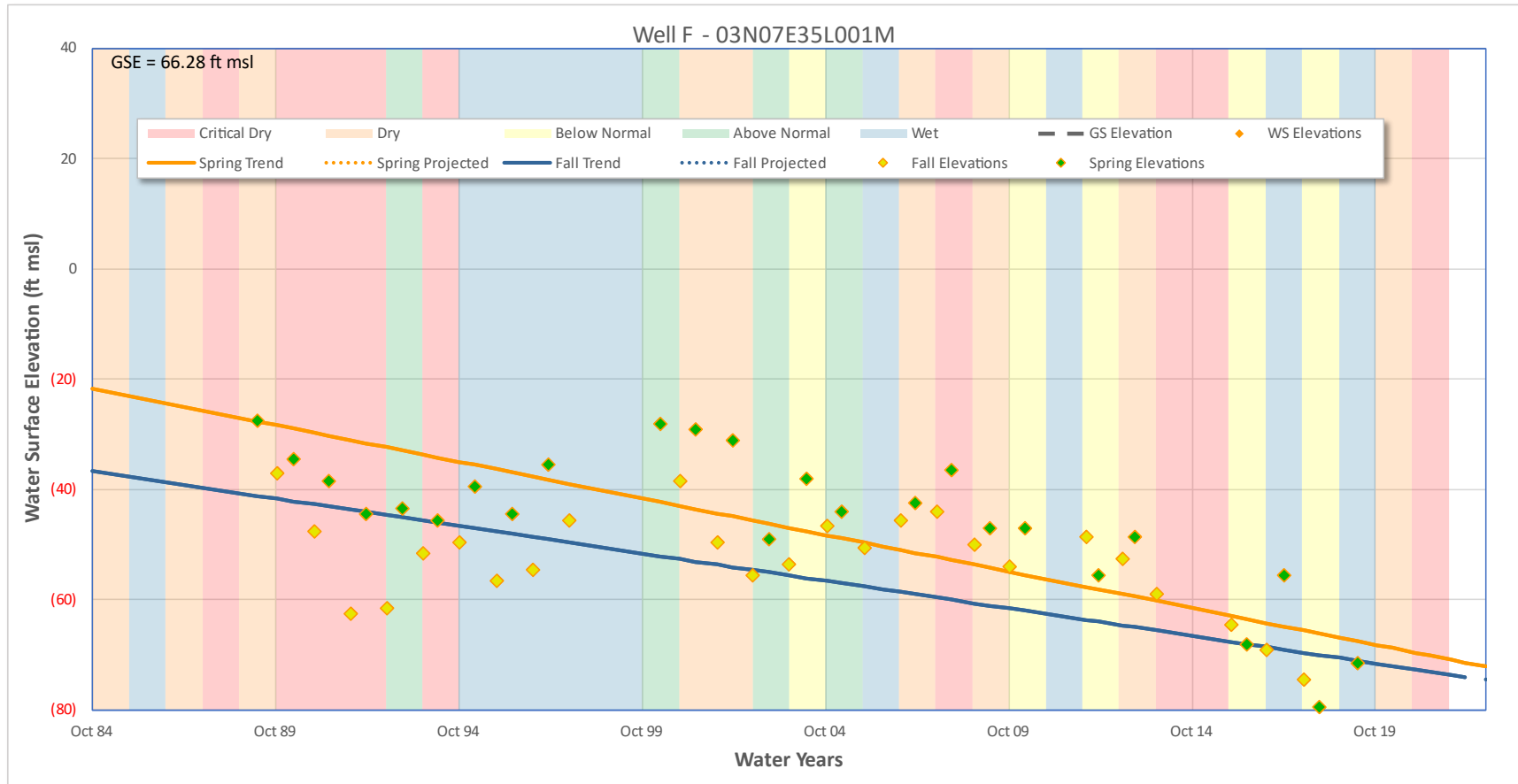


Figure 4-7 Hydrograph Well F - West of Route 88 & North of Eight Mile Rd.



Figure 4-8 Hydrograph Well G - West of Route 26 & South of Shelton Rd.

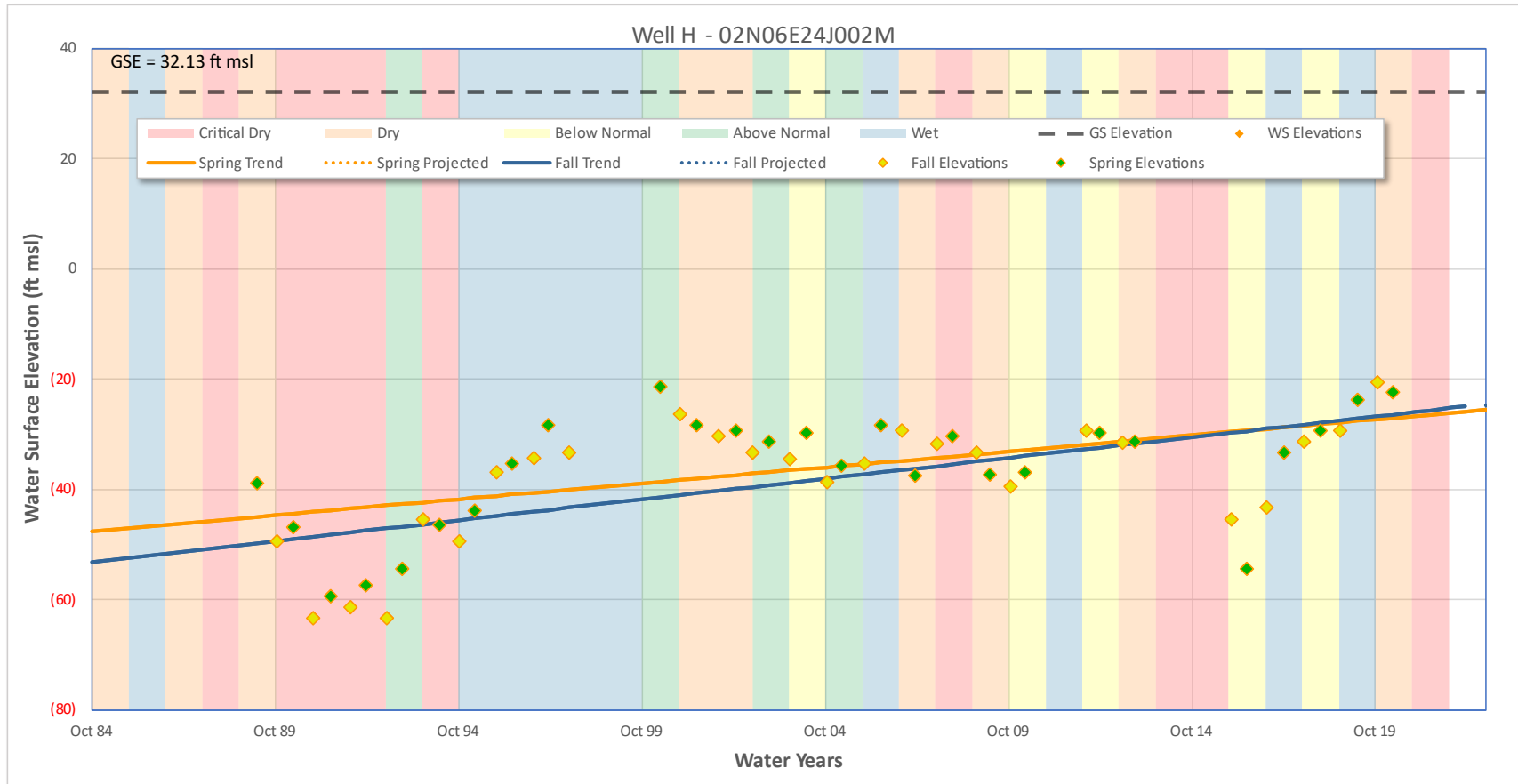


Figure 4-9 Hydrograph Well H - East of Ijams Rd. & North of McAllen Rd.

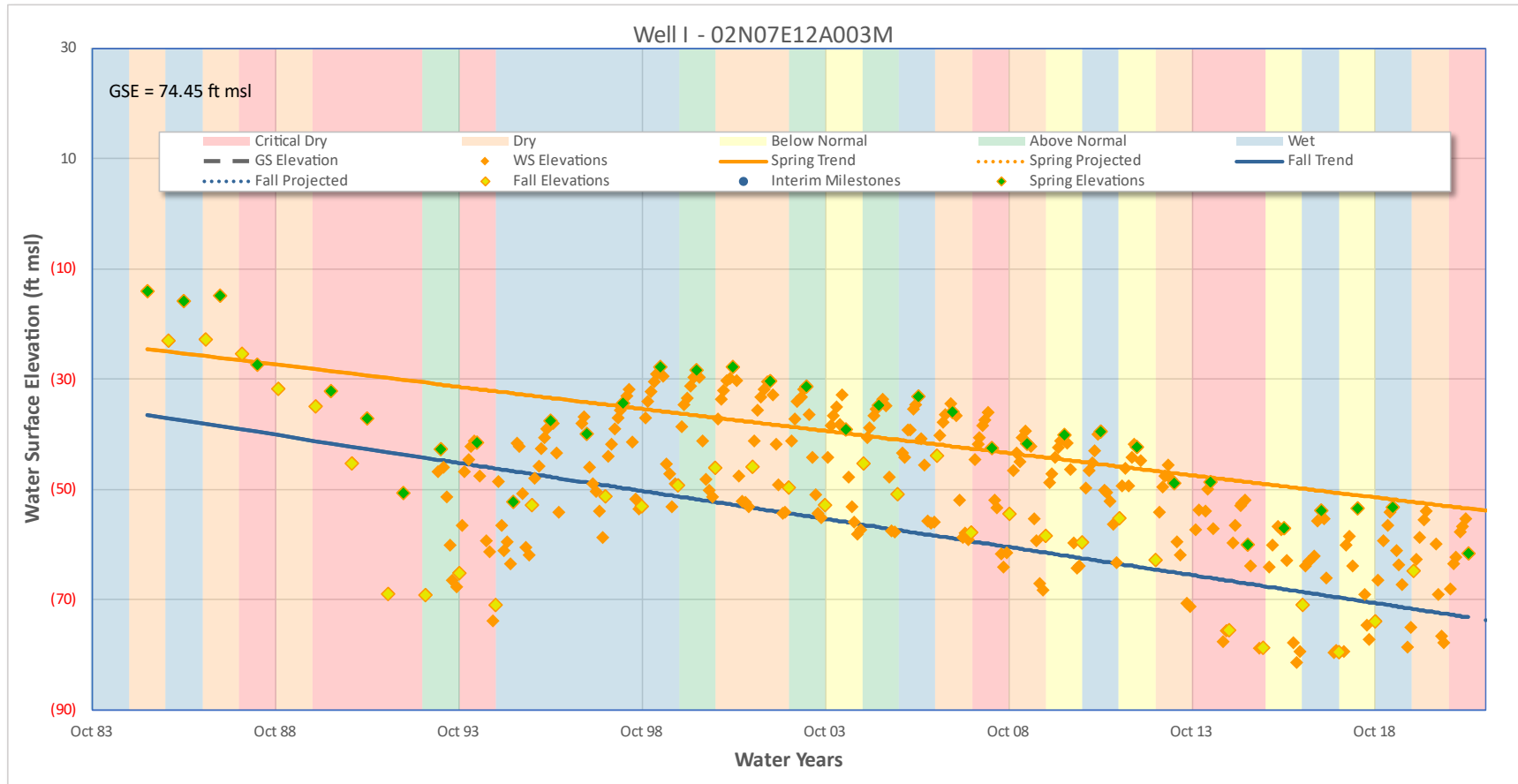


Figure 4-10 Hydrograph Well I - West of Gogna Rd. & North of Route 26

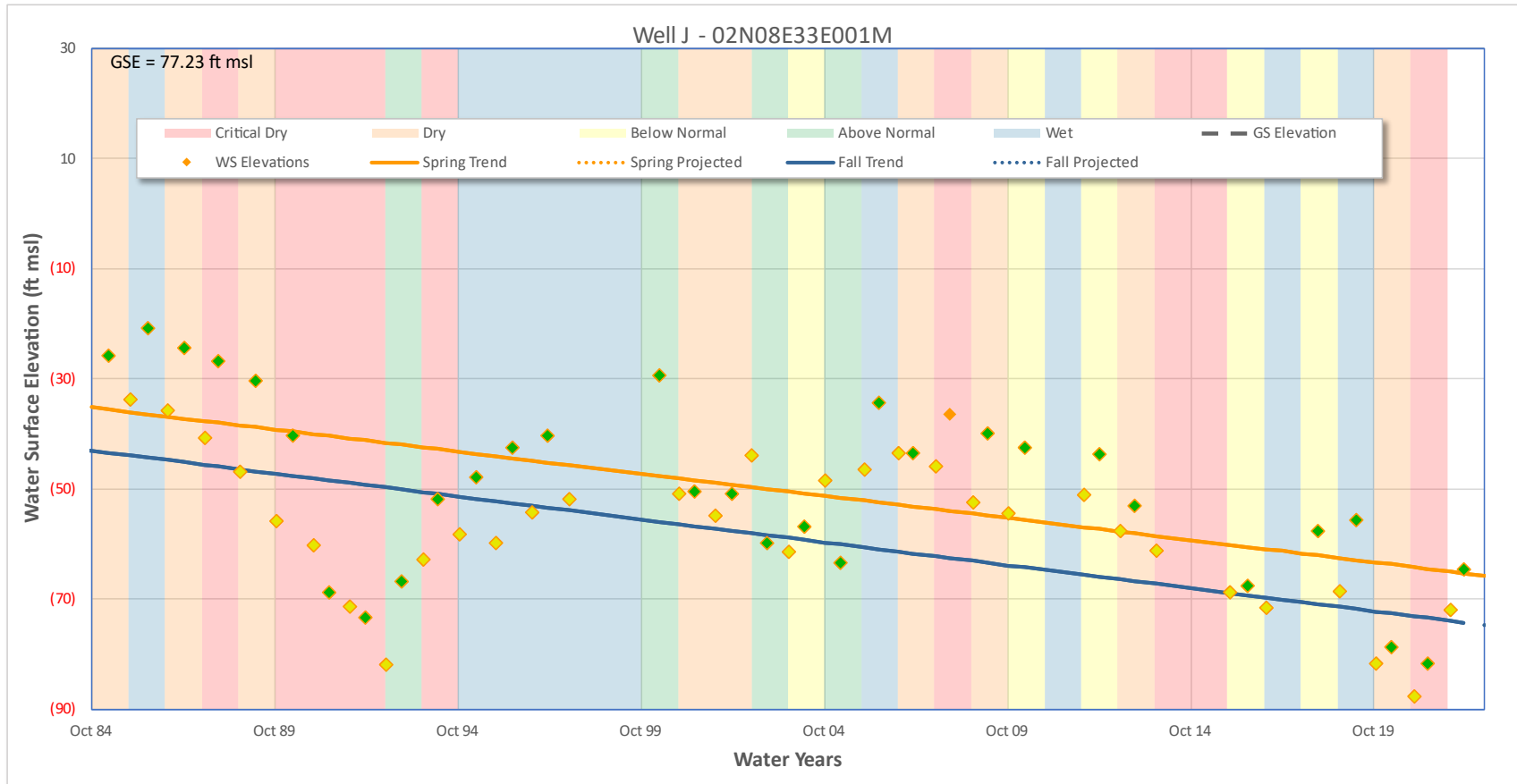


Figure 4-11 Hydrograph Well J - East of Duncan Rd. & South of Milton Rd.

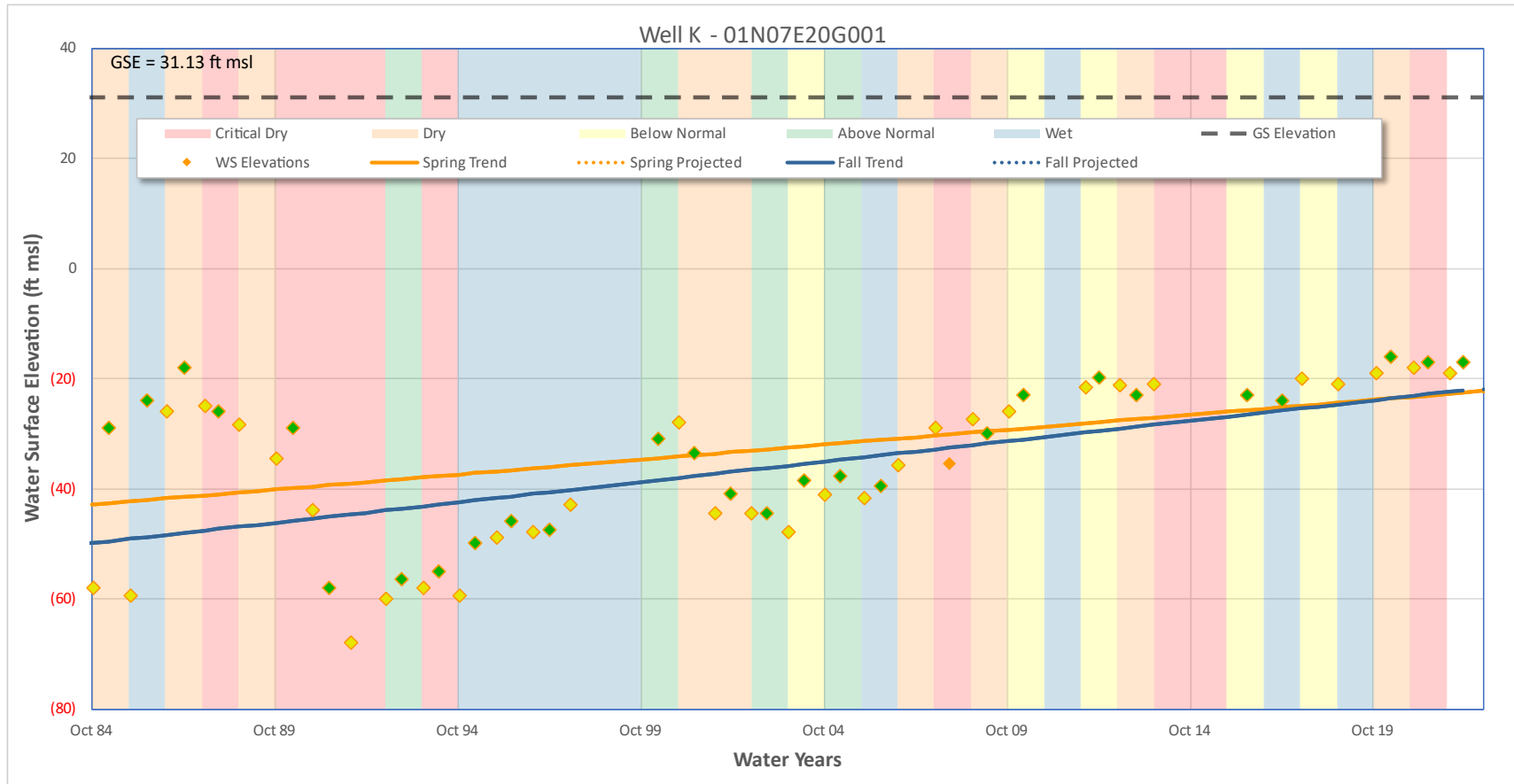


Figure 4-12 Hydrograph Well K - East of Ash Rd. & North of Carpenter Rd.

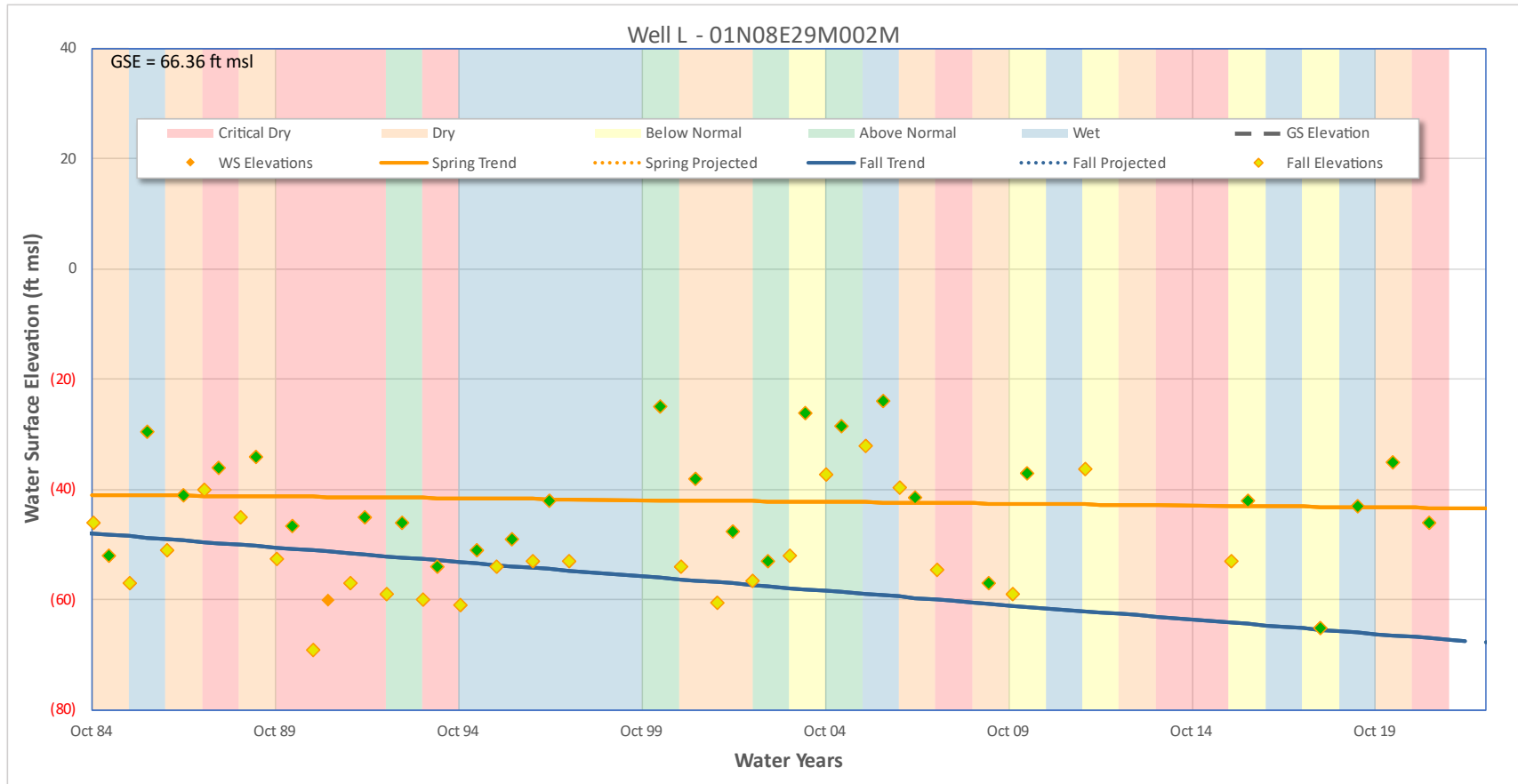


Figure 4-13 Hydrograph Well L - West of Jack Tone Rd. & North of Mariposa Rd.



Figure 4-14 Hydrograph Well M - West of Hewitt Rd. & South of Hwy. 4

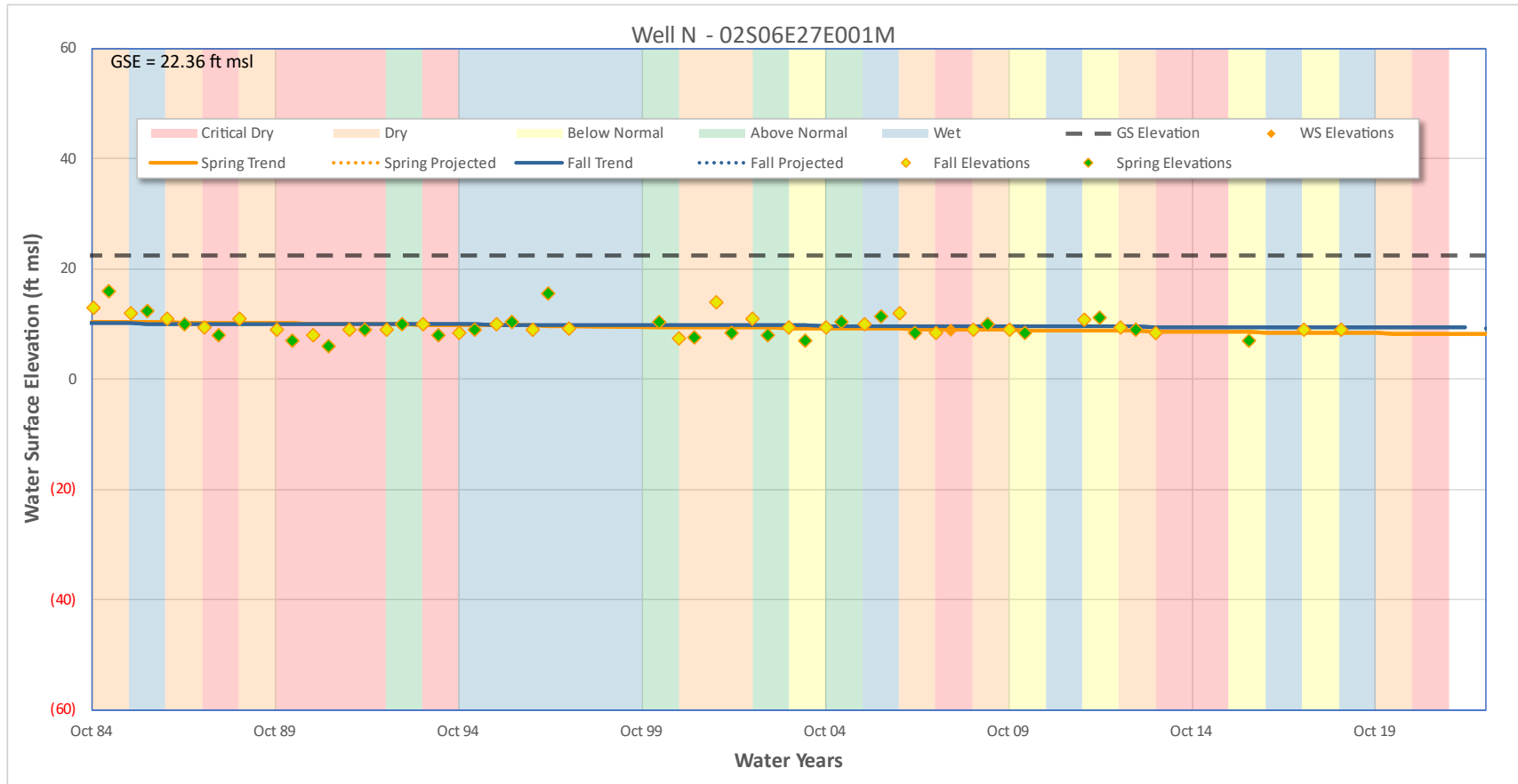


Figure 4-15 Hydrograph Well N - West of Wright Rd. & North of Kasson Rd.



Figure 4-16 Hydrograph Well O – West of Austin Rd. & North of French Camp Rd.

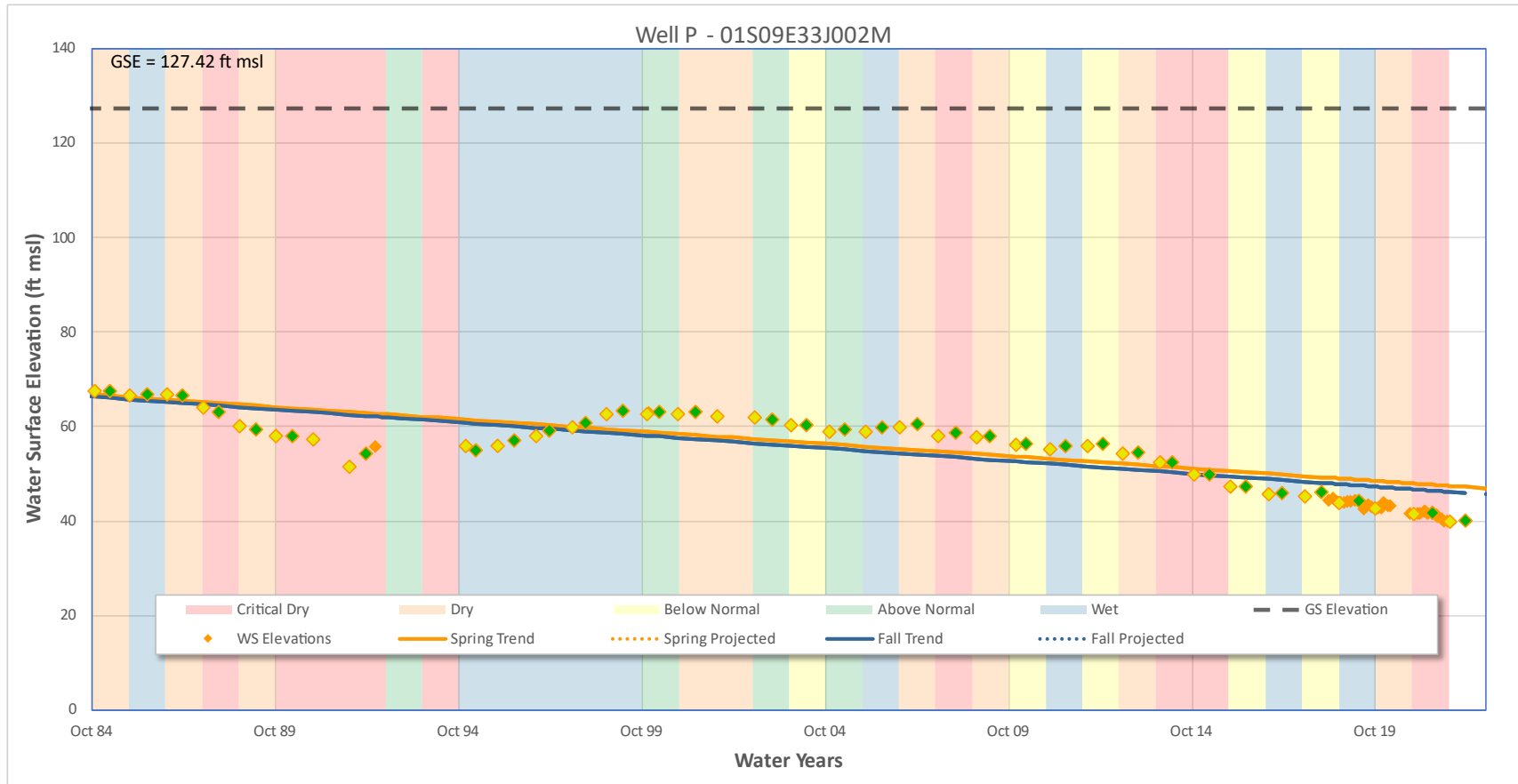


Figure 4-17 Hydrograph Well P - West of Campbell Ave. & North of Hwy 120.

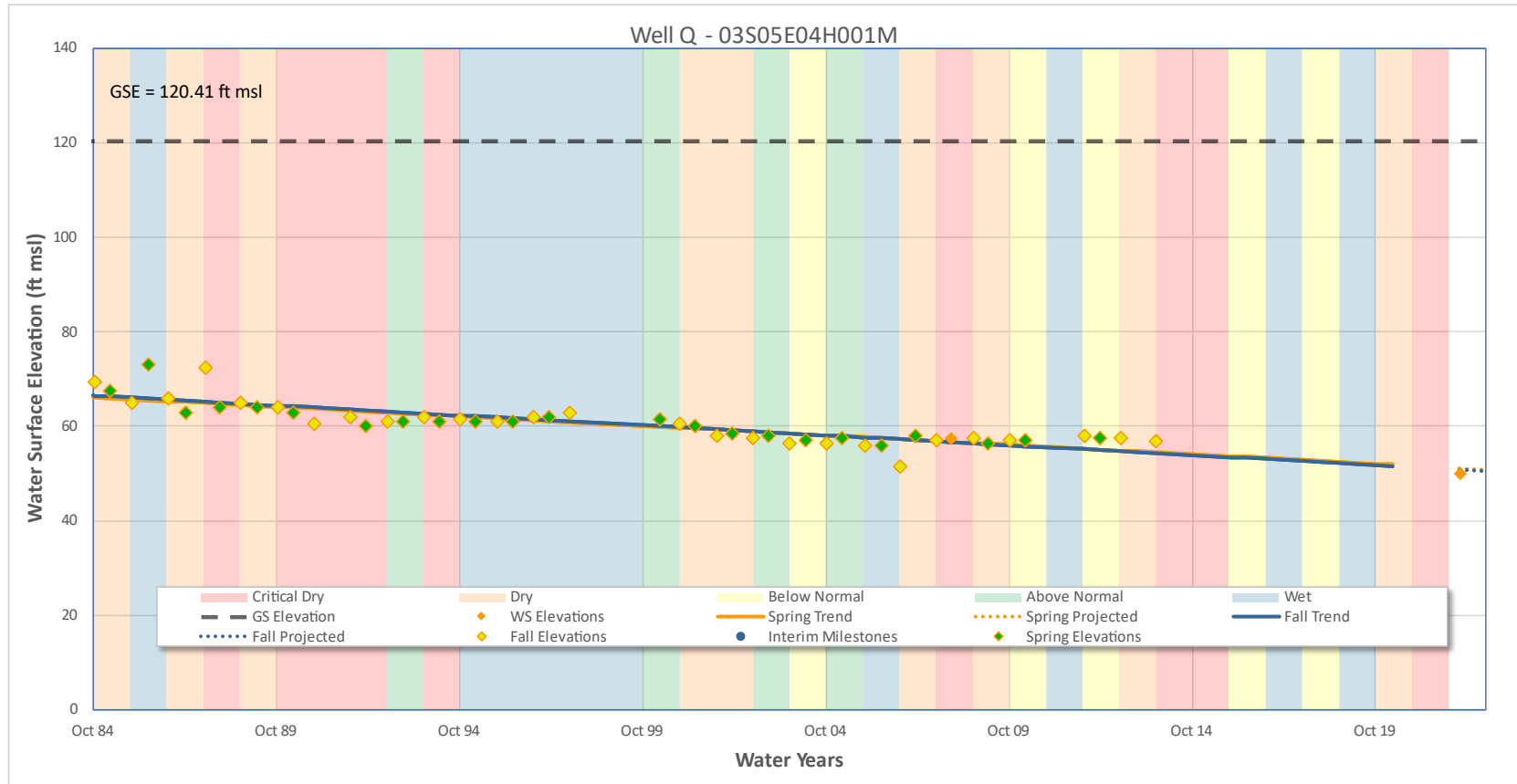


Figure 4-18 Hydrograph Well Q - East of McArthur Rd. & North of Darlene Rd.

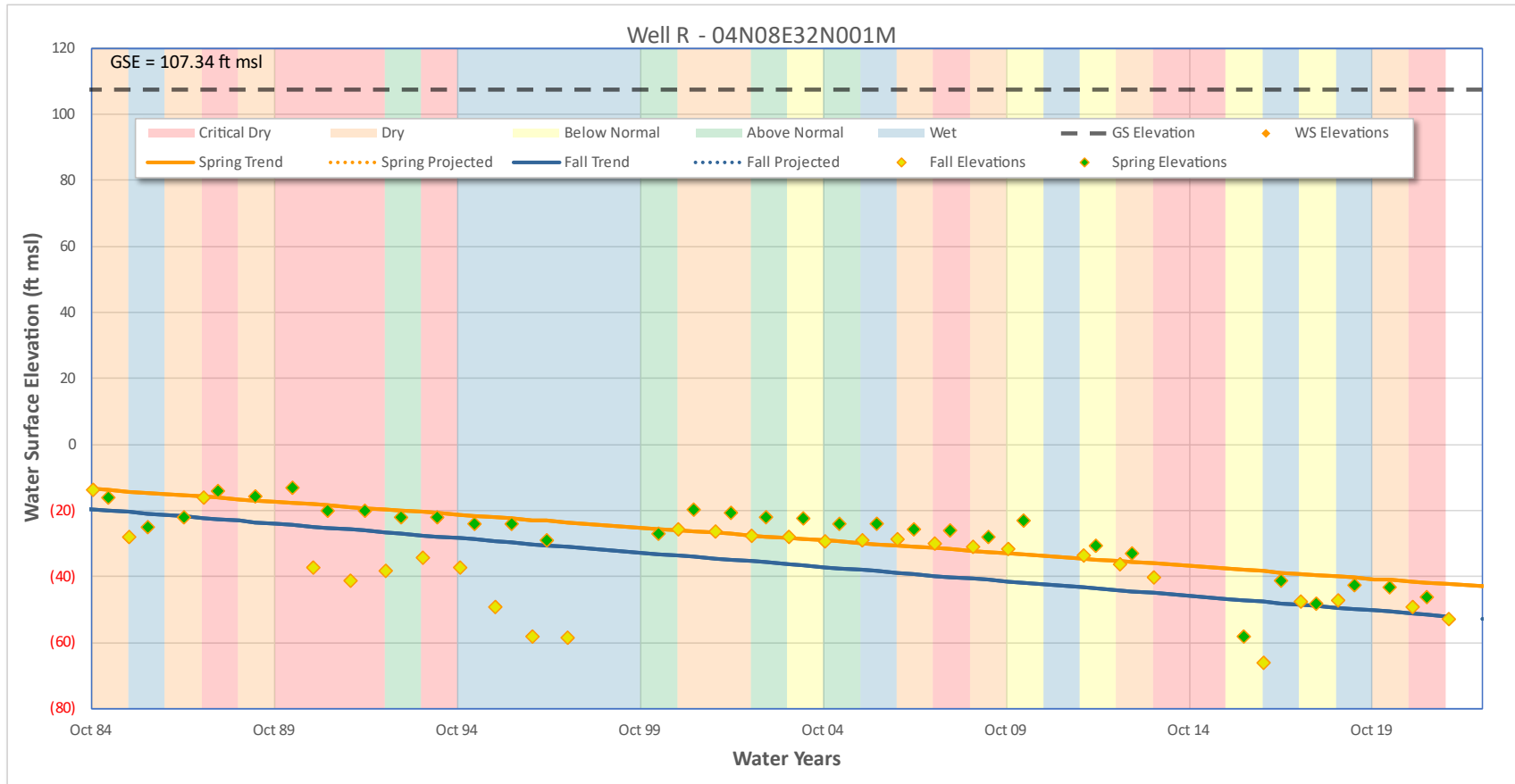


Figure 4-19 Hydrograph Well R - West of Tully Rd. & North of Brandt Rd.

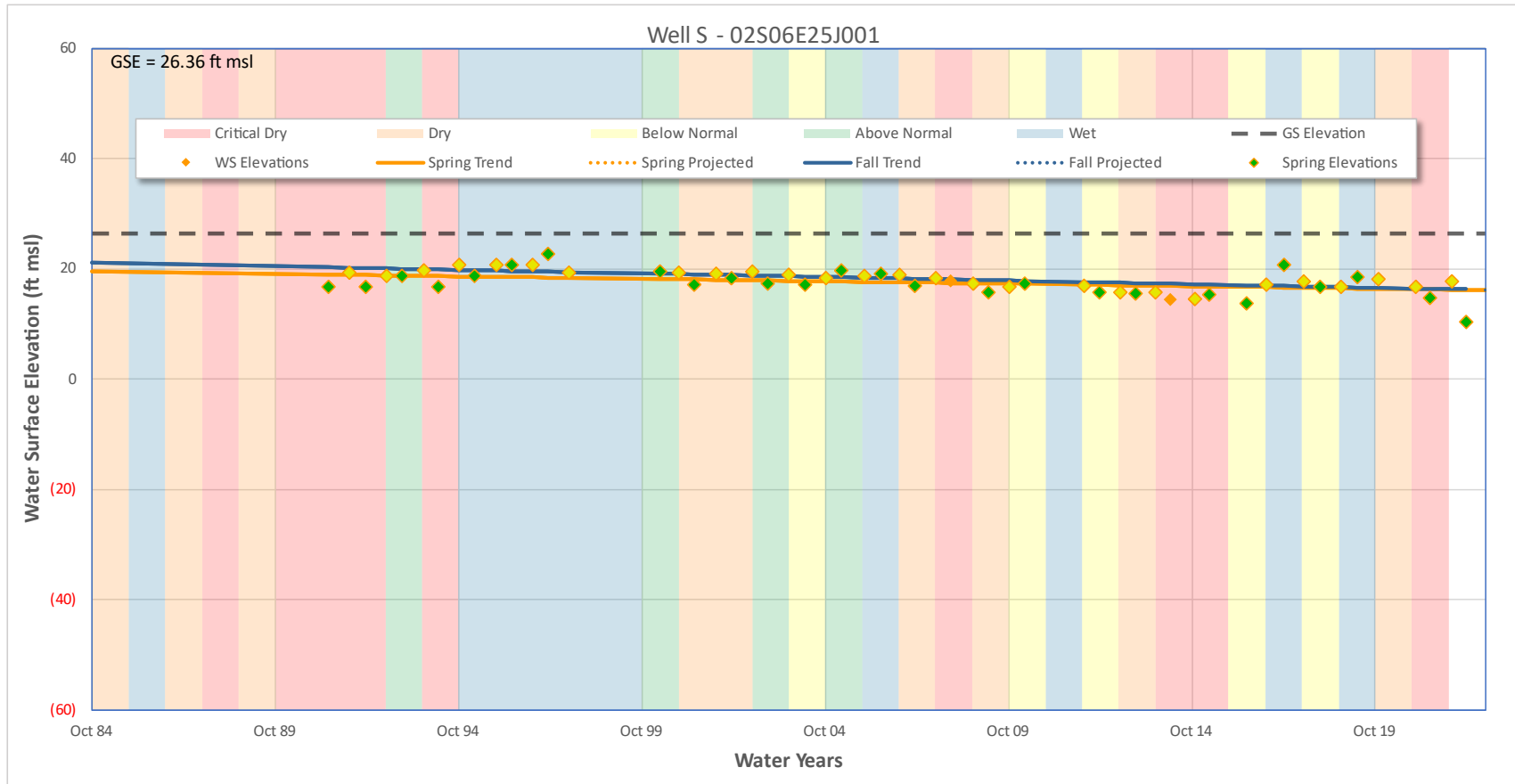


Figure 4-20 Hydrograph Well S - East of Hays Rd. & North of Mullin Rd.

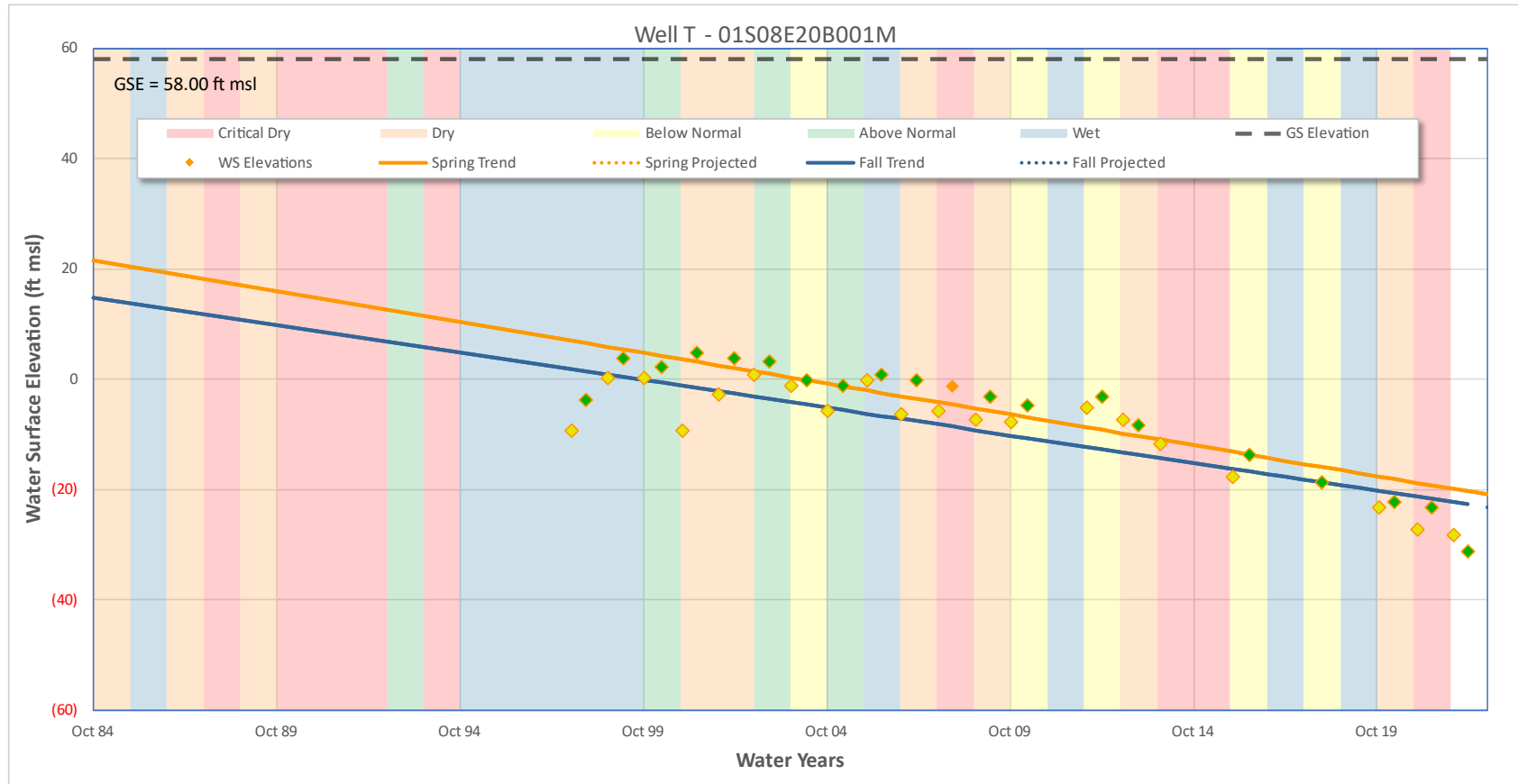


Figure 4-21 Hydrograph Well T - West of Murphy Rd. & South of Avena Rd.

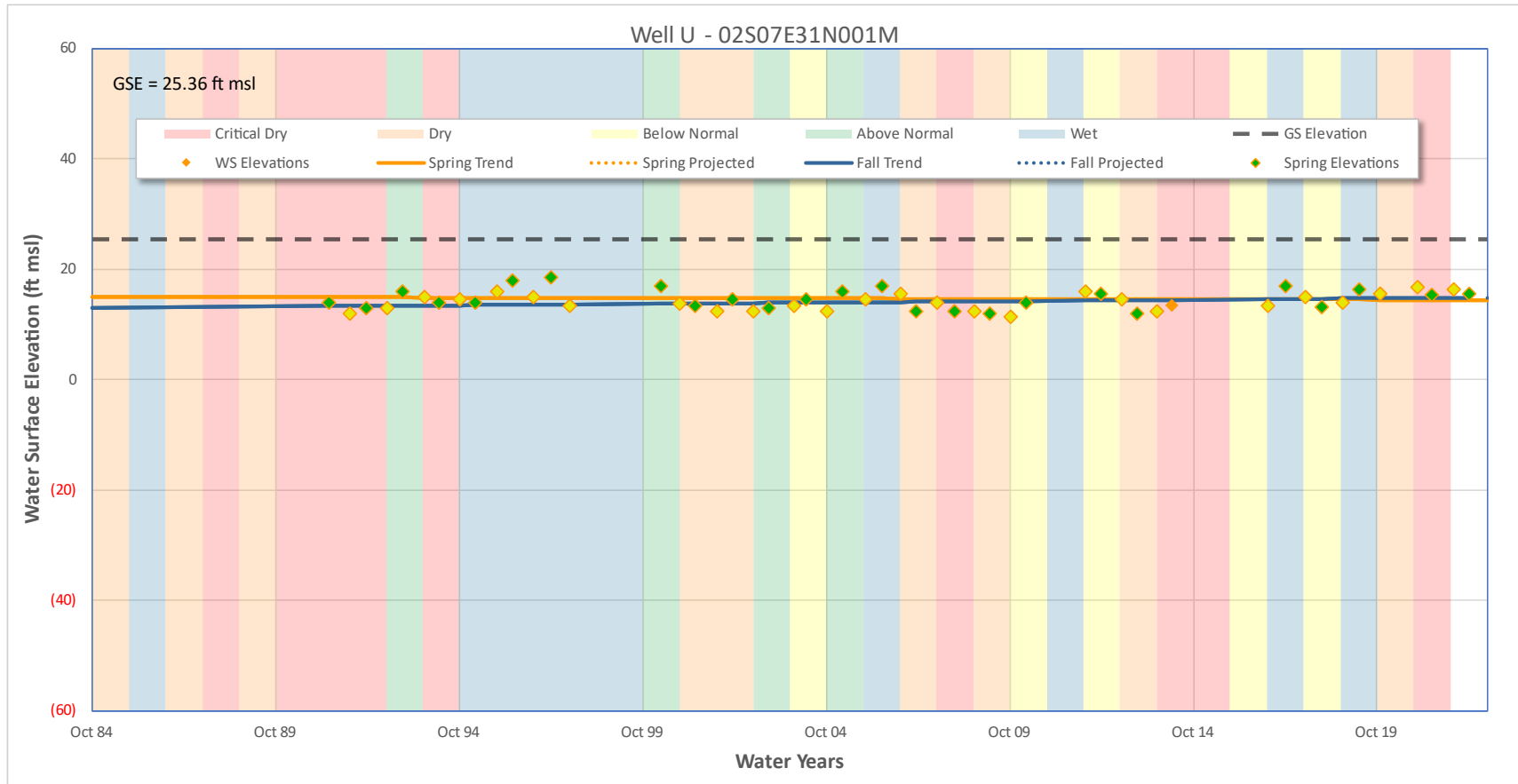
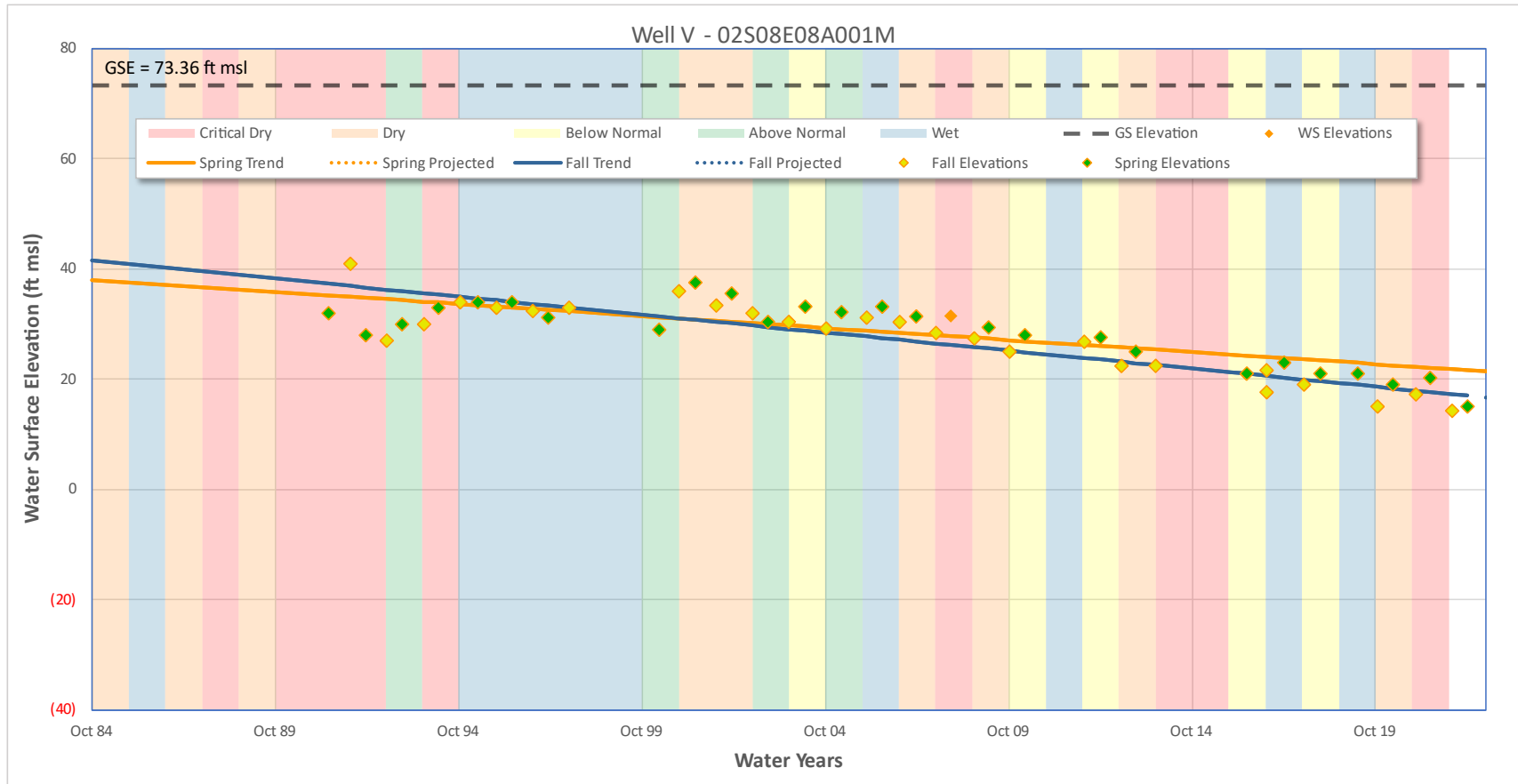


Figure 4-22 Hydrograph Well U - East of Airport Rd. & South of Perrin Rd.



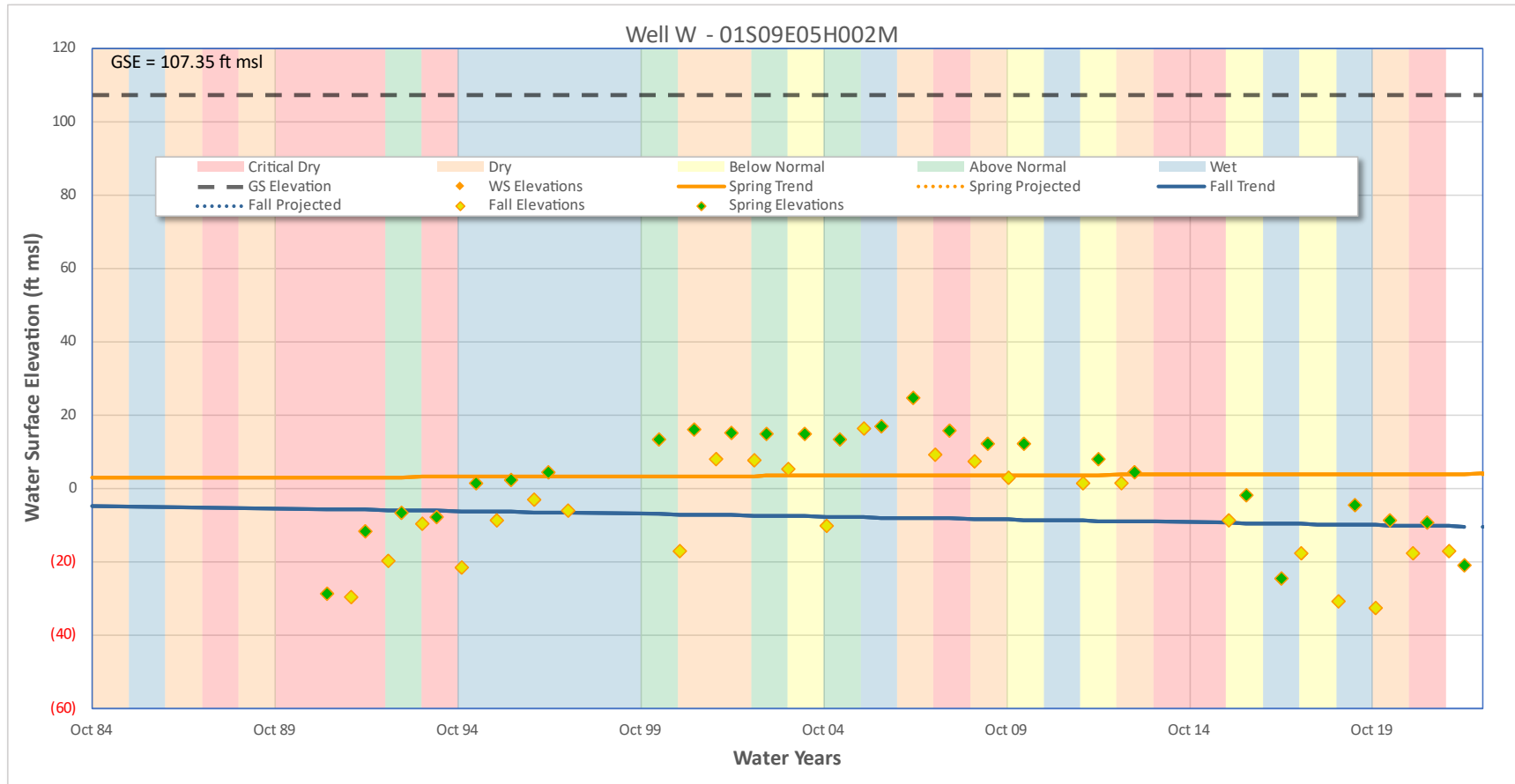


Figure 4-24 Hydrograph Well W - West of Henry Rd. & South of Sonora Rd.



Figure 4-25 Hydrograph Well X - East of Wolfe Rd. & South of Howard Rd.

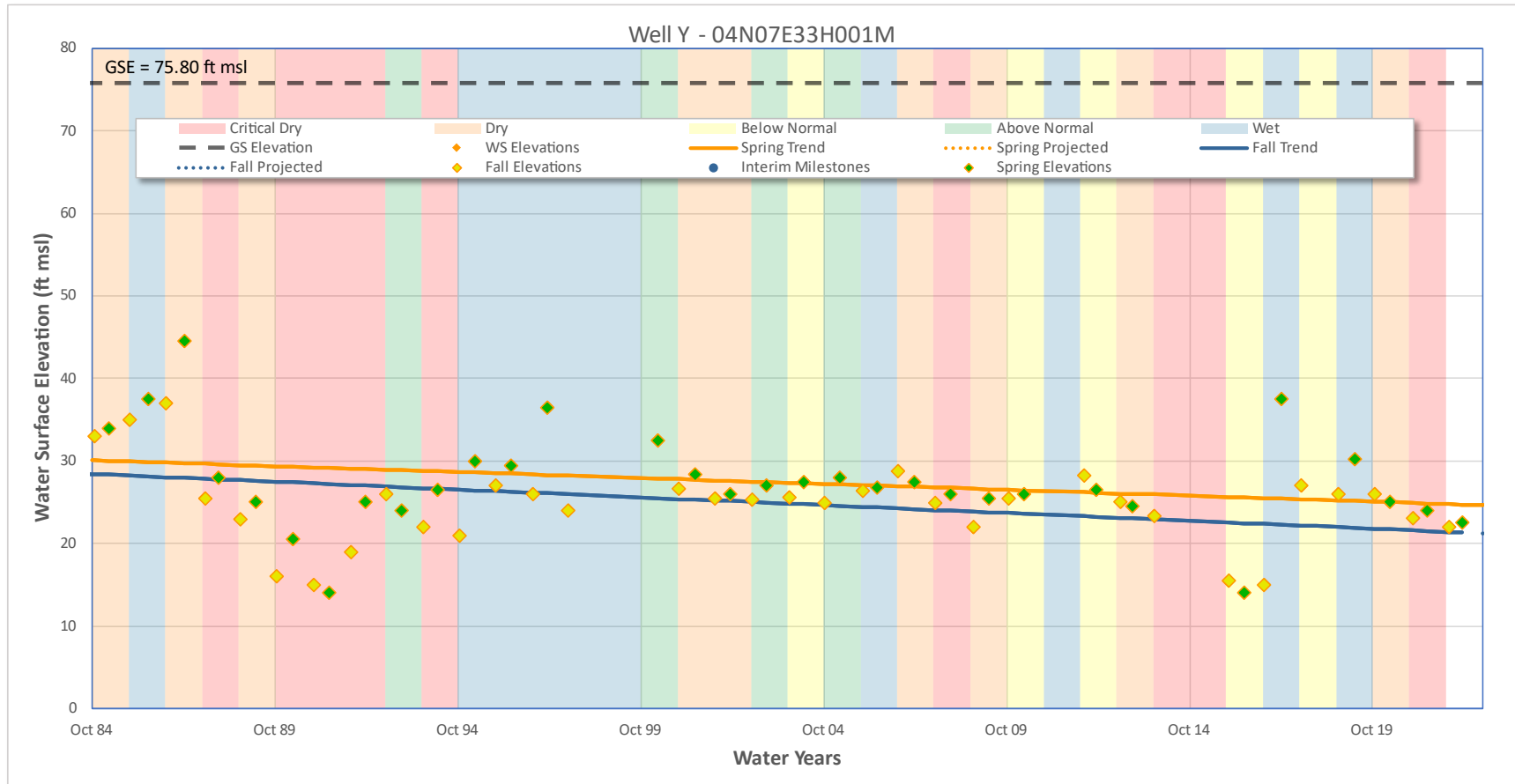


Figure 4-26 Hydrograph Well Y - East of Bruella Rd. & North of Schmiedt Rd.

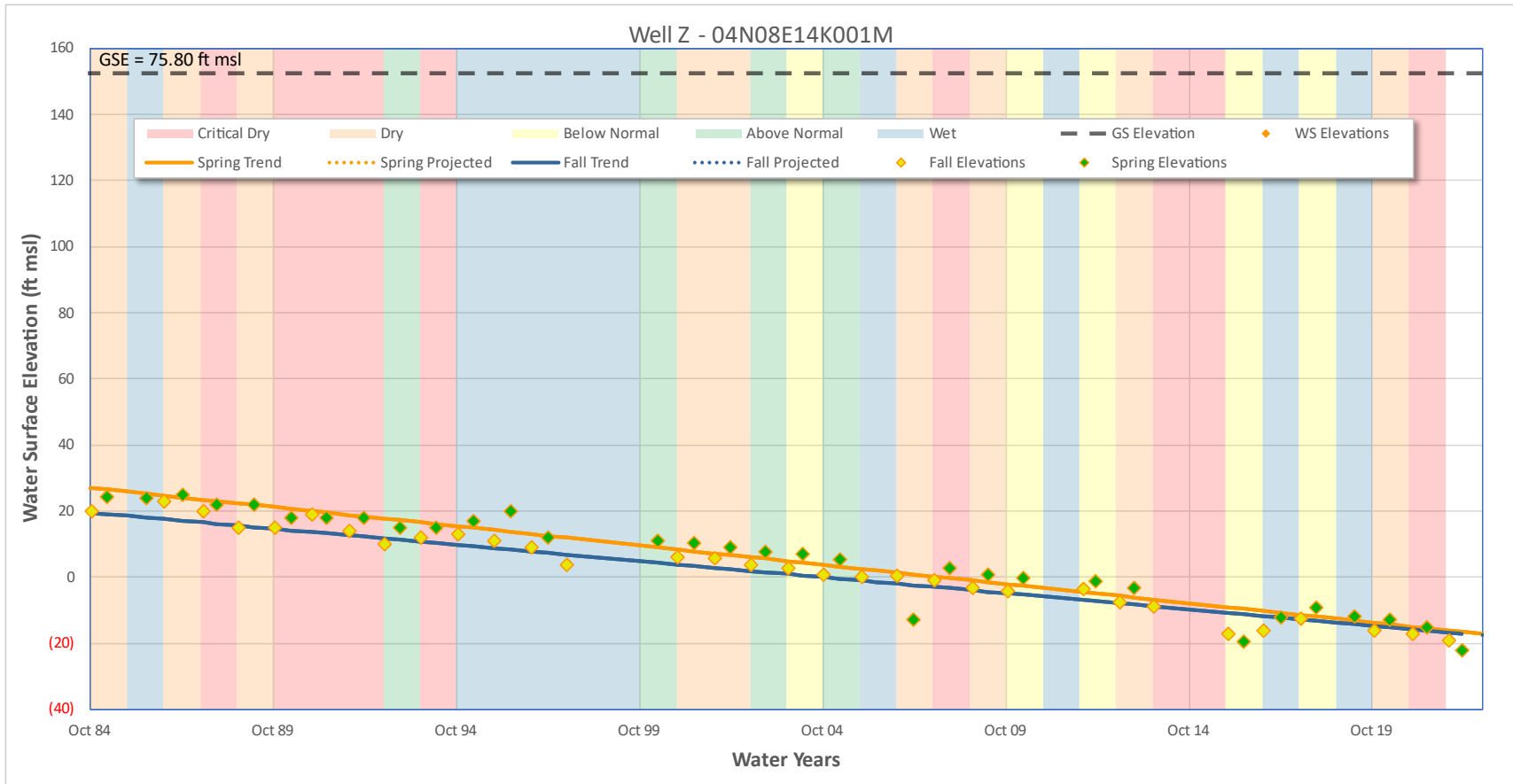


Figure 4-27 Hydrograph Well Z - East of Johnson Rd. & South of Route 1

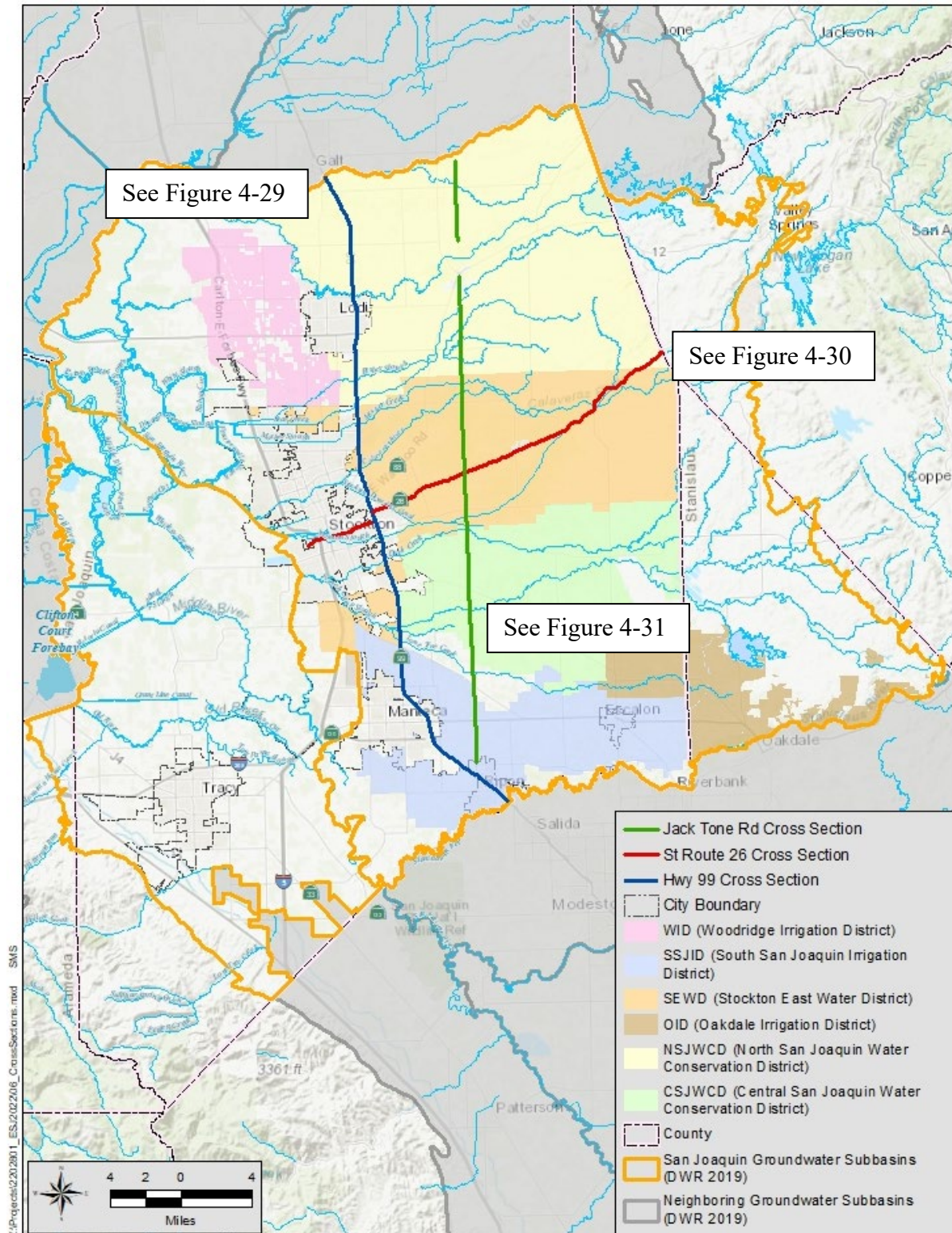


Figure 4-28 Water Surface Cross Sections

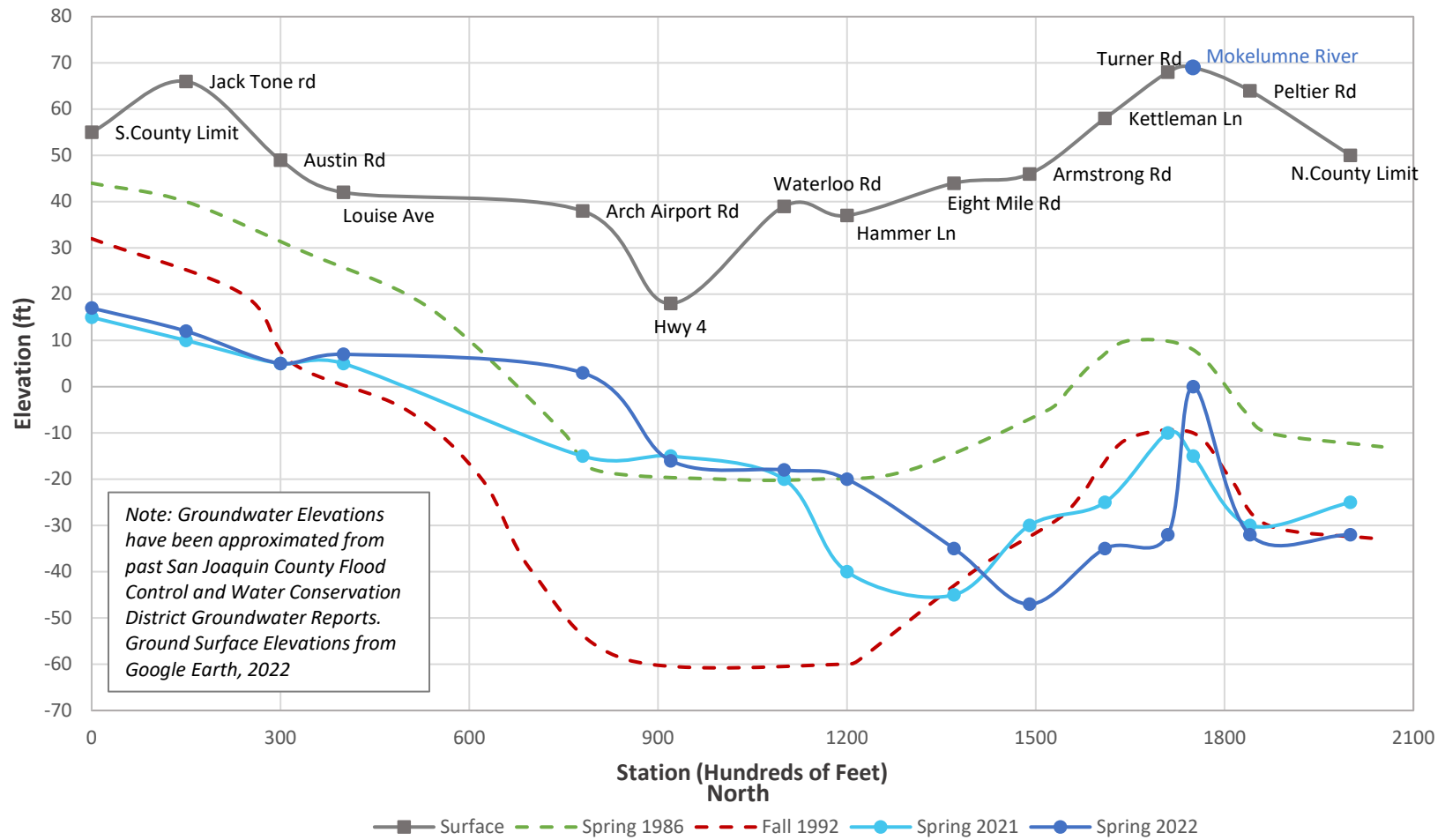


Figure 4-29 Highway 99 Cross Section Spring 2022

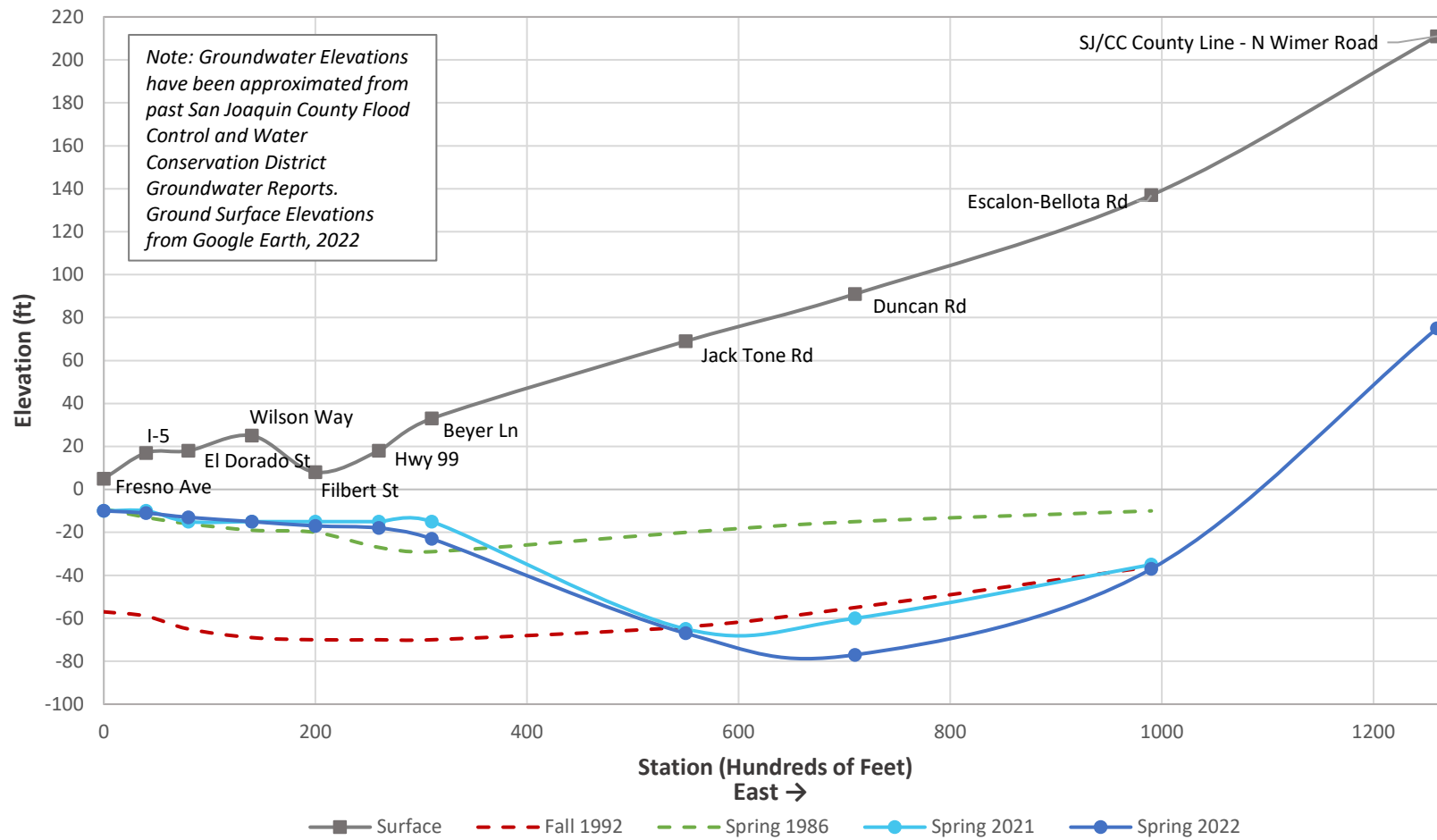


Figure 4-30 Highway 4 & Highway 26 Cross Section Spring 2022

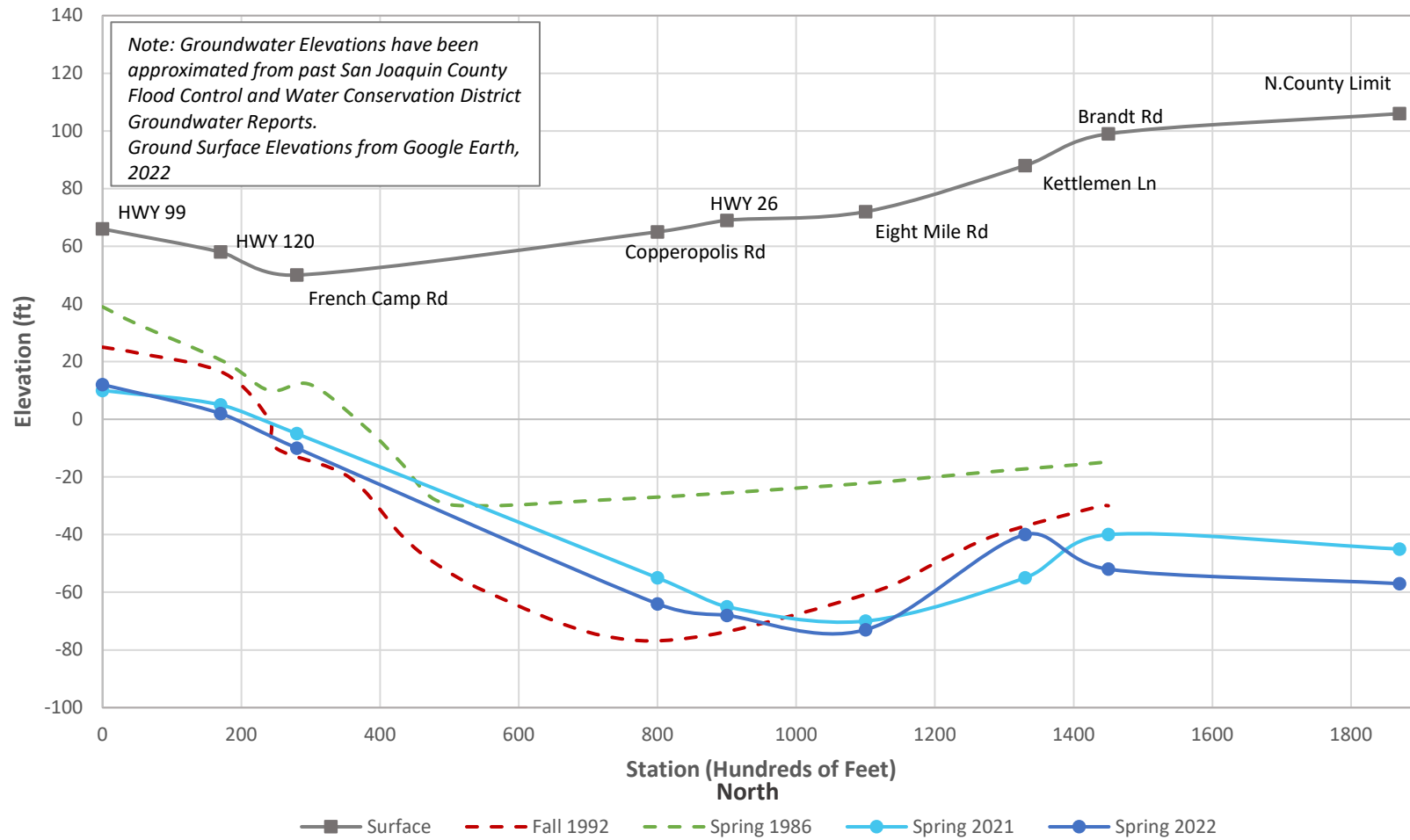


Figure 4-31 Jack Tone Rd Cross Section Spring 2022

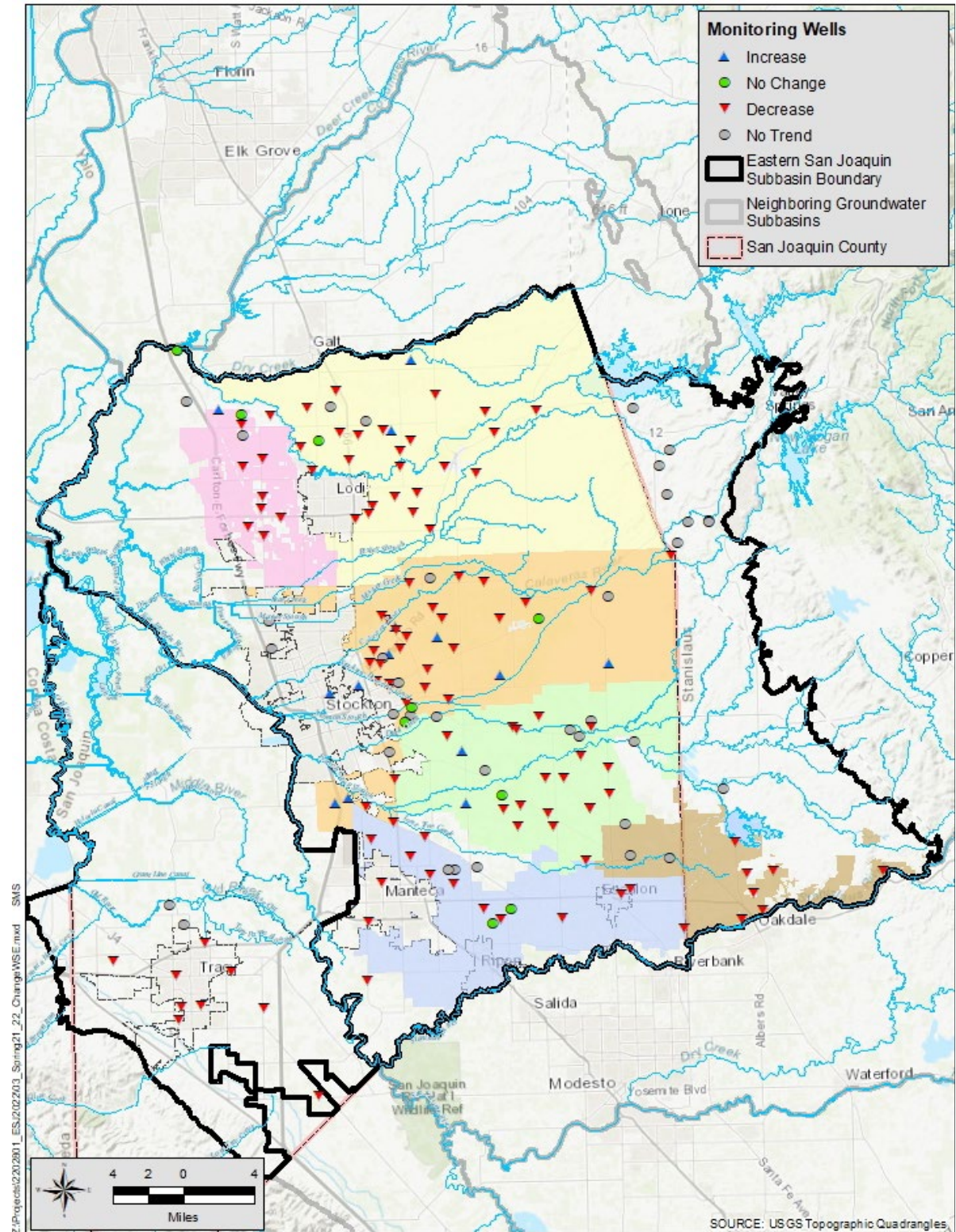


Figure 4-32 Change in Groundwater Elevation – Spring 2021 to Spring 2022

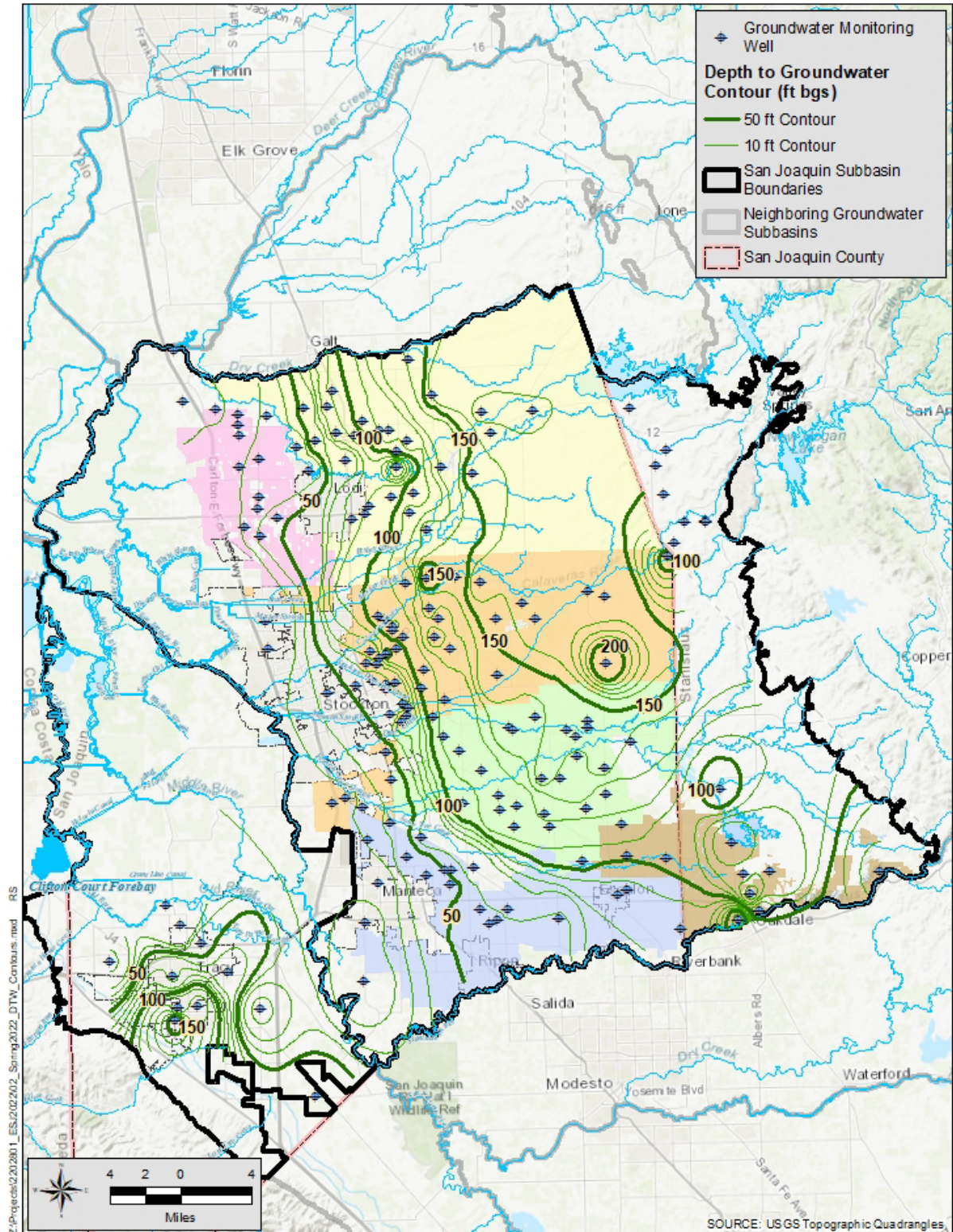


Figure 4-33 Depth to Groundwater – Spring 2022

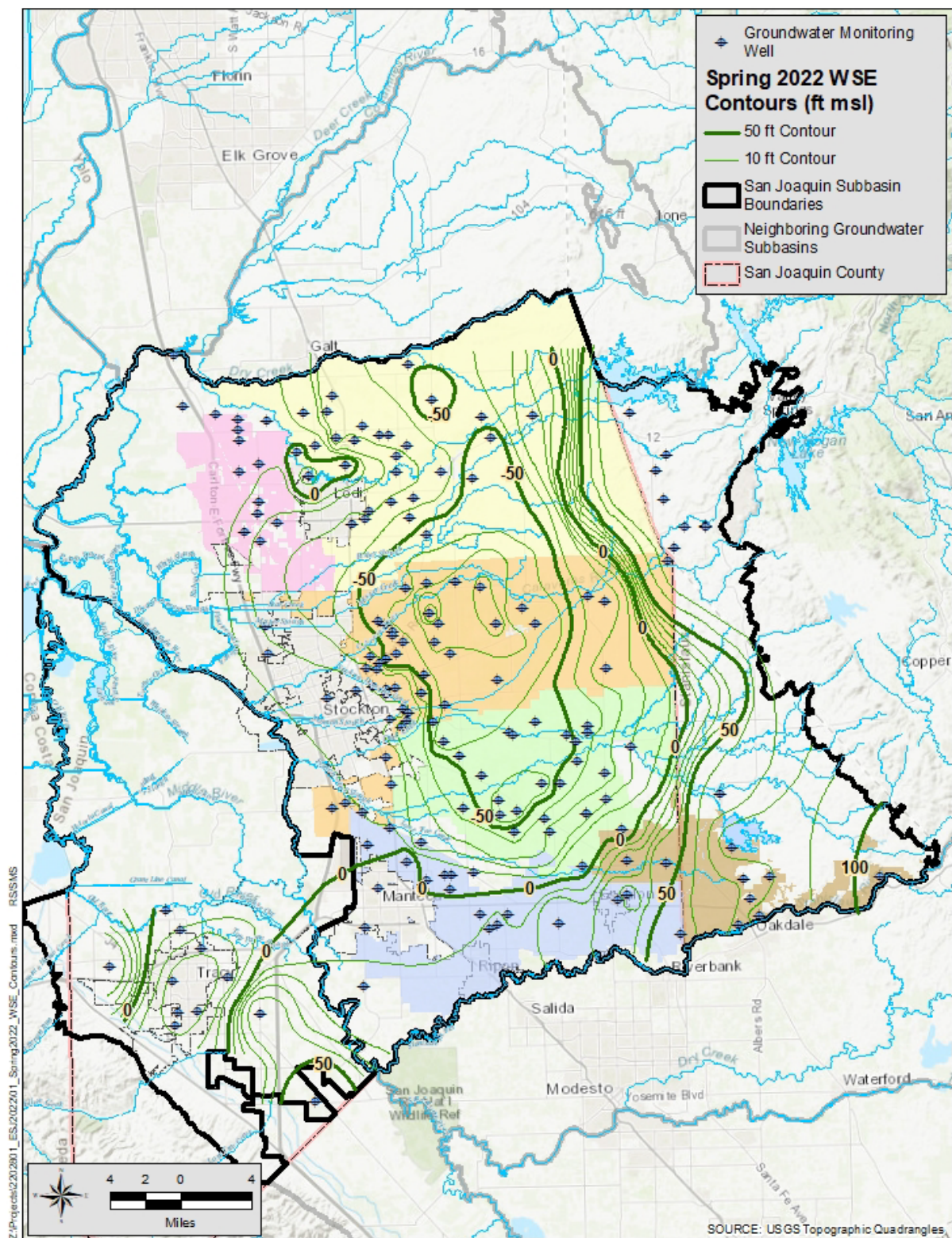


Figure 4-34 Groundwater Surface Elevation – Spring 2022