

San Joaquin County Flood Control and Water Conservation District



Groundwater Report Fall 2015



San Joaquin County Flood Control and Water Conservation District

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Copies of the Fall 2015 Groundwater Report may be purchased for \$30 and 36"X48" Contour Maps for \$25 each from:

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Acknowledgements

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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 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

Libby-Owens-Ford, Lathrop

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



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San Joaquin County Flood Control and Water Conservation District Fall 2015 Groundwater Report

Introduction

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

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 550 wells, of which 270 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.

Purpose

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

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

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

Saline intrusion from the west is a continuing concern affecting the quality of groundwater in the Eastern San Joaquin Groundwater Basin. Groundwater quality analysis is completed on an annual basis, from approximately 18 municipal and domestic supply wells (exact number varies from year to year) located in proximity to the saline front.

Procedure

Groundwater quality sampling is conducted on an annual basis during the month of October, along with the Fall measurements. Approximately 18 wells are currently sampled. The exact number of wells may vary depending on well access and other conditions. Replicate groundwater samples (two) are analyzed for Chloride (Cl⁻) by Fruit Growers Laboratory, Inc., and analyzed for Electrical Conductivity (EC) using DiST 3 by Hanna Instruments. Total Dissolved Solids (TDS) are calculated using the formula: $TDS = 0.64 \times EC$ (umhos). Data is then stored in a database for accessibility and reporting requirements.

Water level measurements are performed with the use of 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.

Section 1–Rainfall Distribution

Summary of Rainfall Distribution

The underlying groundwater basin levels in San Joaquin County respond to changes in annual precipitation. There are four total annual precipitation graphs and four monthly precipitation graphs included in this report (Figures 1-1 through 1-8). These graphs reflect three areas located across San Joaquin County and one area in Calaveras County. The station located at the Stockton Fire Station No. 4, as well as the station located in Tracy Carbona, has pertinent data beginning in 1940. Lodi station has data from 1949 to 2015. The Camp Pardee station has data available from 1949 to 2015.

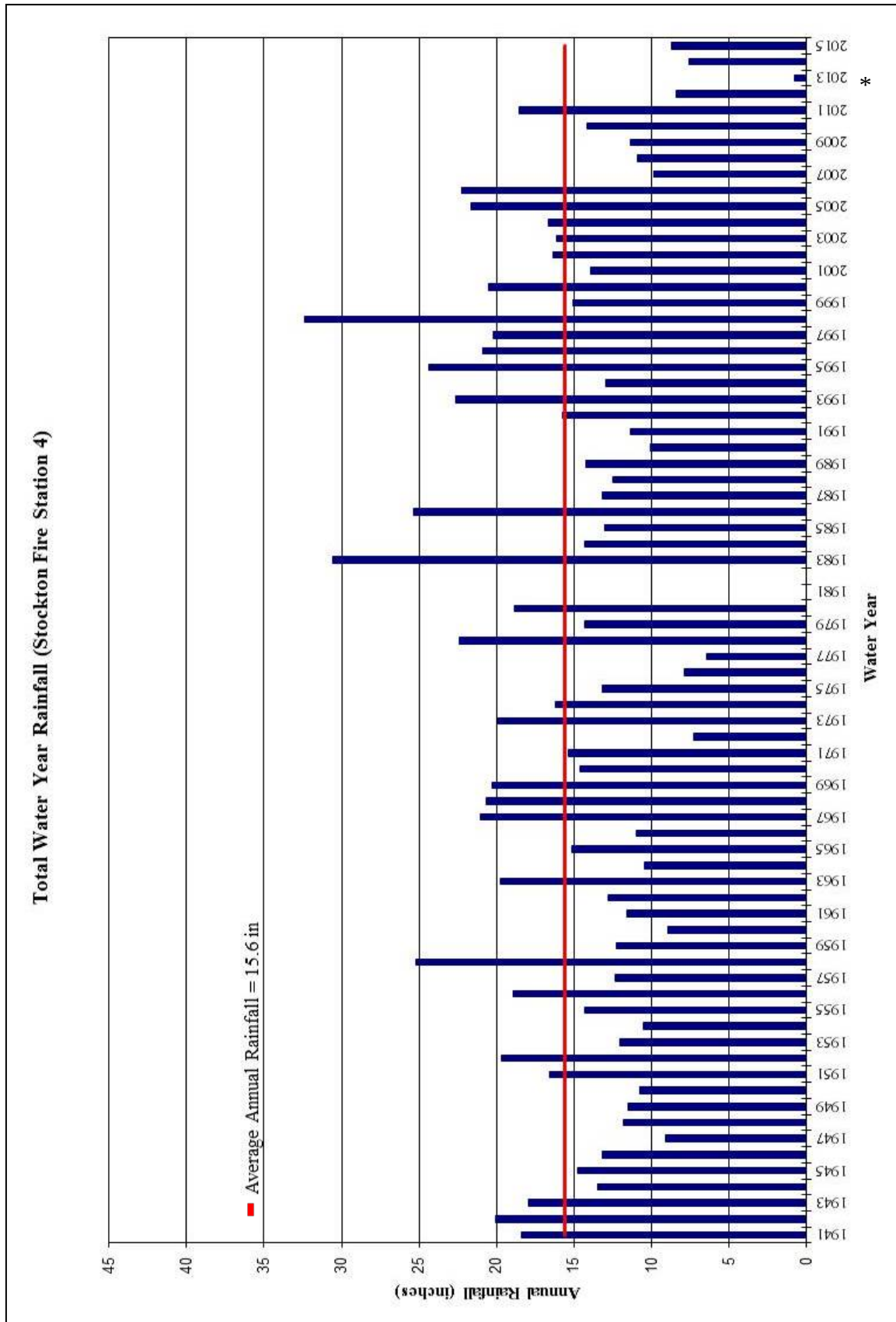


Figure 1-1: Total Annual Rainfall (Stockton Fire Station 4)

* Some data for 2012-2013 Water Year is missing. Total in graph does not reflect actual precipitation

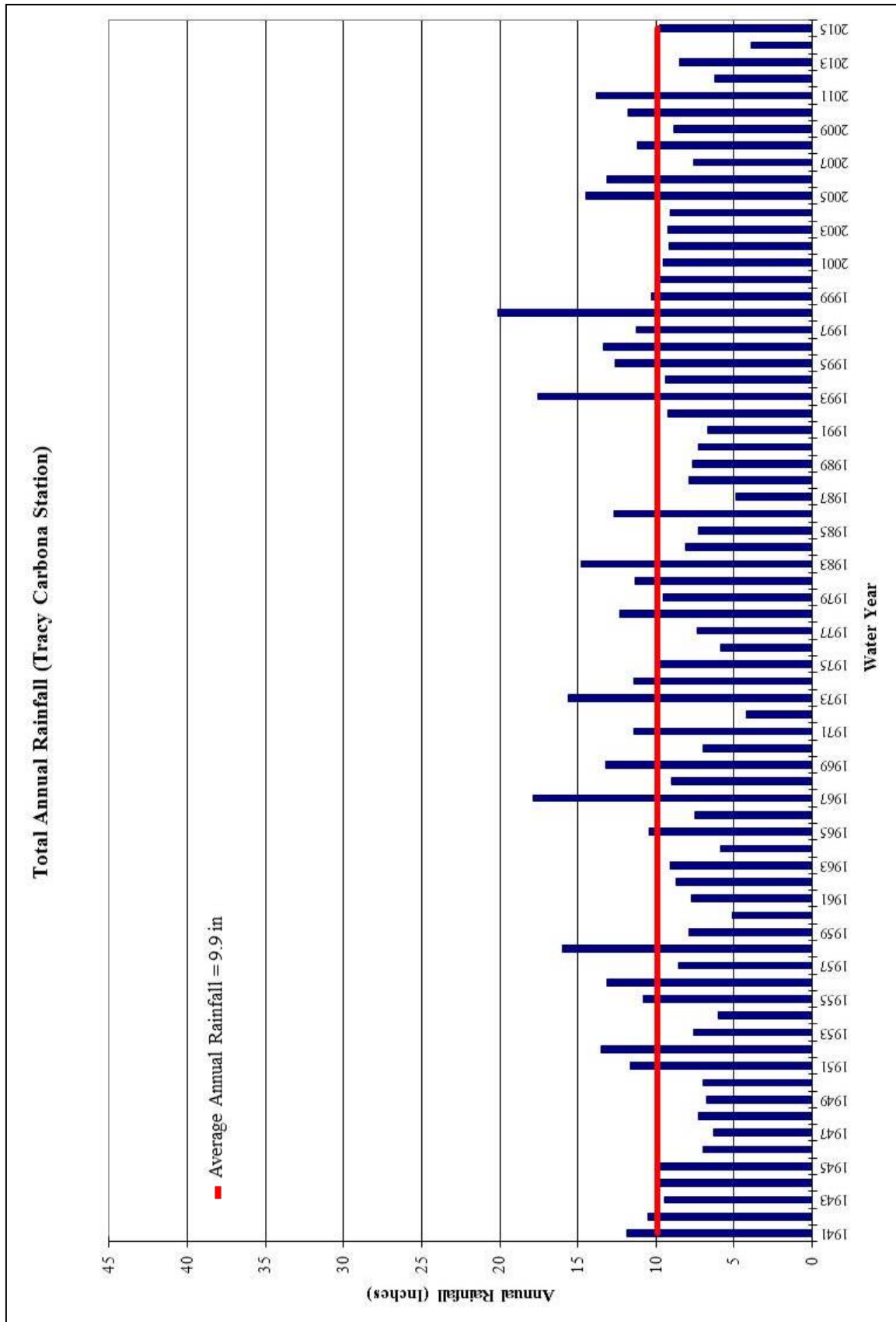


Figure 1-2: Total Annual Rainfall (Tracy Carbona Station)

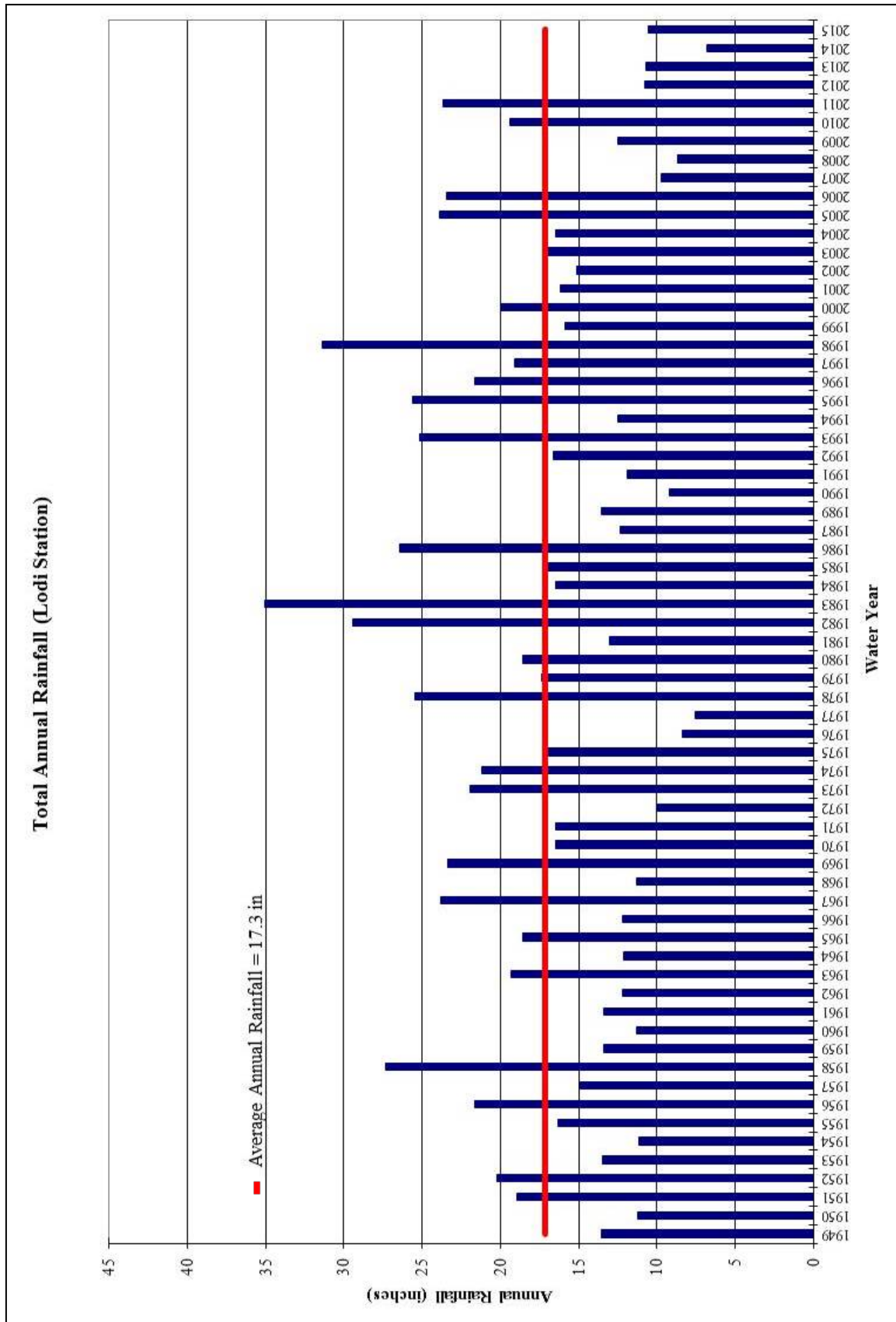


Figure 1-3: Total Annual Rainfall (Lodi Station)

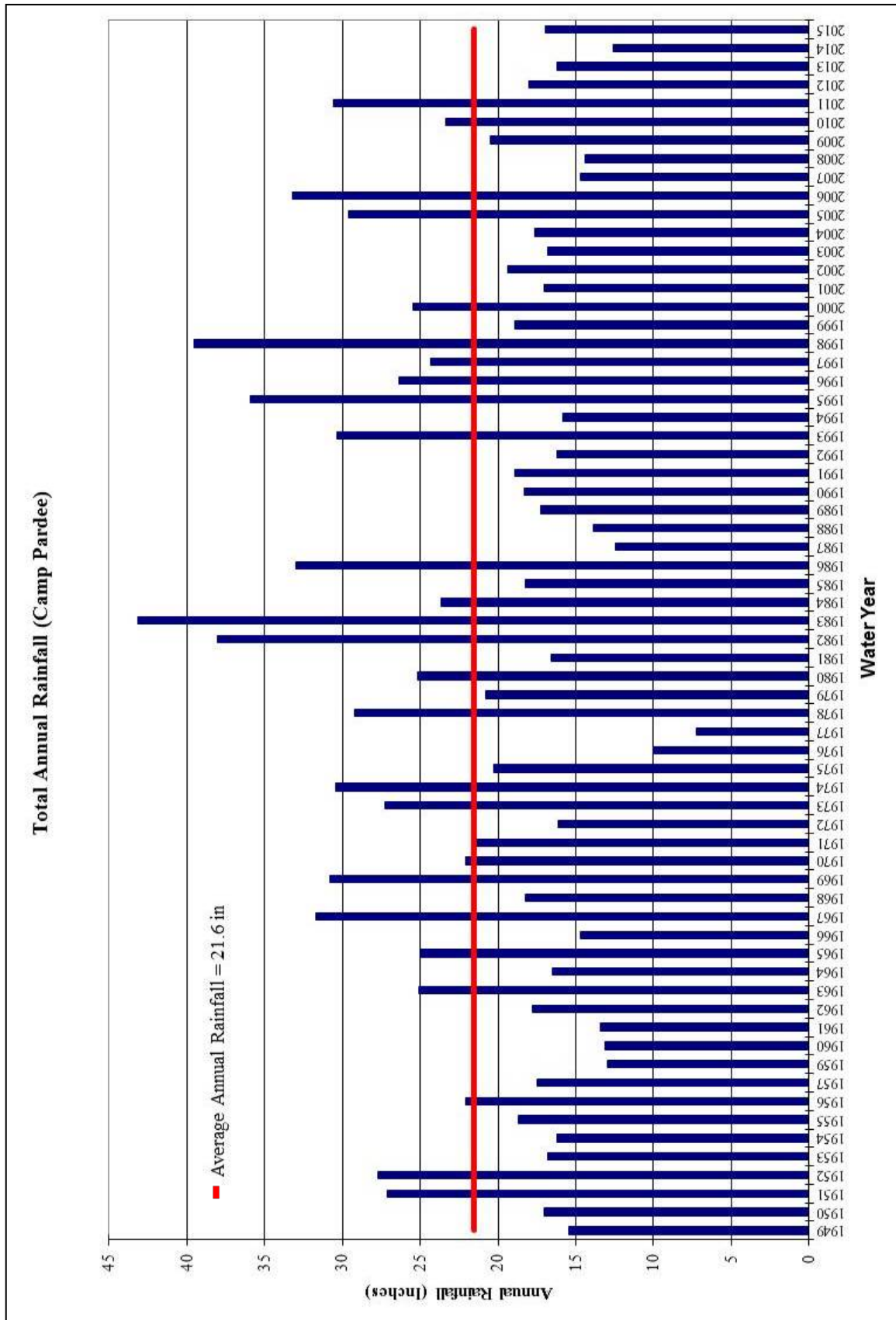


Figure 1-4: Total Annual Rainfall (Camp Pardee)

Monthly Rainfall Distribution

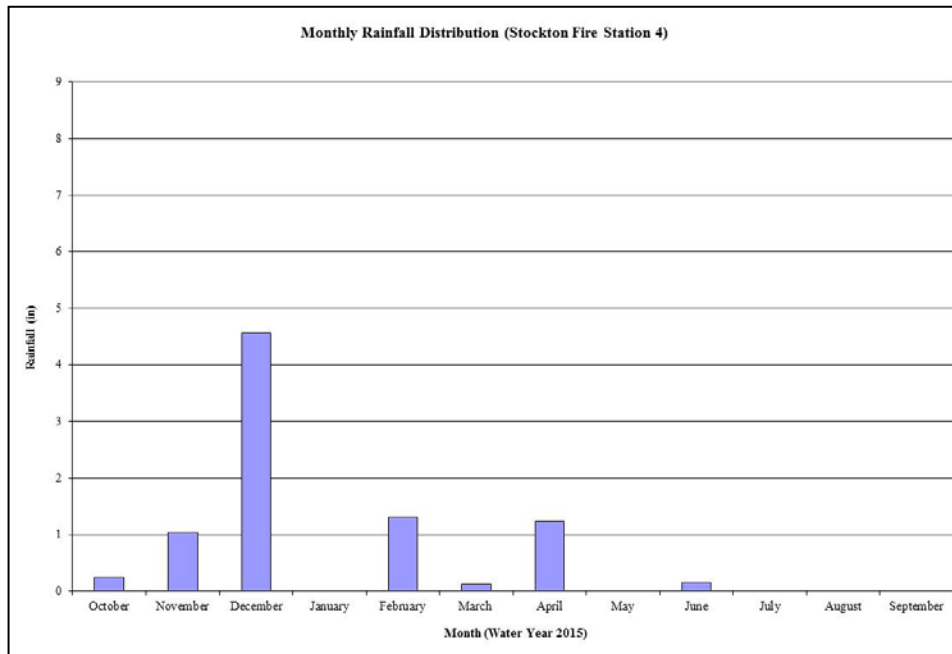


Figure 1-5: Monthly Rainfall Distribution (Stockton Fire Station 4)

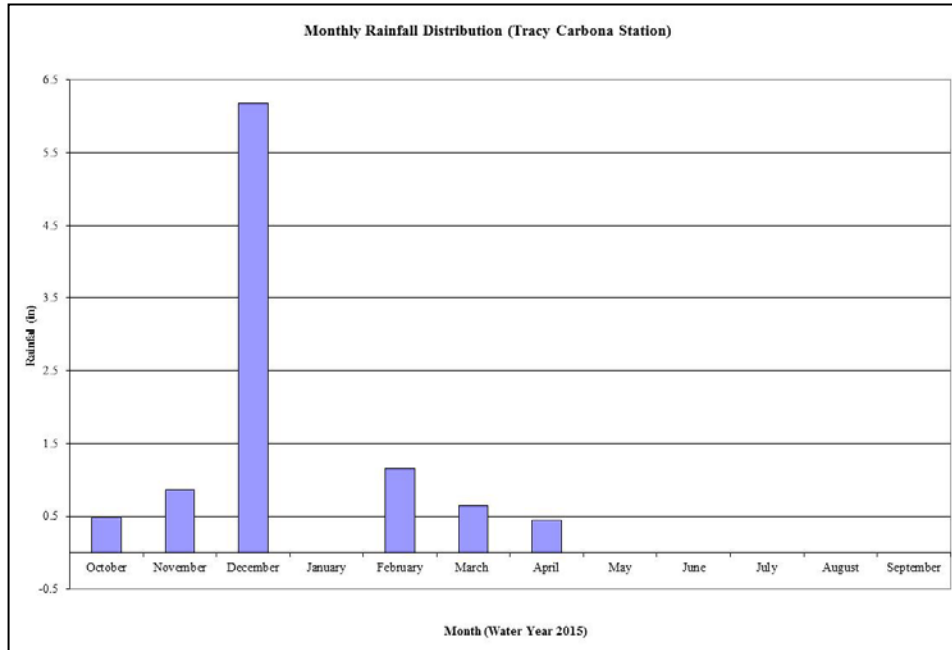


Figure 1-6: Monthly Rainfall Distribution (Tracy Carbona Station)

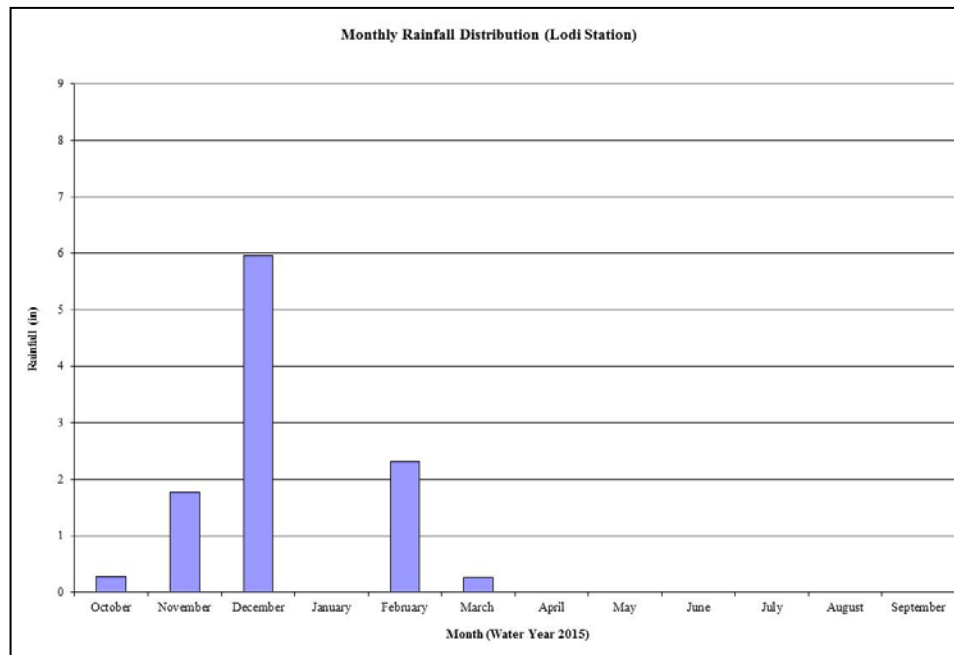


Figure 1-7: Monthly Rainfall Distribution (Lodi Station)

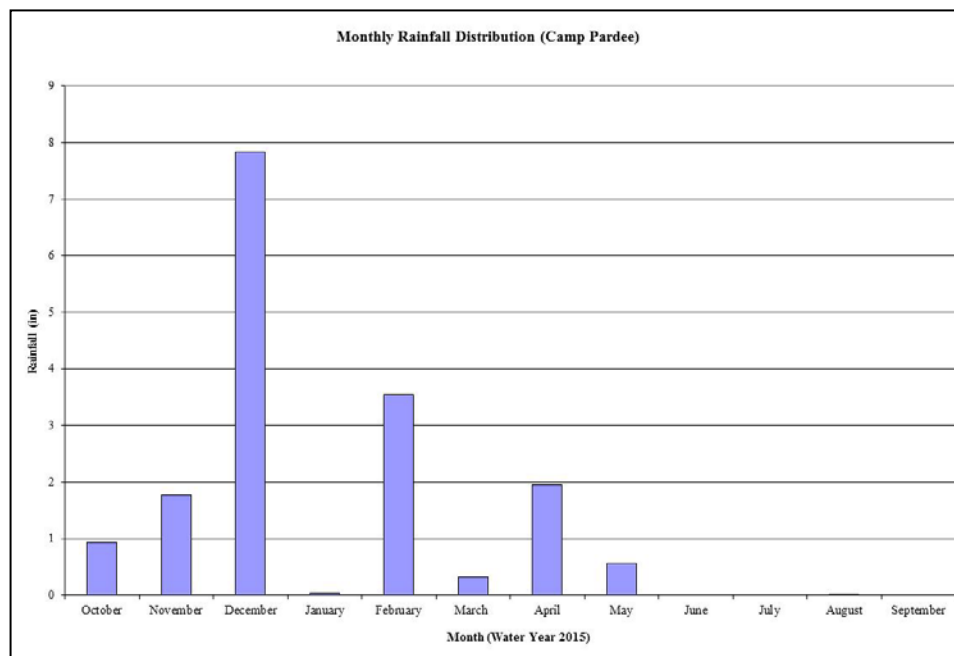


Figure 1-8: Monthly Rainfall Distribution (Camp Pardee)

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Section 2 – Groundwater Quality Monitoring

Summary of Groundwater Quality Results

The information contained in the Fall 2015 Groundwater Report is summarized as follows:

North San Joaquin County – Due to access constraints no wells was tested in this area this year.

North Stockton – Five wells were tested for Cl^- , EC and TDS in North Stockton. One of the wells increased in Cl^- , EC and TDS concentrations from the previous measurements in the fall of 2014. Two of the wells decreased in Cl^- , EC and TDS concentrations, and two of the wells were not comparable to the analysis in the fall 2014.

County Hospital Area – Due to access constraints no wells was tested in this area this year.

Lathrop – Two wells were sampled in Lathrop. One of the wells decrease in Cl^- concentrations and the other increased in Cl^- concentrations. One of the wells decrease in EC and TDS concentrations and the other increased in EC and TDS from the analysis in the fall 2014.

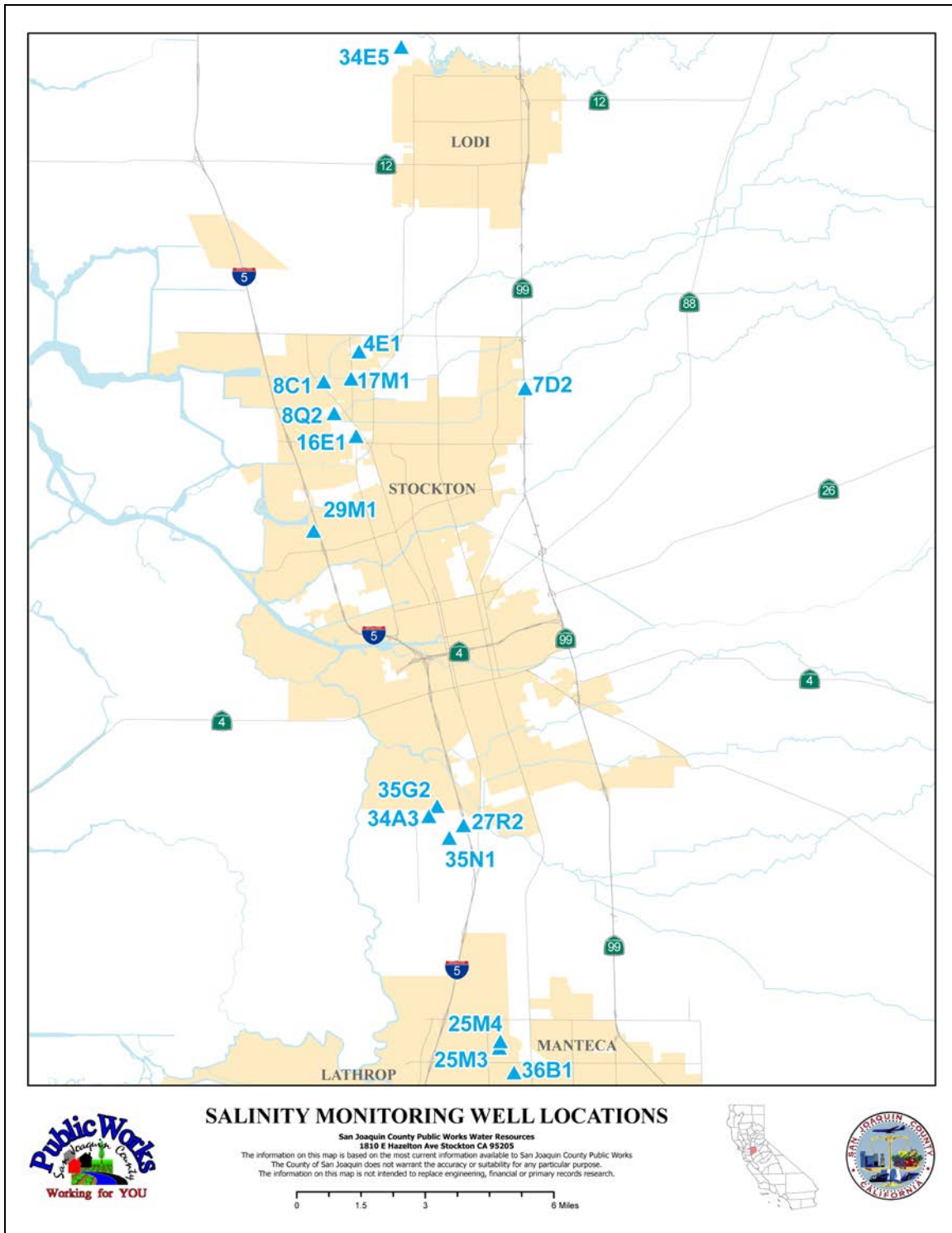


Figure 2-1: Salinity Monitoring Well Locations

Table 2-1: Groundwater Quality Mineral Analysis Fall 2015

Well	Chloride ppm	EC mmho	TDS* ppm
27R2	-	-	-
34A3	-	-	-
35G2	-	-	-
35N1	-	-	-
25M3	59	0.721	461
25M4	34	0.494	316
36B1	-	-	-
4E1	22	0.565	362
8C1	33	0.867	555
8Q2	-	-	-
16E1	-	-	-
17M1	14	0.277	177
29M1	80	0.642	411
7D2	5	0.405	259
34E5	-	-	-

*TDS values are calculated by the following formula: $TDS = .64 * 1000 * EC$

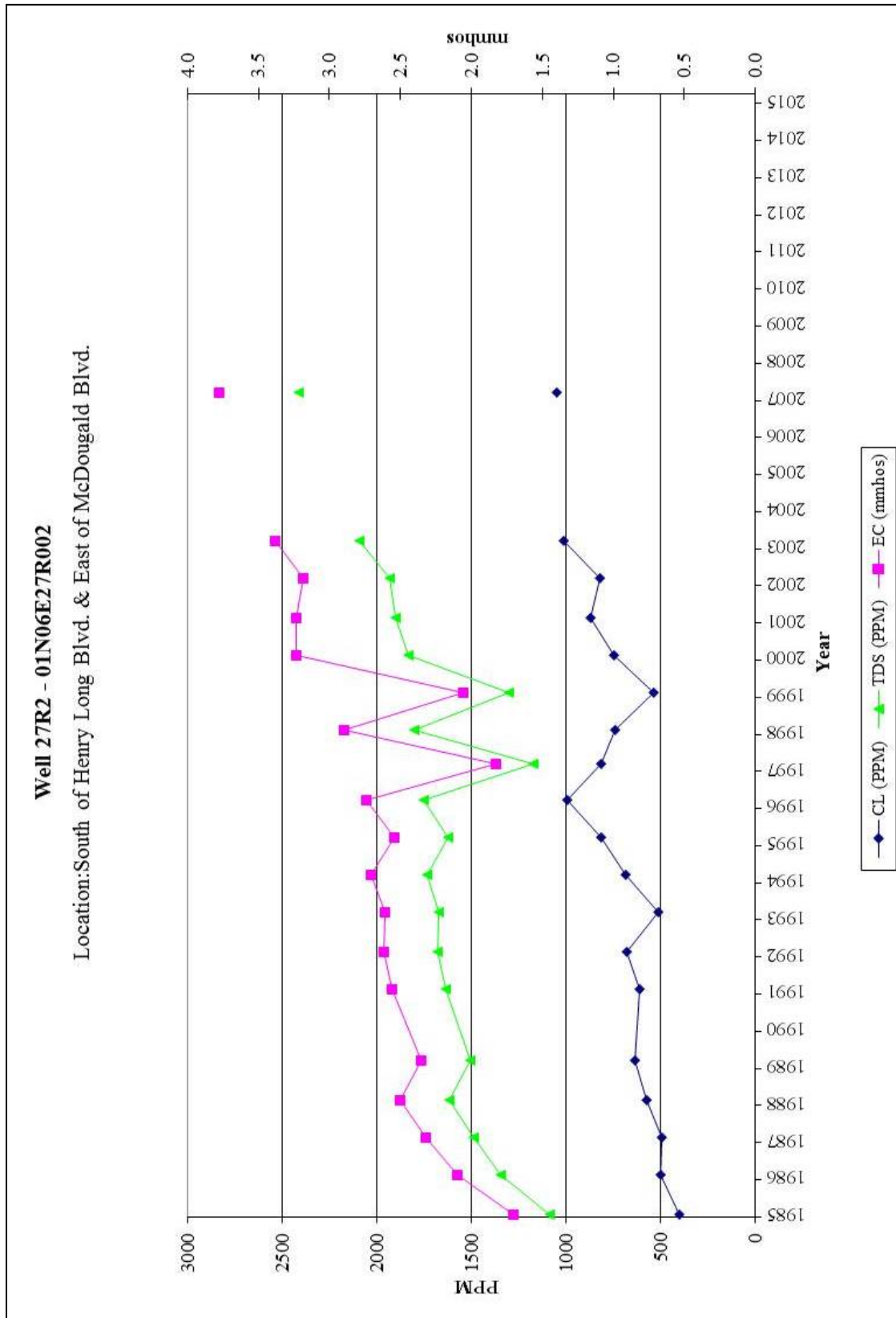


Figure 2-2: Quality Comparison Graph Well 27R2

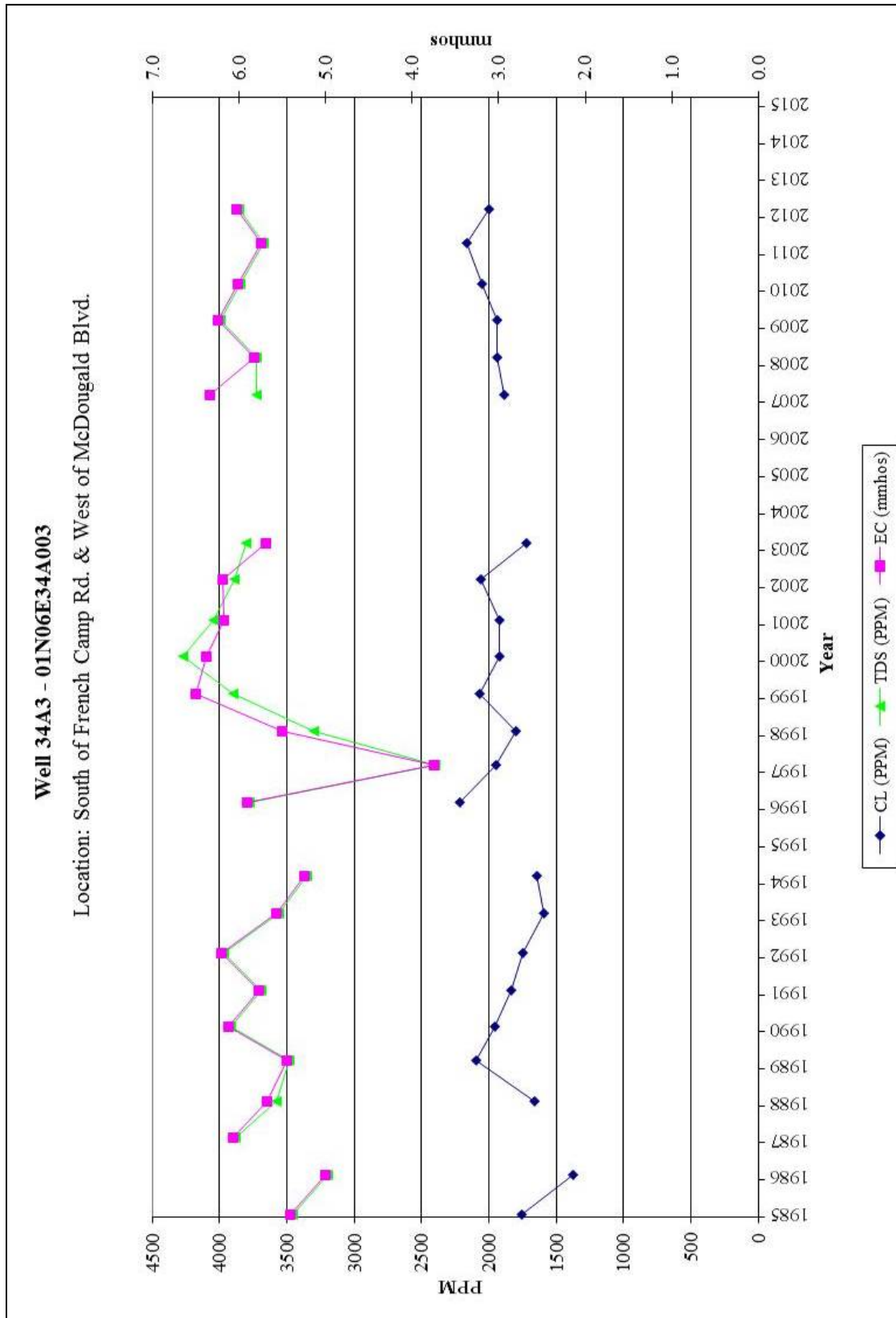


Figure 2-3: Quality Comparison Graph Well 34A3

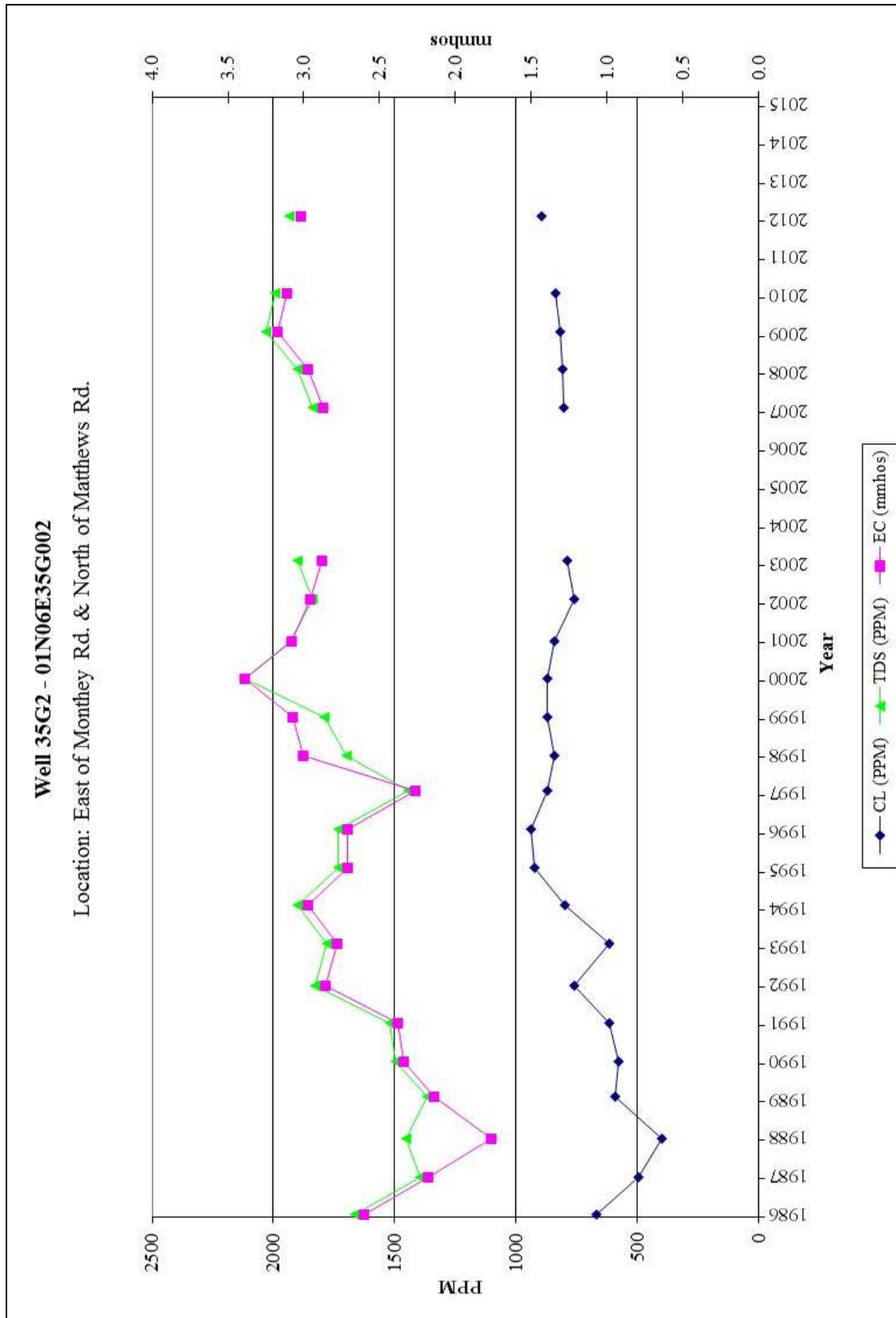


Figure 2-4: Quality Comparison Graph Well 35G2

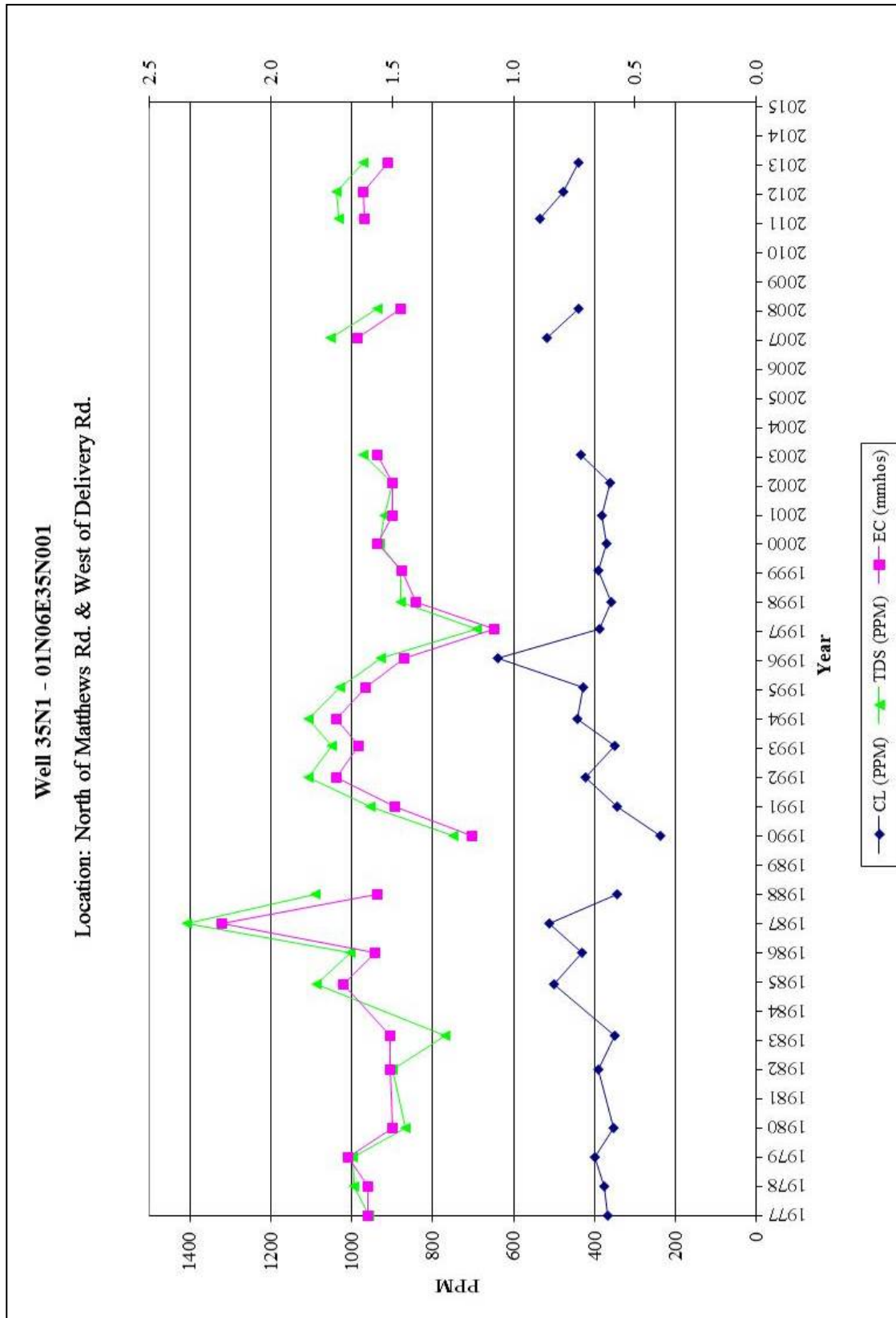


Figure 2-5: Quality Comparison Graph Well 35N1

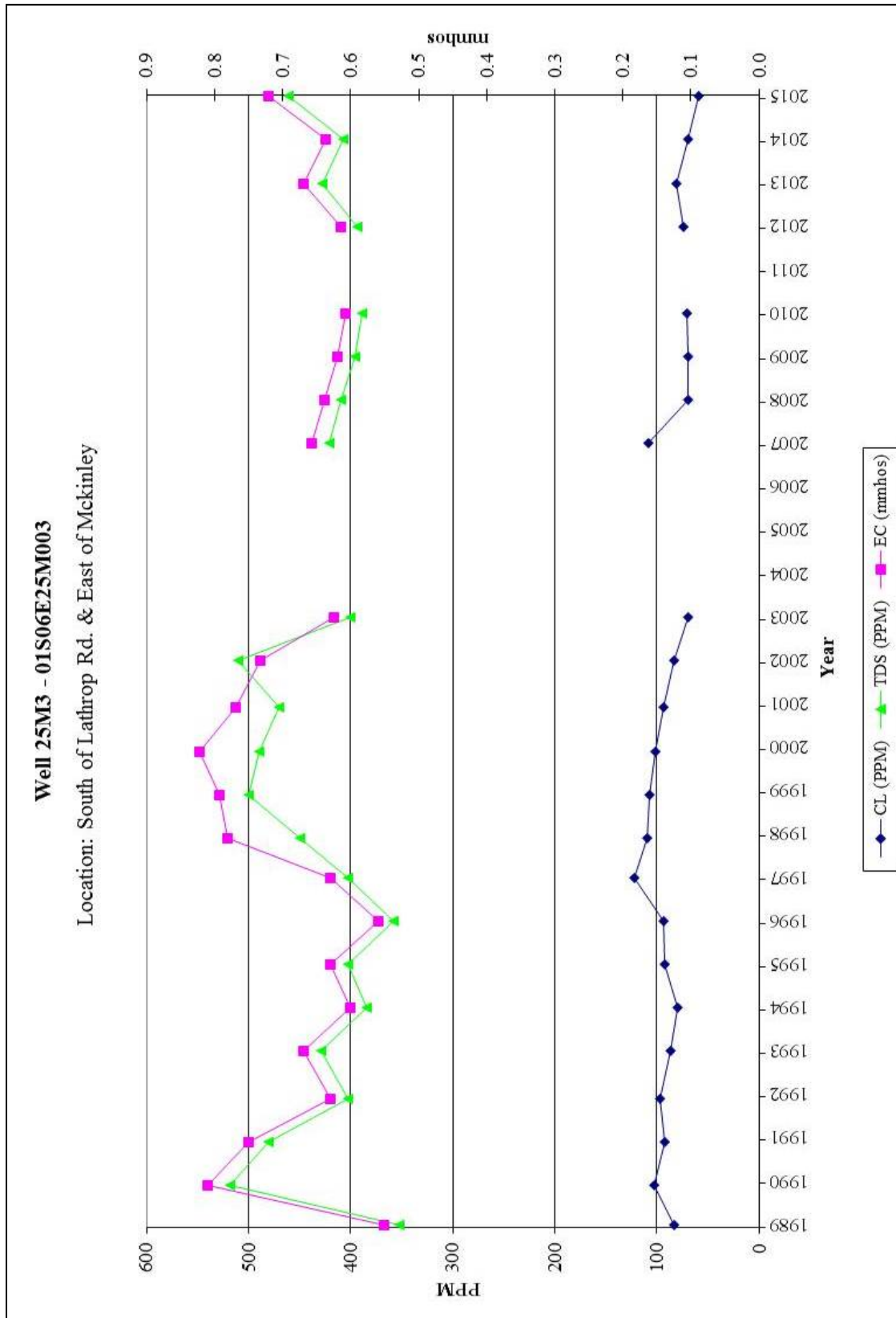


Figure 2-6: Quality Comparison Graph Well 25M3

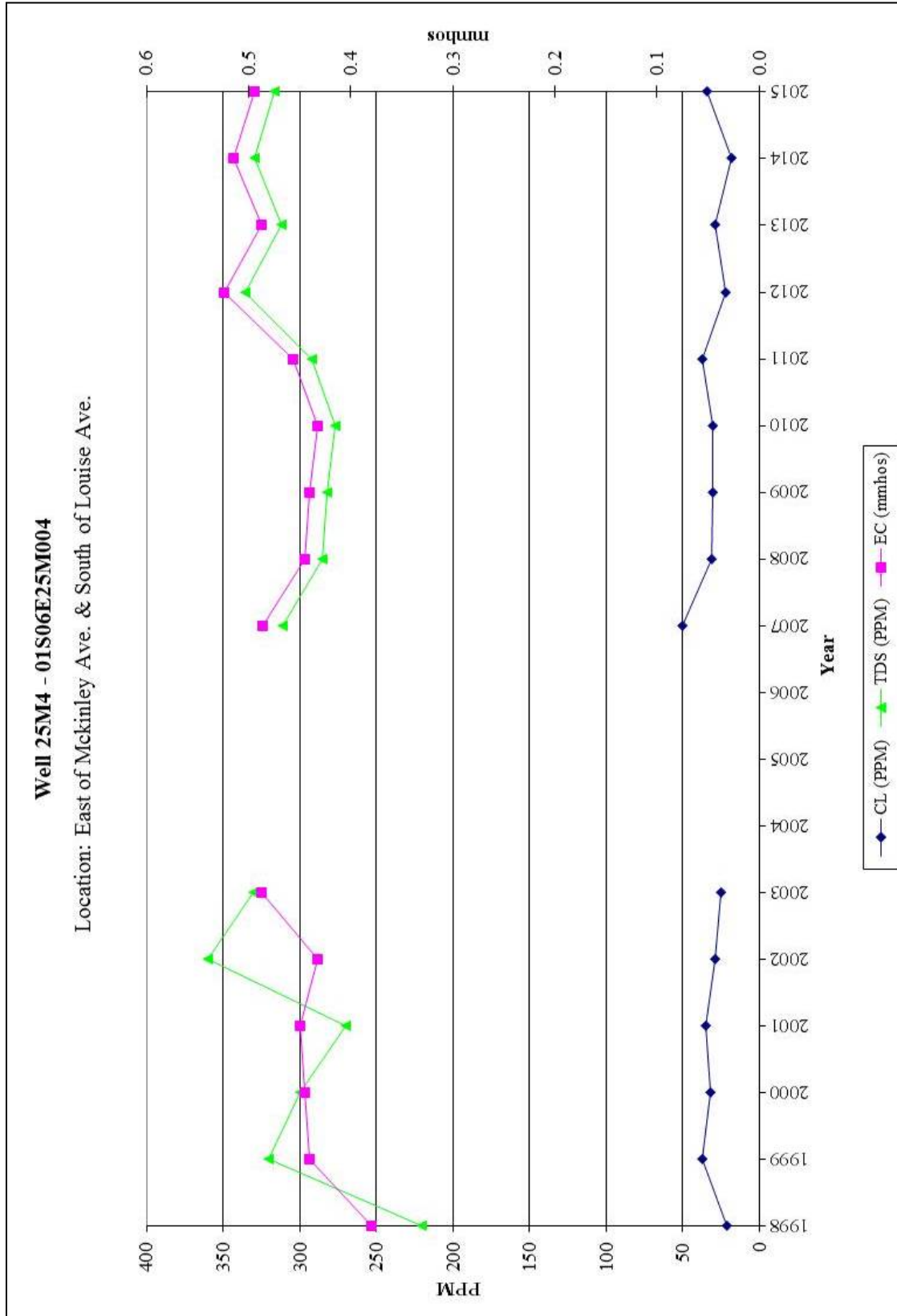


Figure 2-7: Quality Comparison Graph Well 25M4

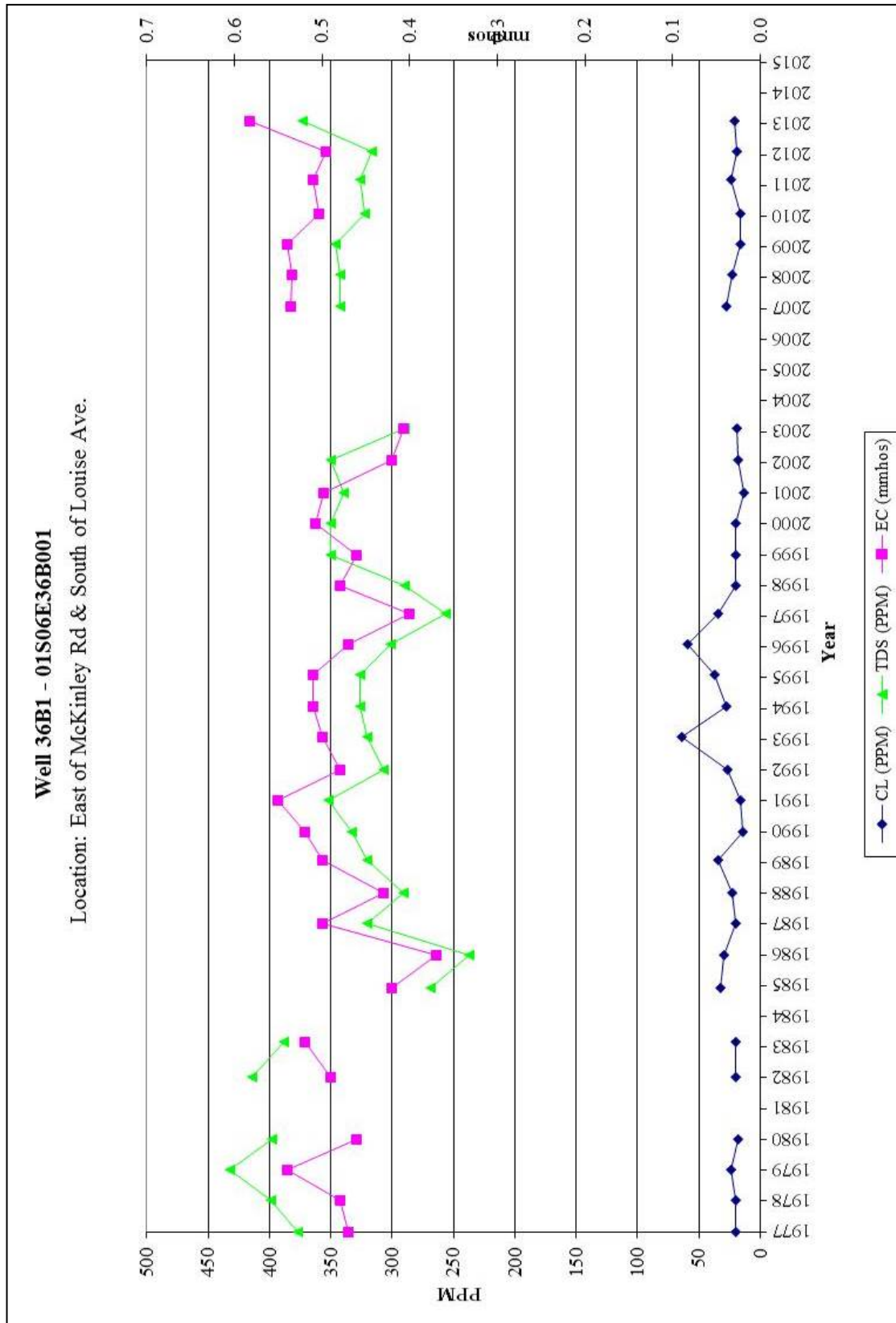


Figure 2-8: Quality Comparison Graph Well 36B1

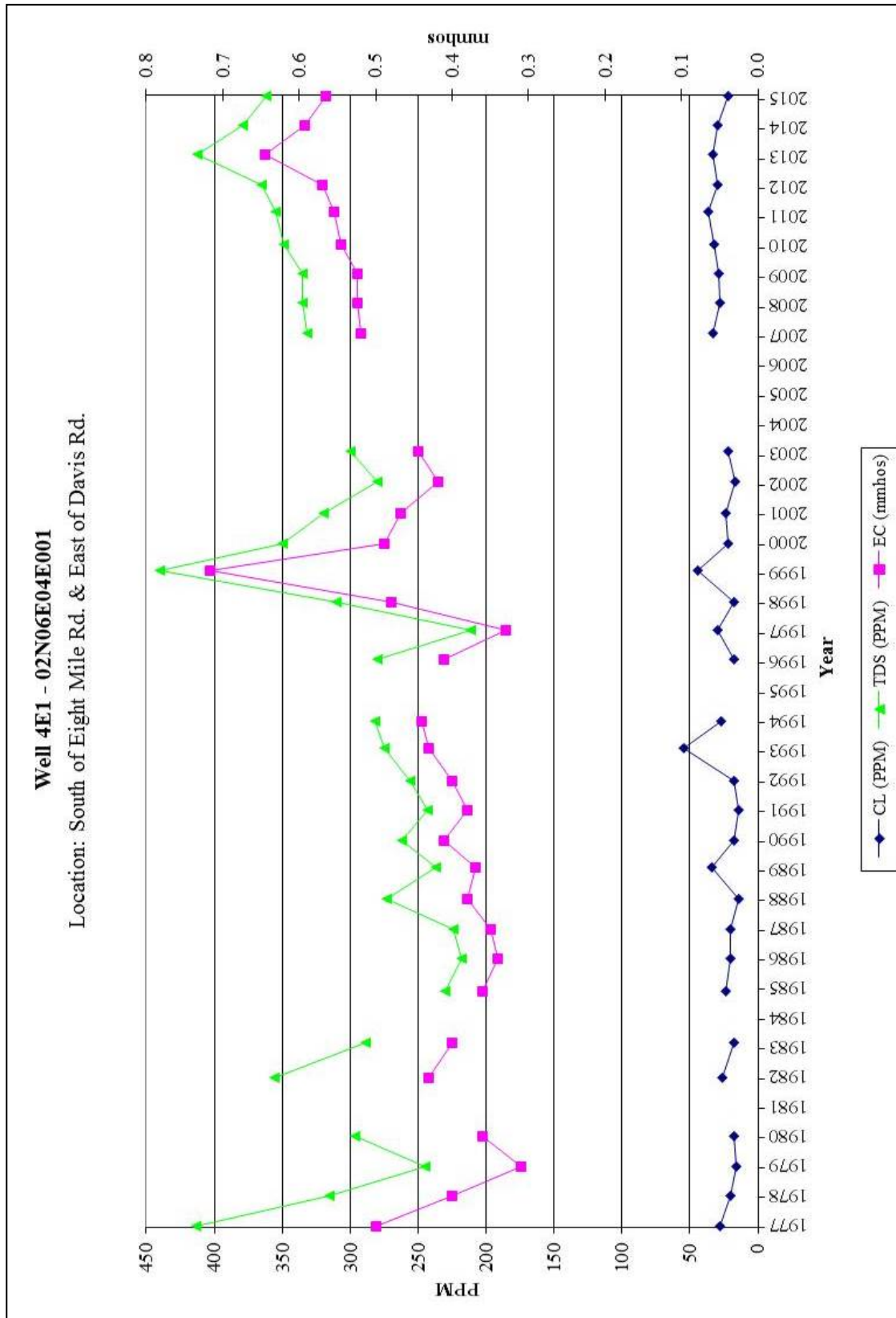


Figure 2-9: Quality Comparison Graph Well 4E1

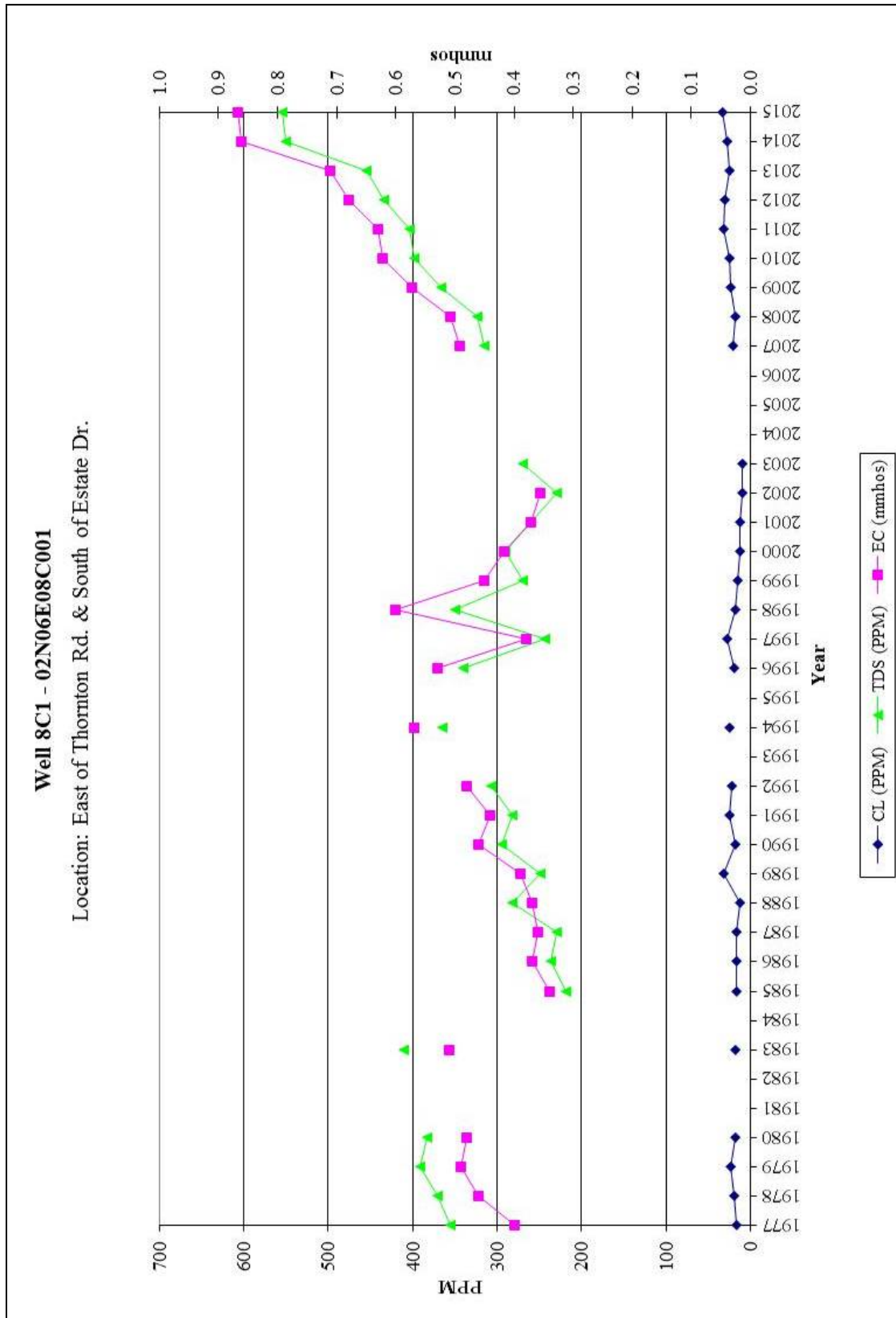


Figure 2-10: Quality Comparison Graph Well 8C1

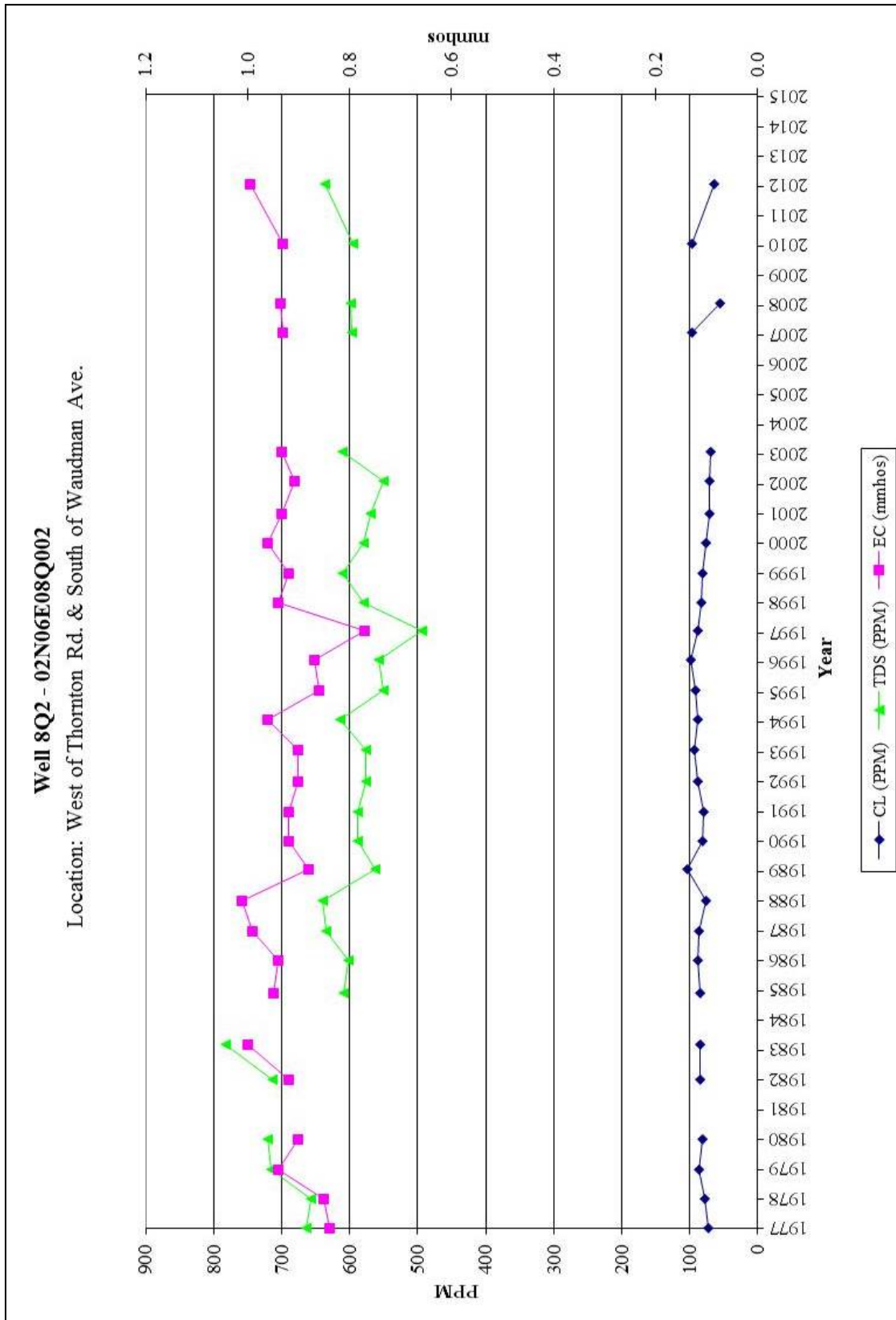


Figure 2-11: Quality Comparison Graph Well 8Q2

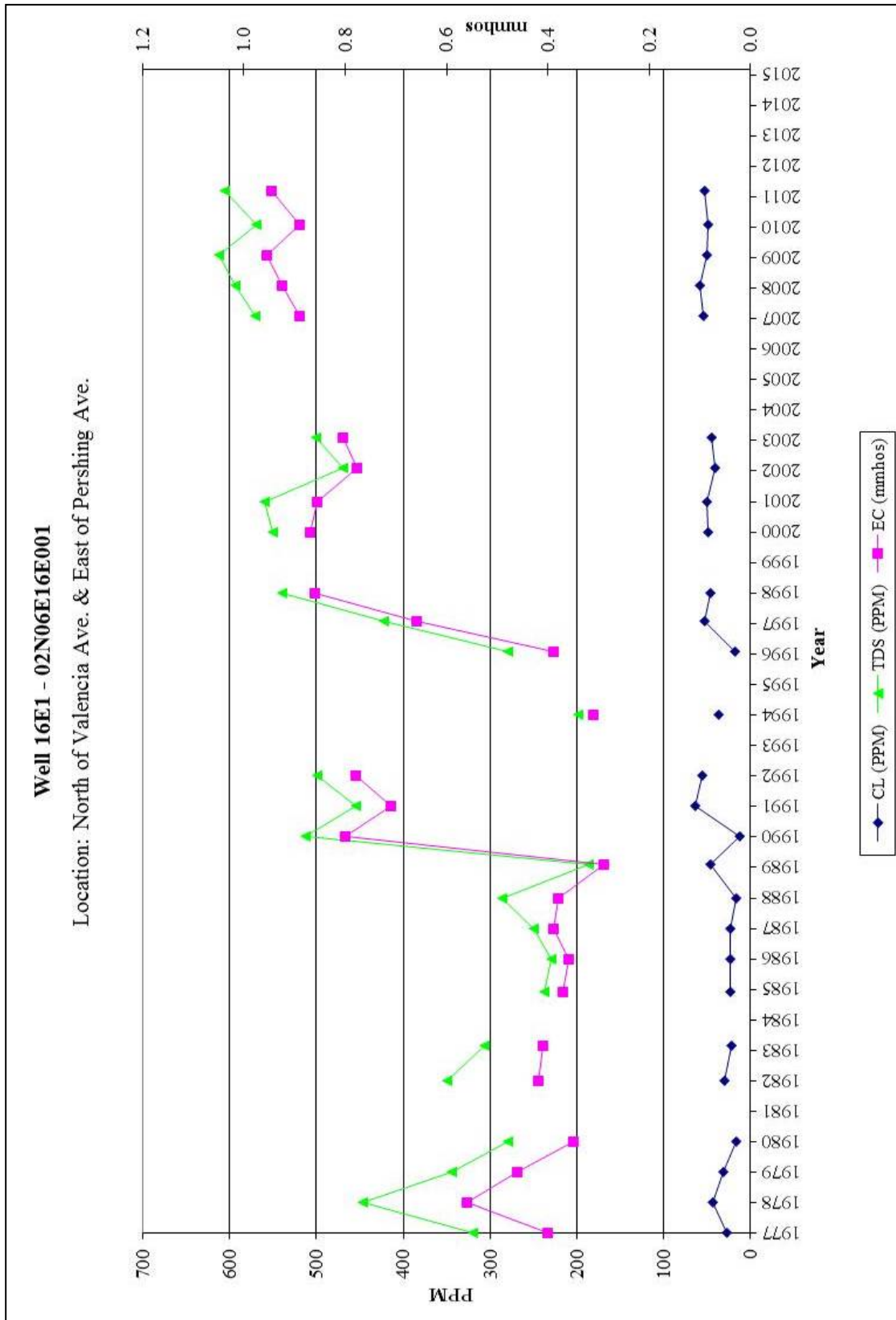


Figure 2-12: Quality Comparison Graph Well 16E1

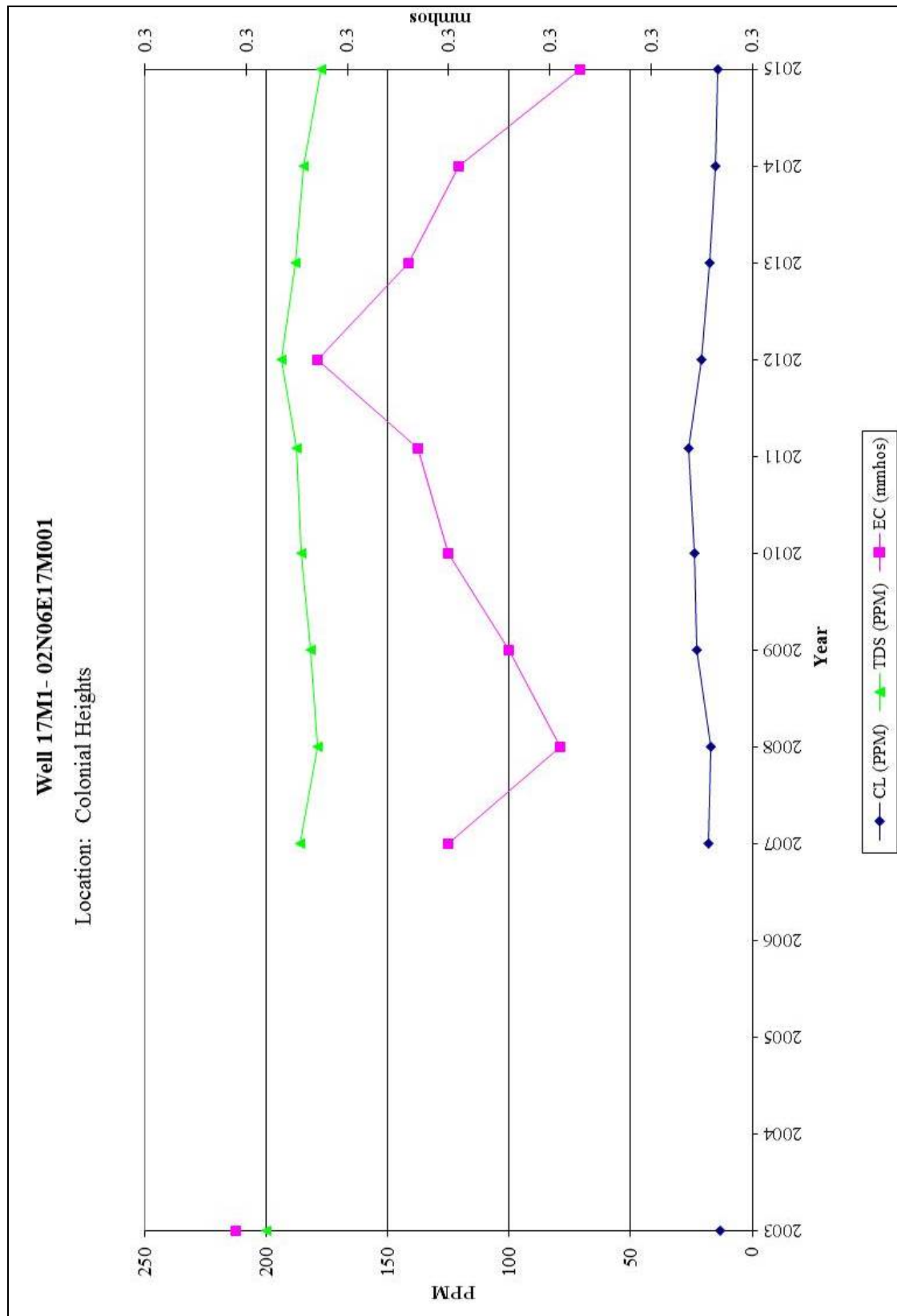


Figure 2-13: Quality Comparison Graph Well 17M1

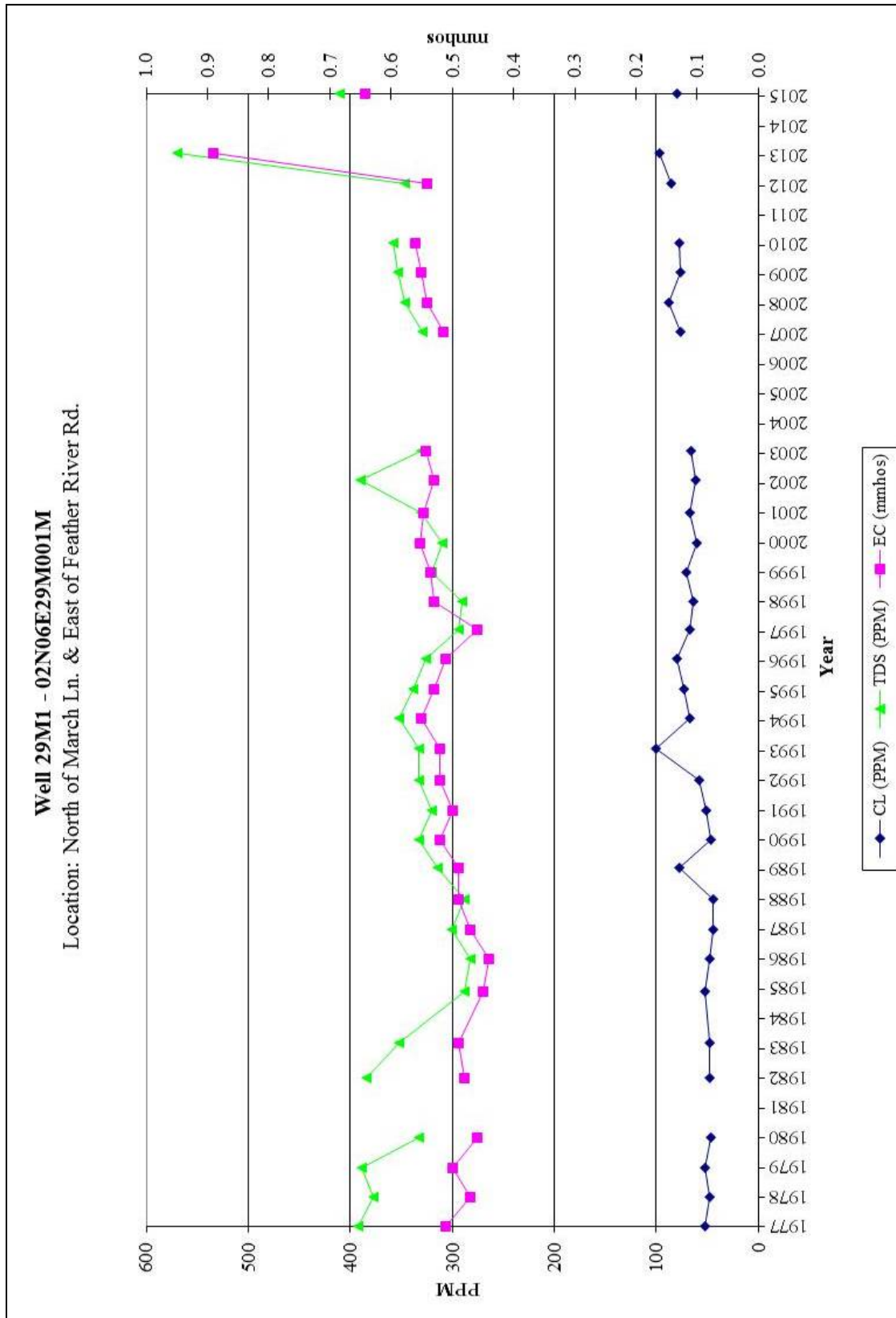


Figure 2-14: Quality Comparison Graph Well 29M1

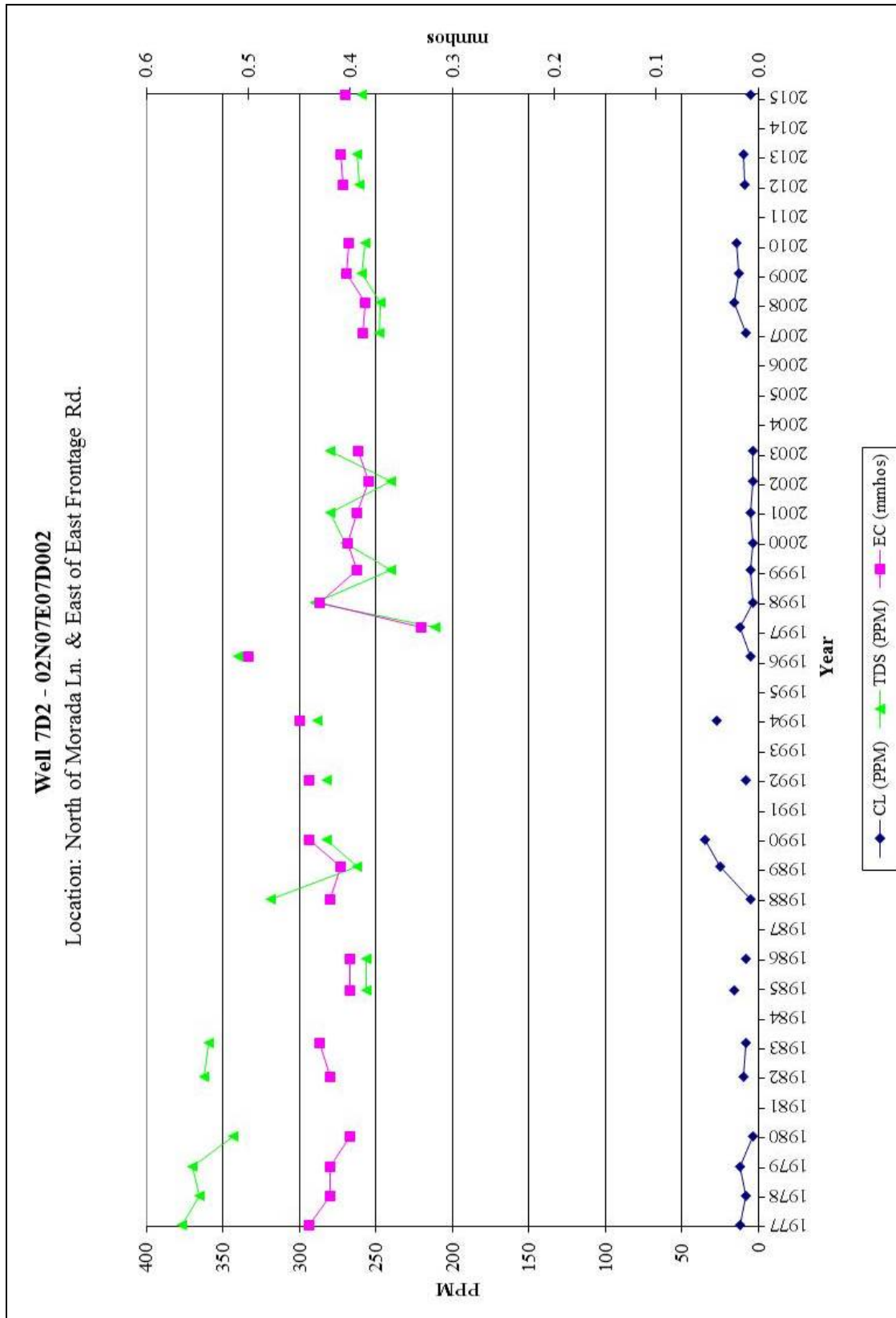


Figure 2-15: Quality Comparison Graph Well 7D2

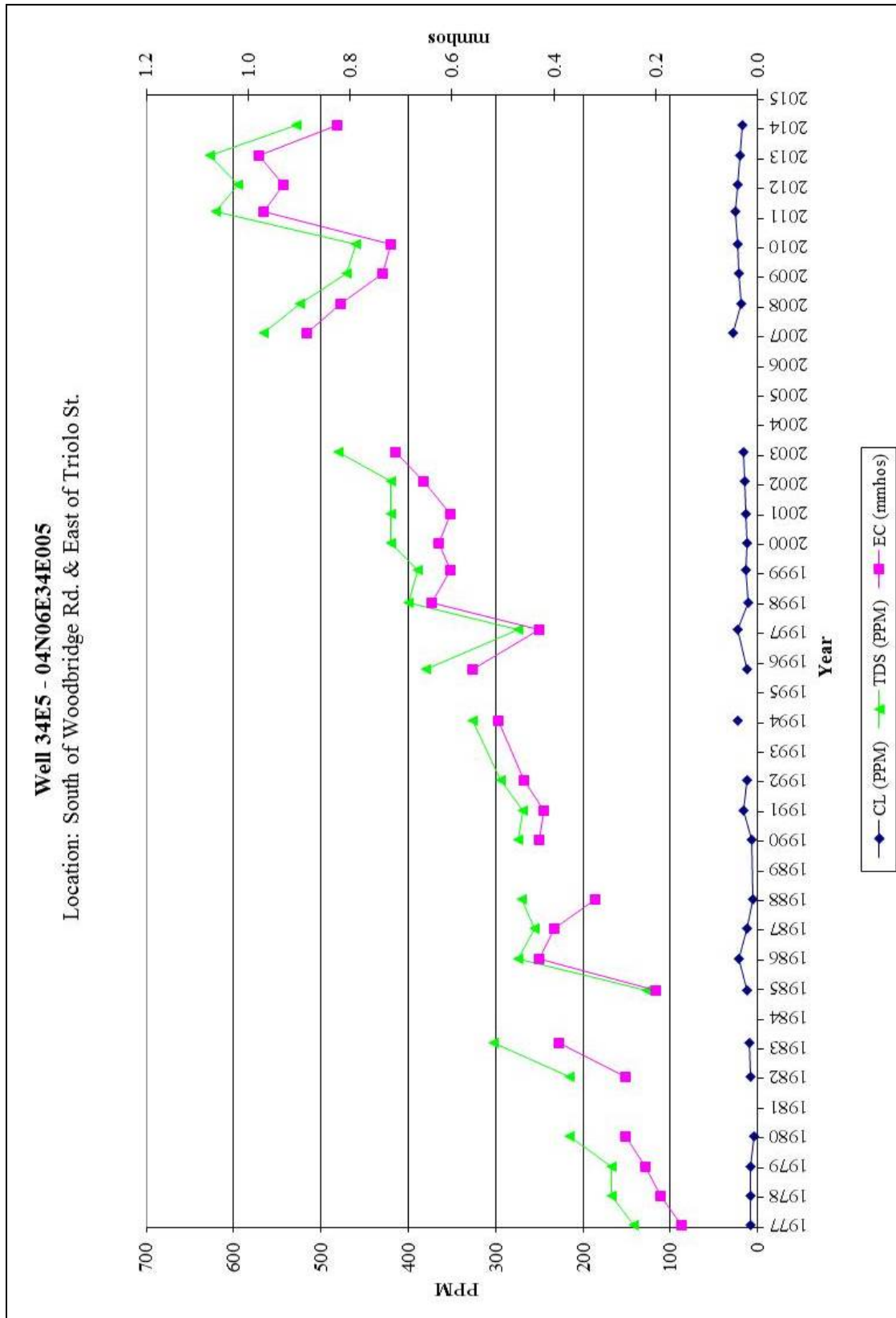


Figure 2-15: Quality Comparison Graph Well 34E5

Section 3 – Groundwater Elevation Monitoring

Summary of Groundwater Elevations

The information contained in the Fall 2015 Groundwater Report is summarized as follows:

GROUNDWATER LEVELS

Central San Joaquin Water Conservation District (CSJWCD) – Forty-eight (48) wells were able to be compared in CSJWCD. Forty-one (41) show decreases in groundwater levels. Six (6) wells show an increase in groundwater levels. One (1) well had no change in groundwater elevation.

North San Joaquin Water Conservation District (NSJWCD) – One-hundred six (106) wells were compared in NSJWCD. Ninety-four (94) wells decreased in groundwater levels. Ten (10) wells increased in groundwater levels. Two (2) wells had no change in groundwater elevation.

Oakdale Irrigation District (OID) – One (1) well¹ was compared in the OID area. The well decreased in groundwater elevation.

Stockton East Water District (SEWD) – One-hundred six (106) wells were compared in SEWD. Ninety (90) wells decreased in groundwater levels. Fifteen (15) wells show increases in groundwater levels. One (1) well had no change in groundwater elevation.

South San Joaquin Irrigation District (SSJID) – Twenty-six (26) wells were compared in the SSJID area. Twenty-five (25) wells declined in groundwater elevation. One (1) increased in groundwater elevation.

Woodbridge Irrigation District (WID) – Twenty-three (23) wells were compared in WID. Nineteen (19) wells decreased in groundwater levels. Three (3) wells shows increase in groundwater levels. One (1) well had no change in groundwater elevation.

Southwest County Areas – Twenty-nine (29) wells compared across the Southwest County. Eight (8) wells descended in groundwater levels. Twenty-one (21) wells increased in groundwater level.

Eastern San Joaquin Groundwater Sub-basin in Calaveras County – Ten (10) wells compared in Calaveras County. Four (4) wells descended in groundwater levels. Six (6) wells increased in groundwater level.

Eastern San Joaquin Groundwater Sub-basin in Stanislaus County – Seven (7) wells compared in Stanislaus County. Five (5) wells descended in groundwater levels. Two (2) wells increased in groundwater level.

Table 3-1 Comparison of CSJWCD Water Levels

State Well ID	Fall 2015	Fall 2014	Change
01N07E11L001	-57.00	-42.50	-14.50
01N07E11M001	-56.20	-41.70	-14.50
01N07E13J002	----	----	----
01N07E14J002	-52.10	-46.60	-5.50
01N07E14L001	-51.71	-47.91	-3.80
01N07E15M002	----	----	----
01N07E24A001	----	-48.60	----
01N07E24R001	-60.00	-50.50	-9.50
01N07E26H003	----	----	----
01N07E32A001	-22.89	-22.89	0.00
01N08E02B001	-61.74	-54.84	-6.90
01N08E02J001	-53.83	-53.23	-0.60
01N08E09L001	-63.16	-58.16	-5.00
01N08E11L001	-60.50	-59.00	-1.50
01N08E13J001	-45.20	-37.70	-7.50
01N08E16G001	-56.20	-50.00	-6.20
01N08E16H002	-55.50	-49.10	-6.40
01N08E16P001	-54.85	-49.25	-5.60
01N08E18A002	-58.00	-51.50	-6.50
01N08E22J001	-54.50	-47.50	-7.00
01N08E26A002	-48.30	----	----
01N08E27R002	-47.00	-41.40	-5.60
01N08E28K001	-50.03	-43.33	-6.70
01N08E29M002	-53.00	-46.00	-7.00
01N08E35F001	-42.90	-38.30	-4.60
01N08E35R002	-37.50	-39.00	1.50
01N08E36F001	-34.00	-35.50	1.50
01N09E01C001	-2.70	-8.70	6.00
01N09E05J001	-22.50	-17.50	-5.00
01N09E06N001	-59.00	-44.50	-14.50
01N09E13D001	9.00	4.00	5.00
01N09E15B002	----	-8.00	----
01N09E17D001	-37.50	-31.00	-6.50
01N09E17M001	-40.00	-31.00	-9.00
01N09E19C001	-41.60	-31.70	-9.90
01N09E21J001	-12.06	----	----
01N09E22G002	-9.90	----	----
01N09E29R001	-19.30	-14.50	-4.80
01N09E30C005	-31.20	-24.70	-6.50
01N09E31J001	----	-28.35	----
01N09E35K001	1.58	1.18	0.40

State Well ID	Fall 2015	Fall 2014	Change
01S07E01J001	-44.60	----	----
01S07E02J001	-44.00	-35.00	-9.00
01S07E12H001	----	----	----
01S07E13J001	----	----	----
01S08E04R001	-49.20	-33.50	-15.70
01S08E05A001	-43.40	-39.40	-4.00
01S08E05R001	-46.40	-32.80	-13.60
01S08E06D001	-42.10	-29.00	-13.10
01S08E09Q001	-28.70	----	----
01S08E11F001	-29.90	-24.90	-5.00
01S08E12B001	-15.70	-18.20	2.50
01S08E14B001	-21.20	-19.70	-1.50
01S08E15A001	-39.27	-34.47	-4.80
01S08E15P001	----	----	----
01S08E20B001	-17.70	-14.70	-3.00
01S08E23A001	----	----	----
01S08E27A001	-3.55	-1.05	-2.50
01S09E02R001	9.80	21.30	-11.50
01S09E05H002	-11.00	-7.00	-4.00
01S09E07A001	----	-11.30	----
01S09E07N001	-10.30	-7.80	-2.50
01S09E09R001	-5.10	5.30	-10.40
01S09E11J002	----	22.20	----
01S09E18R003	----	2.00	----
01S09E19Q002	6.00	8.40	-2.40

Total Number of Wells	66
Total Number of Comparable Wells	48
Number of Wells with Decrease	41
Number of Wells with Increase	6
Number of Wells with No Change	1
Range of Change	-15.70 to 6.00
Average Change	-5.6

Table 3-2 Comparison of NSJWCD Water Levels

State Well ID	Fall 2015	Fall 2014	Change
03N06E04C001	-3.44	-3.44	0.00
03N06E23A003	-33.58	-32.57	-1.01
03N06E24M003	----	-38.22	----
03N06E25C001	-41.75	-43.05	1.30
03N06E25H015	----	----	----
03N06E25R005	-48.12	-47.32	-0.80

State Well ID	Fall 2015	Fall 2014	Change
03N06E36N001	----	----	----
03N07E02G003	-35.54	-33.54	-2.00
03N07E03R001	-34.80	-35.30	0.50
03N07E08B012	-24.65	-25.05	0.40
03N07E08E002	-42.00	-33.00	-9.00
03N07E09C001	-42.20	-33.70	-8.50
03N07E09C003	-28.18	-27.78	-0.40
03N07E09P002	-39.88	-38.28	-1.60
03N07E10L004	-38.82	-38.31	-0.51
03N07E12P001	-51.75	-49.65	-2.10
03N07E15C004	-46.50	-45.00	-1.50
03N07E17A006	-37.76	-36.86	-0.90
03N07E17D003	-30.83	-30.13	-0.70
03N07E17D004	----	-32.40	----
03N07E17K002	-45.70	-45.00	-0.70
03N07E18D012	-33.00	-34.50	1.50
03N07E18M002	-36.43	-39.63	3.20
03N07E19J004	-59.00	-52.00	-7.00
03N07E19Q012	-46.78	-46.58	-0.20
03N07E20C012	-5.95	----	----
03N07E21L003	-51.50	----	----
03N07E22C011	-49.01	-47.20	-1.80
03N07E23C002	-52.00	-49.50	-2.50
03N07E23K011	-52.84	-50.44	-2.40
03N07E25G001	----	----	----
03N07E26G012	-54.07	-51.67	-2.40
03N07E32Q012	-61.45	-57.05	-4.40
03N07E33G002	----	-50.00	----
03N08E04Q001	-47.67	-44.67	-3.00
03N08E05K011	-44.07	-41.47	-2.60
03N08E07D002	-48.96	-47.66	-1.30
03N08E07J001	----	-36.30	----
03N08E17B001	-52.77	-51.27	-1.50
03N08E17Q011	-57.17	-54.57	-2.60
03N08E19C001	----	----	----
03N08E19M003	-57.87	-54.47	-3.40
03N08E22A001	-57.00	-54.50	-2.50
04N06E02R011	----	----	----
04N06E03A012	-24.10	-22.40	-1.70
04N06E06N012	-16.60	----	----
04N06E12C004	-42.00	-40.00	-2.00
04N06E12N002	-43.30	-41.80	-1.50

State Well ID	Fall 2015	Fall 2014	Change
04N06E15B002	-20.70	-18.70	-2.00
04N06E16A011	-5.08	-13.86	8.78
04N06E16C001	-14.86	-6.18	-8.68
04N06E16K011	-3.36	-2.86	-0.50
04N06E23D004	-30.61	-27.41	-3.20
04N06E23K00	-17.00	-13.00	-4.00
04N06E24D012	-22.70	-22.10	-0.60
04N06E24F001	-26.50	-26.50	0.00
04N06E25B001	-17.60	-16.50	-1.10
04N06E25R001	-8.00	-7.50	-0.50
04N06E27D002	0.20	0.70	-0.50
04N06E27Q012	12.68	13.28	-0.60
04N06E36J012	5.20	6.00	-0.80
04N07E01B011	----	----	----
04N07E02R001	-47.74	-45.44	-2.30
04N07E04B012	-51.75	-49.25	-2.50
04N07E04Q012	-51.51	-49.51	-2.00
04N07E07A001	----	----	----
04N07E07H011	-46.44	-44.04	-2.40
04N07E11D012	-49.63	-47.43	-2.20
04N07E12E001	----	----	----
04N07E12G012	-43.74	-42.40	-1.34
04N07E14P011	-39.41	-37.51	-1.90
04N07E14P011	-39.41	-37.51	-1.90
04N07E15B012	----	-41.39	----
04N07E16D001	-46.54	-43.84	-2.70
04N07E17J013	----	----	----
04N07E17N001	-44.30	-39.80	-4.50
04N07E19K001	-41.10	-30.10	-11.00
04N07E19R011	-27.51	-25.81	-1.70
04N07E20H003	-105.80	-104.10	-1.70
04N07E21F001	----	-35.55	----
04N07E23J012	-35.23	-33.33	-1.90
04N07E24N002	-35.24	-33.43	-1.80
04N07E25G015	-32.04	-30.04	-2.00
04N07E27C002	----	-30.00	----
04N07E28J002	-30.20	-17.20	-13.00
04N07E28P011	0.03	4.43	-4.40
04N07E29H001	----	-25.44	----
04N07E29N012	-16.92	-12.72	-4.20
04N07E31Q031	16.59	16.49	0.10
04N07E32F011	0.97	1.57	-0.60
04N07E33H001	15.50	22.50	-7.00
04N07E34K011	-18.03	-17.73	-0.30

State Well ID	Fall 2015	Fall 2014	Change
04N07E35C002	----	-20.43	----
04N07E35E013	-23.74	-20.93	-2.80
04N07E36L001	-33.30	-32.50	-0.80
04N08E01K001	47.83	49.43	-1.60
04N08E02E011	-11.27	-9.07	-2.20
04N08E04P014	-36.67	-31.47	-5.20
04N08E06C002	----	----	----
04N08E06N002	-56.20	-46.70	-9.50
04N08E11M012	-12.07	-8.87	-3.20
04N08E12A011	69.43	71.73	-2.30
04N08E12B011	49.03	50.03	-1.00
04N08E12N001	17.13	19.63	-2.50
04N08E14B011	-5.87	-4.17	-1.70
04N08E14K001	-17.10	-10.60	-6.50
04N08E15D011	-26.27	-21.07	-5.20
04N08E15J011	-20.47	-15.67	-4.80
04N08E17A001	----	----	----
04N08E17J001	----	-35.00	----
04N08E21M001	----	-38.60	----
04N08E22C015	----	-22.47	----
04N08E26A012	----	-10.57	----
04N08E27J011	-23.87	-21.47	-2.40
04N08E28E001	-39.36	----	----
04N08E32N001	----	-42.60	----
04N08E34Q011	-43.36	-35.76	-7.60
04N09E06L011	109.43	112.53	-3.10
04N09E07D012	72.23	78.03	-5.80
04N09E07E011	87.93	89.63	-1.70
04N09E16Q002	143.93	154.33	-10.40
04N09E17E001	130.13	135.23	-5.10
04N09E18A011	151.03	154.43	-3.40
04N09E18D002	47.33	49.93	-2.60
04N09E18N011	13.63	13.33	0.30
04N09E20M001	109.74	111.54	-1.80
04N09E21A001	166.54	169.04	-2.50
04N09E28C002	185.34	187.64	-2.30
05N06E36R001	-42.80	----	----
05N07E31J001	----	-54.00	----
05N07E31Q001	-52.90	----	----
05N07E34G001	----	-58.10	----
05N07E34Q001	-56.90	----	----
05N08E24Q011	53.33	53.23	0.10

State Well ID	Fall 2015	Fall 2014	Change
05N08E25P011	52.53	52.93	-0.40
05N08E32R011	-40.67	-39.17	-1.50
05N08E35K012	0.53	1.23	-0.70
05N09E30C011	161.33	161.23	0.10
05N09E30M011	144.73	145.63	-0.90
05N09E31L011	123.13	124.43	-1.30

Total Number of Wells	140
Total Number of Comparable Wells	106
Number of Wells with Decrease	94
Number of Wells with Increase	10
Number of Wells with No Change	2
Range of Change	-13.00 to 8.78
Average Change	-2.4

Table 3-3 Comparison of OLD Water Levels

State Well ID	Fall 2015	Fall 2014	Change
01S09E21J002	27.50	31.00	-3.50
01S09E23N001	----	----	----
01S09E24R001	----	----	----
01S09E28M002	----	----	----

Total Number of Wells	4
Total Number of Comparable Wells	1
Number of Wells with Decrease	1
Number of Wells with Increase	0
Number of Wells with No Change	0
Range of Change	----
Average Change	-3.5

Table 3-4 Comparison of SEWD Water Levels

State Well ID	Fall 2015	Fall 2014	Change
01N06E01J001	-30.50	-26.50	-4.00
01N06E01M001	-40.00	-38.00	-2.00
01N06E02C001	-28.93	-30.33	1.40
01N06E02Q001	-31.00	-20.00	-11.00
01N06E03K001	-9.74	-9.44	-0.30
01N06E04J002	----	----	----
01N06E04J003	-19.93	-18.43	-1.50
01N06E04J004	-13.87	-12.57	-1.30
01N06E04J005	-7.11	-6.91	-0.20

State Well ID	Fall 2015	Fall 2014	Change
01N06E05H001	-9.59	-9.09	-0.50
01N06E05M004	----	----	----
01N06E12A001	-26.00	-22.00	-4.00
01N06E12F001	-55.00	-52.00	-3.00
01N06E12G001	-34.80	-21.80	-13.00
01N06E12N001	----	----	----
01N06E13J001	----	-18.00	----
01N06E23J001	----	----	----
01N06E27R002	----	-10.30	----
01N06E36C003	-19.90	-18.50	-1.40
01N06E36C004	-15.30	-14.00	-1.30
01N06E36C005	-13.80	-11.00	-2.80
01N07E01A002	----	----	----
01N07E01M002	-70.00	-56.00	-14.00
01N07E02G001	-61.50	----	----
01N07E03D002	----	-50.76	----
01N07E03D003	----	-50.33	----
01N07E03D004	----	-41.28	----
01N07E03D005	----	-34.24	----
01N07E03L001	----	----	----
01N07E03M001	----	----	----
01N07E04R001	-54.80	-34.80	-20.00
01N07E05A001	-49.00	-33.00	-16.00
01N07E05N001	----	----	----
01N07E08B001	----	----	----
01N07E08H002	-35.00	-33.00	-2.00
01N07E08P001	-29.50	-31.50	2.00
01N07E09E004	-35.00	-22.00	-13.00
01N07E09H001	-46.50	-36.10	-10.40
01N07E09Q003	-48.00	-36.20	-11.80
01N07E10D001	-56.00	-35.00	-21.00
01N07E10G001	----	----	----
01N07E16M001	-41.00	-35.00	-6.00
01N07E17D001	-37.50	-28.50	-9.00
01N07E17D002	-35.50	-27.50	-8.00
01N07E18B001	-33.00	-29.00	-4.00
01N07E18D001	-23.00	-22.00	-1.00
01N07E18E003	-23.00	-22.00	-1.00
01N07E18L001	-31.00	-25.00	-6.00
01N07E19G001	----	----	----
01N07E20G001	----	-23.20	----
01N07E21R001	----	-29.20	----
01N08E03P001	----	----	----
01N09E05B001	-27.69	-21.99	-5.70

State Well ID	Fall 2015	Fall 2014	Change
01S06E01C002	-7.00	-5.70	-1.30
01S06E02D004	-8.89	-7.89	-1.00
01S06E02G002	-10.17	-8.67	-1.50
01S06E10G001	-8.80	-6.00	-2.80
01S07E06M002	-11.00	-7.80	-3.20
01S07E08J002	-14.00	-7.10	-6.90
02N05E01A002	-32.94	-31.54	-1.40
02N05E01A003	-21.91	-21.01	-0.90
02N05E01A004	-17.96	-17.56	-0.40
02N05E01A005	-15.44	-15.04	-0.40
02N05E01A006	-11.98	-11.08	-0.90
02N06E01A001	-46.42	-43.72	-2.70
02N06E03A003	----	-36.30	----
02N06E06C002	----	----	----
02N06E08N001	-30.88	-29.48	-1.40
02N06E08N002	-28.22	-26.02	-2.20
02N06E08N003	-24.31	-23.61	-0.70
02N06E11H004	-56.80	-52.40	-4.40
02N06E11H005	-59.17	-53.37	-5.80
02N06E11H006	-52.22	-48.42	-3.80
02N06E11H007	-51.75	-47.85	-3.90
02N06E12H001	-51.29	-48.19	-3.10
02N06E13R002	----	-43.00	----
02N06E17G001	-20.70	-21.70	1.00
02N06E20E001	-22.10	-21.00	-1.10
02N06E20E002	-20.90	-20.00	-0.90
02N06E20E003	-19.30	-18.00	-1.30
02N06E22B001	-38.00	-37.00	-1.00
02N06E22E001	-30.00	-28.00	-2.00
02N06E22G001	-38.00	-33.00	-5.00
02N06E22G002	-40.00	-40.00	0.00
02N06E22Q001	-36.50	-27.50	-9.00
02N06E22Q002	-35.00	-38.00	3.00
02N06E24F001	----	-41.00	----
02N06E24J002	-45.30	----	----
02N06E24J003	-46.07	----	----
02N06E26L001	-70.00	----	----
02N06E27B001	-33.00	-24.00	-9.00
02N06E27H001	-35.00	-18.00	-17.00
02N06E27K001	-35.00	-33.00	-2.00
02N06E27K002	-44.00	-32.00	-12.00
02N06E27L001	-33.00	-30.00	-3.00

State Well ID	Fall 2015	Fall 2014	Change
02N06E27P001	-32.00	-31.00	-1.00
02N06E34C001	-33.00	-35.00	2.00
02N06E35B001	-92.00	----	----
02N06E36A001	-47.00	-49.00	2.00
02N06E36D001	-38.50	-45.50	7.00
02N06E36F001	-36.50	-39.50	3.00
02N06E36G001	-41.00	-47.00	6.00
02N06E36N003	-40.50	-27.50	-13.00
02N06E36R003	-26.00	-34.00	8.00
02N07E03D001	-64.00	-60.50	-3.50
02N07E06P002	-55.80	-48.80	-7.00
02N07E08D001	----	-58.20	----
02N07E08K003	-71.00	-65.00	-6.00
02N07E08R002	-69.64	-65.14	-4.50
02N07E10F002	----	-64.80	----
02N07E11F001	-80.50	-77.50	-3.00
02N07E11R002	----	-66.50	----
02N07E15C001	----	-84.30	----
02N07E16F002	----	----	----
02N07E16L001	-71.30	----	----
02N07E18H002	-59.70	-61.70	2.00
02N07E20N002	-54.00	-48.00	-6.00
02N07E21A002	-82.81	-64.81	-18.00
02N07E21K002	-69.00	-64.00	-5.00
02N07E21N001	----	----	----
02N07E23B001	-82.00	-75.50	-6.50
02N07E24B001	-71.10	-72.10	1.00
02N07E24Q001	-81.50	----	----
02N07E26H003	----	----	----
02N07E26N001	-75.20	-62.00	-13.20
02N07E28K002	-69.50	-63.00	-6.50
02N07E28N004	-59.00	----	----
02N07E28P001	----	----	----
02N07E29B001	----	----	----
02N07E29M002	----	-47.00	----
02N07E30E001	-46.50	----	----
02N07E30H001	----	-47.50	----
02N07E30K001	-53.00	-51.00	-2.00
02N07E31M001	----	----	----
02N07E32J002	-50.00	-42.00	-8.00
02N07E32M002	-48.00	-36.00	-12.00
02N07E32R001	----	----	----
02N07E33L001	-62.00	-45.00	-17.00

State Well ID	Fall 2015	Fall 2014	Change
02N07E34R001	-59.40	-44.50	-14.90
02N07E35L001	----	----	----
02N07E36H001	----	-59.20	----
02N08E03G002	----	----	----
02N08E04C001	-67.50	-62.50	-5.00
02N08E05C001	-84.50	-65.00	-19.50
02N08E08N001	----	-68.50	----
02N08E09G002	----	----	----
02N08E10H002	----	-57.10	----
02N08E13K001	----	----	----
02N08E14C001	-44.00	-44.40	0.40
02N08E15M002	-63.20	-47.40	-15.80
02N08E16D001	-81.10	-64.10	-17.00
02N08E18C001	----	-76.70	----
02N08E20F001	----	-70.30	----
02N08E24J001	----	----	----
02N08E24P001	----	-34.70	----
02N08E28H002	-50.60	-52.60	2.00
02N08E32L002	----	----	----
02N08E33E001	-68.70	-71.10	2.40
02N09E03A001	----	55.10	----
02N09E04H001	----	51.00	----
02N09E05H001	----	-13.80	----
02N09E05N001	-27.49	-23.59	-3.90
02N09E08N001	----	----	----
02N09E09D001	-19.80	----	----
02N09E18Q001	----	----	----
02N09E22D001	----	----	----
02N09E28N001	----	----	----
03N06E35P002	-35.14	-34.44	-0.70
03N07E28K012	-56.46	-54.26	-2.20
03N07E35C002	-65.80	-62.80	-3.00
03N07E35L001	-64.50	----	----
03N07E36J001	-72.30	-63.30	-9.00
03N08E27R001	----	----	----
03N08E32P001	-72.12	-63.52	-8.60

State Well ID	Fall 2015	Fall 2014	Change
03N09E25R001	80.10	80.50	-0.40
03N09E36G001	----	----	----
Total Number of Wells			176
Total Number of Comparable Wells			106
Number of Wells with Decrease			90
Number of Wells with Increase			15
Number of Wells with No Change			1
Range of Change			-21.00 to 8.00
Average Change			-4.6

Table 3-5 Comparison of SSJID Water Levels

State Well ID	Fall 2015	Fall 2014	Change
01S07E09Q001	-11.77	-6.57	-5.20
01S07E14M001	-9.10	-8.20	-0.90
01S07E14P003	-10.80	----	----
01S07E15F002	-16.60	-11.60	-5.00
01S07E18L001	0.07	2.07	-2.00
01S07E21G001	6.35	9.55	-3.20
01S07E25E001	-4.00	4.00	-8.00
01S07E25R001	7.75	12.65	-4.90
01S07E26G001	----	----	----
01S07E27K001	2.70	7.20	-4.50
01S07E30R001	4.56	6.06	-1.50
01S07E36D001	10.15	15.05	-4.90
01S08E19R001	----	----	----
01S08E25Q001	----	----	----
01S08E29K001	-4.00	1.00	-5.00
01S08E30C002	-2.00	0.00	-2.00
01S08E34Q001	7.46	13.16	-5.70
01S08E35R002	19.07	20.47	-1.40
01S09E29M002	21.50	----	----
01S09E33J002	47.22	49.92	-2.70
01S09E33P001	40.61	43.51	-2.90
01S09E34A001	----	----	----
02S07E07D002	8.00	10.00	-2.00
02S07E07Q001	19.06	22.86	-3.80
02S07E08R001	----	23.76	----
02S07E10B002	19.76	24.06	-4.30
02S07E11N002	26.00	----	----
02S07E19H001	18.00	----	----
02S07E20R002	----	----	----

State Well ID	Fall 2015	Fall 2014	Change
02S07E22N002	21.25	26.85	-5.60
02S07E26B001	----	34.00	----
02S08E04M001	----	14.50	----
02S08E06J001	14.00	15.30	-1.30
02S08E07R001	----	----	----
02S08E08A001	----	19.00	----
02S08E08E001	----	18.20	----
02S08E09J001	----	28.96	----
02S08E12D001	32.27	34.17	-1.90
02S08E14E001	41.27	40.77	0.50
02S09E03K001	----	----	----
02S09E07D001	30.29	37.19	-6.90
02S09E11K001	69.24	74.44	-5.20
02S09E12R001	60.85	64.15	-3.30
Total Number of Wells			43
Total Number of Comparable Wells			26
Number of Wells with Decrease			25
Number of Wells with Increase			1
Number of Wells with No Change			0
Range of Change			-8.00 to 0.50
Average Change			-3.6

Table 3-6 Comparison of WID Water Levels

State Well ID	Fall 2015	Fall 2014	Change
03N05E13L001	----	----	----
03N05E14C001	-7.10	-6.30	-0.80
03N05E24L001	-6.74	-7.44	0.70
03N06E04P012	-9.96	-11.66	1.70
03N06E05N003	-16.50	----	----
03N06E07D013	-10.28	-9.58	-0.70
03N06E07H003	-19.00	-18.50	-0.50
03N06E09N011	----	----	----
03N06E10D001	-13.90	----	----
03N06E15C004	----	----	----
03N06E17A004	-29.70	-26.20	-3.50
03N06E18M003	-18.60	-19.10	0.50
03N06E20D002	-32.50	-22.50	-10.00
03N06E26P002	-37.20	-35.70	-1.50
03N06E27E001	-43.70	-35.20	-8.50
03N06E29C001	-31.30	-30.30	-1.00
03N06E30R001	----	-31.00	----

State Well ID	Fall 2015	Fall 2014	Change
03N06E32R001	-29.00	-29.00	0.00
04N05E10K001	-7.00	-5.50	-1.50
04N05E13C012	-9.93	-9.93	0.00
04N05E13H001	----	-12.25	----
04N05E13R004	----	-12.50	----
04N05E14B002	-10.40	-8.40	-2.00
04N05E14P001	----	----	----
04N05E22H001	----	-11.25	----
04N05E24J004	-8.60	-6.60	-2.00
04N05E26F001	-3.30	-0.30	-3.00
04N05E36C004	-3.39	-1.99	-1.40
04N05E36H003	-7.50	-4.50	-3.00
04N06E17G004	-9.50	-6.50	-3.00
04N06E18R012	-8.30	-7.40	-0.90
04N06E19F001	-5.90	----	----
04N06E19R012	-7.18	-3.88	-3.30
04N06E21D001	----	1.14	----
04N06E29N002	-11.40	----	----
04N06E30E001	----	-4.30	----
04N06E34J002	18.90	20.40	-1.50
05N05E28L003	-6.00	----	----

Total Number of Wells	38
Total Number of Comparable Wells	23
Number of Wells with Decrease	19
Number of Wells with Increase	3
Number of Wells with No Change	1
Range of Change	-10.00 to 1.70
Average Change	-2.0

Table 3-7 Comparison of South West County Water Levels

State Well ID	Fall 2015	Fall 2014	Change
01S05E31R002	0.60	0.80	-0.20
01S06E04J001	-4.00	-2.20	-1.80
01S06E12P001	-5.58	-4.18	-1.40
01S06E14F001	----	-3.80	----
01S06E15F001	-0.49	-0.19	-0.30
01S06E23C003	2.63	2.53	0.10
01S06E26K001	----	----	----
02S04E15R001	54.00	54.10	-0.10
02S05E08B001	----	----	----
02S05E13N001	----	----	----

State Well ID	Fall 2015	Fall 2014	Change
02S06E10K001	2.00	----	----
02S06E11J001	10.86	9.16	1.70
02S06E25J001	12.60	14.50	-1.90
02S06E26B001	----	4.90	----
02S06E27E001	----	7.80	----
02S06E31N001	50.50	41.30	9.20
03S05E04H001	----	----	----
03S06E03F002	----	----	----
03S06E23C001	----	----	----
03S06E27N001	----	68.60	----
03S07E05J001	22.66	23.66	-1.00
03S07E06Q001	17.26	18.76	-1.50
MW-1A	-22.07	-37.33	15.26
MW-1B	-36.09	-52.05	15.95
MW-1C	-36.35	-56.05	19.70
MW-2A	-31.58	-40.41	8.84
MW-2B	-38.53	-50.42	11.88
MW-2C	-39.28	-50.41	11.13
MW-3A	-27.68	-34.21	6.53
MW-3B	-38.59	-49.23	10.64
MW-3C	-39.88	-49.63	9.75
MW-4A	-32.07	-41.27	9.20
MW-4B	-37.44	-50.07	12.62
MW-4C	-38.17	-50.09	11.92
MW-5A	-31.24	-39.92	8.68
MW-5B	-32.37	-41.35	8.98
MW-5C	-31.62	-38.28	6.66
MW-6A	-25.45	-36.37	10.92
MW-6B	-30.63	-45.85	15.22
MW-6C	-28.81	-39.65	10.85
Total Number of Wells			40
Total Number of Comparable Wells			29
Number of Wells with Decrease			8
Number of Wells with Increase			21
Number of Wells with No Change			0
Range of Change			-1.90- to 19.72
Average Change			7.2

Table 3-8 Comparison of Calaveras County Water Levels

State Well ID	Fall 2015	Fall 2014	Change
CCWD 001	95.27	87.20	8.07

State Well ID	Fall 2015	Fall 2014	Change
CCWD 002	93.62	84.15	9.47
CCWD 003	130.95	131.77	-0.82
CCWD 004	98.42	99.23	-0.81
CCWD 005	101.26	101.77	-0.51
CCWD 006	107.37	107.85	-0.48
CCWD 007	----	----	----
CCWD 008	----	72.50	----
CCWD 009	----	115.11	----
CCWD 010	92.78	89.38	3.40
CCWD 011	90.37	89.69	0.68
CCWD 012	153.65	152.64	1.01
CCWD 014	160.33	156.86	3.47
CCWD 015	----	----	----
CCWD 016	----	----	----
Total Number of Wells			15
Total Number of Comparable Wells			10
Number of Wells with Decrease			4
Number of Wells with Increase			6
Number of Wells with No Change			0
Range of Change			-0.82 to 9.47
Average Change			2.3

Table 3-9 Comparison of Stanislaus County Water Levels

State Well ID	Fall 2015	Fall 2014	Change
01S10E04C001	76.42	81.52	-5.10
01S10E21A001	95.56	99.56	-4.00
01S10E26J001	81.70	----	----
01S10E27Q001	74.38	66.38	8.00
01S10E34R001	65.69	71.09	-5.40
01S11E25N001	146.51	149.11	-2.60
02S10E02P001	88.60	81.70	6.90
02S10E10M002	73.98	76.28	-2.30
Total Number of Wells			8
Total Number of Comparable Wells			7
Number of Wells with Decrease			5
Number of Wells with Increase			2
Number of Wells with No Change			0
Range of Change			-5.40 to 8.00
Average Change			-0.6

HYDROGRAPHS

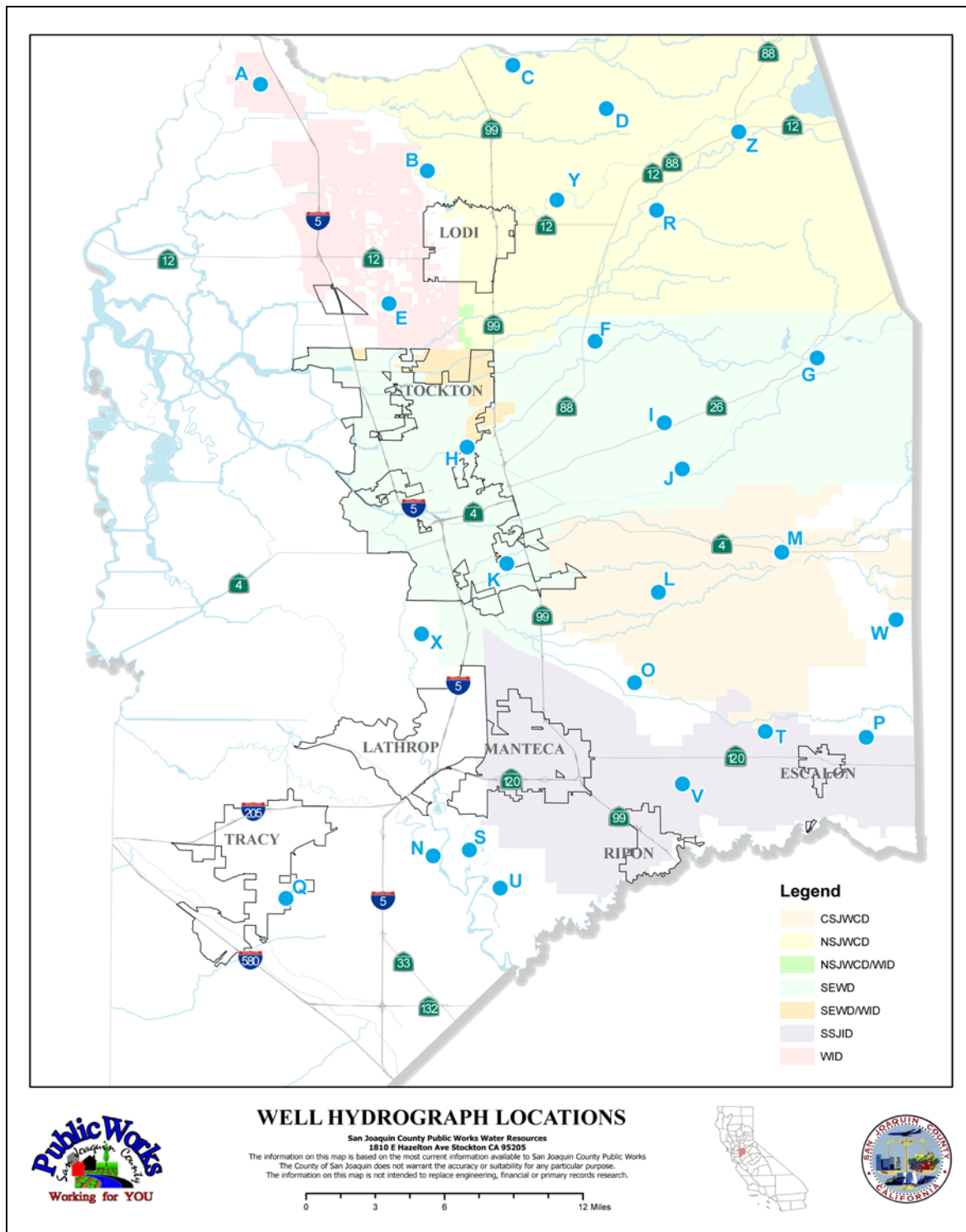


Figure 3-1: Well Hydrograph Locations

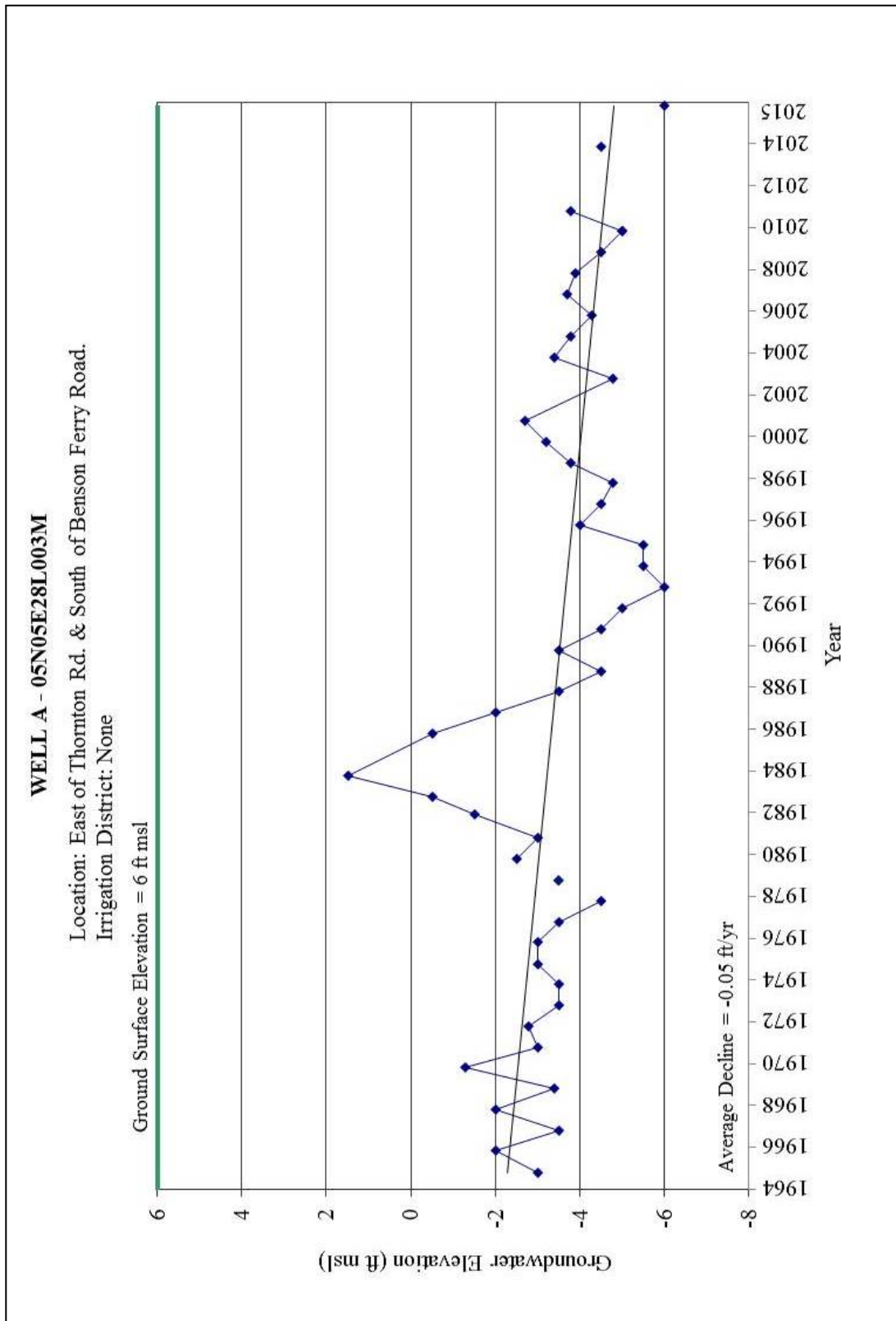


Figure 3-2: Fall Hydrograph Well A

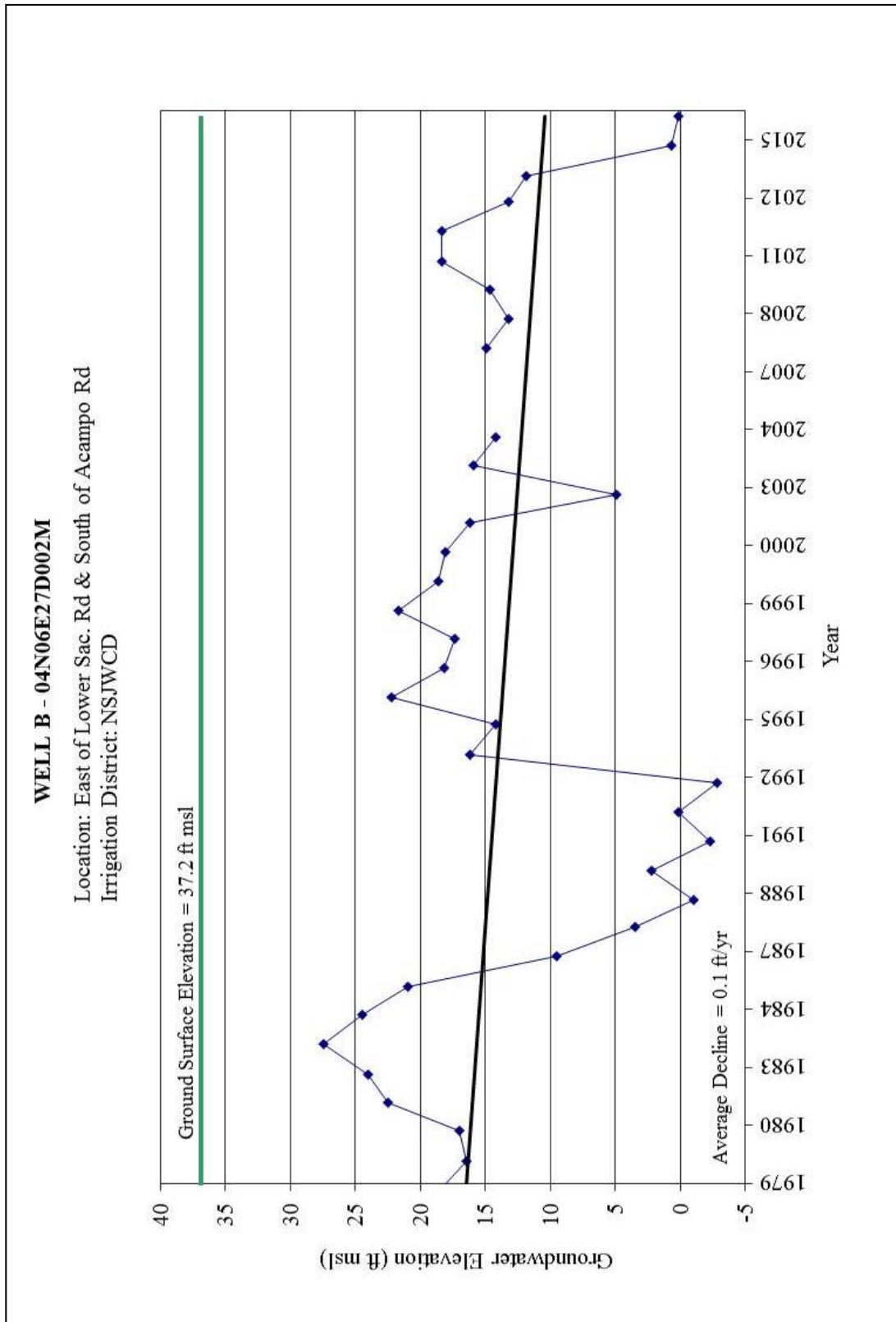


Figure 3-3: Fall Hydrograph Well B

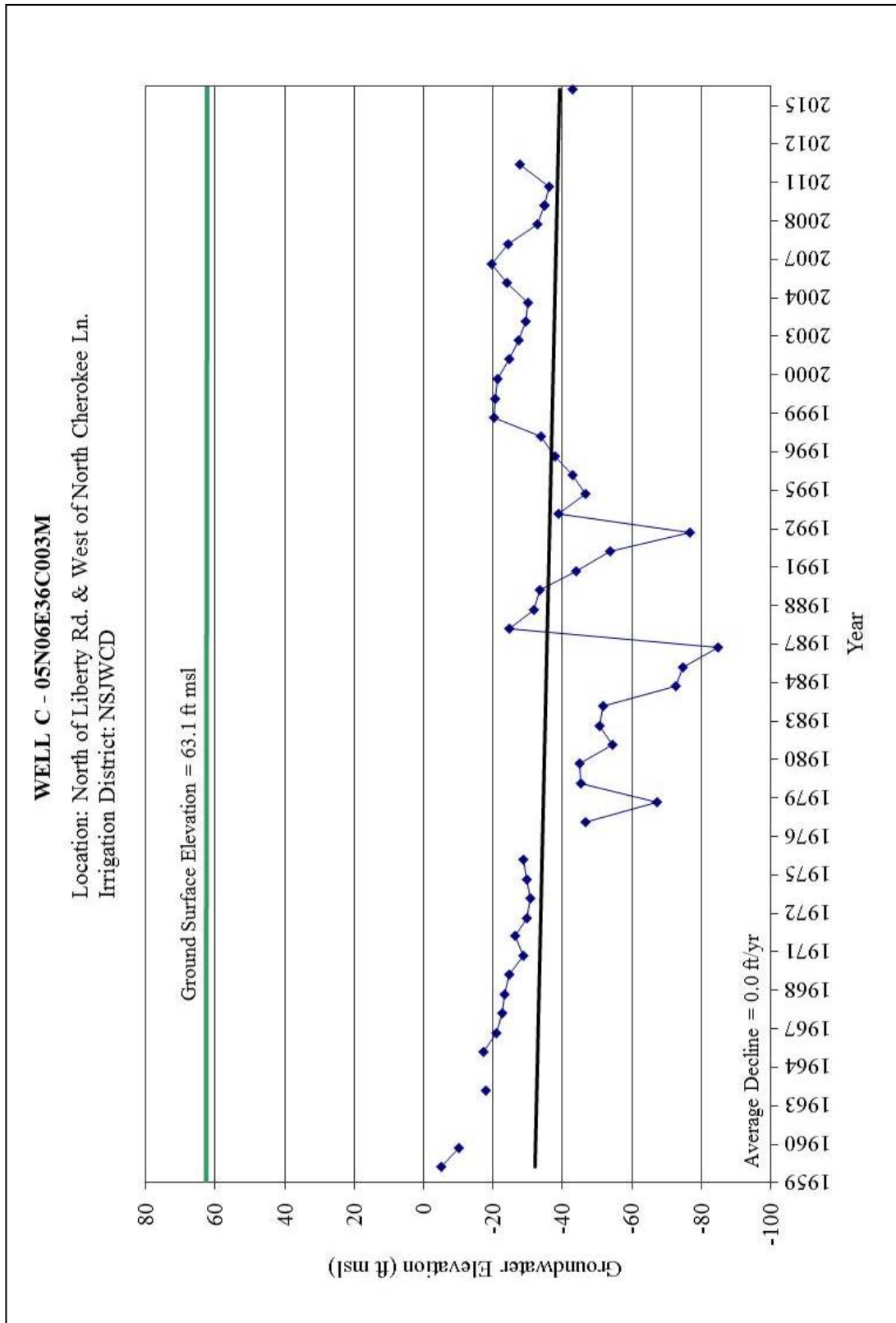


Figure 3-4: Fall Hydrograph Well C

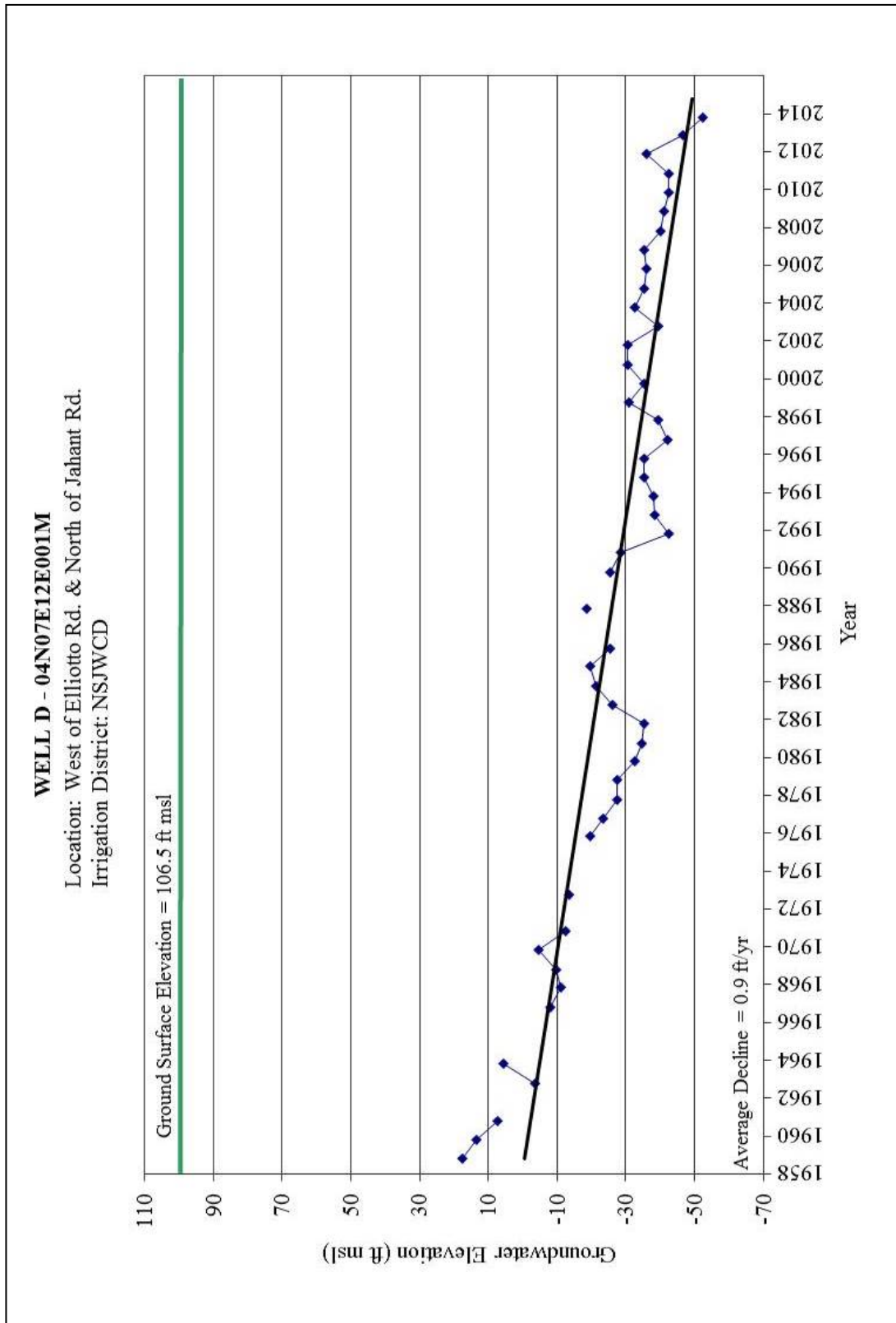


Figure 3-5: Fall Hydrograph Well D

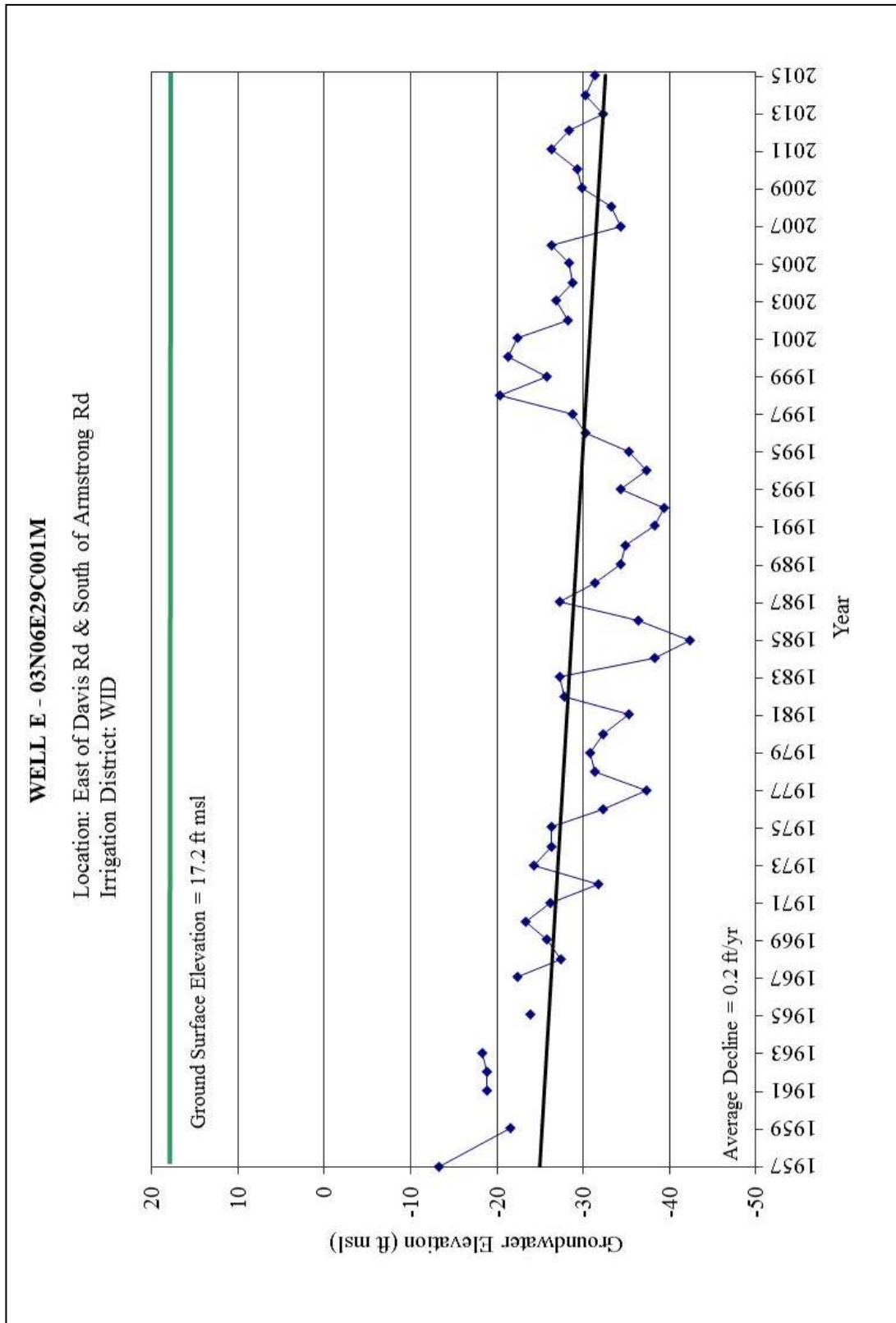


Figure 3-6: Fall Hydrograph Well E

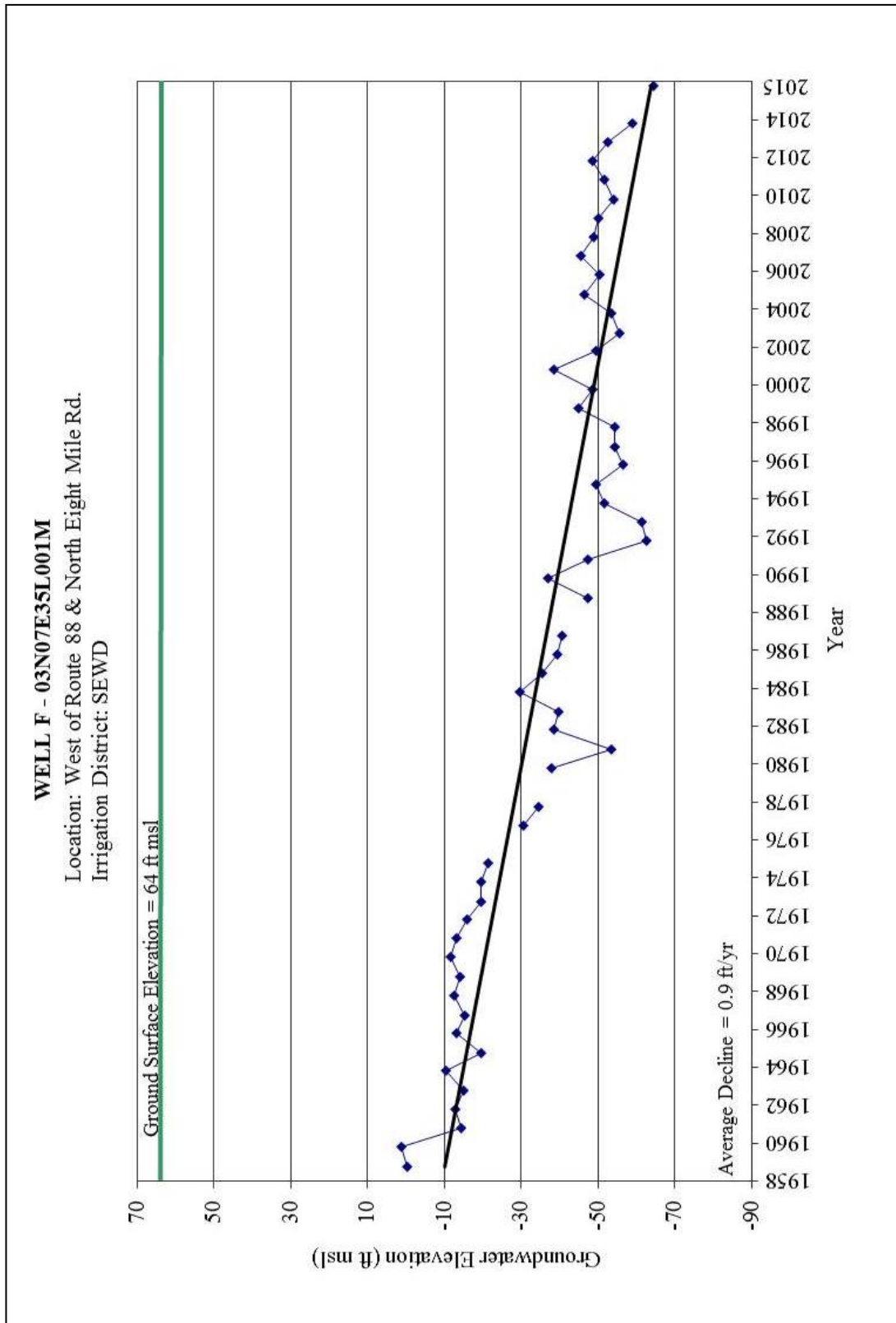


Figure 3-7: Fall Hydrograph Well F

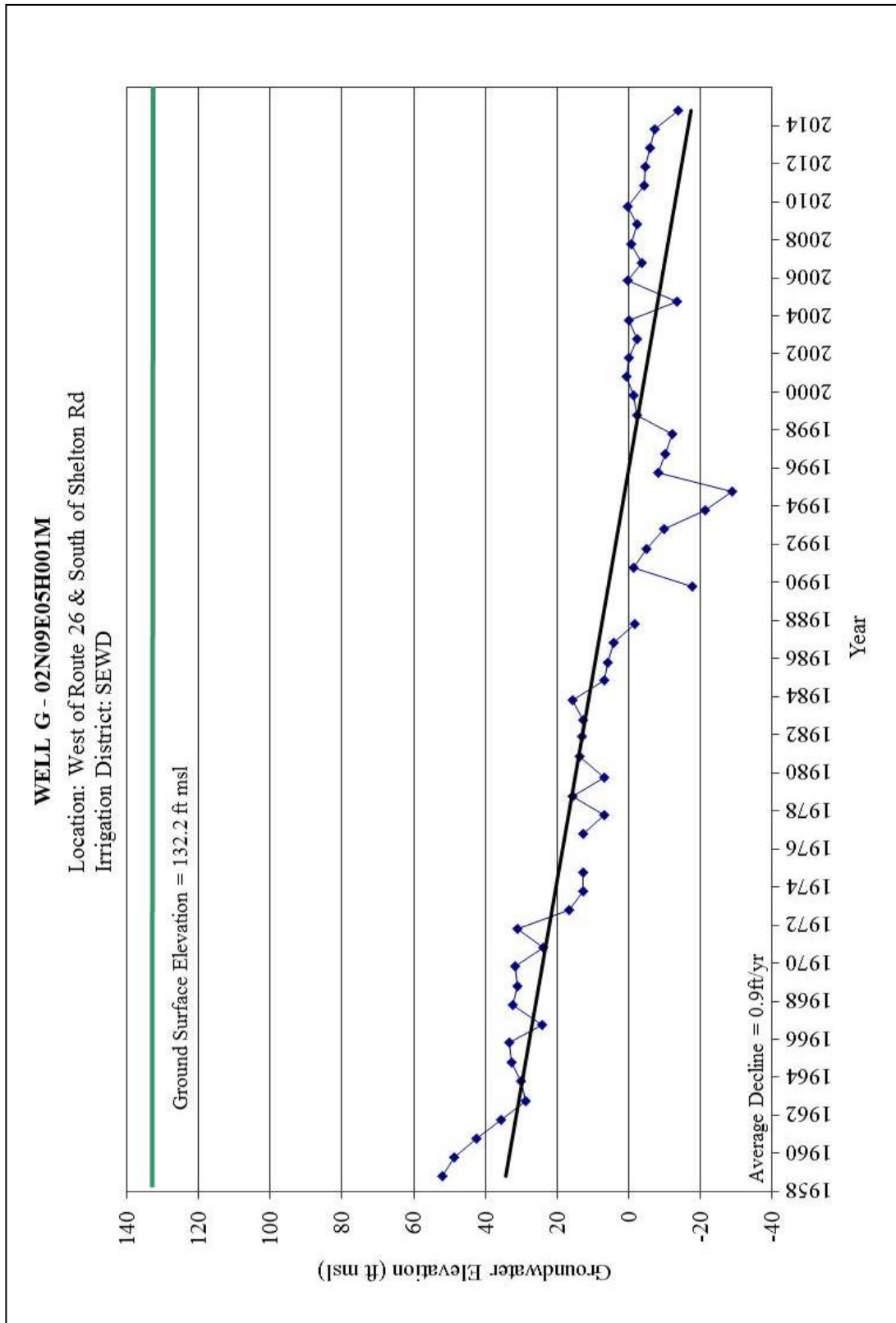


Figure 3-8: Fall Hydrograph Well G

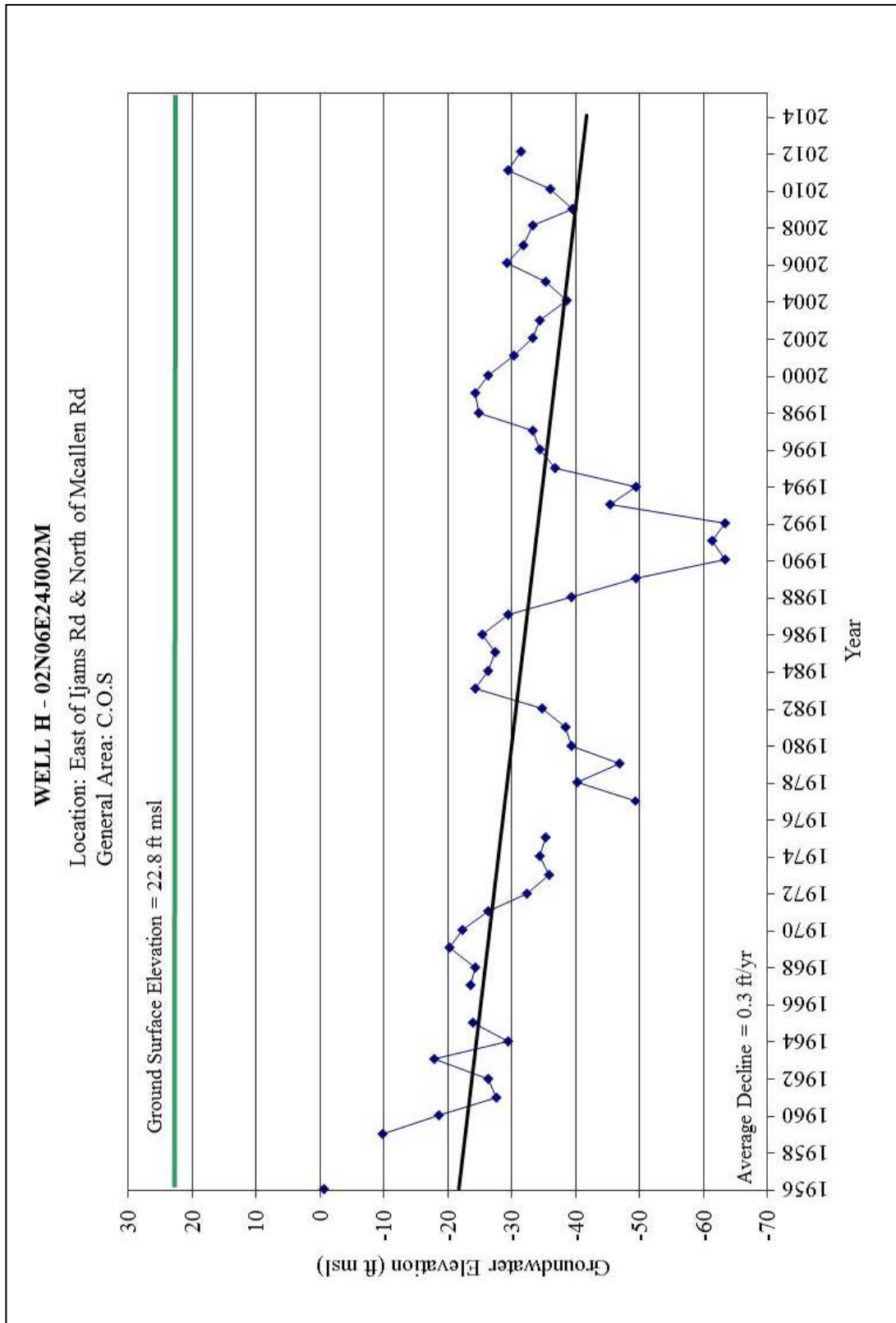


Figure 3-9: Fall Hydrograph Well H

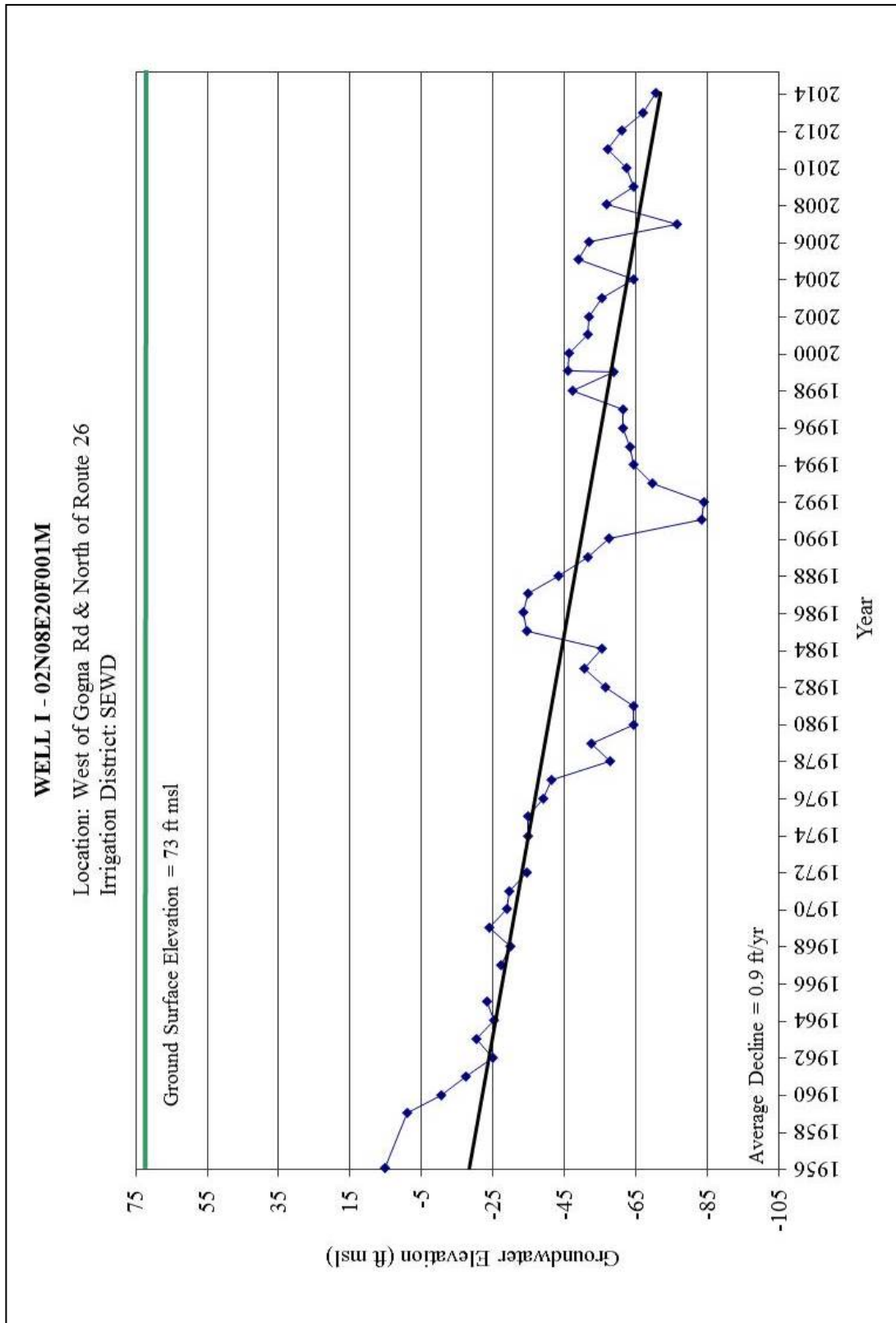


Figure 3-10: Fall Hydrograph Well I

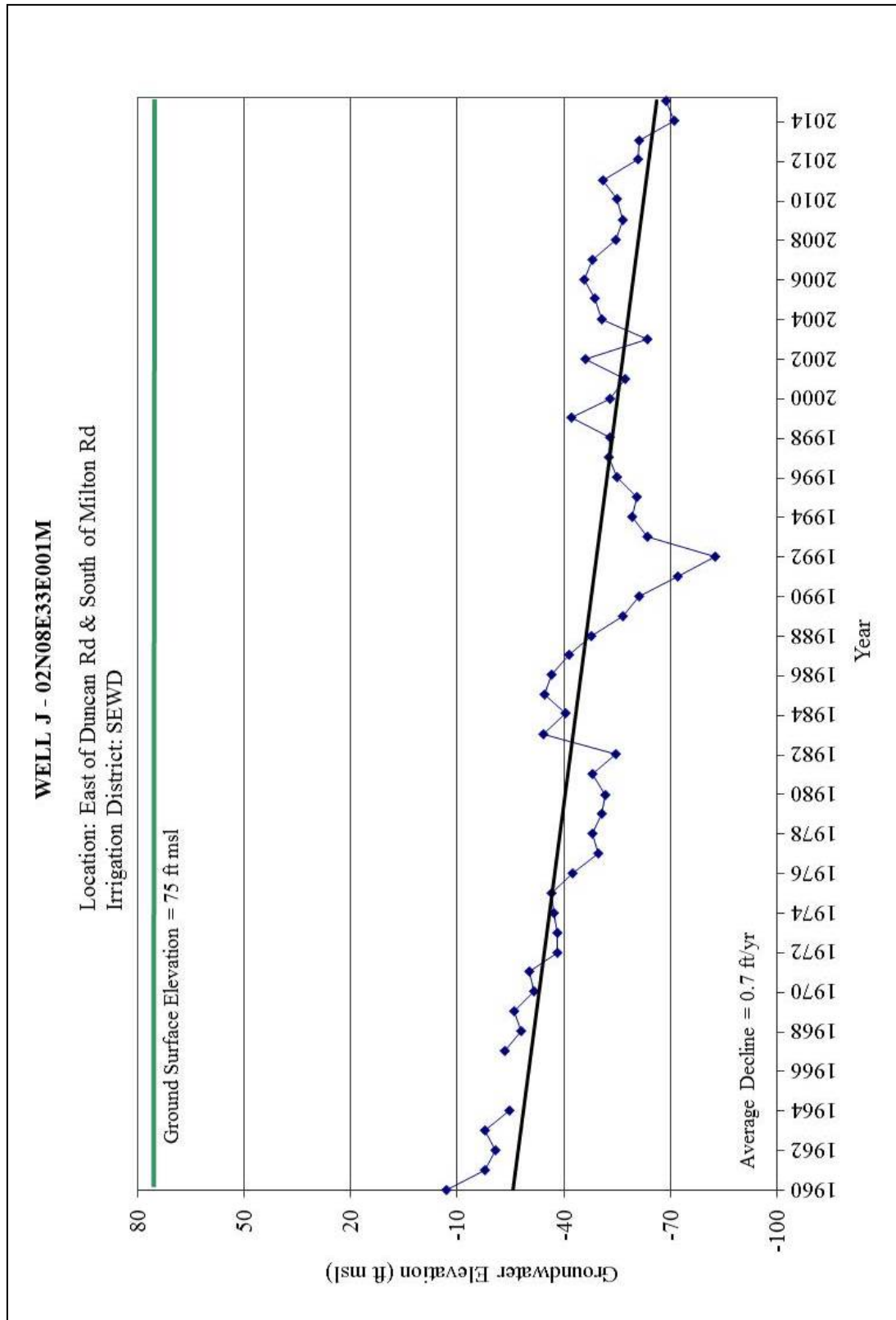


Figure 3-11: Fall Hydrograph Well J

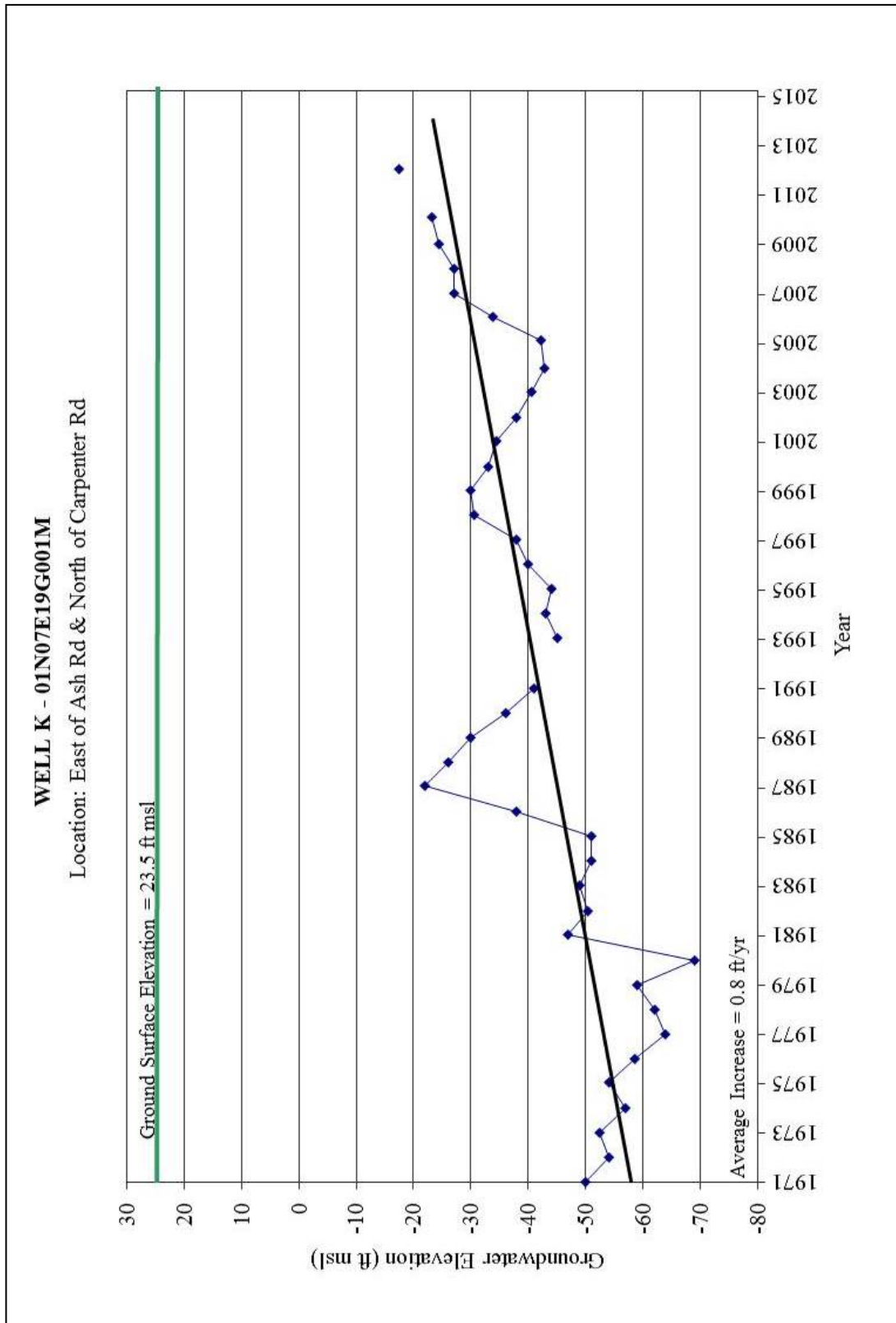


Figure 3-12: Fall Hydrograph Well K

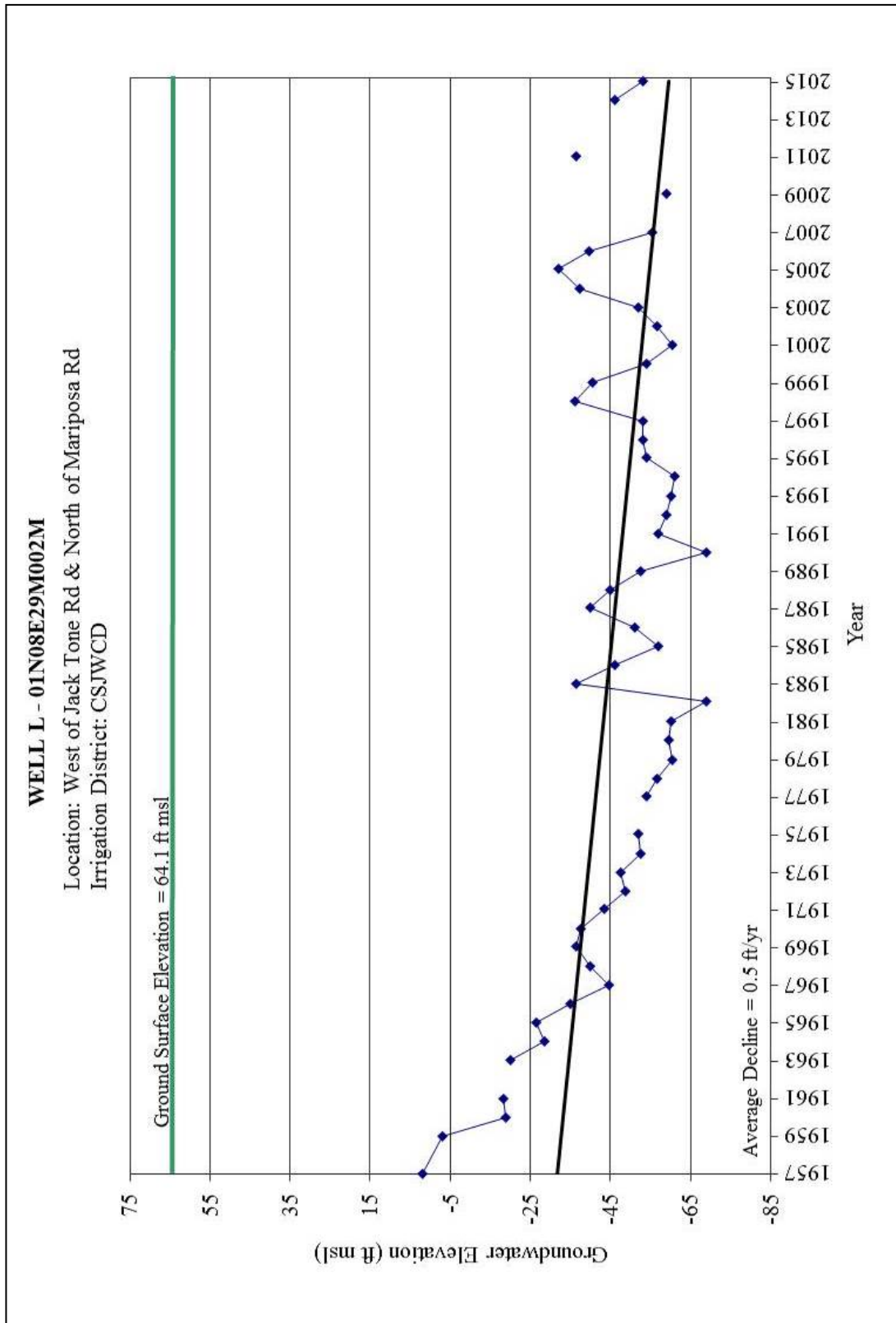


Figure 3-13: Fall Hydrograph Well L

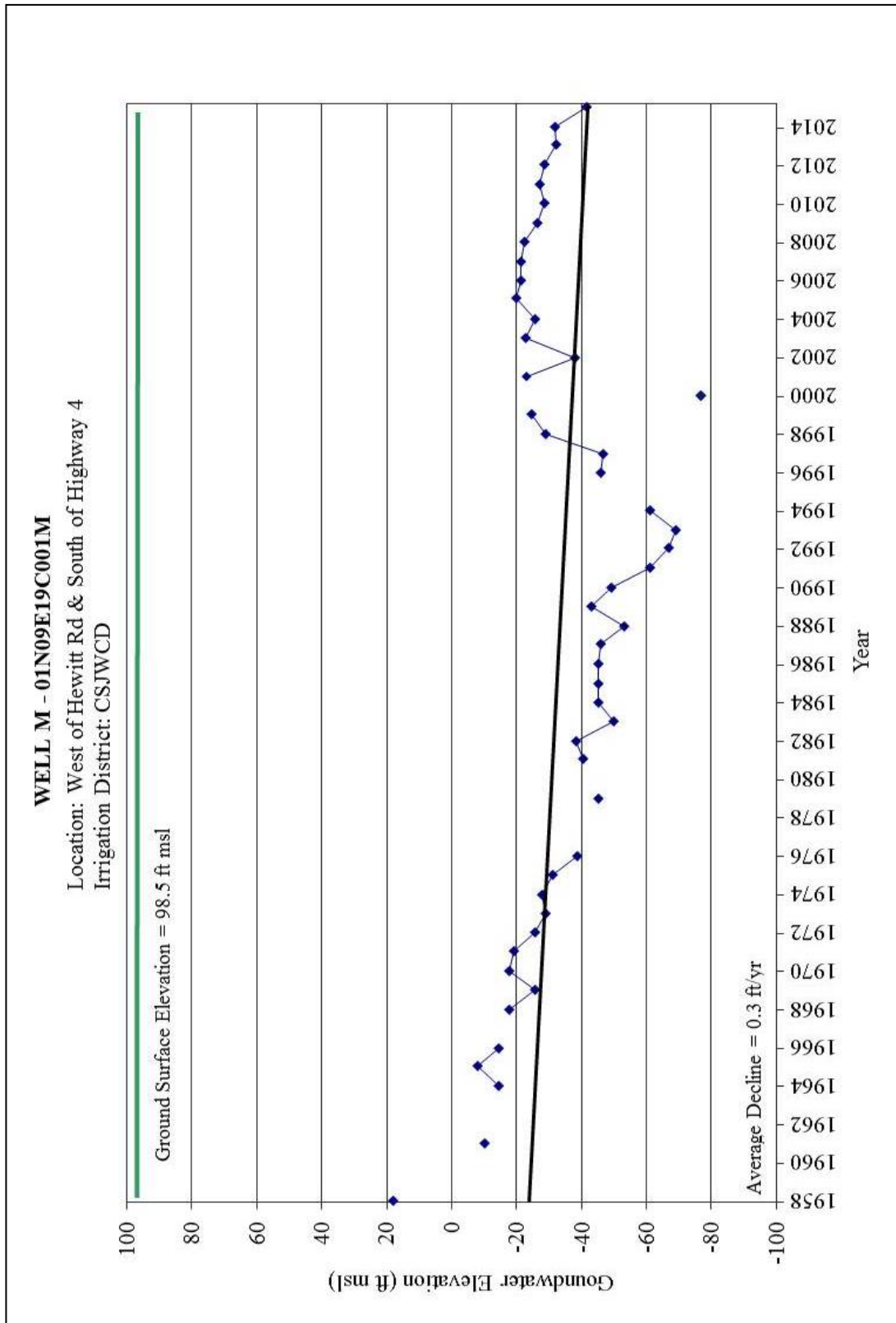


Figure 3-14: Fall Hydrograph Well M

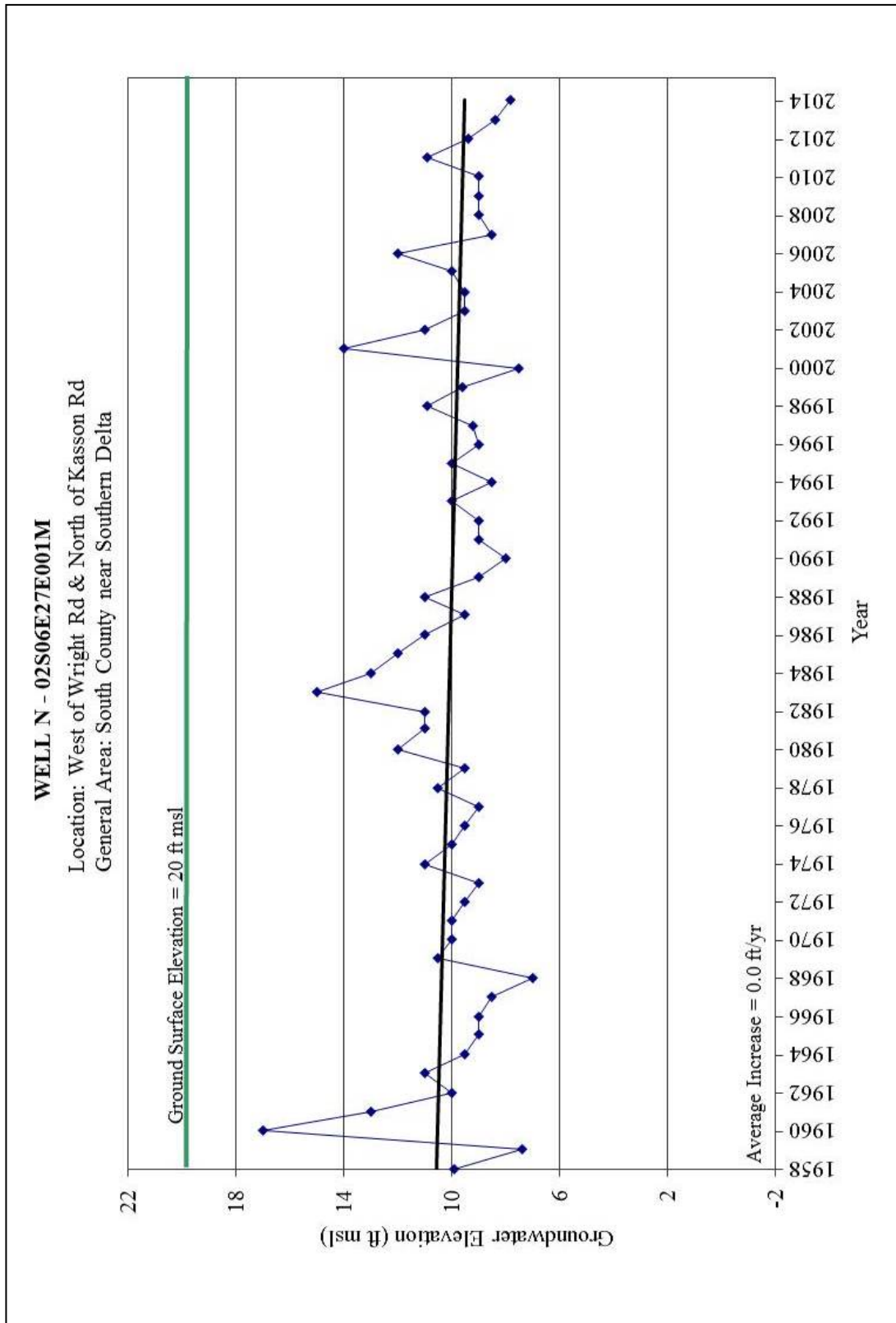


Figure 3-15: Fall Hydrograph Well N

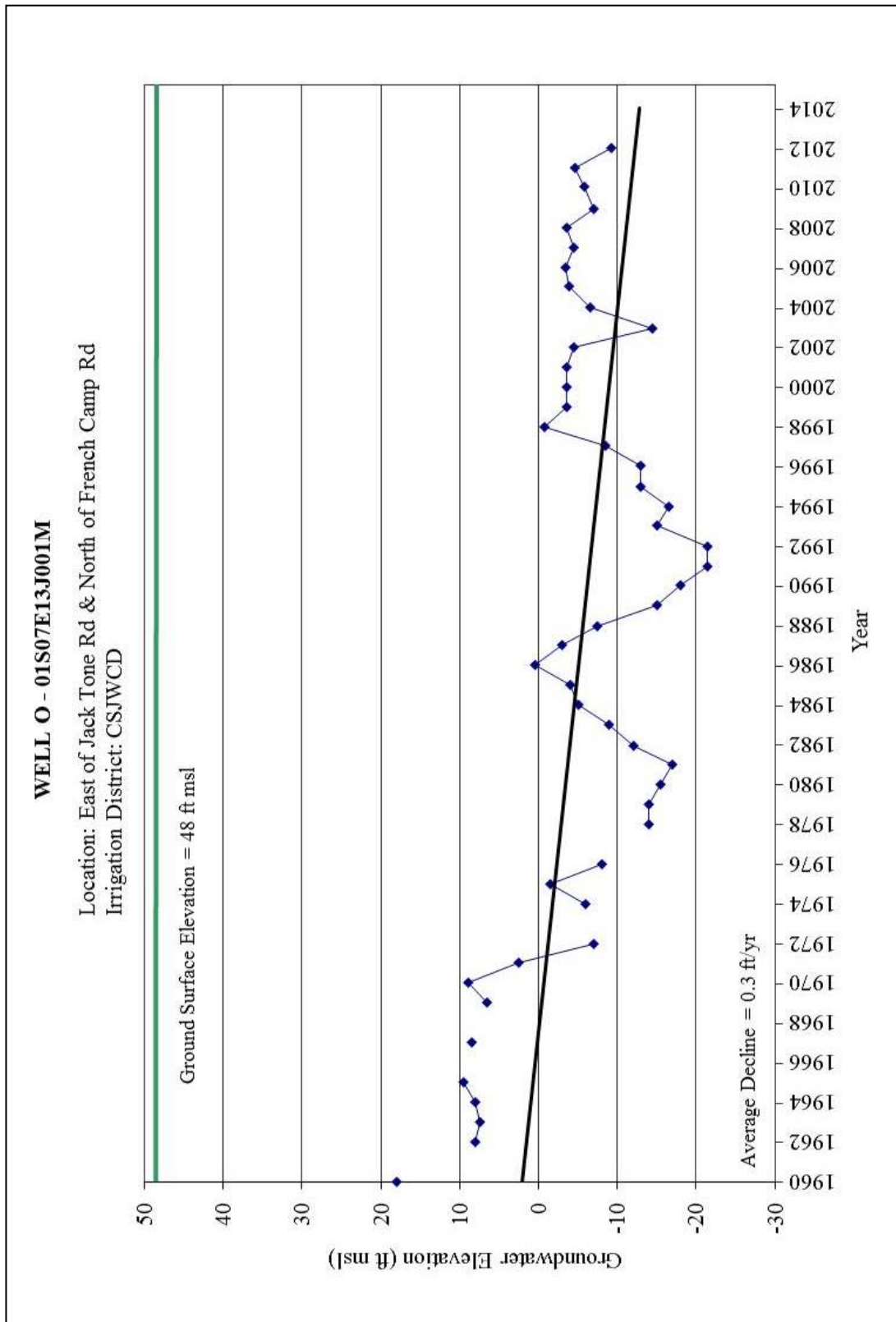


Figure 3-16: Fall Hydrograph Well O

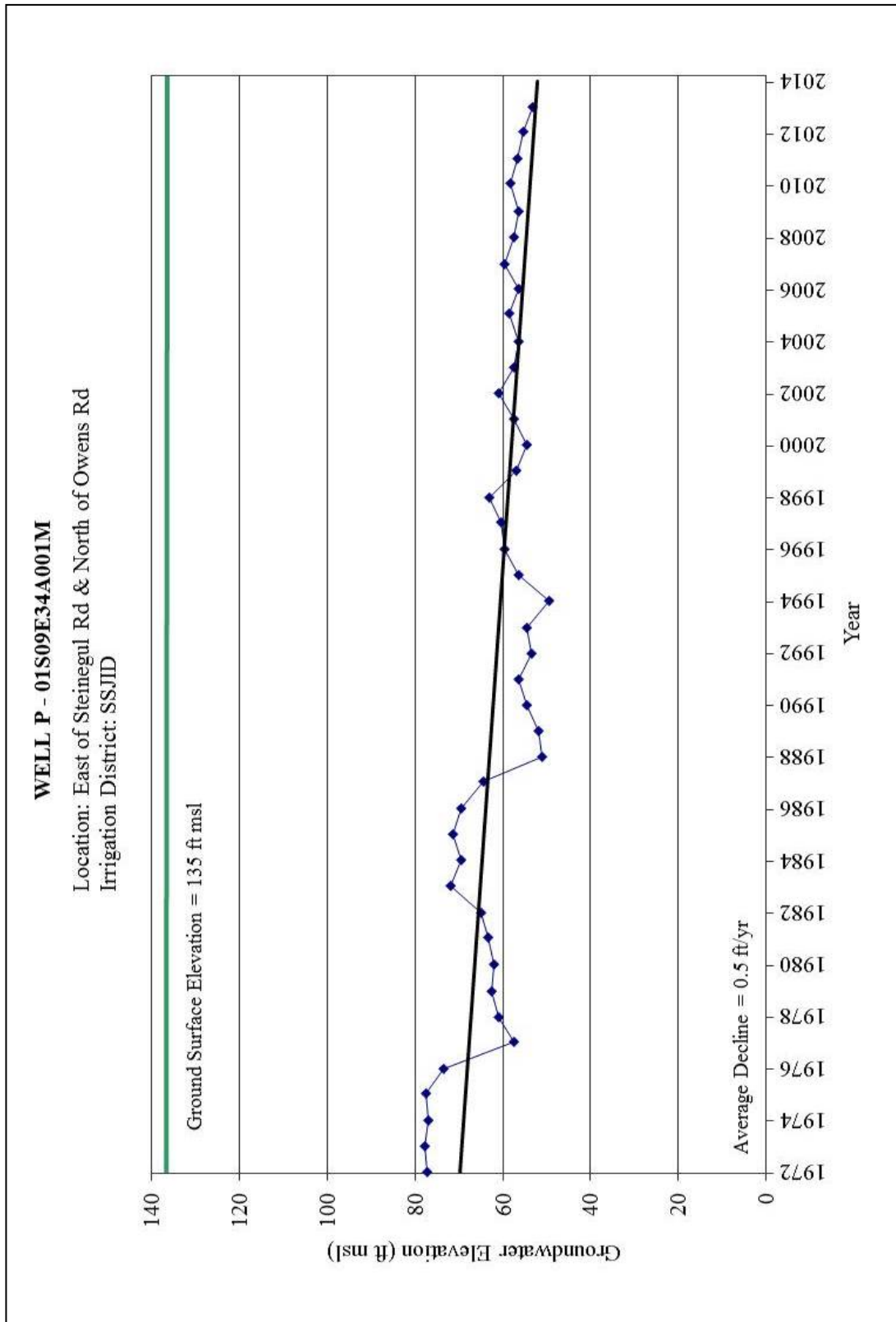


Figure 3-17: Fall Hydrograph Well P

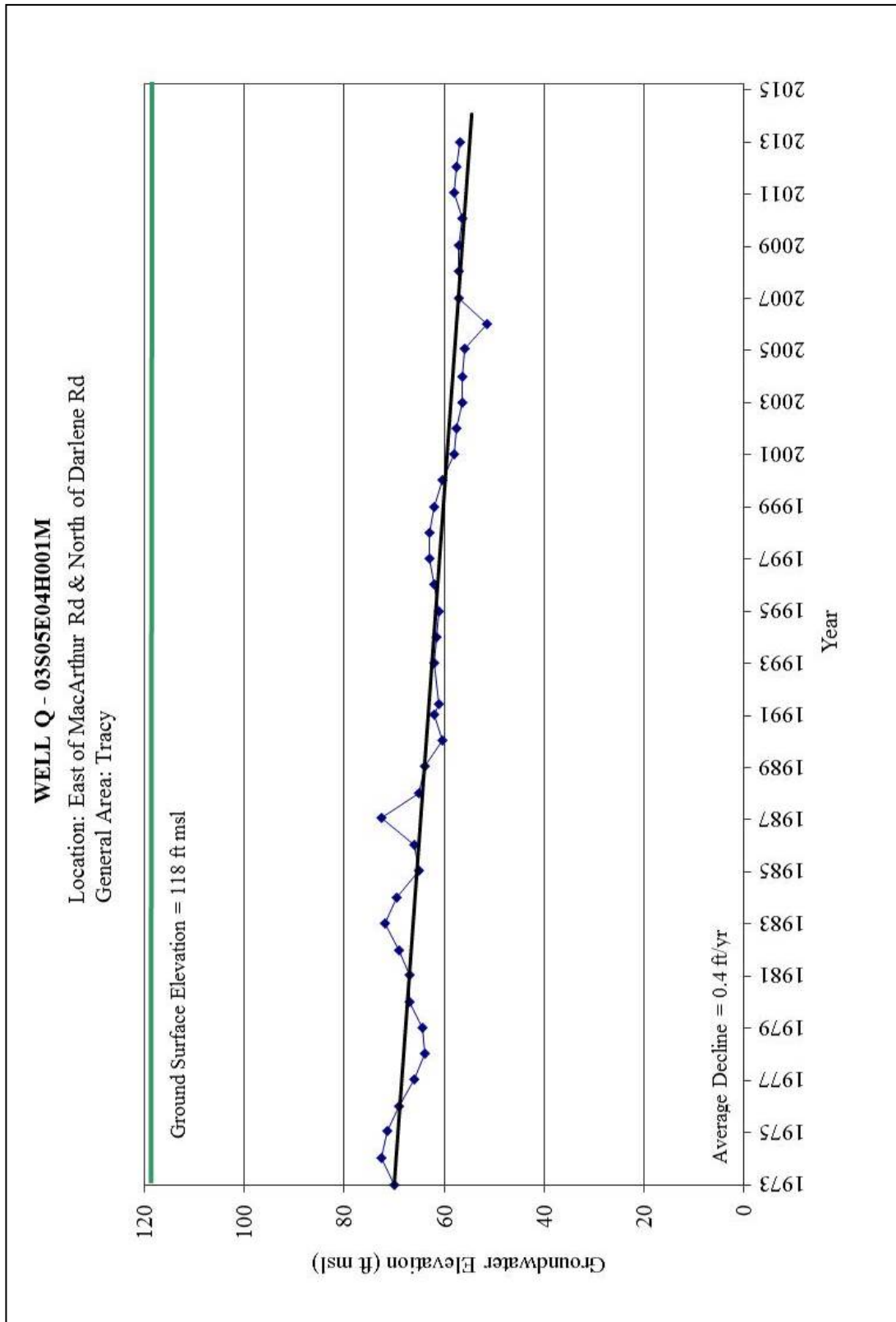


Figure 3-18: Fall Hydrograph Well Q

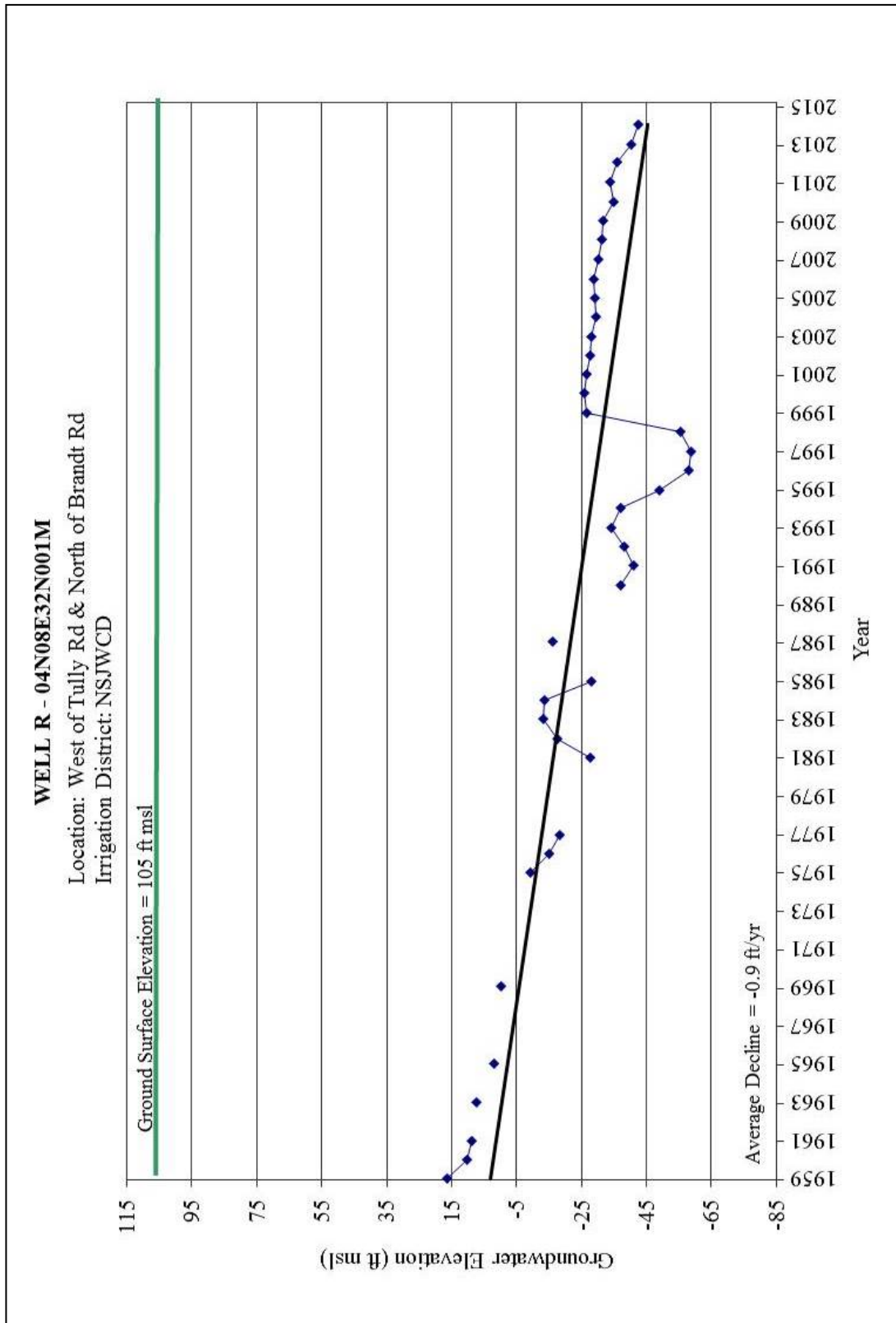


Figure 3-19: Fall Hydrograph Well R

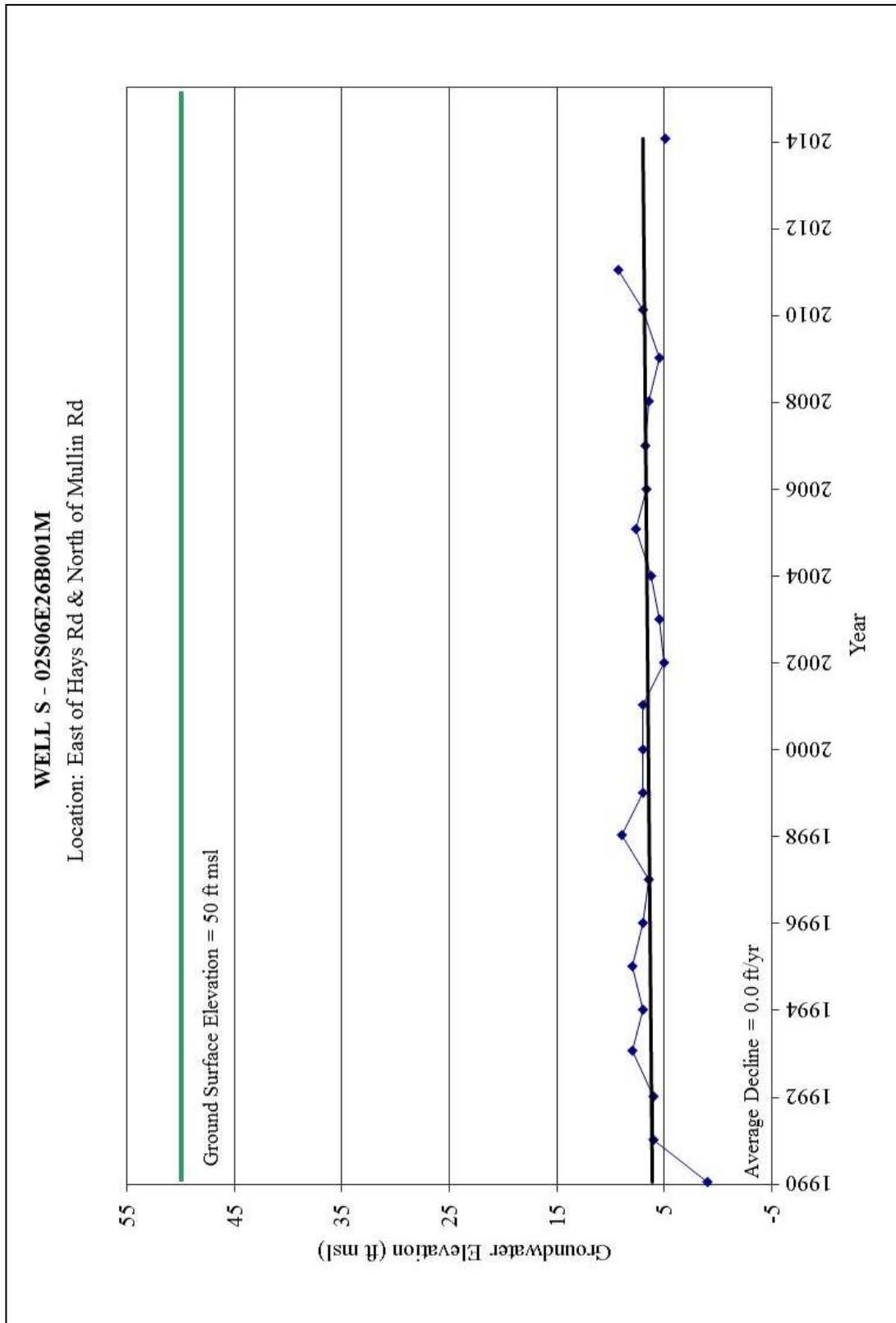


Figure 3-20: Fall Hydrograph Well S

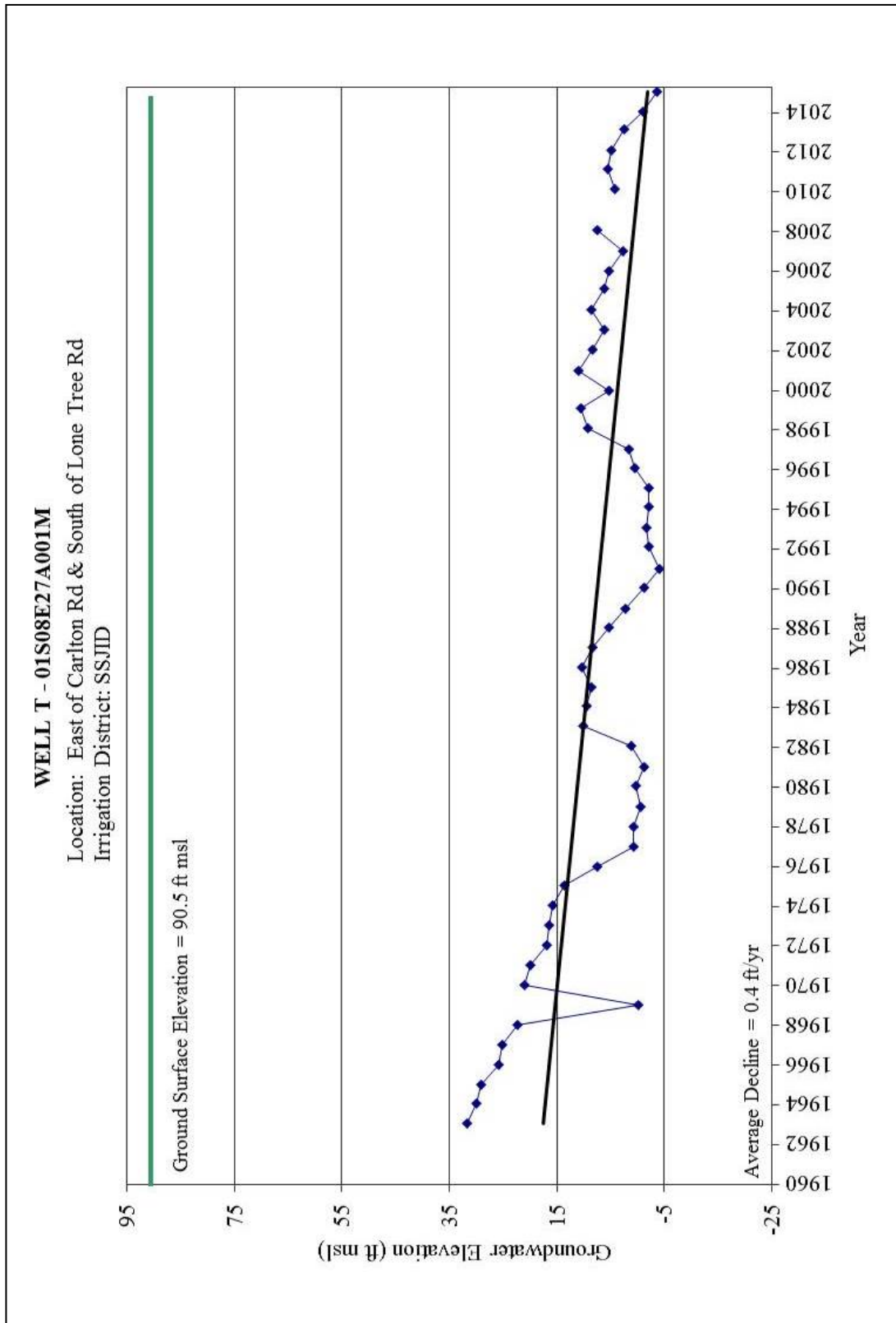


Figure 3-21: Fall Hydrograph Well T

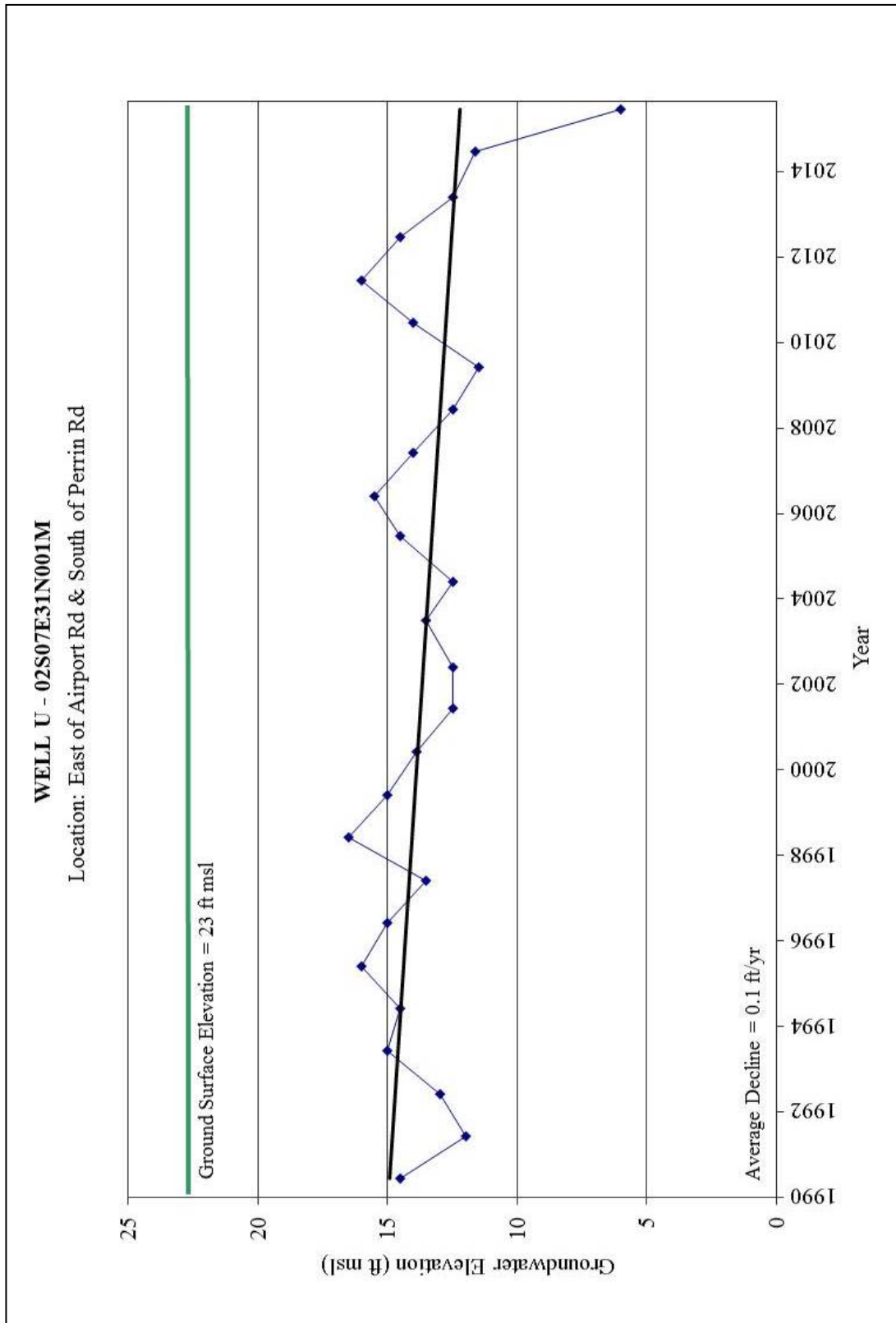


Figure 3-22: Fall Hydrograph Well U

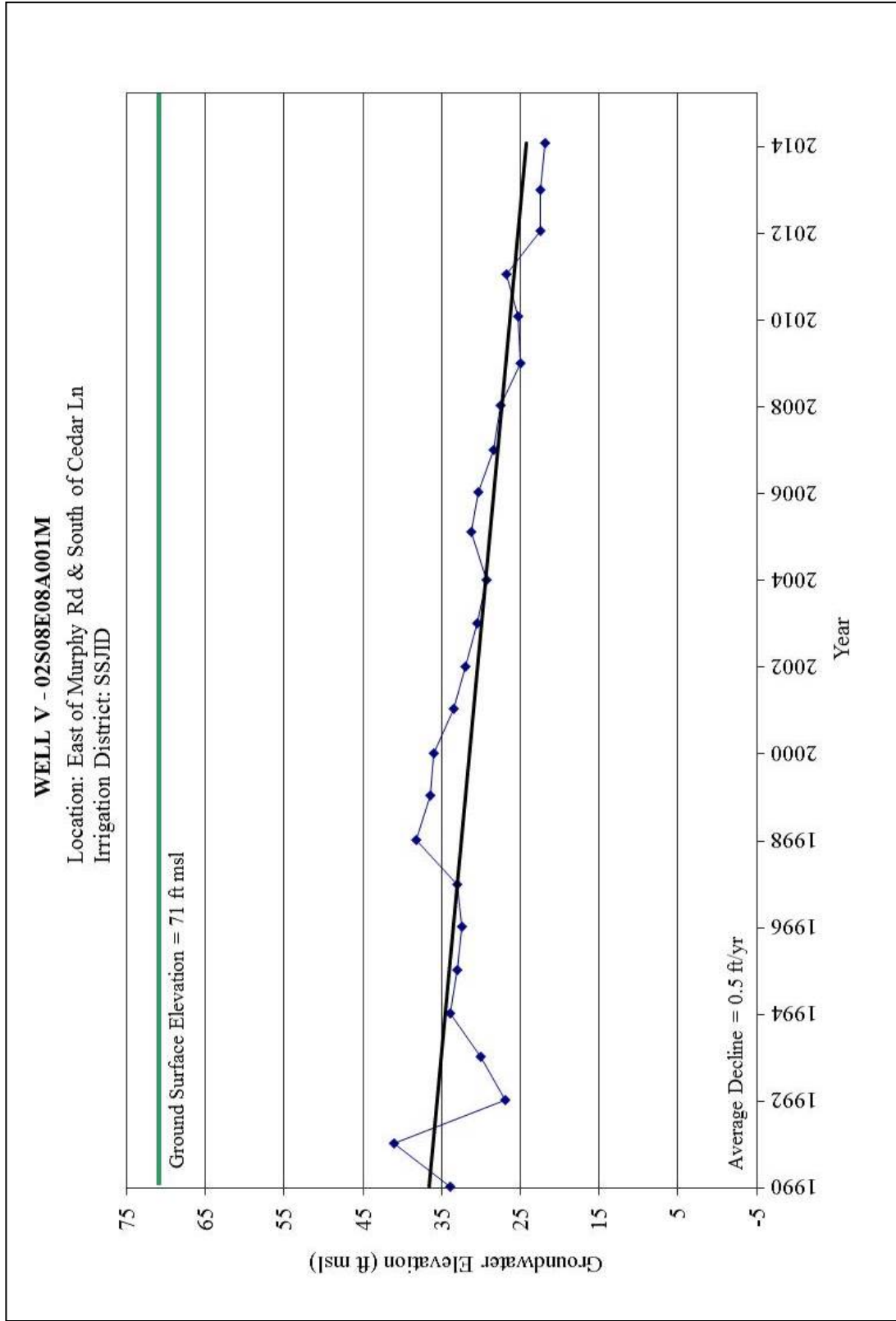


Figure 3-23: Fall Hydrograph Well V

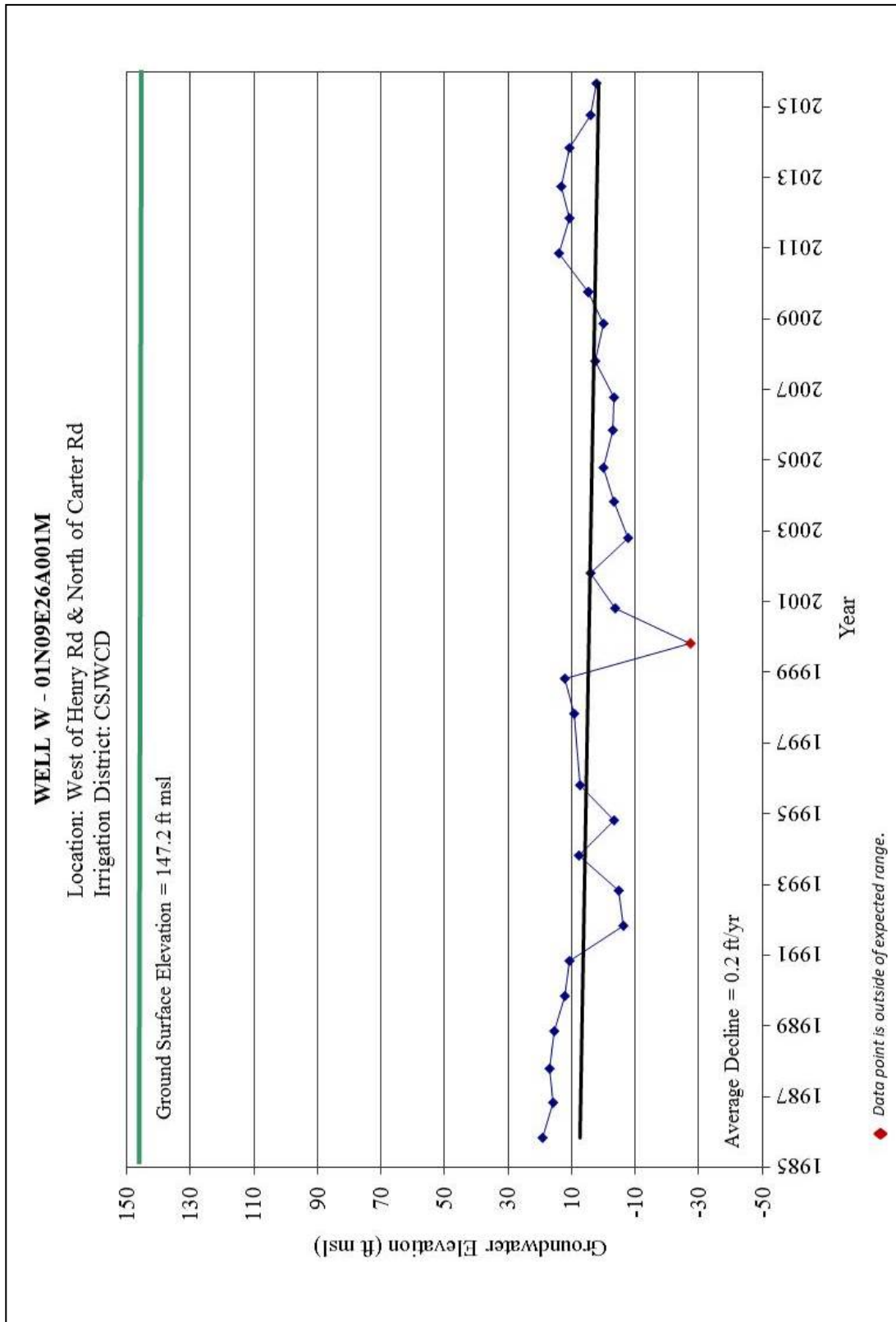


Figure 3-24: Fall Hydrograph Well W

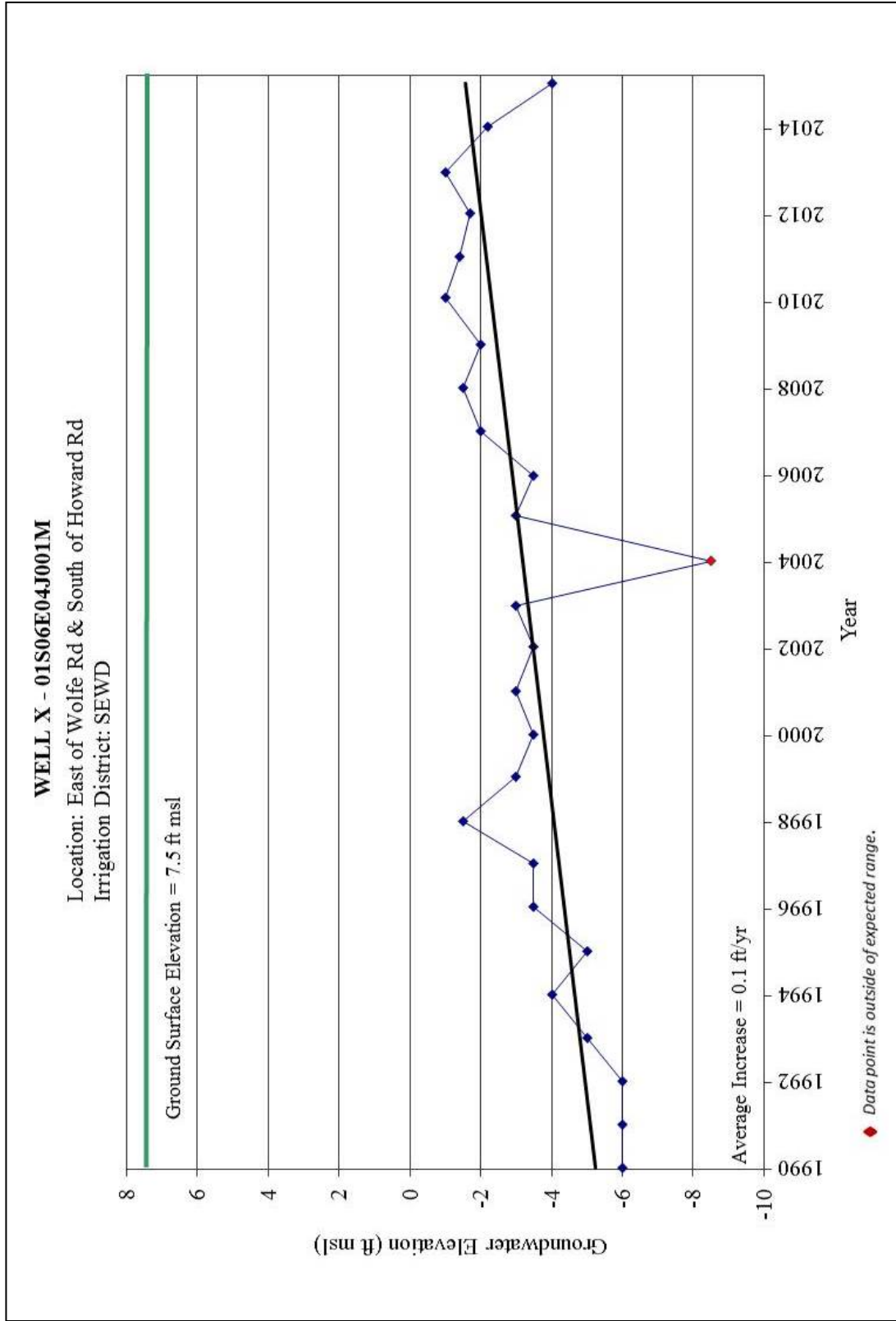


Figure 3-25: Fall Hydrograph Well X

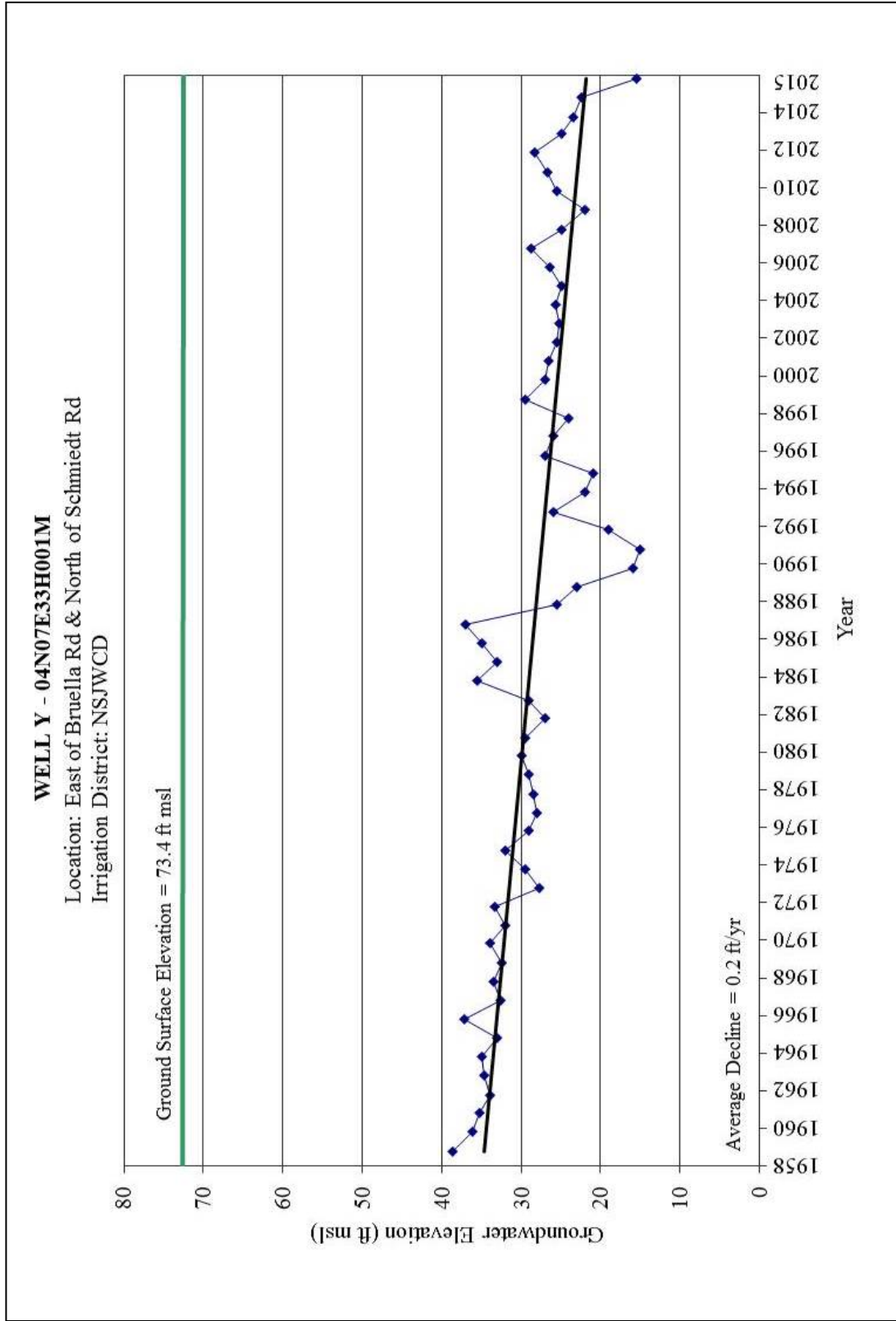


Figure 3-26: Fall Hydrograph Well Y

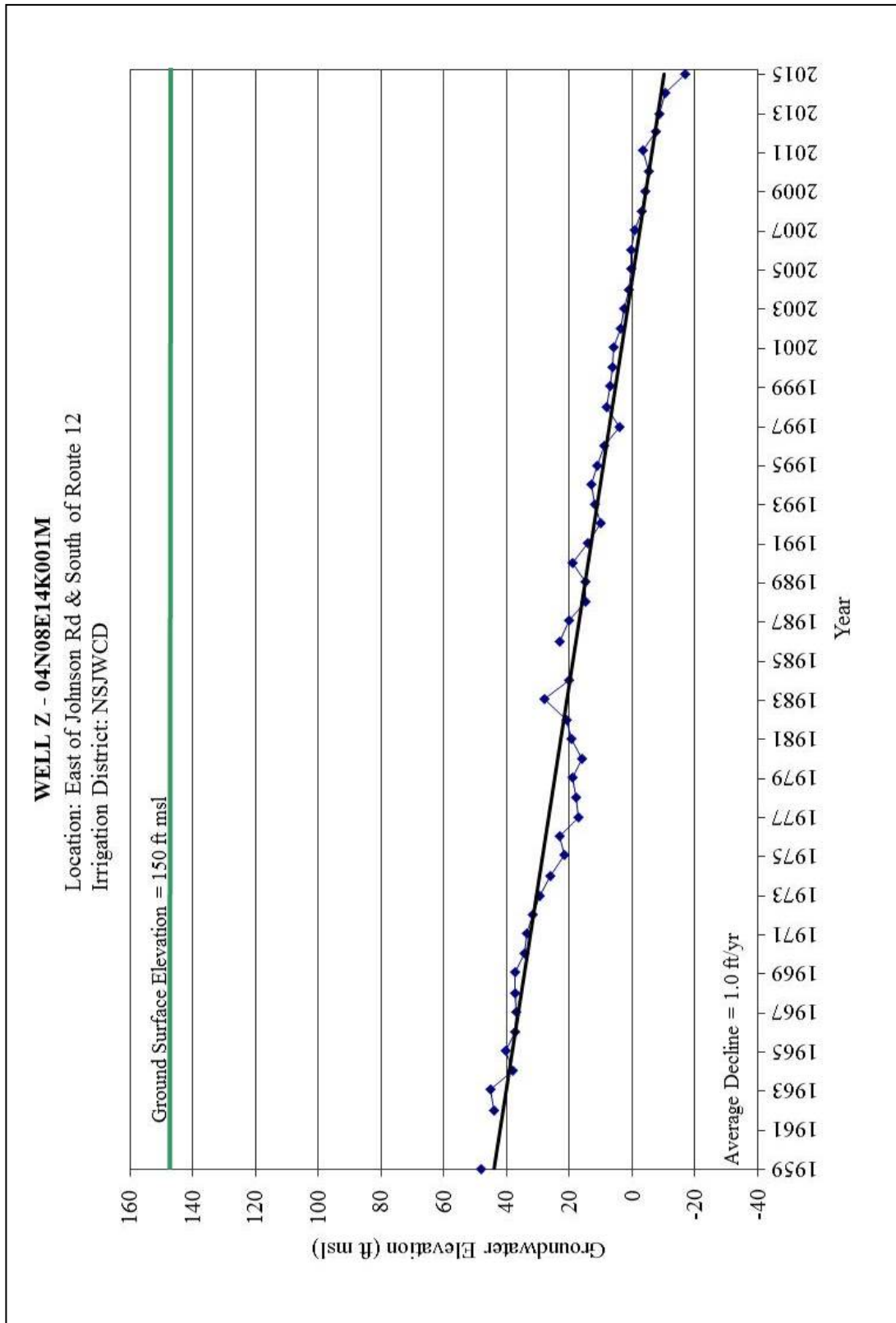


Figure 3-27: Fall Hydrograph Well Z

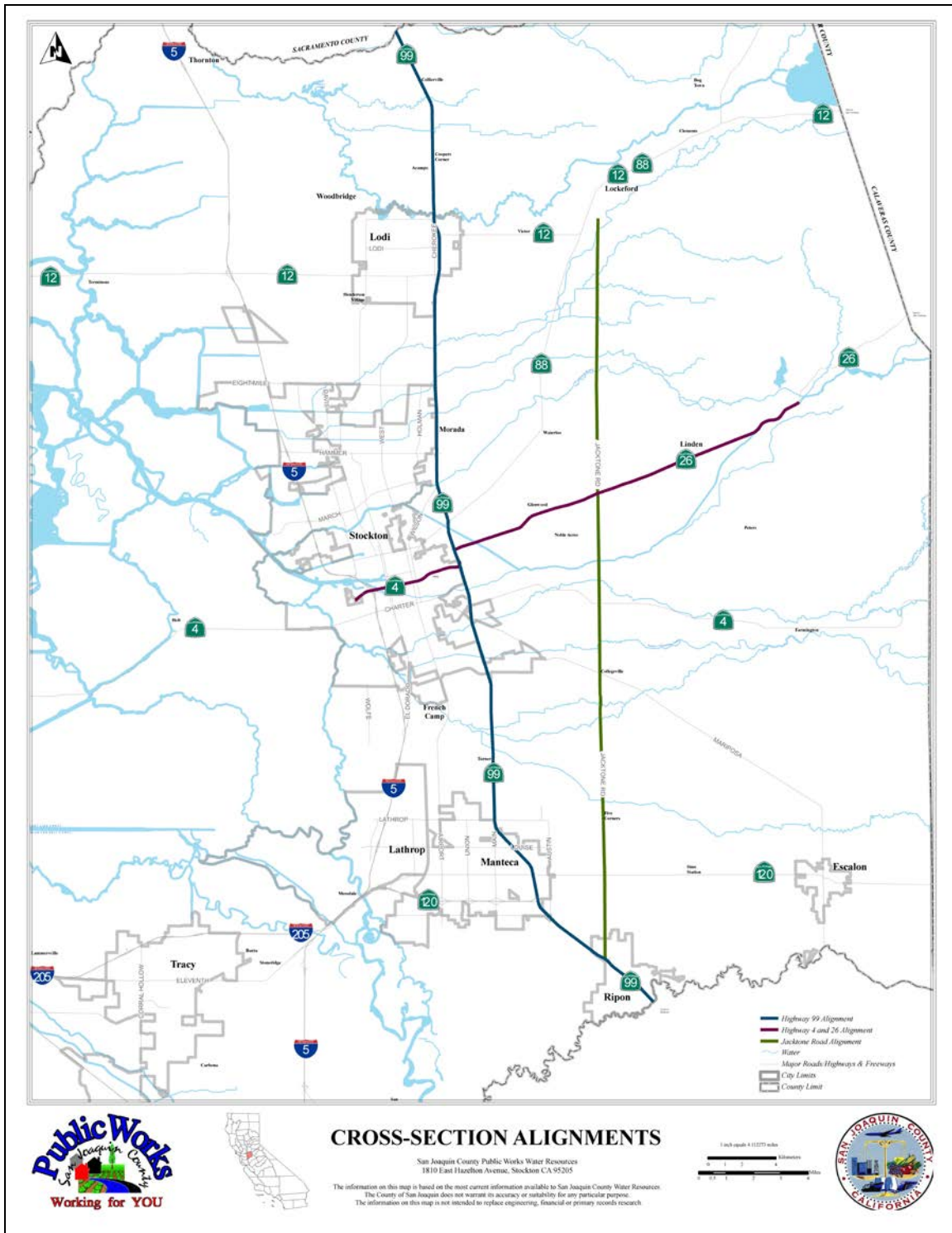


Figure 3-28: Cross Section Alignments

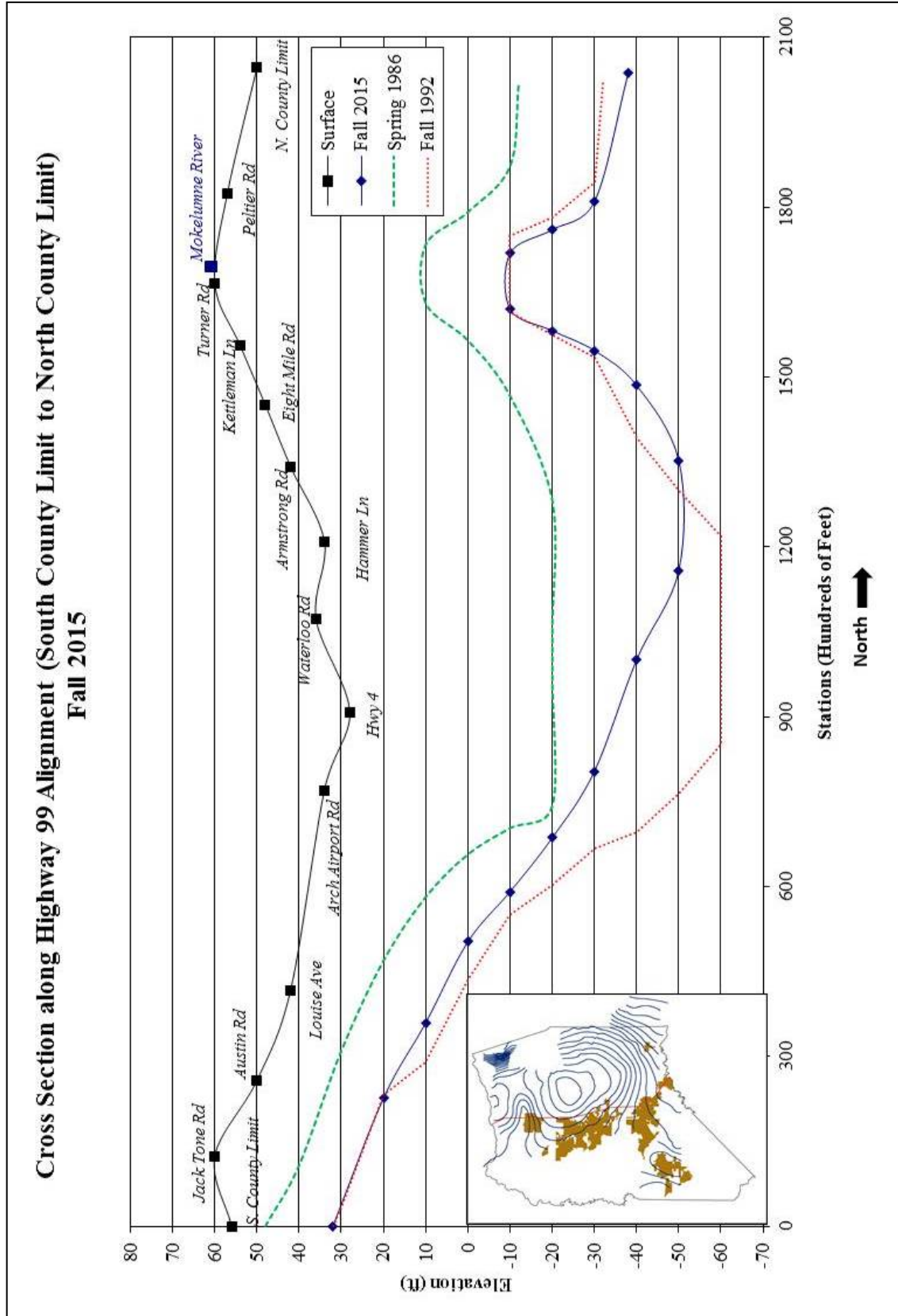


Figure 3-29: Highway 99 Cross Section Fall 2015

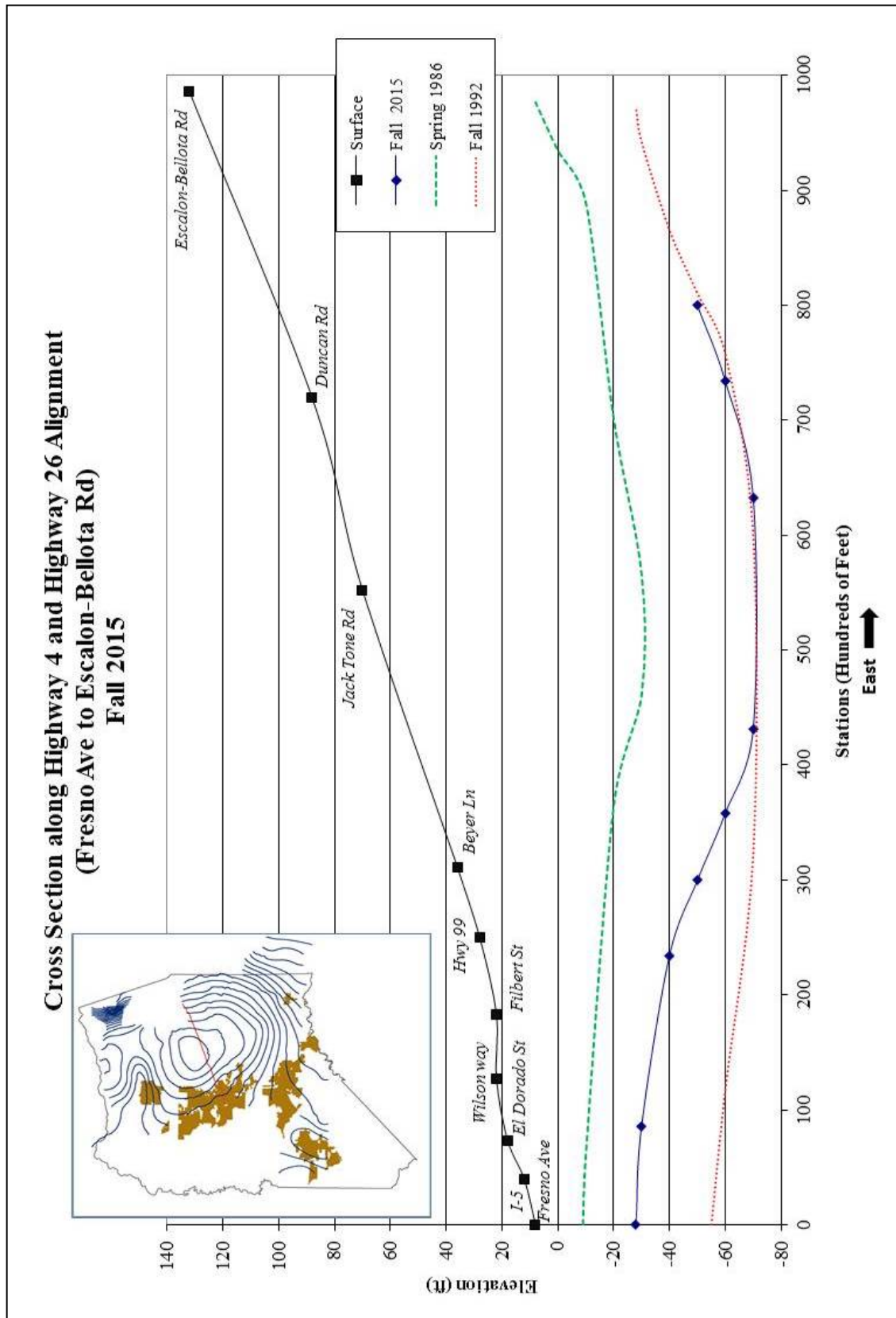


Figure 3-30: Highway 4 & Highway 26 Cross Section Fall 2015

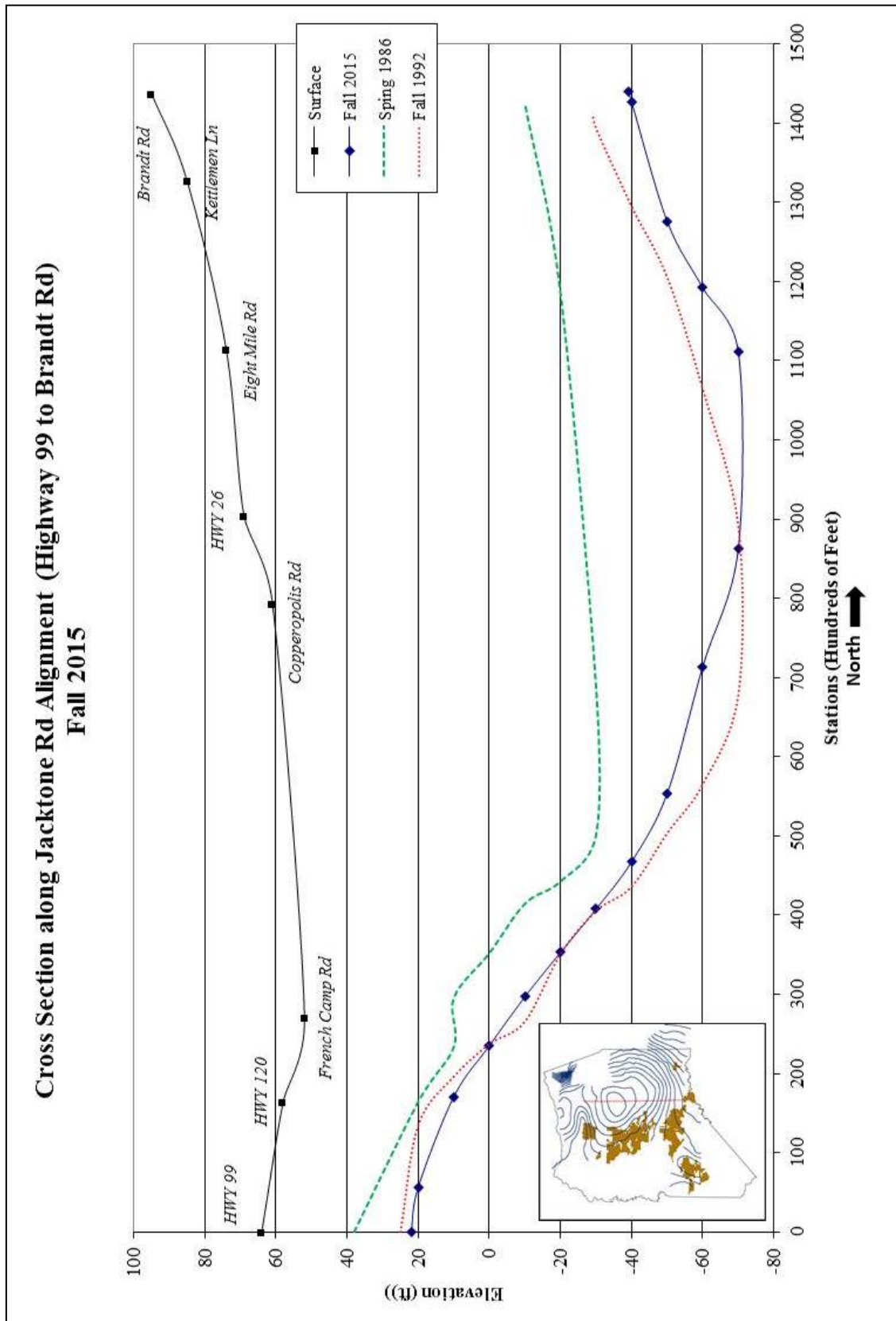
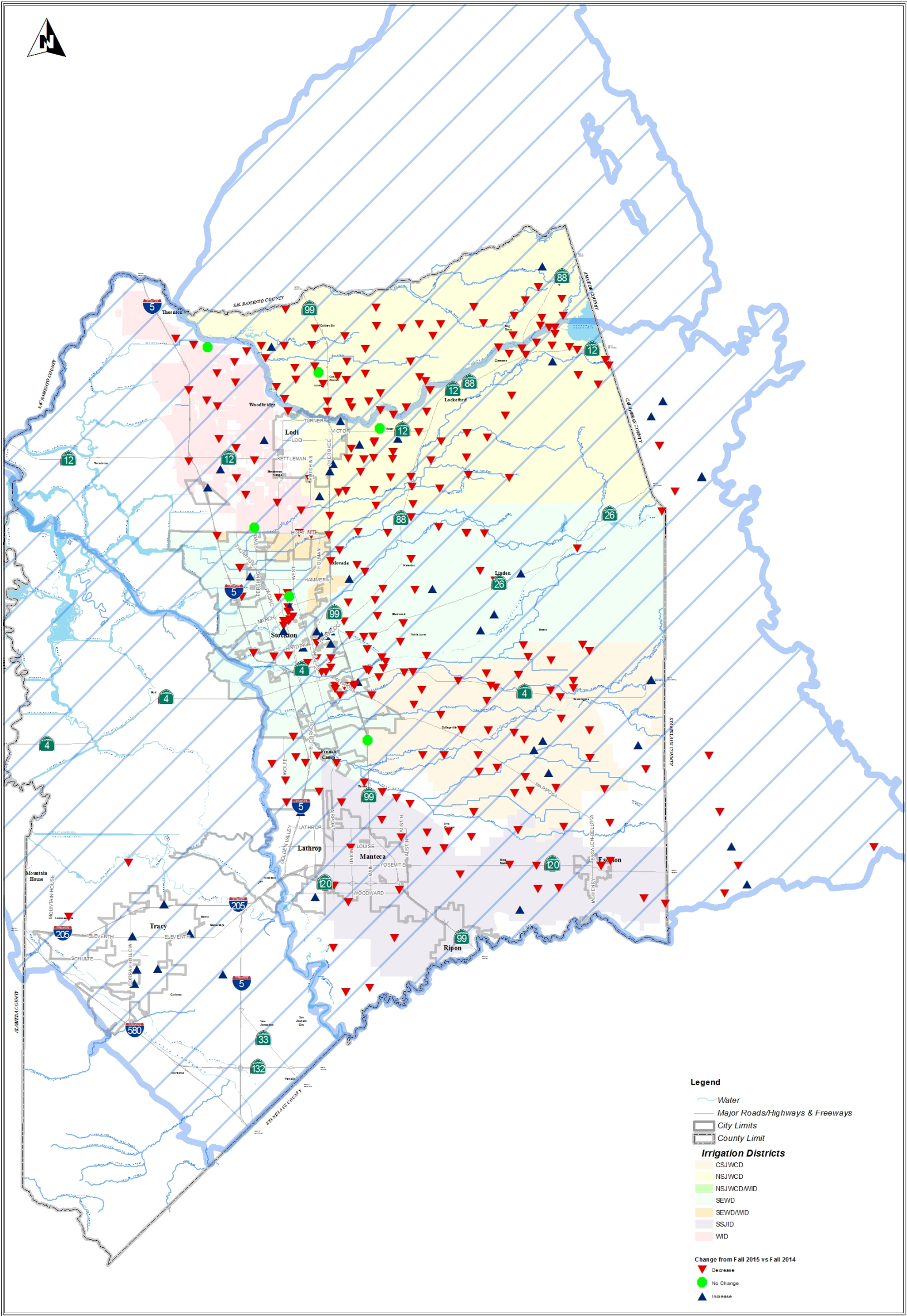


Figure 3-31: Jacktone Rd Cross Section Fall 2015



Differences in Groundwater Elevations Fall 2015 VS Fall 2014
San Joaquin County Public Works Water Resources
1810 East Hazelton Avenue, Stockton CA 95205

The information on this map is based on the most current information available to San Joaquin County Water Resources.
The County of San Joaquin does not warrant its accuracy or suitability for any particular purpose.
The information on this map is not intended to replace engineering, financial or primary records research.

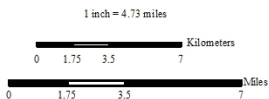
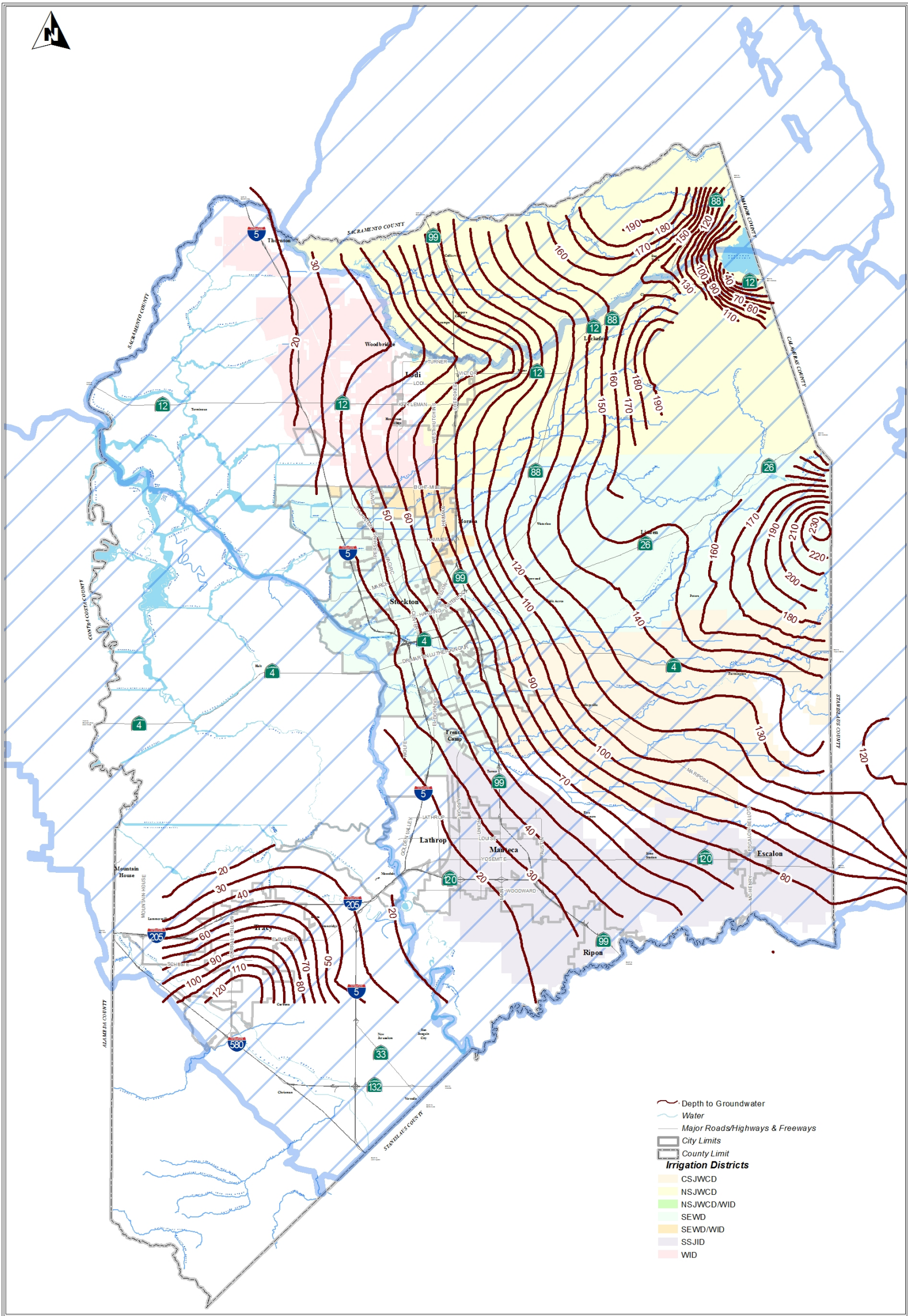


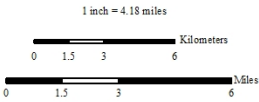
Figure 3-32: Differences in Groundwater Elevations Fall 2015



LINES OF EQUAL DEPTH TO GROUNDWATER FALL 2015

San Joaquin County Public Works Water Resources
1810 East Hazelton Avenue, Stockton CA 95205

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Prepared by: General Contractor

Figure 3-33: Lines of Equal Depth to Groundwater Fall 2015

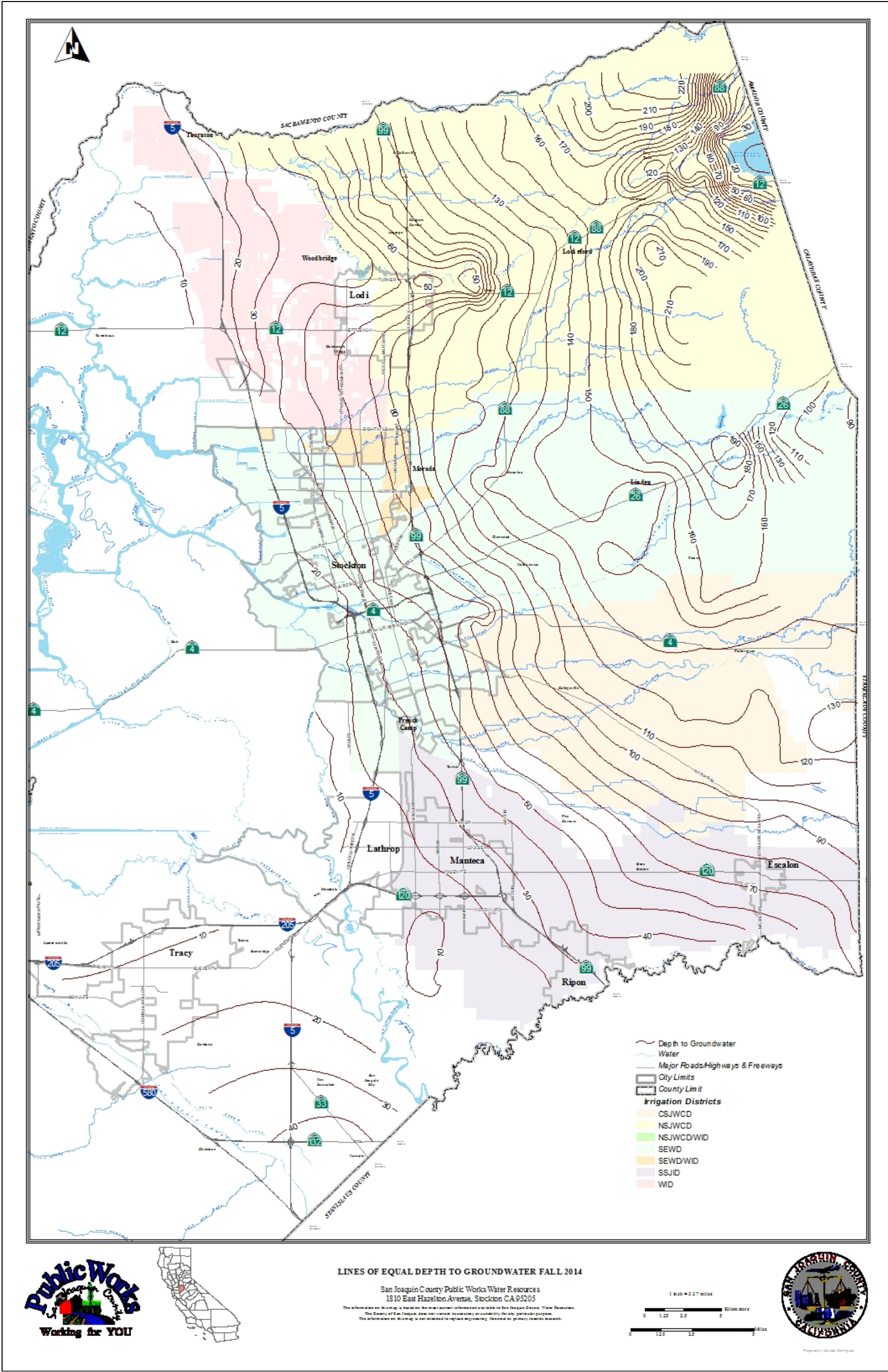


Figure 3-34: Lines of Equal Depth to Groundwater Fall 2014

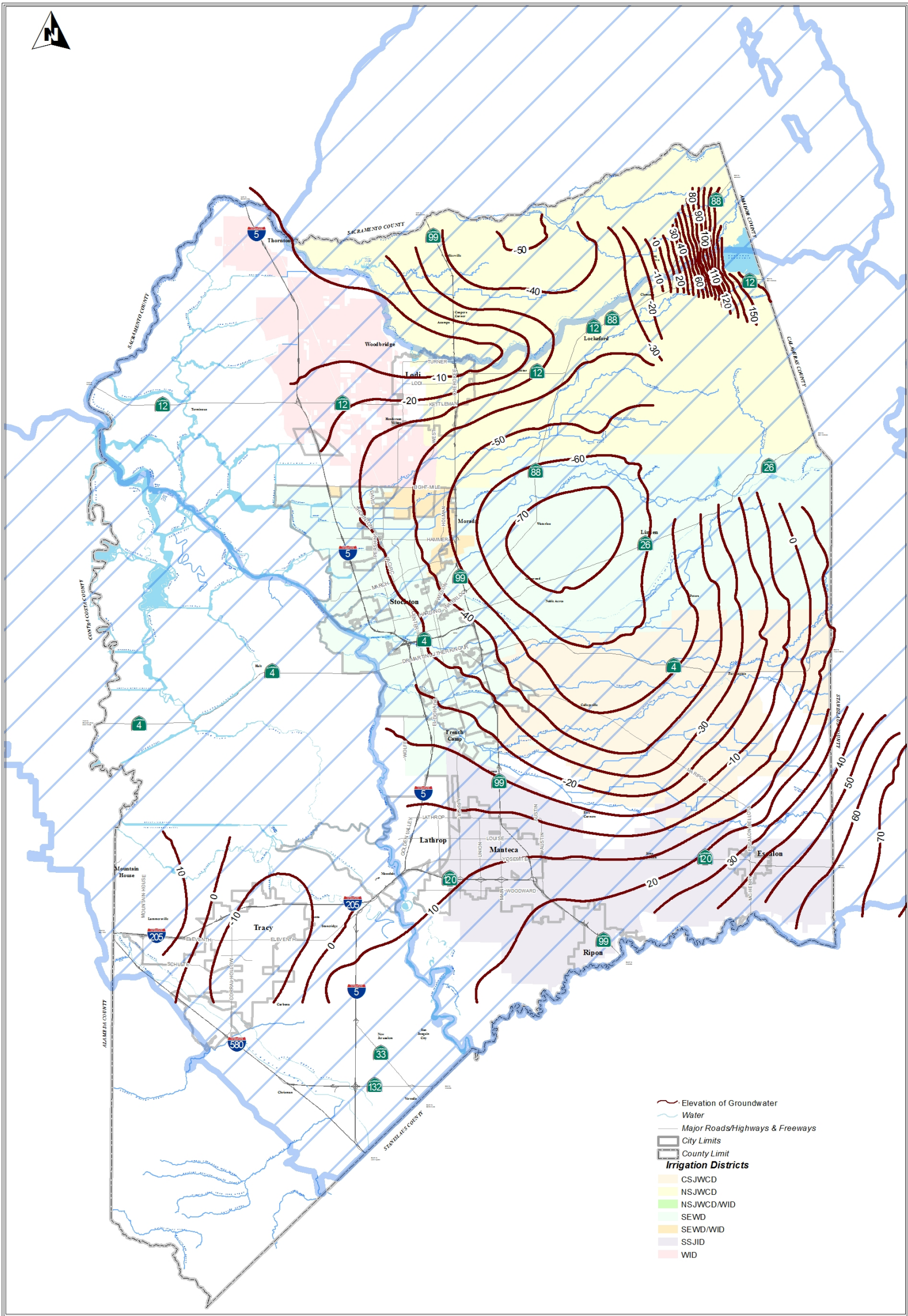


Figure 3-35: Lines of Equal Elevation of Groundwater Fall 2015

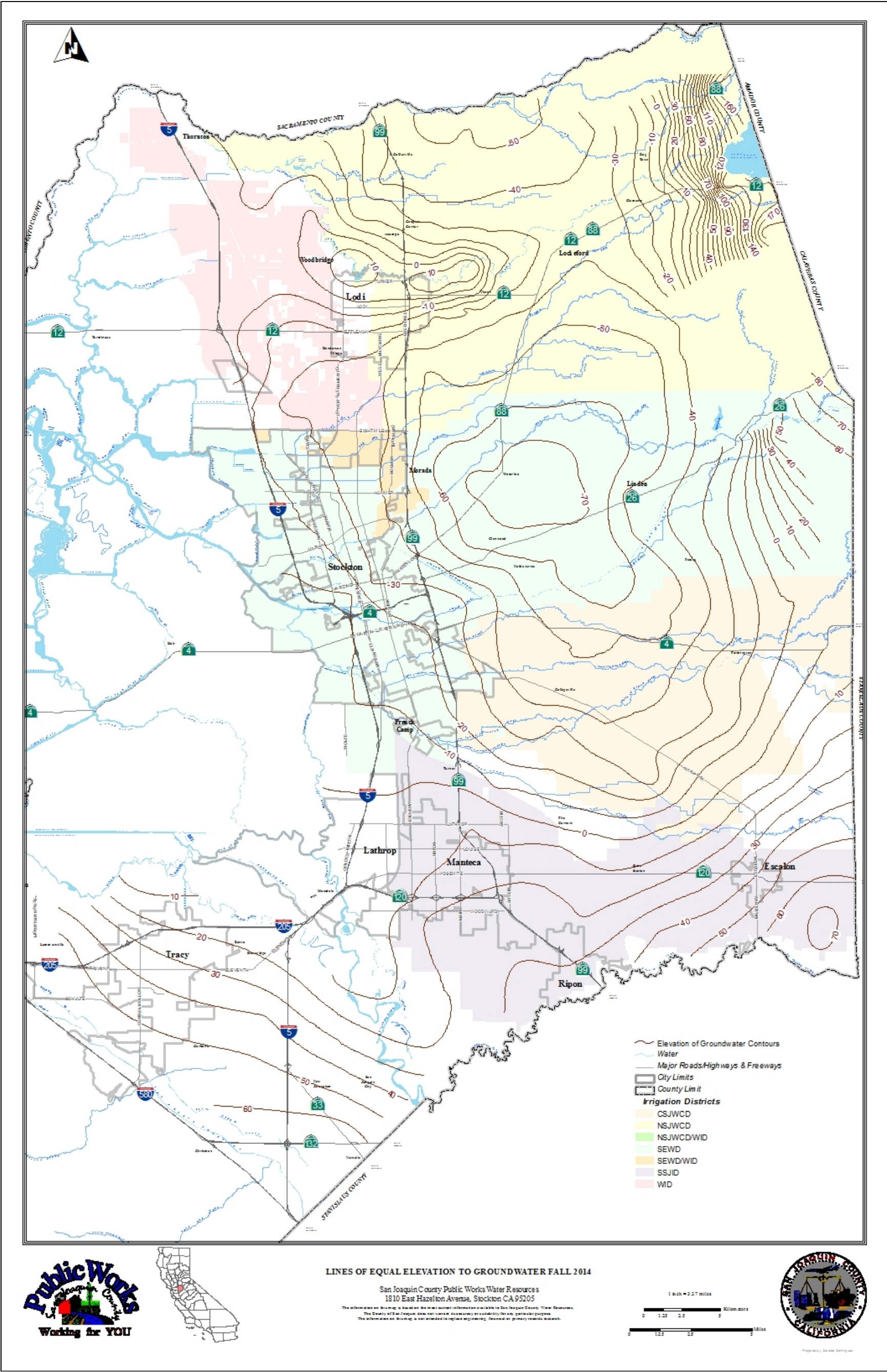


Figure 3-36: Lines of Equal Elevation of Groundwater Fall 2014