

San Joaquin County Flood Control and Water Conservation District



Groundwater Report Fall 2014



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Copies of the Fall 2014 Groundwater Report may be purchased for \$30 and 36"X48" Contour Maps for \$25 each from:

San Joaquin County Department of Public Works

P.O. Box 1810

Stockton, California 95201

Make checks payable to: San Joaquin County Department of Public Works



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

Morada Area Association

Newark Sierra Paperboard Company

Pacific Gas and Electric Company

San Joaquin County Department of Public Works

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Stockton East Water District

United States Bureau of Reclamation

United States Geological Survey

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 2014 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⁻) using the Thomas Scientific 675 pH/ISE meter in conjunction with the ISE Cl⁻ Combination Electrode, 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 2 – Groundwater Quality Monitoring

Summary of Groundwater Quality Results

The information contained in the Fall 2014 Groundwater Report is summarized as follows:

North San Joaquin County – One well was tested for chloride ions (Cl^-), electrical conductivity (EC) and total dissolved solids (TDS). There was a slight decrease in Cl^- , EC, and TDS from the previous measurements in the fall of 2013.

North Stockton – Three wells were tested for Cl^- , EC and TDS in North Stockton. One of the wells increased in Cl^- concentrations from the previous measurements in the fall of 2013. One of the wells increased in EC and TDS concentrations, and one well had no change in EC and TDS concentrations from the analysis in the fall 2013.

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

Lathrop – Two wells were sampled in Lathrop. Both of the wells have decreased in Cl^- concentrations. One of the wells has higher concentrations of EC and TDS from the analysis in the fall 2013.

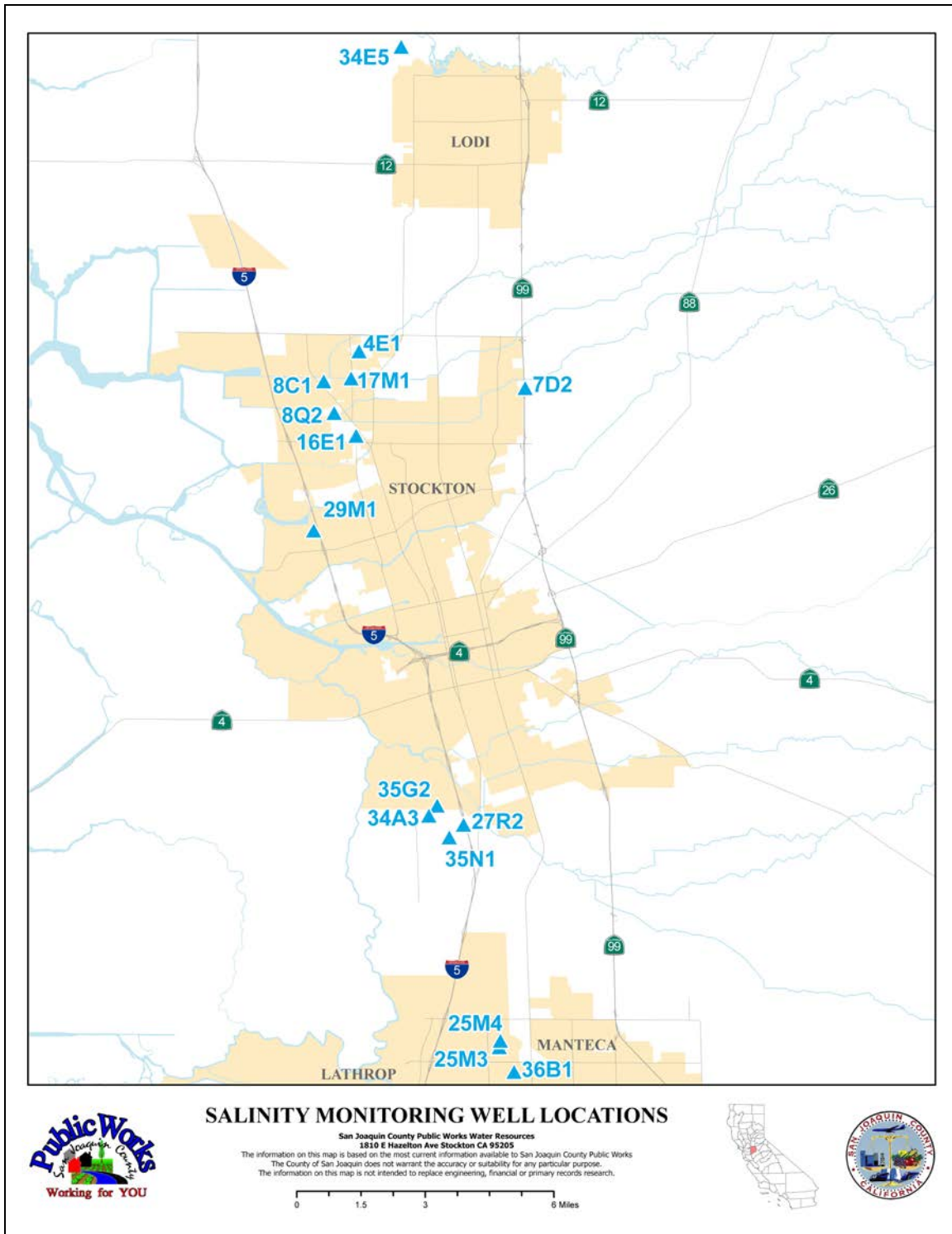


Figure 2-1: Salinity Monitoring Well Locations

Table 2-1: Groundwater Quality Mineral Analysis Fall 2014

Well	Chloride ppm	EC mmho	TDS* ppm
27R2	-	-	-
34A3	-	-	-
35G2	-	-	-
35N1	-	-	-
25M3	70	0.64	408
25M4	18	0.52	330
36B1	-	-	-
4E1	30	0.59	379
8C1	28	0.86	551
8Q2	-	-	-
16E1	-	-	-
17M1	15	0.29	185
29M1	-	-	-
7D2	-	-	-
34E5	18	0.83	529

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

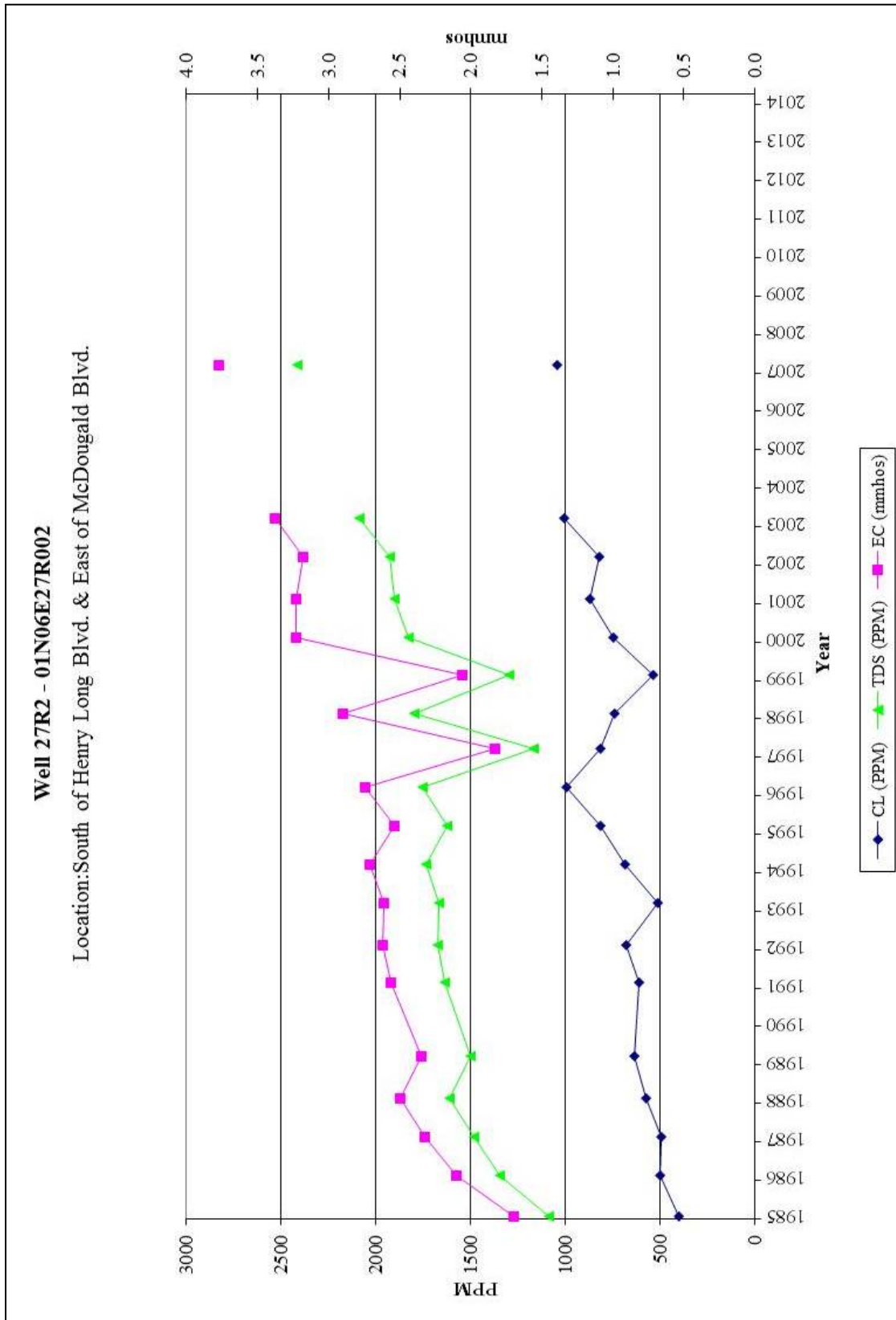


Figure 2-2: Quality Comparison Graph Well 27R2

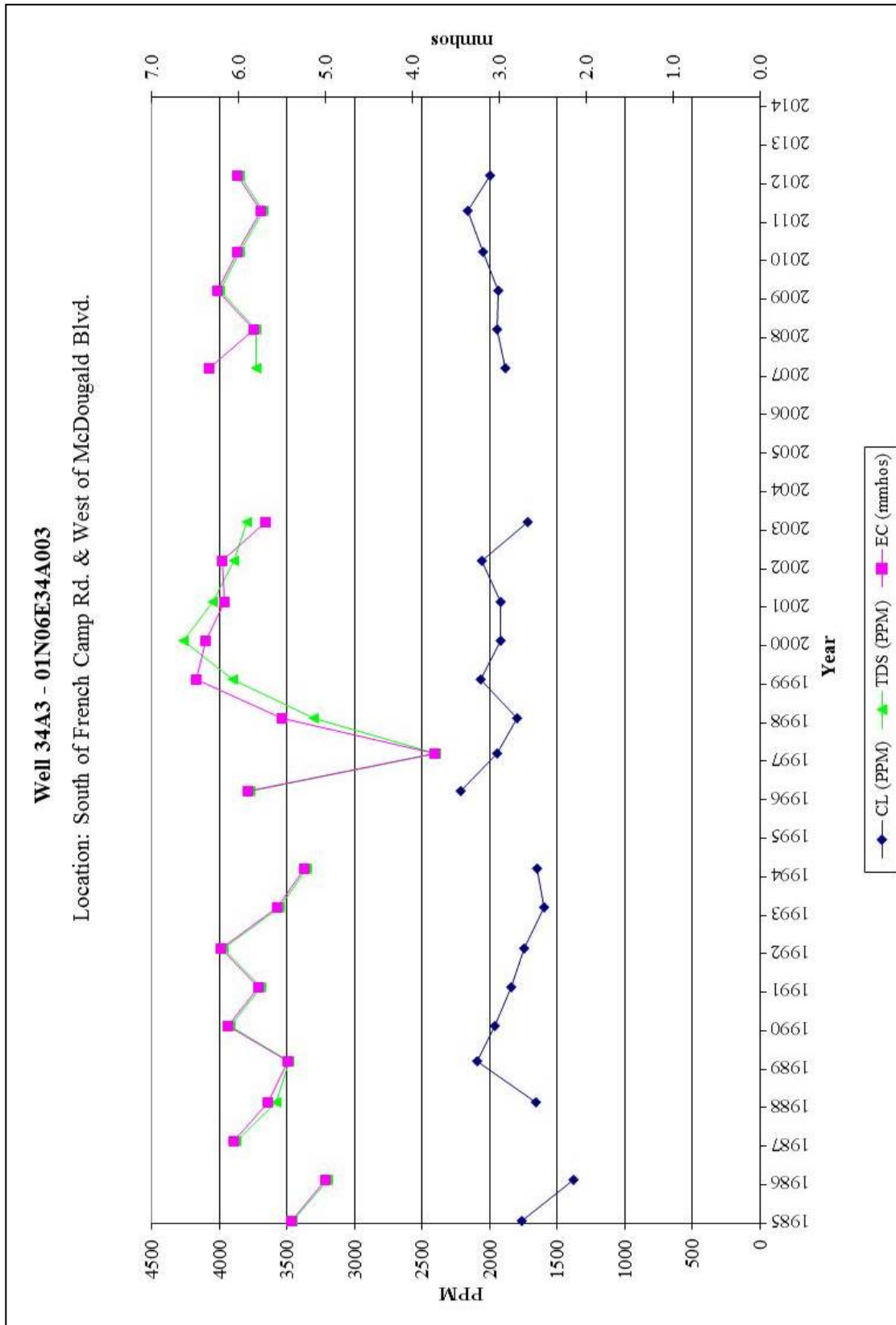


Figure 2-3: Quality Comparison Graph Well 34A3

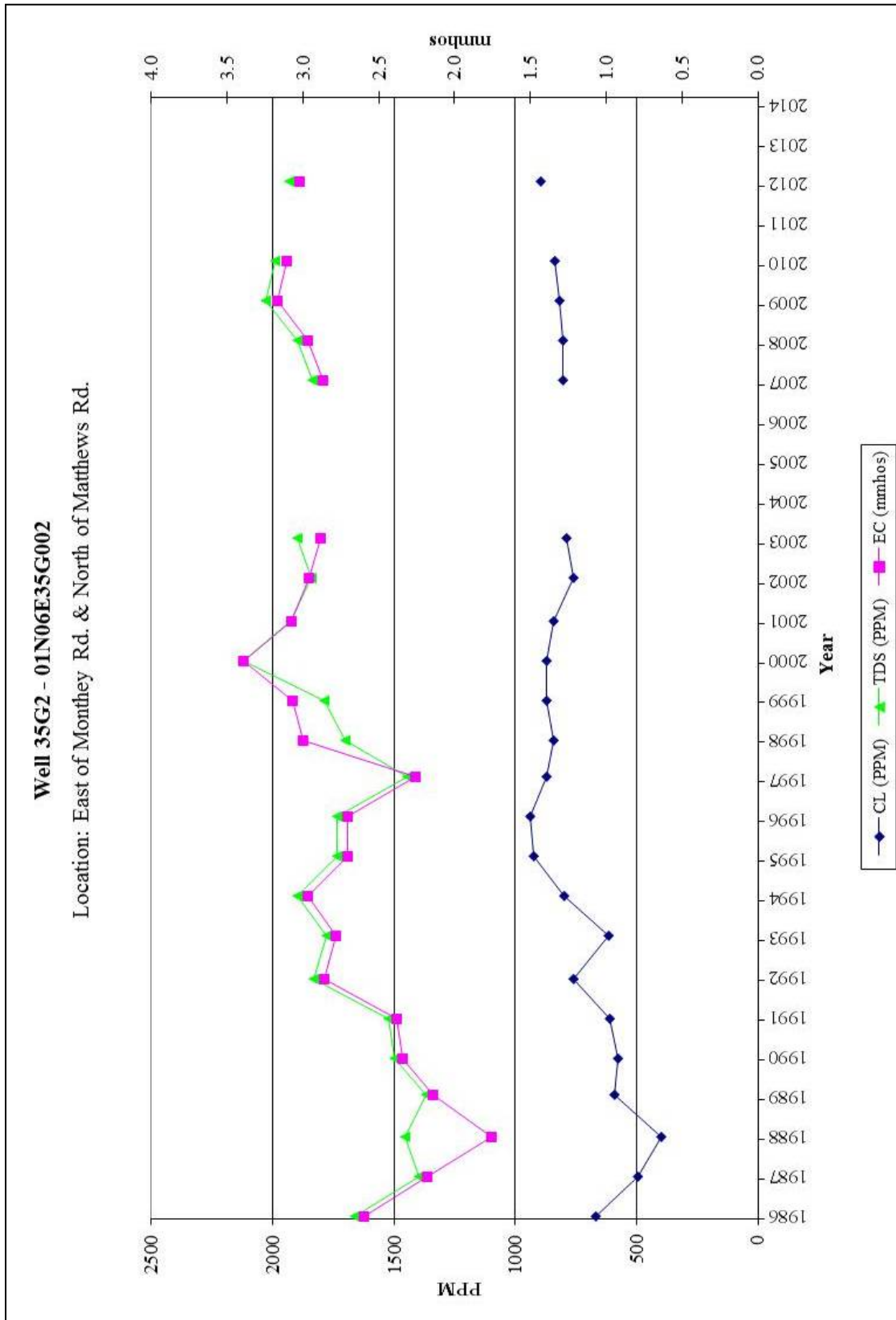


Figure 2-4: Quality Comparison Graph Well 35G2

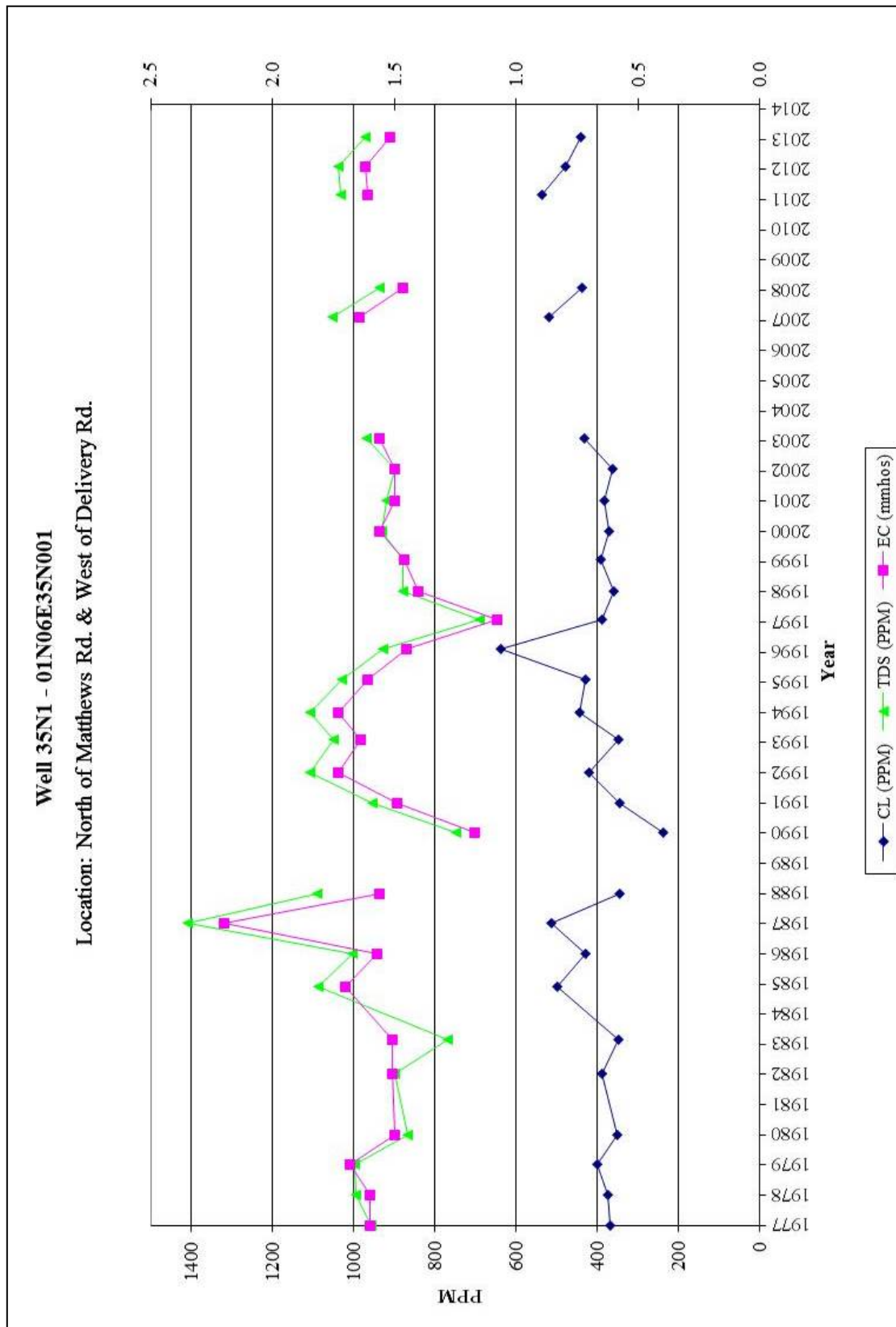


Figure 2-5: Quality Comparison Graph Well 35N1

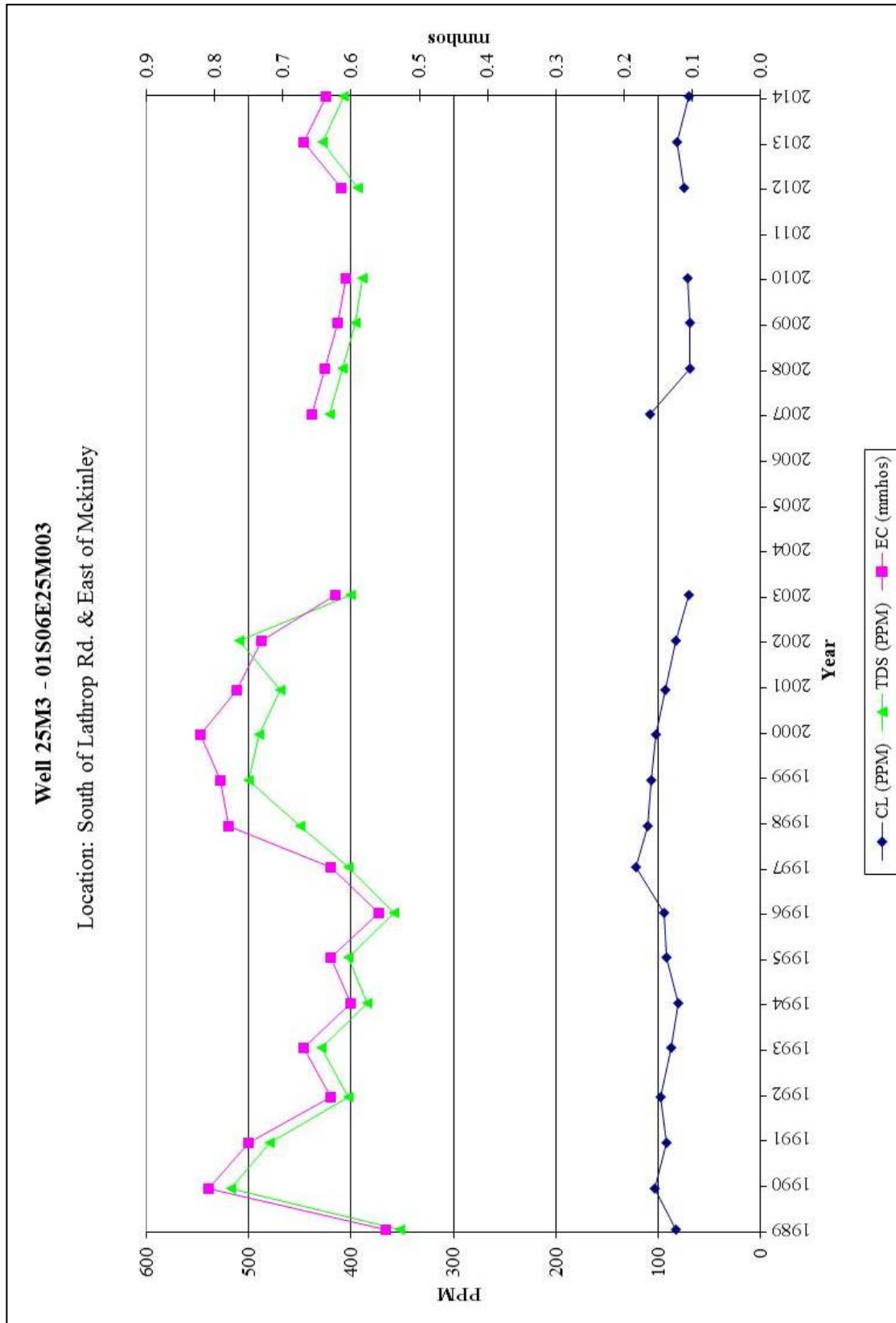


Figure 2-6: Quality Comparison Graph Well 25M3

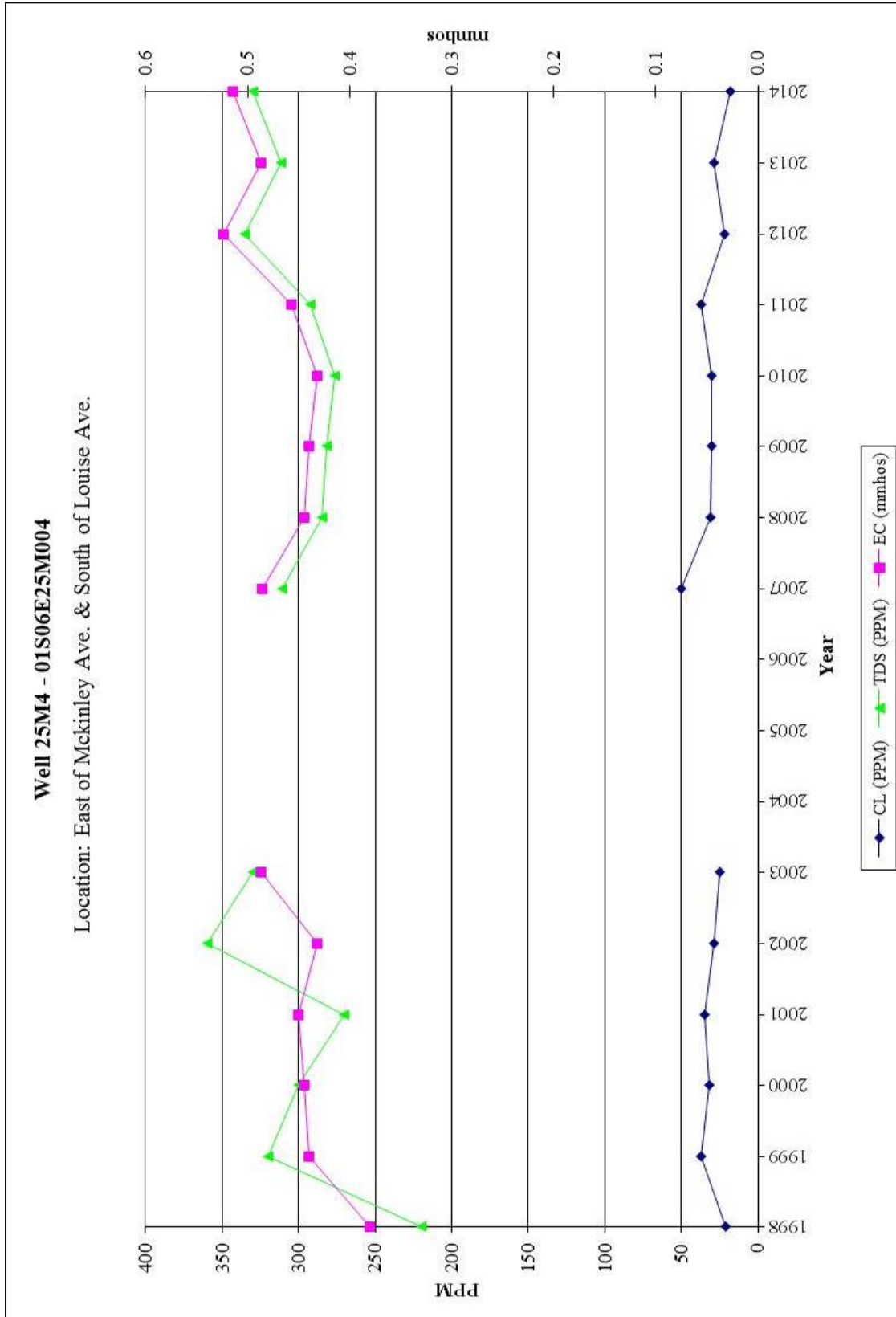


Figure 2-7: Quality Comparison Graph Well 25M4

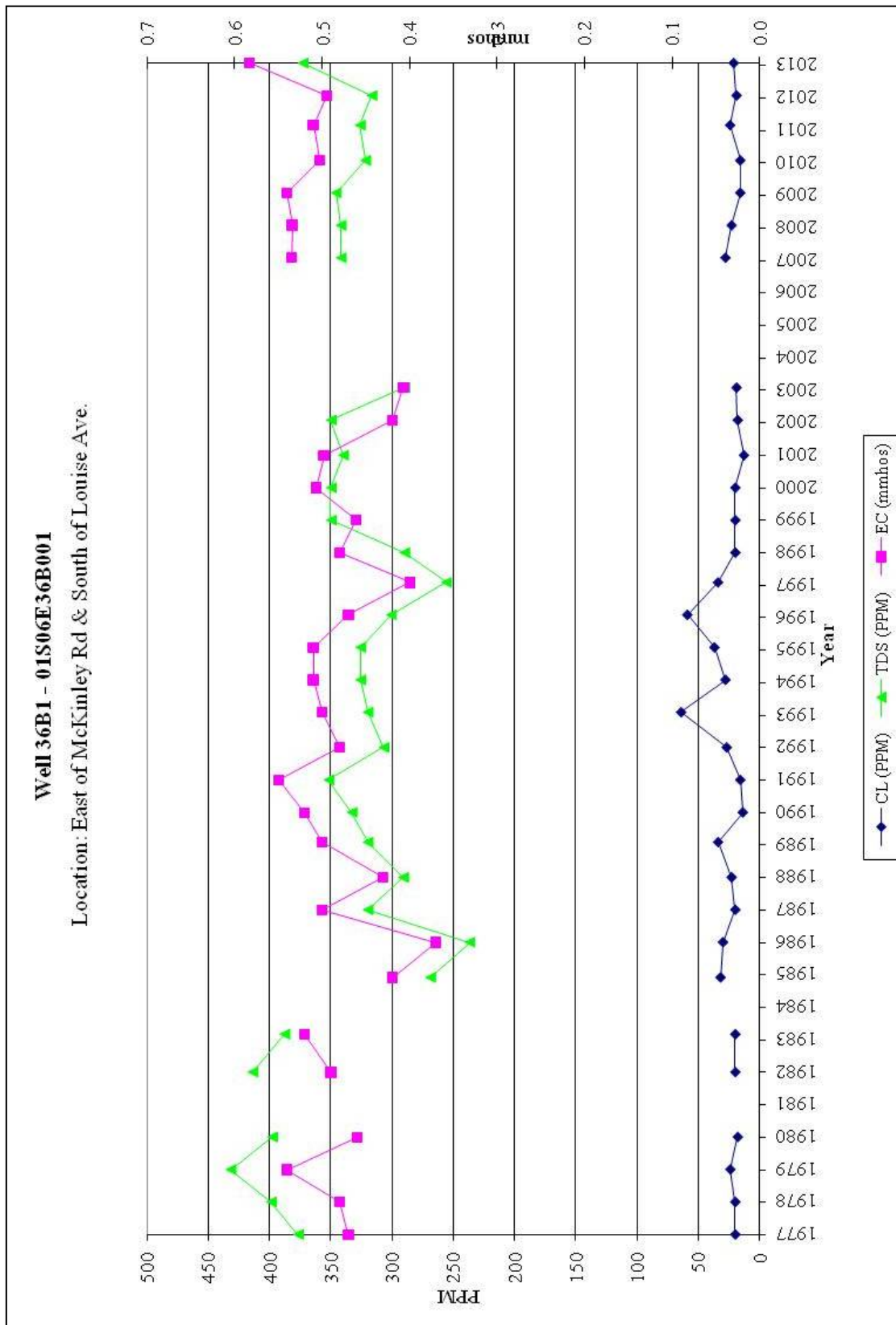


Figure 2-8: Quality Comparison Graph Well 36B1

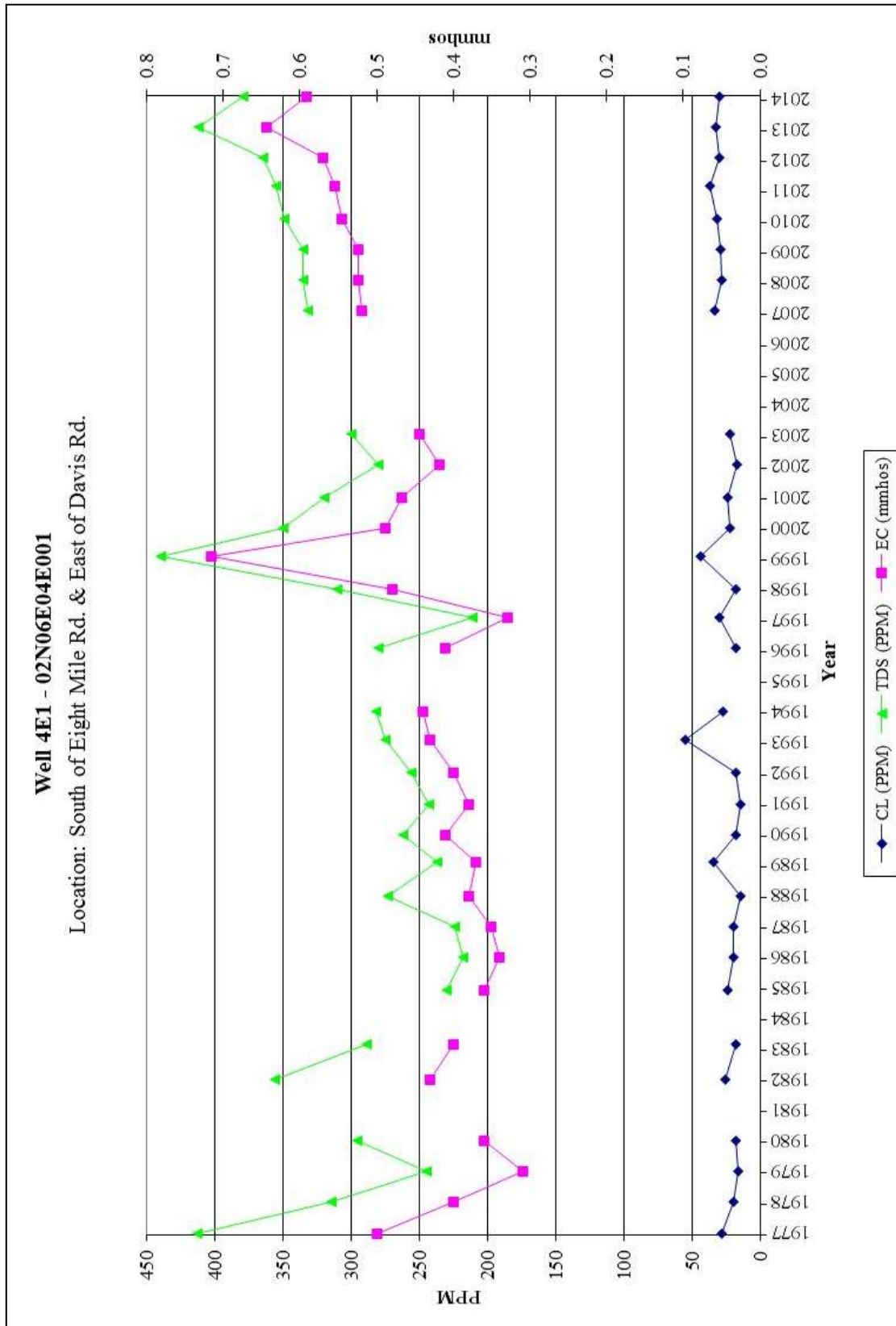


Figure 2-9: Quality Comparison Graph Well 4E1

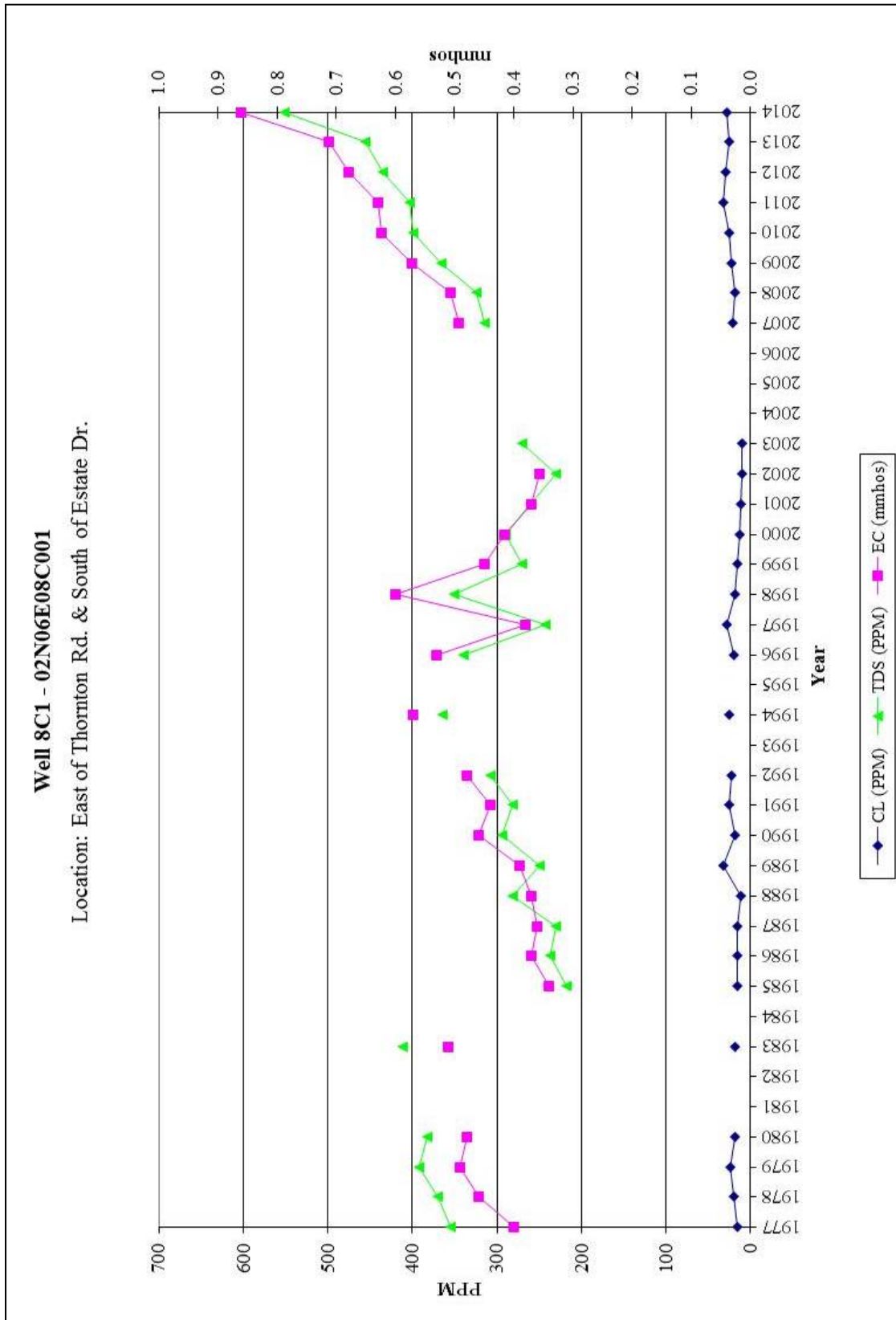


Figure 2-10: Quality Comparison Graph Well 8C1

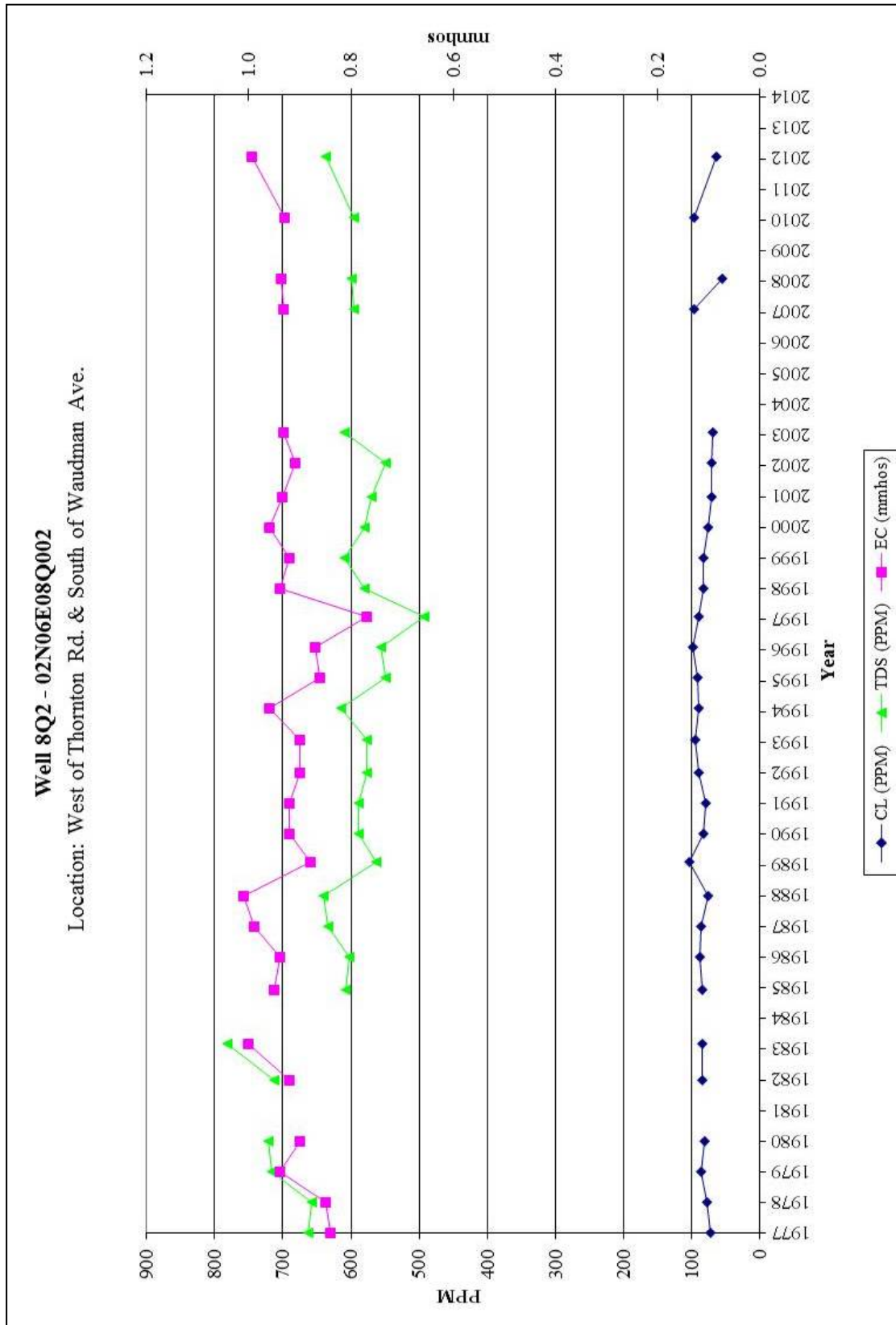


Figure 2-11: Quality Comparison Graph Well 8Q2

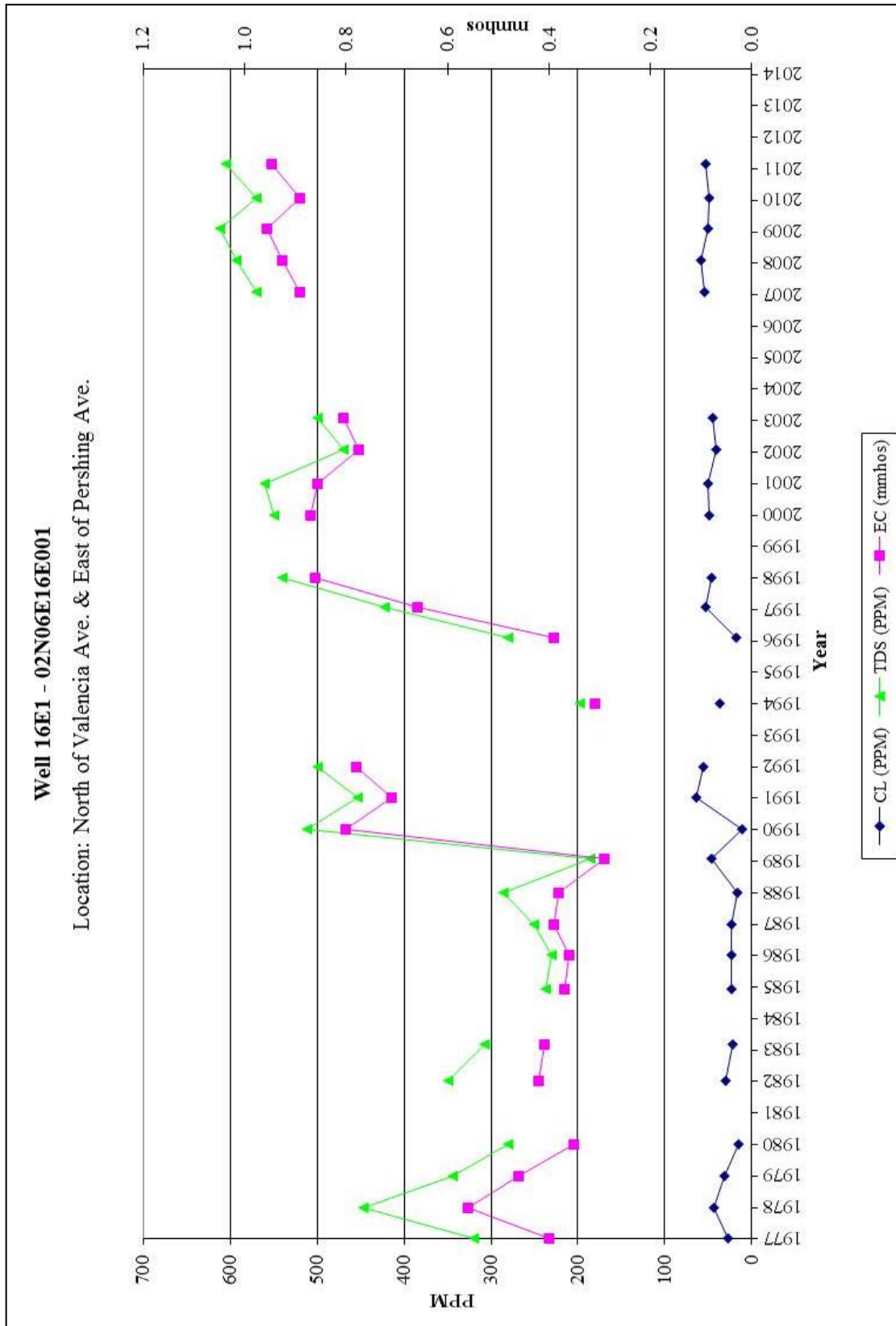


Figure 2-12: Quality Comparison Graph Well 16E1

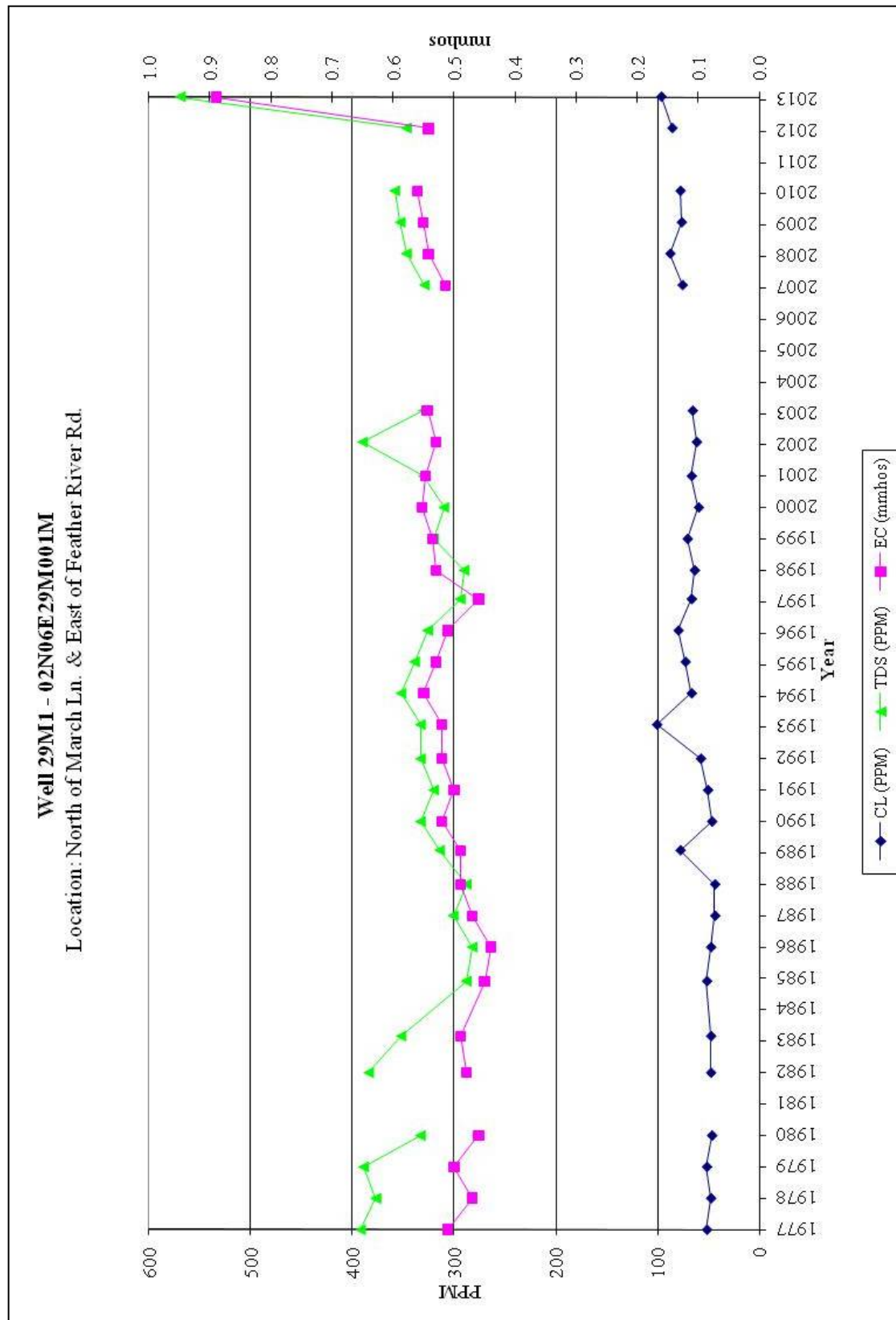


Figure 2-13: Quality Comparison Graph Well 29M1

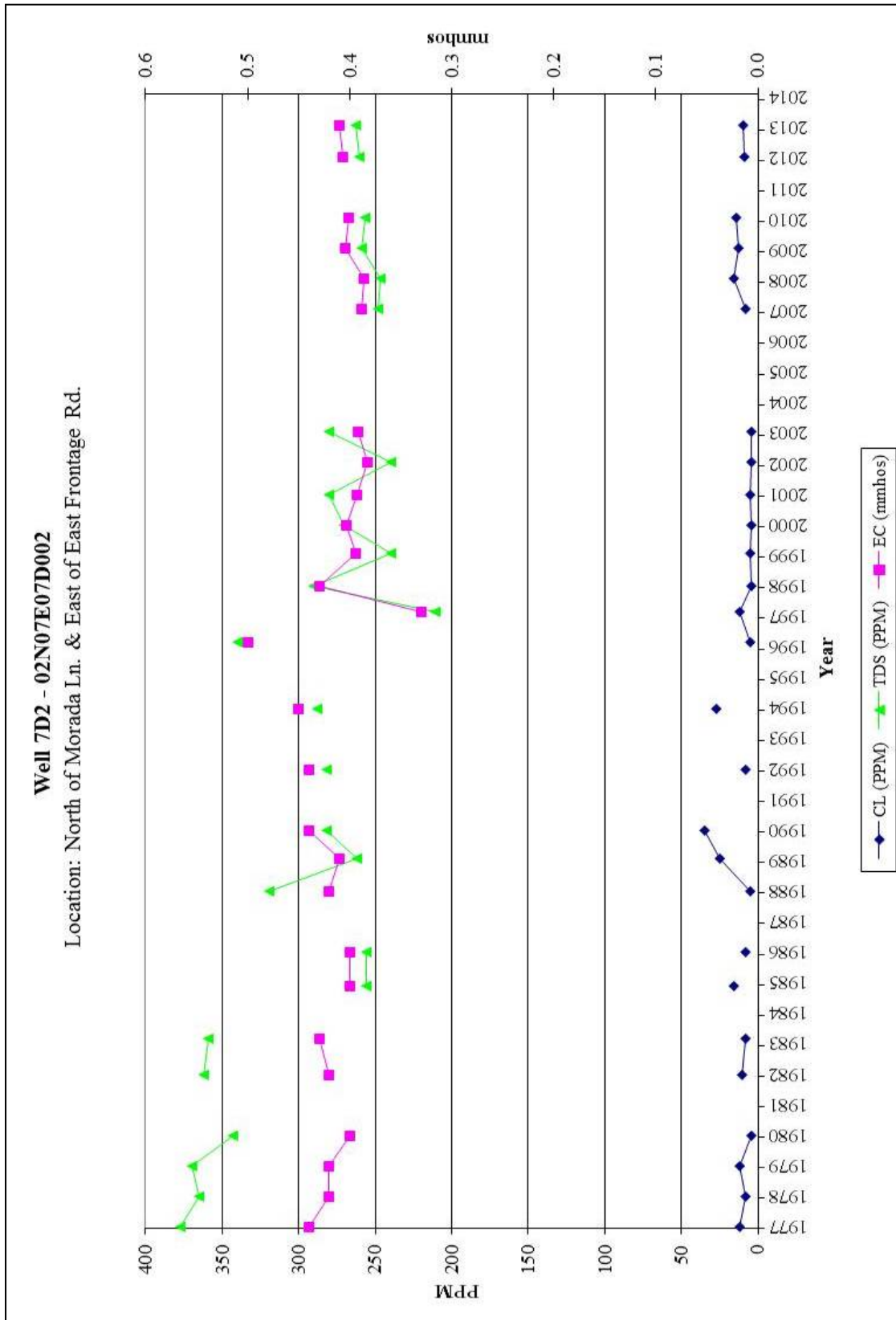


Figure 2-14: Quality Comparison Graph Well 7D2

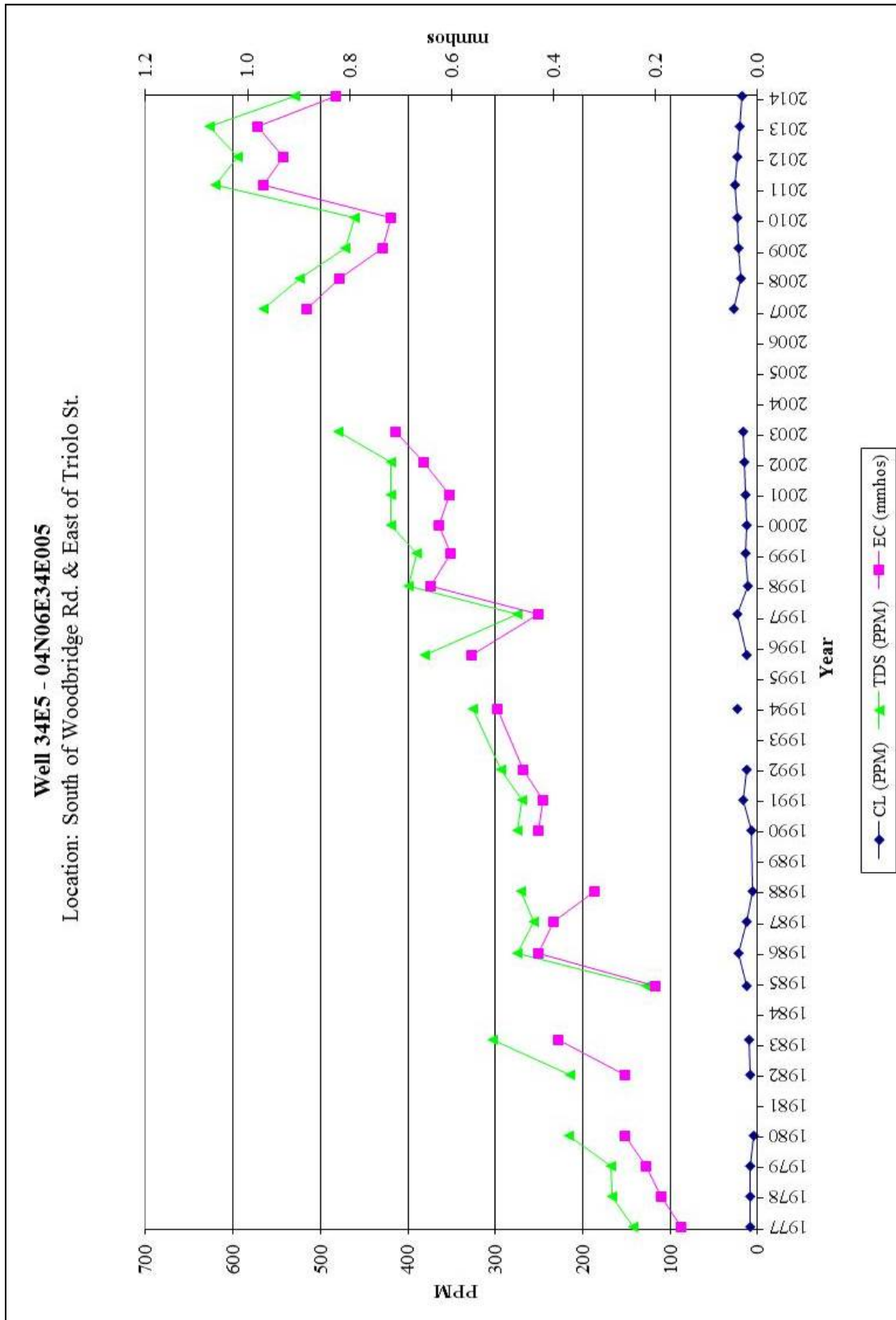


Figure 2-15: Quality Comparison Graph Well 34E5

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Section 3 – Groundwater Elevation Monitoring

Summary of Groundwater Elevations

The information contained in the Fall 2014 Groundwater Report is summarized as follows:

GROUNDWATER LEVELS

Central San Joaquin Water Conservation District (CSJWCD) – Forty-nine (49) wells were able to be compared in CSJWCD. Forty-seven (47) show decreases in groundwater levels. Two (2) wells show an increase in groundwater levels.

North San Joaquin Water Conservation District (NSJWCD) – One-hundred eleven (111) wells were compared in NSJWCD. One-hundred two (102) wells decreased in groundwater levels. Eight (8) wells increased in groundwater levels. One (1) well had no change in groundwater elevation.

Oakdale Irrigation District (OID) – Two (2) wells were compared in the OID area. Both wells shows decrease in groundwater levels.

Stockton East Water District (SEWD) – Seventy-one (71) wells were compared in SEWD. Sixty-two (62) wells decreased in groundwater levels. Nine (9) wells show increases in groundwater levels.

South San Joaquin Irrigation District (SSJID) – Thirty-three (33) wells were compared in the SSJID area. Thirty (30) wells declined in groundwater elevation. Three (3) show increases in groundwater levels.

Southwest County Areas – Fifteen (15) wells measured across the Southwest County. Twelve (12) wells descended in groundwater levels. Three (3) wells increased in groundwater level.

Woodbridge Irrigation District (WID) – Twenty-seven (27) wells were compared in the WID. Twenty-four (24) wells decreased in groundwater levels. Three (3) wells shows increase in groundwater levels.

Table 3-1 Comparison of CSJWCD Water Levels

StateWellID	Fall 2014	Fall 2013	Change
01N07E11L001	-42.50	-37.00	-5.50
01N07E11M001	-41.70	-37.30	-4.40
01N07E13J002	-----	-----	-----
01N07E14J002	-46.60	-44.60	-2.00
01N07E14L001	-47.91	-40.71	-7.20
01N07E15M002	-----	-----	-----
01N07E24A001	-48.60	-----	-----
01N07E24R001	-50.50	-51.00	0.50
01N07E26H003	-----	-36.00	-----
01N07E32A001	-22.89	-21.39	-1.50
01N08E02B001	-54.84	-45.54	-9.30
01N08E02J001	-53.23	-----	-----
01N08E07M001	-----	-59.10	-----
01N08E09L001	-58.16	-52.86	-5.30
01N08E11L001	-59.00	-48.20	-10.80
01N08E13J001	-37.70	-34.80	-2.90
01N08E15J001	-46.73	-42.83	-3.90
01N08E16G001	-50.00	-45.90	-4.10
01N08E16H002	-49.10	-45.40	-3.70
01N08E16P001	-49.25	-44.25	-5.00
01N08E18A002	-51.50	-50.00	-1.50
01N08E22J001	-47.50	-44.40	-3.10
01N08E26A002	-----	-33.20	-----
01N08E27R002	-41.40	-37.30	-4.10
01N08E28K001	-43.33	-38.23	-5.10
01N08E29M002	-46.00	-----	-----
01N08E35F001	-38.30	-31.90	-6.40
01N08E35R002	-39.00	-27.00	-12.00
01N08E36F001	-35.50	-25.20	-10.30
01N09E01C001	-8.70	-----	-----
01N09E05J001	-17.50	-14.50	-3.00
01N09E06N001	-44.50	-36.80	-7.70
01N09E13D001	4.00	-----	-----
01N09E15B002	-8.00	-4.10	-3.90
01N09E17D001	-31.00	-28.80	-2.20
01N09E17M001	-31.00	-28.80	-2.20
01N09E19C001	-31.70	-32.20	0.50
01N09E21J001	-----	-4.86	-----
01N09E22G002	-----	-----	-----
01N09E26A001	4.17	10.77	-6.60

StateWellID	Fall 2014	Fall 2013	Change
01N09E29R001	-14.50	-12.50	-2.00
01N09E30C005	-24.70	-21.00	-3.70
01N09E31J001	-28.35	-----	-----
01N09E35K001	1.18	5.38	-4.20
01S07E01J001	-----	-28.40	-----
01S07E02J001	-35.00	-31.00	-4.00
01S07E10A001	-22.20	-17.50	-4.70
01S07E12H001	-----	-----	-----
01S07E13J001	-----	-----	-----
01S08E04R001	-33.50	-28.80	-4.70
01S08E05A001	-39.40	-35.40	-4.00
01S08E05R001	-32.80	-----	-----
01S08E06D001	-29.00	-28.50	-0.50
01S08E09Q001	-----	-20.70	-----
01S08E11F001	-24.90	-21.70	-3.20
01S08E12B001	-18.20	-15.80	-2.40
01S08E14B001	-19.70	-10.90	-8.80
01S08E15A001	-34.47	-31.87	-2.60
01S08E15P001	-----	-----	-----
01S08E19R001	-----	-4.70	-----
01S08E20B001	-14.70	-11.70	-3.00
01S08E23A001	-----	-----	-----
01S08E27A001	-1.05	2.55	-3.60
01S09E02R001	21.30	24.60	-3.30
01S09E05H002	-7.00	-----	-----
01S09E07A001	-11.30	-7.80	-3.50
01S09E07N001	-7.80	-4.50	-3.30
01S09E09R001	5.30	7.80	-2.50
01S09E11J002	22.20	31.50	-9.30
01S09E18R003	2.00	4.10	-2.10
01S09E19Q002	8.40	12.30	-3.90

Total Number of Wells	71
Total Number of Comparable Wells	49
Number of Wells with Decrease	47
Number of Wells with Increase	2
Number of Wells with No Change	0
Range of Change	-12 to 0.5
Average Change	-4.3

Table 3-2 Comparison of NSJWCD Water Levels

StateWellID	Fall 2014	Fall 2013	Change
03N06E04C001	-3.44	-2.34	-1.10
03N06E23A003	-32.57	-30.07	-2.50
03N06E24M003	-38.22	-35.52	-2.70
03N06E25C001	-43.05	-38.15	-4.90
03N06E25H015	-----	-----	-----
03N06E25R005	-47.32	-44.62	-2.70
03N06E36N001	-----	-----	-----
03N07E02G003	-33.54	-30.54	-3.00
03N07E03R001	-35.30	-30.80	-4.50
03N07E08B012	-25.05	-22.05	-3.00
03N07E08E002	-33.00	-30.80	-2.20
03N07E09C001	-33.70	-30.80	-2.90
03N07E09C003	-27.78	-25.38	-2.40
03N07E09P002	-38.30	-34.58	-3.72
03N07E10L004	-38.31	-35.31	-3.00
03N07E12P001	-49.65	-45.65	-4.00
03N07E15C004	-45.00	-43.30	-1.70
03N07E17A006	-36.86	-34.16	-2.70
03N07E17D003	-30.13	-28.73	-1.40
03N07E17D004	-32.40	-31.10	-1.30
03N07E17K002	-45.00	-42.20	-2.80
03N07E18D012	-34.50	-32.40	-2.10
03N07E18M002	-39.63	-34.03	-5.60
03N07E19J004	-52.00	-----	-----
03N07E19Q012	-46.58	-43.78	-2.80
03N07E20C012	-43.34	-41.04	-2.30
03N07E21L003	-44.00	-48.30	4.30
03N07E22C011	-47.20	-45.00	-2.20
03N07E23C002	-49.50	-----	-----
03N07E23K011	-50.44	-47.74	-2.70
03N07E25G001	-----	-----	-----
03N07E26G012	-51.67	-49.17	-2.50
03N07E32Q012	-57.05	-----	-----
03N07E33G002	-50.00	-42.80	-7.20
03N08E04Q001	-44.67	-41.17	-3.50
03N08E05K011	-41.47	-----	-----
03N08E07D002	-47.66	-44.06	-3.60
03N08E07J001	-36.30	-----	-----
03N08E17B001	-51.27	-46.87	-4.40
03N08E17Q011	-54.57	-50.57	-4.00
03N08E19C001	-----	-----	-----

StateWellID	Fall 2014	Fall 2013	Change
03N08E19M003	-54.47	-51.47	-3.00
03N08E22A001	-54.50	-51.80	-2.70
04N06E02R011	-----	-----	-----
04N06E03A012	-22.40	-14.50	-7.90
04N06E05Q001	-18.38	-15.78	-2.60
04N06E06N012	-----	-----	-----
04N06E12C004	-40.00	-35.30	-4.70
04N06E12N002	-41.80	-35.00	-6.80
04N06E15B002	-18.70	-16.00	-2.70
04N06E16A011	-13.86	-11.56	-2.30
04N06E16C001	-6.18	-----	-----
04N06E16K011	-2.86	-0.66	-2.20
04N06E17G004	-6.50	-3.80	-2.70
04N06E23D004	-27.41	-27.11	-0.30
04N06E23K00	-13.00	-14.00	1.00
04N06E24D012	-22.10	-19.80	-2.30
04N06E24F001	-26.50	-25.00	-1.50
04N06E25B001	-16.50	-13.50	-3.00
04N06E25R001	-7.50	-6.00	-1.50
04N06E27D002	0.70	11.90	-11.20
04N06E27Q012	13.28	14.48	-1.20
04N06E34J002	20.40	20.60	-0.20
04N06E35D011	16.49	17.19	-0.70
04N06E36J012	6.00	5.40	0.60
04N07E01B011	-----	-----	-----
04N07E02R001	-45.44	-42.54	-2.90
04N07E04B012	-49.25	-46.45	-2.80
04N07E04Q012	-49.51	-45.91	-3.60
04N07E07A001	-----	-----	-----
04N07E07H011	-44.04	-41.84	-2.20
04N07E11D012	-47.43	-45.33	-2.10
04N07E12E001	-----	-52.50	-----
04N07E12G012	-42.44	-----	-----
04N07E14P011	-37.51	-35.41	-2.10
04N07E15B012	-41.39	-----	-----
04N07E16D001	-43.84	-43.84	0.00
04N07E17J013	-----	-----	-----
04N07E17N001	-39.80	-29.30	-10.50
04N07E19K001	-30.10	-26.10	-4.00
04N07E19R011	-25.81	-23.01	-2.80
04N07E20H003	-104.10	-98.50	-5.60
04N07E21F001	-35.55	-32.60	-2.95
04N07E23J012	-33.33	-34.33	1.00

StateWellID	Fall 2014	Fall 2013	Change
04N07E24N002	-33.43	-----	-----
04N07E25G015	-30.04	-28.04	-2.00
04N07E27C002	-30.00	-29.50	-0.50
04N07E28J002	-17.20	-24.70	7.50
04N07E28P011	4.43	6.03	-1.60
04N07E29H001	-25.44	-----	-----
04N07E29N012	-12.72	-9.52	-3.20
04N07E31Q031	16.49	17.09	-0.60
04N07E32F011	1.57	2.87	-1.30
04N07E33H001	22.50	23.40	-0.90
04N07E34K011	-17.73	-14.63	-3.10
04N07E35C002	-20.43	-18.93	-1.50
04N07E35E013	-20.93	-19.83	-1.10
04N07E36L001	-32.50	-29.80	-2.70
04N08E01K001	49.43	50.23	-0.80
04N08E02E011	-9.07	-7.17	-1.90
04N08E04P014	-31.47	-----	-----
04N08E06C002	-----	-38.87	-----
04N08E06N002	-46.70	-44.50	-2.20
04N08E11M012	-8.87	-6.27	-2.60
04N08E12A011	71.73	73.33	-1.60
04N08E12B011	50.03	51.13	-1.10
04N08E12N001	19.63	21.93	-2.30
04N08E14K001	-10.60	-8.80	-1.80
04N08E15D011	-21.07	-19.97	-1.10
04N08E15J011	-15.67	-13.52	-2.15
04N08E17A001	-----	-----	-----
04N08E17J001	-35.00	-32.10	-2.90
04N08E21M001	-38.60	-35.70	-2.90
04N08E22C015	-22.47	-20.87	-1.60
04N08E26A012	-10.57	-8.27	-2.30
04N08E27J011	-21.47	-18.97	-2.50
04N08E28E001	-----	-----	-----
04N08E32N001	-42.60	-40.20	-2.40
04N08E34Q011	-35.76	-33.06	-2.70
04N09E06L011	112.53	107.43	5.10
04N09E07D012	78.03	81.73	-3.70
04N09E07E011	89.63	90.93	-1.30
04N09E16Q002	154.33	164.63	-10.30
04N09E17E001	135.23	138.23	-3.00
04N09E18A011	-----	184.50	-----
04N09E18D002	49.93	50.93	-1.00
04N09E18N011	13.33	16.33	-3.00

StateWellID	Fall 2014	Fall 2013	Change
04N09E20M001	111.54	118.14	-6.60
04N09E21A001	-----	217.40	-----
04N09E28C002	187.64	187.14	0.50
05N06E36R001	-----	-----	-----
05N07E31J001	-54.00	-----	-----
05N07E31Q001	10065.10	-----	-----
05N07E34G001	-58.10	-53.30	-4.80
05N07E34Q001	-----	-52.60	-----
05N08E24Q011	53.23	54.33	-1.10
05N08E25P011	52.93	53.23	-0.30
05N08E35K012	1.23	3.43	-2.20
05N09E30C011	161.23	161.43	-0.20
05N09E30M011	145.63	145.33	0.30
05N09E31L011	124.43	125.33	-0.90
Total Number of Wells			141
Total Number of Comparable Wells			111
Number of Wells with Decrease			102
Number of Wells with Increase			8
Number of Wells with No Change			1
Range of Change			-11.2 to 7.5
Average Change			-2.4

Table 3-3 Comparison of OID Water Levels

StateWellID	Fall 2013	Fall 2012	Change
01S09E14K001	32.81	38.31	-5.50
01S09E21J002	31.00	35.10	-4.10
01S09E23N001	-----	-----	-----
01S09E24R001	-----	63.50	-----
01S09E28M002	-----	-----	-----
Total Number of Wells			5
Total Number of Comparable Wells			2
Number of Wells with Decrease			2
Number of Wells with Increase			0
Number of Wells with No Change			0
Range of Change			-5.50 to -4.10
Average Change			-4.8

Table 3-4 Comparison of SEWD Water Levels

StateWellID	Fall 2014	Fall 2013	Change
01N06E02C001	-30.33	-27.23	-3.10
01N06E03K001	-9.44	-8.54	-0.90
01N06E05H001	-9.09	-6.99	-2.10
01N06E27R002	-10.30	-6.40	-3.90
01N07E01M002	-56.00	-53.50	-2.50
01N07E02G001	-----	-45.30	-----
01N07E04R001	-34.80	-21.80	-13.00
01N07E09E004	-22.00	-26.20	4.20
01N07E09H001	-36.10	-31.90	-4.20
01N07E09Q003	-36.20	-32.40	-3.80
01N07E10D001	-35.00	-28.40	-6.60
01N07E10G001	-----	-37.60	-----
01N07E20G001	-23.20	-21.00	-2.20
01N07E21R001	-29.20	-26.90	-2.30
01N09E05B001	-21.99	-----	-----
01S06E01C002	-5.70	-5.40	-0.30
01S06E02D004	-7.89	-----	-----
01S06E02G002	-8.67	-5.57	-3.10
01S06E10G001	-6.00	-5.30	-0.70
01S06E11E001	-5.93	-3.83	-2.10
01S07E06M002	-7.80	-4.70	-3.10
01S07E08J002	-10.00	-6.10	-3.90
02N06E01A001	-43.72	-----	-----
02N06E11L001	-----	-----	-----
02N06E12H001	-48.19	-44.39	-3.80
02N06E24F001	-41.00	-33.50	-7.50
02N06E24J003	-40.47	-33.97	-6.50
02N06E32G001	-10.99	-9.49	-1.50
02N07E03D001	-60.50	-55.80	-4.70
02N07E08D001	-58.20	-55.20	-3.00
02N07E08K003	-65.00	-64.20	-0.80
02N07E08R002	-65.14	-51.04	-14.10
02N07E10F002	-64.80	-61.80	-3.00
02N07E11F001	-77.50	-59.50	-18.00
02N07E11R002	-66.50	-64.70	-1.80
02N07E12A003	-75.55	-57.35	-18.20
02N07E15C001	-84.30	-68.20	-16.10
02N07E16F002	-----	-64.44	-----
02N07E16L001	-----	-63.30	-----
02N07E20N002	-48.00	-44.00	-4.00
02N07E21A002	-64.81	-67.61	2.80

StateWellID	Fall 2014	Fall 2013	Change
02N07E21K002	-64.00	-60.40	-3.60
02N07E21N001	-----	-----	-----
02N07E23B001	-75.50	-72.50	-3.00
02N07E24B001	-72.10	-65.20	-6.90
02N07E24Q001	-----	-67.30	-----
02N07E26H003	-68.80	-67.60	-1.20
02N07E26N001	-62.00	-61.20	-0.80
02N07E28K002	-63.00	-64.00	1.00
02N07E28N004	-----	-47.60	-----
02N07E29B001	-----	-49.80	-----
02N07E29M002	-47.00	-40.90	-6.10
02N07E30E001	-42.00	-35.10	-6.90
02N07E30H001	-47.50	-37.80	-9.70
02N07E31M001	-----	-24.80	-----
02N07E32J002	-42.00	-36.80	-5.20
02N07E32M002	-36.00	-31.20	-4.80
02N07E32R001	-----	-31.00	-----
02N07E33L001	-45.00	-39.00	-6.00
02N07E34R001	-44.50	-36.60	-7.90
02N07E35L001	-----	-----	-----
02N07E36H001	-59.20	-65.50	6.30
02N07E36P002	-58.13	-53.43	-4.70
02N08E03G002	-----	-54.20	-----
02N08E04C001	-62.50	-58.90	-3.60
02N08E05C001	-65.00	-----	-----
02N08E08N001	-68.50	-63.20	-5.30
02N08E09G002	-73.00	-63.10	-9.90
02N08E10H002	-57.10	-54.10	-3.00
02N08E13K001	-----	-----	-----
02N08E14C001	-44.40	-53.00	8.60
02N08E15M002	-47.40	-----	-----
02N08E16D001	-64.10	-62.10	-2.00
02N08E18C001	-76.70	-----	-----
02N08E20F001	-70.30	-66.70	-3.60
02N08E24J001	-----	-----	-----
02N08E24P001	-34.70	-44.20	9.50
02N08E28H002	-52.60	-54.60	2.00
02N08E32L002	-65.50	-63.40	-2.10
02N08E33E001	-71.10	-61.10	-10.00
02N09E03A001	55.10	57.80	-2.70
02N09E04H001	51.00	47.80	3.20
02N09E05H001	-13.80	-7.20	-6.60
02N09E05N001	-23.59	-----	-----

StateWellID	Fall 2014	Fall 2013	Change
02N09E08N001	-33.40	-----	-----
02N09E09D001	-----	-10.80	-----
02N09E18Q001	-----	-43.40	-----
02N09E28N001	-16.10	-12.30	-3.80
03N07E28K012	-54.26	-50.16	-4.10
03N07E35C002	-62.80	-58.00	-4.80
03N07E35L001	-----	-59.00	-----
03N07E36J001	-63.30	-60.20	-3.10
03N08E27R001	-54.70	-----	-----
03N08E32P001	-63.52	-58.32	-5.20
03N09E25R001	80.40	78.90	1.50
02N06E03A003	-36.30	-32.90	-3.40
02N06E06C002	-----	-13.00	-----
02N06E13R002	-43.00	-38.00	-5.00
02N06E24J002	-----	-----	-----
03N06E35P002	-34.44	-31.04	-3.40
Total Number of Wells			100
Total Number of Comparable Wells			71
Number of Wells with Decrease			62
Number of Wells with Increase			9
Number of Wells with No Change			0
Range of Change			-18.2 to 9.5
Average Change			-3.8

Table 3-5 Comparison of SSJID Water Levels

StateWellID	Fall 2014	Fall 2013	Change
01S07E09Q001	-6.57	-1.77	-4.80
01S07E14M001	-8.20	-0.40	-7.80
01S07E14P003	-----	-2.30	-----
01S07E15F002	-11.60	-6.60	-5.00
01S07E17N002	-----	-----	-----
01S07E18L001	2.07	4.27	-2.20
01S07E21G001	9.55	14.65	-5.10
01S07E25E001	4.00	7.50	-3.50
01S07E25R001	12.65	13.75	-1.10
01S07E26G001	-----	9.00	-----
01S07E27K001	6.50	10.90	-4.40
01S07E30R001	6.06	8.16	-2.10
01S07E36D001	15.05	19.05	-4.00
01S08E25Q001	-----	-----	-----
01S08E29K001	1.00	1.30	-0.30

StateWellID	Fall 2014	Fall 2013	Change
01S08E30C002	0.00	3.30	-3.30
01S08E34Q001	13.16	15.36	-2.20
01S08E35R002	20.47	25.97	-5.50
01S09E29M002	-----	28.40	-----
01S09E33J002	49.92	52.52	-2.60
01S09E33P001	43.51	48.01	-4.50
01S09E34A001	-----	53.30	-----
02S07E07D002	10.00	9.20	0.80
02S07E07Q001	22.86	-----	-----
02S07E08R001	23.76	26.76	-3.00
02S07E10B002	24.06	-----	-----
02S07E11N002	30.00	34.60	-4.60
02S07E12R001	18.45	22.55	-4.10
02S07E12R002	25.75	28.35	-2.60
02S07E19H001	-----	20.50	-----
02S07E20R002	-----	23.76	-----
02S07E22N002	26.85	-----	-----
02S07E26B001	34.00	29.50	4.50
02S08E04M001	10.40	11.50	-1.10
02S08E06J001	15.30	19.40	-4.10
02S08E07R001	-----	31.20	-----
02S08E08A001	19.00	22.50	-3.50
02S08E08E001	18.20	21.70	-3.50
02S08E09J001	28.96	32.86	-3.90
02S08E12D001	34.17	37.87	-3.70
02S08E14E001	40.77	42.27	-1.50
02S09E03K001	-----	-----	-----
02S09E07D001	37.19	36.29	0.90
02S09E11K001	74.44	74.74	-0.30
02S09E12R001	64.15	70.05	-5.90
02S09E19B002	55.80	57.70	-1.90

Total Number of Wells	48
Total Number of Comparable Wells	33
Number of Wells with Decrease	30
Number of Wells with Increase	3
Number of Wells with No Change	0
Range of Change	-7.8 to 4.5
Average Change	-2.9

Table 3-6 Comparison of South West County Area Water Levels

StateWellID	Fall 2014	Fall 2013	Change
01S05E31R002	0.80	0.60	0.20
01S06E04J001	-2.20	-1.00	-1.20
01S06E12P001	-4.18	-2.48	-1.70
01S06E14F001	-3.80	-1.60	-2.20
01S06E15F001	-0.19	1.31	-1.50
01S06E23C003	2.53	3.83	-1.30
01S06E26K001	-----	1.74	-----
02S04E15R001	54.10	56.50	-2.40
02S05E08B001	-----	-2.30	-----
02S05E13N001	-----	14.10	-----
02S06E10K001	-----	2.50	-----
02S06E11J001	9.16	11.36	-2.20
02S06E25J001	14.50	15.80	-1.30
02S06E26B001	4.90	-----	-----
02S06E27E001	7.80	8.40	-0.60
02S06E31N001	54.28	52.50	1.78
02S07E31N001	11.60	12.50	-0.90
03S05E04H001	-----	56.90	-----
03S06E03F002	-----	14.50	-----
03S06E23C001	-----	2.30	-----
03S06E27N001	68.60	72.50	-3.90
03S07E05J001	23.66	23.76	-0.10
03S07E06Q001	18.76	18.16	0.60
Total Number of Wells			23
Total Number of Comparable Wells			15
Number of Wells with Decrease			12
Number of Wells with Increase			3
Number of Wells with No Change			0
Range of Change			-3.9 to 1.78
Average Change			-1.1

Table 3-7 Comparison of WID Water Levels

StateWellID	Fall 2014	Fall 2013	Change
03N05E13L001	-----	-----	-----
03N05E14C001	-6.30	-5.10	-1.20
03N06E04P012	-11.66	-8.96	-2.70
03N06E05C002	-5.75	-4.05	-1.70
03N06E05N003	-----	-13.50	-----
03N06E07D013	-9.58	-6.98	-2.60

StateWellID	Fall 2014	Fall 2013	Change
03N06E07H003	-18.50	-16.50	-2.00
03N06E10D001	-----	-5.40	-----
03N06E17A004	-26.20	-27.20	1.00
03N06E18M003	-19.10	-17.00	-2.10
03N06E20D002	-22.50	-21.00	-1.50
03N06E26P002	-35.70	-33.30	-2.40
03N06E27E001	-35.20	-36.20	1.00
03N06E30R001	-31.00	-26.60	-4.40
03N06E32R001	-29.00	-26.40	-2.60
04N05E10K001	-5.50	-5.20	-0.30
04N05E13C012	-9.93	-4.43	-5.50
04N05E13H001	-12.25	-8.30	-3.95
04N05E13R004	-12.50	-7.60	-4.90
04N05E14B002	-8.40	-5.90	-2.50
04N05E14P001	-----	0.00	-----
04N05E22H001	-11.25	-8.80	-2.45
04N05E24J004	-6.60	-3.10	-3.50
04N05E26F001	-0.30	1.30	-1.60
04N05E36H003	-4.50	-0.40	-4.10
04N06E19F001	-----	-0.30	-----
04N06E19R012	-3.88	1.02	-4.90
04N06E21D001	1.14	-----	-----
04N06E29N002	-----	-4.60	-----
04N06E30E001	-4.30	-1.50	-2.80
03N05E24L001	-7.44	-5.64	-1.80
03N06E09N011	-----	-----	-----
03N06E15C004	-----	-20.80	-----
03N06E29C001	-30.30	-32.30	2.00
04N05E36C004	-1.99	1.31	-3.30
04N06E18R012	-7.40	-3.10	-4.30
05N05E28L003	-----	-4.50	-----

Total Number of Wells	37
Total Number of Comparable Wells	27
Number of Wells with Decrease	24
Number of Wells with Increase	3
Number of Wells with No Change	0
Range of Change	-5.5 to 2
Average Change	-2.4

HYDROGRAPHS

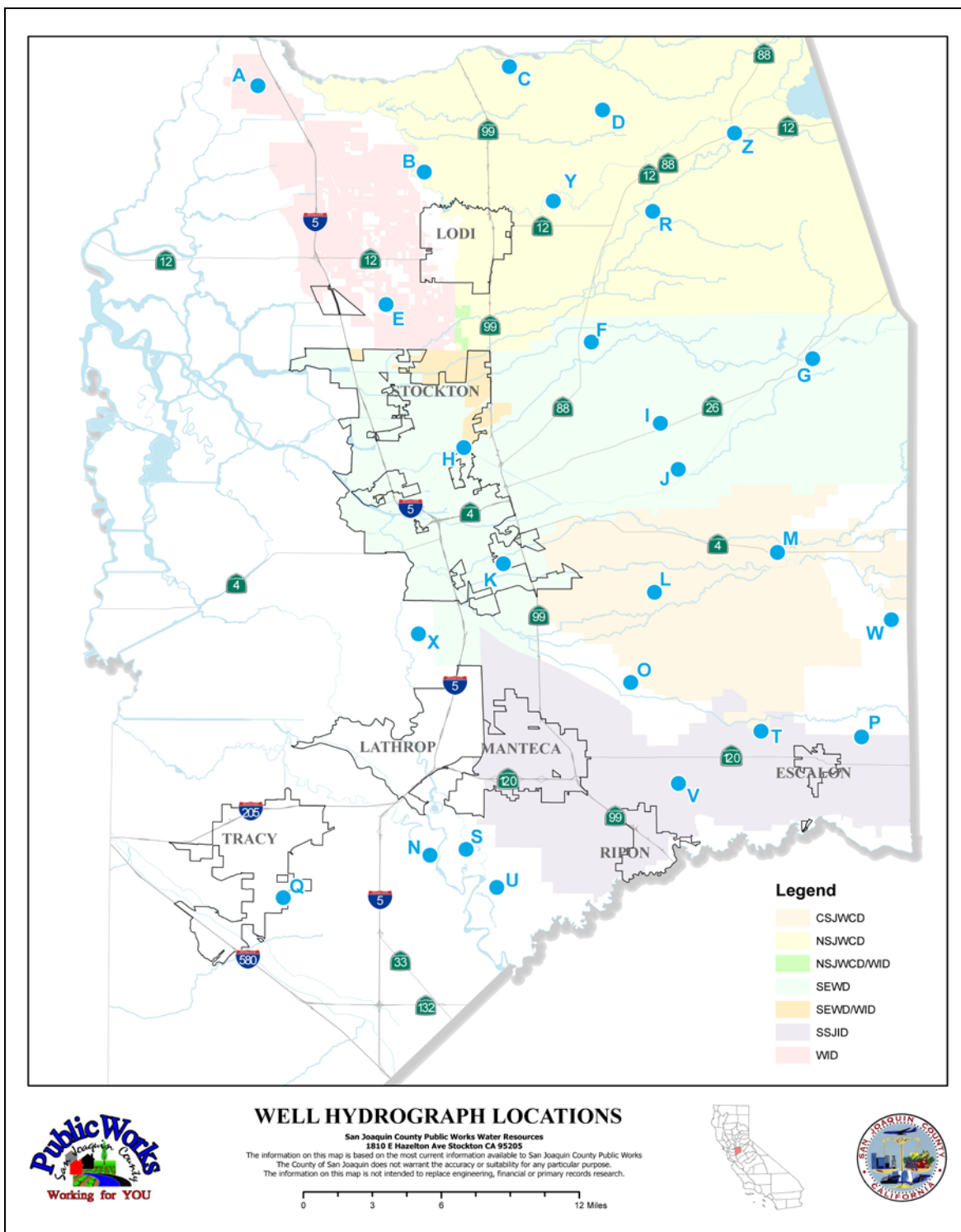


Figure 3-1: Well Hydrograph Locations

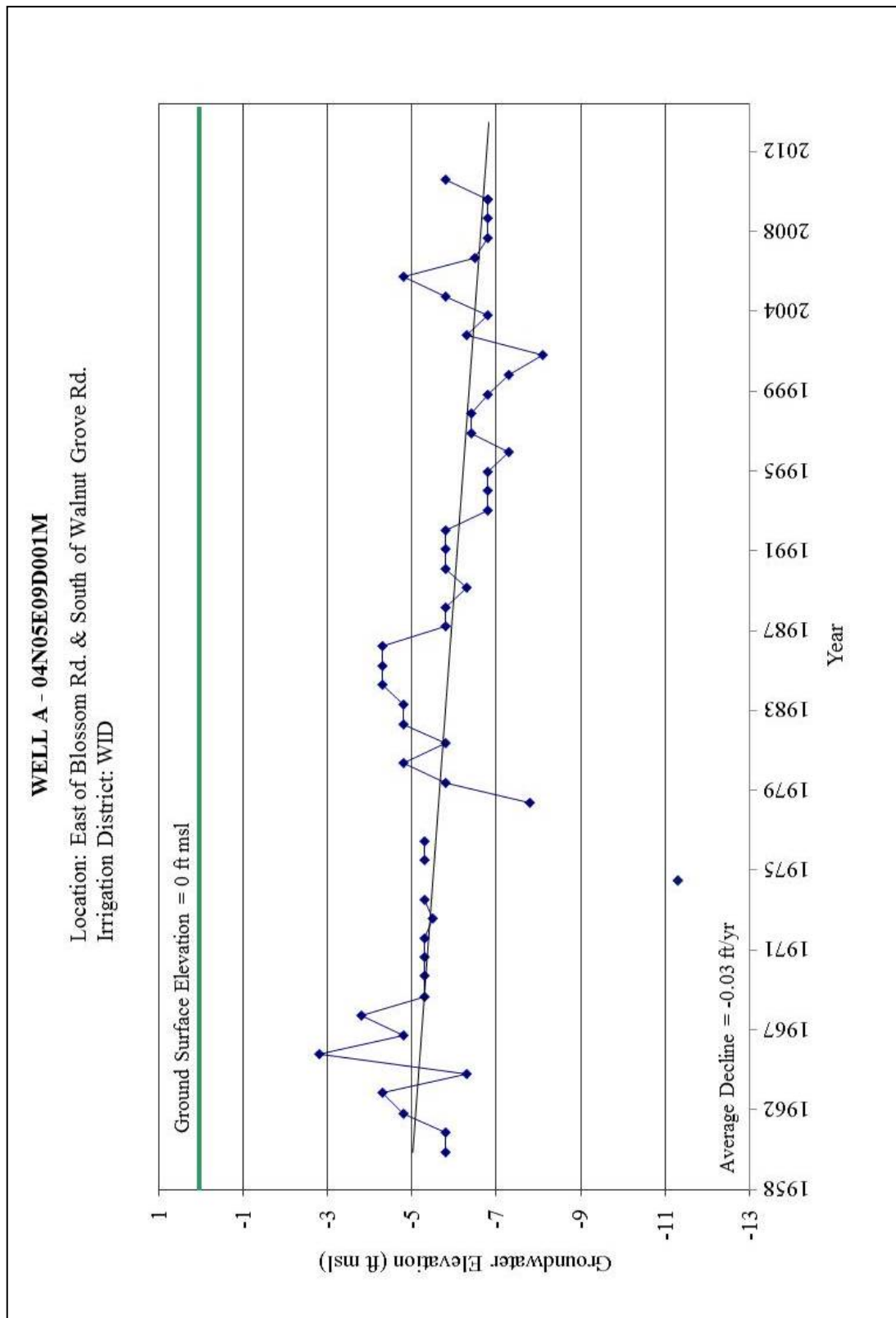


Figure 3-2: Fall Hydrograph Well A

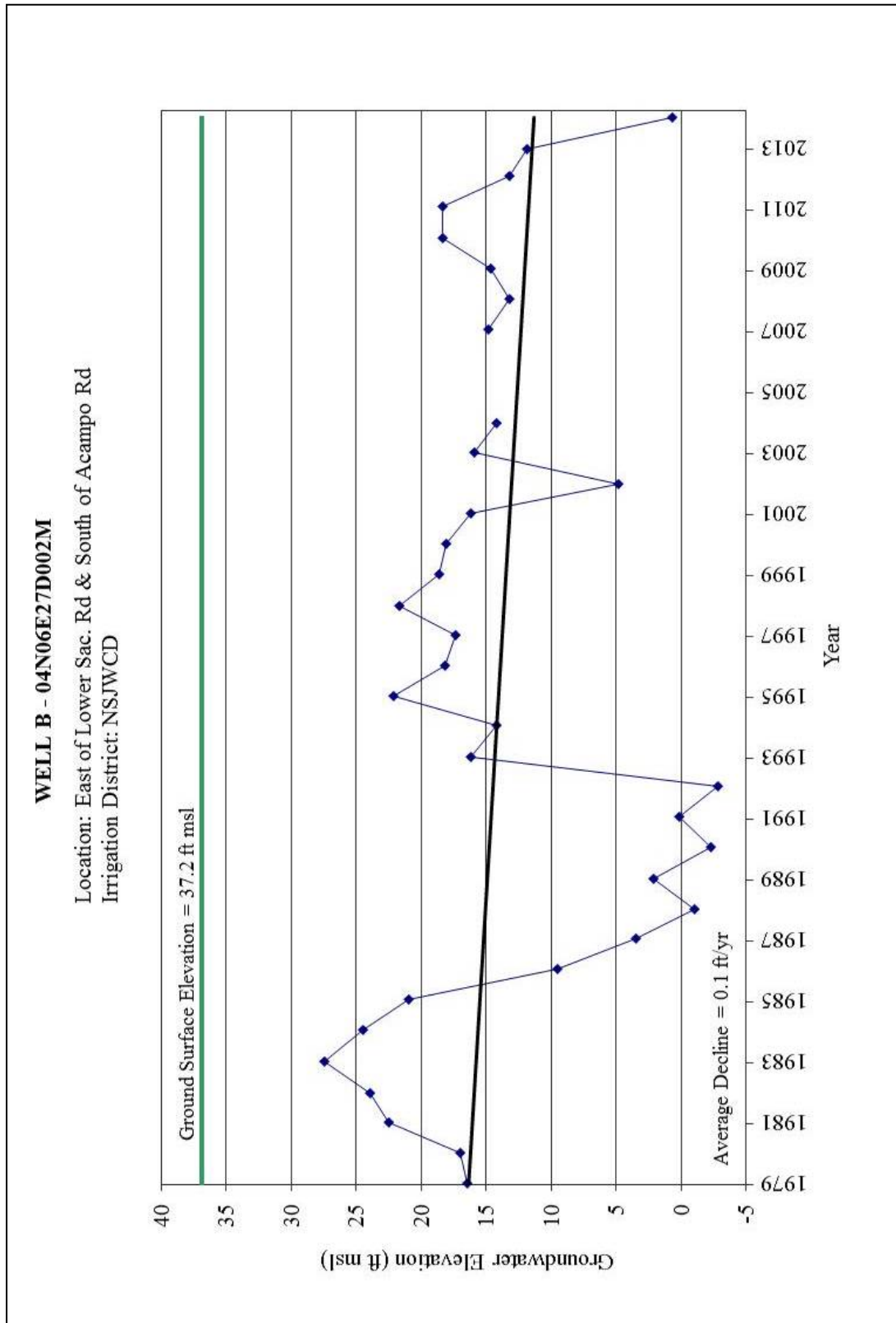


Figure 3-3: Fall Hydrograph Well B

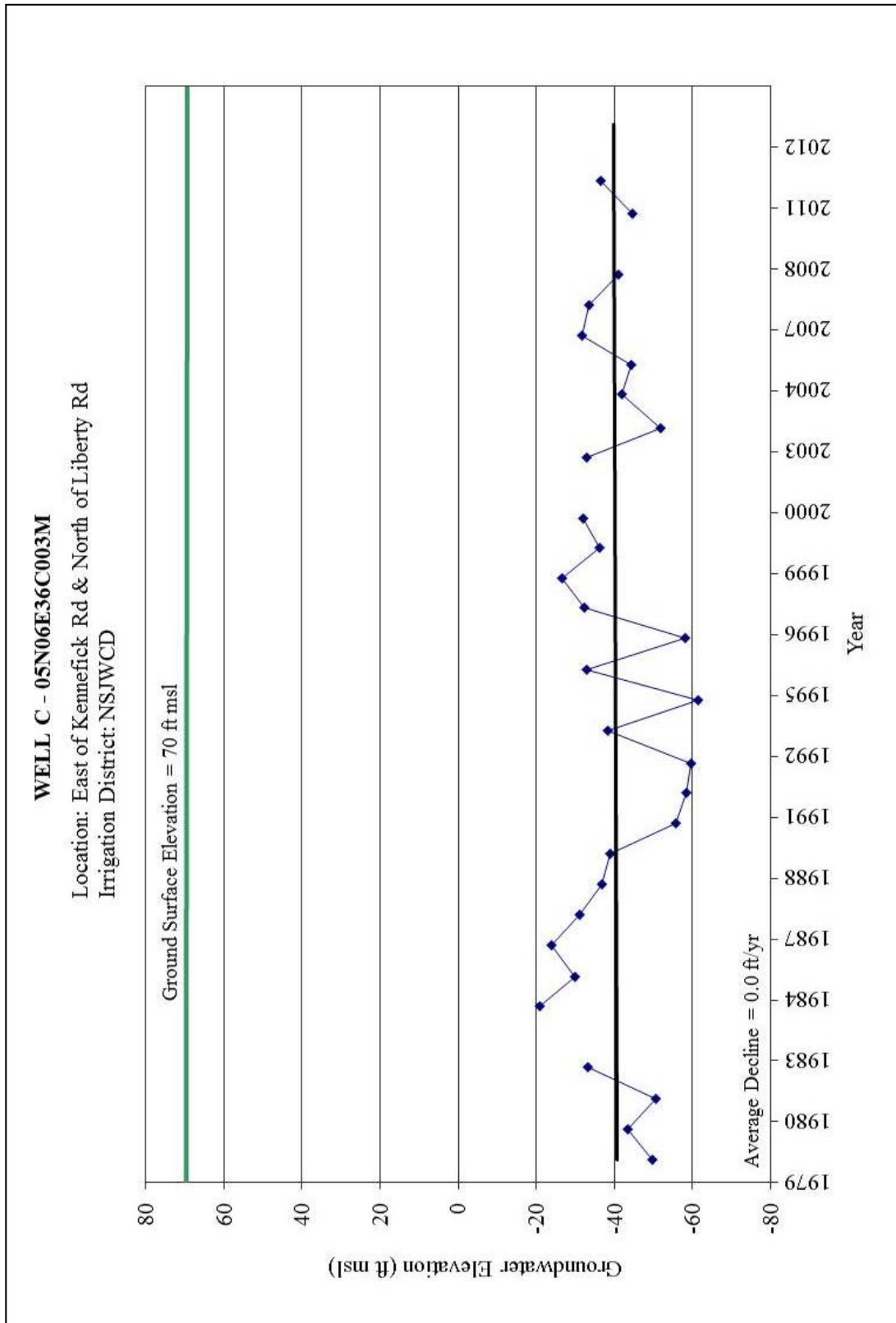


Figure 3-4: Fall Hydrograph Well C

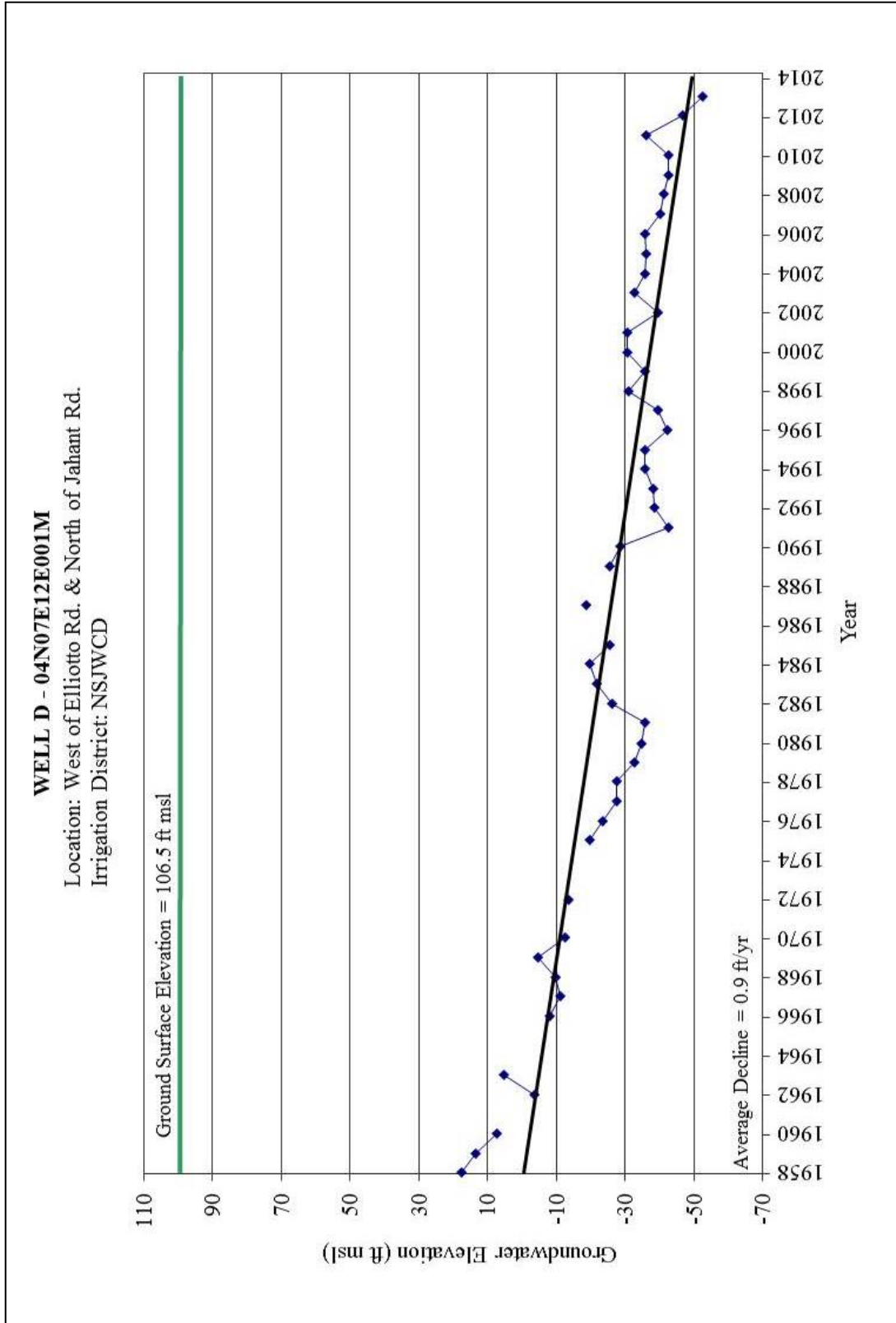


Figure 3-5: Fall Hydrograph Well D

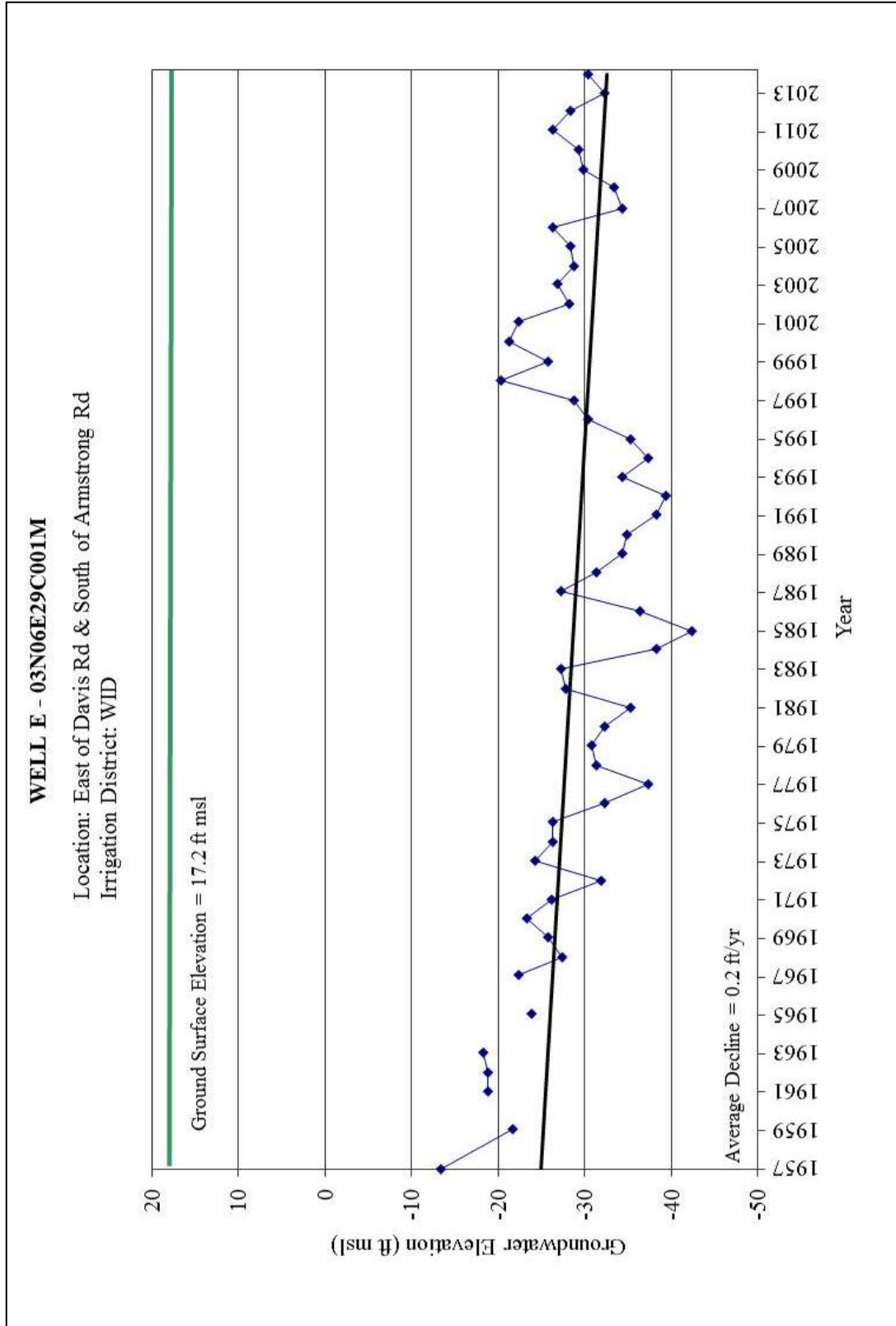


Figure 3-6: Fall Hydrograph Well E

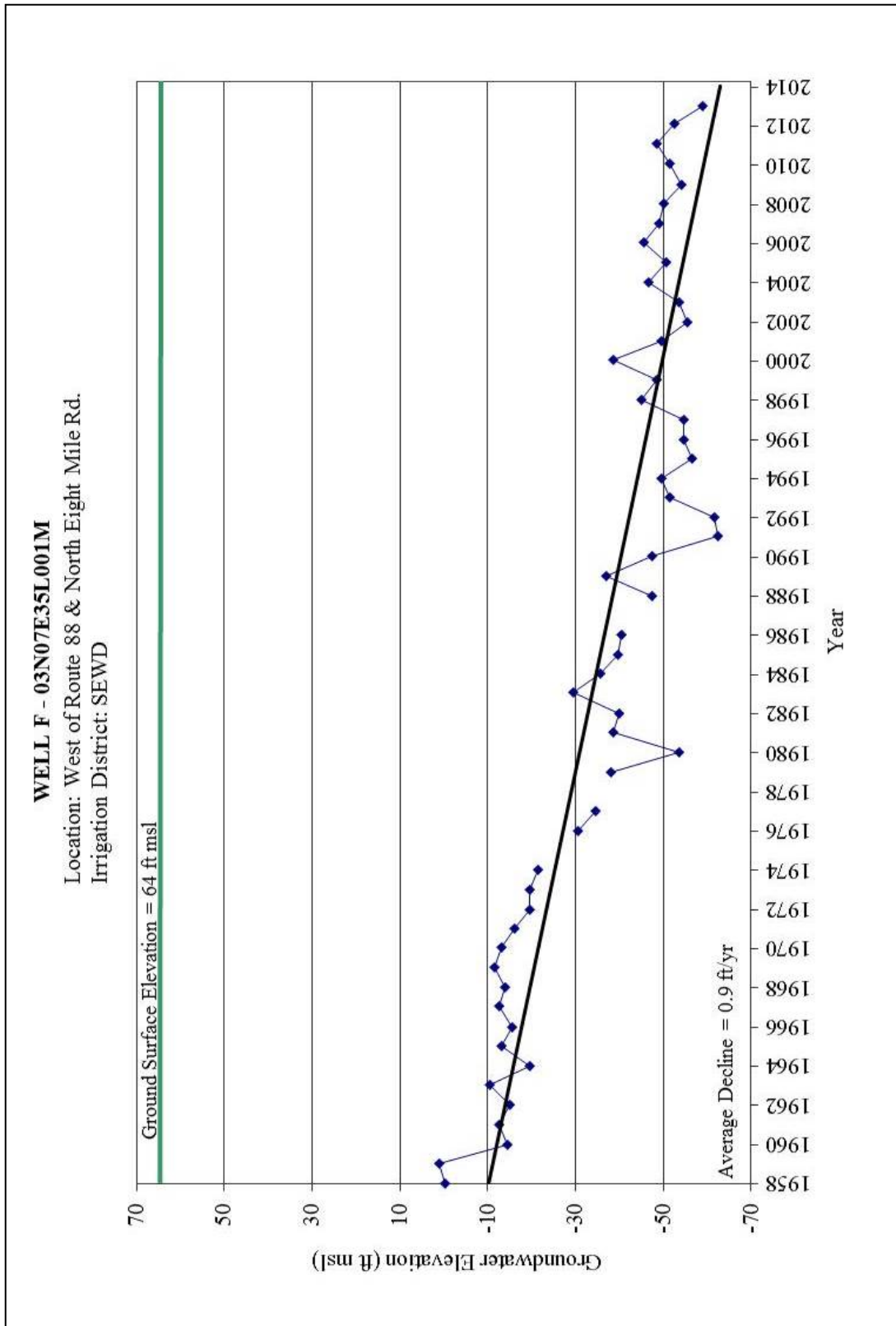


Figure 3-7: Fall Hydrograph Well F

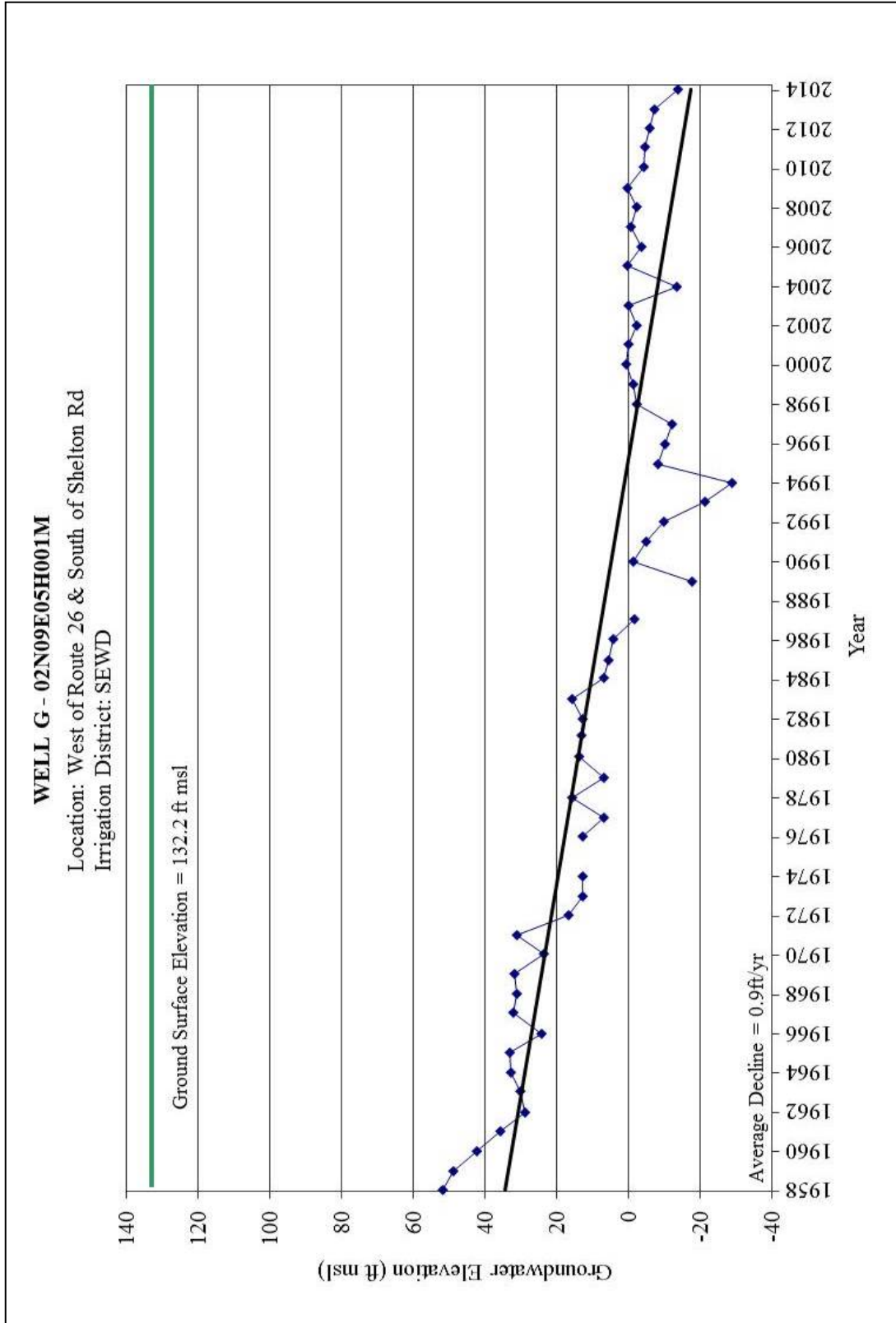


Figure 3-8: Fall Hydrograph Well G

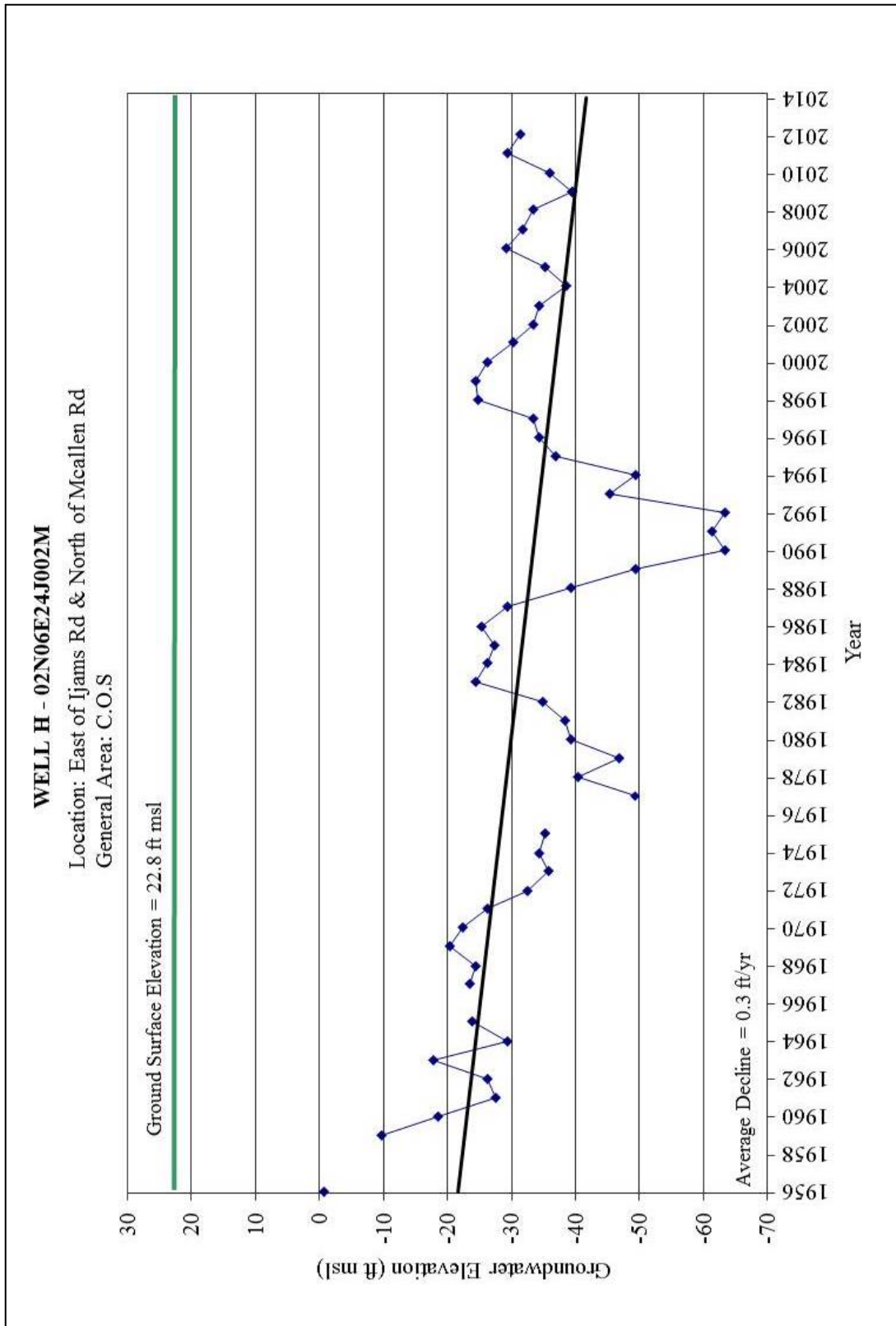


Figure 3-9: Fall Hydrograph Well H

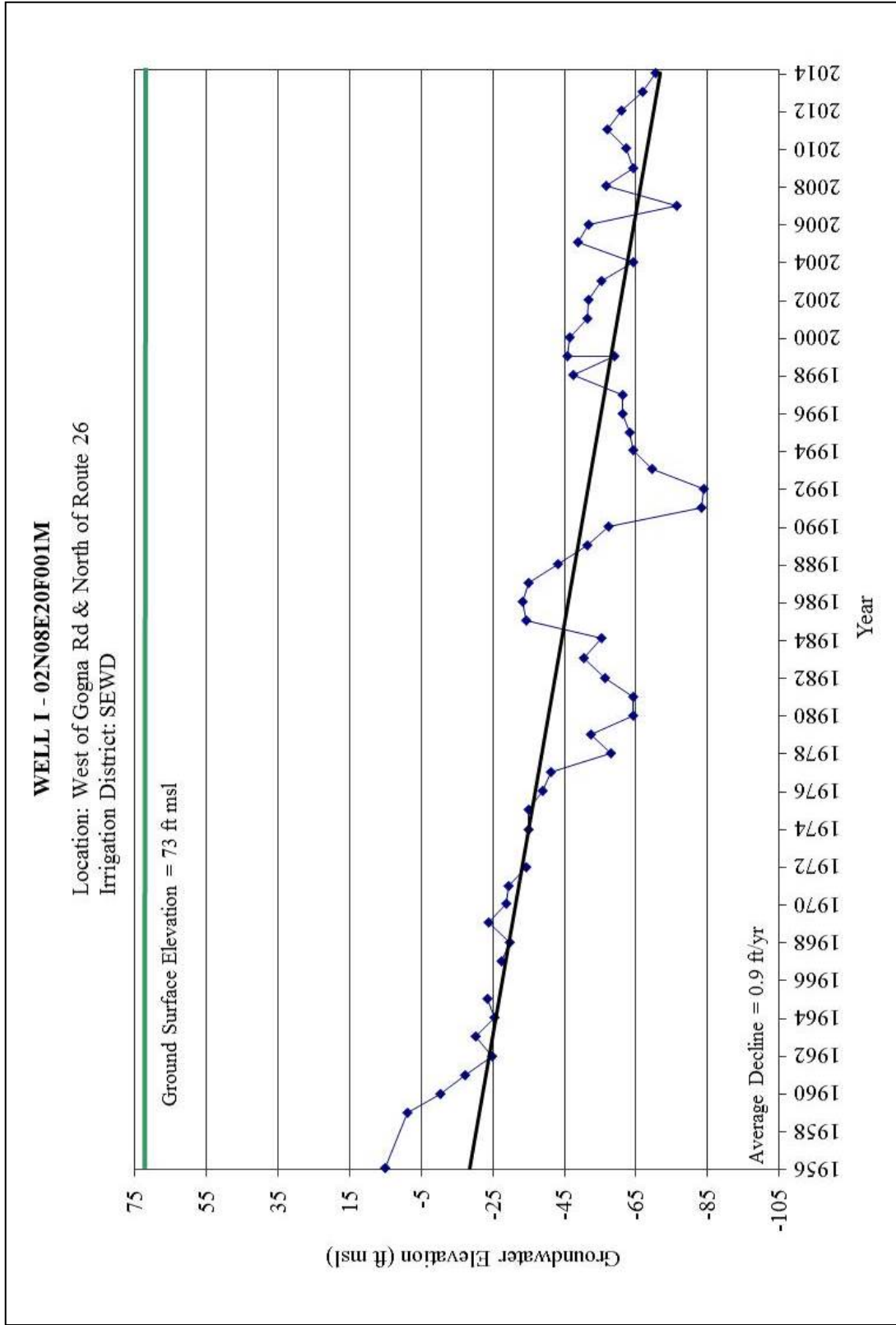


Figure 3-10: Fall Hydrograph Well I

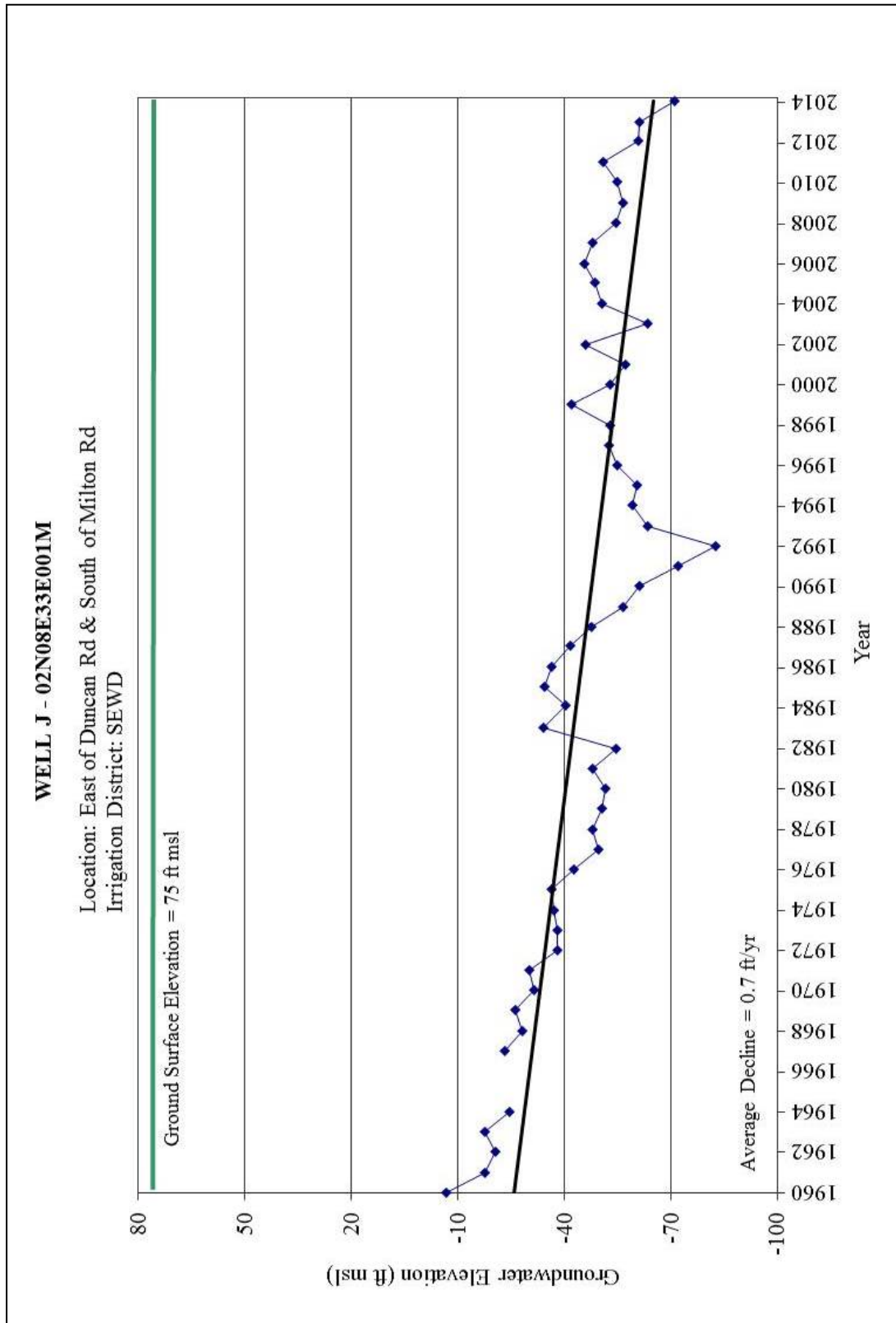


Figure 3-11: Fall Hydrograph Well J

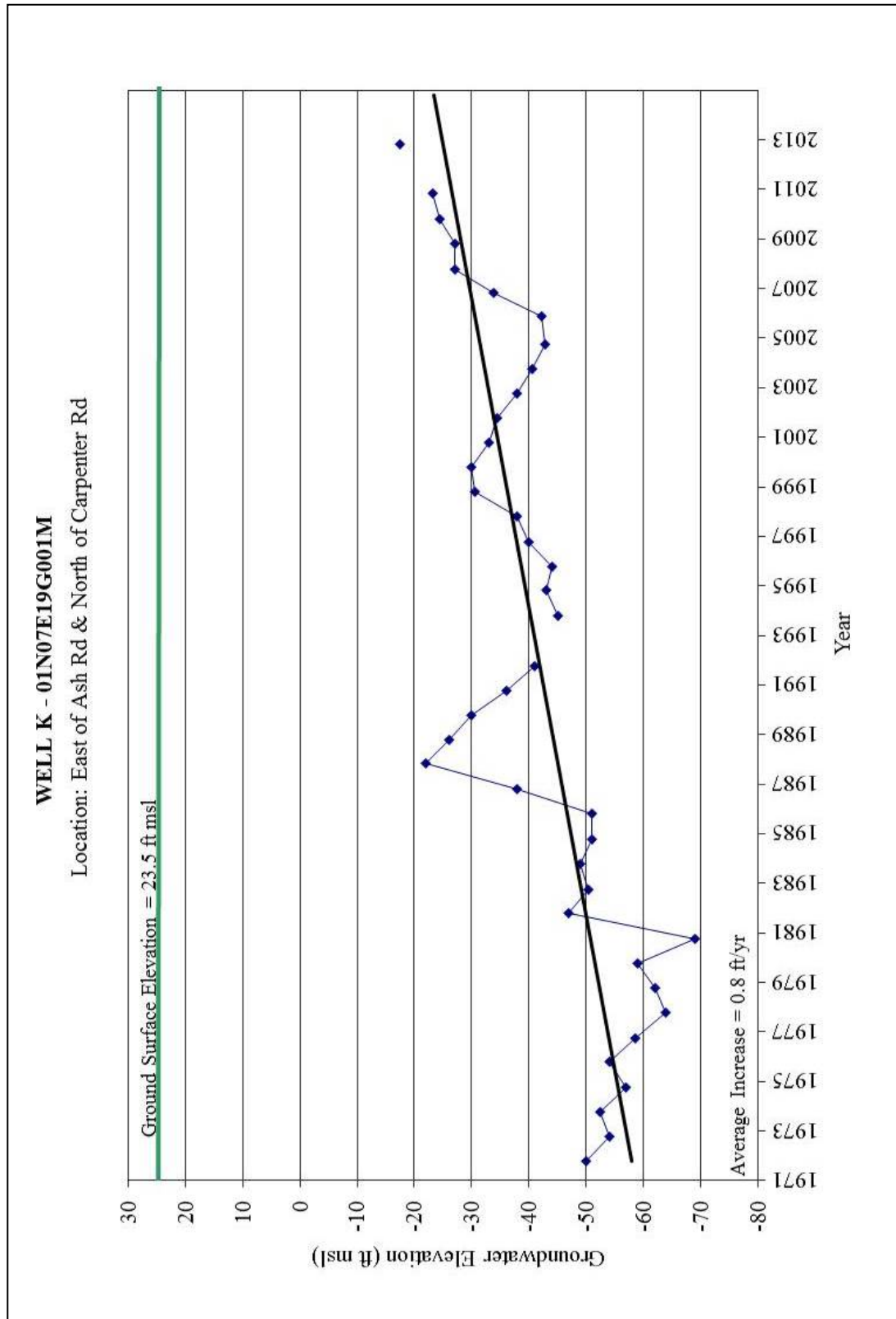


Figure 3-12: Fall Hydrograph Well K

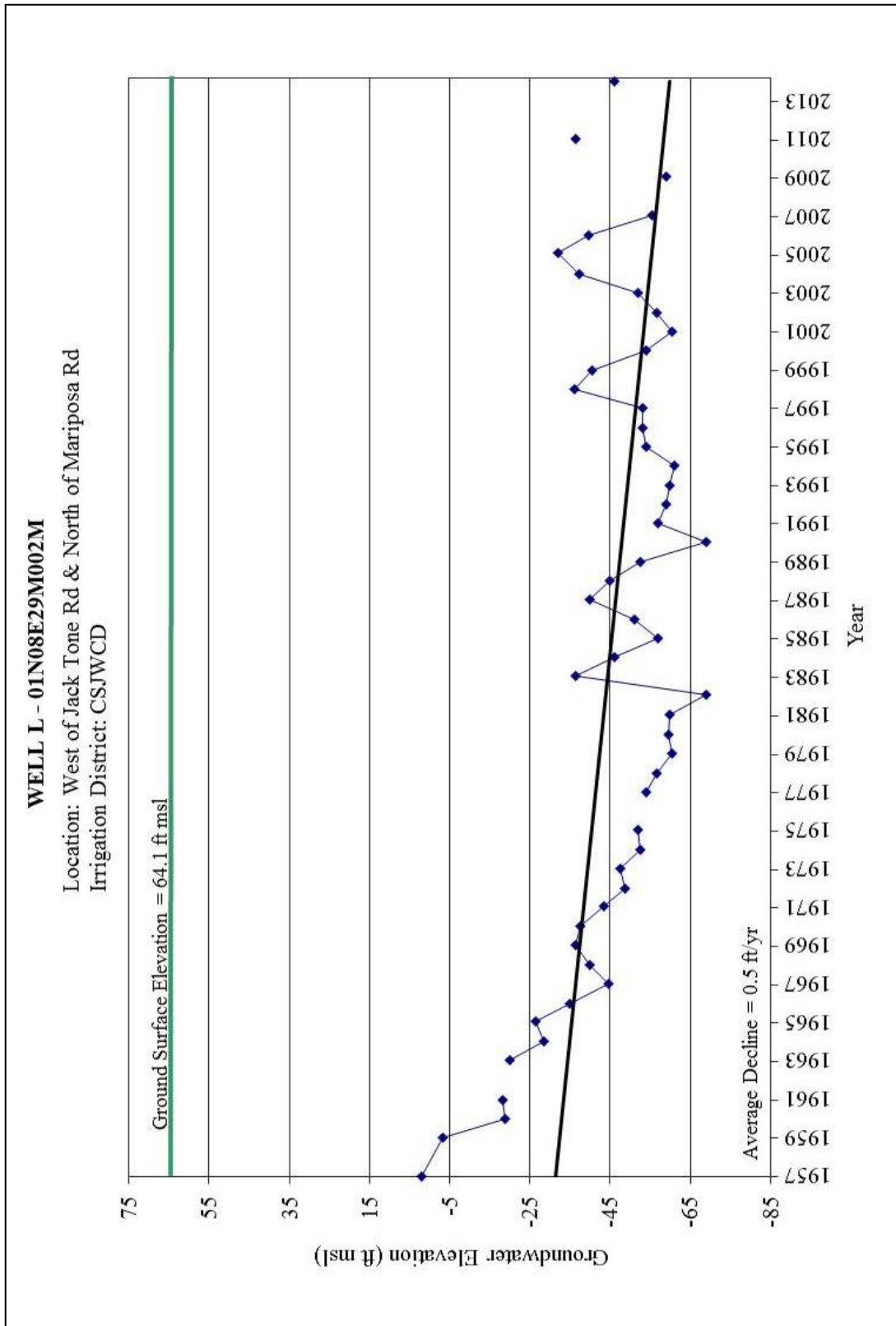


Figure 3-13: Fall Hydrograph Well L

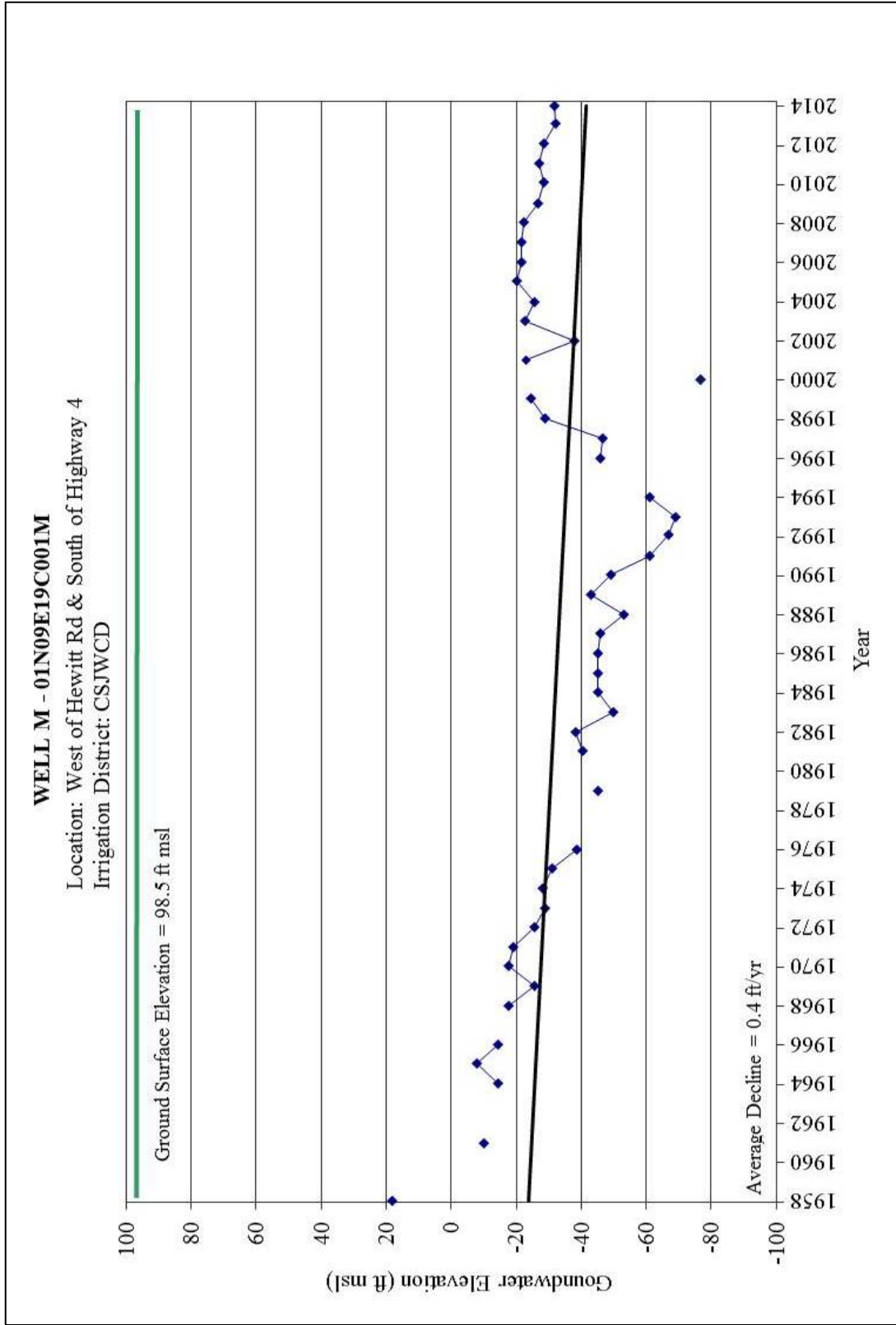


Figure 3-14: Fall Hydrograph Well M

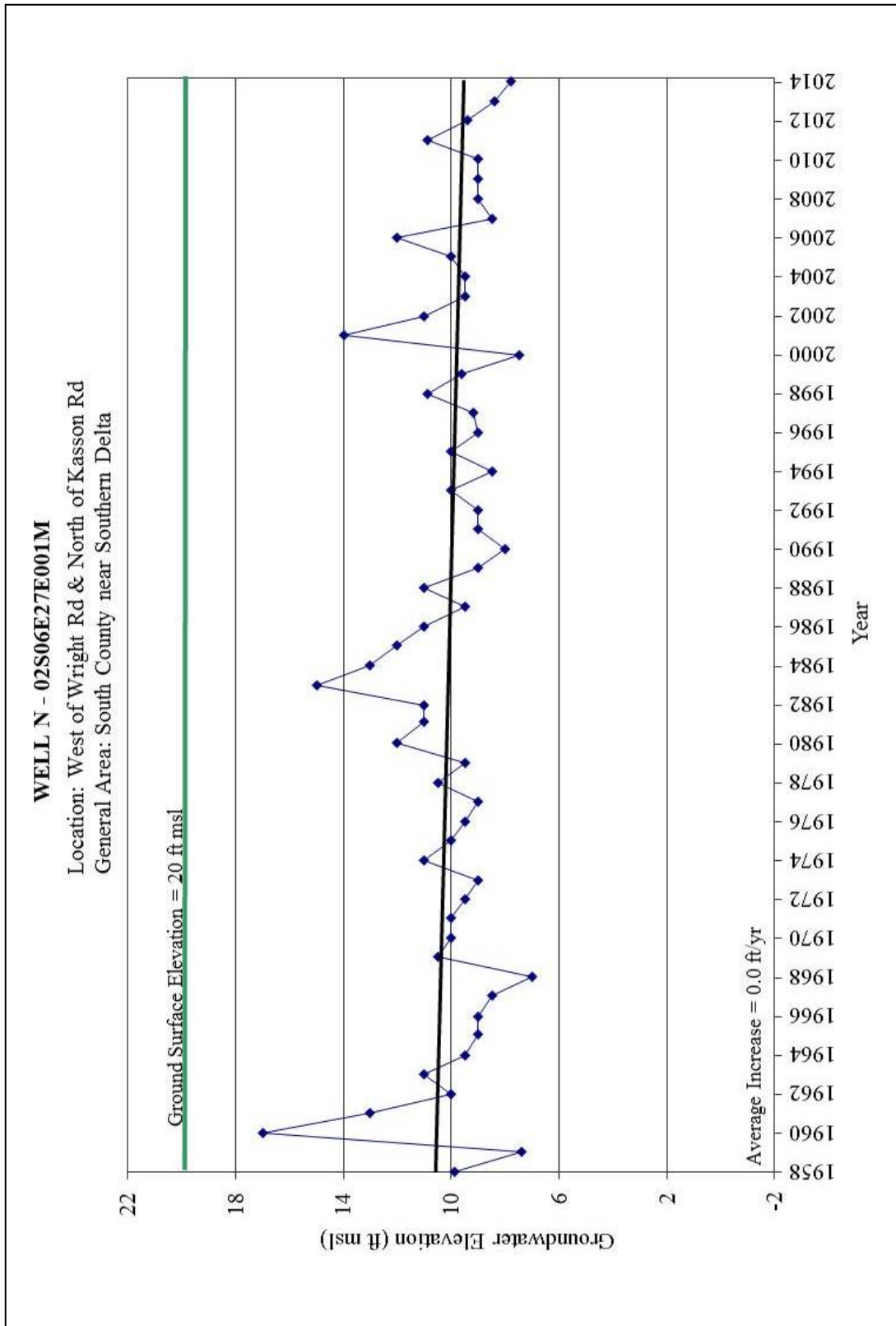


Figure 3-15: Fall Hydrograph Well N

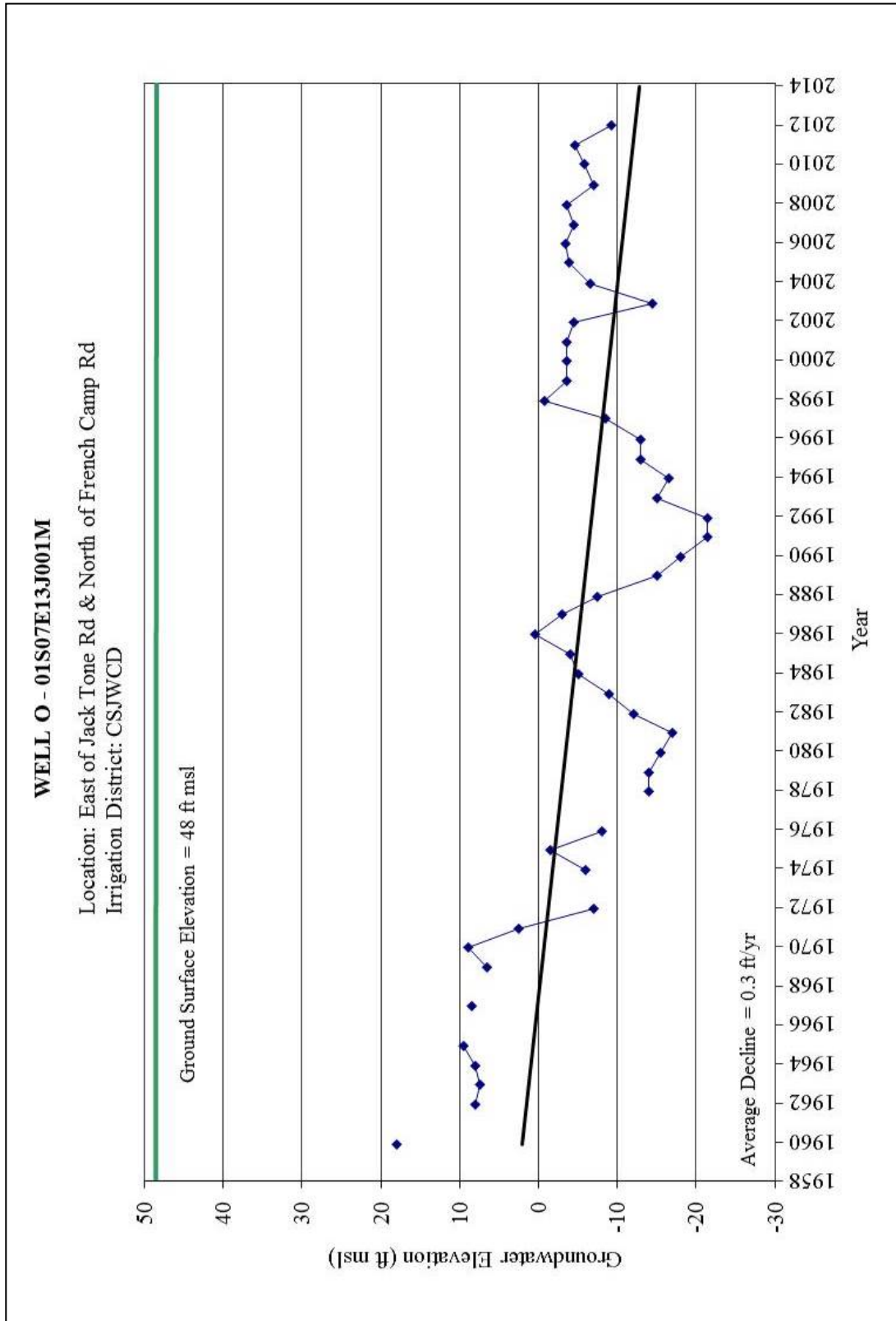


Figure 3-16: Fall Hydrograph Well O

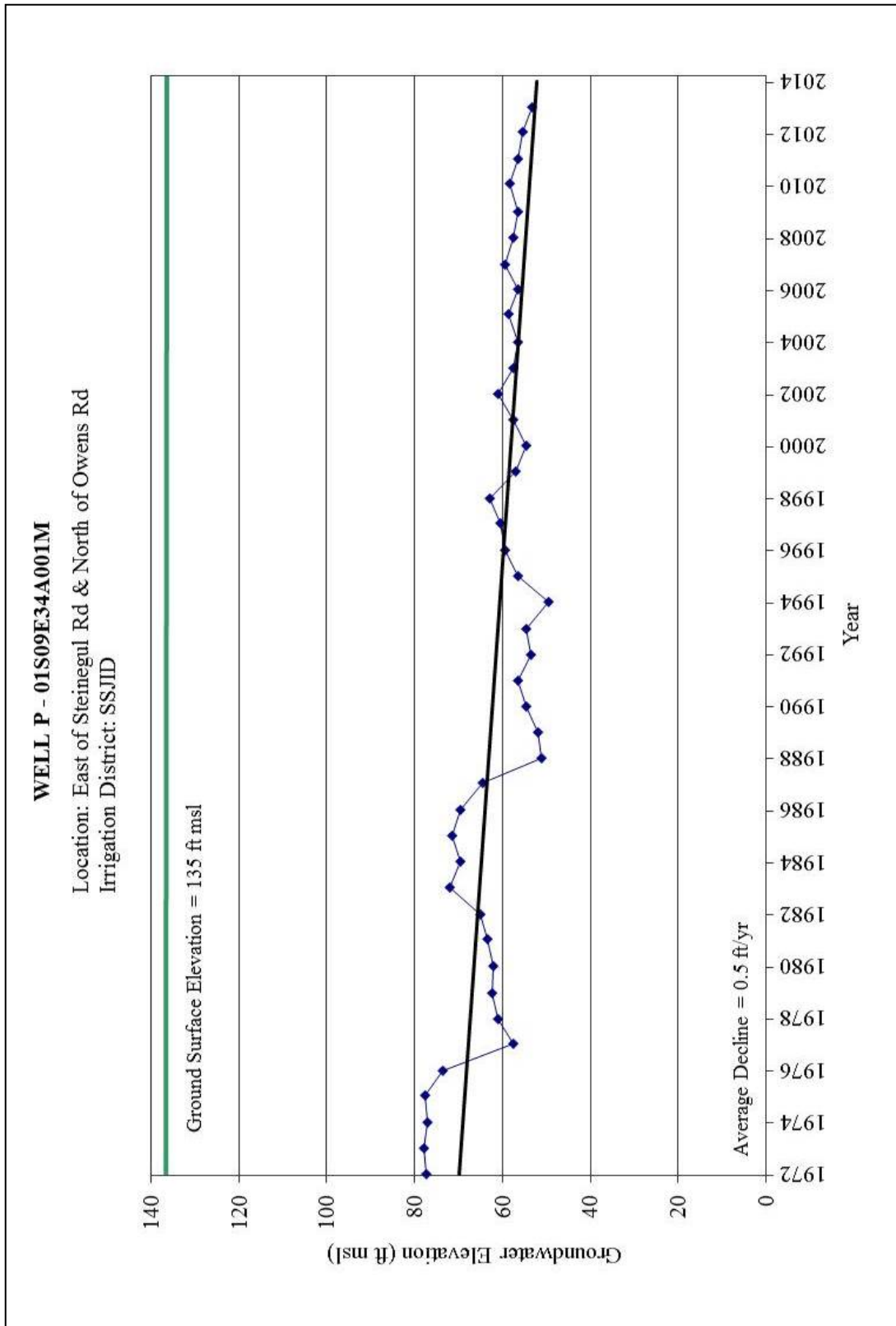


Figure 3-17: Fall Hydrograph Well P

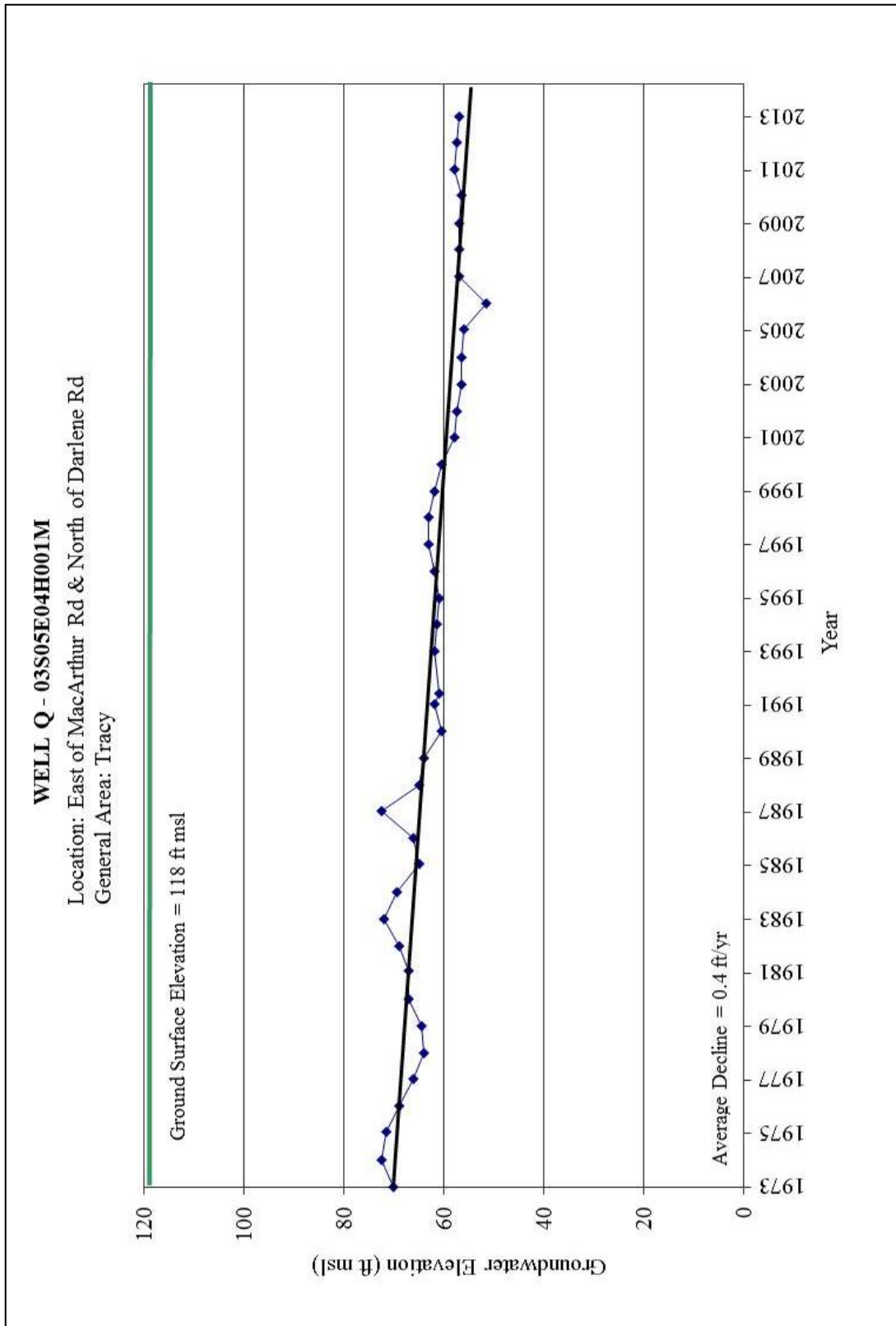


Figure 3-18: Fall Hydrograph Well Q

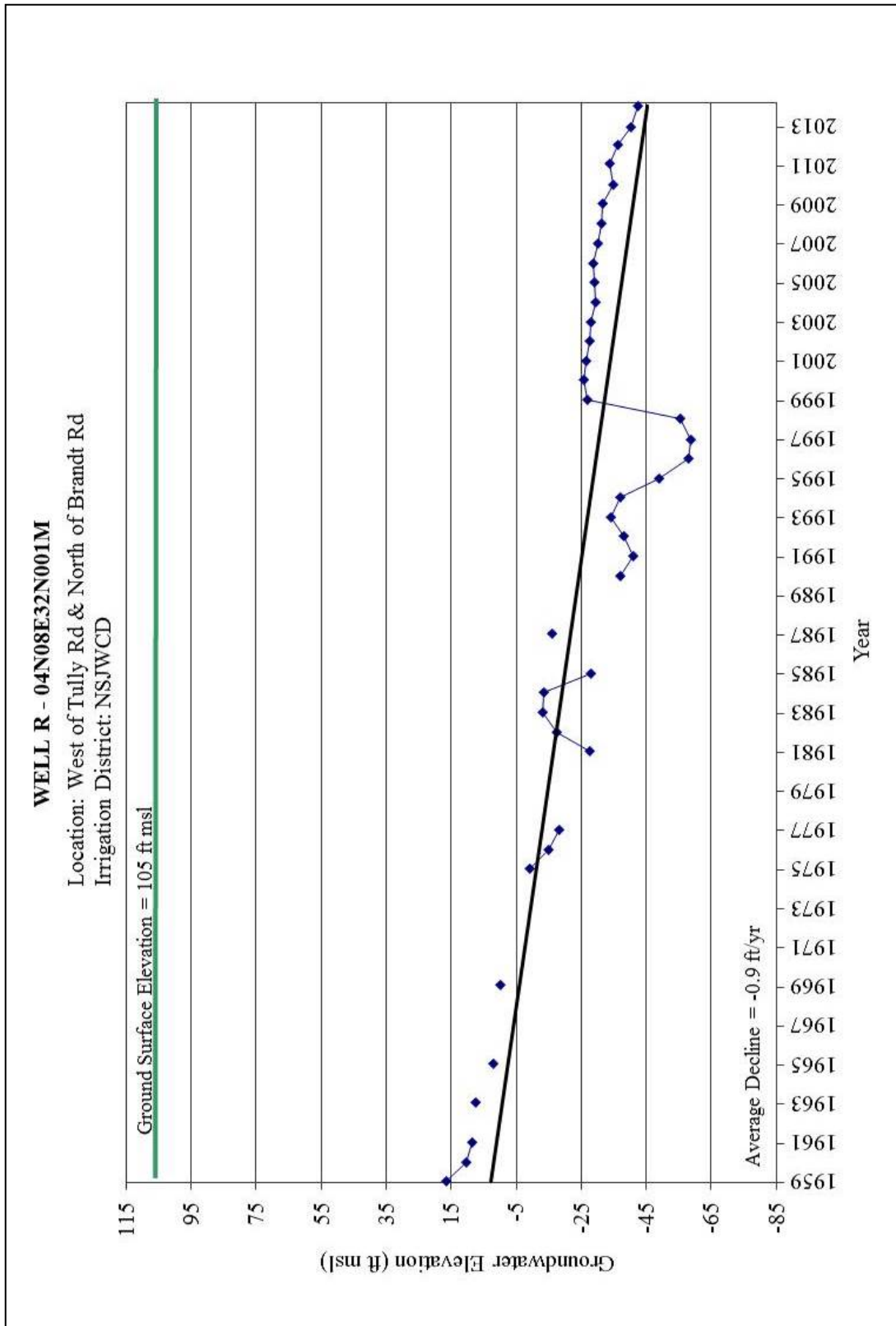


Figure 3-19: Fall Hydrograph Well R

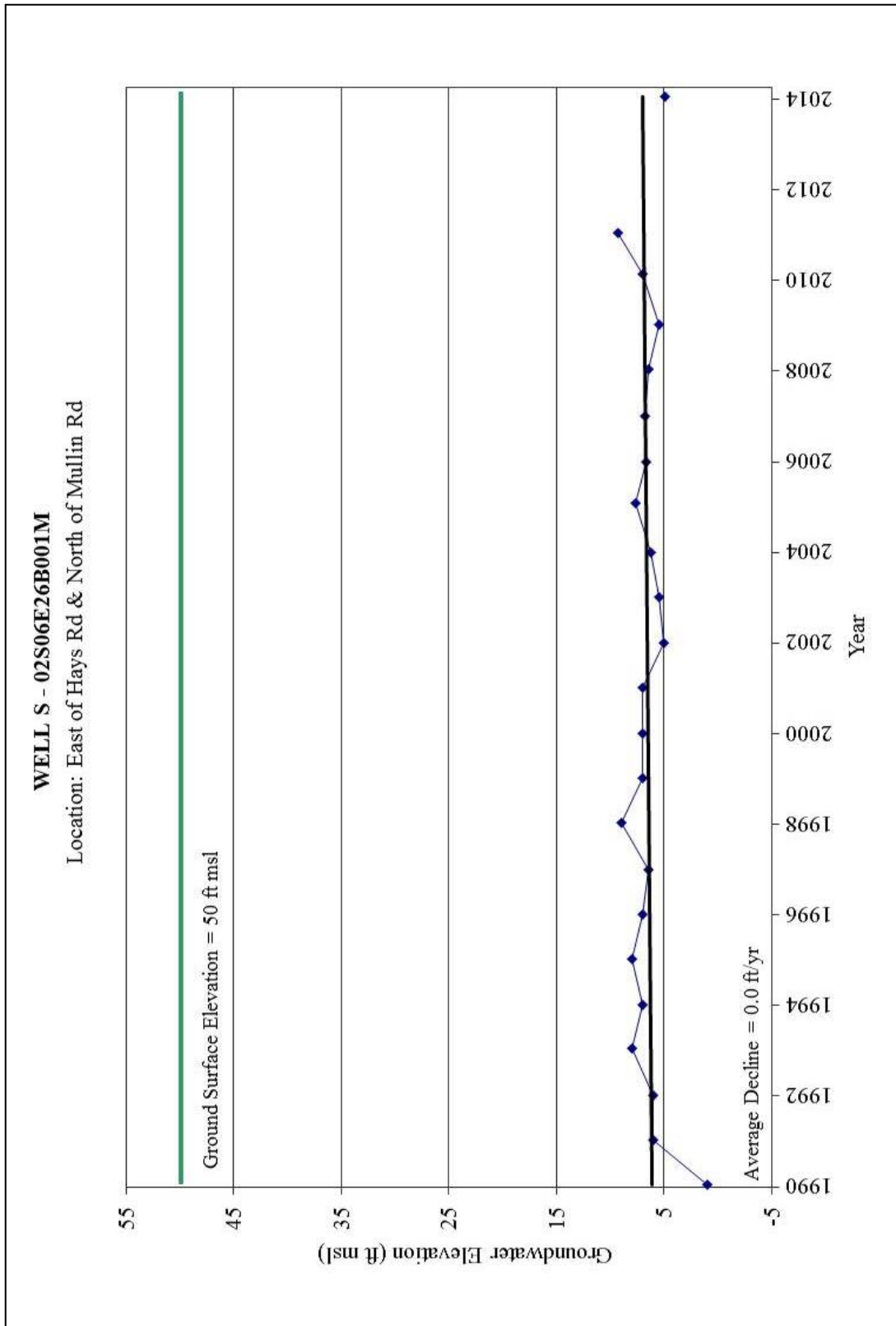


Figure 3-20: Fall Hydrograph Well S

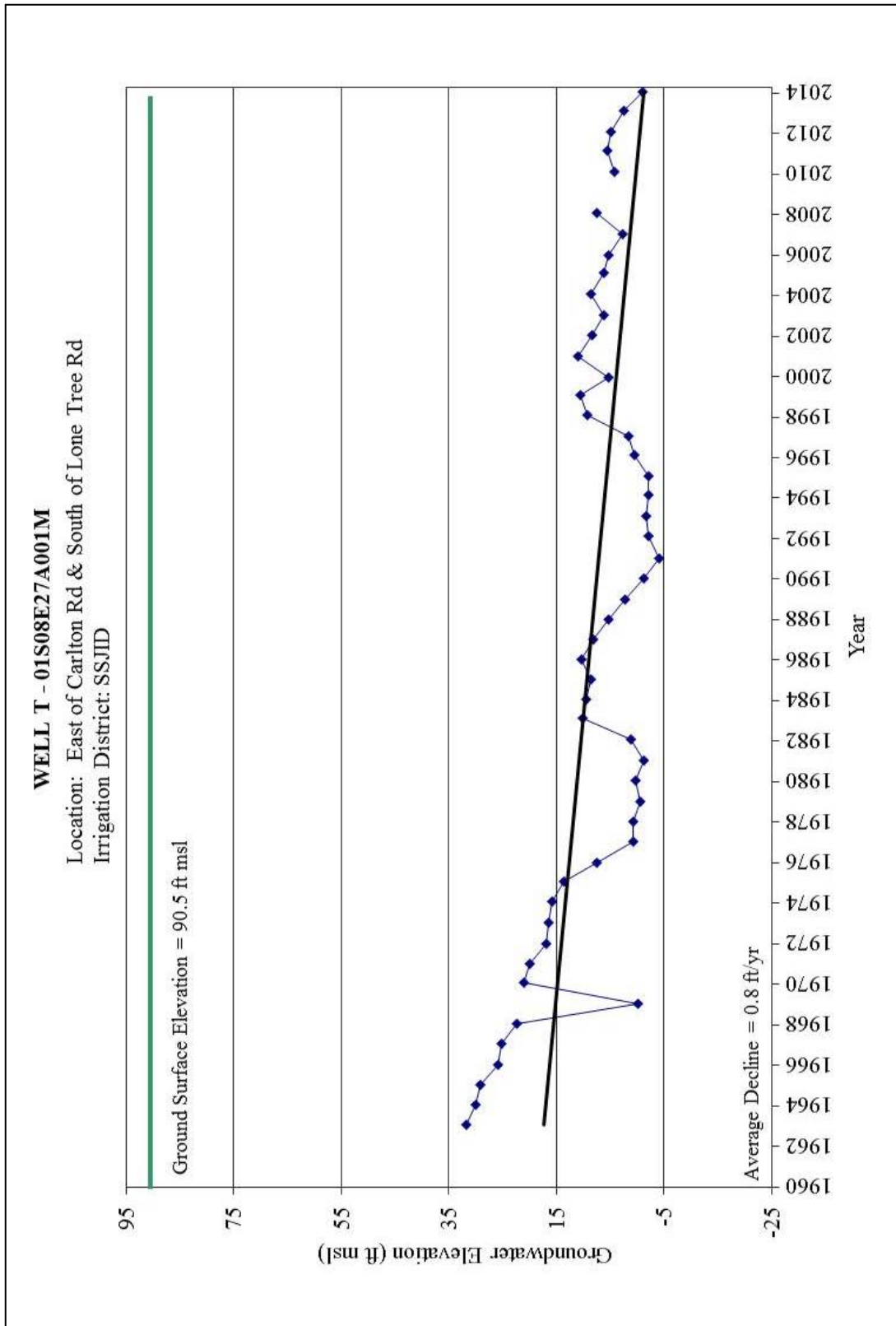


Figure 3-21: Fall Hydrograph Well T

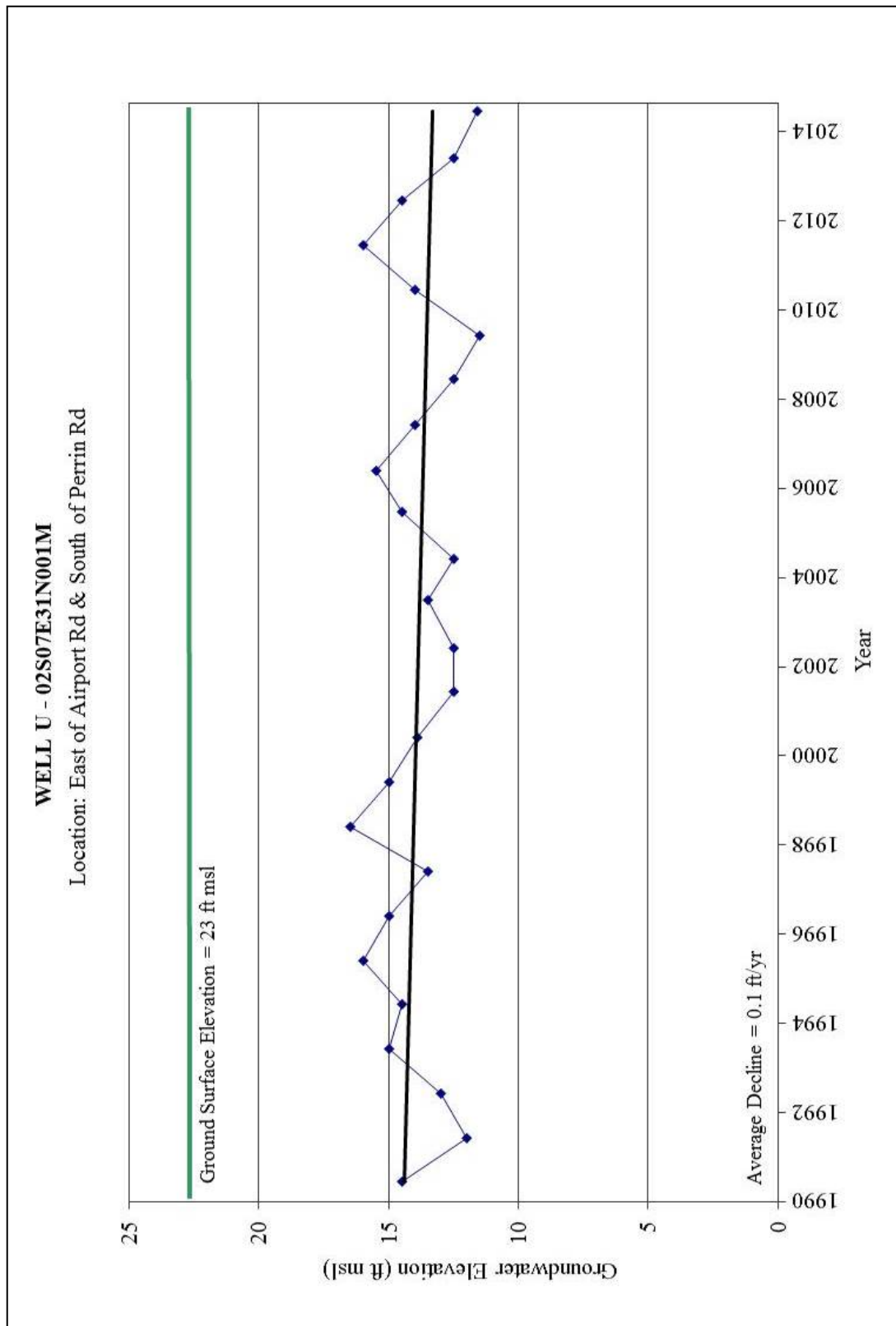


Figure 3-22: Fall Hydrograph Well U

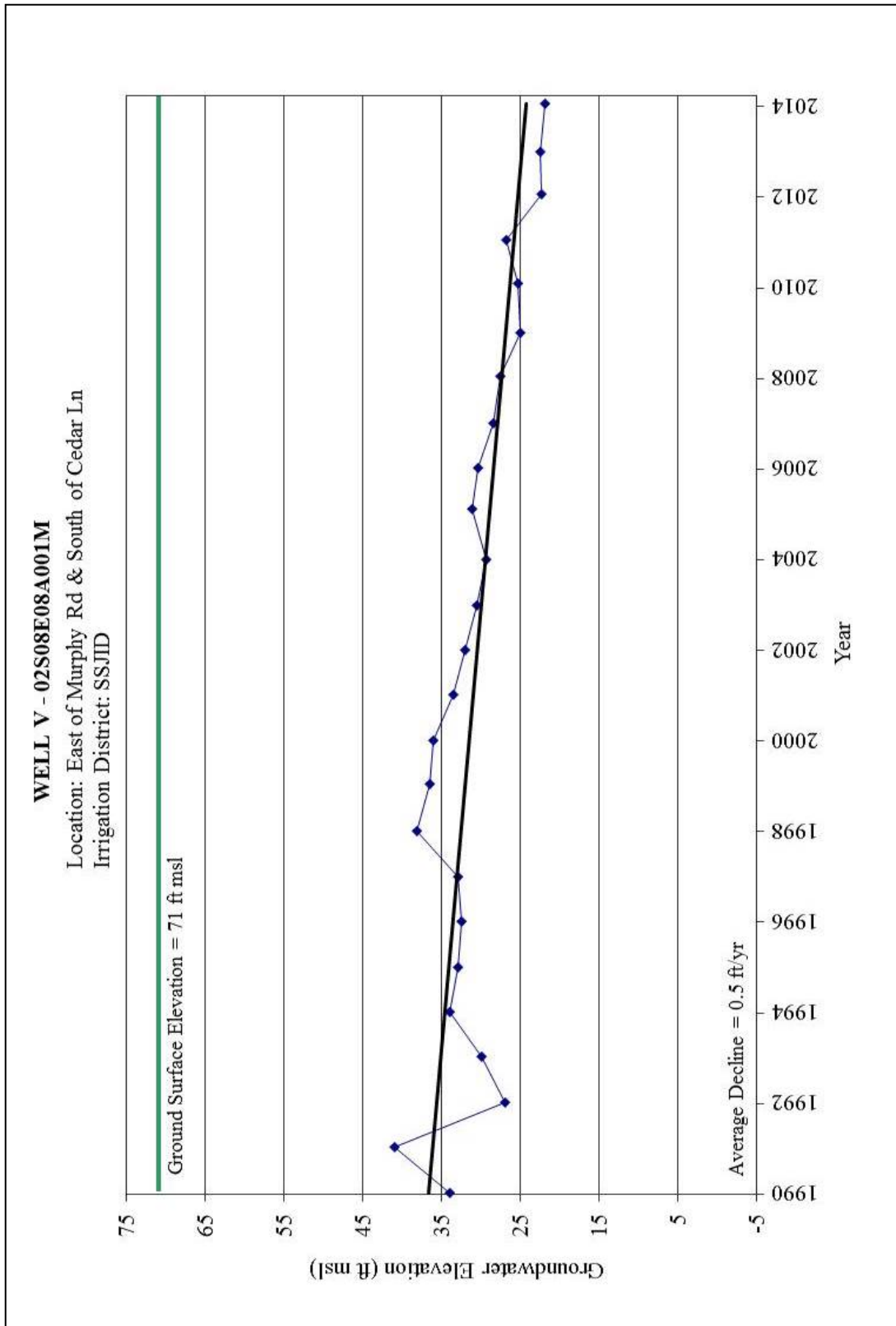


Figure 3-23: Fall Hydrograph Well V

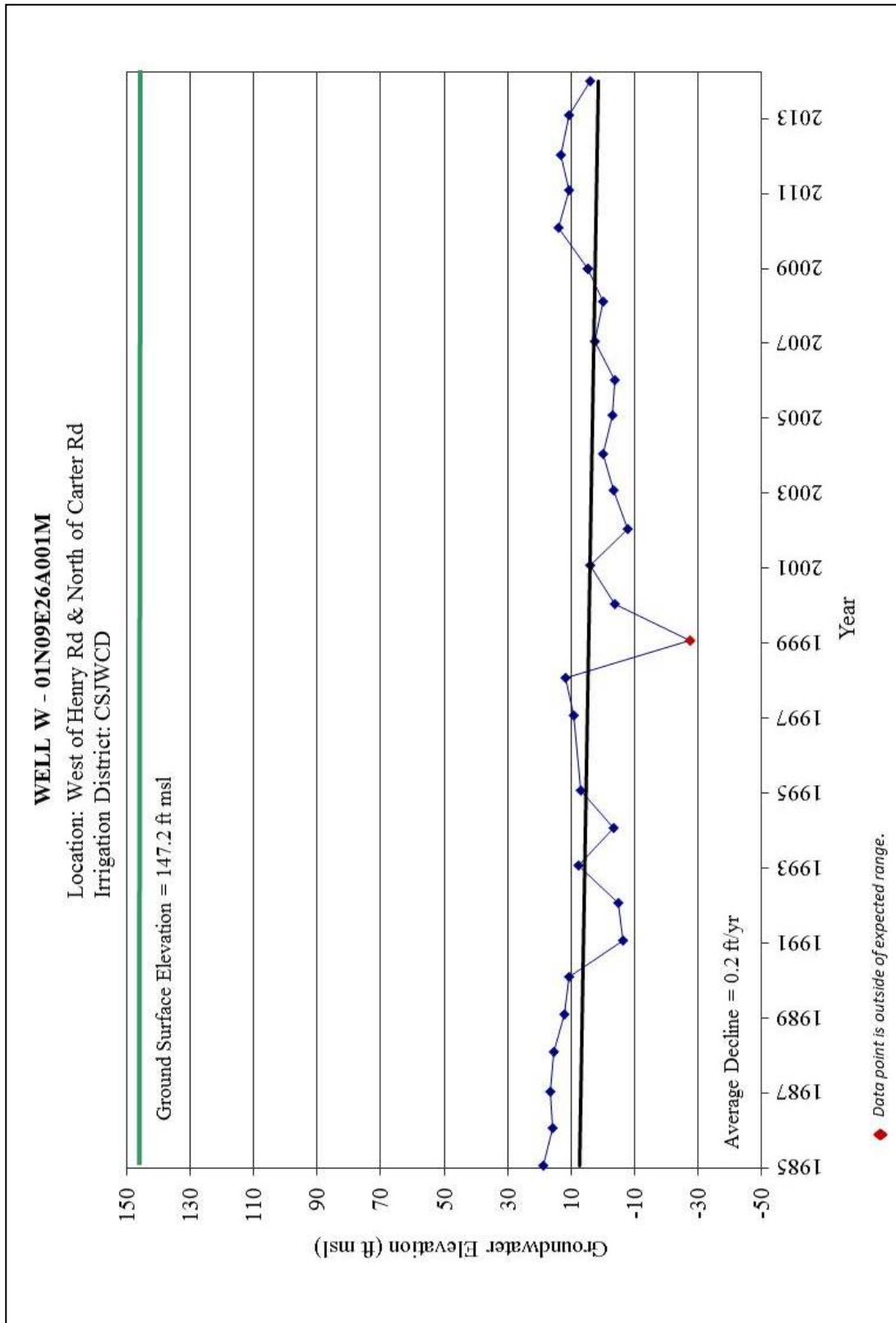


Figure 3-24: Fall Hydrograph Well W

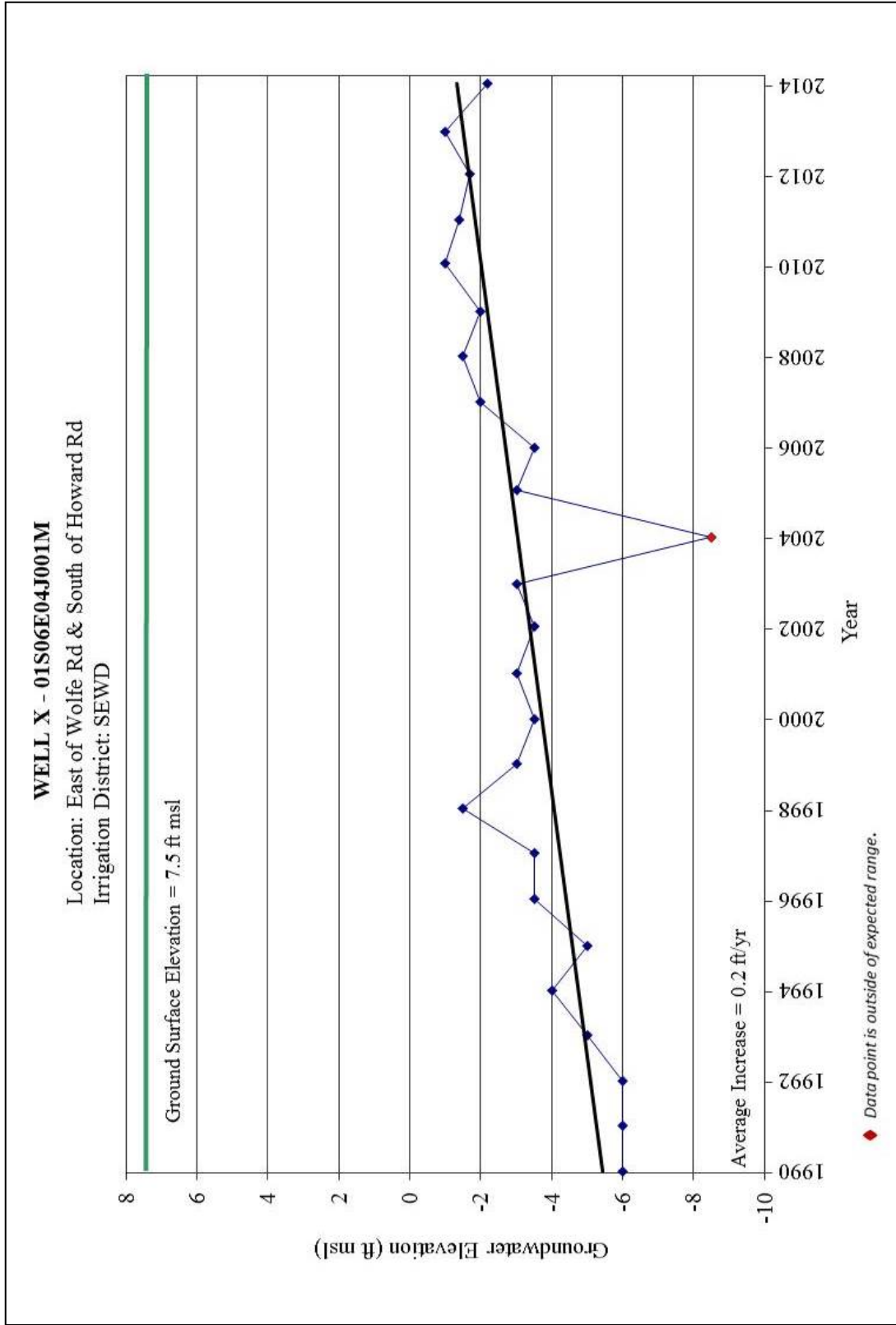


Figure 3-25: Fall Hydrograph Well X

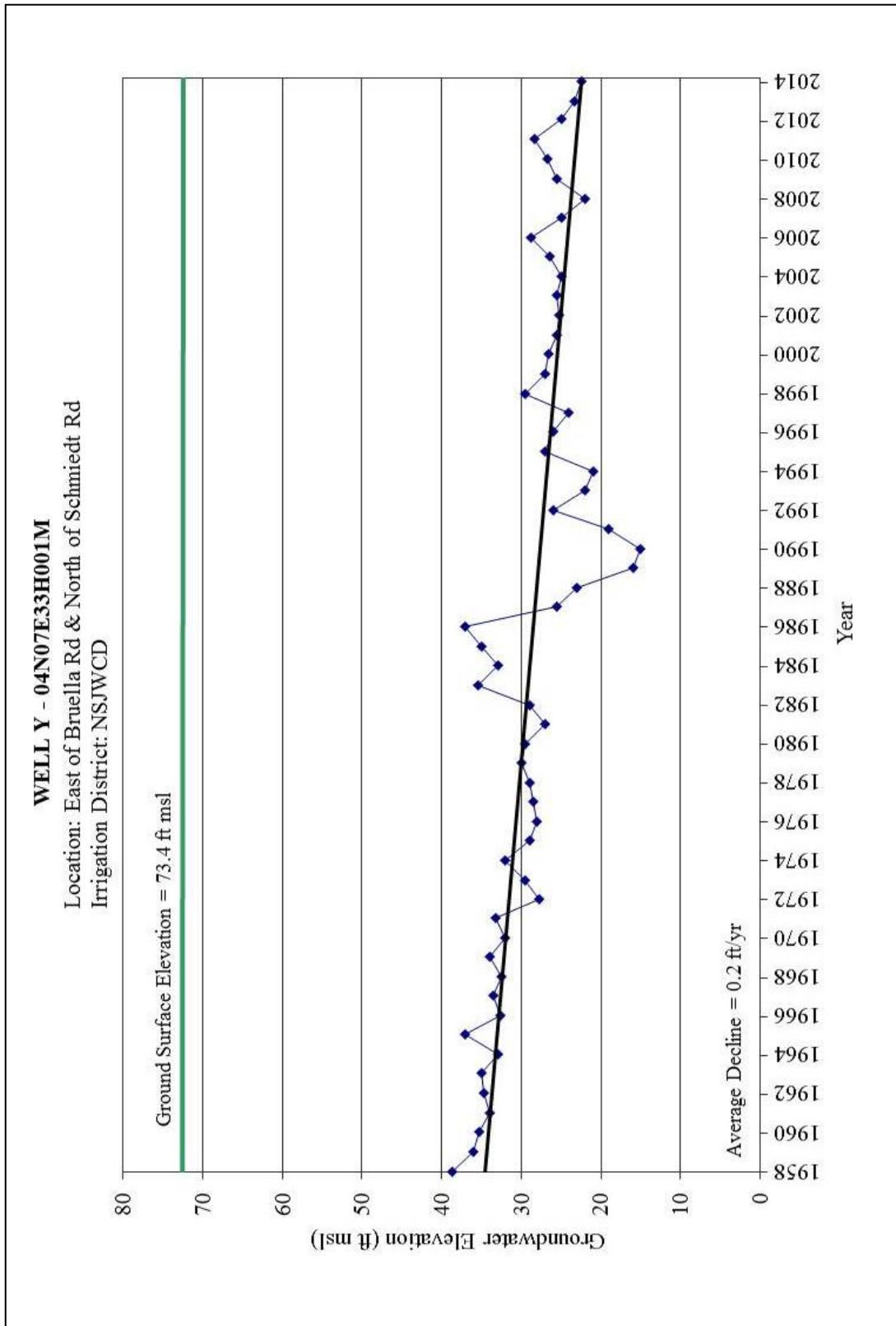


Figure 3-26: Fall Hydrograph Well Y

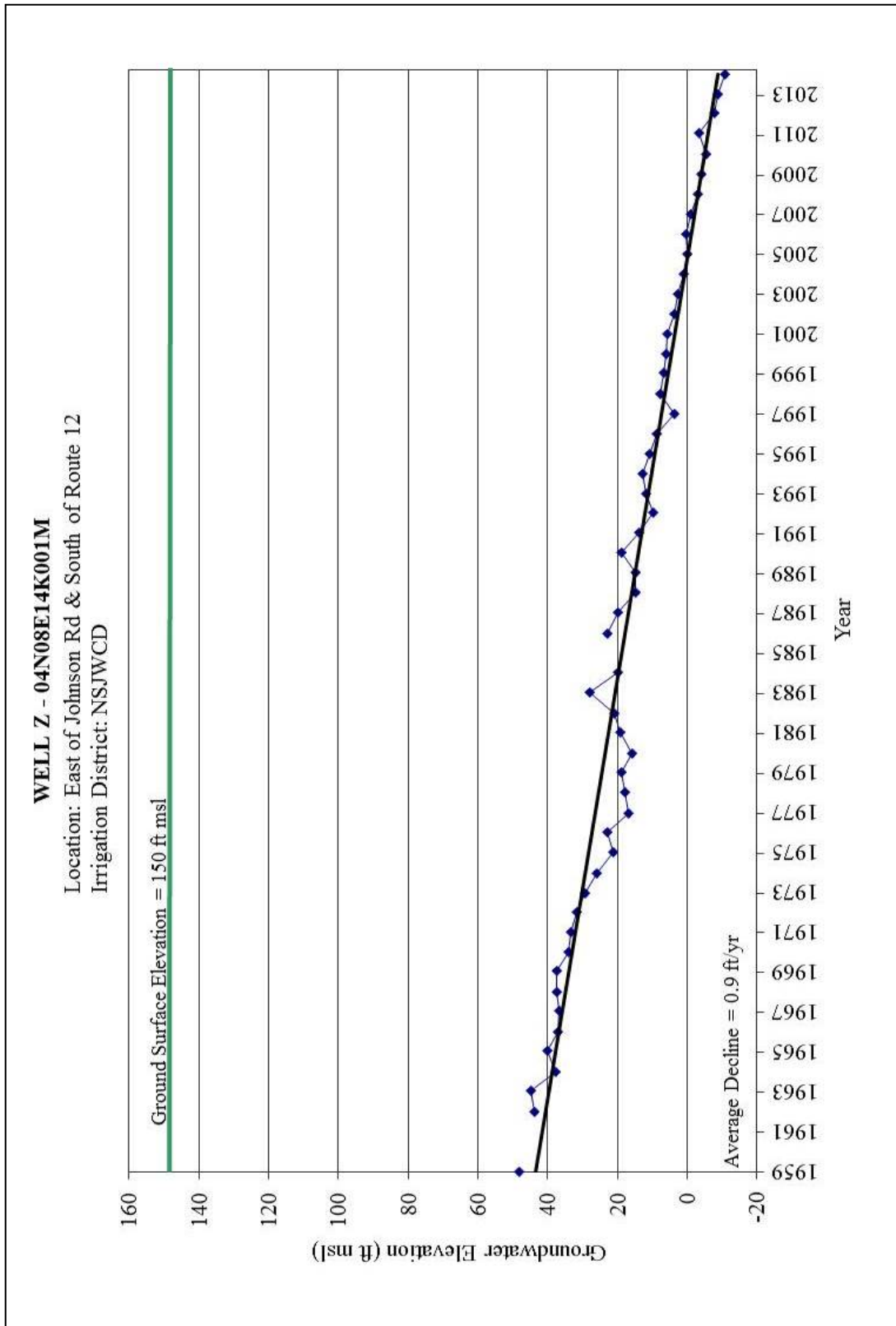


Figure 3-27: Fall Hydrograph Well Z

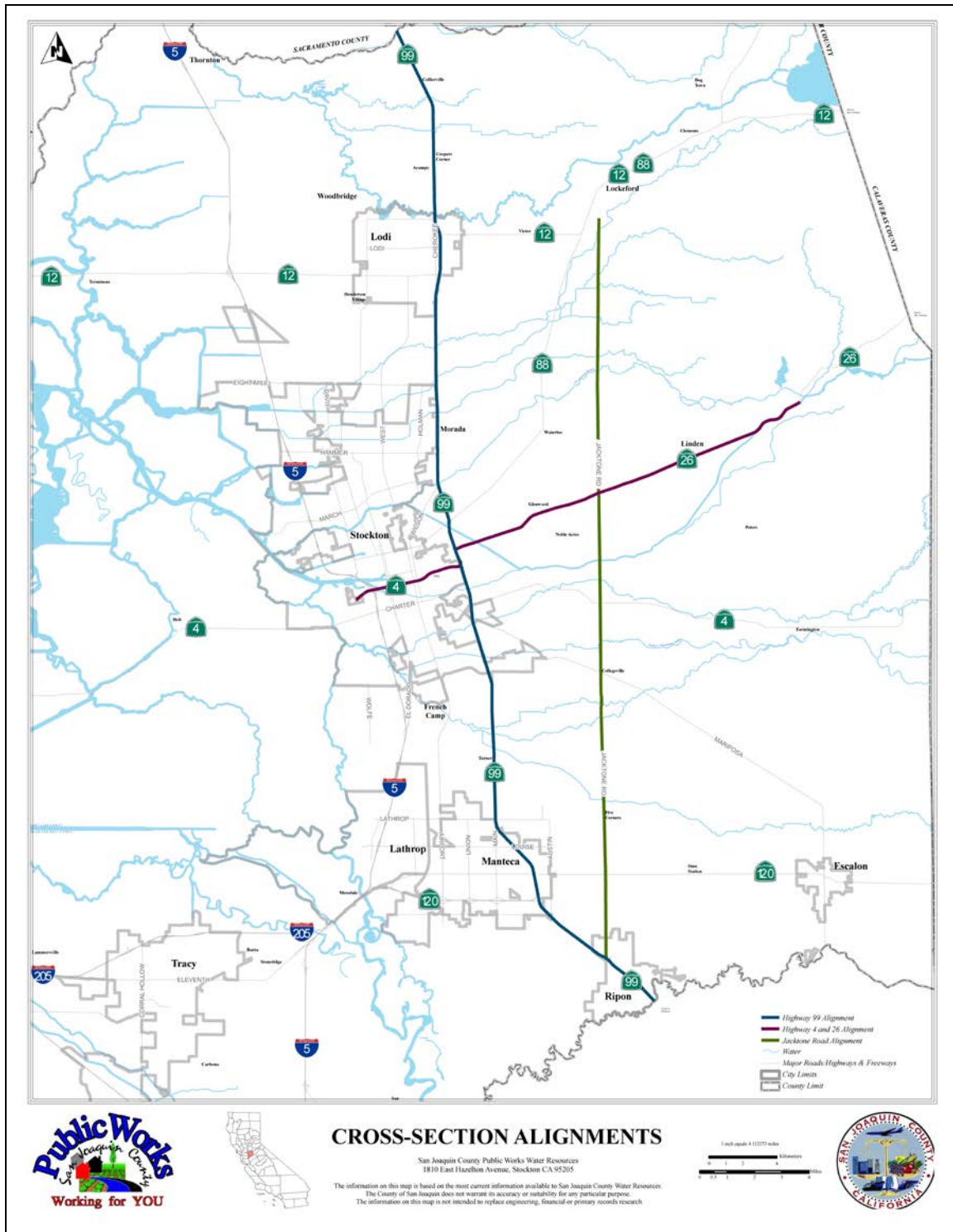


Figure 3-28: Cross Section Alignments

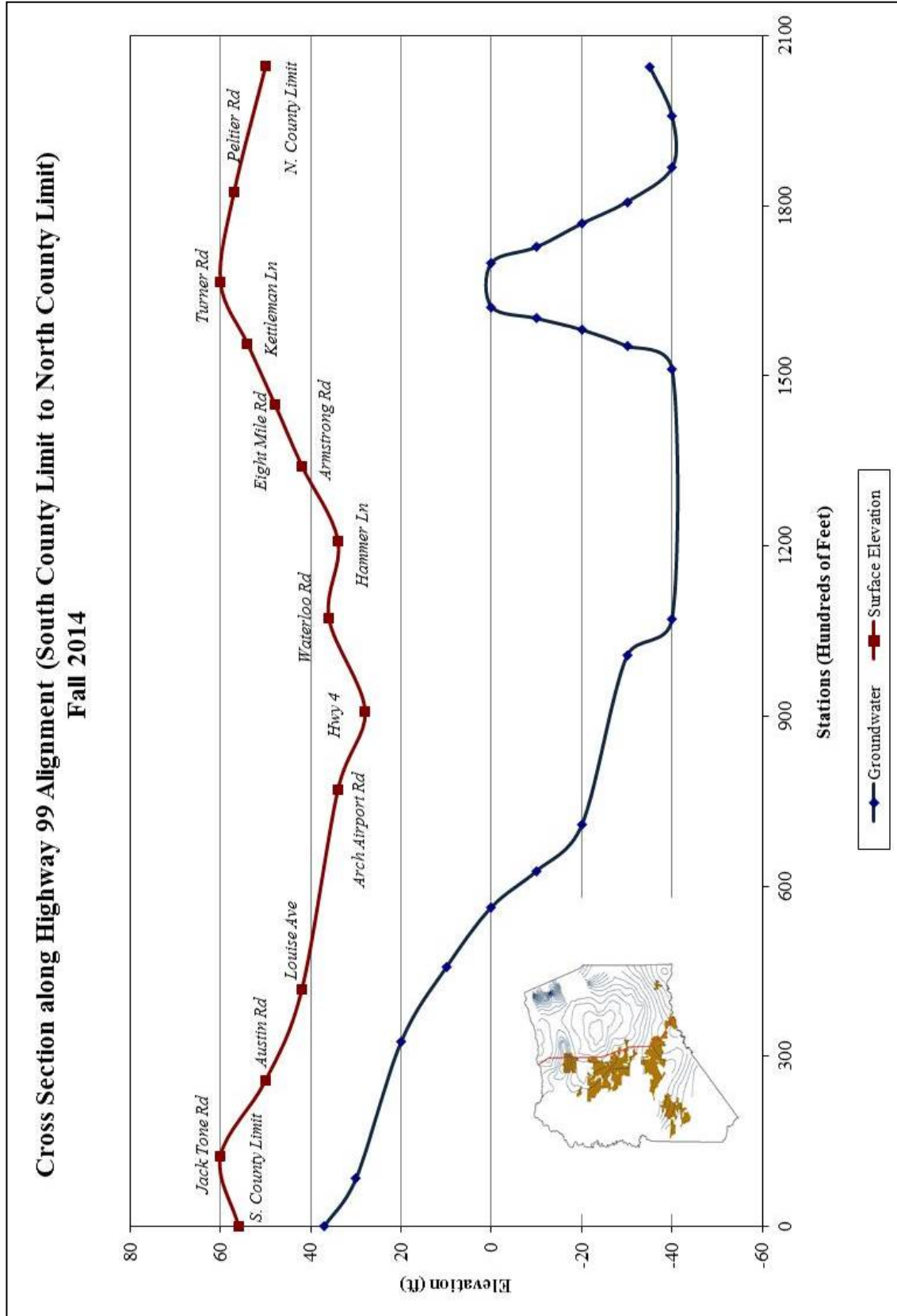


Figure 3-29: Highway 99 Cross Section Fall 2014

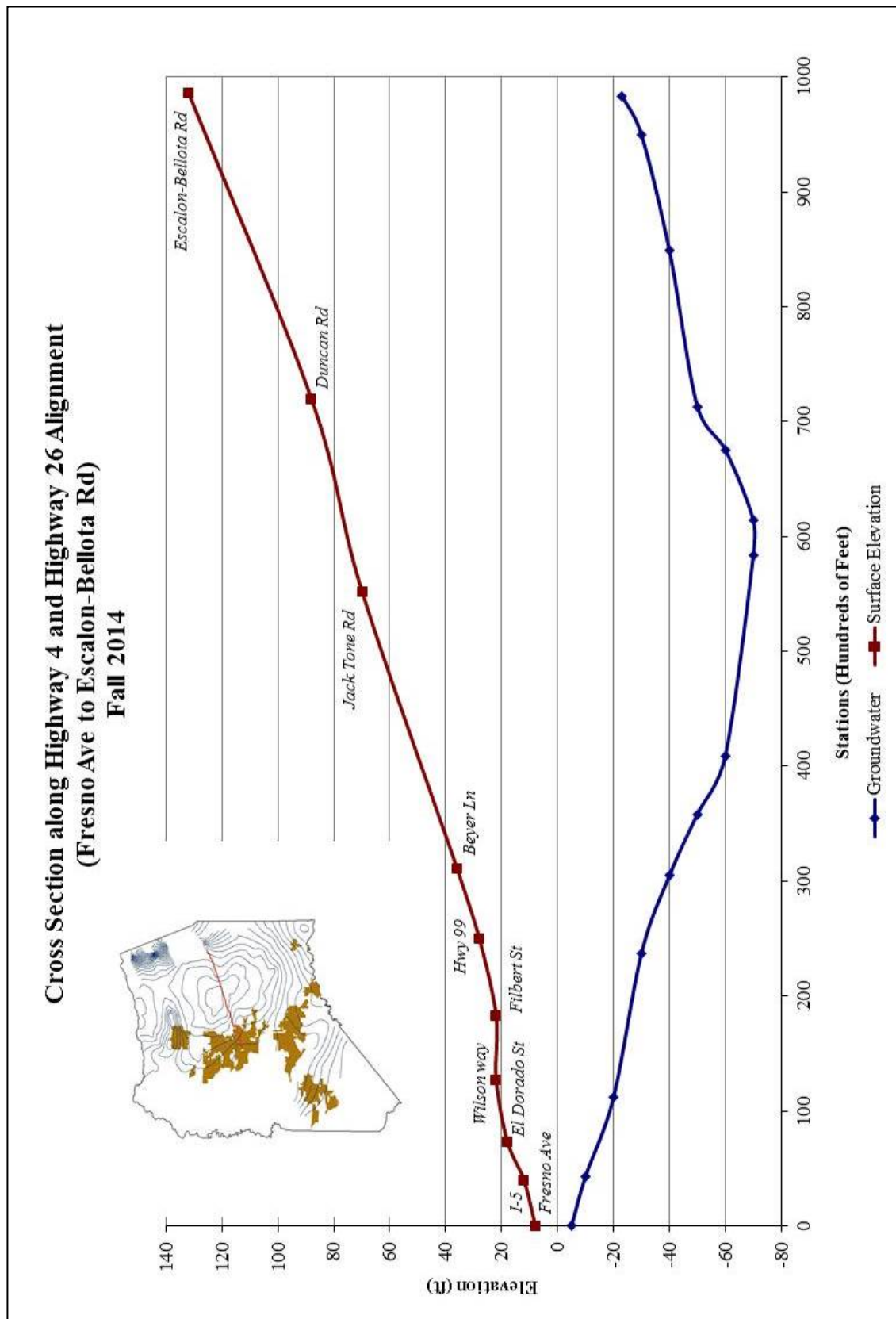


Figure 3-30: Highway 4 & Highway 26 Cross Section Fall 2014

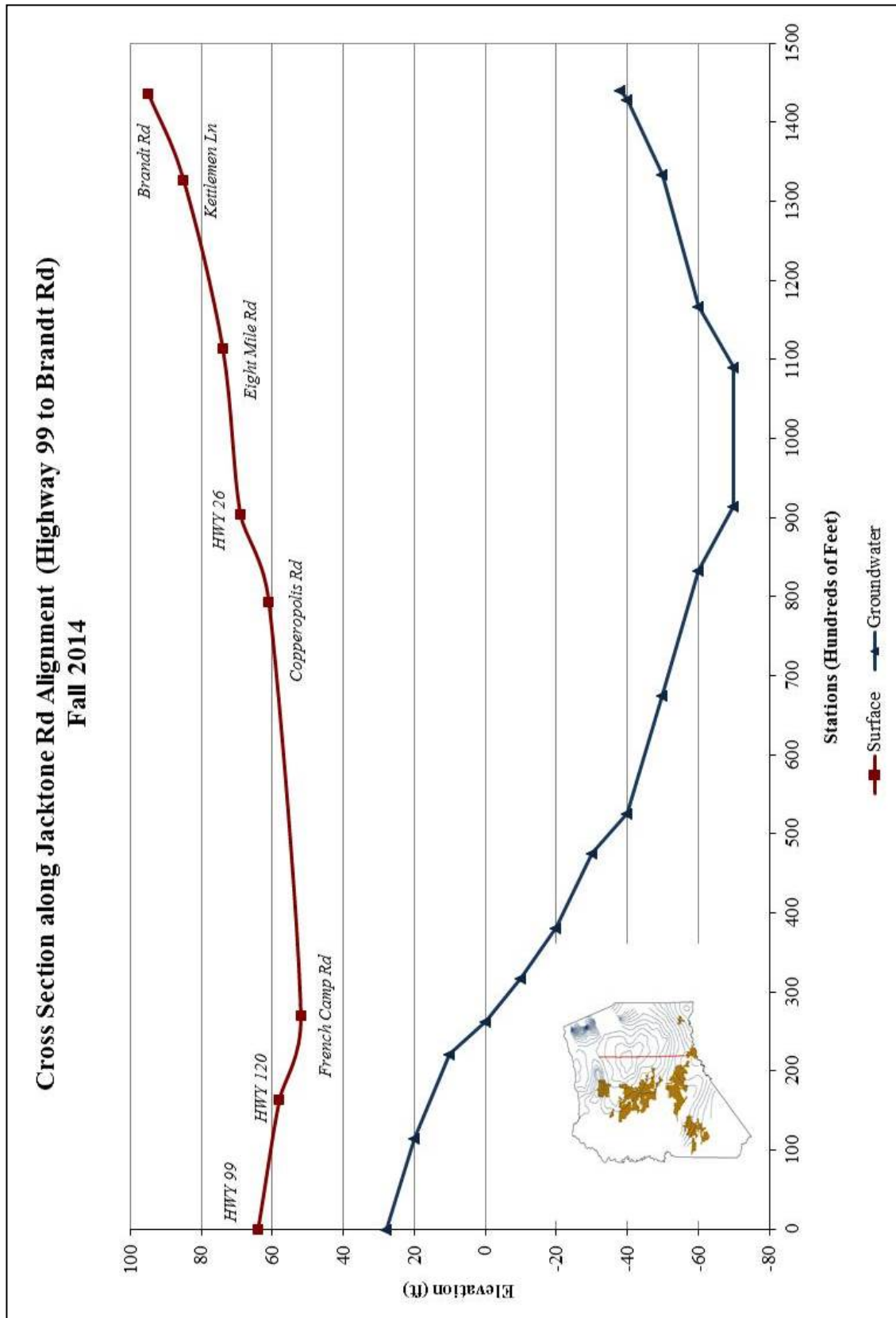


Figure 3-31: Jacktone Rd Cross Section Fall 2014

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 2014. The Camp Pardee station has data available from 1949 to 2014.

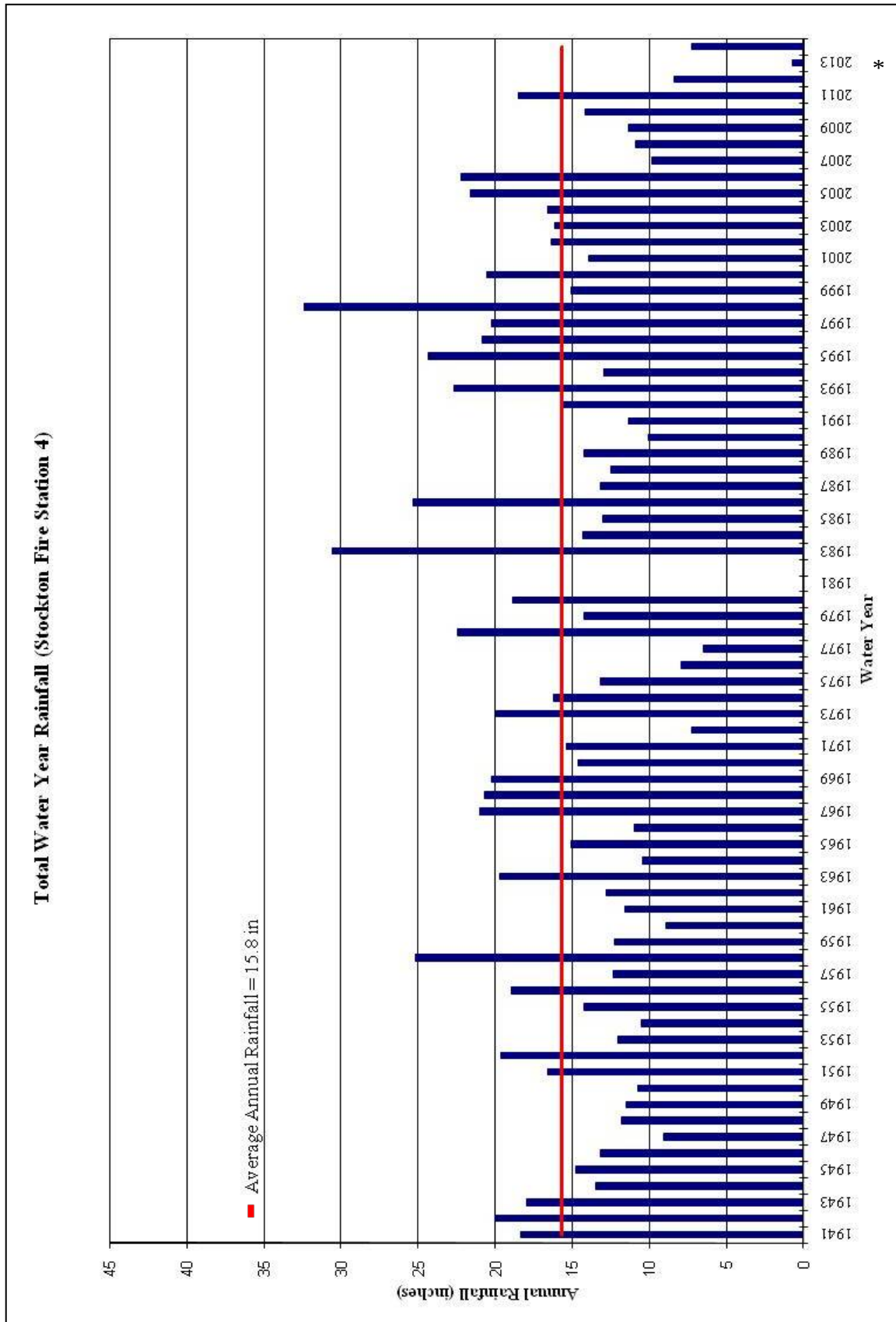


Figure 1-1: Total Annual Rainfall (Stockton Fire Station 4)

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

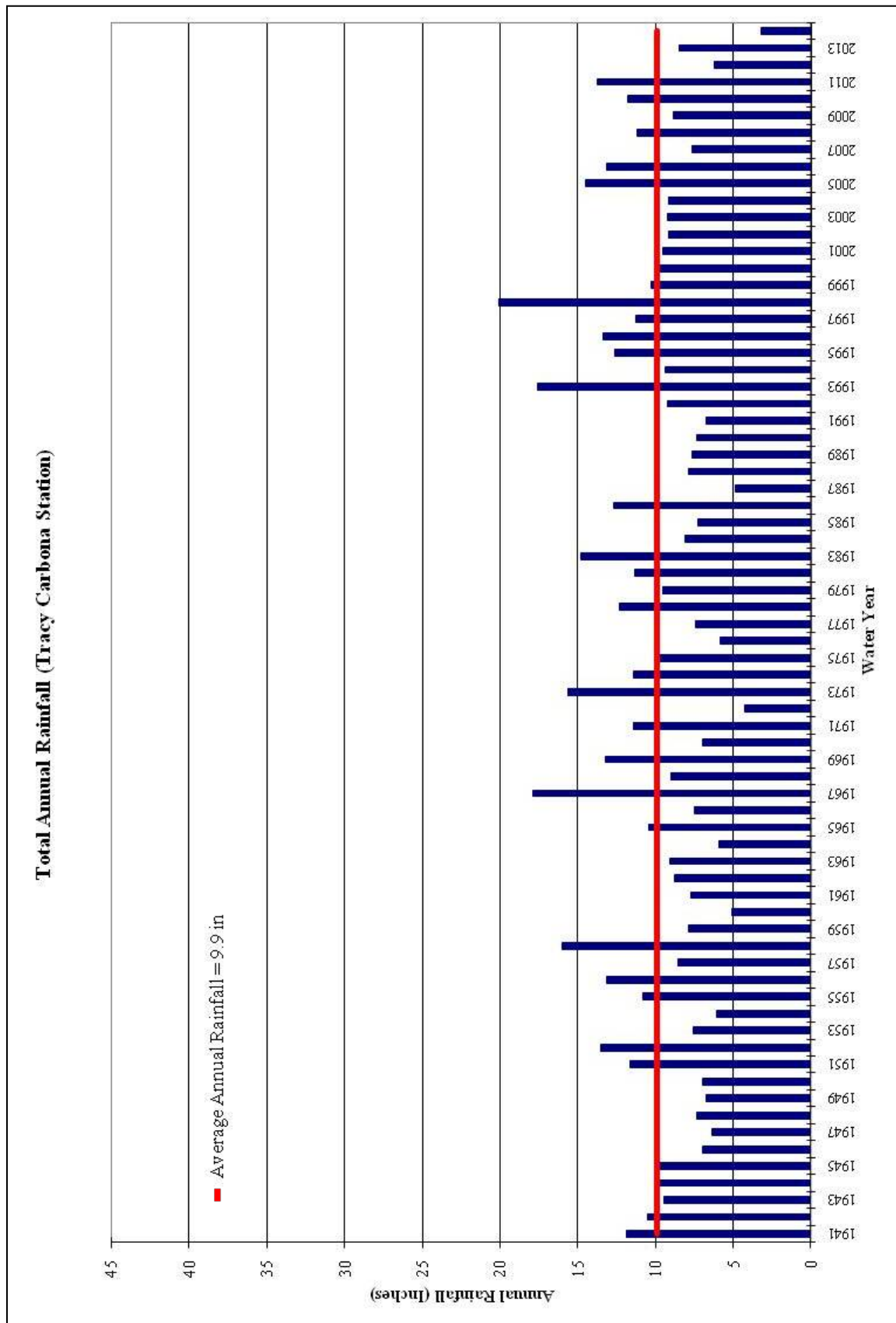


Figure 1-2: Total Annual Rainfall (Tracy Carbona Station)

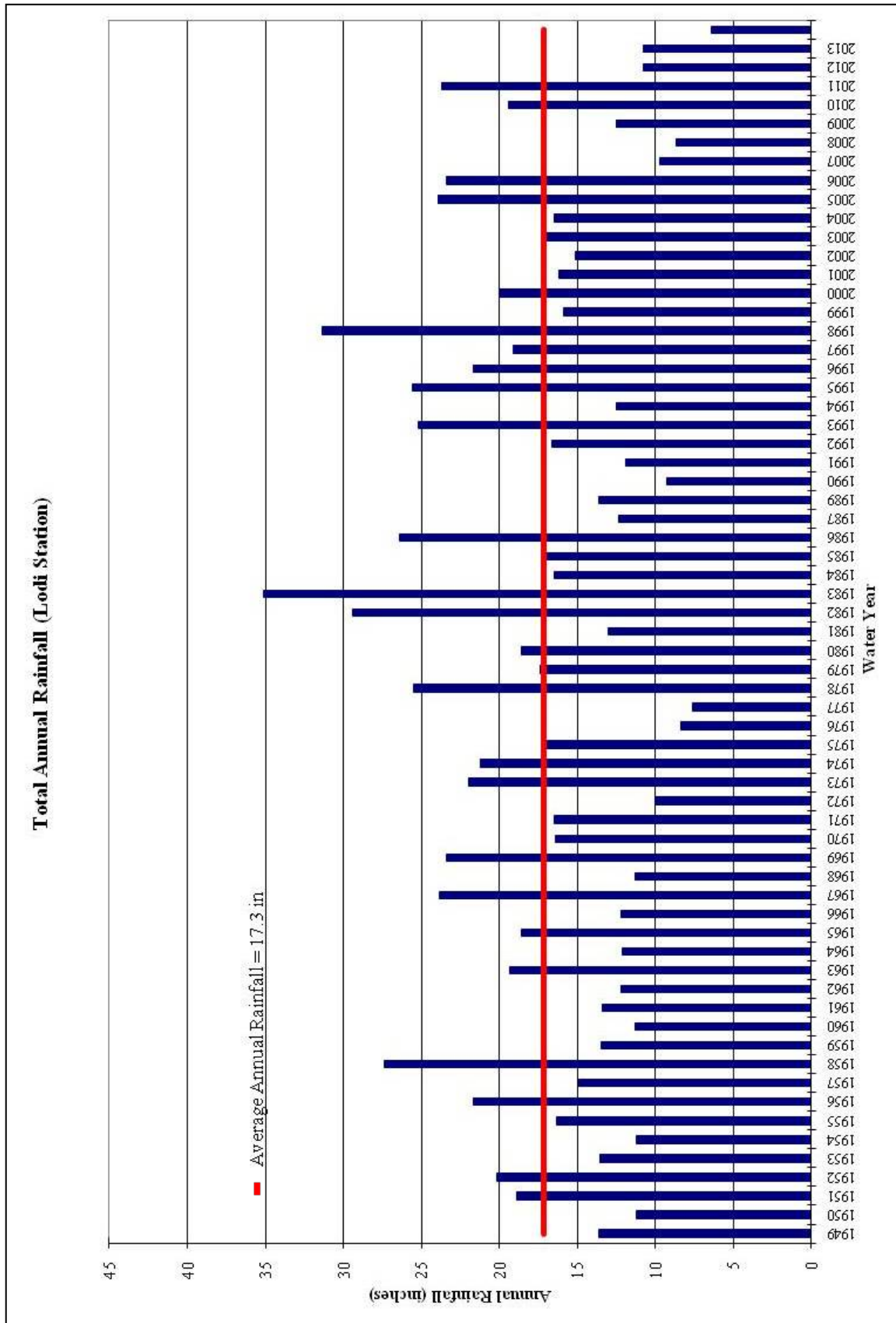


Figure 1-3: Total Annual Rainfall (Lodi Station)

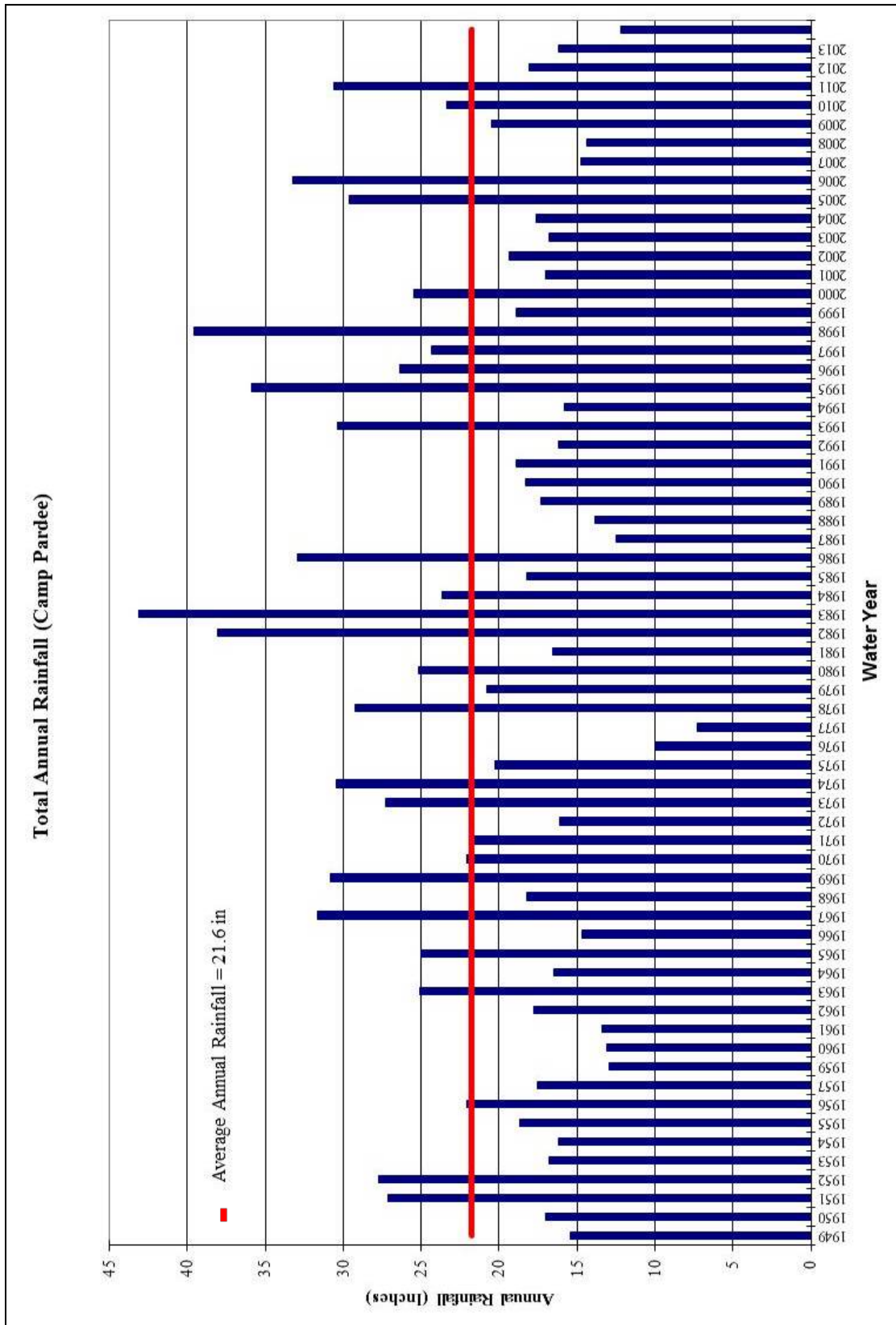


Figure 1-4: Total Annual Rainfall (Camp Pardee)

Monthly Rainfall Distribution

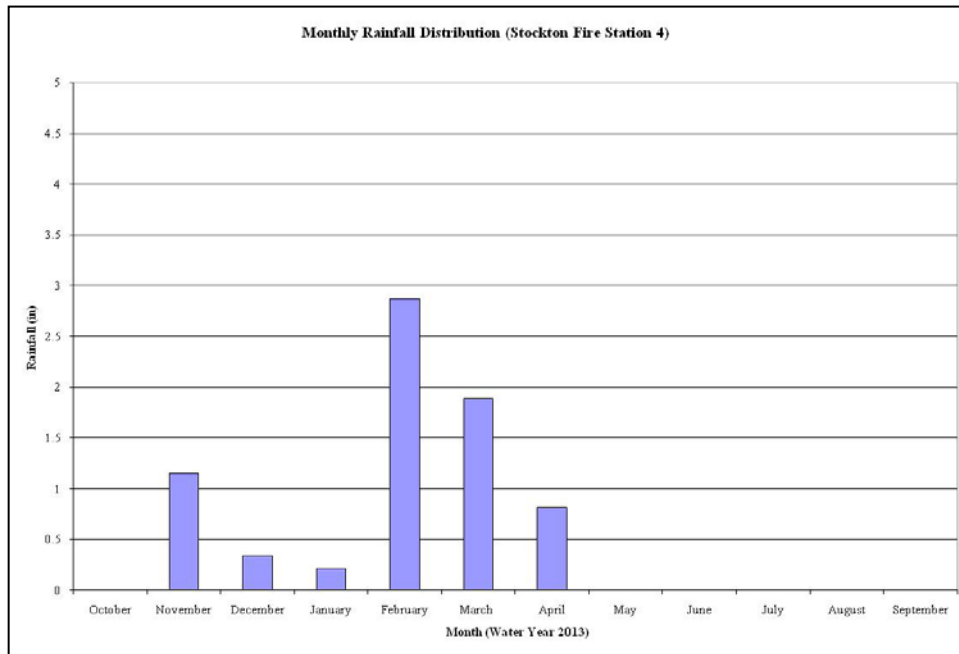


Figure 1-5: Monthly Rainfall Distribution (Stockton Fire Station 4)

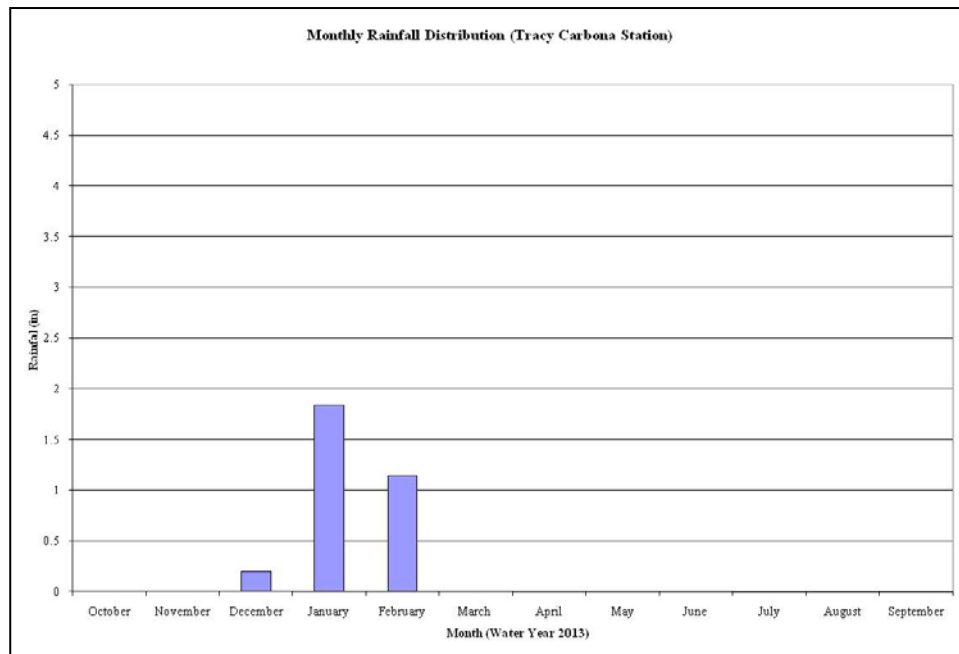


Figure 1-6: Monthly Rainfall Distribution (Tracy Carbona Station)

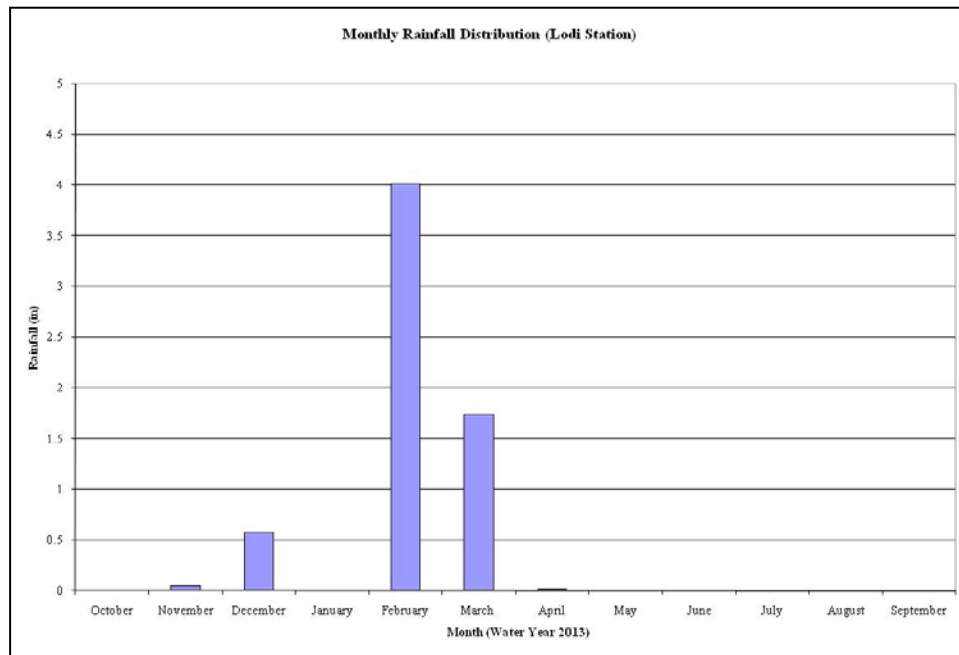


Figure 1-7: Monthly Rainfall Distribution (Lodi Station)

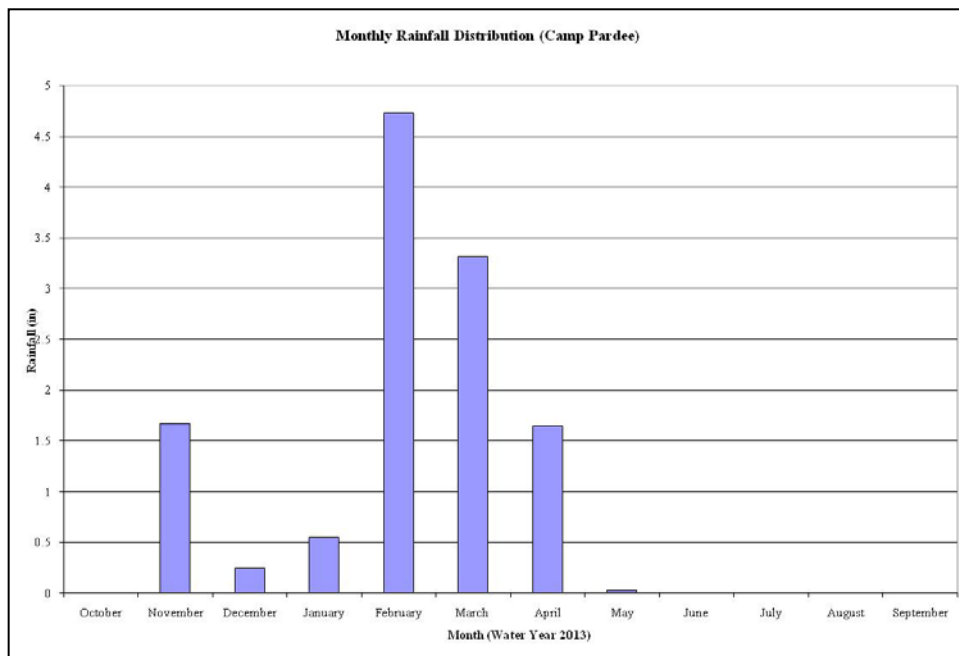


Figure 1-8: Monthly Rainfall Distribution (Camp Pardee)

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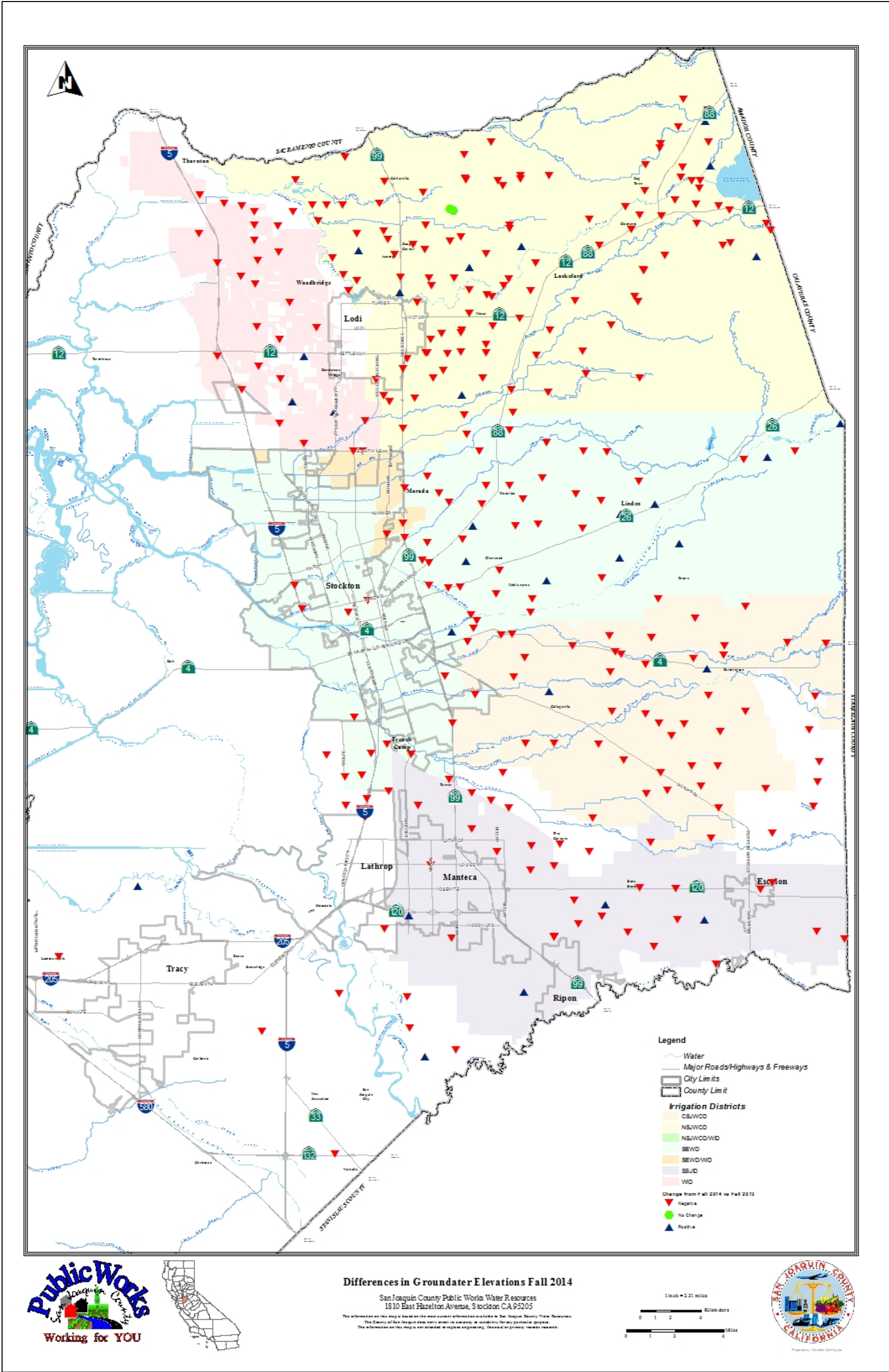


Figure 3-32: Differences in Groundwater Elevations Fall 2014

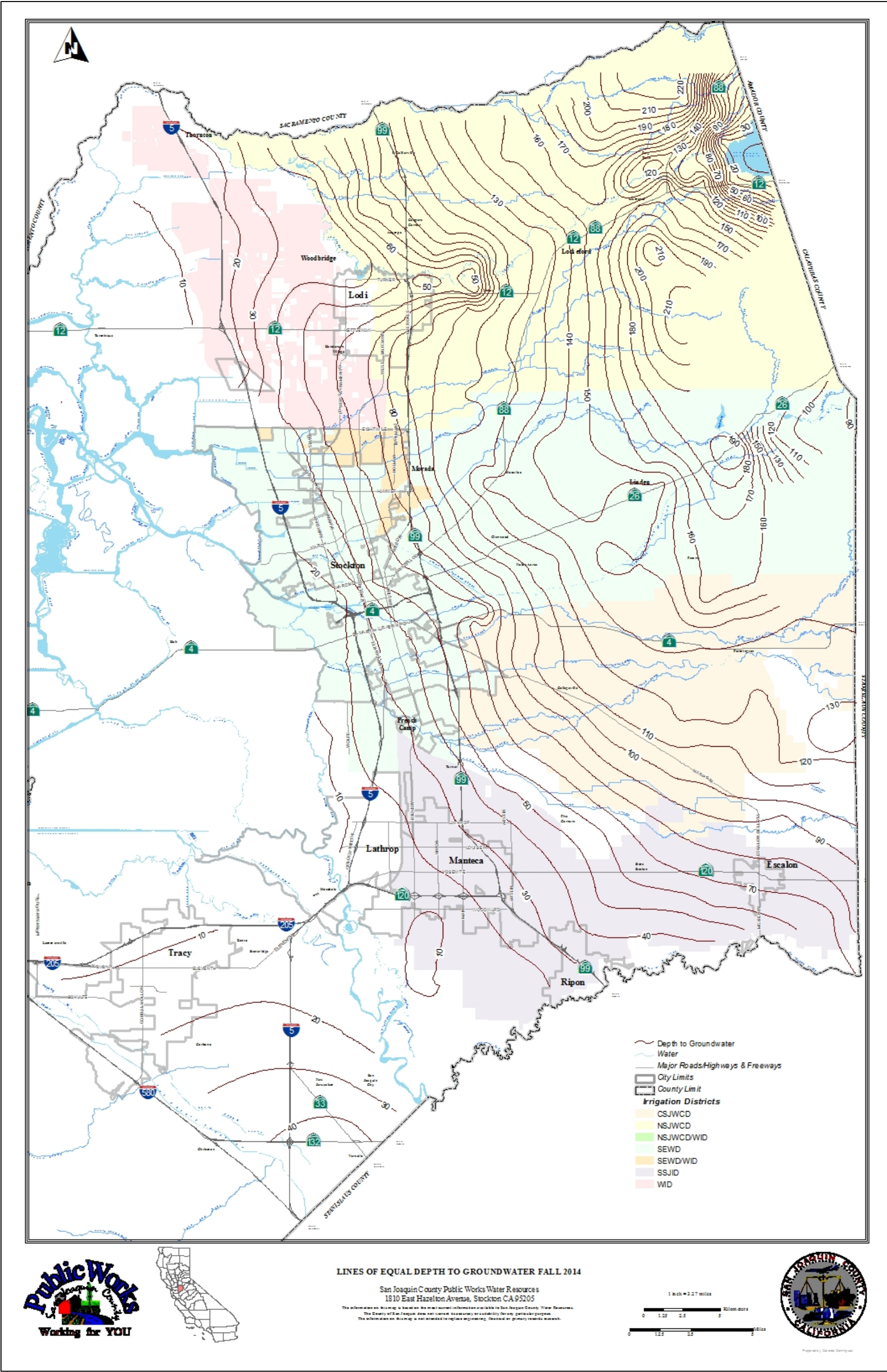


Figure 3-33: Lines of Equal Depth to Groundwater Fall 2014

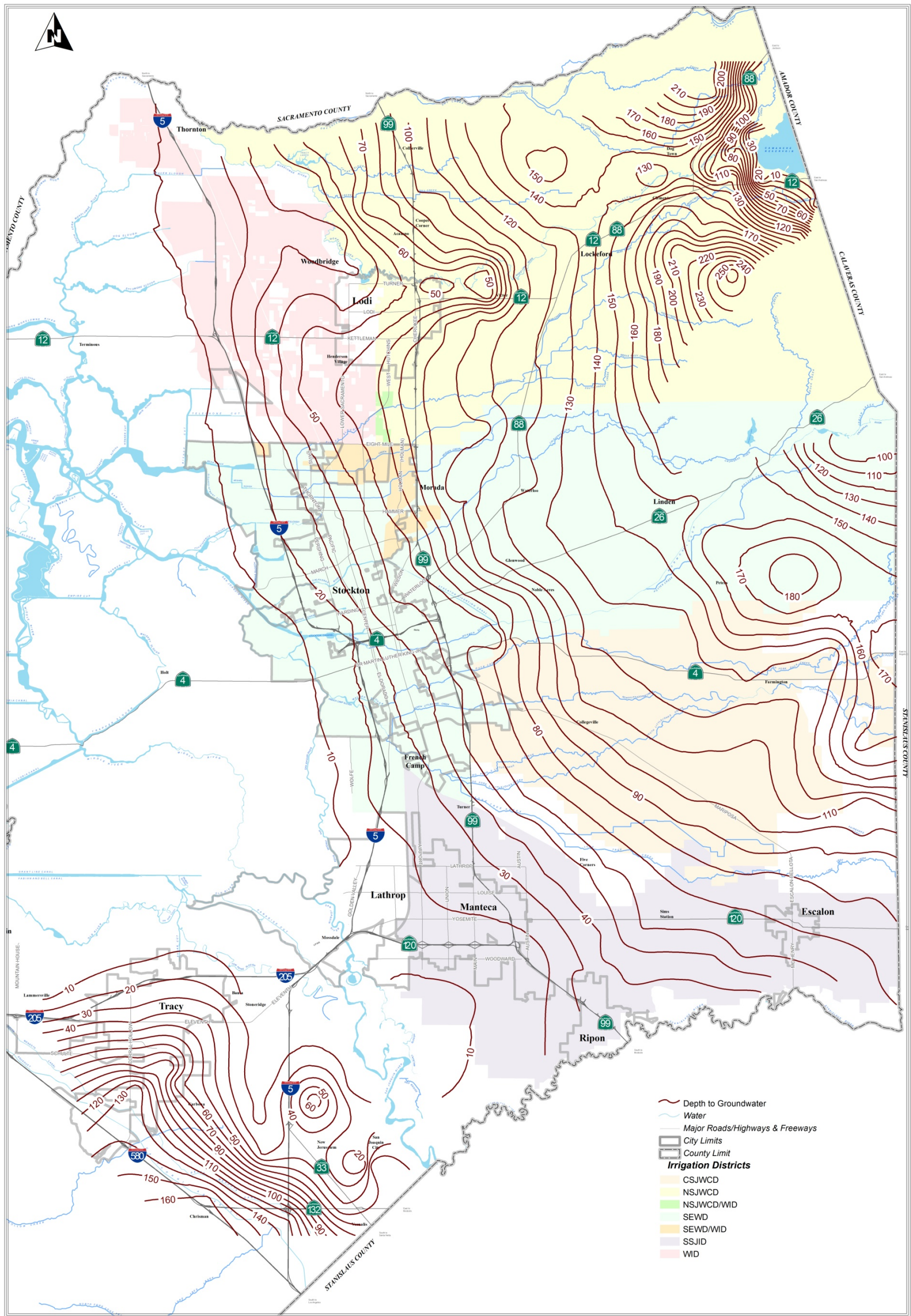


Figure 3-34: Lines of Equal Depth to Groundwater Fall 2013

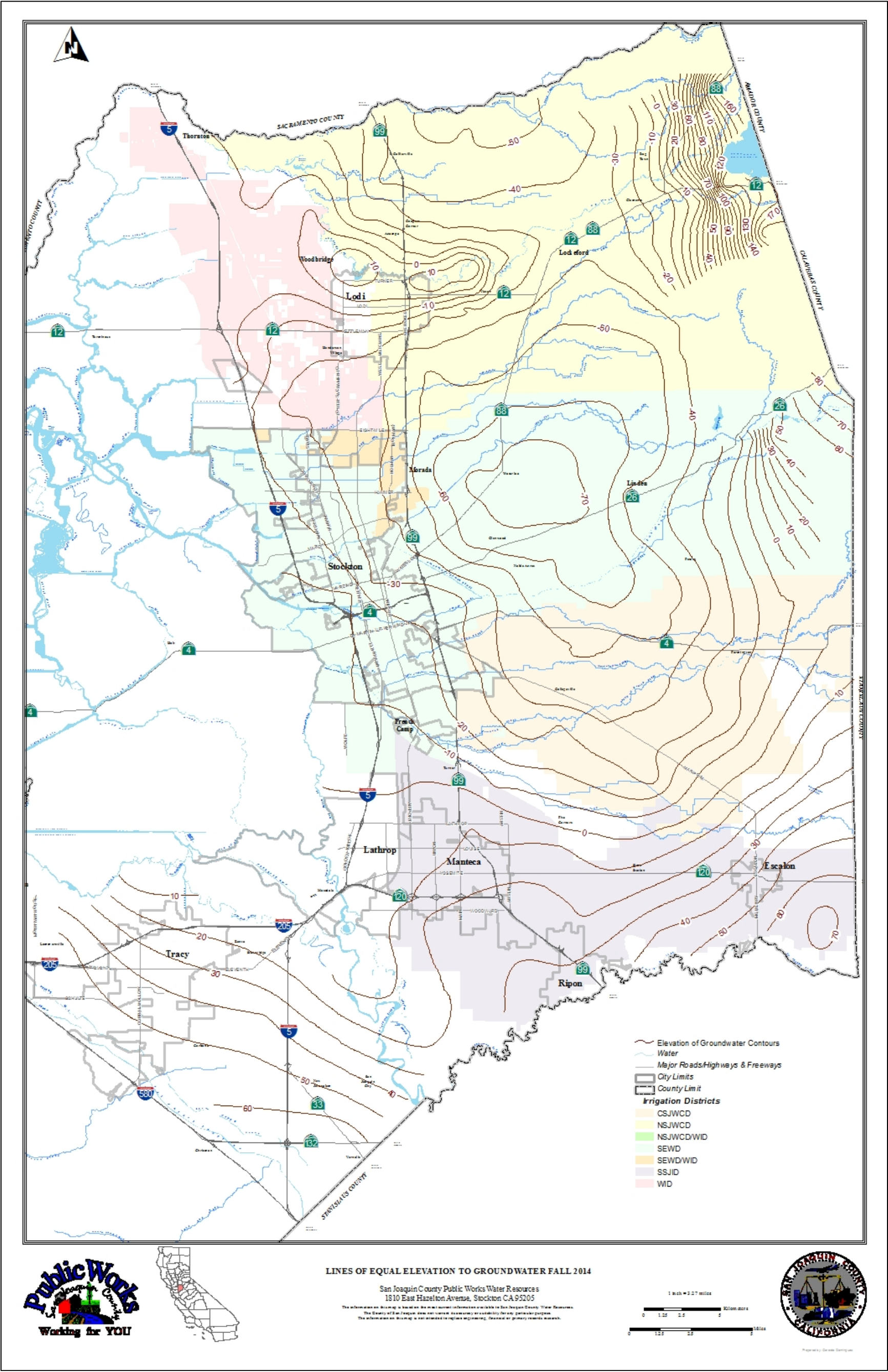


Figure 3-35: Lines of Equal Elevation of Groundwater Fall 2014

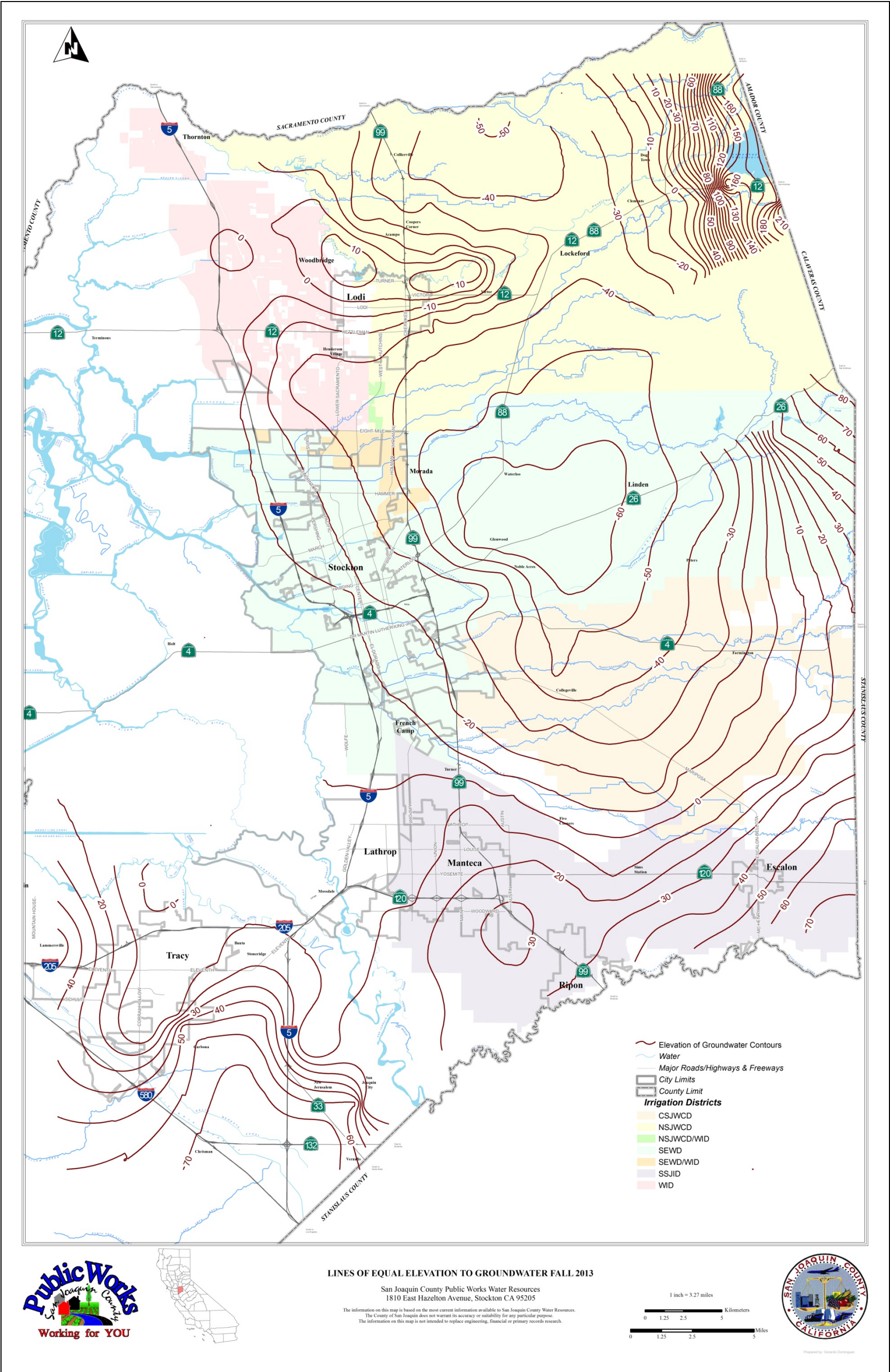


Figure 3-36: Lines of Equal Elevation of Groundwater Fall 2014