Groundwater Report

Fall 2007

San Joaquin County
Flood Control and Water Conservation District

San Joaquin County
Flood Control and Water Conservation District

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Copies of the Fall 2007 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

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 of the individual well owners, who give us access to their wells and in some cases some of their time.

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Table of Contents

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San Joaquin County Flood Control and Water Conservation District
Fall 2007 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 300 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 month. Therefore, groundwater quality data will be published only in the fall report. The groundwater depth and elevation data will be published in both the spring and fall.

Saline intrusion from the west is a continuing concern, affecting the quality of groundwater in the 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 in the county (Figure 2-1). 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 X 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 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 2007. The Camp Pardee station has data available from 1949 to 2007.

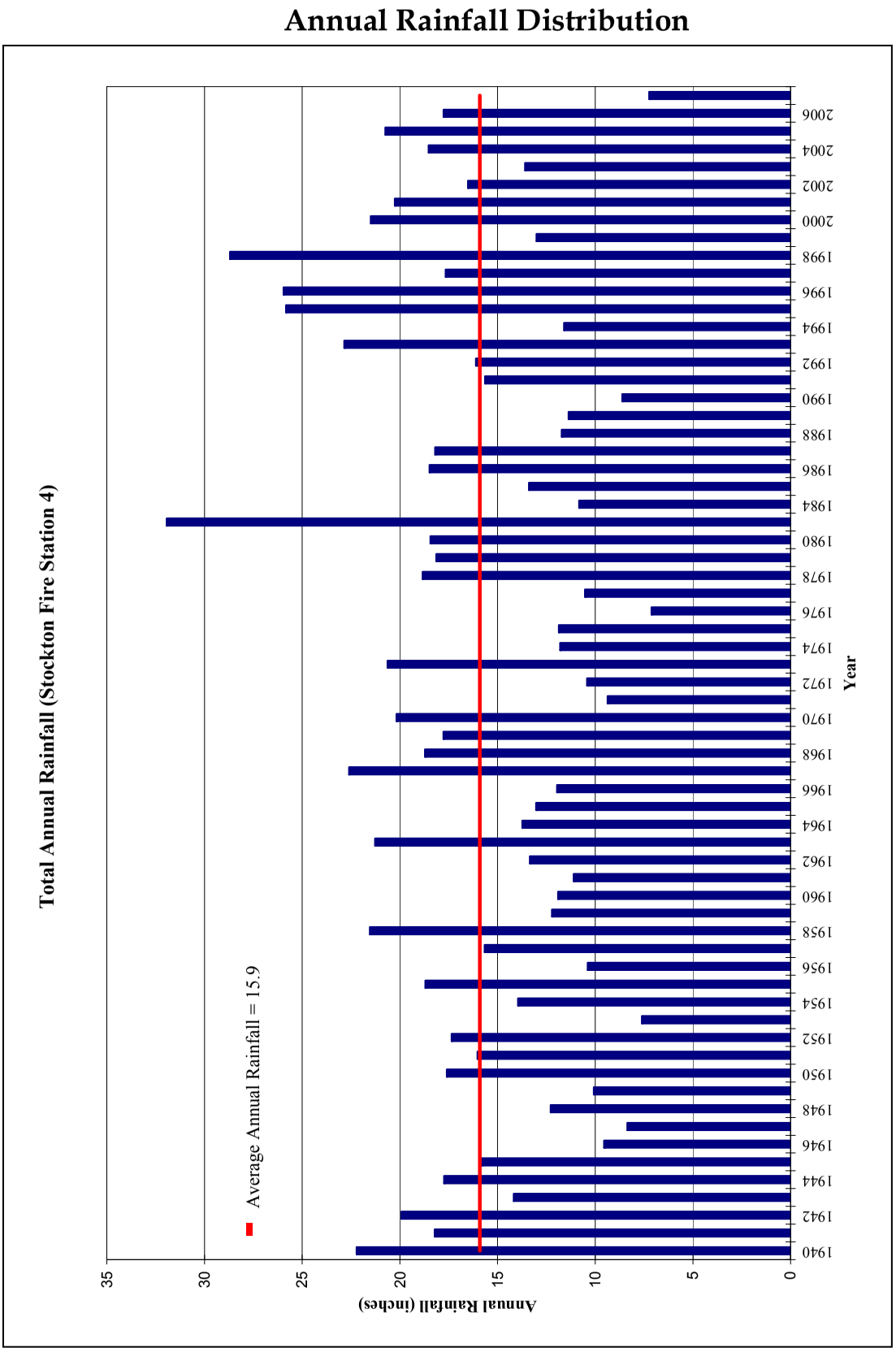

Figure 1-1: Total Annual Rainfall (Stockton Fire Station 4)

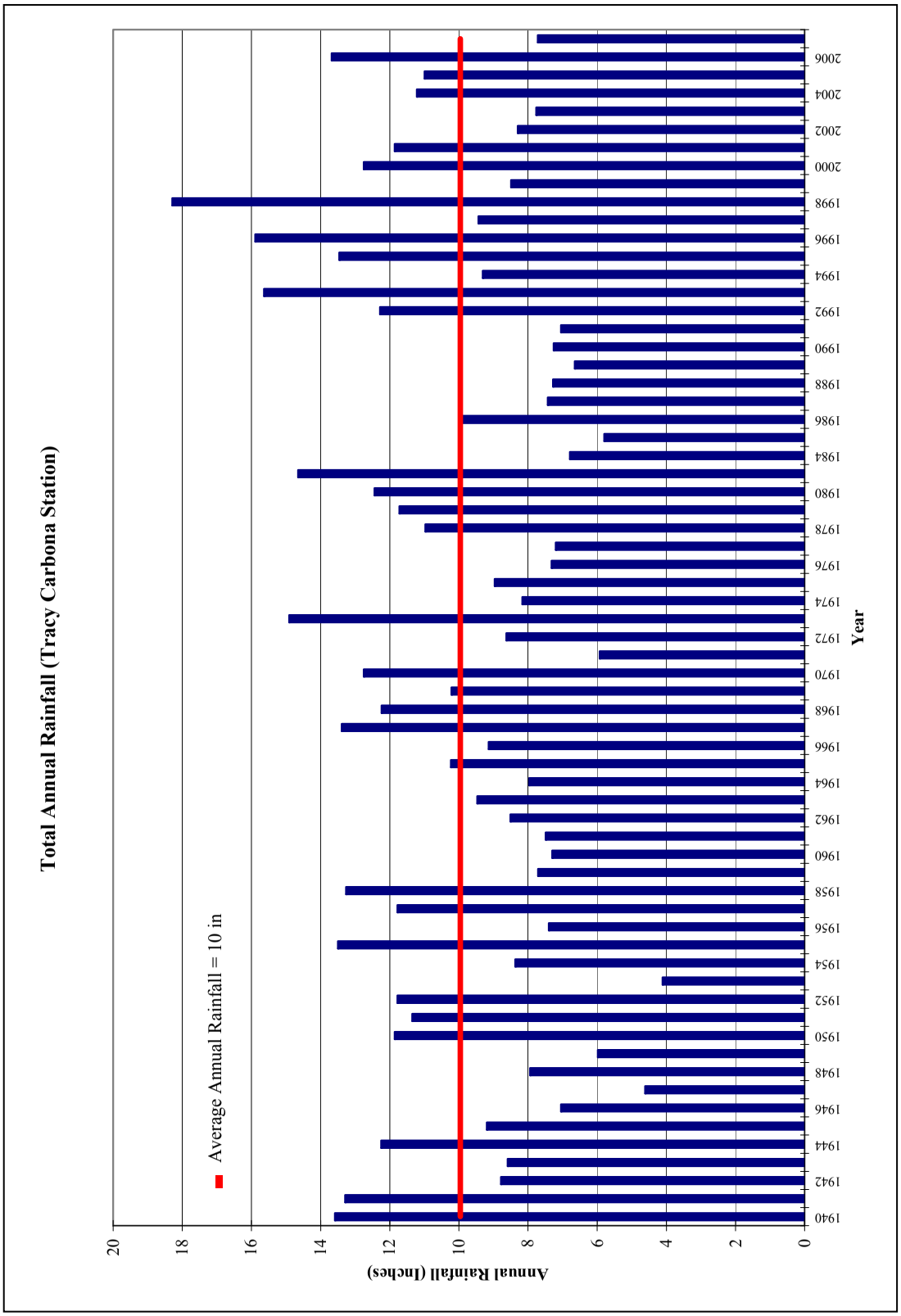

Figure 1-2: Total Annual Rainfall (Tracy Carbona Station)

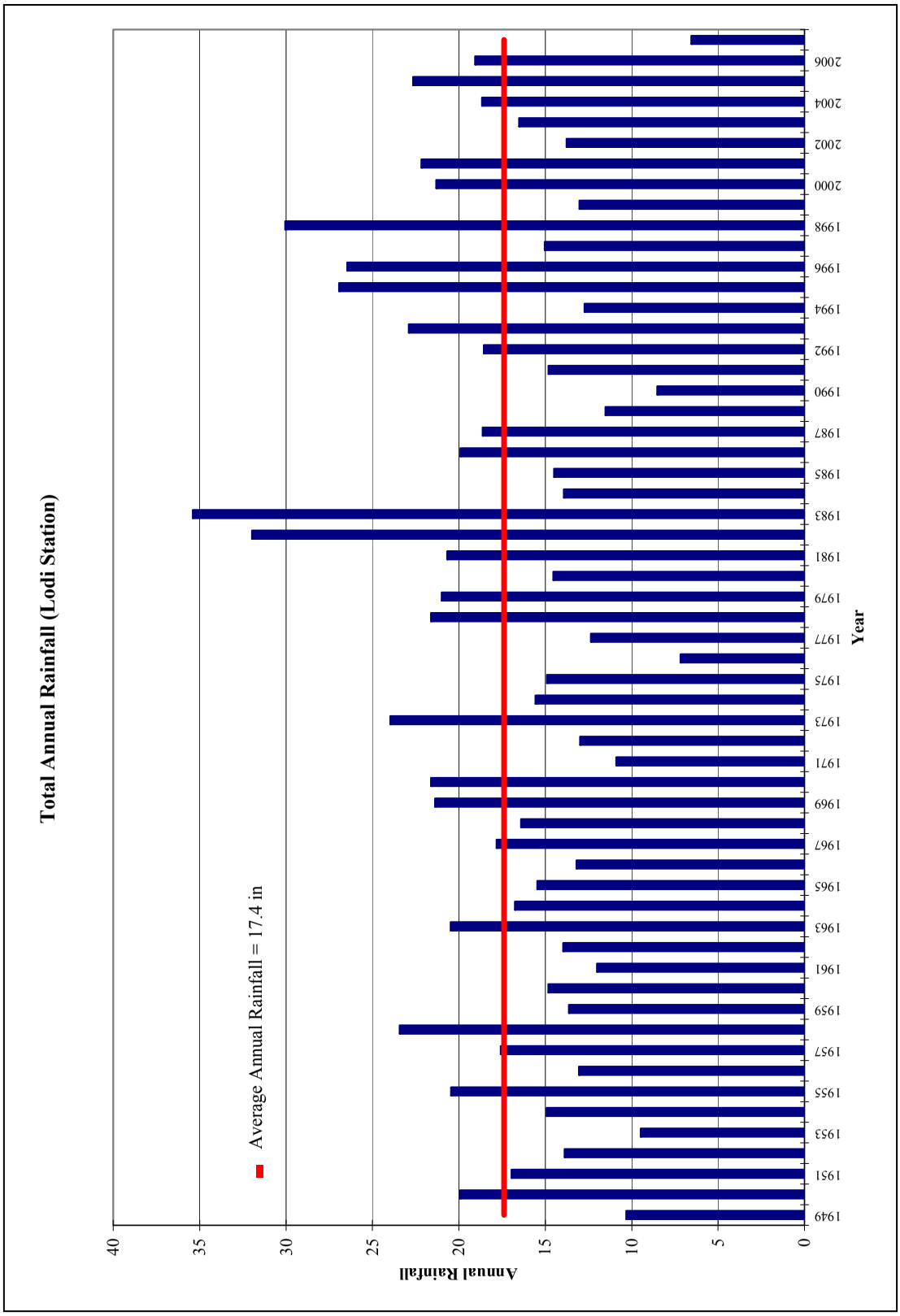

Figure 1-3: Total Annual Rainfall (Lodi Station)

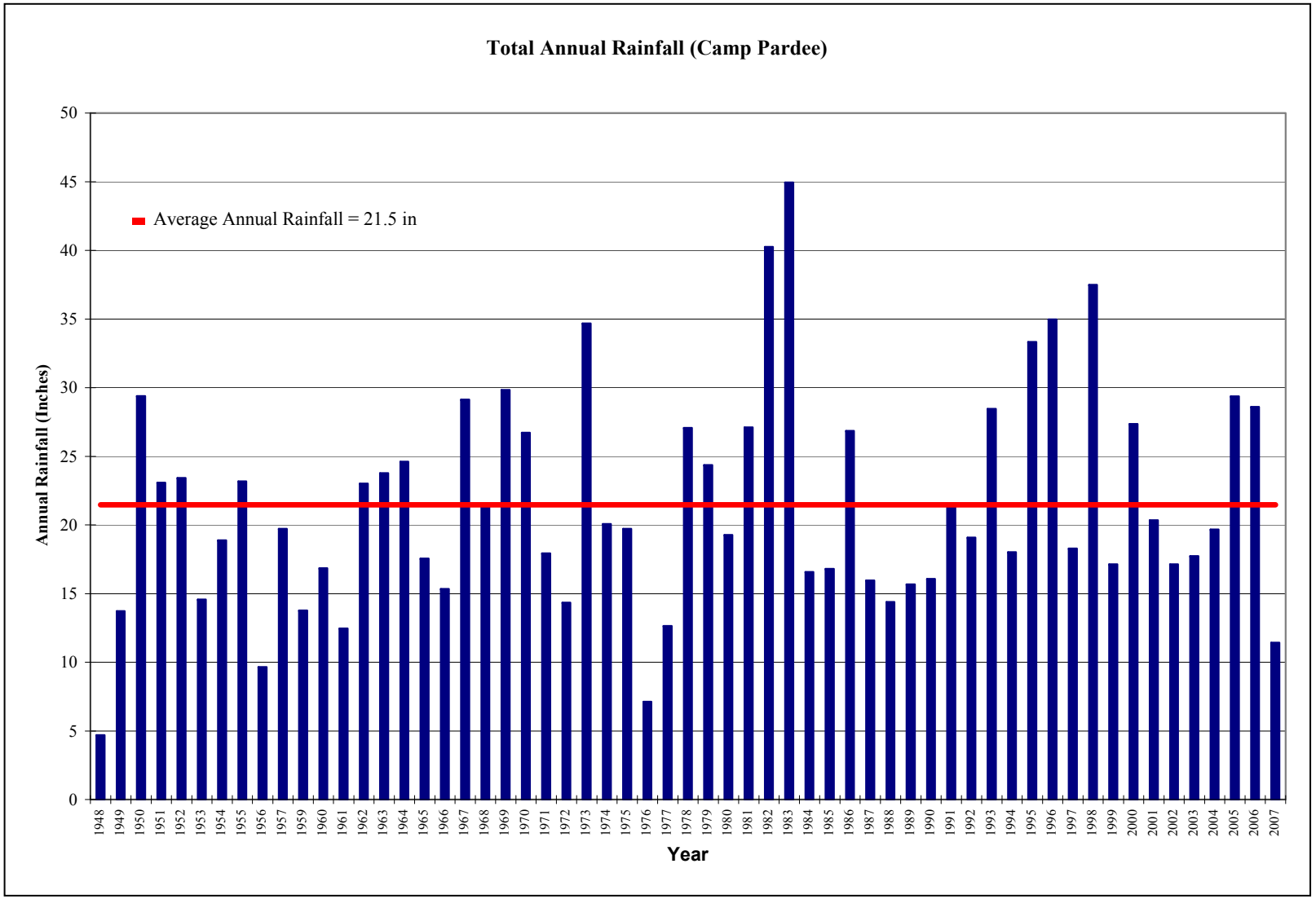

Figure 1-4: Total Annual Rainfall (Camp Pardee)

Monthly Rainfall Distribution

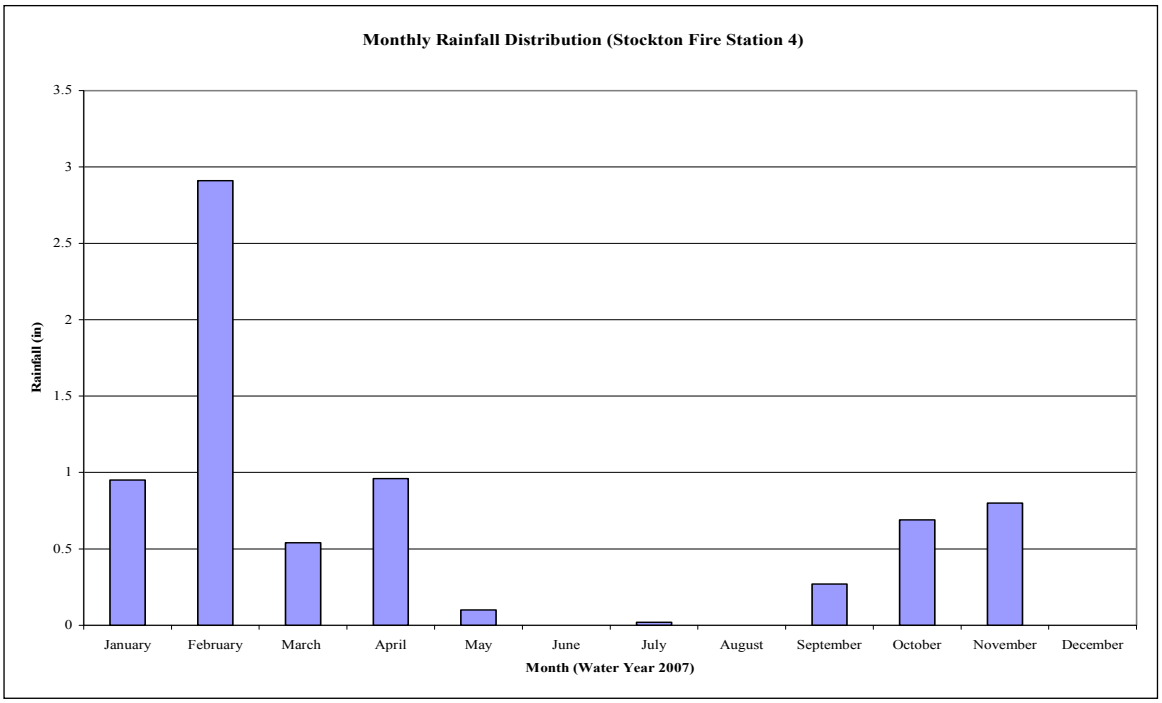

Figure 1-5: Monthly Rainfall Distribution (Stockton Fire Station 4)

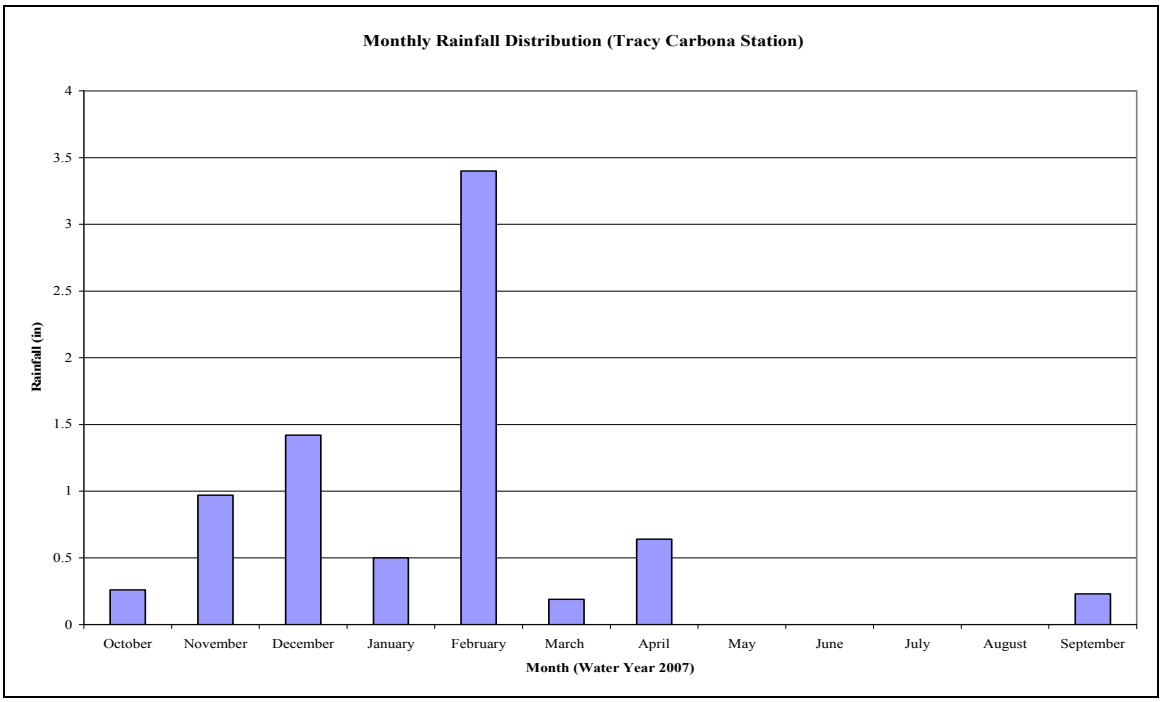

Figure 1-6: Monthly Rainfall Distribution (Tracy Carbona Station)

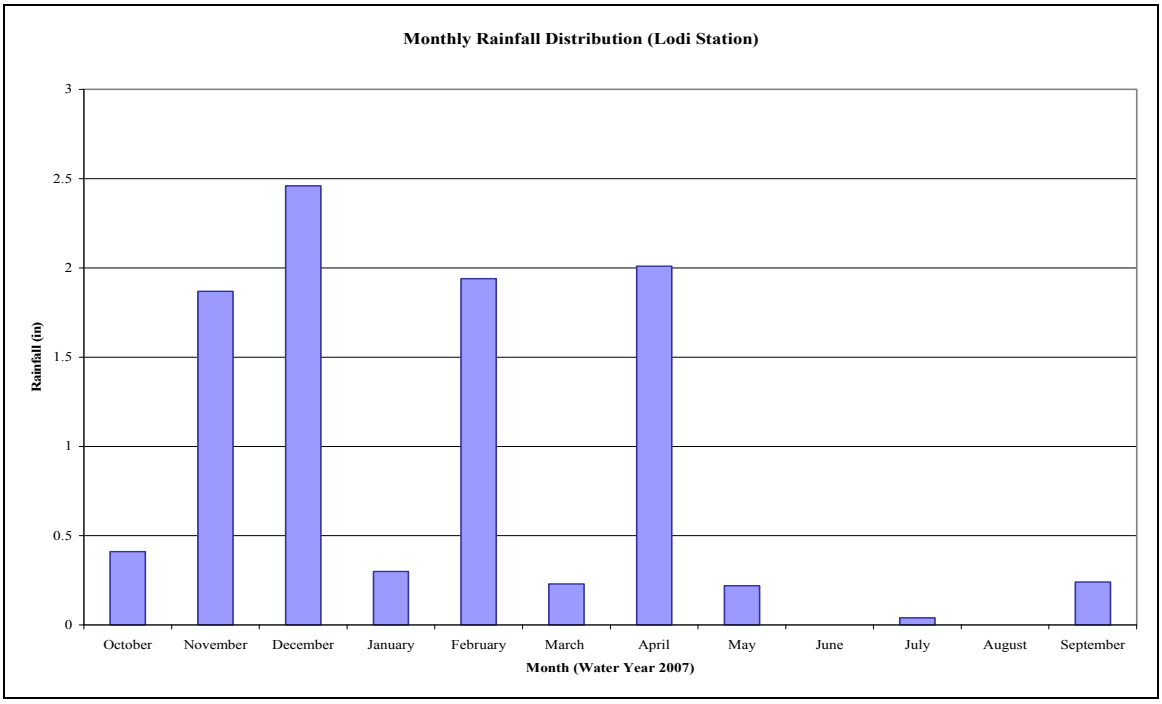

Figure 1-7: Monthly Rainfall Distribution (Lodi Station)

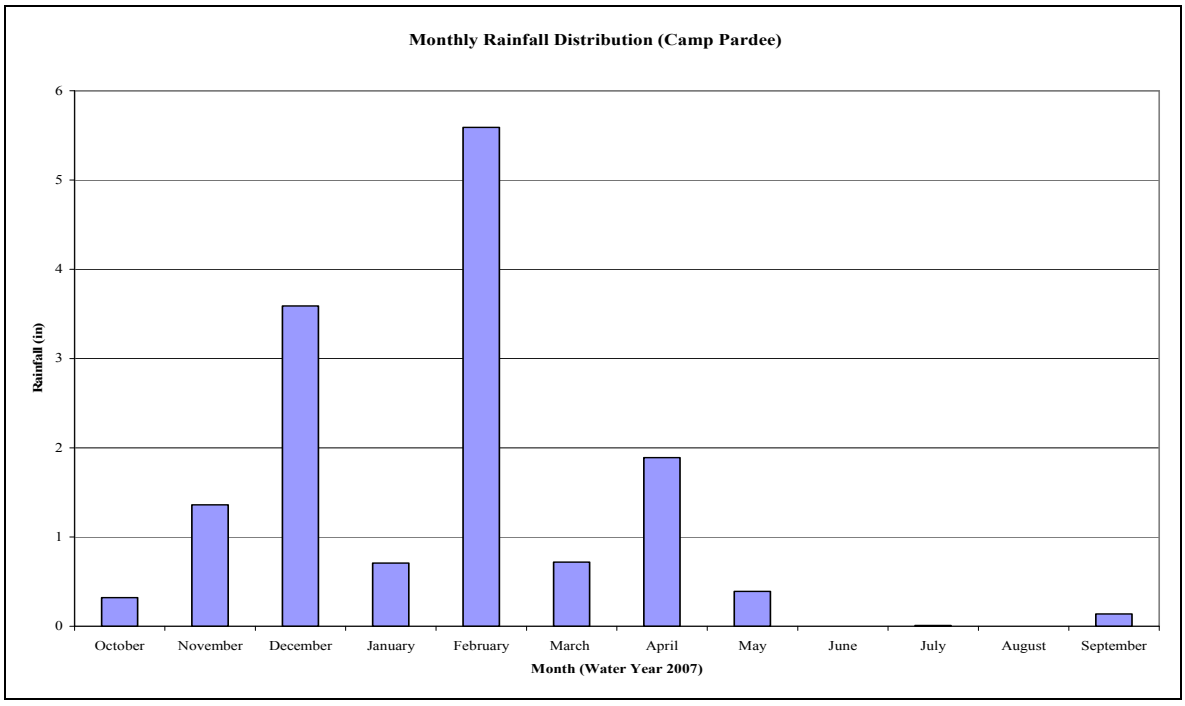

Figure 1-8: Monthly Rainfall Distribution (Camp Pardee)

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Section 2 – Groundwater Quality Monitoring

Summary of Groundwater Quality Results

The information contained in the Fall 2007 Groundwater Report is summarized as follows:

North San Joaquin County – One well was tested for chloride and TDS. There was no available data for the past four years; however, the last measurement taken in 2003 indicated there was an increase in both chloride and TDS.

Since the groundwater quality monitoring program has been in effect, chloride and TDS have increased over the years from 1977 to 2007 for this well.

North Stockton – Six wells were tested for chloride and TDS in North Stockton. Four wells experienced an increase in chloride and two wells experienced a decrease in chloride since they were all last measured in 2003.

Since the groundwater quality monitoring program has been in effect, chloride has remained constant in five of the wells tested. Three wells show a decrease in TDS since 1977. Two wells show an increase in TDS since 1977. No interpolation of the trend can be made for well 17M1 because only three data points were available for this well.

Central Stockton – One well was tested for chloride and TDS in Central Stockton. Data for the well was available from last year (2006), which shows small increases in concentration of both chloride and TDS.

Since the groundwater quality monitoring program has been in effect, chloride has increased over the years from 1977 to 2007 for this well. In the same time period, TDS have slightly lowered in this well.

County Hospital Area - Four wells were tested near the San Joaquin County Hospital. All four wells have not been tested since 2004. However, in 2007, testing of the four wells resumed and the data obtained shows there has been major increases in TDS in three wells and a decrease in TDS in one well. All four wells s increased in chloride concentration.

Since the groundwater quality monitoring program has been in effect, chloride has increased over the years from 1977 to 2007 for all wells. Well 27R2 and well 34A3 showed increased TDS over the thirty year time frame. The other two wells in this area have maintained the same relative TDS concentrations over the years.

Lathrop – Three wells were sampled in Lathrop. Two wells showed a slight increase in TDS and chloride. One well showed a minor decrease in both TDS and chloride.

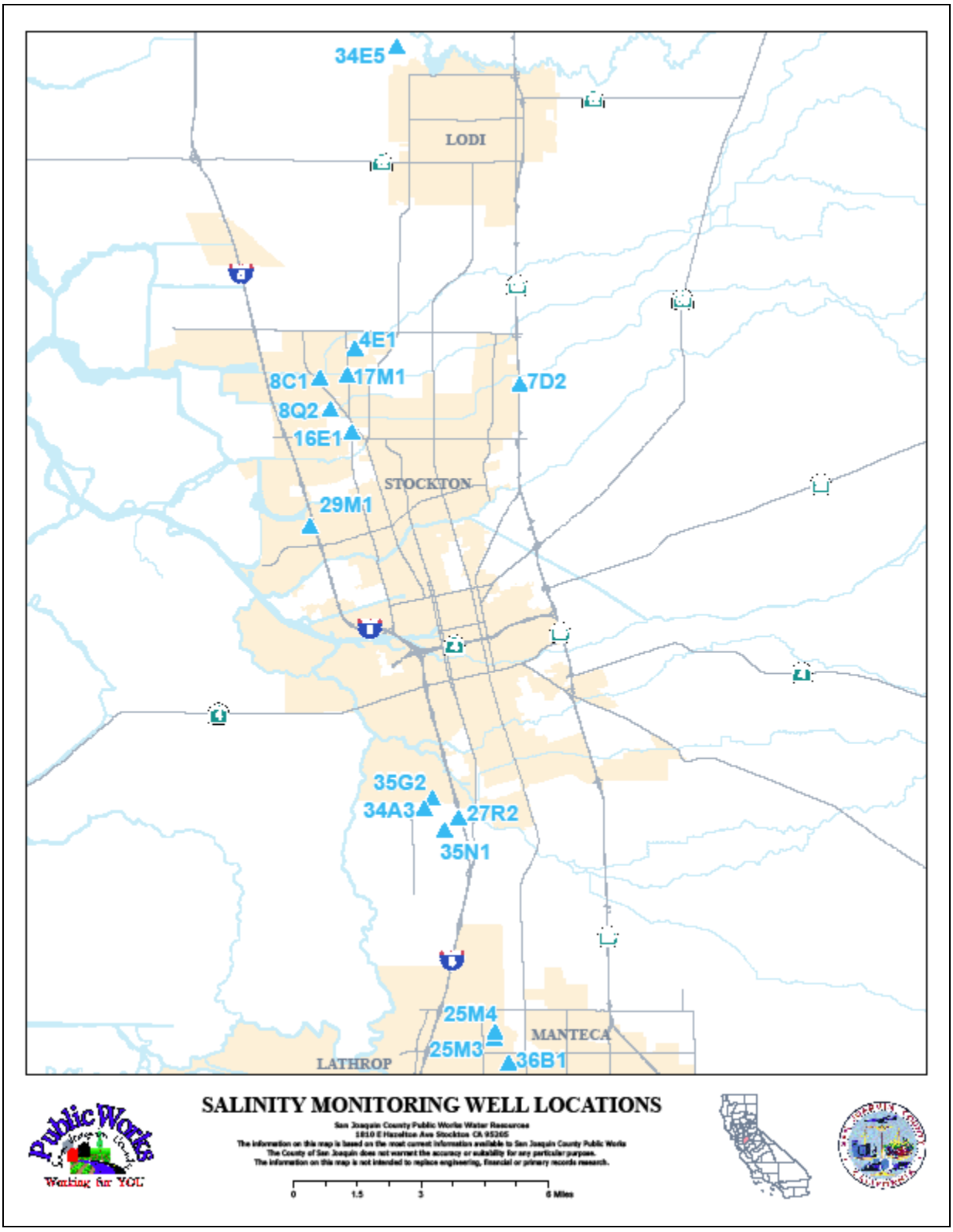

Figure 2-1: Salinity Monitoring Well Locations

Table 2-1: Groundwater Quality Mineral Analysis Fall 2007

Well	Chloride ppm	EC mmho	TDS* ppm
27R2	1047	3.774	2415
34A3	1888	6.336	4055
35G2	803	2.872	1838
35N1	519	1.645	1053
25M3	108	0.658	421
25M4	50	0.486	311
36B1	28	0.535	342
4E1	33	0.519	332
8C1	21	0.492	315
8Q2	96	0.931	596
16E1	55	0.89	570
17M1	18	0.29	186
29M1	76	0.514	329
7D2	8	0.388	248
34E5	28	0.884	566

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

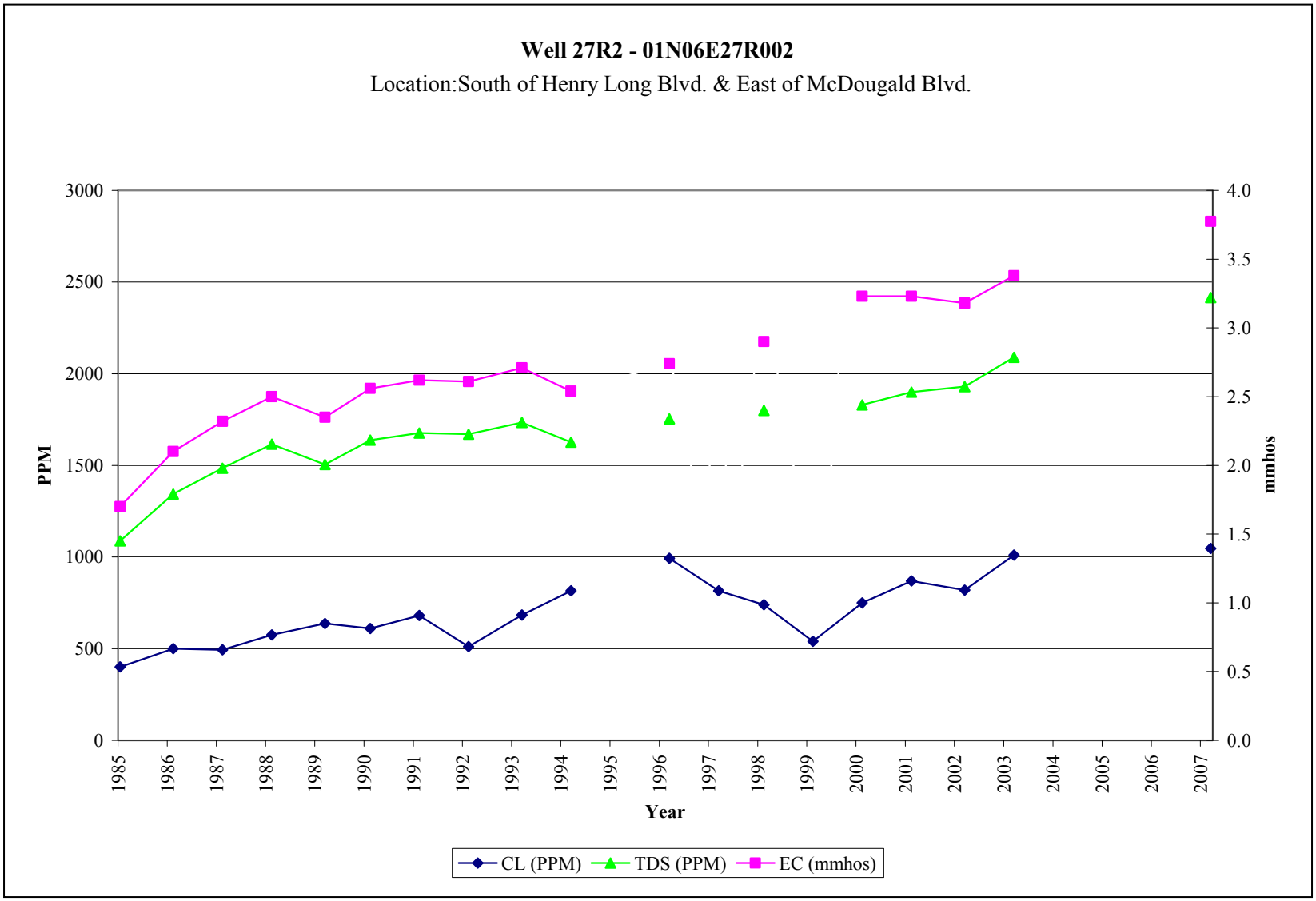

Figure 2-2: Quality Comparison Graph Well 27R2

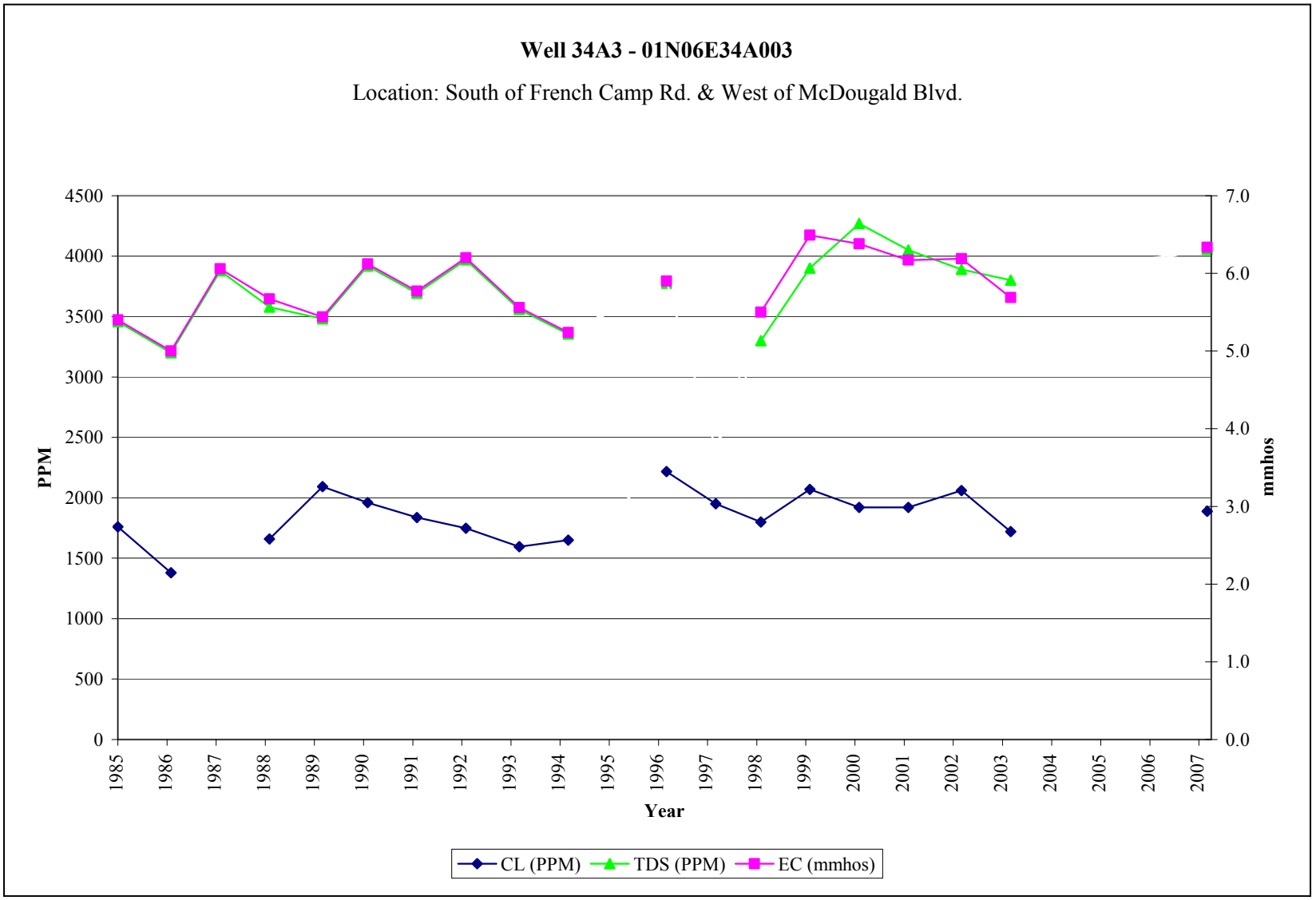

Figure 2-3: Quality Comparison Graph Well 34A3

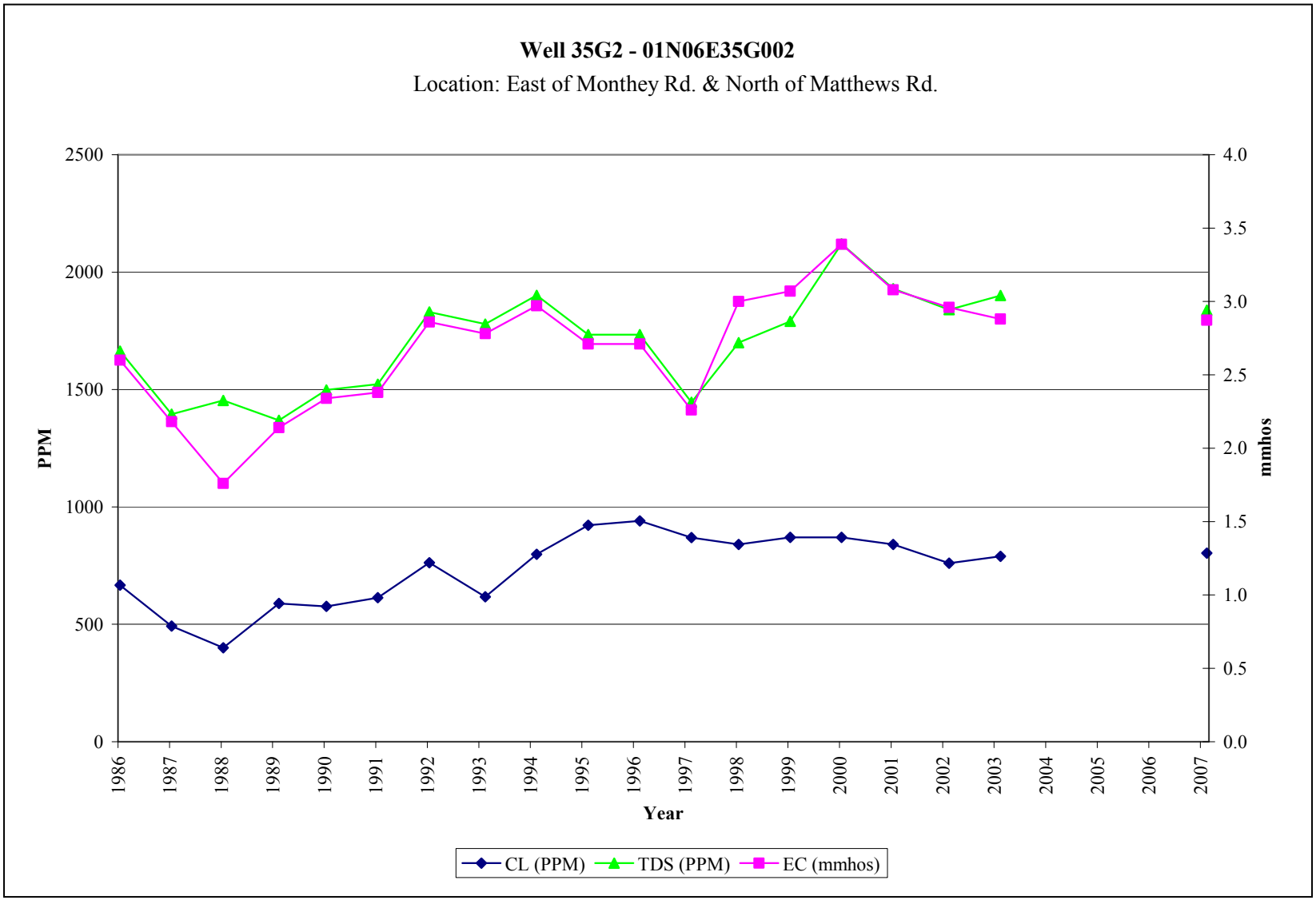

Figure 2-4: Quality Comparison Graph Well 35G2

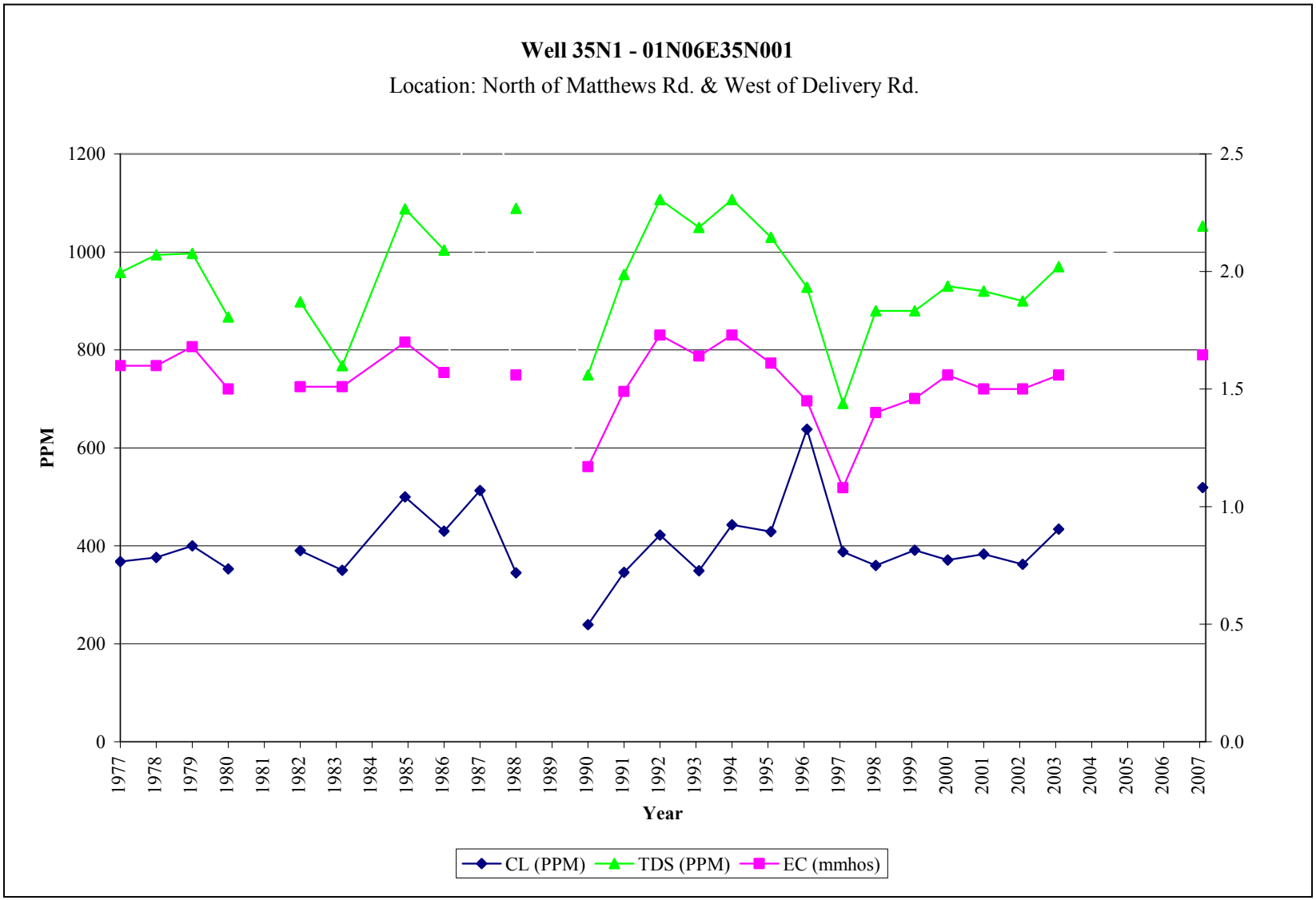

Figure 2-5: Quality Comparison Graph Well 35N1

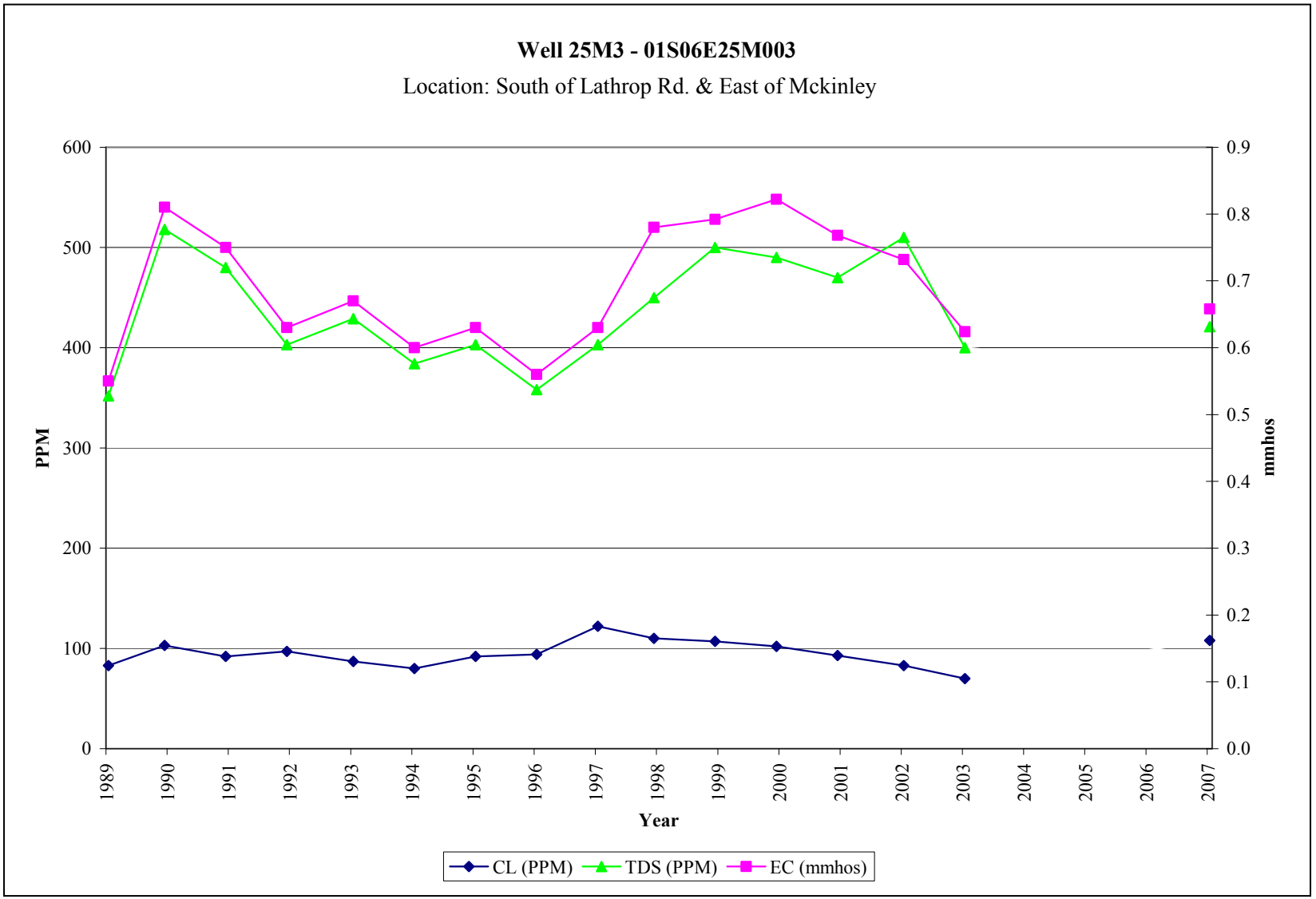

Figure 2-6: Quality Comparison Graph Well 25M3

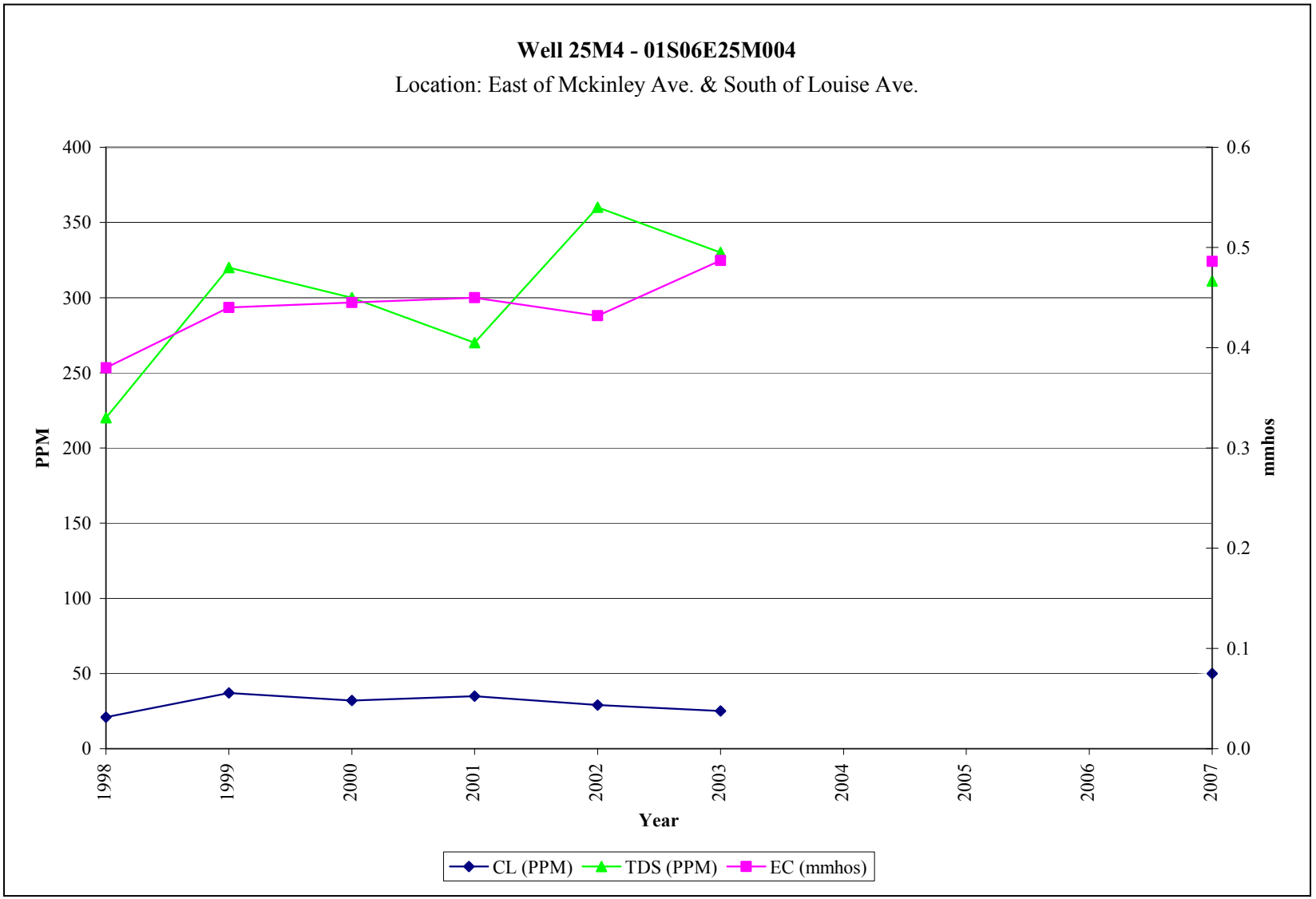

Figure 2-7: Quality Comparison Graph Well 25M4

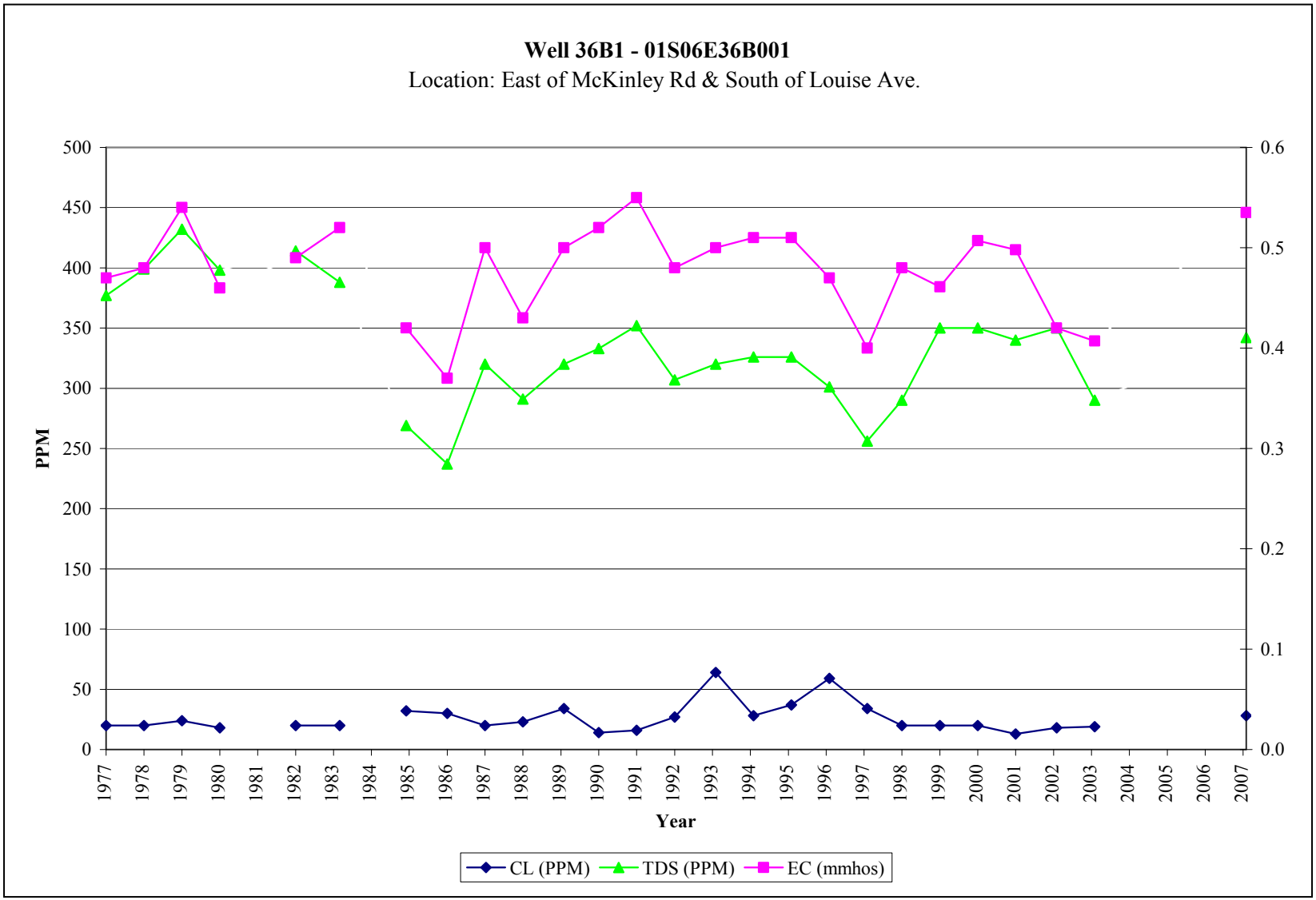

Figure 2-8: Quality Comparison Graph Well 36B1

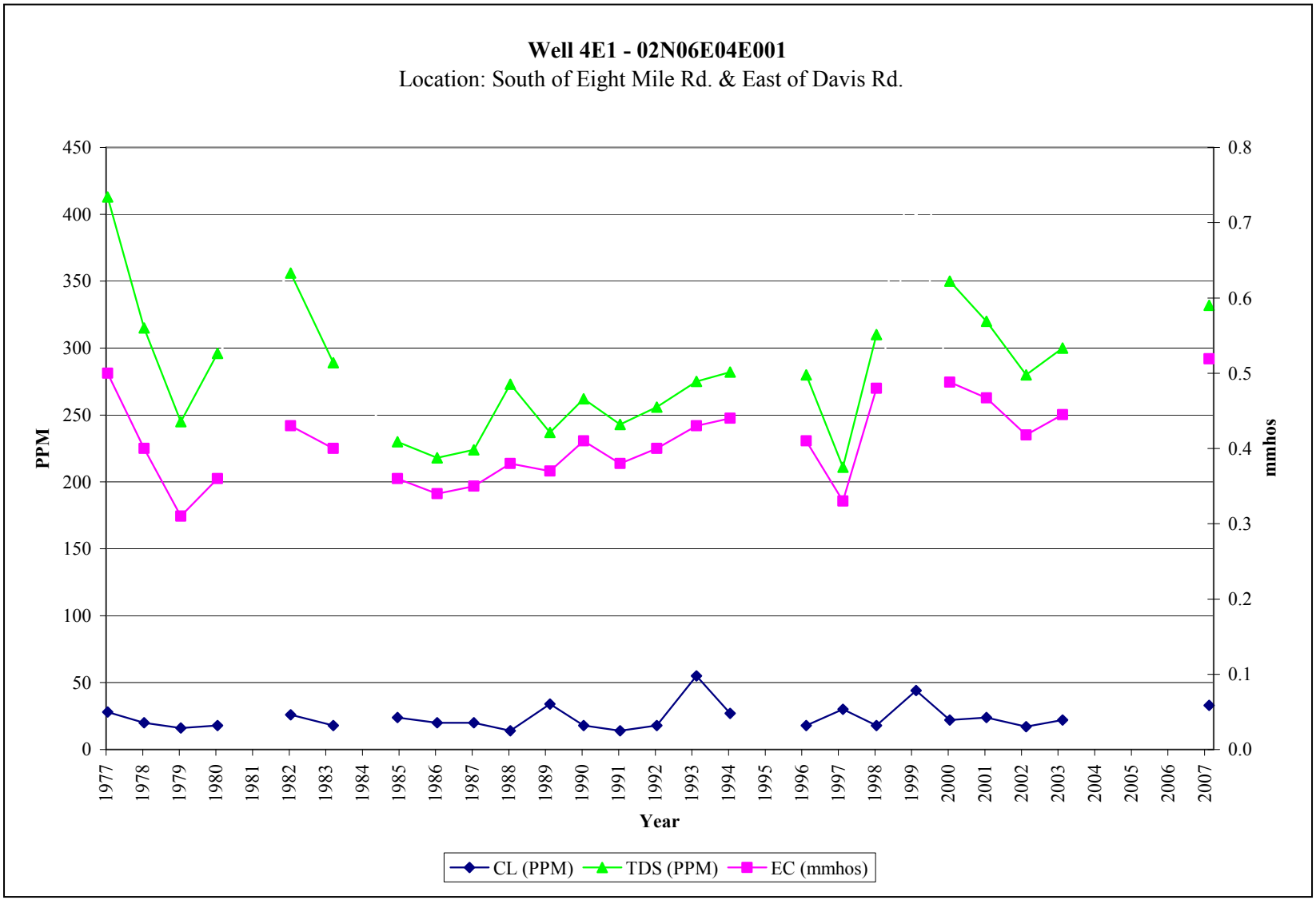

Figure 2-9: Quality Comparison Graph Well 4E1

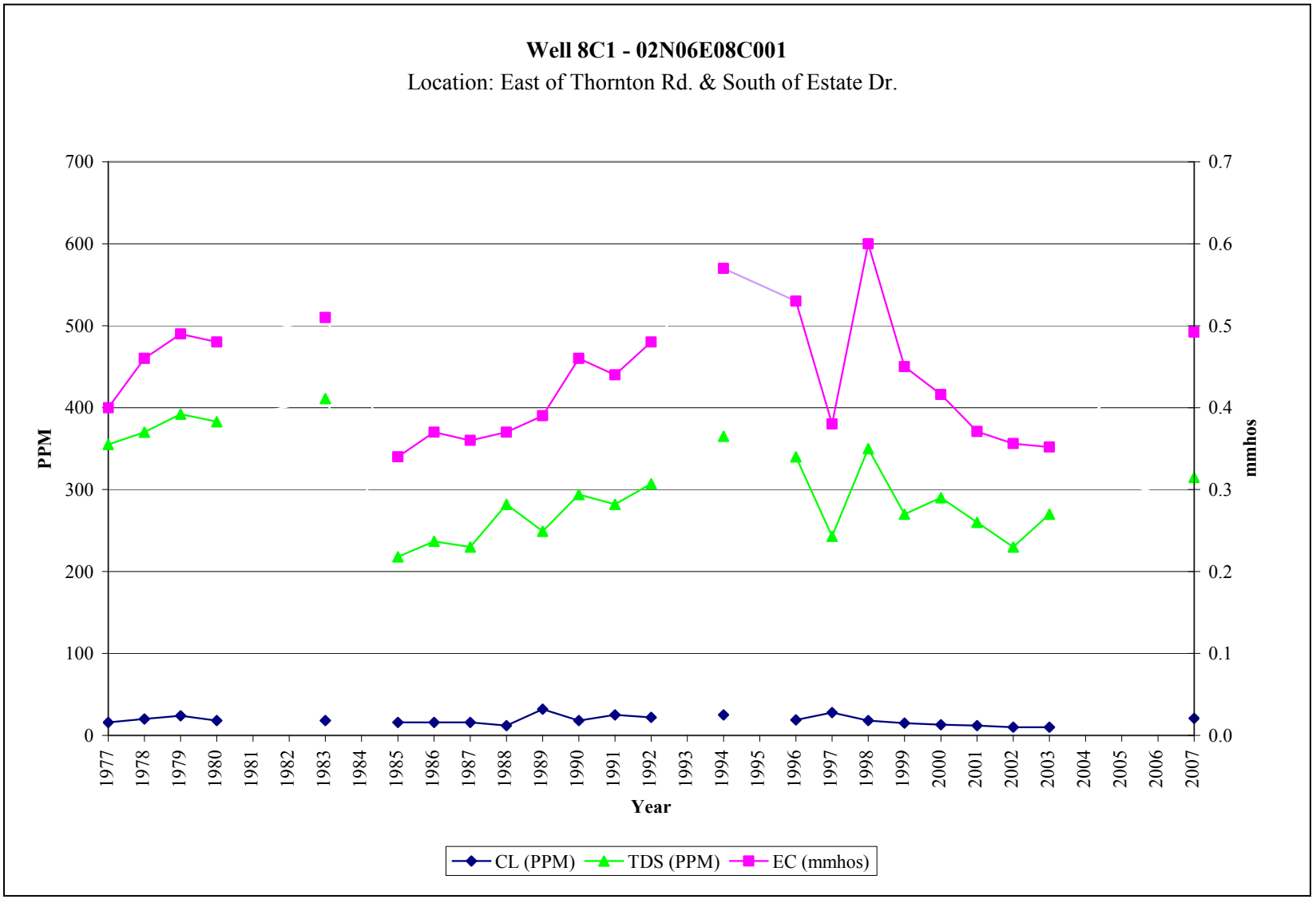

Figure 2-10: Quality Comparison Graph Well 8C1

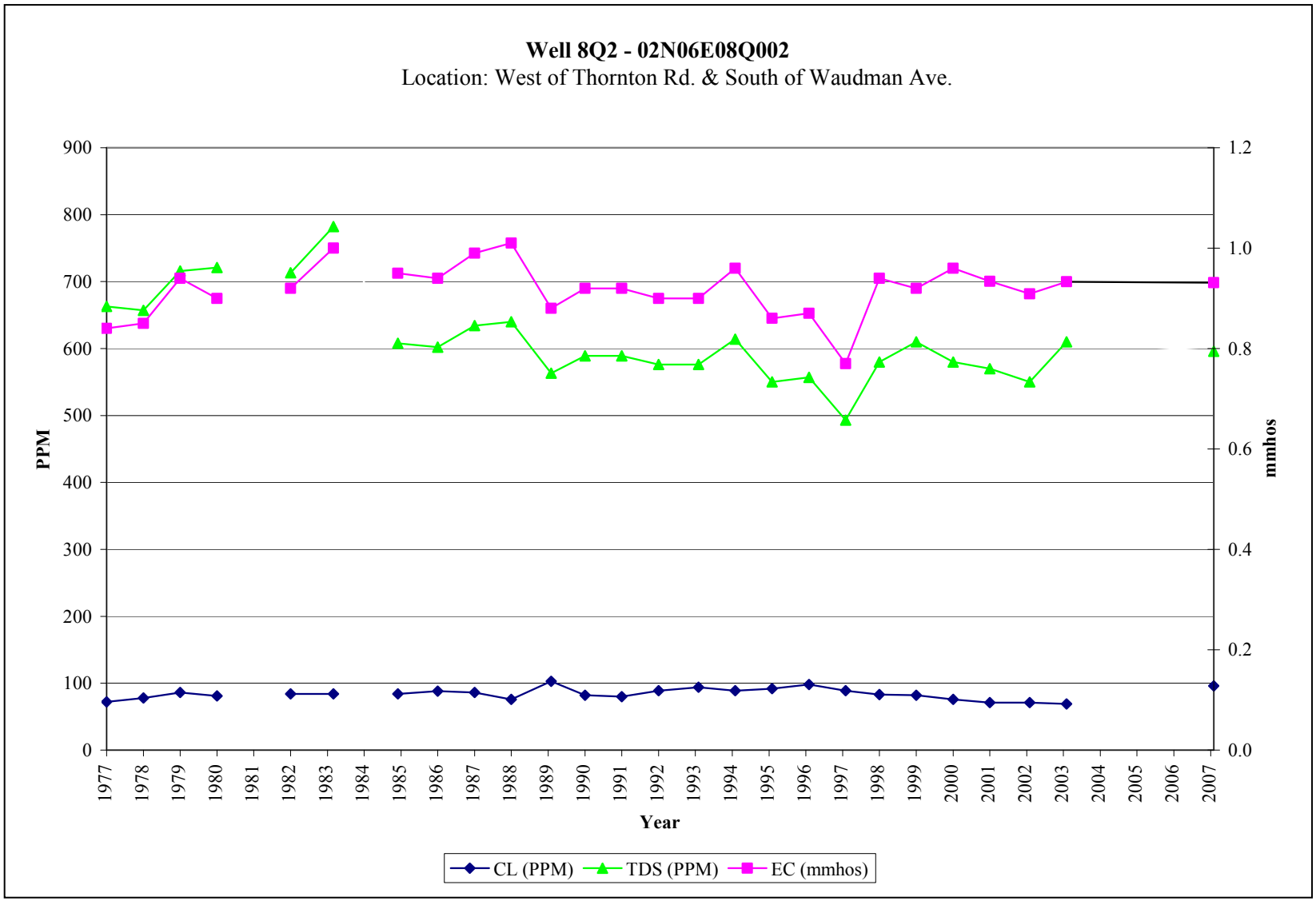

Figure 2-11: Quality Comparison Graph Well 8Q2

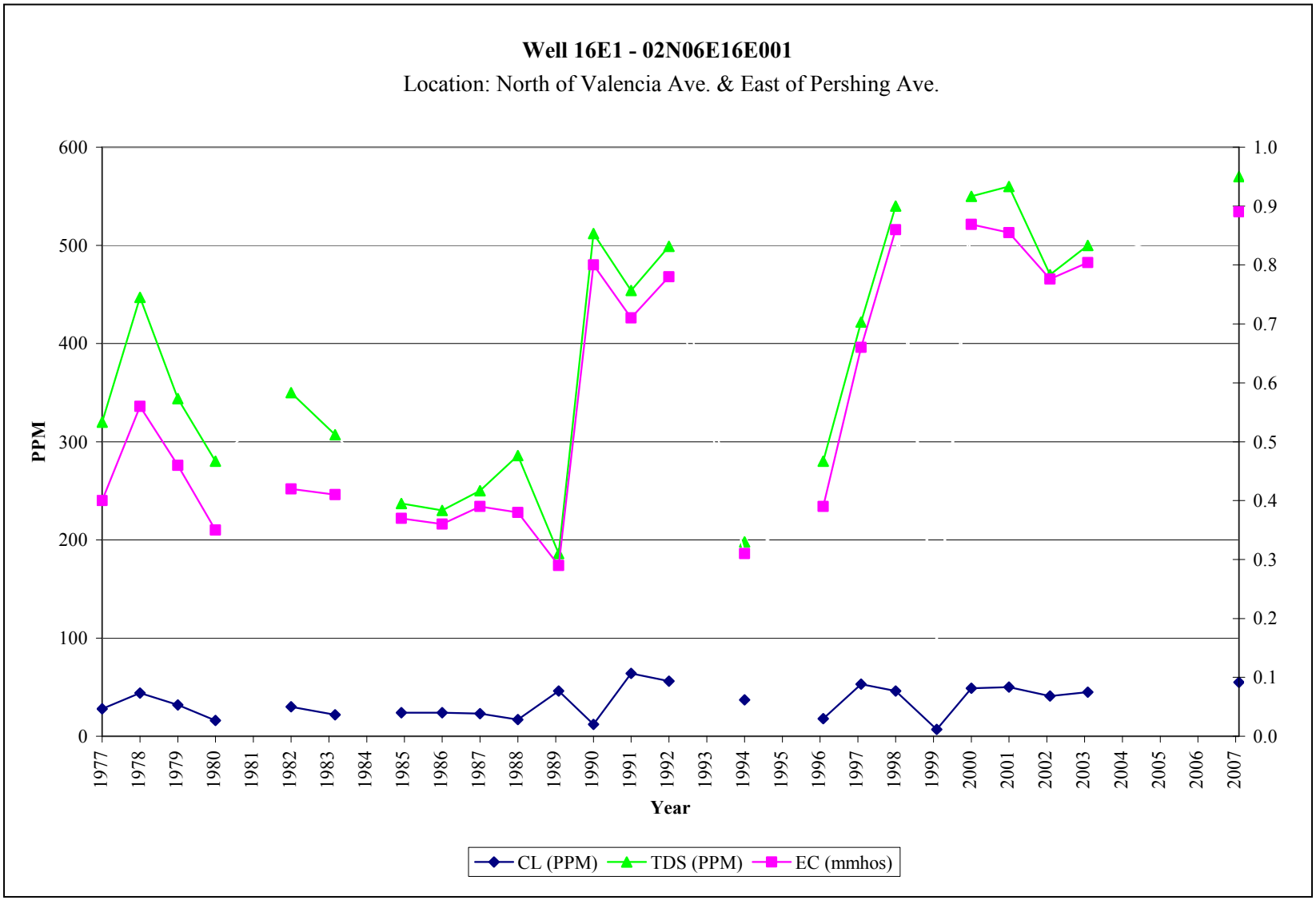

Figure 2-12: Quality Comparison Graph Well 16E1

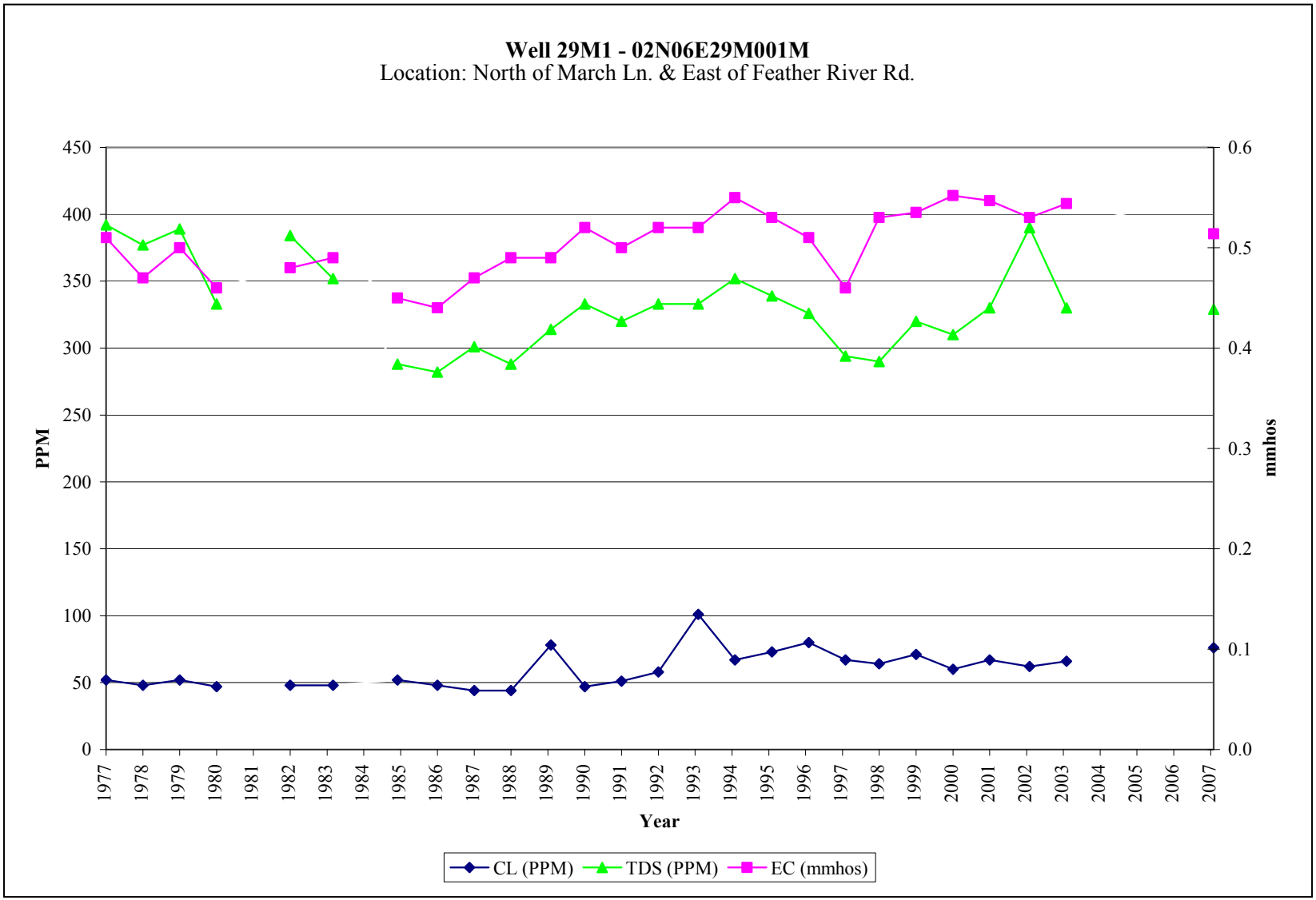

Figure 2-13: Quality Comparison Graph Well 29M1

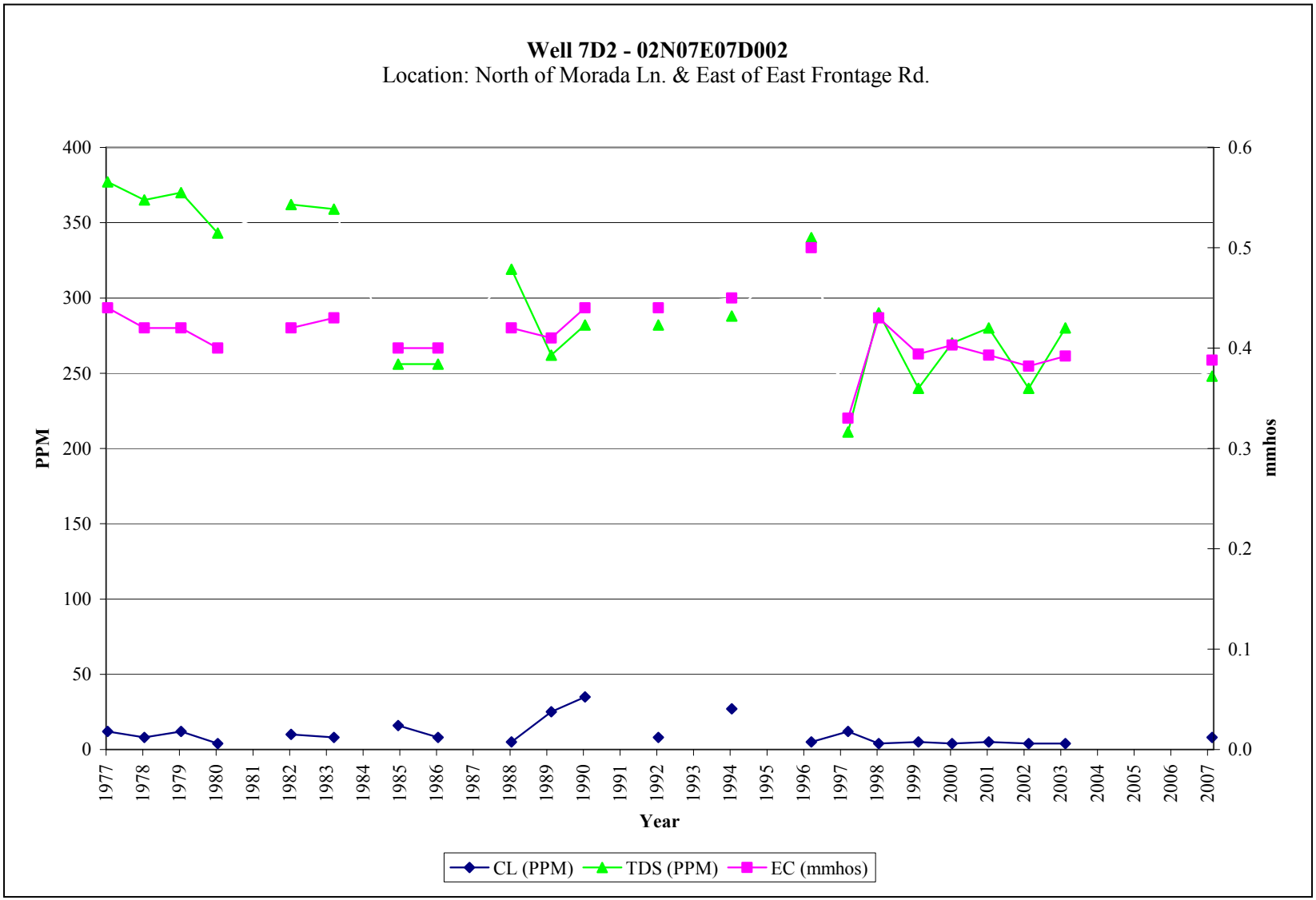

Figure 2-14: Quality Comparison Graph Well 7D2

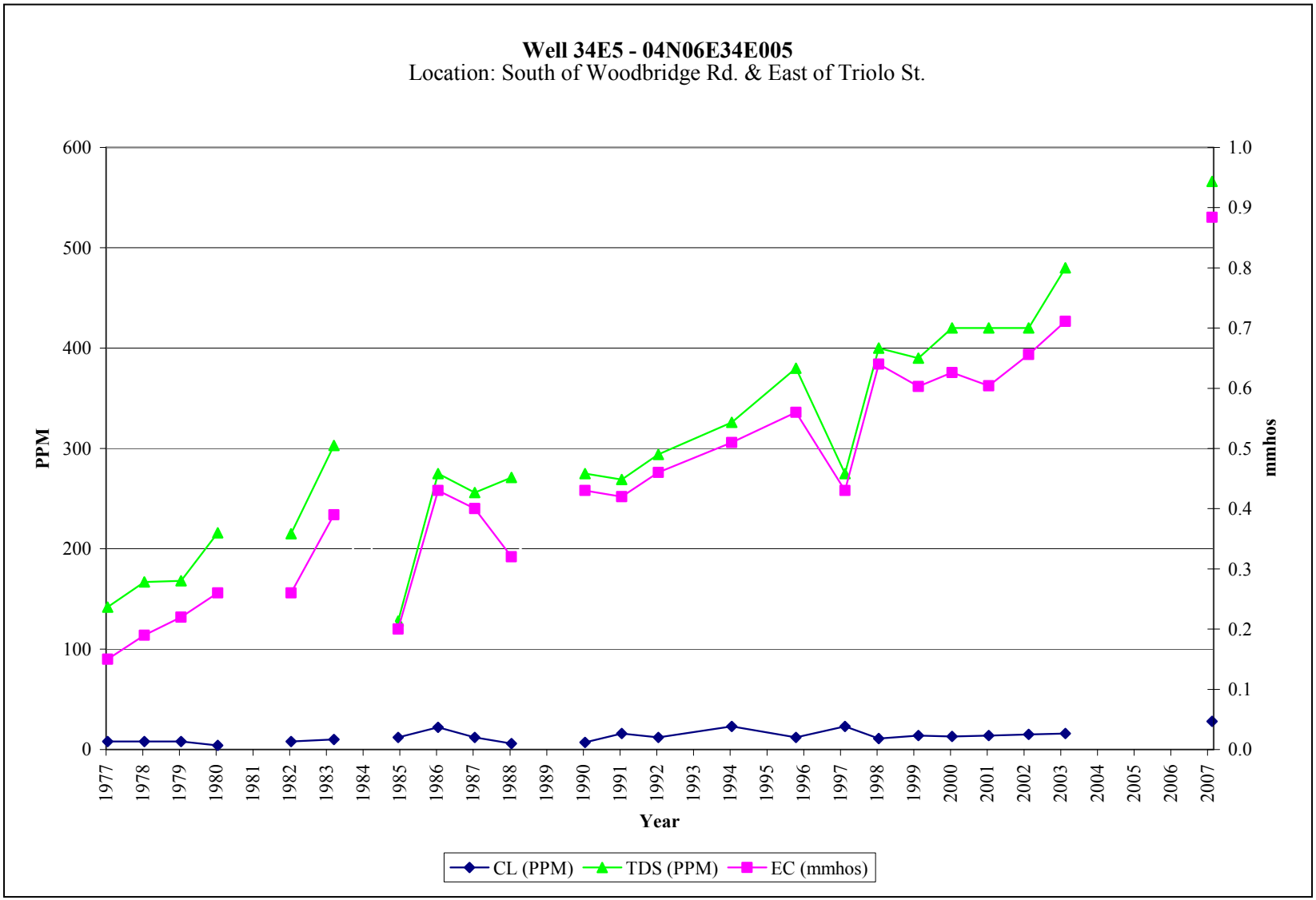

Figure 2-15: Quality Comparison Graph Well 34E5

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Section 3 – Groundwater Elevation Monitoring

Summary of Groundwater Elevations

The information contained in the Fall 2007 Groundwater Report is summarized as follows:

GROUNDWATER LEVELS

Banta-Carbona Irrigation District (BCID) – Two wells were compared in the BCID area. One well dropped one-half foot in groundwater level and the other well gained one-half foot in groundwater level.

Oakdale Irrigation District (OID) – Four wells were measured in the OID area. All four wells show a decrease in groundwater levels.

South San Joaquin Irrigation District (SSJID) – Fourteen wells were measured in the SSJID area. Ten wells show decreases in groundwater levels. Four wells show increases in groundwater levels.

Central San Joaquin Water Conservation District (CSJWCD) – Forty-four wells were measured in CSJWCD. Twenty-four show decreases in groundwater levels. Nineteen wells show an increase in groundwater levels. One well's groundwater level remained constant.

North San Joaquin Water Conservation District (NSJWCD) – Thirty-one wells were measured in NSJWCD. Twenty-two wells decreased in groundwater levels. Seven wells increased in groundwater levels. Two wells experienced no change in groundwater levels.

Stockton East Water District (SEWD) – Sixty-two wells were measured in SEWD. Forty-eight wells decreased in groundwater levels. Thirteen wells show increases in groundwater levels. One well experienced no change in groundwater level.

Woodbridge Irrigation District (WID) – Twenty five wells were measured in the WID. Twenty-four wells decreased in groundwater levels. One well managed to increase its groundwater level by 0.7 foot.

Miscellaneous County Areas – Twenty-seven wells measured across the County in areas that are not a part of any irrigation district. Seventeen wells descended in groundwater levels averaging. Nine wells increased in groundwater. One well's groundwater level remained constant.

Table 3-1: Comparison of BCID Water Levels

State Well ID	Fall 2006	Fall 2007	Change
02S06E31N001	54.5	54.0	-0.5
03S06E27N001	77.3	77.8	0.5

Total Number of Wells	2
Number of Wells with Decrease	1
Number of Wells with Increase	1
Number of Wells with No Change	0

Table 3-2: Comparison of OID Area Water Levels

State Well ID	Fall 2006	Fall 2007	Change
01S09E21J002	44.7	42.8	-1.9
01S09E23N001	55.5	53.3	-2.2
01S09E24R001	74.7	69.7	-5.0
01S09E28M002	43.2	37.7	-5.5

Total Number of Wells	4
Number of Wells with Decrease	4
Number of Wells with Increase	0
Number of Wells with No Change	0

Table 3-3: Comparison of SSJID Areas Water Levels

State Well ID.	Fall 2006	Fall 2007	Change
01S07E25E001	15.0	11.5	-3.5
01S07E27K001	15.2	13.1	-2.1
01S09E29M002	36.1	40.5	4.4
01S09E34A001	56.5	59.5	3.0
02S07E07D002	9.5	8.3	-1.2
02S07E11N002	35.7	36.5	0.8
02S07E19H001	21.5	20.0	-1.5
02S07E26B001	30.0	29.0	-1.0
02S08E04M001	26.5	24.5	-2.0
02S08E06J001	25.2	22.6	-2.6
02S08E07R001	37.5	34.0	-3.5
02S08E08A001	30.4	28.4	-2.0
02S08E08E001	26.2	27.2	1.0
02S09E03K001	63.1	61.5	-1.6

Total Number of Wells	14
Number of Wells with Decrease	10
Number of Wells with Increase	4
Number of Wells with No Change	0

Table 3-4: Comparison of CSJWCD Area Water Levels

State Well ID	Fall 2006	Fall 2007	Change
01N07E11M001	-35.1	-33.8	1.3
01N07E13J002	-45.5	-49.0	-3.5
01N07E14J002	-39.6	-40.6	-1.0
01N07E15M002	-38.5	-36.5	2.0
01N07E24A001	-40.6	-49.1	-8.5
01N07E26H003	-32.4	-33.9	-1.5
01N08E07M001	-49.6	-52.6	-3.0
01N08E11L001	-39.5	-39.1	0.4
01N08E13J001	-12.2	-27.7	-15.5
01N08E16G001	-36.5	-38.2	-1.7
01N08E16H002	-35.5	-37.1	-1.6
01N08E18A002	-37.5	-39.0	-1.5

State Well ID	Fall 2006	Fall 2007	Change
01N08E22J001	-33.6	-34.5	-0.9
01N08E26A002	-31.3	-26.3	5.0
01N08E35R002	-22.8	-18.2	4.6
01N08E36F001	-19.4	-14.6	4.8
01N09E01C001	15.7	16.3	0.6
01N09E05J001	-11.4	-10.0	1.4
01N09E13D001	18.2	19.0	0.8
01N09E15B002	0.3	1.9	1.6
01N09E17D001	-22.3	-29.0	-6.7
01N09E17M001	-21.3	-28.5	-7.2
01N09E19C001	-21.5	-21.5	0.0
01N09E29R001	-19.0	-9.5	9.5
01N09E30C005	-31.2	-13.7	17.5
01N09E31J001	-0.7	-2.7	-2.0
01S07E01J001	-21.4	-22.5	-1.1
01S07E02J001	-24.0	-28.0	-4.0
01S07E12H001	-14.4	-29.5	-15.1
01S08E04R001	-25.2	-23.6	1.6
01S08E05R001	-28.4	-24.4	4.0
01S08E06D001	-21.5	-23.3	-1.8
01S08E09Q001	-17.4	-14.4	3.0
01S08E11F001	-16.6	-12.5	4.1
01S08E12B001	-3.3	-4.5	-1.2
01S08E14B001	-5.7	-9.7	-4.0
01S08E15P001	-4.6	-6.6	-2.0
01S08E20B001	-7.2	-5.7	1.5
01S08E23A001	1.4	0.0	-1.4
01S09E07A001	4.9	3.1	-1.8
01S09E07N001	6.8	4.8	-2.0
01S09E09R001	15.2	15.3	0.1
01S09E18R003	15.7	13.6	-2.1
01S09E19Q002	15.6	19.5	3.9

Total Number of Wells	44
Number of Wells with Decrease	24
Number of Wells with Increase	19
Number of Wells with No Change	1

Table 3-5: Miscellaneous County Areas Water Levels

State Well ID	Fall 2006	Fall 2007	Change
01S06E04J001	-3.5	-2.0	1.5
01S06E14F001	-5.6	-3.1	2.5
01S07E13J001	-3.4	-4.4	-1.0
01S07E14M001	4.7	5.2	0.5
01S07E14P003	3.2	3.2	0.0
01S07E15F002	-0.6	-9.1	-8.5
01S08E19R001	5.8	6.8	1.0
01S08E29K001	11.0	9.0	-2.0
01S08E30C002	9.7	9.1	-0.6
01S09E11J002	34.2	33.2	-1.0
02S05E08B001	-4.2	-3.2	1.0
02S05E13N001	13.4	13.5	0.1
02S06E10K001	2.5	2.0	-0.5
02S06E25J001	16.6	16.0	-0.6
02S06E26B001	6.7	6.8	0.1
02S06E27E001	12.0	8.5	-3.5
02S07E31N001	15.5	14.0	-1.5
03N06E15C004	-19.0	-27.0	-8.0
03N06E29C001	-26.3	-34.3	-8.0
03S05E04H001	51.5	57.0	5.5
03S06E03F002	19.0	16.5	-2.5
03S06E23C001	-2.7	-5.2	-2.5
04N05E03D003	-2.3	-4.9	-2.6
04N05E16N001	-8.7	-8.5	0.2
04N06E17G004	4.0	1.0	-3.0
04N06E34J002	22.4	17.2	-5.2
05N05E28L003	-3.7	-3.9	-0.2

Total Number of Wells	27
Number of Wells with Decrease	17
Number of Wells with Increase	9
Number of Wells with No Change	1

Comparison of NSJWCD Area Water Levels

State Well ID	Fall 2006	Fall 2007	Change
03N07E03R001	-18.8	-18.3	0.5
03N07E08E002	-19.5	-22.0	-2.5
03N07E09C001	-19.3	-21.4	-2.1
03N07E15C004	-27.5	-29.0	-1.5
03N07E17D004	-22.1	-26.4	-4.3
03N07E17K002	-33.5	-32.7	0.8
03N07E18D012	-23.5	-25.3	-1.8
03N07E19J004	-42.0	-43.5	-1.5
03N07E23C002	-32.3	-34.5	-2.2
03N08E22A001	-40.4	-41.7	-1.3
04N06E12C004	-20.9	-15.9	5.0
04N06E23K00	-8.0	-8.0	0.0
04N06E24F001	-20.0	-25.0	-5.0
04N06E25R001	0.0	-3.5	-3.5
04N07E12E001	-35.5	-40.0	-4.5
04N07E17N001	-31.3	-31.3	0.0
04N07E19K001	-16.1	-21.6	-5.5
04N07E21F001	-23.9	-23.1	0.8
04N07E28J002	-13.2	-17.7	-4.5
04N07E33H001	28.8	24.9	-3.9
04N07E36L001	-18.1	-17.5	0.6
04N08E06N002	-41.7	-33.6	8.1
04N08E14K001	0.4	-0.9	-1.3
04N08E17A001	-17.3	-28.3	-11.0
04N08E17J001	-21.2	-23.3	-2.1
04N08E21M001	-20.7	-26.0	-5.3
04N08E32N001	-28.7	-30.0	-1.3
05N06E36R001	-19.5	-24.3	-4.8
05N07E34G001	-36.6	-38.1	-1.5
05N07E34Q001	-40.4	-40.0	0.4
03N06E36N001	-57.3	-59.7	-2.4

Total Number of Wells	31
Number of Wells with Decrease	22
Number of Wells with Increase	7
Number of Wells with No Change	2

Table 3-7: Comparison of SEWD Area Water Levels

State Well ID	Fall 2006	Fall 2007	Change
01N06E05M004	-7.5	-8.0	-0.5
01N06E27R002	-9.2	-9.2	0.0
01N07E01M002	-48.5	-48.0	0.5
01N07E20G001	-37.8	-31.0	6.8
01N07E21R001	-40.2	-37.4	2.8
01N08E03P001	-46.0	-52.5	-6.5
01N08E04E001	-44.5	-47.0	-2.5
01S06E01C002	-7.8	-8.8	-1.0
01S06E10G001	-11.8	-6.8	5.0
01S07E06M002	-4.9	-7.7	-2.8
01S07E08J002	-4.3	-9.6	-5.3
02N06E24F001	-34.5	-32.5	2.0
02N07E03D001	-43.0	-54.5	-11.5
02N07E08D001	-46.2	-57.2	-11.0
02N07E08K003	-51.1	-55.8	-4.7
02N07E10F002	-47.9	-55.8	-7.9
02N07E11F001	-49.5	-54.0	-4.5
02N07E11R002	-51.0	-69.5	-18.5
02N07E15C001	-56.3	-62.3	-6.0
02N07E16F002	-55.4	-55.8	-0.4
02N07E16L001	-56.3	-61.3	-5.0
02N07E20N002	-39.0	-43.0	-4.0
02N07E21A002	-56.2	-58.6	-2.4
02N07E24B001	-49.9	-54.2	-4.3
02N07E26N001	-49.5	-49.6	-0.1
02N07E28N004	-38.6	-42.0	-3.4
02N07E30E001	-31.0	-35.7	-4.7
02N07E31M001	-24.8	-26.3	-1.5
02N07E32R001	-14.6	-20.1	-5.5
02N07E35L001	-49.0	-60.5	-11.5
02N07E36H001	-52.5	-56.0	-3.5
02N08E03G002	-39.5	-32.3	7.2
02N08E04C001	-44.8	-47.4	-2.6
02N08E05C001	-46.5	-57.5	-11.0

State Well ID	Fall 2006	Fall 2007	Change
02N08E08N001	-47.0	-51.5	-4.5
02N08E10H002	-41.1	-43.0	-1.9
02N08E12C002	-26.5	-28.0	-1.5
02N08E13K001	-32.2	-34.0	-1.8
02N08E14C001	-43.0	-48.0	-5.0
02N08E15M002	-45.6	-48.2	-2.6
02N08E15M002	-45.6	-48.2	-2.6
02N08E16D001	-53.1	-47.1	6.0
02N08E24P001	-29.4	-35.1	-5.7
02N08E28H002	-51.6	-50.6	1.0
02N08E32L002	-49.0	-51.2	-2.2
02N08E33E001	-45.6	-48.1	-2.5
02N09E03A001	64.6	64.7	0.1
02N09E04H001	51.0	56.0	5.0
02N09E05H001	-3.5	-0.8	2.7
02N09E08N001	-19.9	-20.9	-1.0
02N09E09D001	-8.3	-18.8	-10.5
02N09E18Q001	-40.8	-33.8	7.0
02N09E22D001	-16.4	-12.4	4.0
02N09E28N001	-8.4	-16.1	-7.7
03N07E35C002	-42.6	-45.6	-3.0
03N07E35L001	-45.5	-49.0	-3.5
03N07E36J001	-30.8	-42.3	-11.5
03N08E27R001	-38.4	-42.7	-4.3
03N09E25R001	91.0	86.0	-5.0
02N06E03A003	-25.7	-27.8	-2.1
02N06E06C002	-11.5	-14.6	-3.1
02N06E24J002	-29.2	-31.7	-2.5
02N06E26H001	-38.0	-39.0	-1.0

Total Number of Wells	62
Number of Wells with Decrease	48
Number of Wells with Increase	13
Number of Wells with No Change	1

Table 3-8: Comparison of WID Area Water Levels

State Well ID	Fall 2006	Fall 2007	Change
03N05E13L001	-9.0	-11.5	-2.5
03N05E14C001	-3.3	-8.8	-5.5
03N06E05N003	-7.0	-12.5	-5.5
03N06E07H003	-11.1	-13.2	-2.1
03N06E10D001	-6.9	-12.9	-6.0
03N06E17A004	-20.2	-21.7	-1.5
03N06E18M003	-12.6	-20.6	-8.0
03N06E20D002	-19.1	-19.5	-0.4
03N06E26P002	-23.7	-25.7	-2.0
03N06E27E001	-25.2	-33.7	-8.5
03N06E30R001	-24.2	-29.0	-4.8
03N06E32R001	-26.5	-32.5	-6.0
04N05E05H001	-3.5	-4.6	-1.1
04N05E09D001	-6.5	-6.8	-0.3
04N05E10K001	-4.0	-5.8	-1.8
04N05E13H001	2.0	-5.0	-7.0
04N05E13R004	0.3	-4.4	-4.7
04N05E14B002	0.1	-4.9	-5.0
04N05E14P001	1.0	-2.0	-3.0
04N05E24J004	5.8	0.3	-5.5
04N05E26F001	0.4	-0.1	-0.5
04N05E36H003	6.1	1.6	-4.5
04N06E29N002	4.1	0.1	-4.0
04N06E30E001	5.2	0.7	-4.5
05N05E32M001	-7.0	-6.3	0.7

Total Number of Wells	25
Number of Wells with Decrease	24
Number of Wells with Increase	1
Number of Wells with No Change	0

HYDROGRAPHS

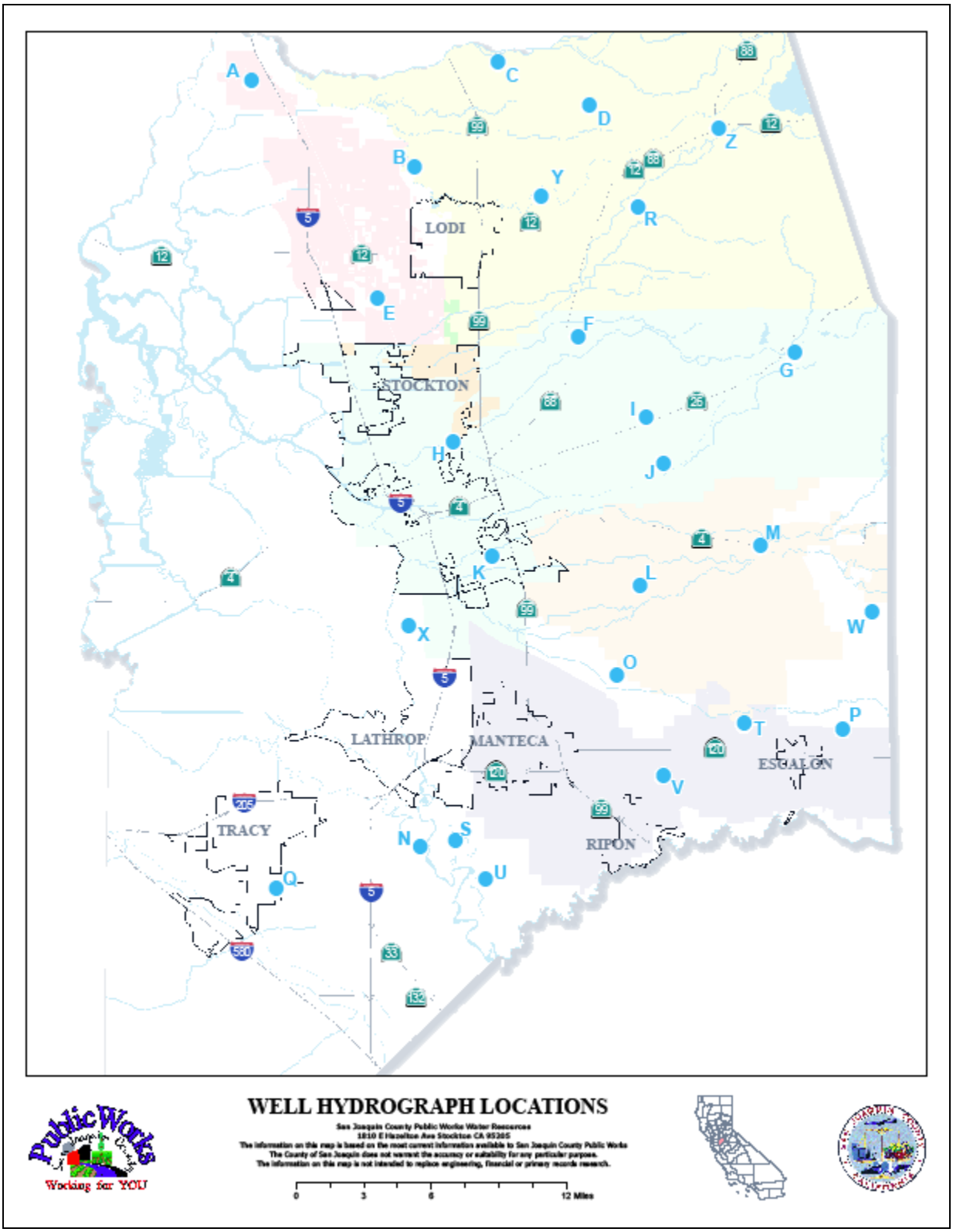

Figure 3-1: Well Hydrograph Locations

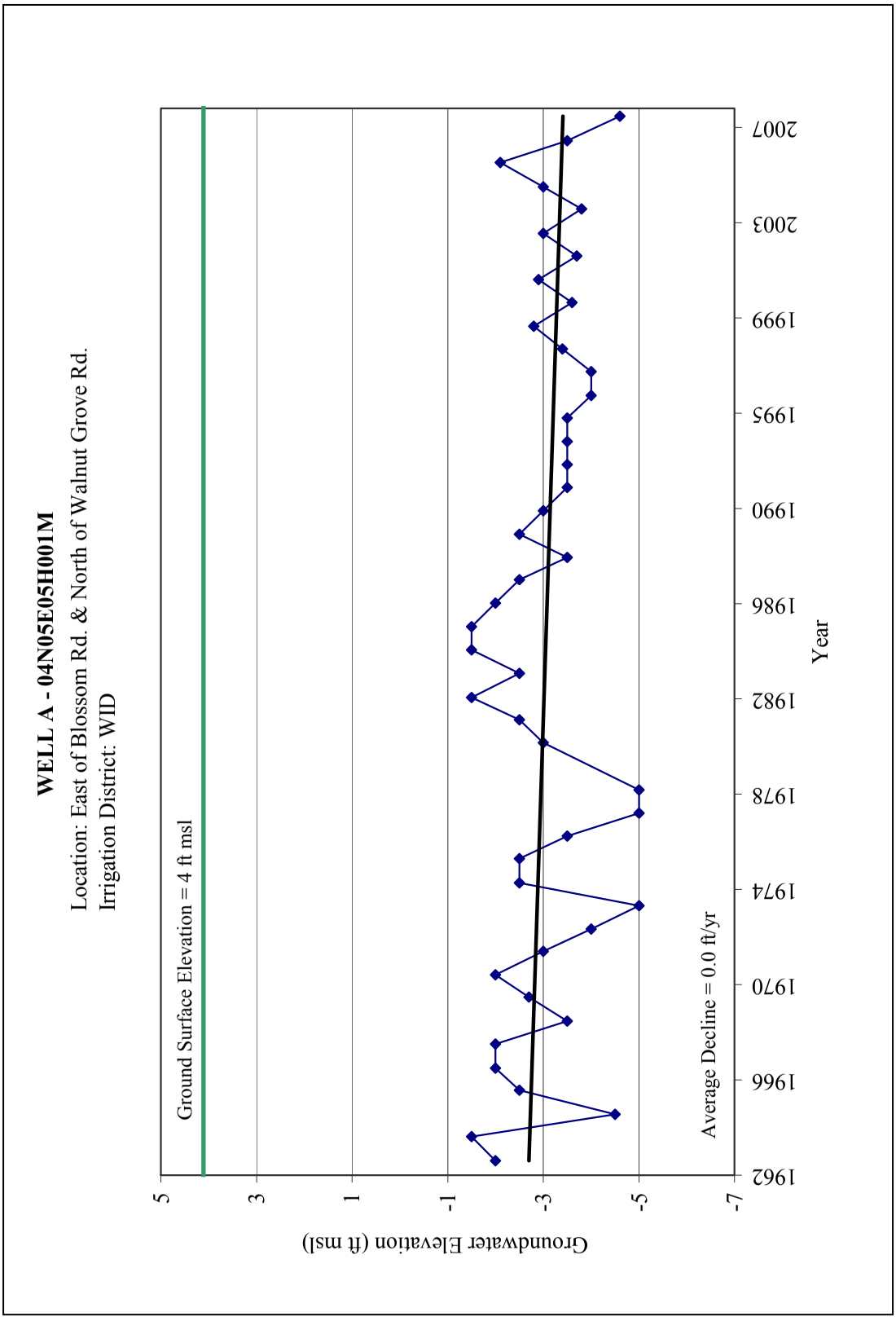

Figure 3-2: Fall Hydrograph Well A

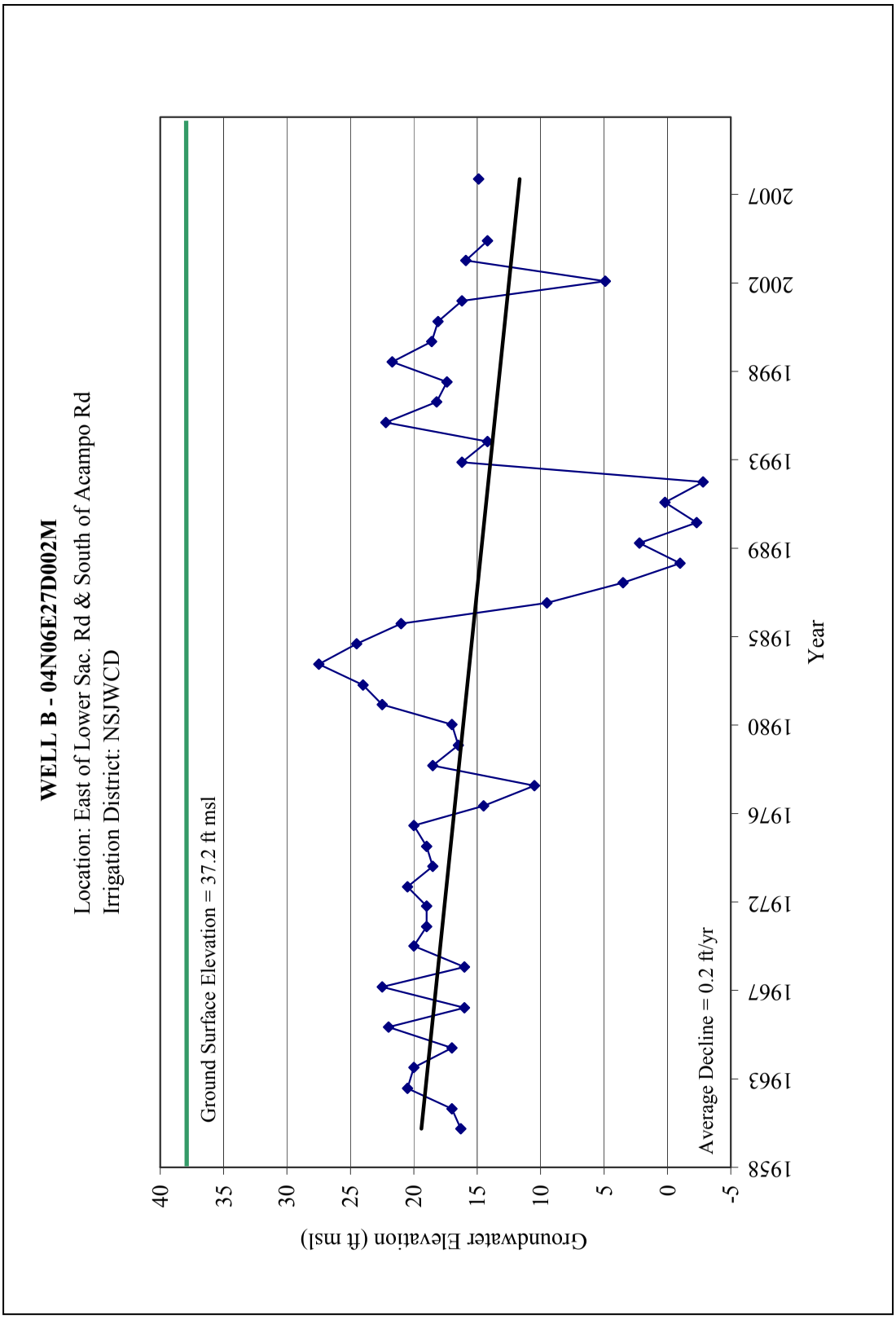

Figure 3-3: Fall Hydrograph Well B

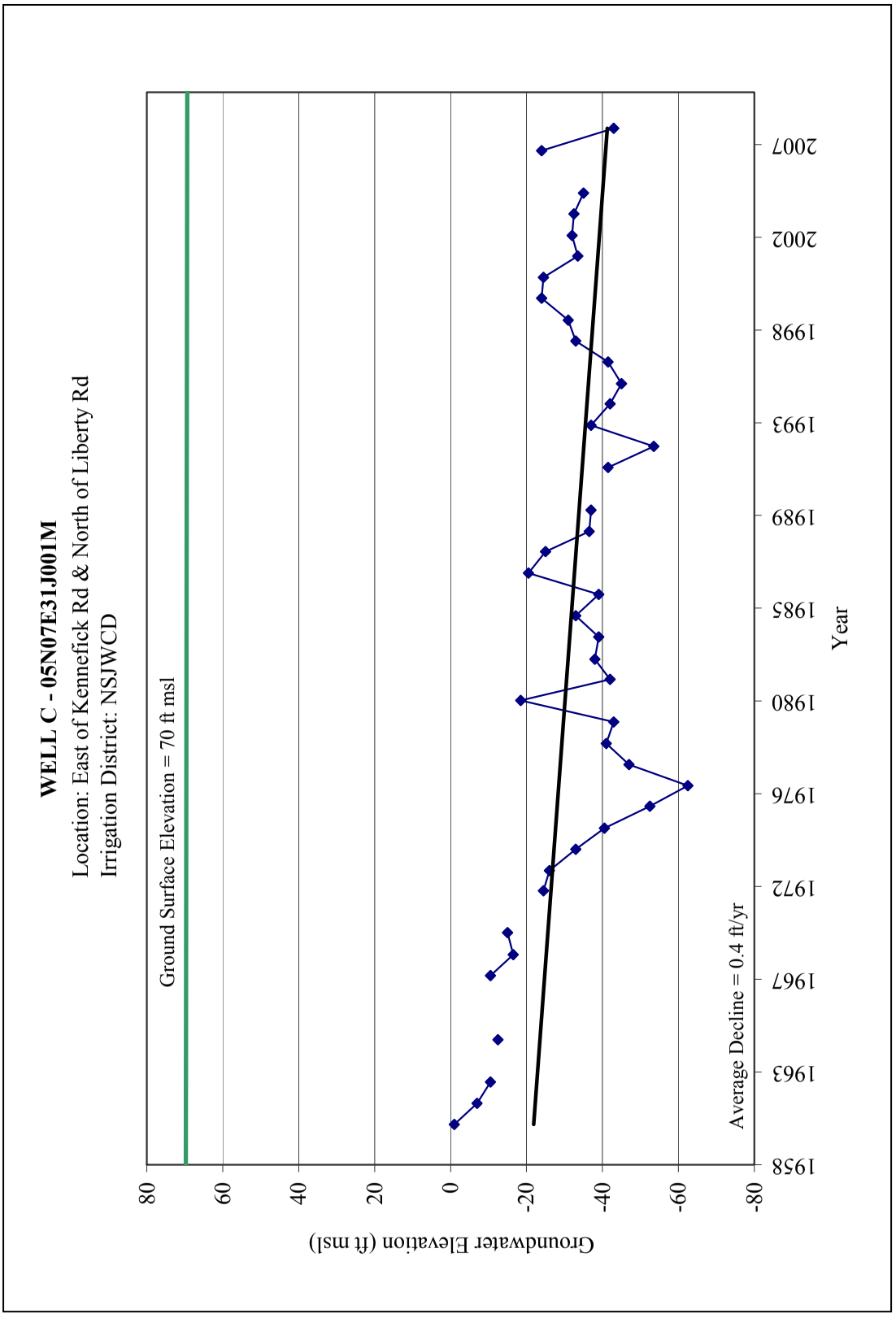

Figure 3-4: Fall Hydrograph Well C

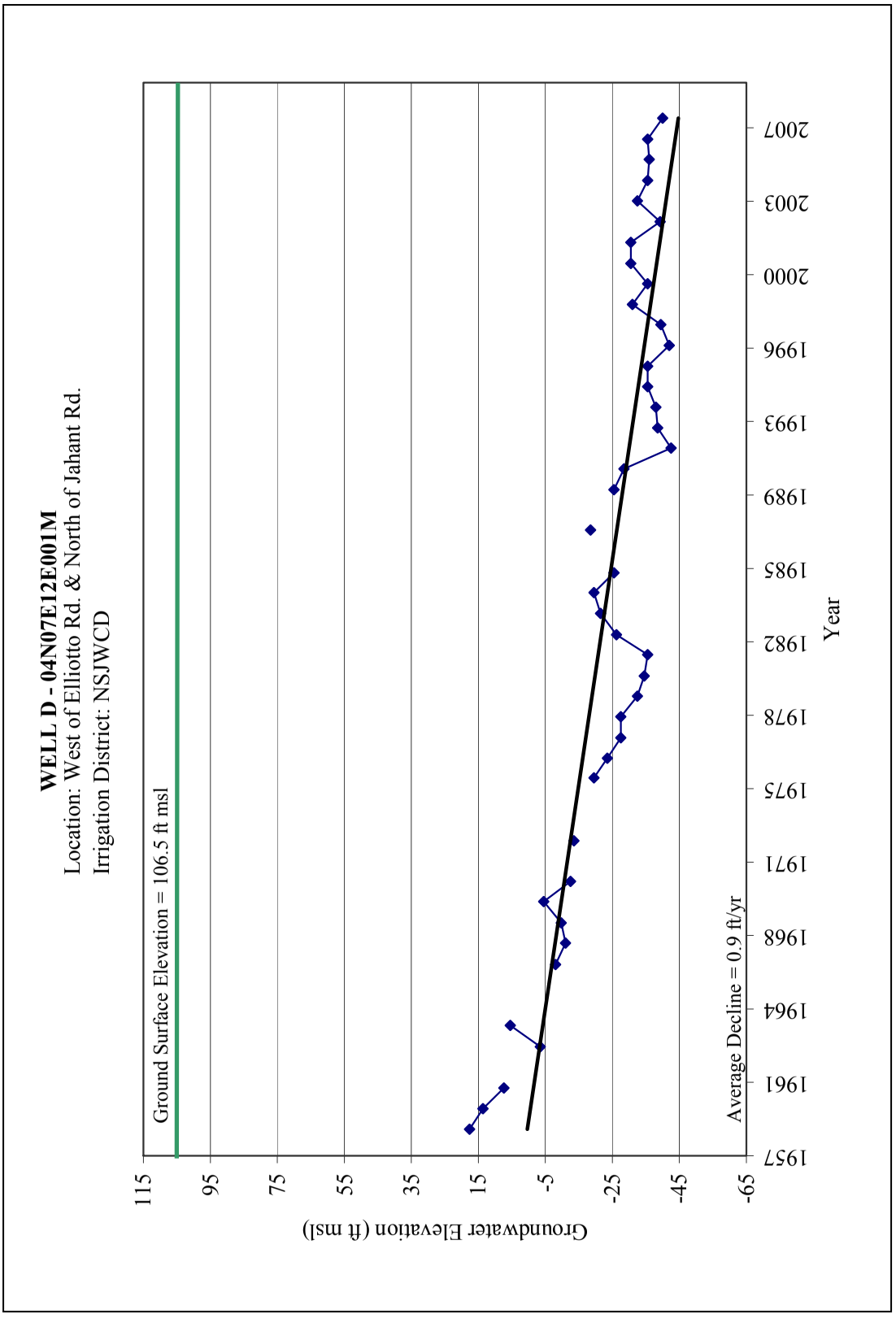

Figure 3-5: Fall Hydrograph Well D

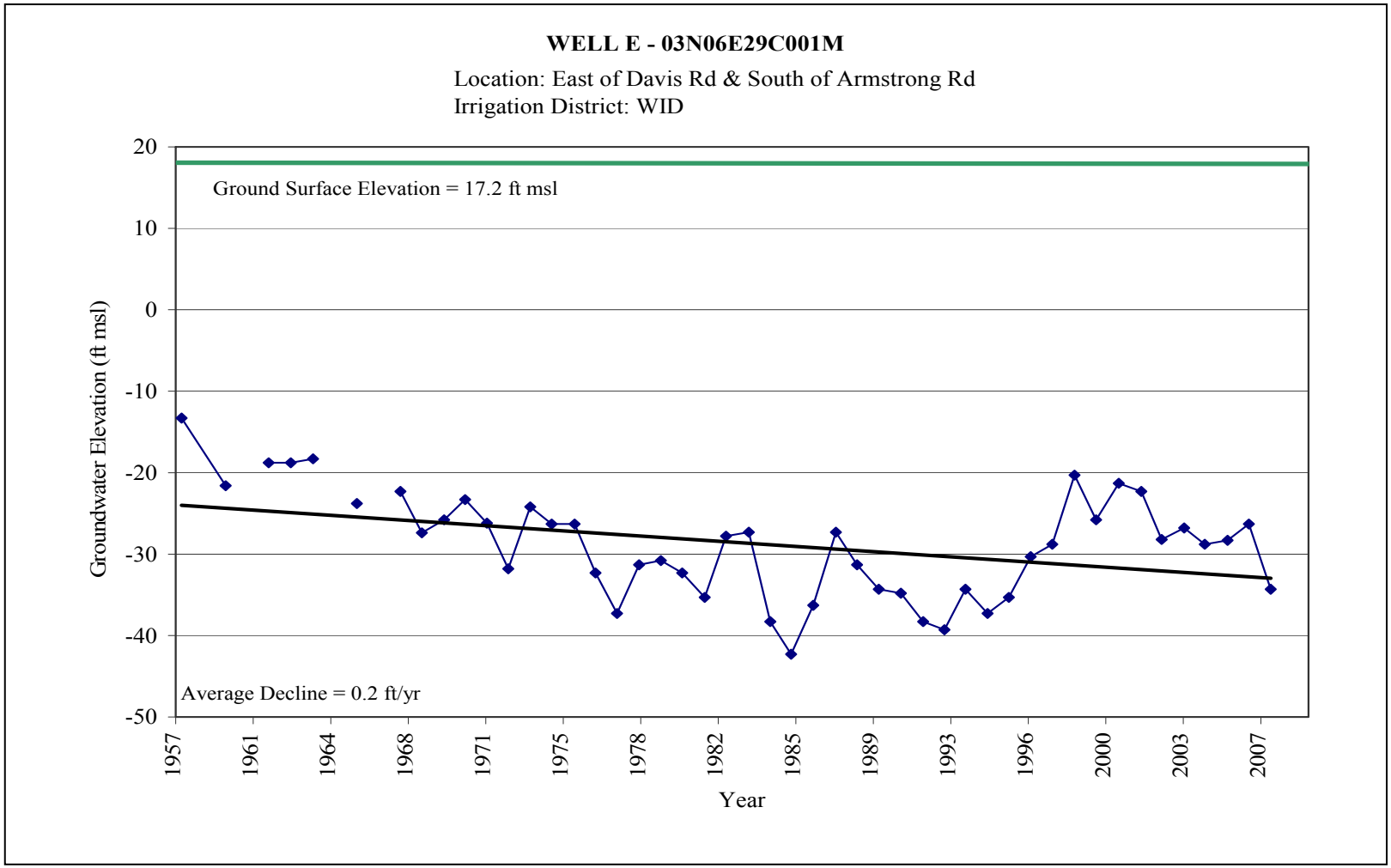

Figure 3-6: Fall Hydrograph Well E

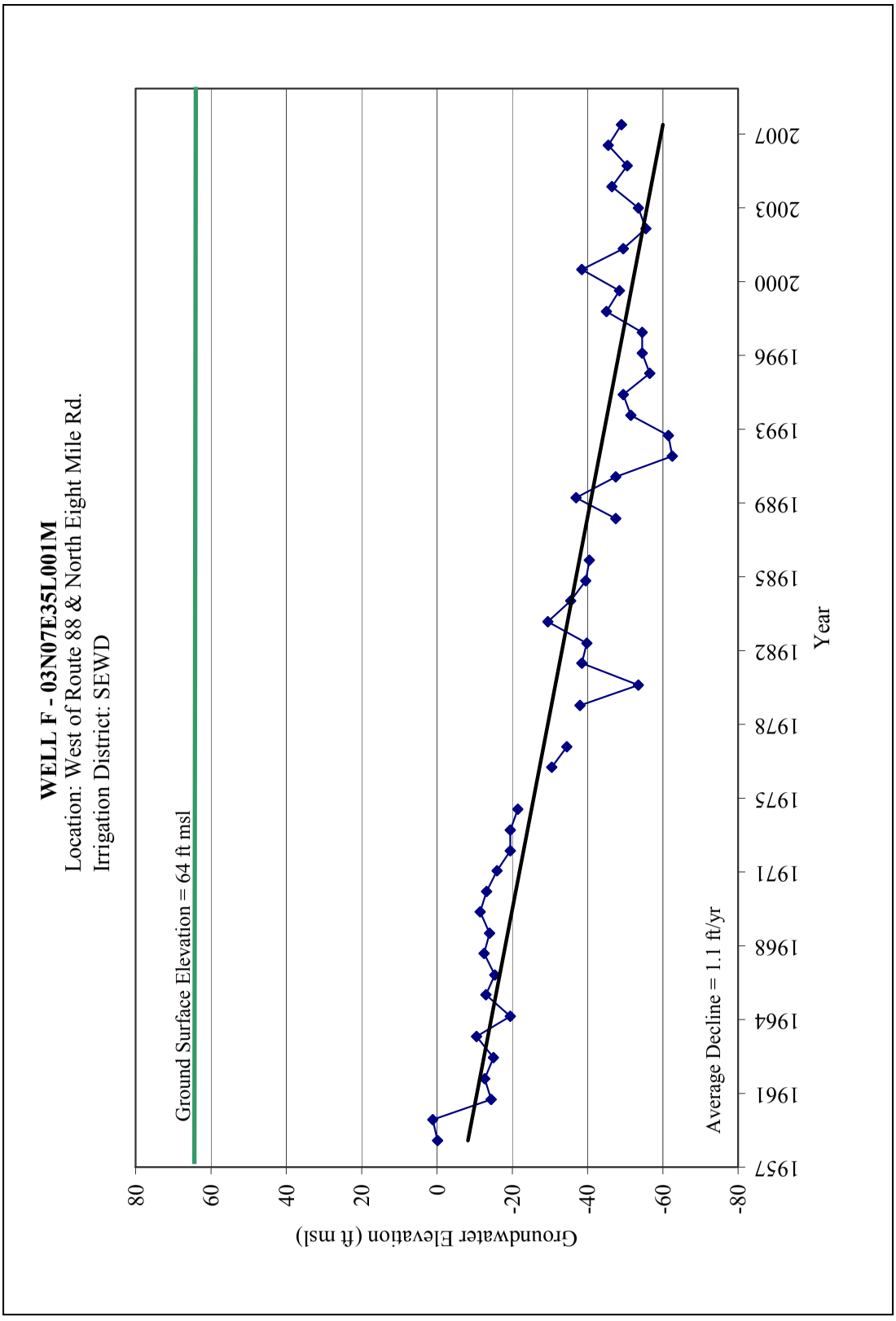

Figure 3-7: Fall Hydrograph Well F

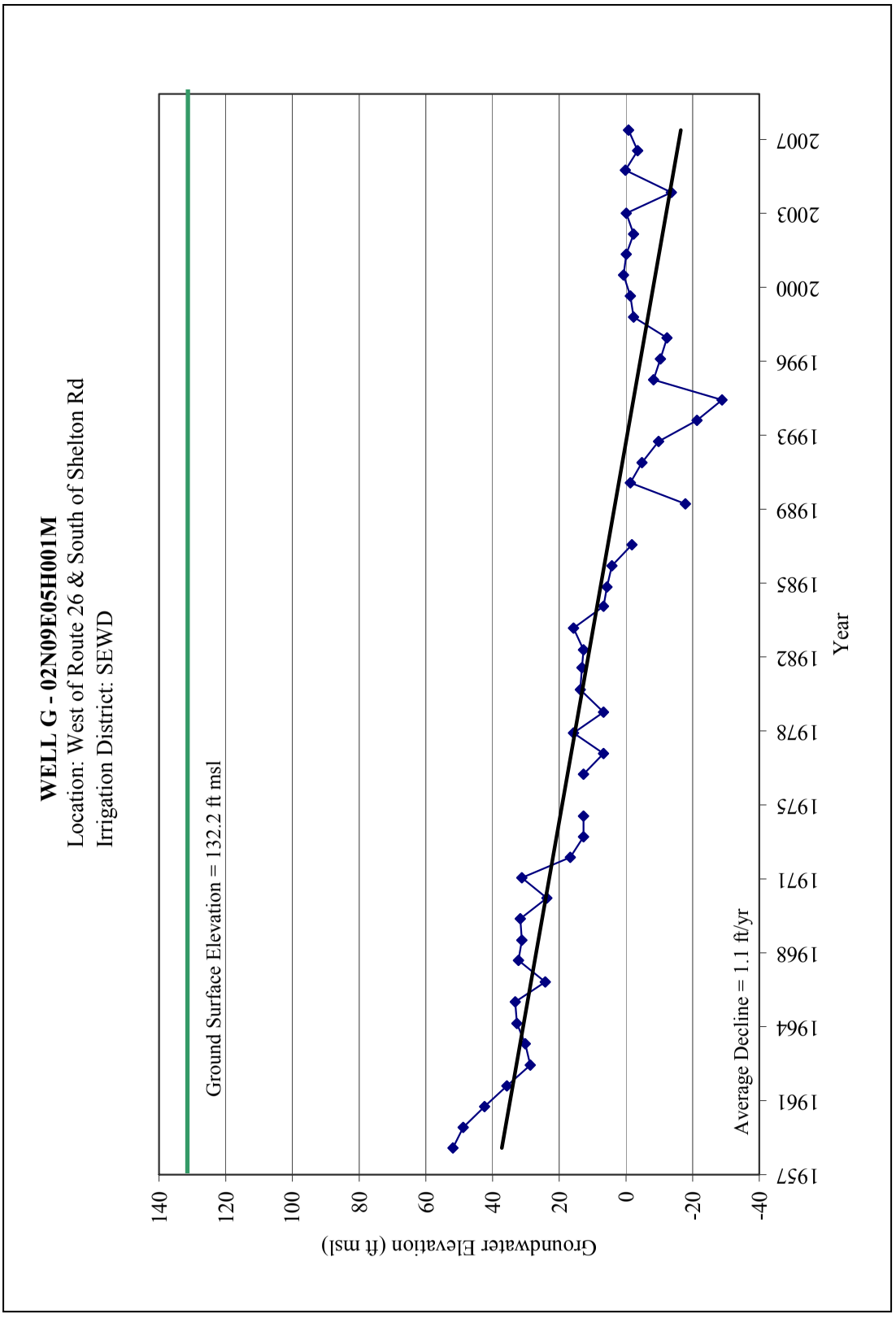

Figure 3-8: Fall Hydrograph Well G

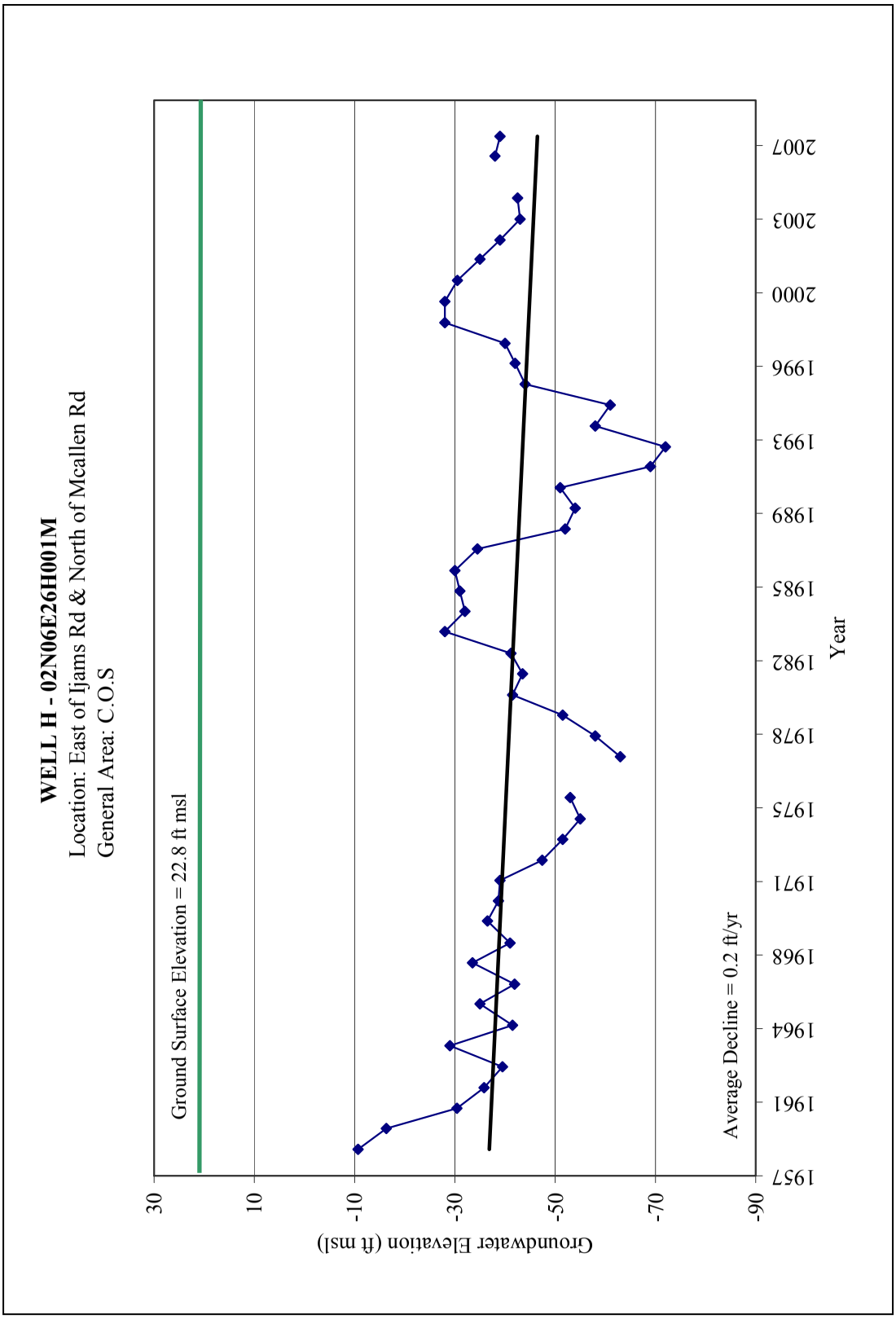

Figure 3-9: Fall Hydrograph Well H

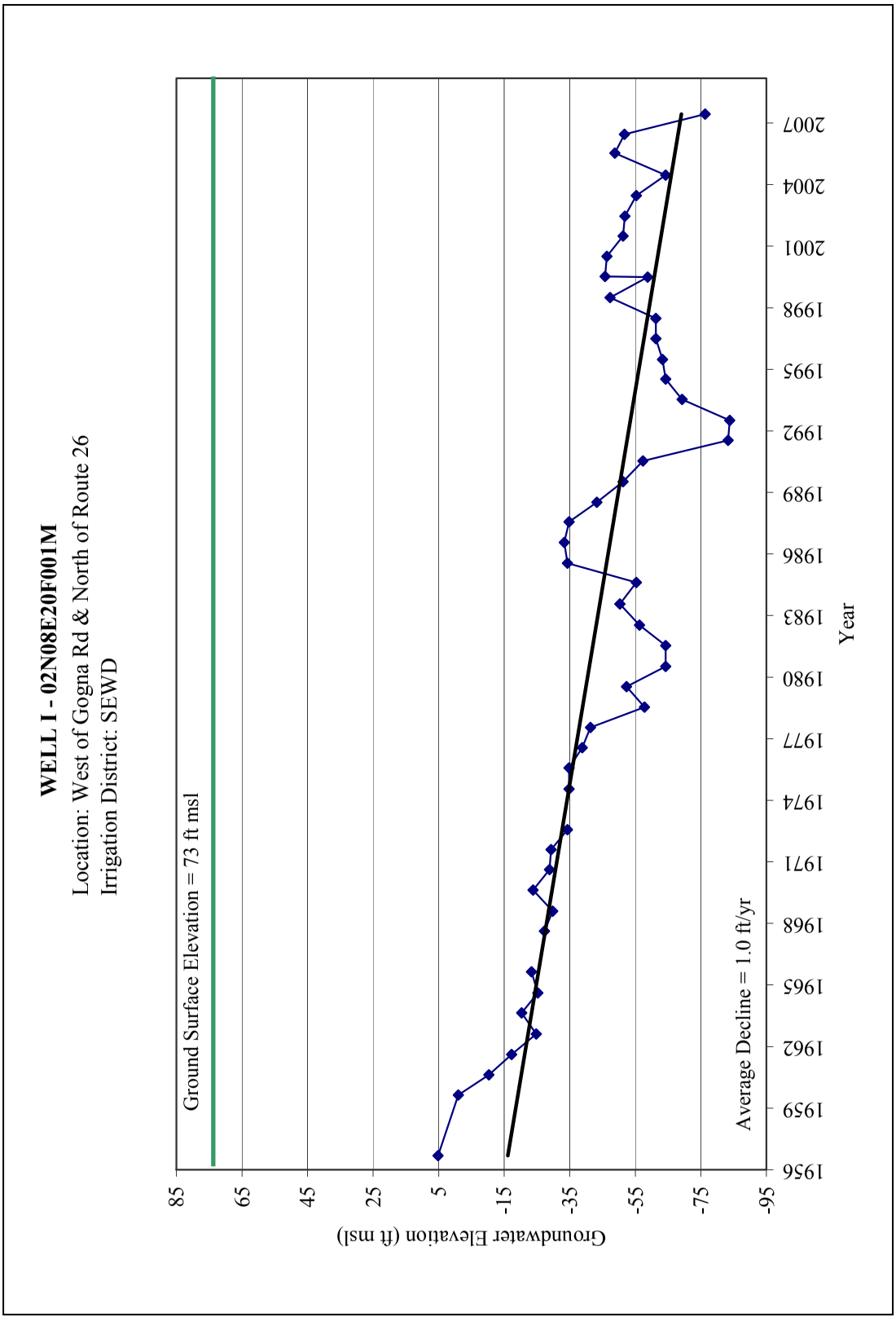

Figure 3-10: Fall Hydrograph Well I

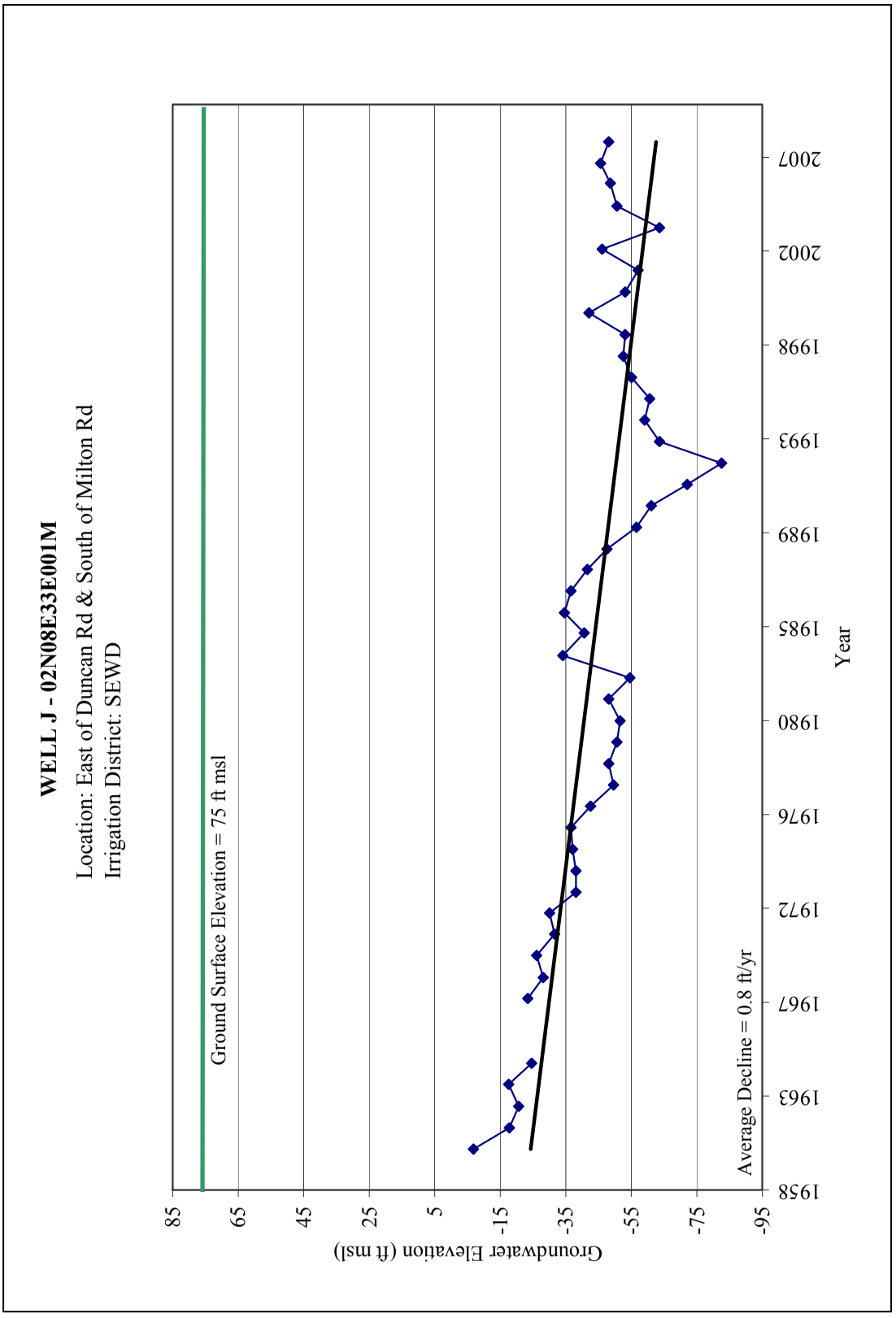

Figure 3-11: Fall Hydrograph Well J

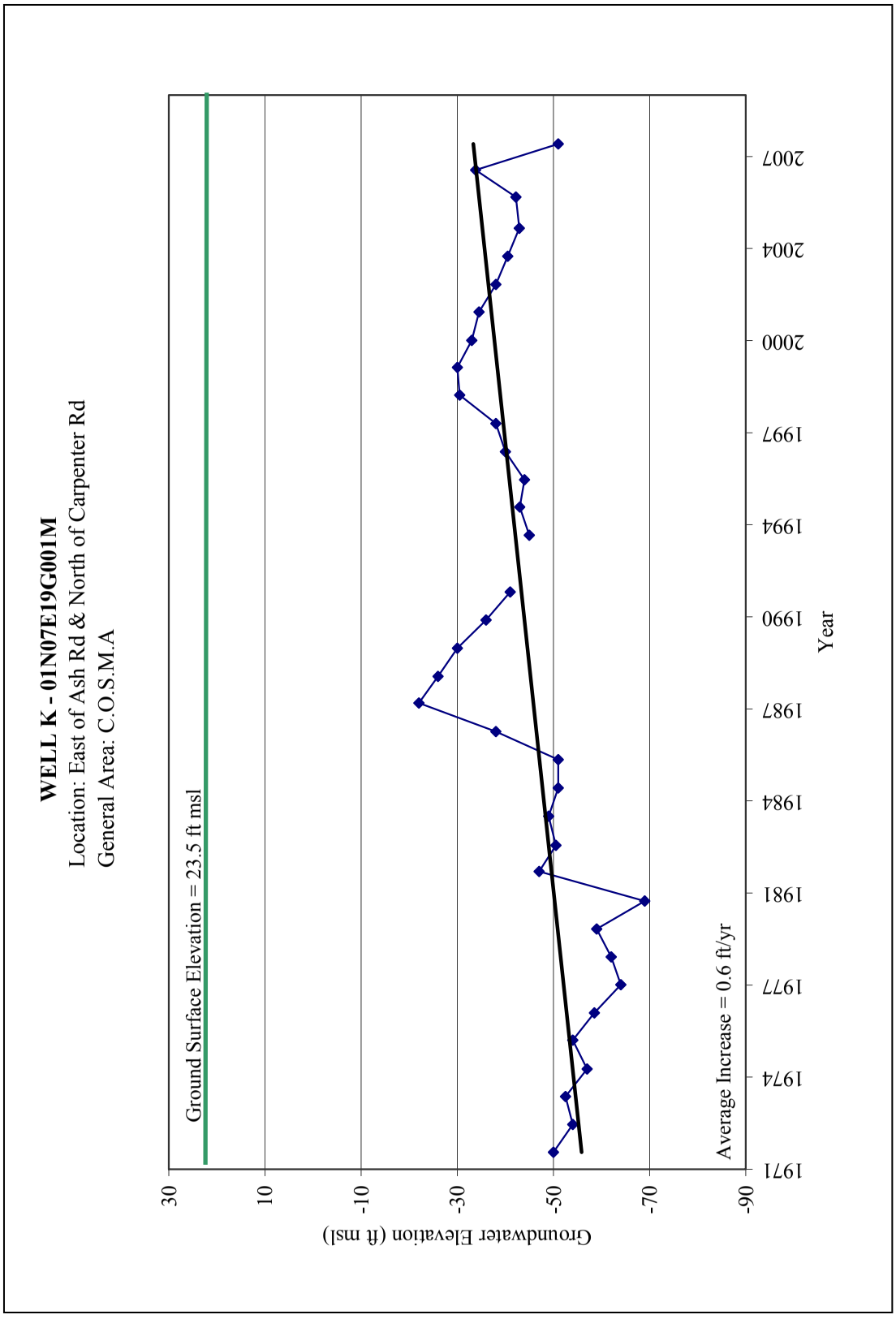

Figure 3-12: Fall Hydrograph Well K

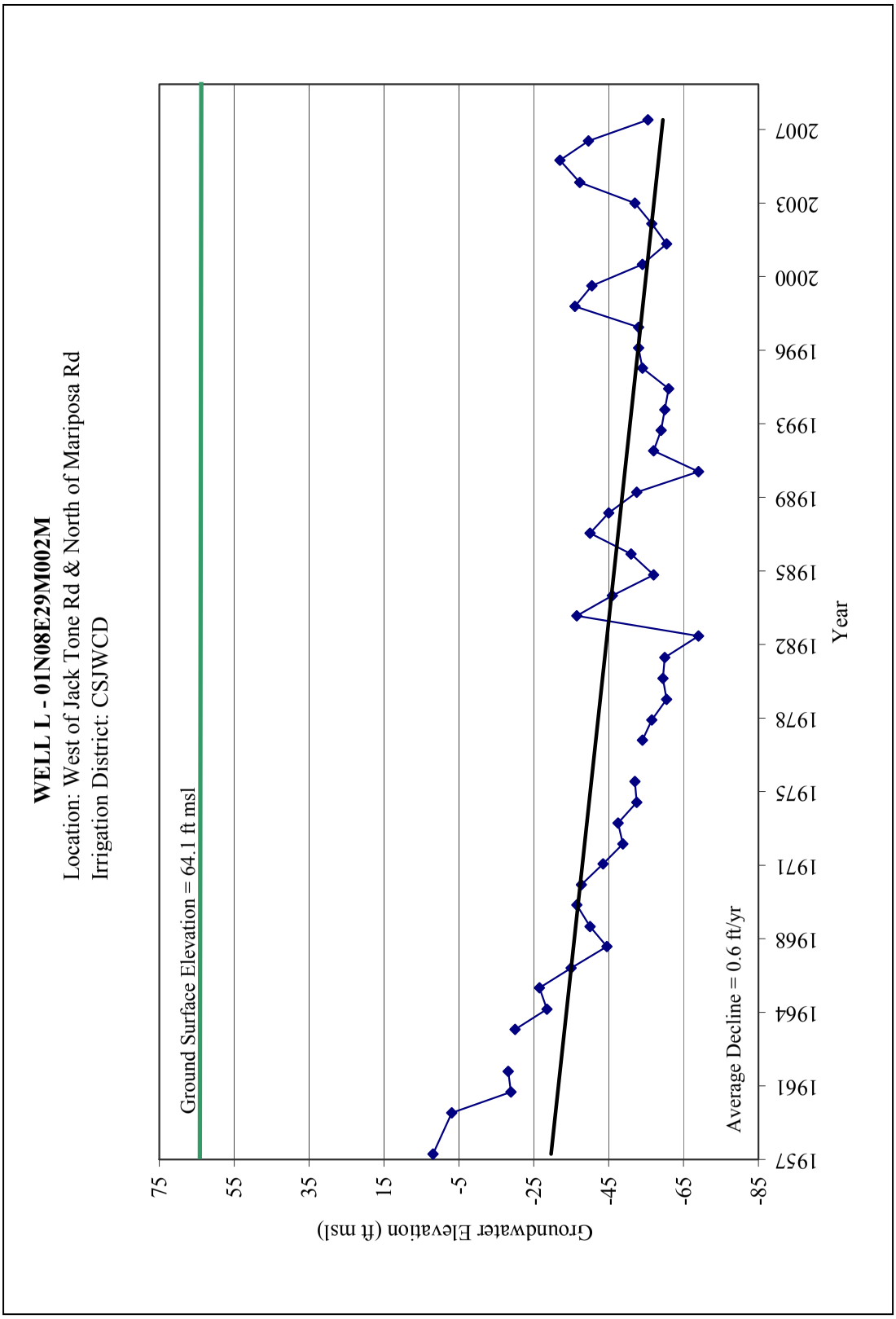

Figure 3-13: Fall Hydrograph Well L

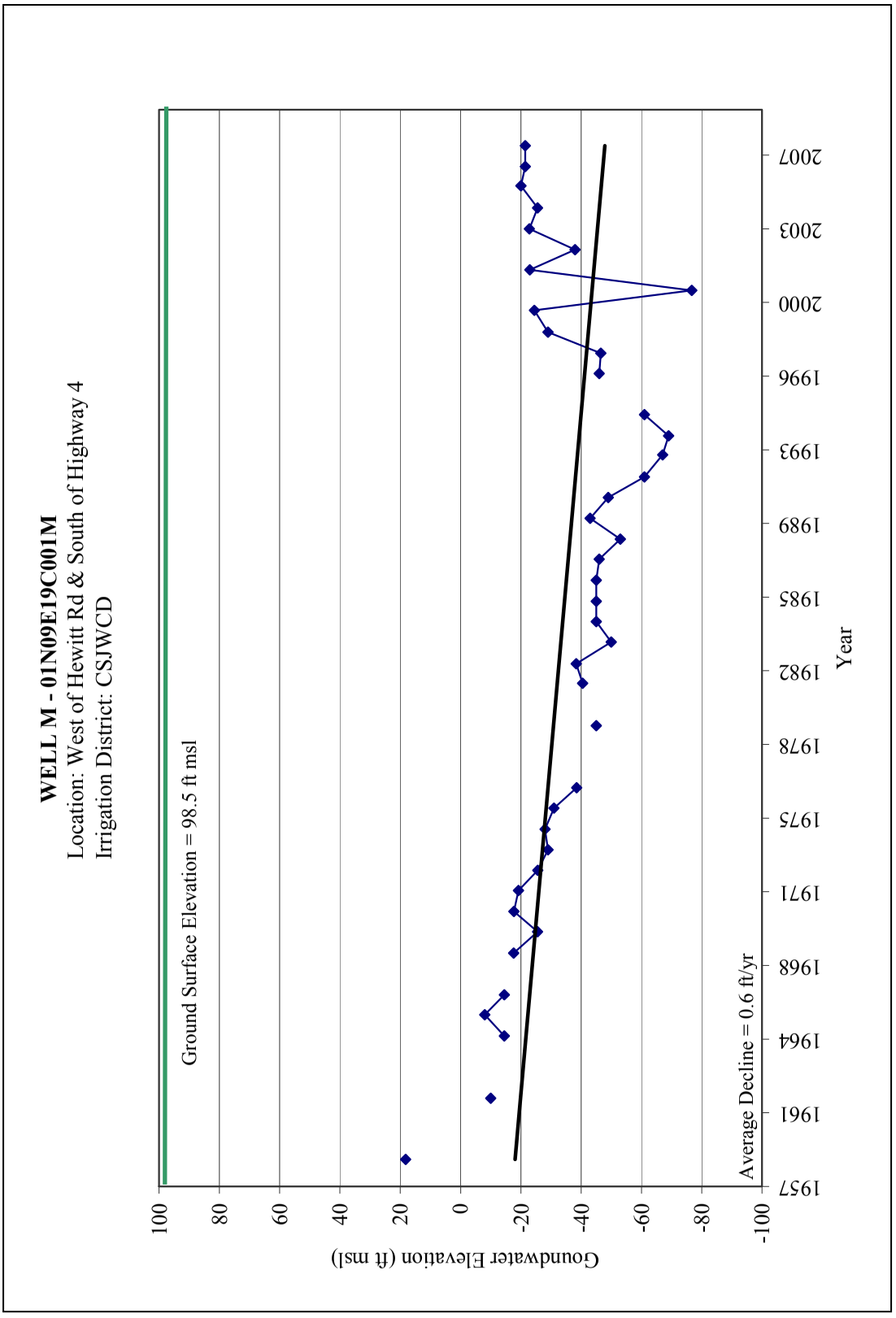

Figure 3-14: Fall Hydrograph Well M

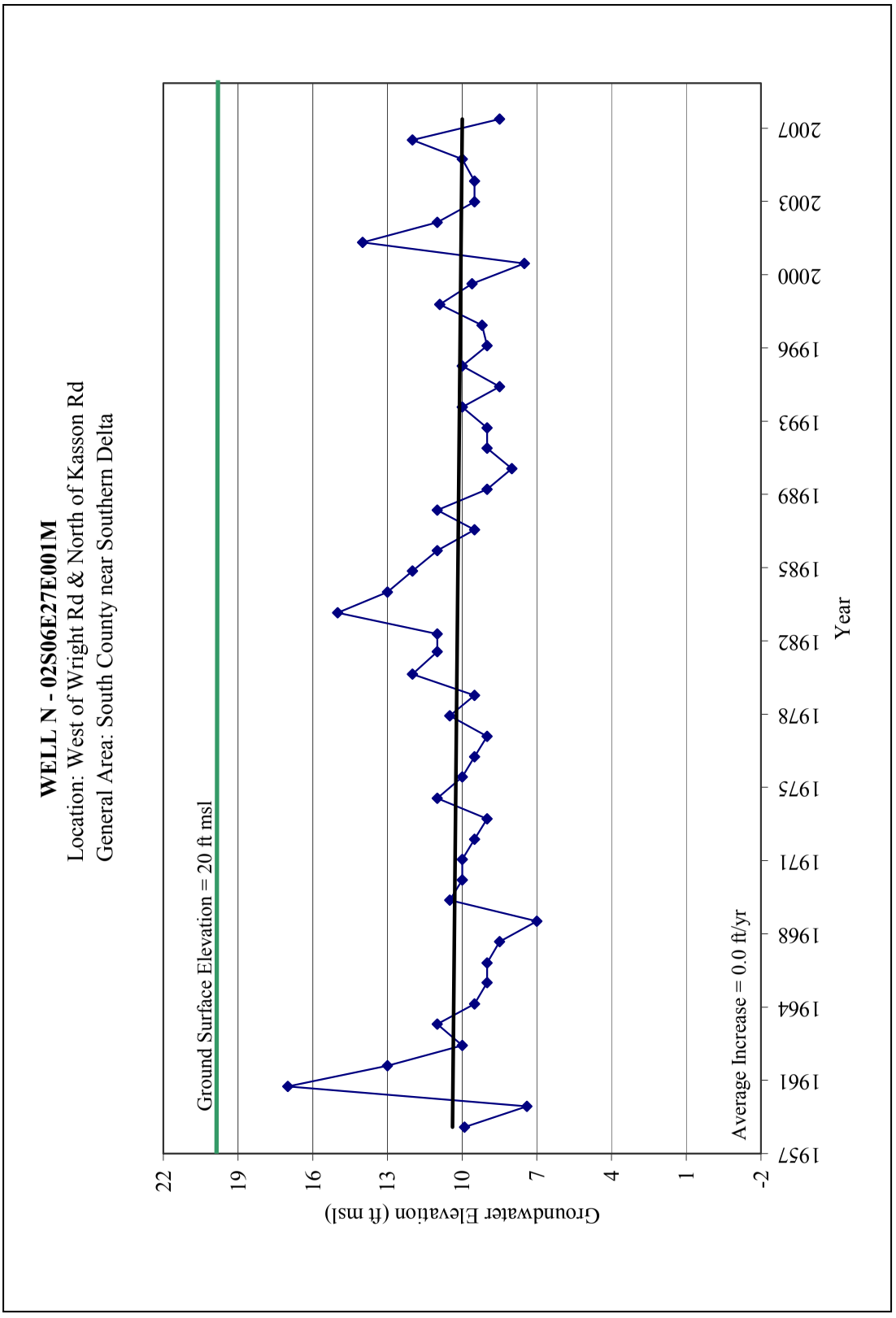

Figure 3-15: Fall Hydrograph Well N

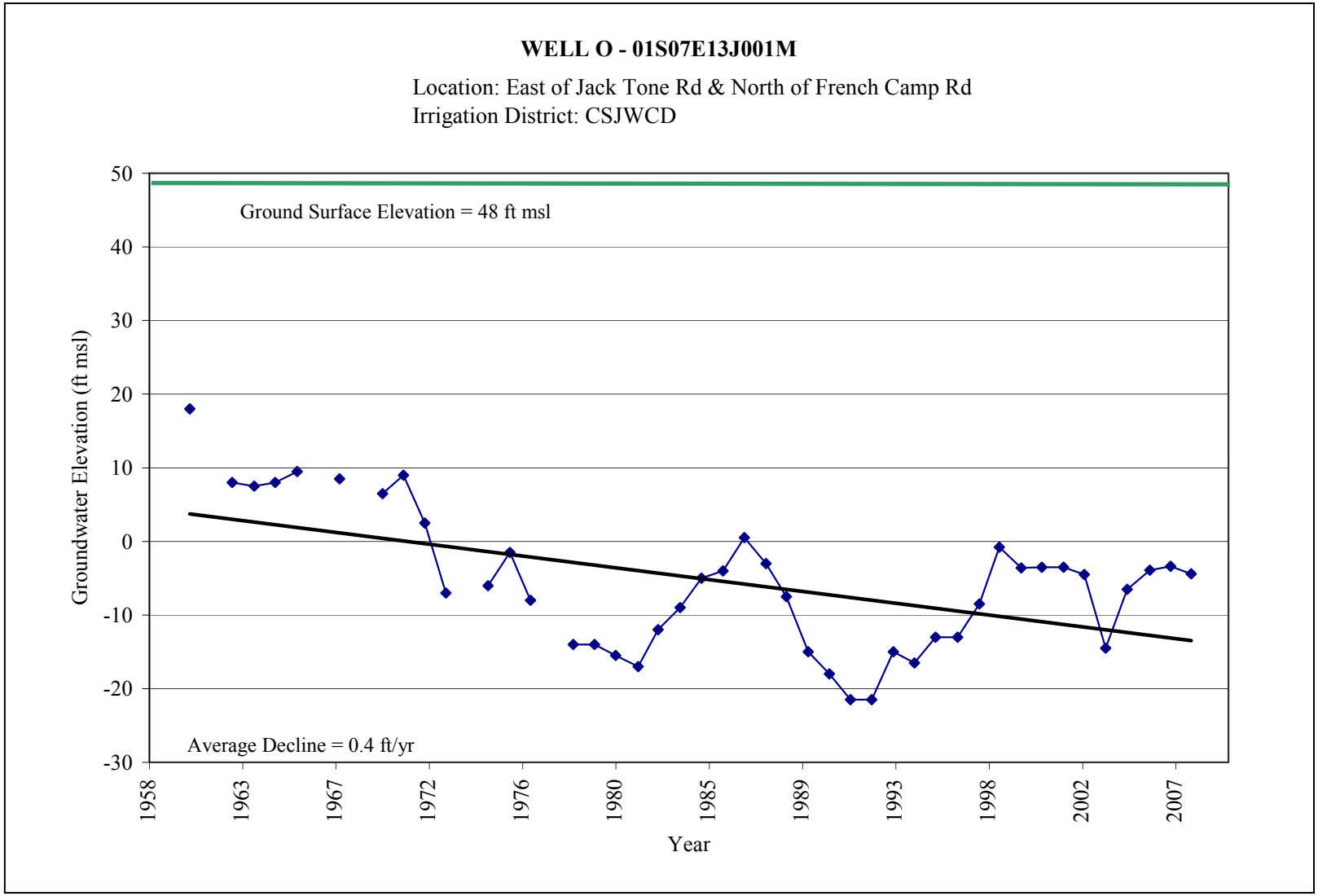

Figure 3-16: Fall Hydrograph Well O

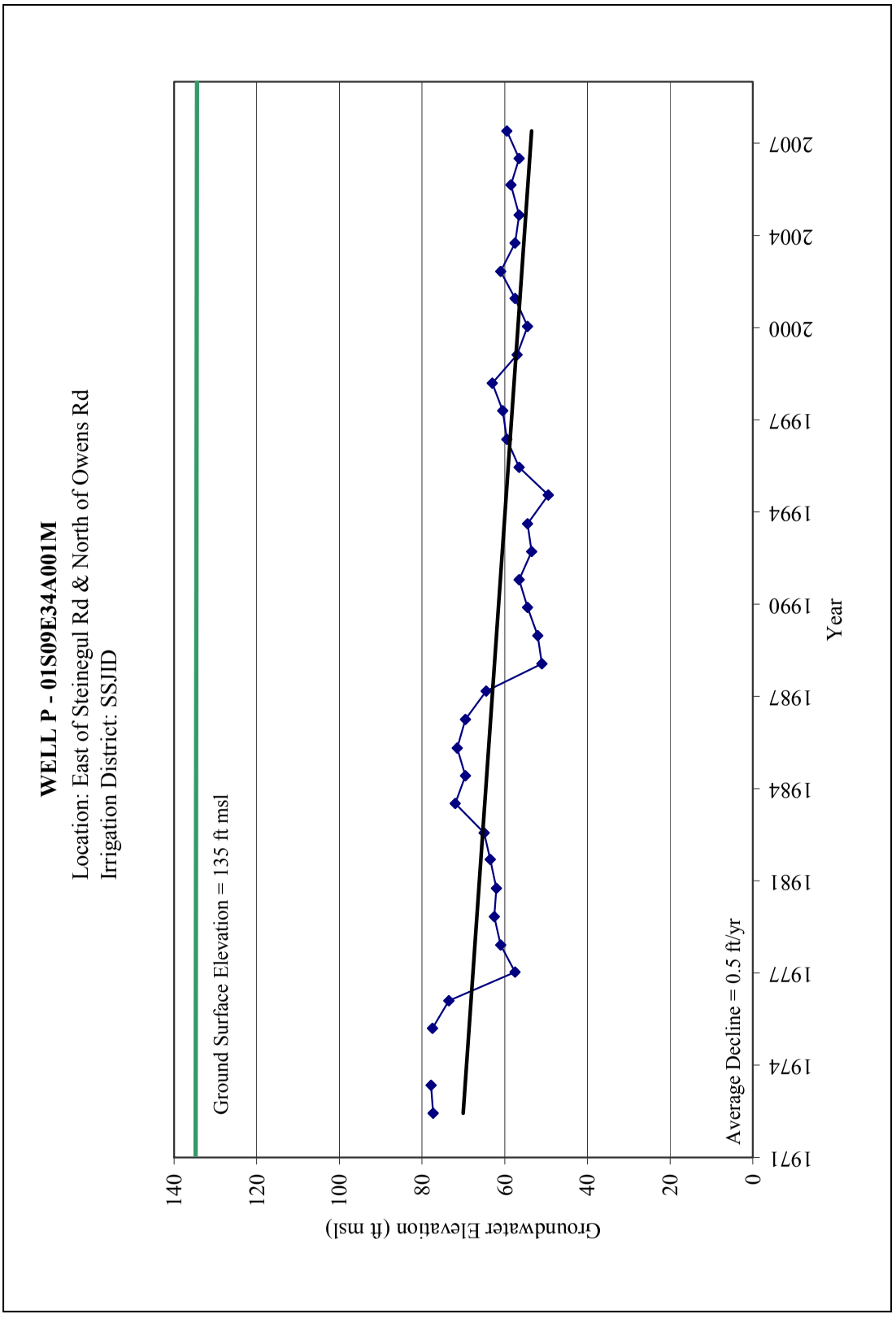

Figure 3-17: Fall Hydrograph Well P

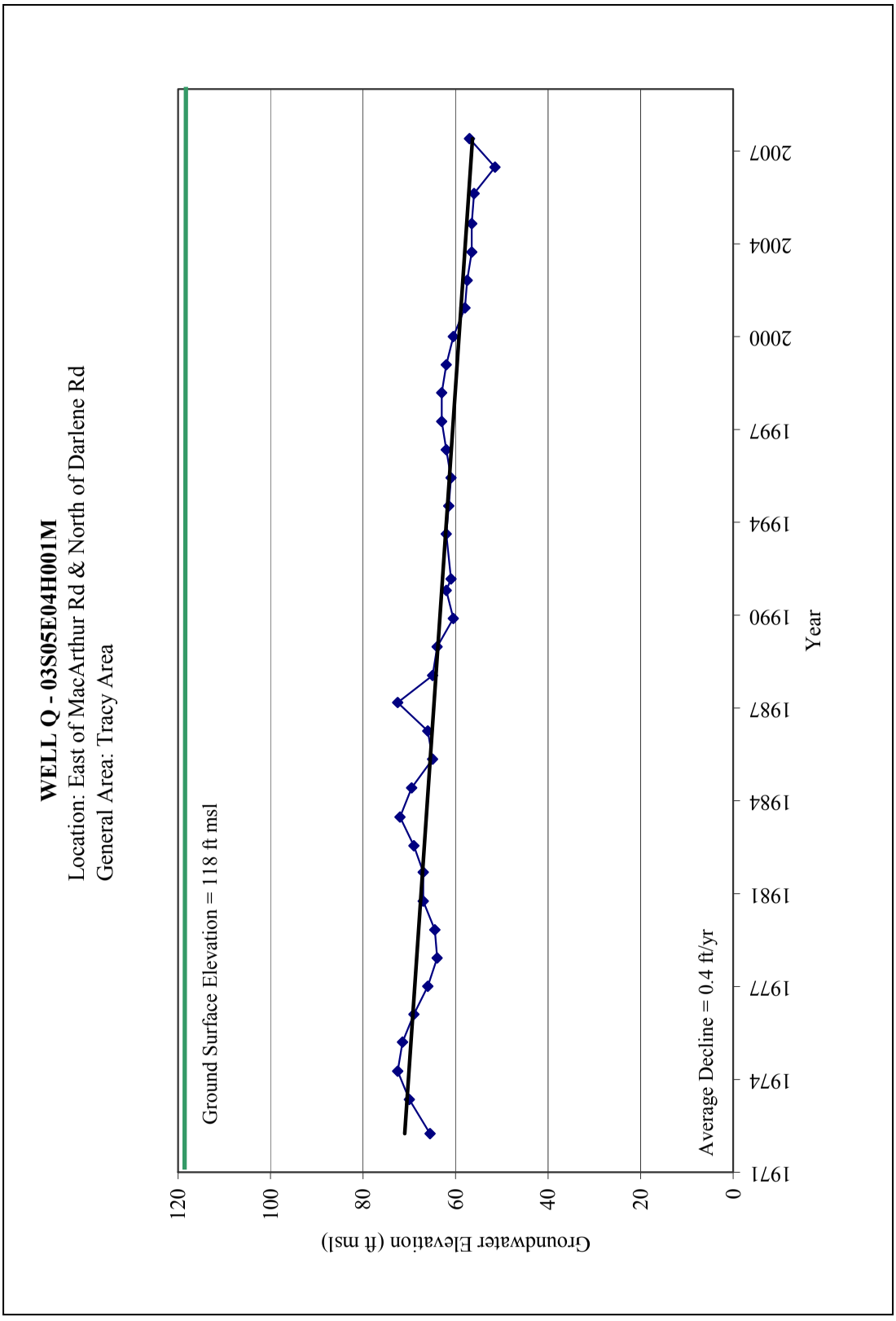

Figure 3-18: Fall Hydrograph Well Q

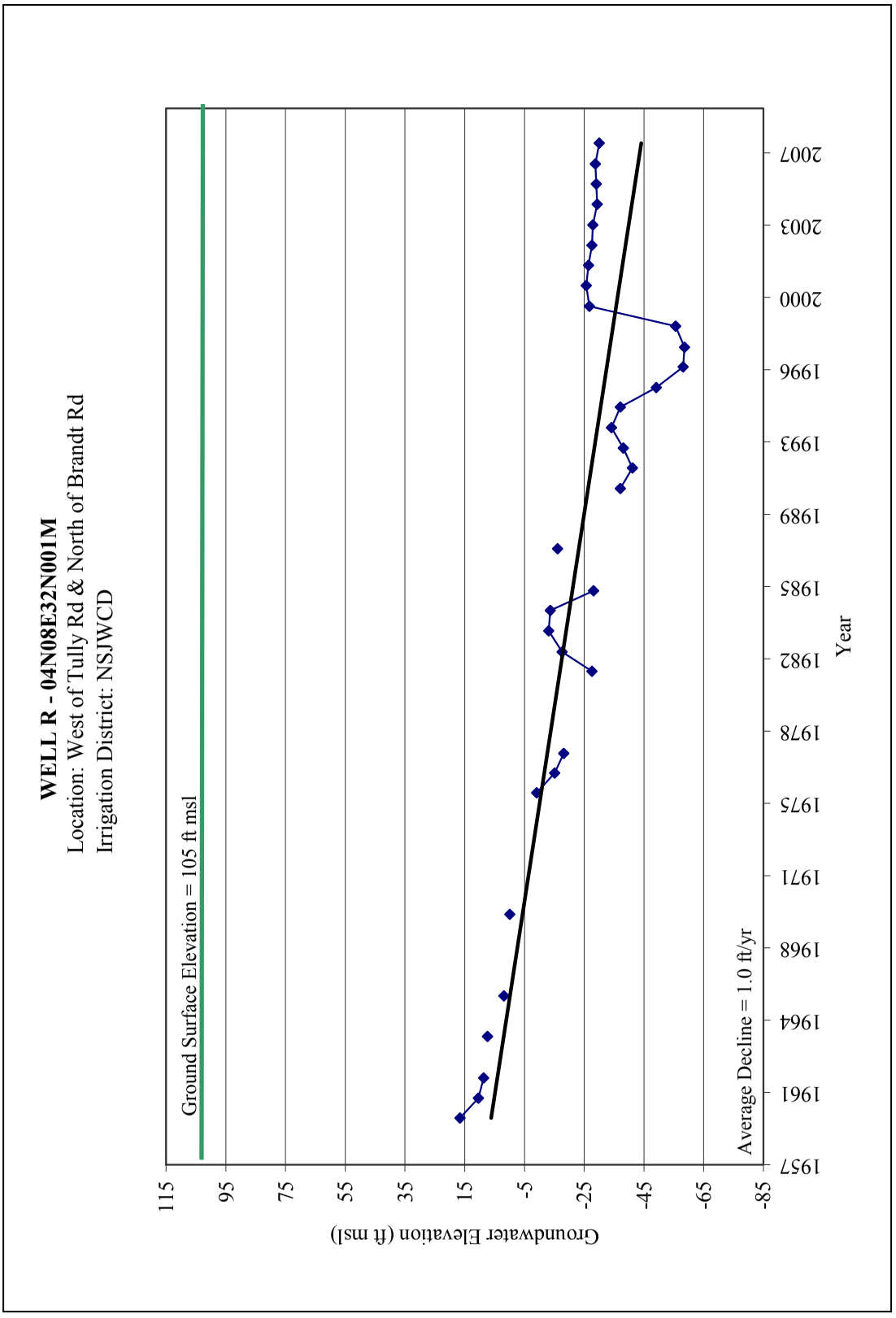

Figure 3-19: Fall Hydrograph Well R

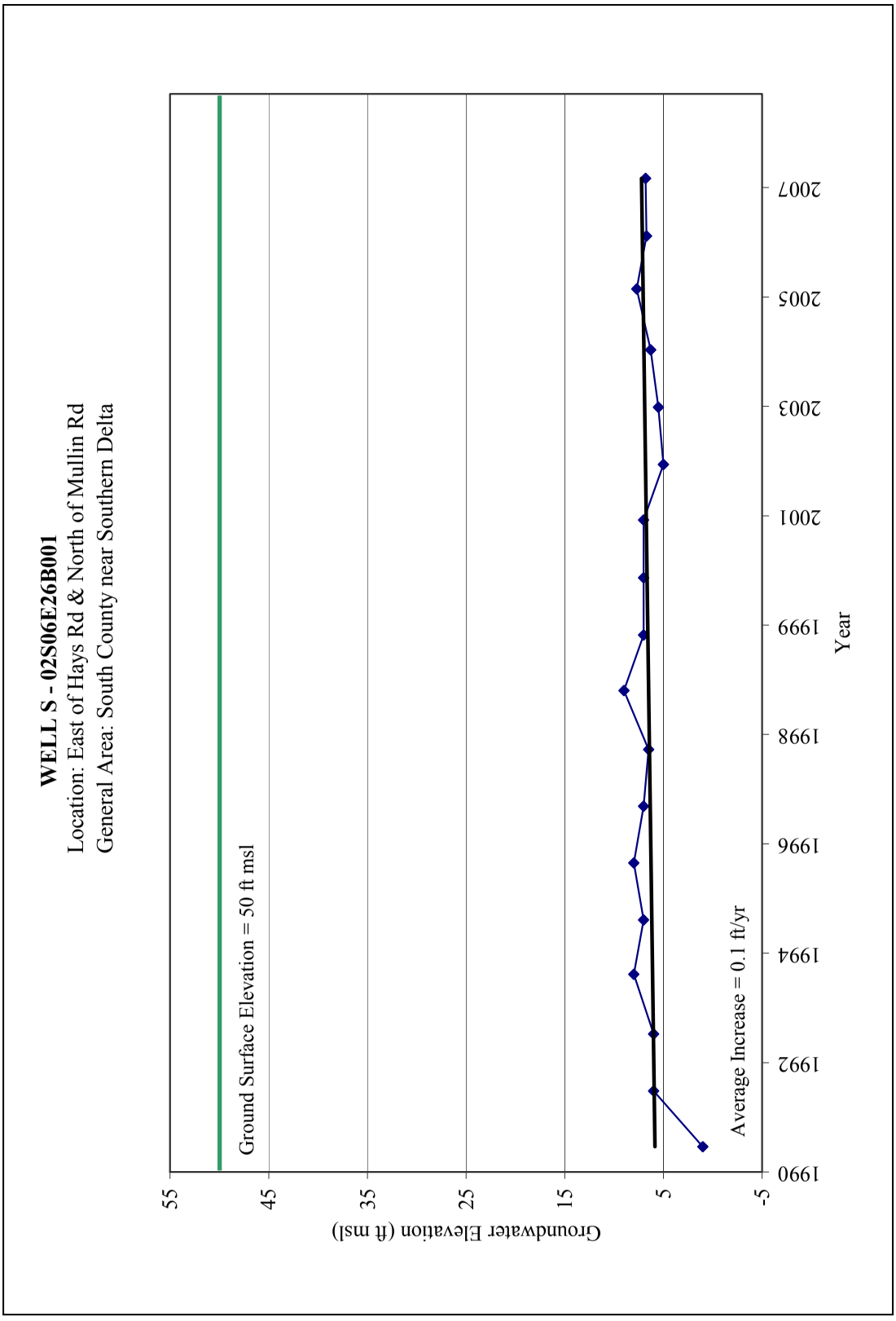

Figure 3-20: Fall Hydrograph Well S

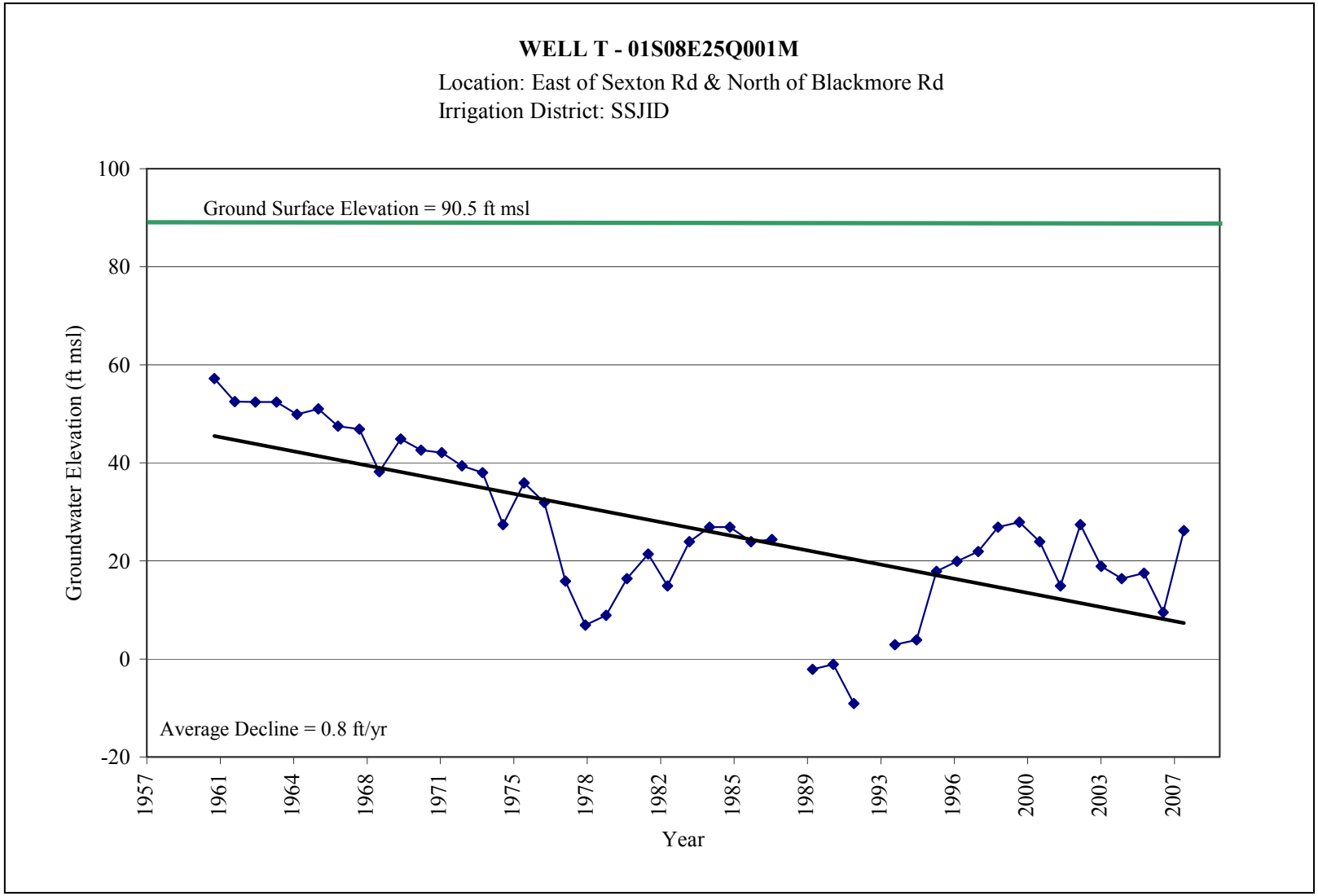

Figure 3-21: Fall Hydrograph Well T

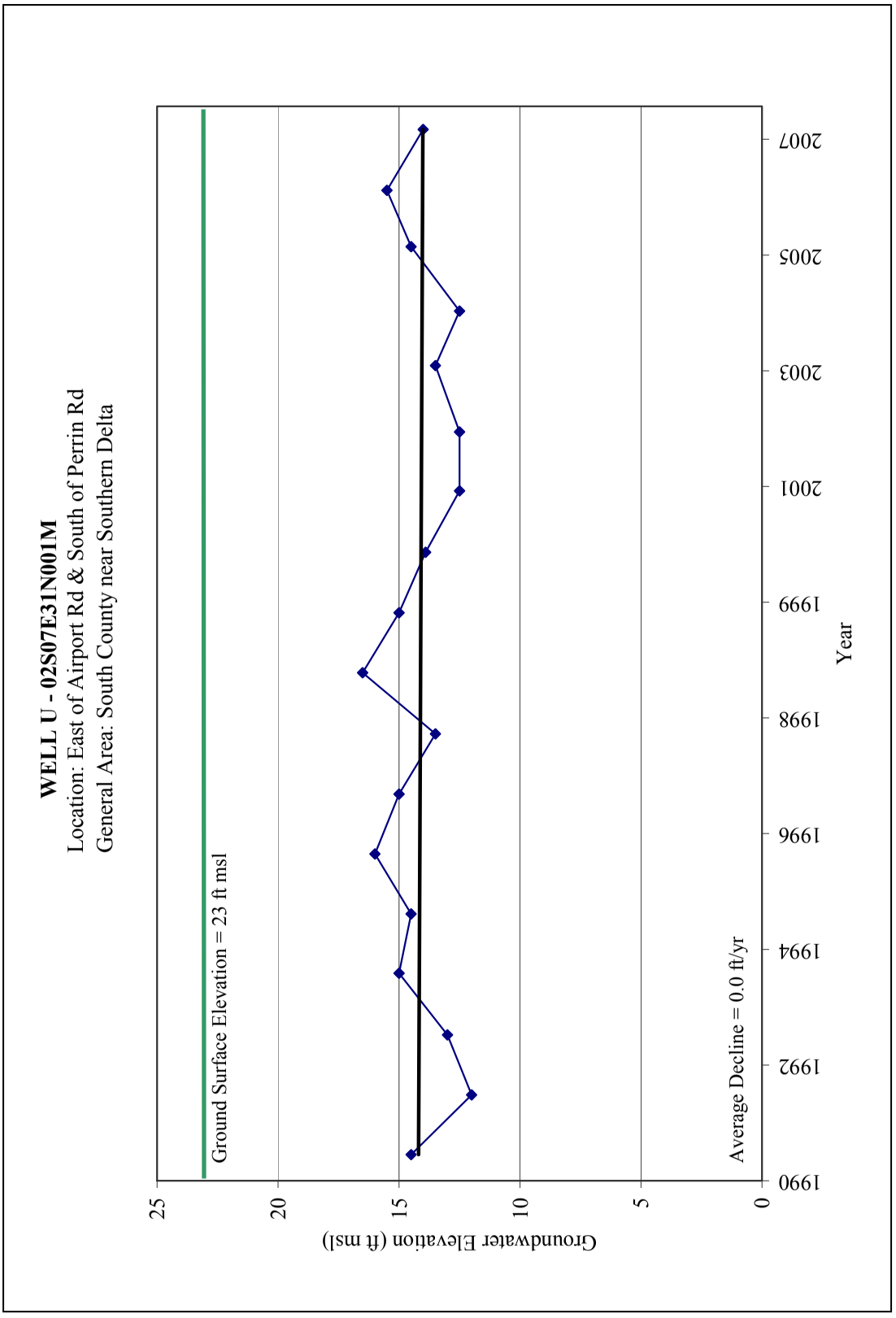

Figure 3-22: Fall Hydrograph Well U

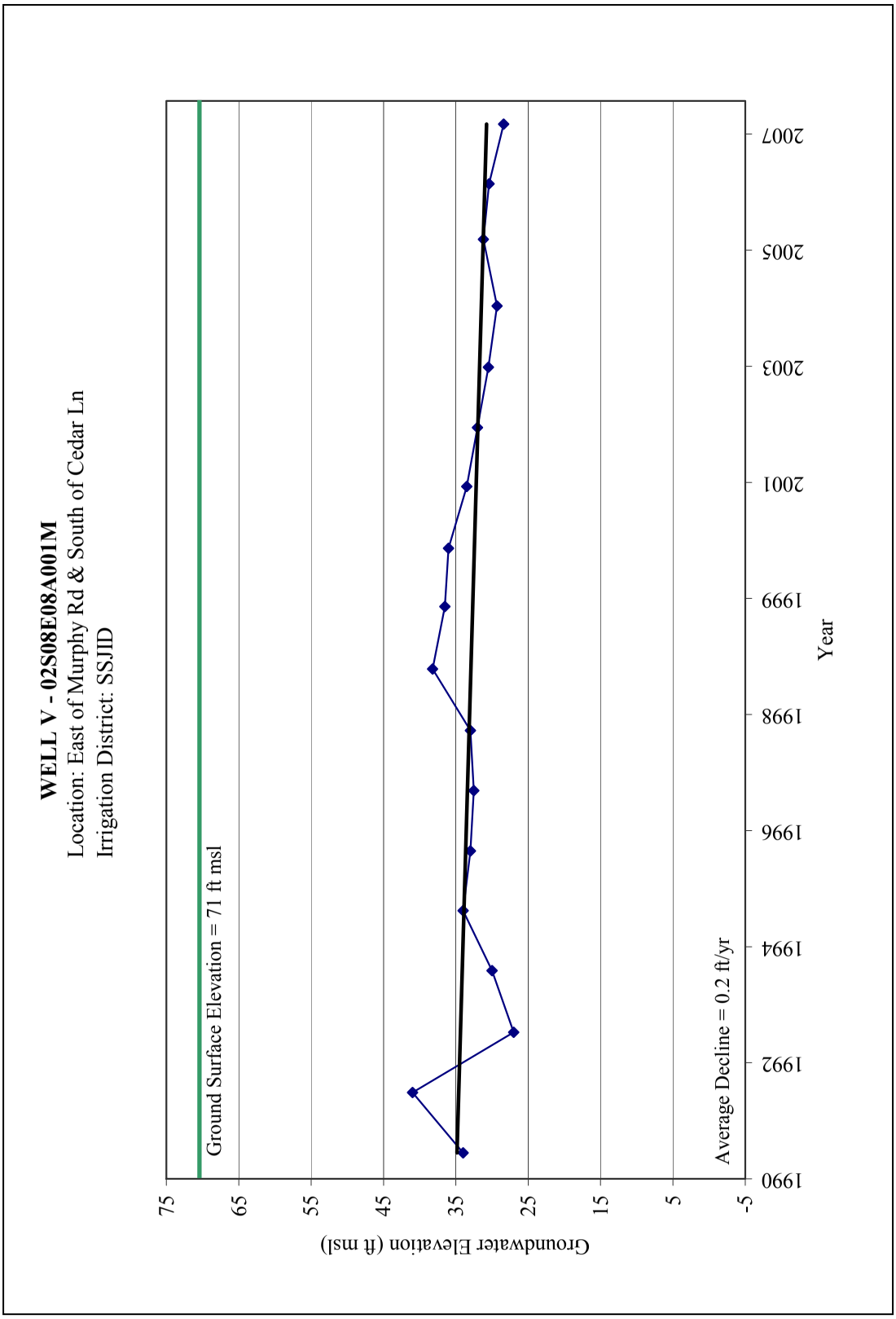

Figure 3-23: Fall Hydrograph Well V

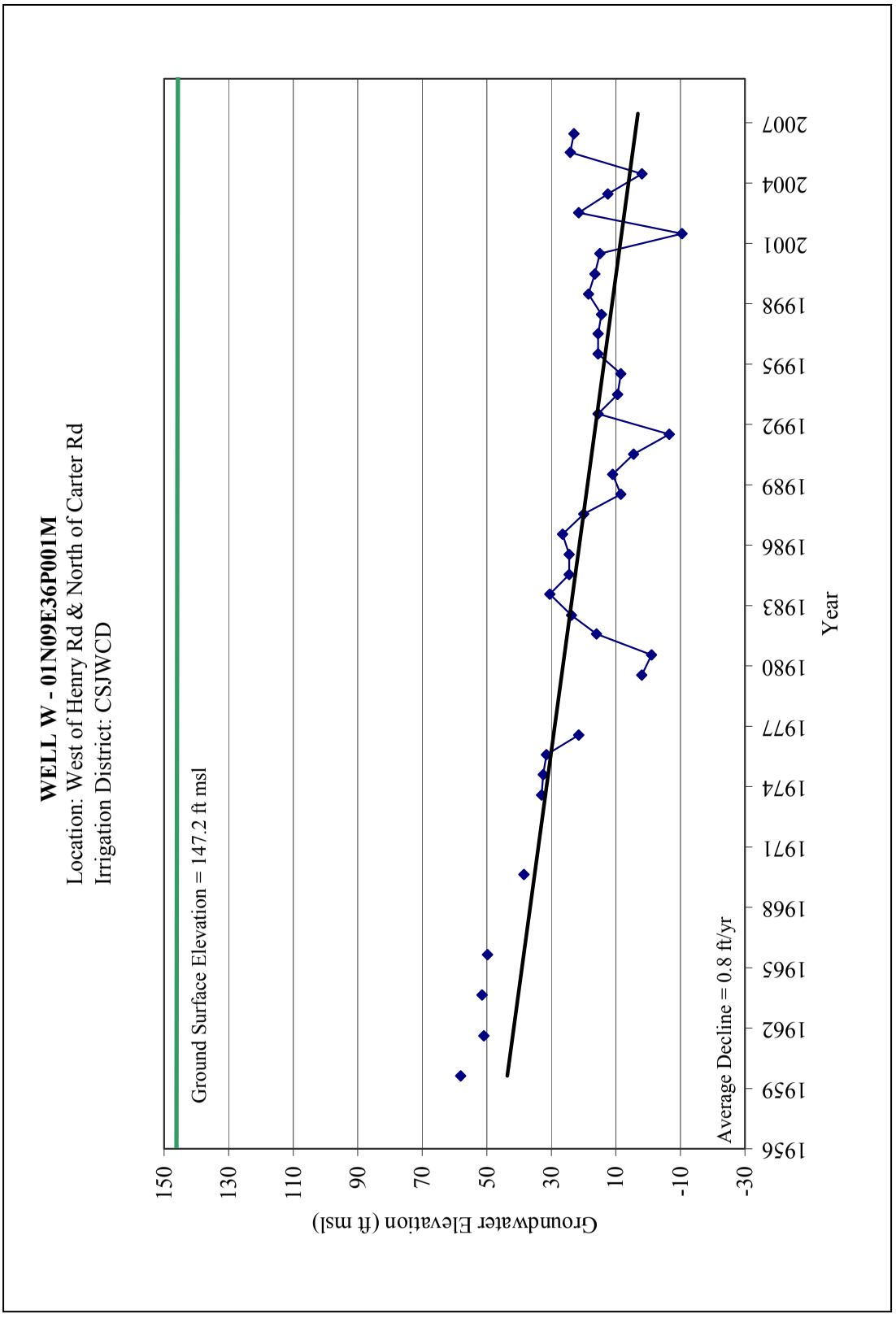

Figure 3-24: Fall Hydrograph Well W

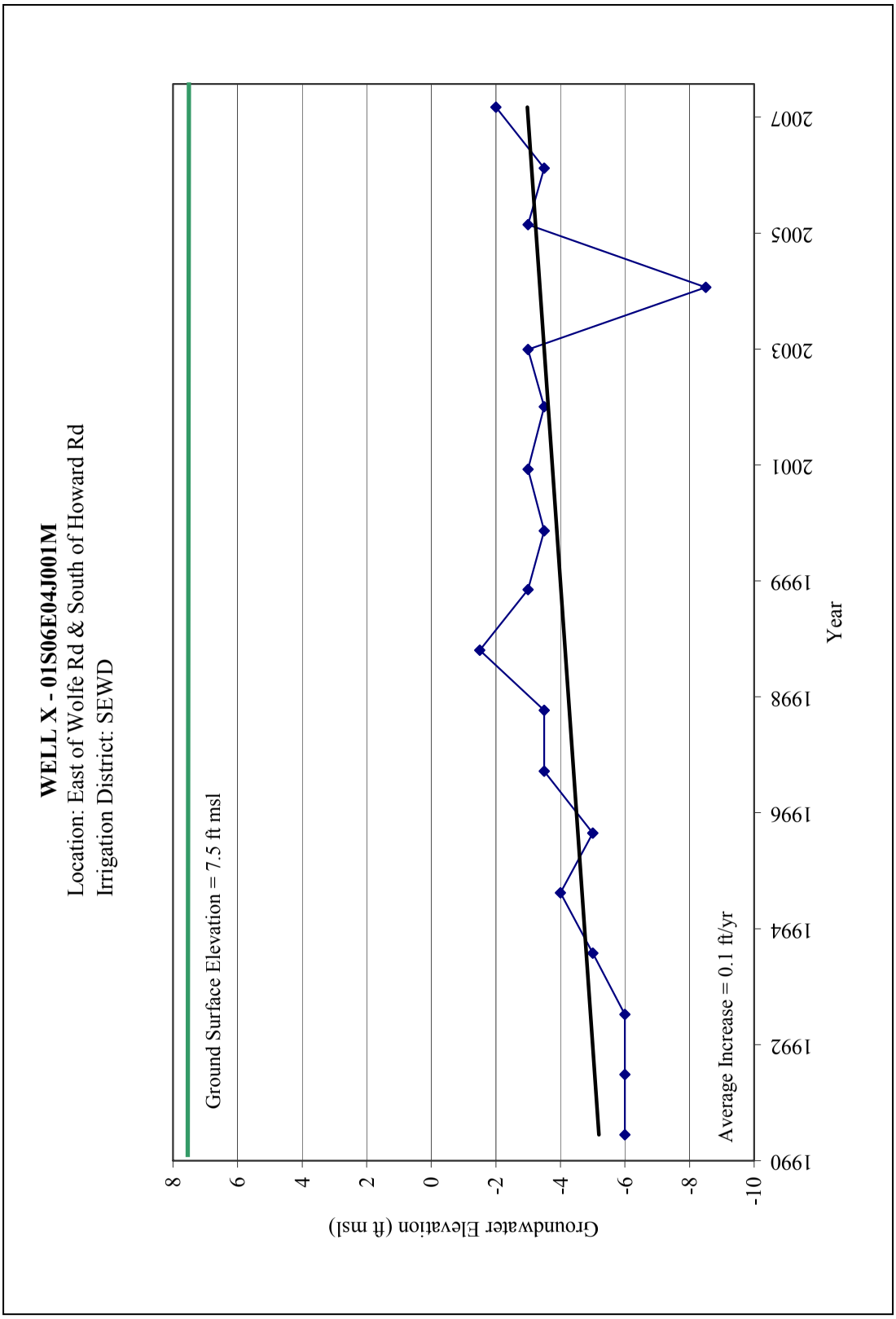

Figure 3-25: Fall Hydrograph Well X

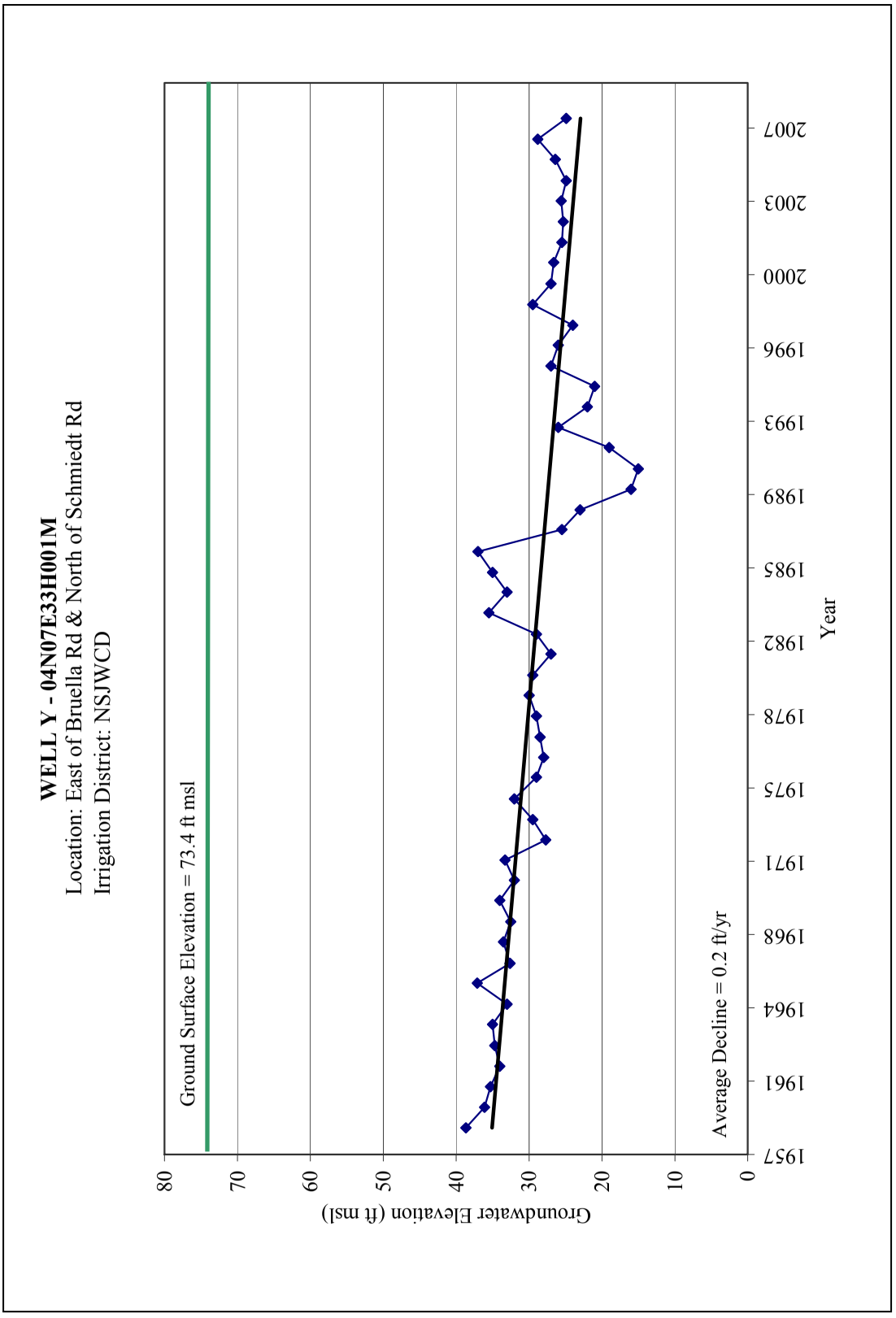

Figure 3-26: Fall Hydrograph Well Y

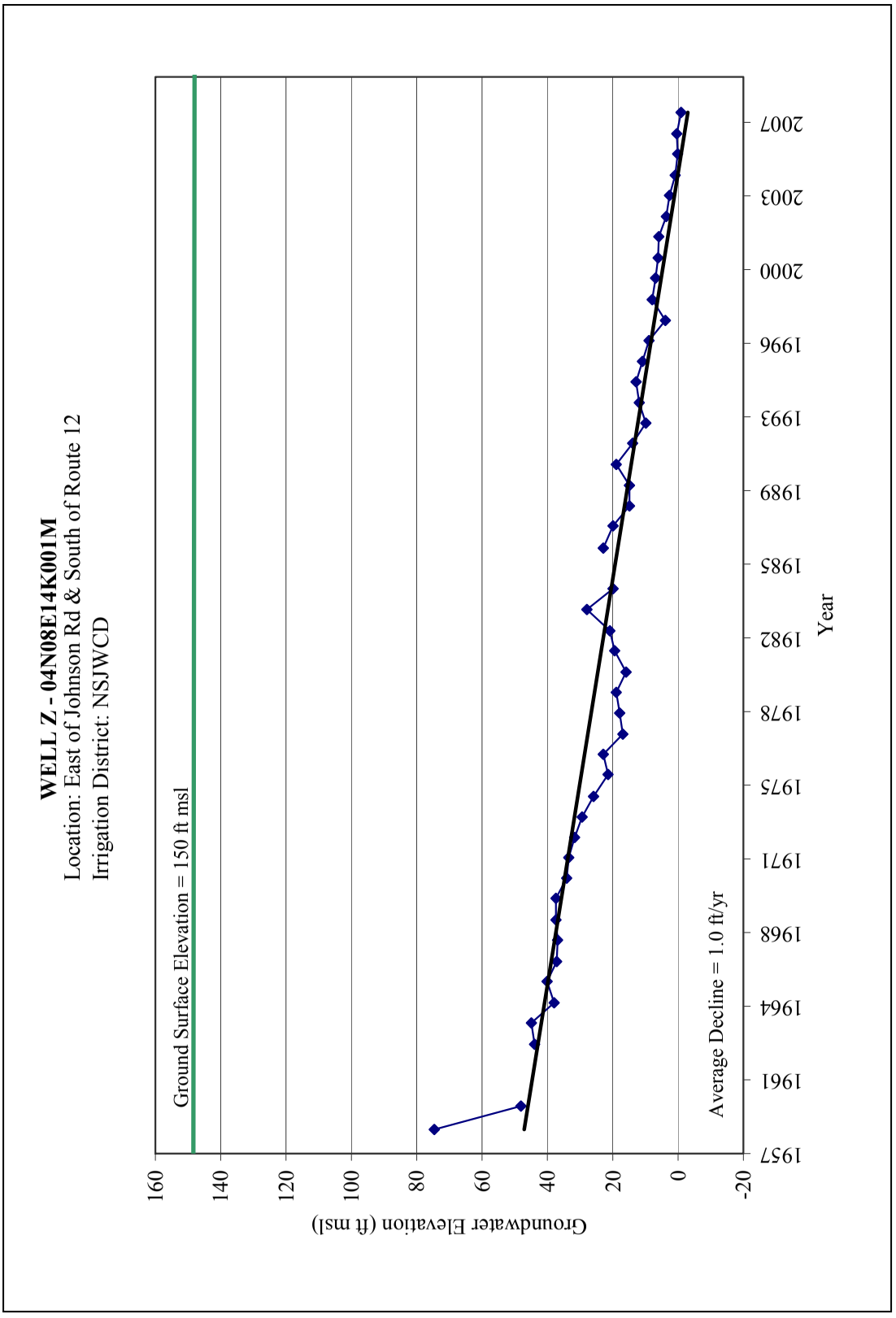

Figure 3-27: Fall Hydrograph Well Z

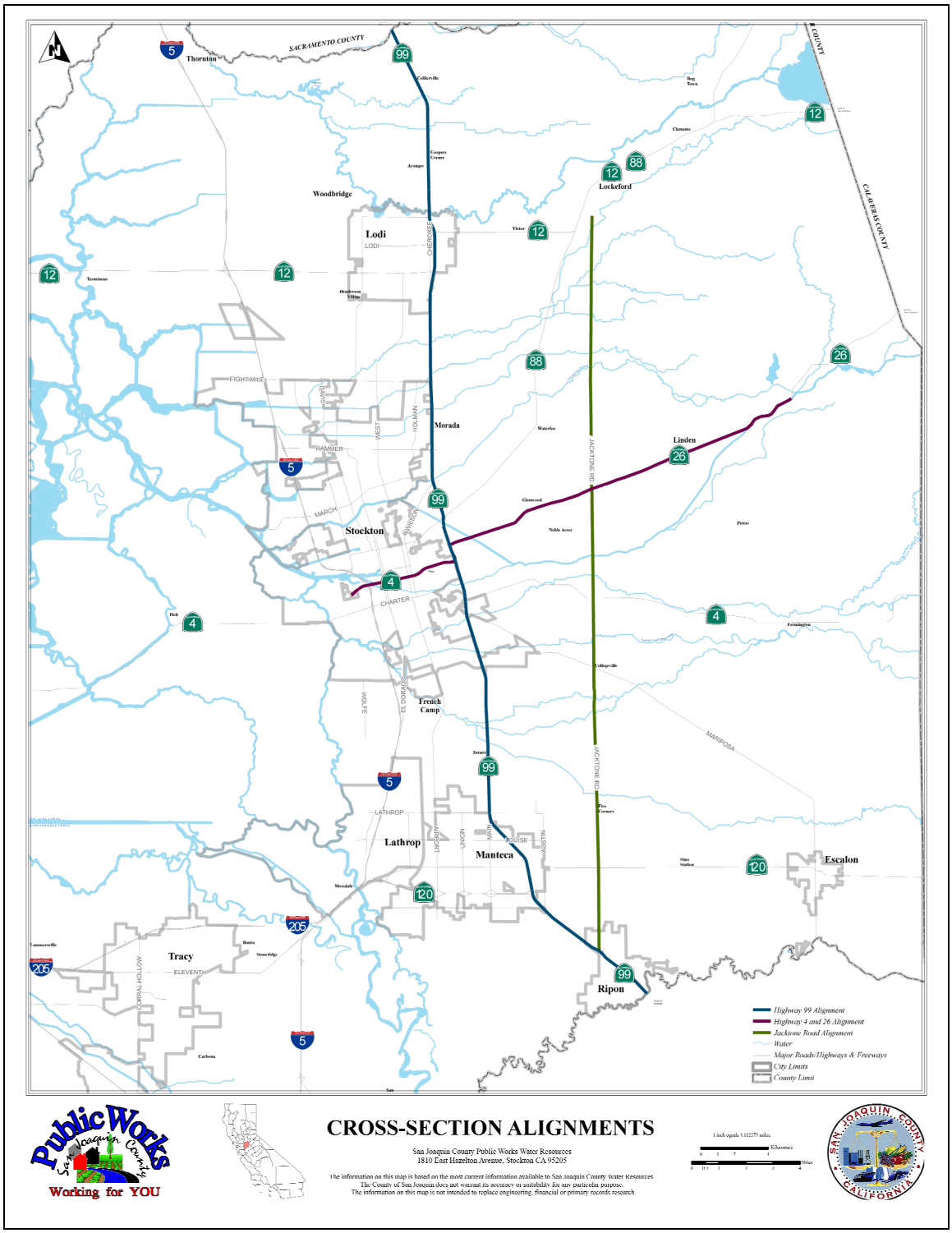

Figure 3-28: Cross Section Alignments

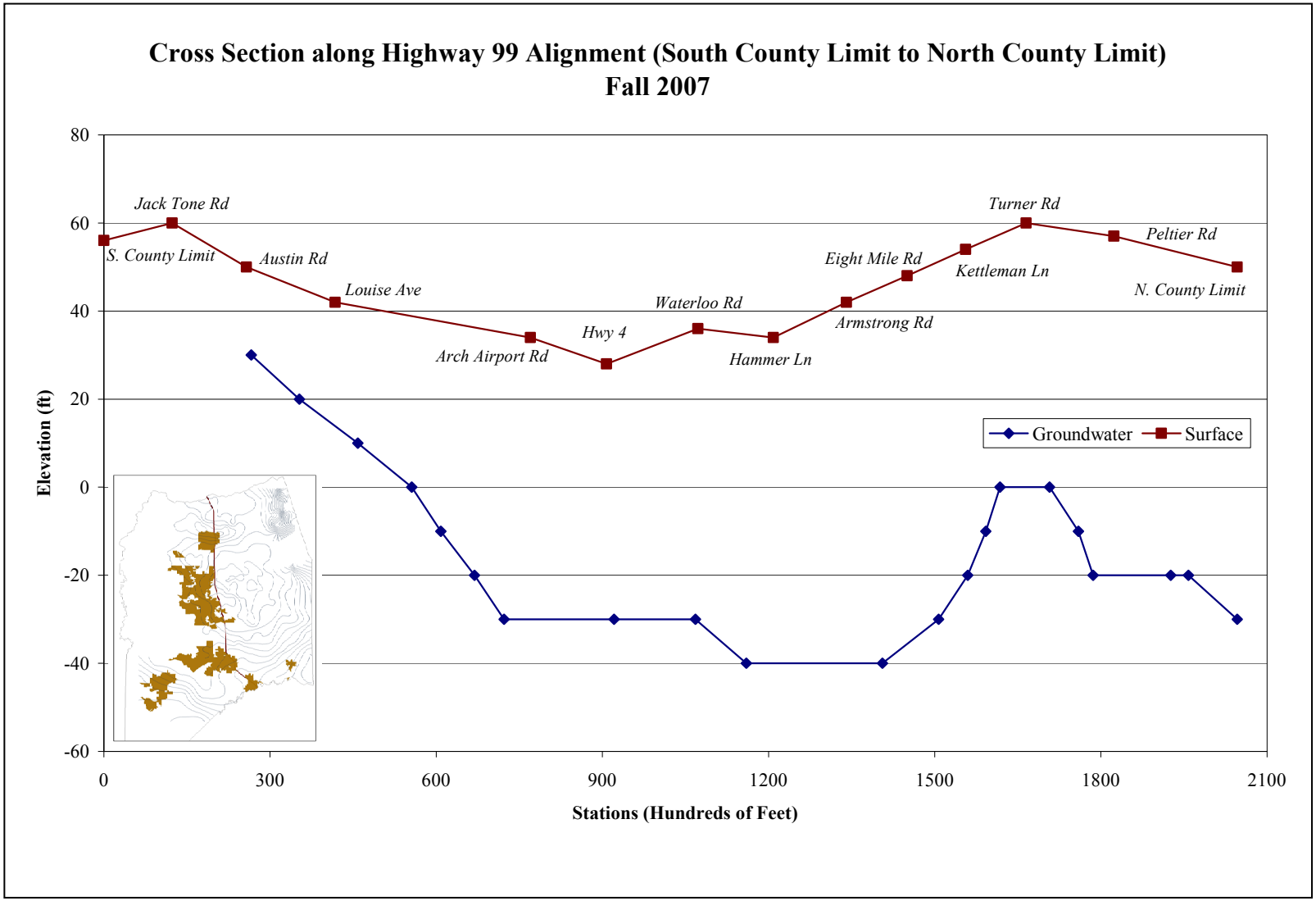

Figure 3-29: Highway 99 Cross Section Fall 2007

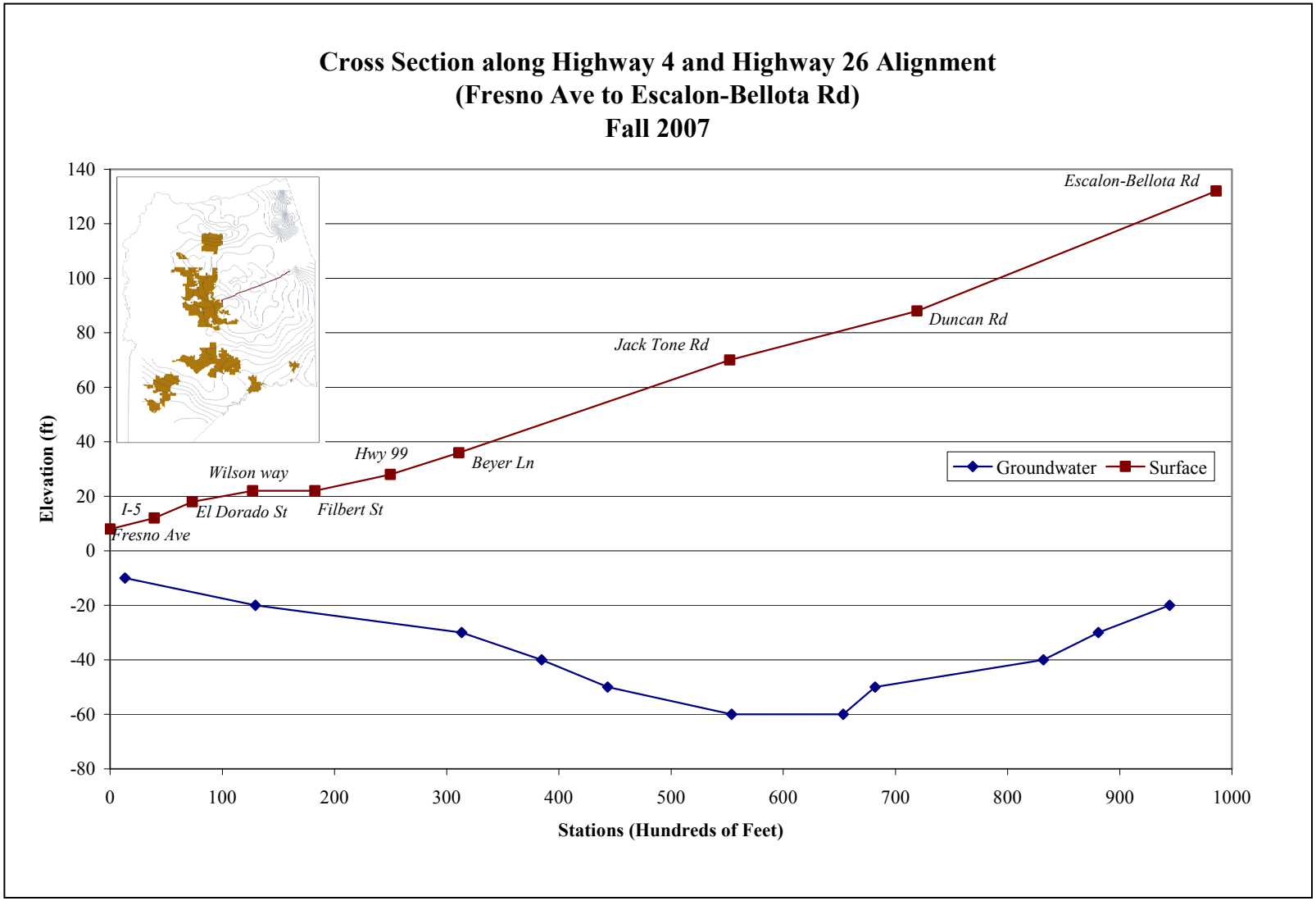

Figure 3-30: Highway 4 & Highway 26 Cross Section Fall 2007

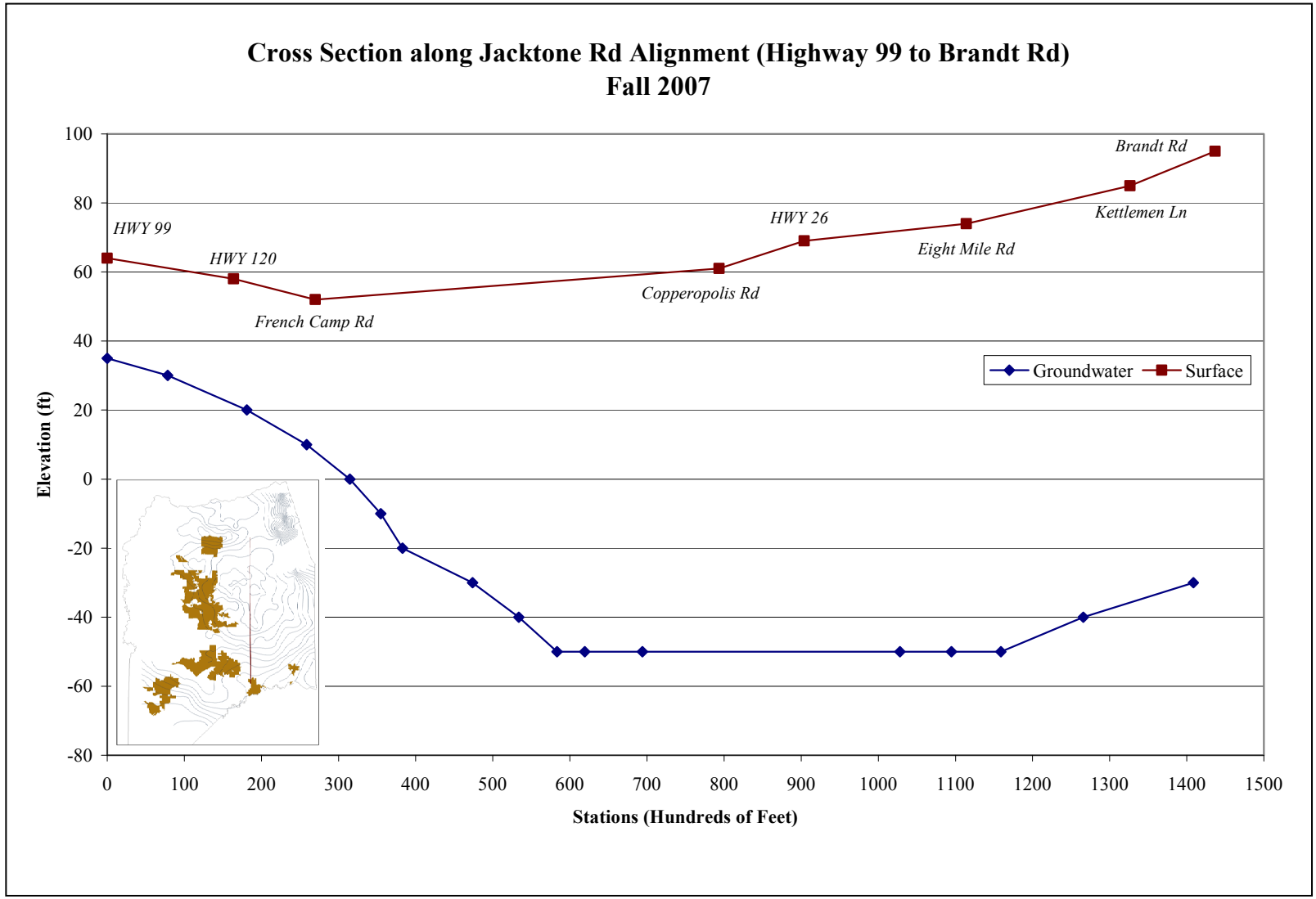

Figure 3-31: Jacktone Rd Cross Section Fall 2007

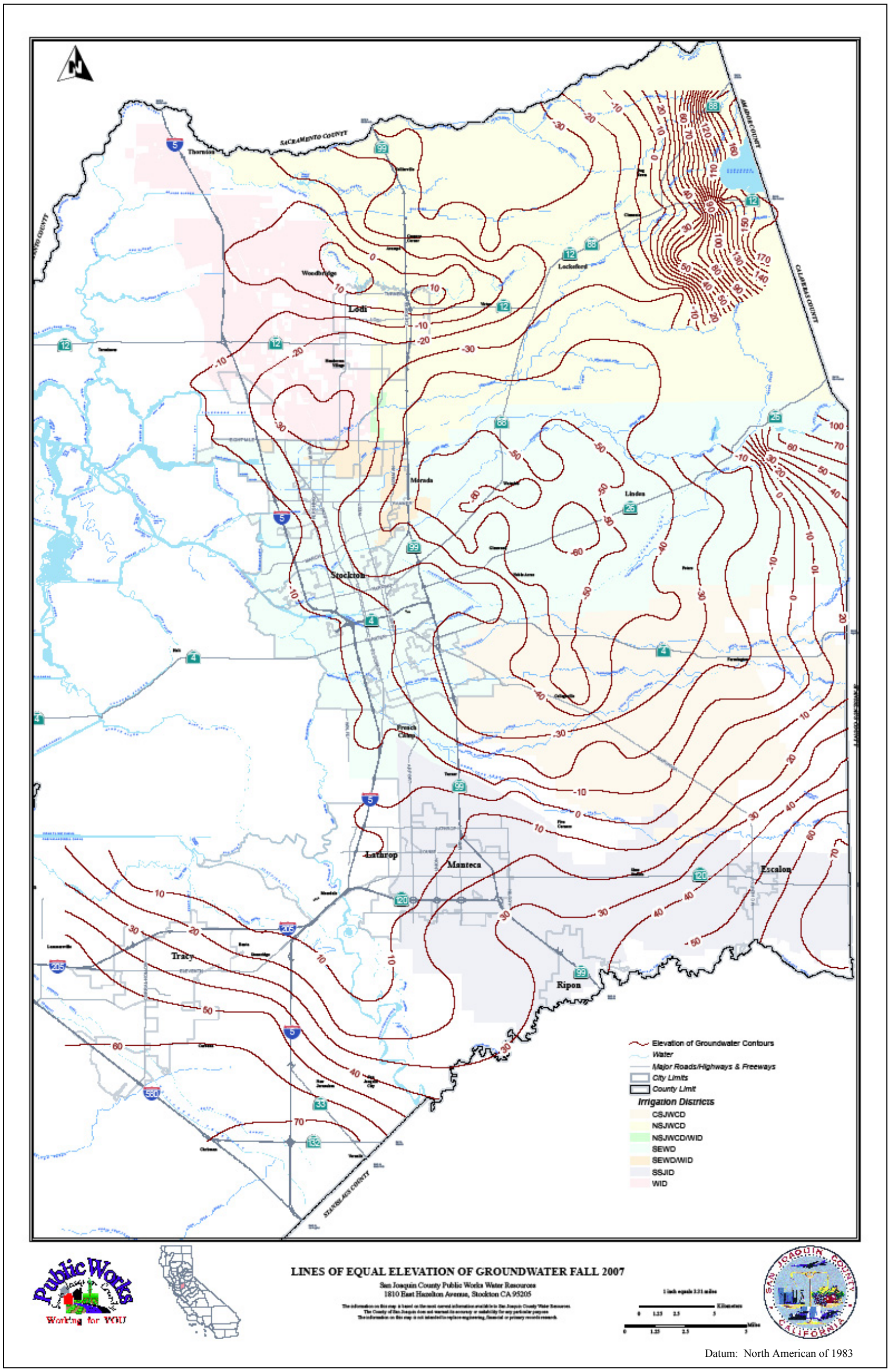

Figure 3-32: Lines of Equal Elevation of Groundwater Fall 2007

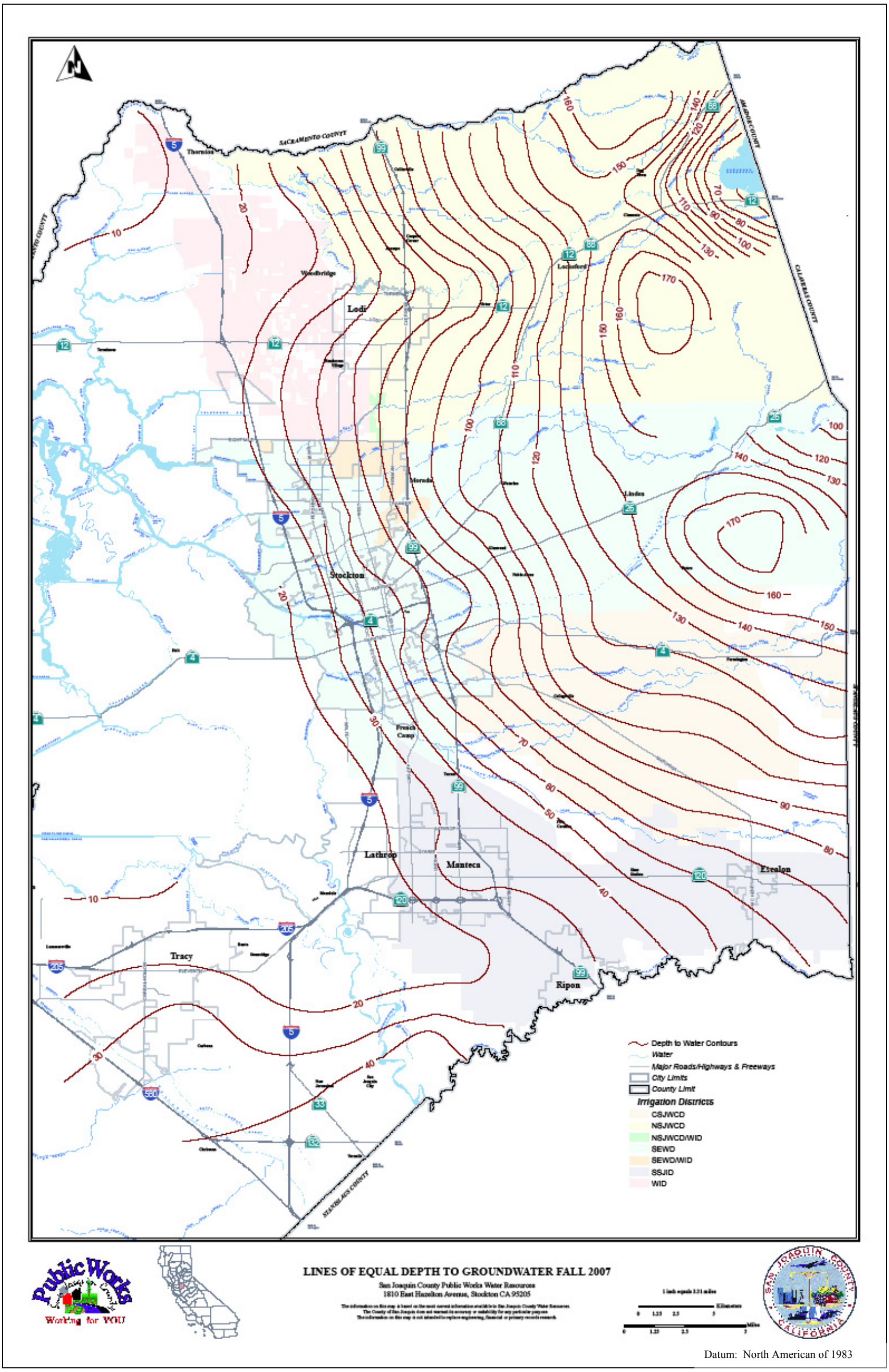

Figure 3-33: Lines of Equal Depth to Groundwater Fall 2007