

1-2-2019

2017 - Salinas Valley Hydrologic Subareas, 4th Quarter Water Conditions

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..Title

Receive Report on Salinas Valley Water Conditions for the Fourth Quarter of Water Year 2016-2017

..Report

RECOMMENDATION:

It is recommended that the Monterey County Water Resources Agency Board of Directors:

Receive report on Salinas Valley water conditions for the fourth quarter of Water Year 2016-2017.

SUMMARY/DISCUSSION:

This report covers the fourth quarter of Water Year 2016-2017 (WY17), July, 2017 through September, 2017. It provides a brief overview of water conditions in the Salinas Valley (Attachment A) with discussion of precipitation, reservoir storage, and ground water level trends. Data for each of these components are included as graphs and tables in Attachments B through J.

Precipitation – The fourth quarter of WY17 brought below normal rainfall to Salinas and King City. Cumulative totals for the quarter were 0.04 inches (20% of normal rainfall of 0.20 inches for the quarter) at the Salinas Airport, and 0.07 inches (41% of normal rainfall of 0.17 inches for the quarter) in King City.

Attachment B contains graphs for both stations showing monthly and cumulative precipitation data for the current and a normal water year. Attachment B also includes tables showing values for precipitation totals as well as percent of normal precipitation.

Rainfall data for Salinas and King City should be considered preliminary until verified by National Weather Service data at a later date.

Reservoirs - The following table compares fourth quarter storage at Nacimiento and San Antonio reservoirs for WR17 and WR16. Storage in Nacimiento Reservoir is 83,258 acre-feet higher than in September 2016, and storage in San Antonio Reservoir is 89,487 acre-feet higher.

Reservoir	September 30, 2017 (WY17) Storage in acre-feet	September 30, 2016 (WY16) Storage in acre-feet	Difference in acre-feet
Nacimiento	181,038	97,780	83,258
San Antonio	111,350	21,863	89,487

Graphs for both reservoirs showing daily storage for the last five water years along with period-of-record daily average storage for comparison are included as Attachments C and D.

Groundwater Levels – More than 80 wells are measured monthly throughout the Salinas Valley to monitor seasonal groundwater level fluctuations. Data from approximately 50 of these wells

are used in the preparation of this report. The measurements are categorized by hydrologic subarea, averaged, and graphed to compare current water levels with selected past conditions. Graphs for individual subareas, showing the current year's water level conditions, last year's conditions (WY16), dry conditions (WY91), and near-normal conditions (WY85), are found in Attachments E through I.

Groundwater level data collected in the fourth quarter indicate that July water levels declined in the Pressure 180-Foot Aquifer, Pressure 400-Foot Aquifer, the East Side Subarea and the Forebay Subarea, while Upper Valley water levels were unchanged. August water levels saw little to no change in the Pressure 180-Foot Aquifer, the East Side Subarea and the Upper Valley Subarea, while declining in the Pressure 400-Foot Aquifer and the Forebay Subarea. In September, water levels began their seasonal recovery in the Pressure 180-Foot and Pressure 400-Foot Aquifers as well as the East Side Subarea, while hovering at seasonal high levels in the Upper Valley Subarea. Water levels in the Forebay Subarea continued to decline in September.

Attachment J is a summary of water level changes for all subareas. From August to September, groundwater levels recovered by one foot in the Pressure 180-Foot Aquifer, three feet in the Pressure 400-Foot Aquifer, six feet in the East Side Subarea and by less than one foot in the Upper Valley Subarea. Water levels declined by one foot from August to September in the Forebay Subarea. Compared to September 2016, average September 2017 groundwater levels rose by eleven feet in the Pressure 180-Foot Aquifer, eight feet in the Pressure 400-Foot Aquifer, seven feet in the East Side Subarea, eighteen feet in the Forebay Subarea, and sixteen feet in the Upper Valley Subarea.

When compared to WY85, which is considered to be a year of near normal groundwater conditions, September 2017 water levels were six feet lower in the Pressure 180-Foot Aquifer, seven feet higher in the Pressure 400-Foot Aquifer, twenty-two feet lower in the East Side Subarea, one foot lower in the Forebay Subarea and two feet lower in the Upper Valley Subarea.

Average WY17 groundwater levels ended the fourth quarter above WY91 (dry conditions) levels by six feet in the Pressure 180-Foot Aquifer, by fifteen feet in the Pressure 400-Foot Aquifer and eight feet in the Forebay Subarea, while equaling WY91 water levels in the East Side Subarea and Upper Valley Subarea.

OTHER AGENCY INVOLVEMENT:

None

FINANCING:

From Water Resources Agency Funds 114, 115, 116

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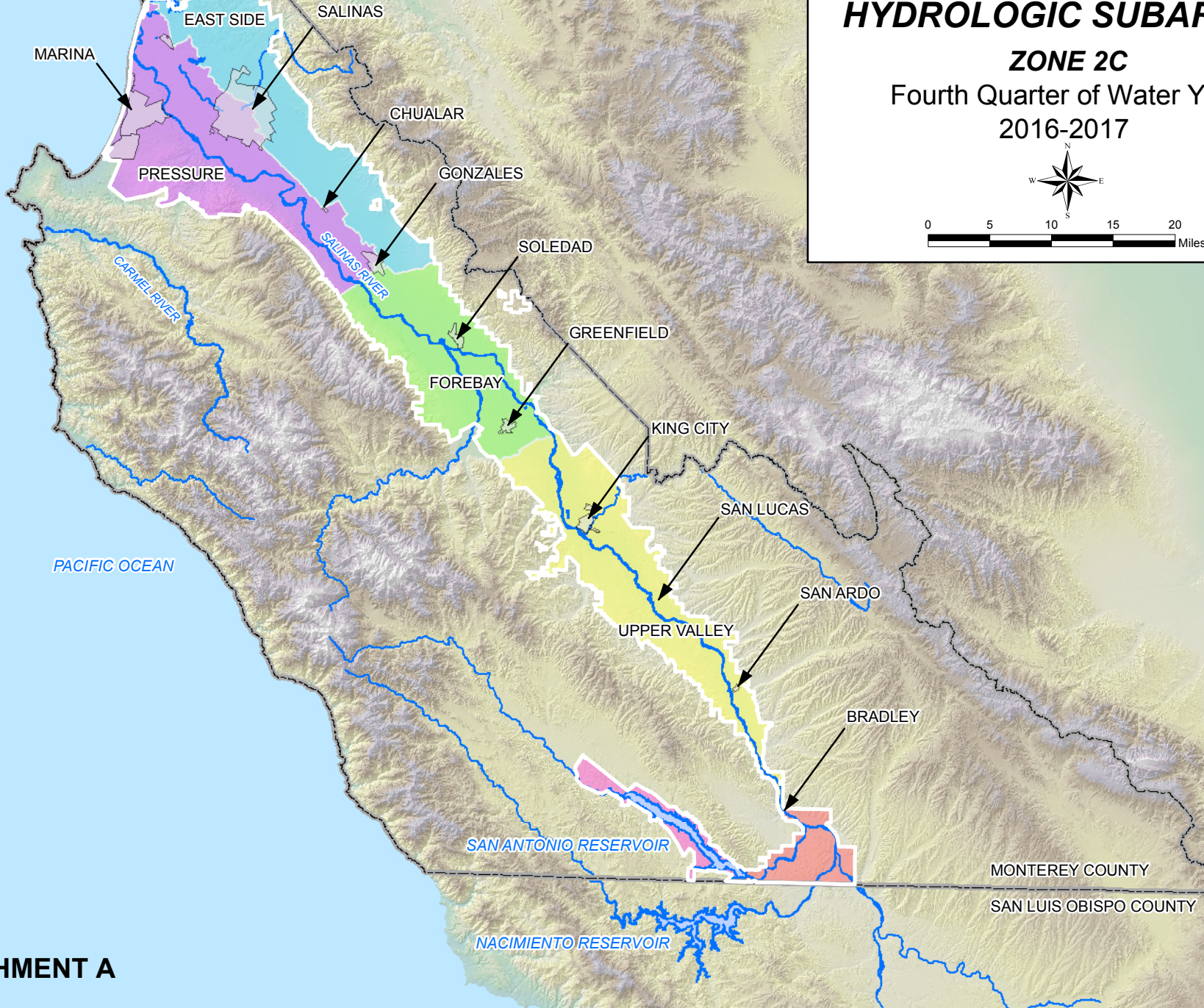
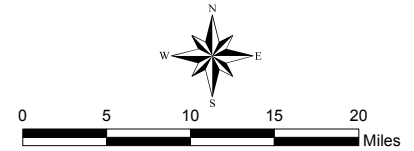
Attachments:

1. Attachment A, Salinas Valley Hydrologic Subareas Map
2. Attachment B, Salinas and King City Precipitation Graphs
3. Attachment C, Nacimiento Reservoir Graph
4. Attachment D, San Antonio Graph
5. Attachment E, Groundwater Trends Pressure 180-Foot Aquifer
6. Attachment F, Groundwater Trends Pressure 400-Foot Aquifer
7. Attachment G, Groundwater Trends East Side Subarea
8. Attachment H, Groundwater Trends Forebay Subarea
9. Attachment I, Groundwater Trends Upper Valley Subarea
10. Attachment J, Groundwater Trends Summary

SALINAS VALLEY GROUNDWATER BASIN HYDROLOGIC SUBAREAS

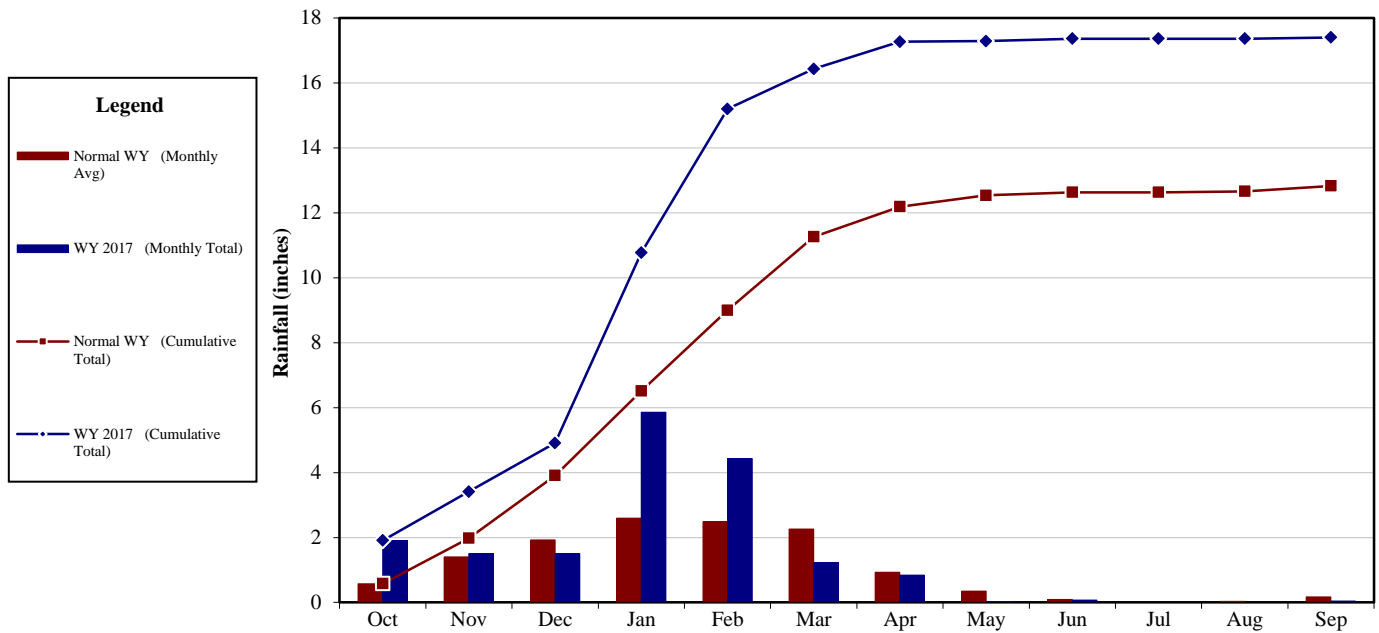
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Fourth Quarter of Water Year
2016-2017



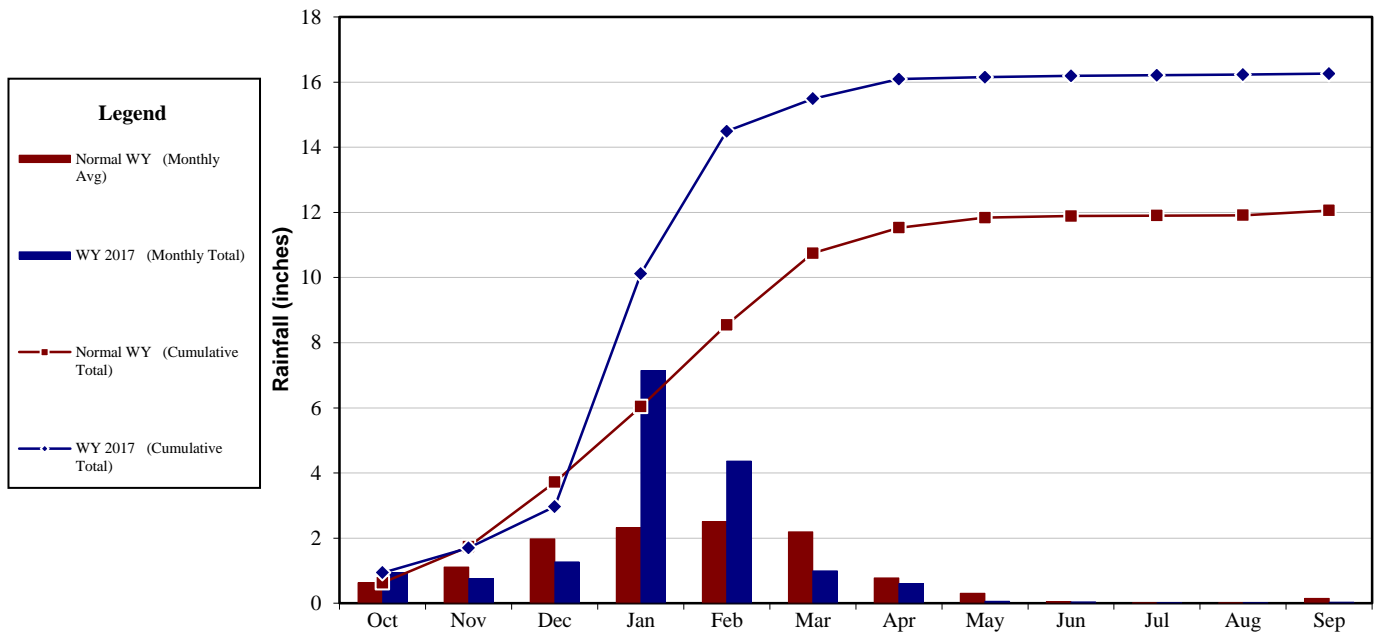
ATTACHMENT A

SALINAS AIRPORT RAINFALL WATER YEAR 2017



Monthly Rainfall (WY 2017)	1.91	1.50	1.50	5.86	4.43	1.23	0.84	0.02	0.07	0.00	0.00	0.04
Monthly Rainfall (Normal WY*)	0.58	1.40	1.93	2.60	2.49	2.26	0.93	0.35	0.09	0.00	0.03	0.17
Percent of Normal for Month	329%	107%	78%	225%	178%	54%	90%	6%	78%	0%	0%	24%
Cumulative Rainfall (WY 2017)	1.91	3.41	4.91	10.77	15.20	16.43	17.27	17.29	17.36	17.36	17.36	17.40
Cumulative Rainfall (Normal WY*)	0.58	1.98	3.91	6.51	9.00	11.26	12.19	12.54	12.63	12.63	12.66	12.83
Percent of Cumulative Normal	329%	172%	126%	165%	169%	146%	142%	138%	137%	137%	137%	136%

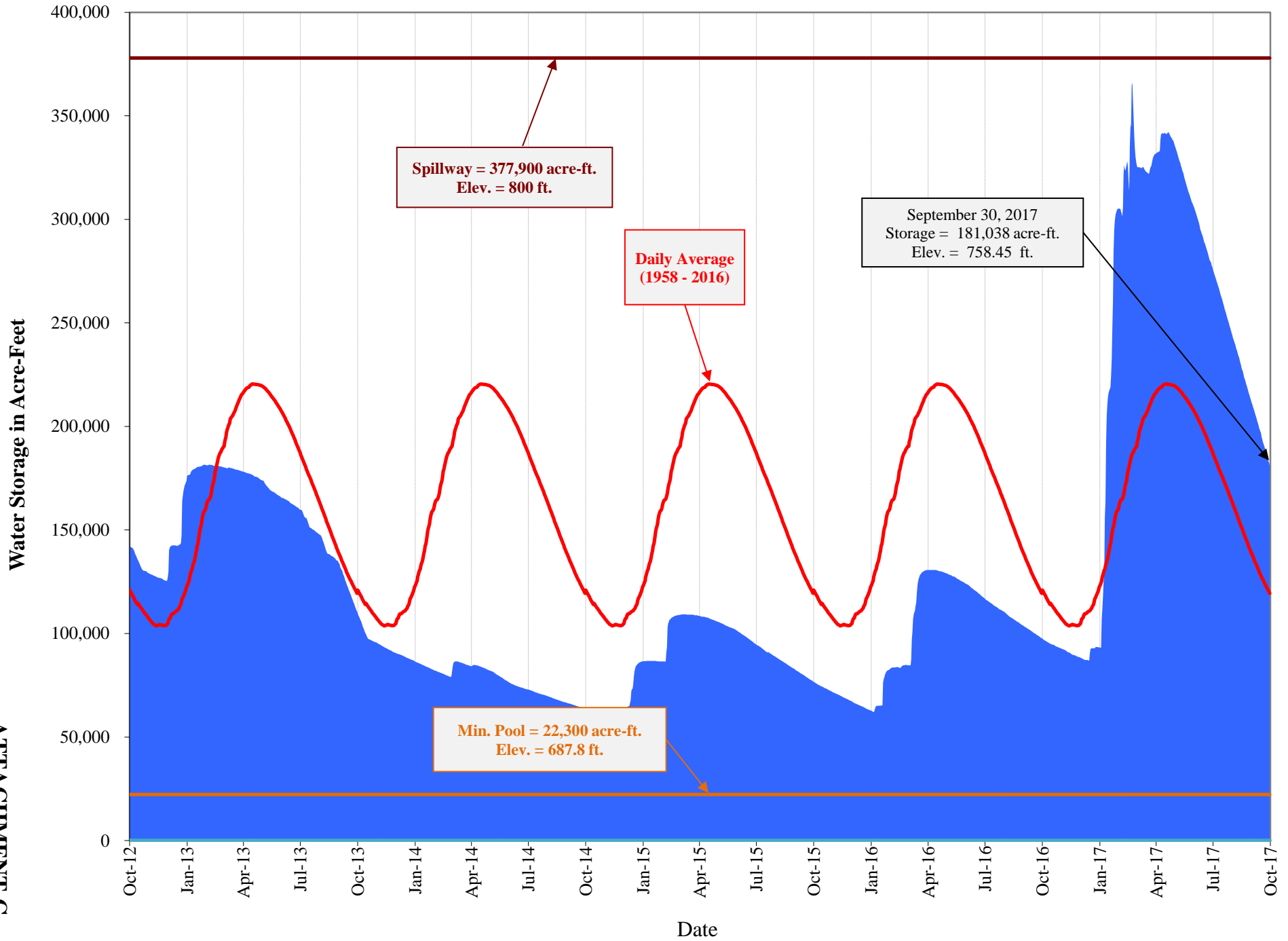
KING CITY RAINFALL WATER YEAR 2017



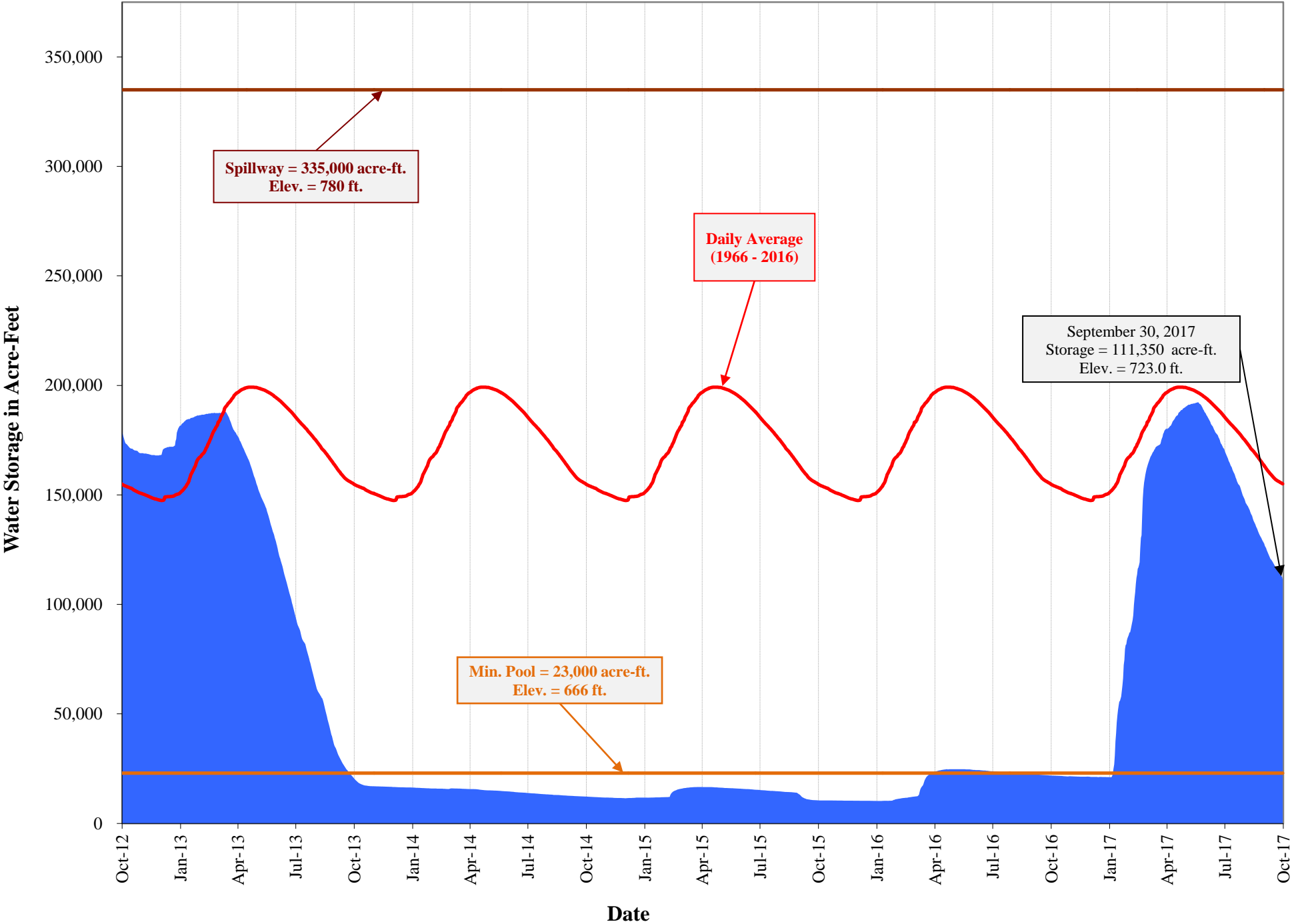
Monthly Rainfall (WY 2017)	0.94	0.76	1.27	7.15	4.37	1.00	0.60	0.06	0.04	0.02	0.02	0.03
Monthly Rainfall (Normal WY*)	0.63	1.11	1.98	2.32	2.51	2.20	0.78	0.31	0.05	0.01	0.01	0.15
Percent of Normal for Month	149%	68%	64%	308%	174%	45%	77%	19%	80%	200%	200%	20%
Cumulative Rainfall (WY 2017)	0.94	1.70	2.97	10.12	14.49	15.49	16.09	16.15	16.19	16.21	16.23	16.26
Cumulative Rainfall (Normal WY*)	0.63	1.74	3.72	6.04	8.55	10.75	11.53	11.84	11.89	11.90	11.91	12.06
Percent of Cumulative Normal	149%	98%	80%	168%	169%	144%	140%	136%	136%	136%	136%	135%

*Average precipitation over the most recent 30-year period ending in a decade (1981-2010)

NACIMIENTO RESERVOIR DAILY STORAGE



SAN ANTONIO RESERVOIR DAILY STORAGE

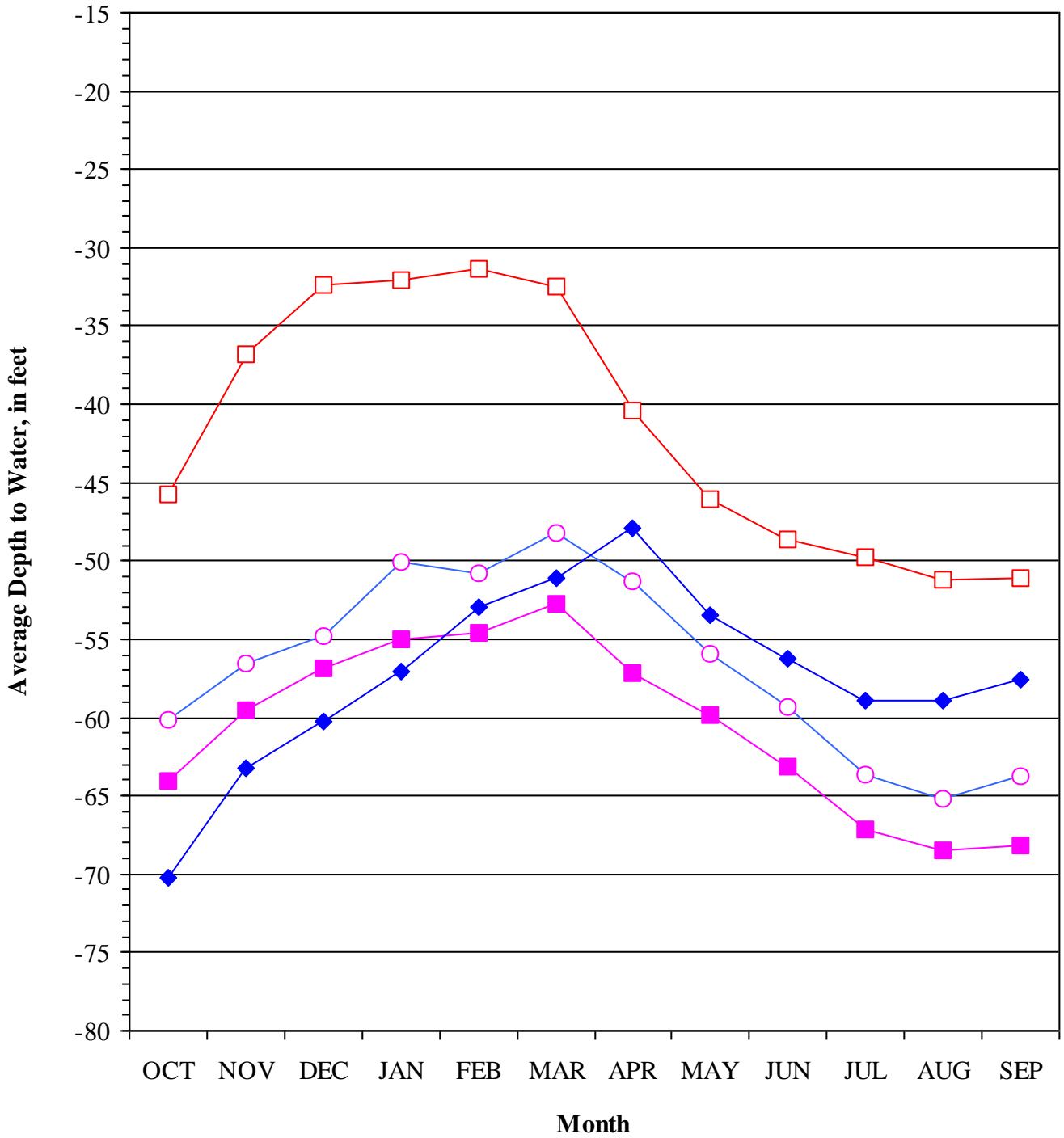


ATTACHMENT D

GROUNDWATER TRENDS

PRESSURE 180-FOOT AQUIFER

5 Wells

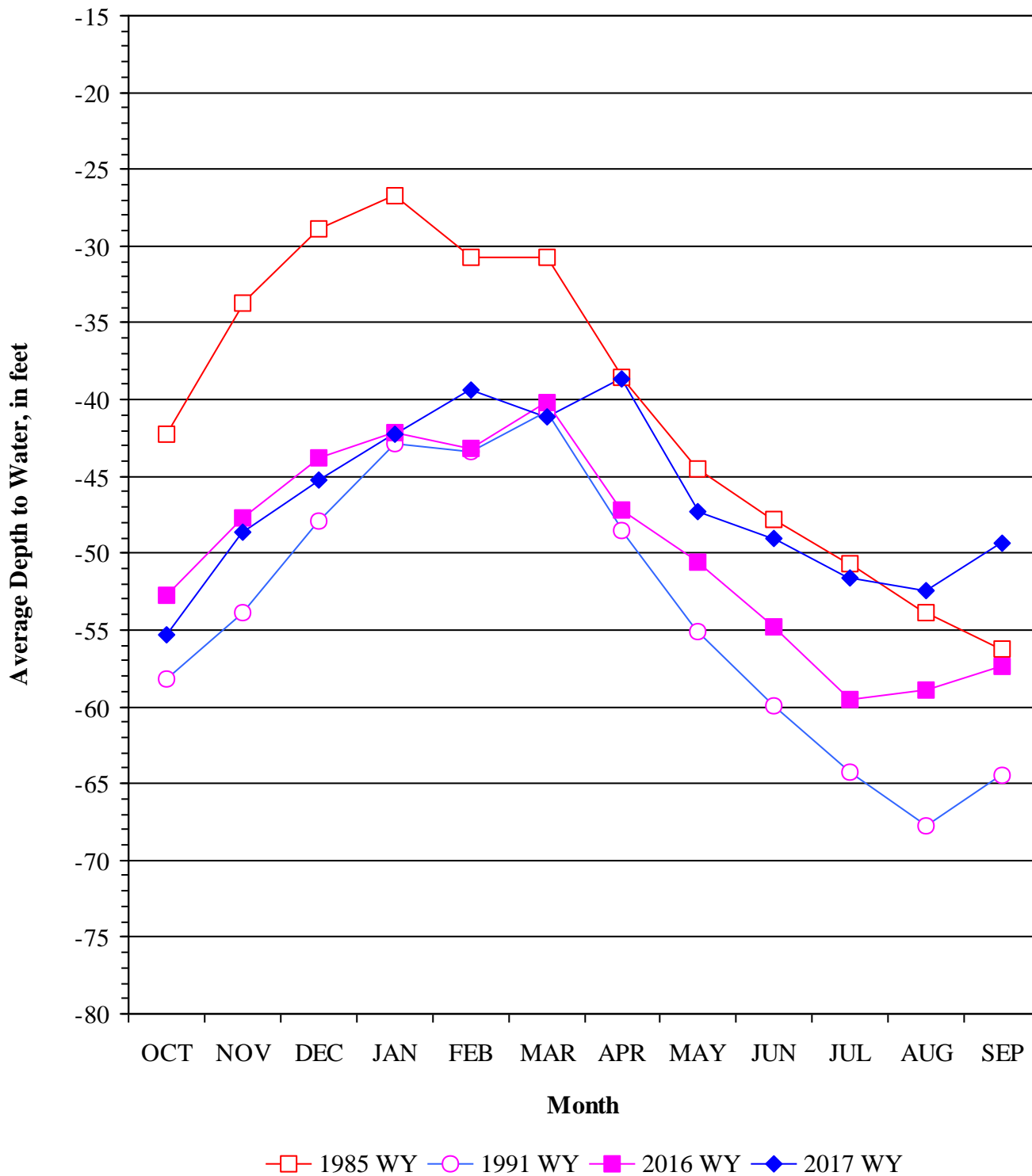


—□— 1985 WY
 —○— 1991 WY
 —■— 2016 WY
 —◆— 2017 WY

GROUNDWATER TRENDS

PRESSURE 400-FOOT AQUIFER

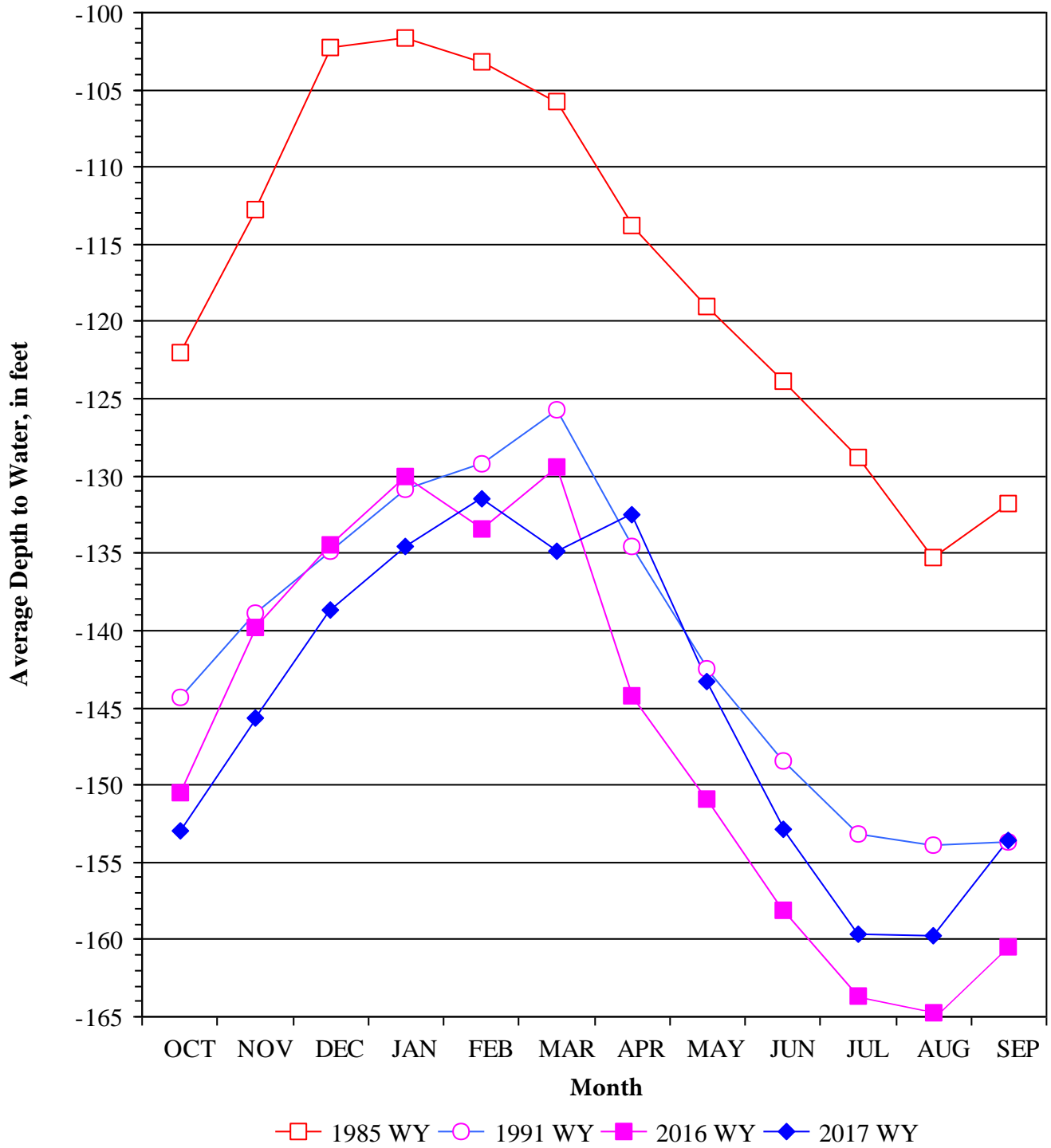
11 Wells



GROUNDWATER TRENDS

EAST SIDE SUBAREA

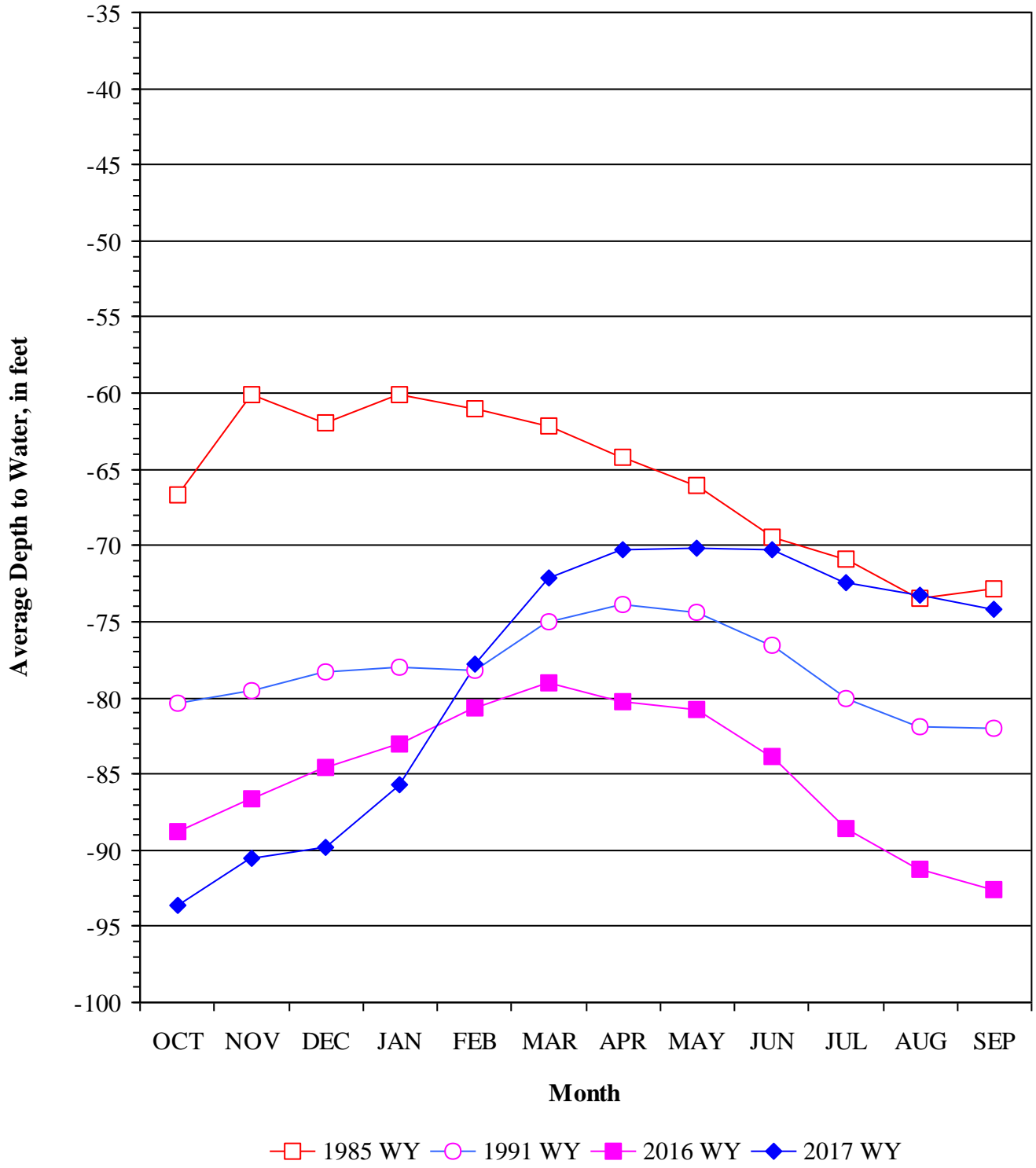
11 Wells



GROUNDWATER TRENDS

FOREBAY SUBAREA

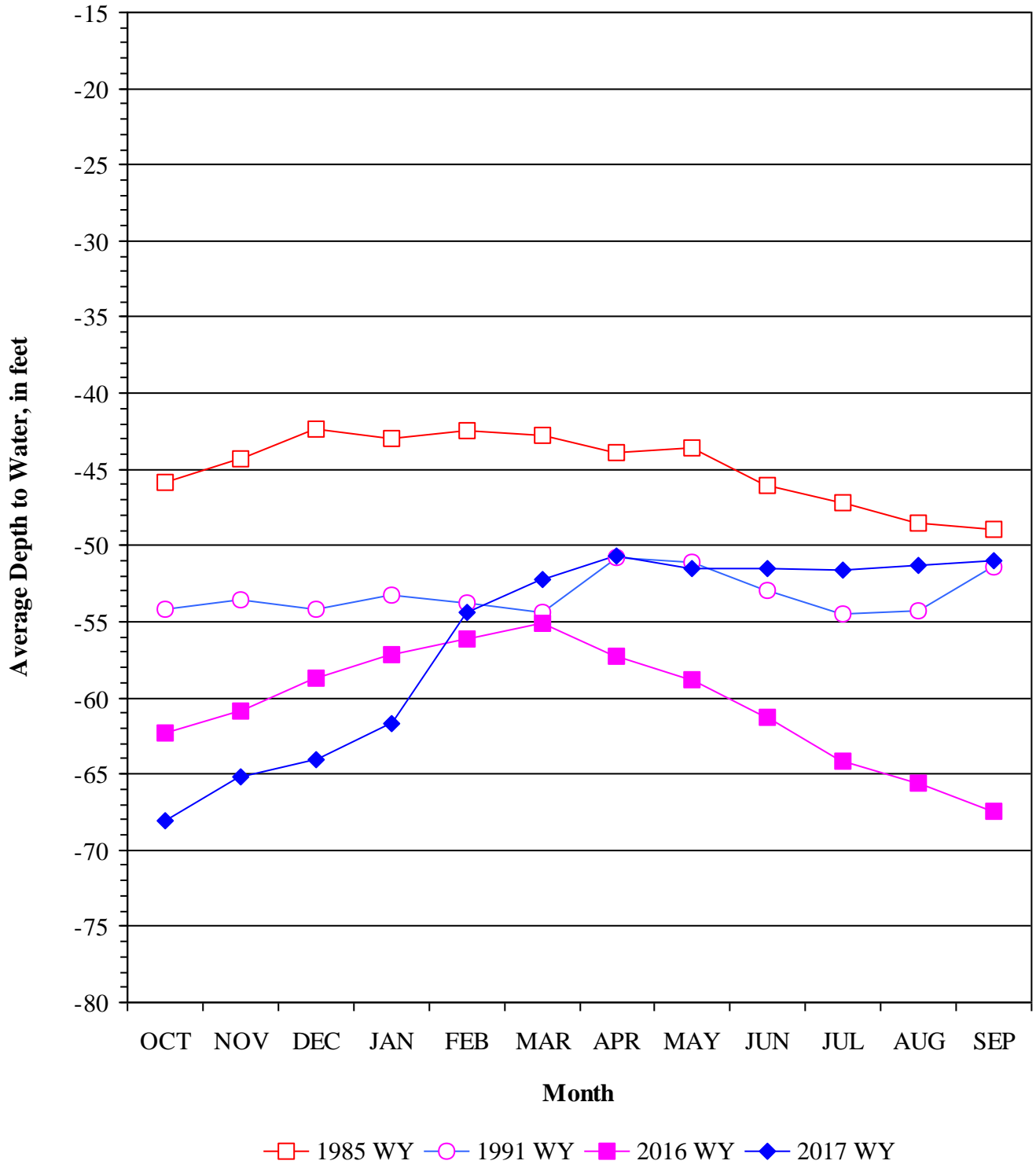
10 Wells



GROUNDWATER TRENDS

UPPER VALLEY SUBAREA

9 Wells



Groundwater Trends Summary

September 2017

Area	September 2017 Depth to Water	1 Year Change	Change From WY 1985	1 Month Change
Pressure 180-Foot Aquifer	58'	up 11'	down 6'	up 1'
Pressure 400-Foot Aquifer	49'	up 8'	up 7'	up 3'
East Side Subarea	154'	up 7'	down 22'	up 6'
Forebay Subarea	74'	up 18'	down 1'	down 1'
Upper Valley Subarea	51'	up 16'	down 2'	up < 1'

September water levels, compared to last year, range from 7' higher to 18' higher.

September water levels, compared to WY 1985, range from 22' lower to 7' higher.

September changes in water levels over the last month range from 1' lower to 6' higher.