

Report on Salinas Valley Water Conditions for the Second Quarter of Water Year 2017-2018

CHANGES TO PRESENTATION OF GROUNDWATER LEVEL TRENDS:

Beginning with the first quarter Water Year 2017-2018 (WY18) report, we introduced changes to the presentation of groundwater level data. The aim of these changes is to enhance understanding of the nature of Salinas Valley groundwater level data and its relationship to basin health and management, to better communicate this information to stakeholders, and to more efficiently maintain the Agency's groundwater level monitoring network.

The changes are graphically incorporated into attachments E through J. As in past Quarterly Reports, attachments E through J summarize water level trends for the current and previous water years (WY18 and WY17, respectively). However, instead of "depth to water," water levels are now presented as "water surface elevation," relative to mean sea level. Unlike depth to water, water surface elevation is independent of well elevation, making replacement of study wells a less costly and more objective process. Water surface elevation also ties Salinas Valley groundwater level data directly to a universally recognized datum, facilitating comparative analysis and scientific collaboration.

A second change is the replacement of the "normal" conditions water level trend curve, as represented by a single selected water year (WY85), with the more objective "long-term average" water level curve, a data set based on averaged monthly water levels for the most recent 30-years for each subarea. In this way, each month's data will now be compared to an objective measure of central tendency based on data that encompass a more representative range of climatic and operational conditions in the Salinas Valley.

Finally, for comparison to water levels in dry conditions, WY15 replaces WY91. With this change, current groundwater level data will now be compared to data from a recent extended drought within a time of contemporary operational constraints. Using WY15 also minimizes uncertainty associated with the gradual loss and replacement of study wells since WY91.

SUMMARY/DISCUSSION:

This report covers the second quarter of Water Year 2017-2018 (WY18), January through March, 2018. It provides a brief overview of water conditions in the Salinas Valley (Attachment A) with discussion of precipitation, reservoir storage, and groundwater level trends. Data for each of these components are included as graphs and tables in Attachments B through J.

Precipitation – Preliminary National Weather Service rainfall data indicates that the second quarter of WY18 brought below normal rainfall to Salinas and near normal rainfall to King City. Totals for the quarter were 4.51 inches (61% of normal rainfall of 7.35 inches for the quarter) at the Salinas Airport, and 6.79 inches (97% of normal rainfall of 7.03 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, based on long-term monthly precipitation averages. Attachment B also includes tables showing values for precipitation totals as well as

percent of “normal” precipitation.

Reservoirs - The following table compares second quarter storage at Nacimiento and San Antonio reservoirs for the past two years. Storage in Nacimiento Reservoir is 119,885 acre-feet lower than in March 2017, and storage in San Antonio Reservoir is 65,817 acre-feet lower.

Reservoir	March 31, 2018 (WY18) Storage in acre-feet	March 31, 2017 (WY17) Storage in acre-feet	Difference in acre-feet
Nacimiento	211,675	331,560	-119,885
San Antonio	114,563	180,380	-65,817

Graphs showing daily reservoir storage for the last five water years along with 30-year average daily 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 (WY18) with selected past conditions. Graphs for individual subareas, showing the current year’s water level conditions, last year’s conditions (WY17) and dry conditions (WY15) are found in Attachments E through I. For comparison to long term conditions, a curve showing monthly water levels averaged over the most recent 30 years (WY1987-WY2017) is included on each graph. Attachment J is a summary of water level changes for all subareas.

Groundwater level measurements document a modest net recovery of water levels in the second quarter of WY18 in all subareas, with the exception of the Upper Valley where water levels experienced a slight overall decline. Over the last month of the quarter, however, average groundwater levels recovered in all subareas, rising by one foot in the Pressure 180-Foot Aquifer, by three feet in the Pressure 400-Foot Aquifer, by four feet in the East Side Subarea and by two feet in the Forebay and Upper Valley Subareas.

Compared to March 2017, average groundwater levels in March 2018 were up by two feet in the Pressure 180-Foot and Pressure 400-Foot Aquifers, by four feet in the East Side Subarea, and by five feet in both the Forebay and Upper Valley Subareas.

When compared to 30 year average groundwater conditions, March 2018 water levels were eight feet lower in the Pressure 180-Foot Aquifer, four feet lower in the Pressure 400-Foot Aquifer, twelve feet lower in the East Side Subarea, six feet lower in the Forebay Subarea and three feet lower in the Upper Valley Subarea.

Average groundwater levels at end of the second quarter of WY18 were higher in all subareas than in WY15 (dry conditions) despite briefly falling below WY15 levels in February in both the

Pressure 400-Foot Aquifer and the East Side Subarea.

OTHER AGENCY INVOLVEMENT:

None

FINANCING:

Funds 113, 114, 115, 116

Prepared by: Howard Franklin, Senior Hydrologist, (831) 755-4860
Tamara Voss, Associate Hydrologist, (831)755-4860
Peter Kwiek, Hydrologist, (831)755-4860
Sean Noble, Water Resources Technician, (831) 755-4860

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 Reservoir 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

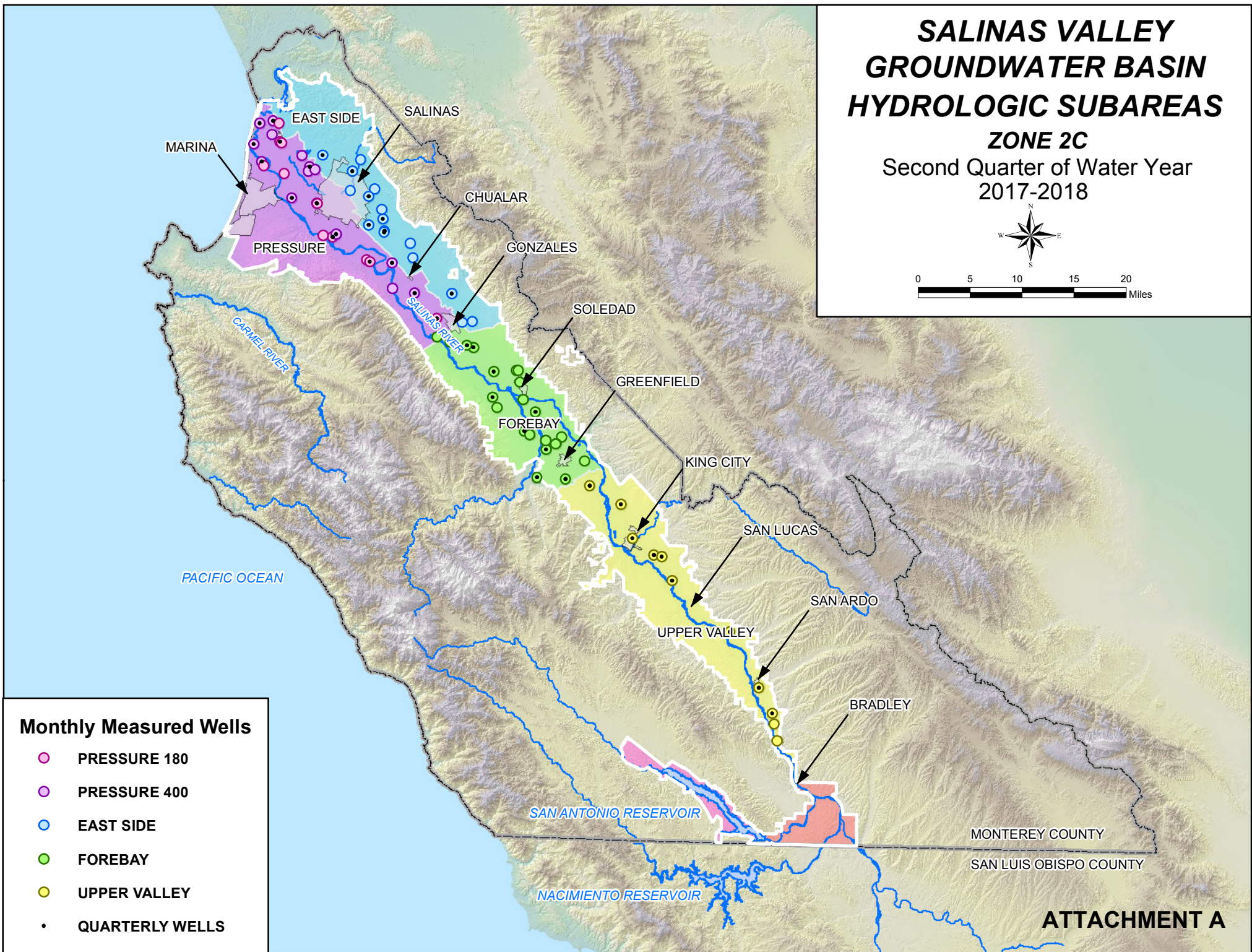
SALINAS VALLEY GROUNDWATER BASIN HYDROLOGIC SUBAREAS

ZONE 2C

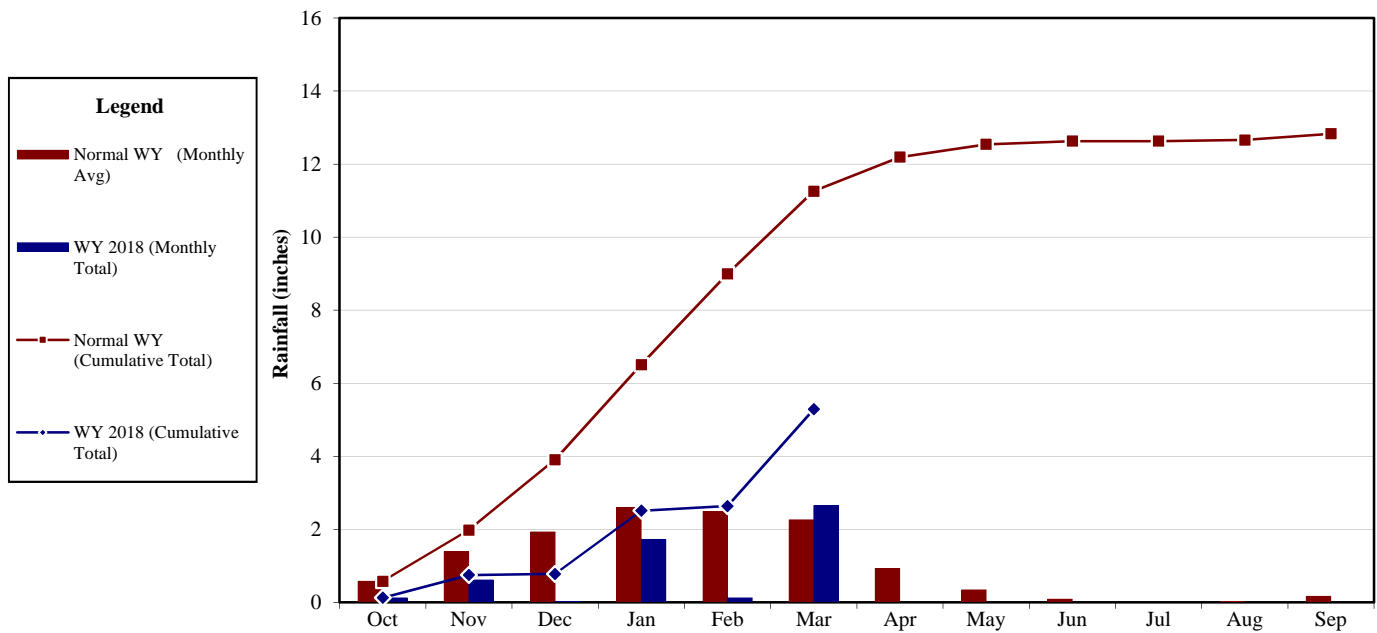
Second Quarter of Water Year
2017-2018



0 5 10 15 20
Miles

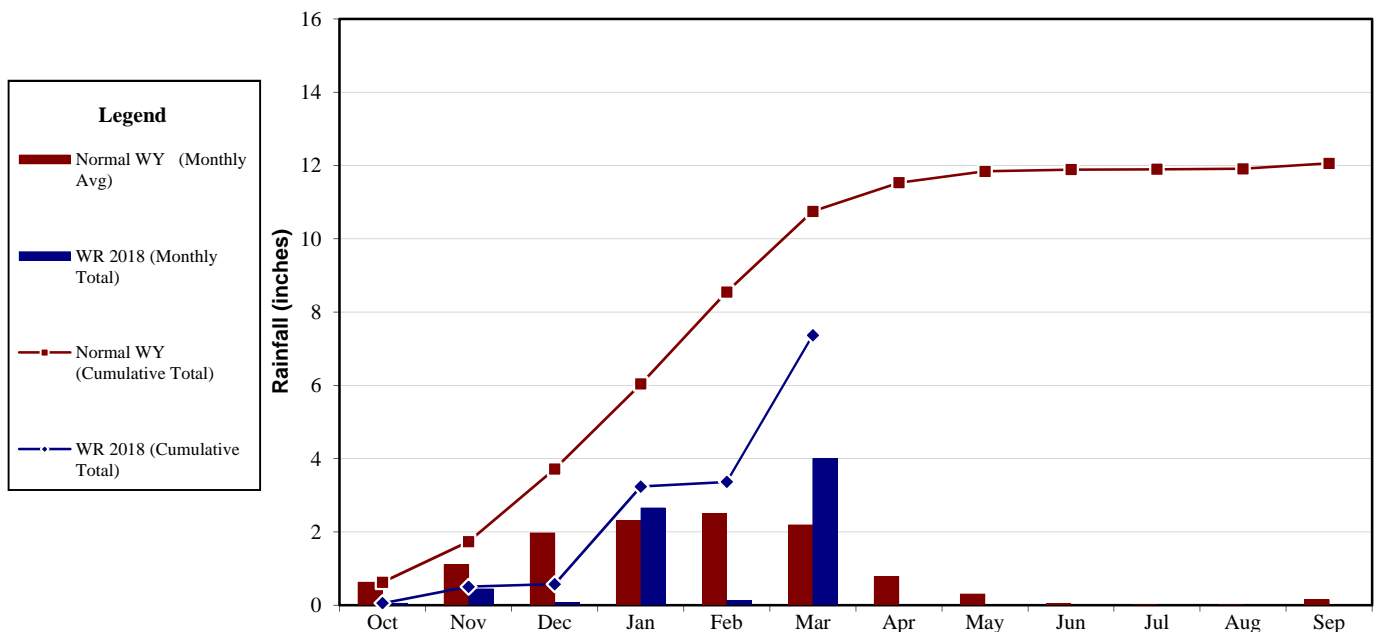


SALINAS AIRPORT RAINFALL WATER YEAR 2018



Monthly Rainfall (WY 2018)	0.13	0.62	0.03	1.73	0.13	2.65						
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	22%	44%	2%	67%	5%	117%						
Cumulative Rainfall (WY 2018)	0.13	0.75	0.78	2.51	2.64	5.29						
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	22%	38%	20%	39%	29%	47%						

KING CITY RAINFALL WATER YEAR 2018

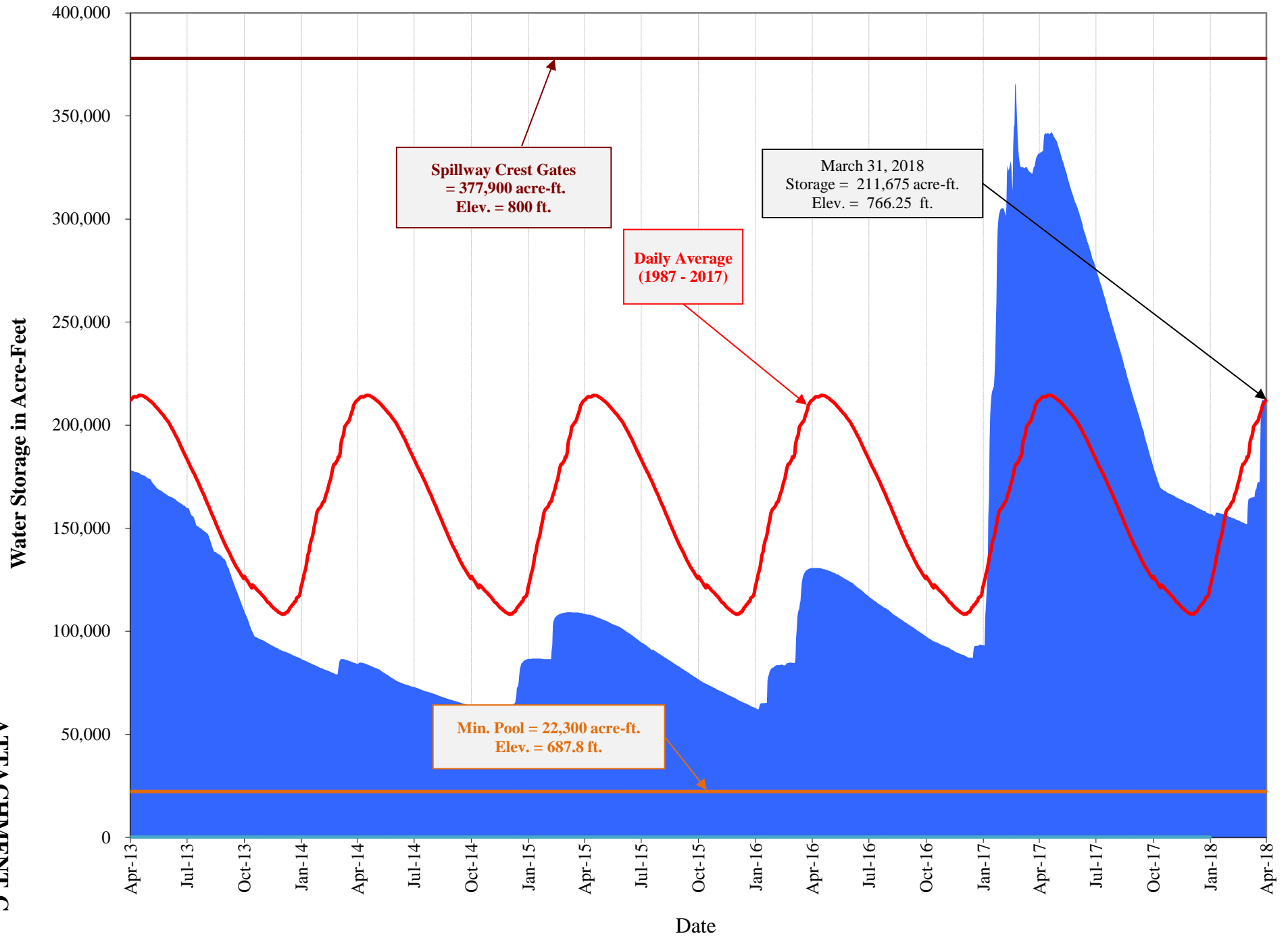


Monthly Rainfall (WR 2018)	0.06	0.45	0.07	2.66	0.13	4.00						
Monthly Rainfall (Normal WY*)	0.63	1.11	1.98	2.32	2.51	2.20	0.78	0.31	0.05	0.01	0.01	0.15
Percent of Normal for Month	10%	41%	4%	115%	5%	182%						
Cumulative Rainfall (WR 2018)	0.06	0.51	0.58	3.24	3.37	7.37						
Cumulative Rainfall (Normal 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	10%	29%	16%	54%	39%	69%						

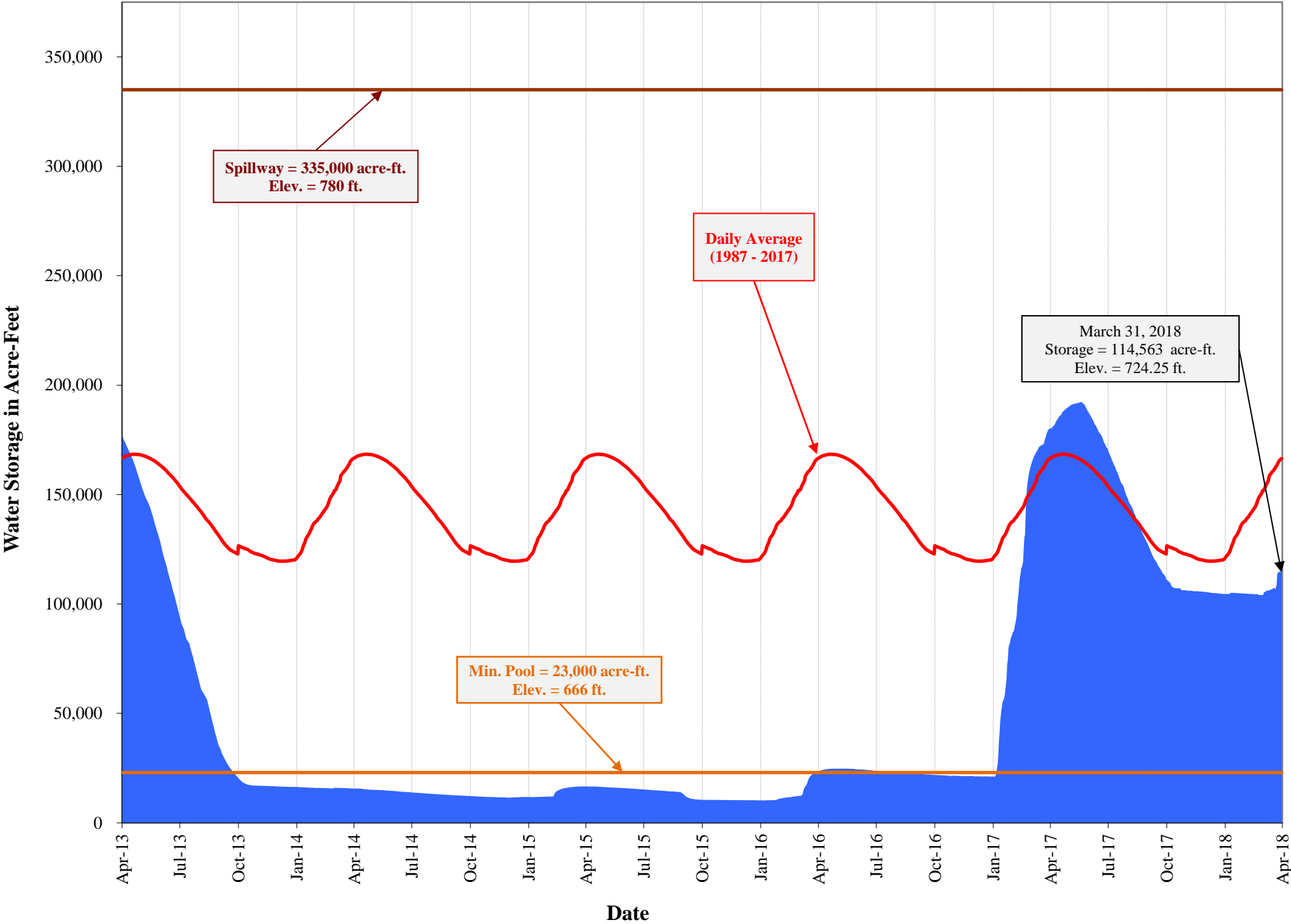
*Average precipitation over the most recent 30-year period ending in a decade (1981-2010)

ATTACHMENT B

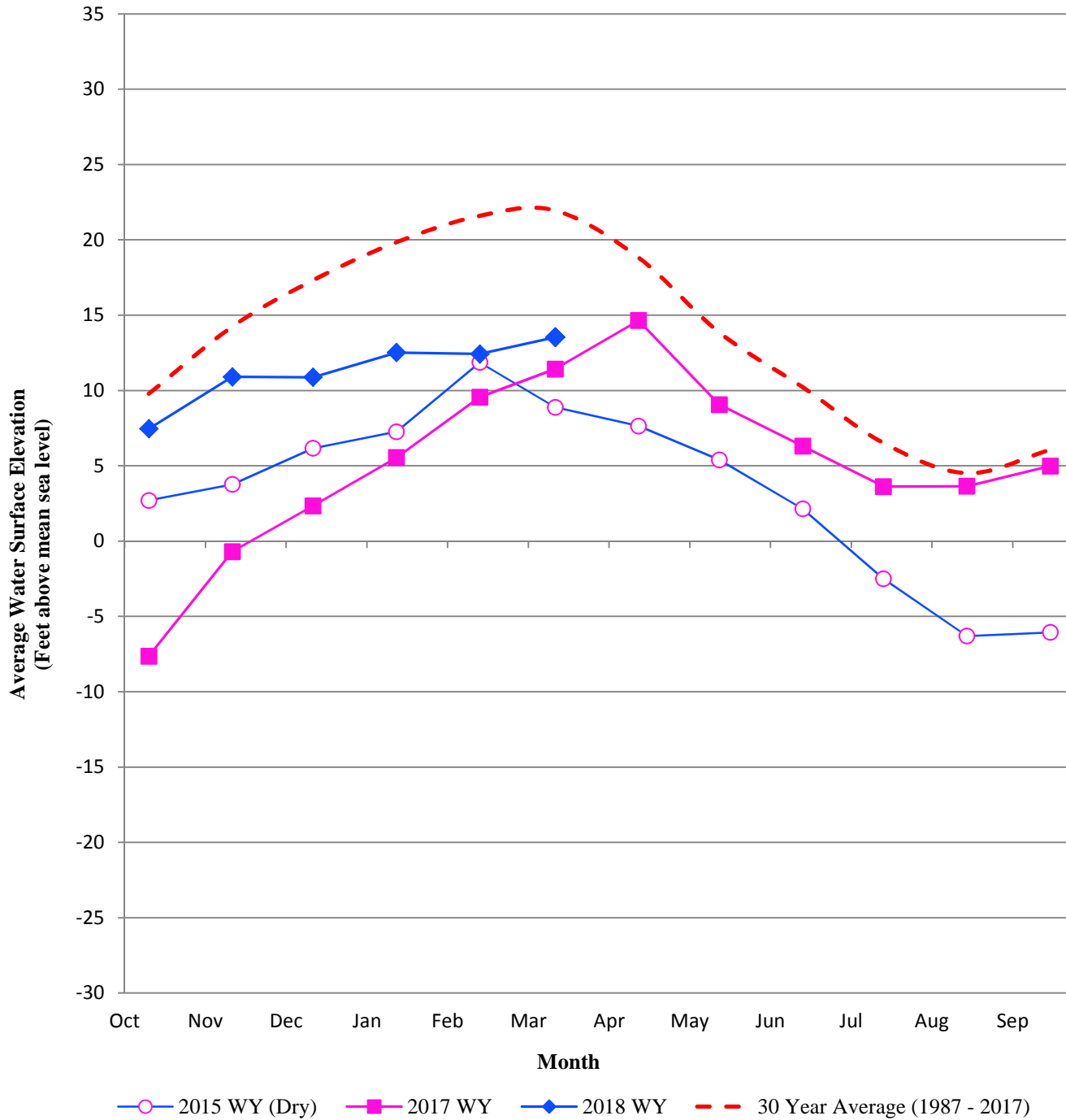
NACIMIENTO RESERVOIR DAILY STORAGE



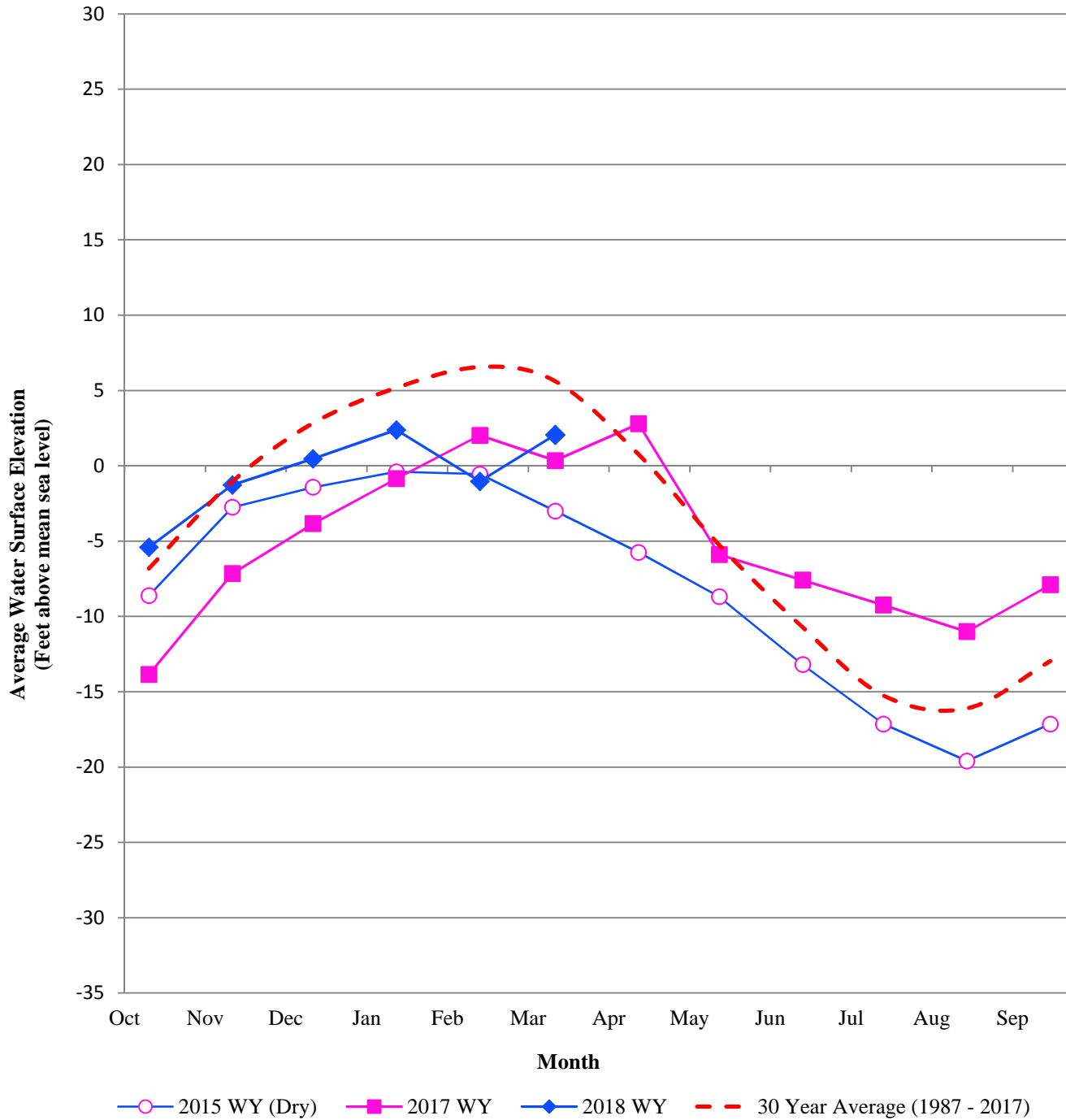
SAN ANTONIO RESERVOIR DAILY STORAGE



GROUNDWATER TRENDS PRESSURE 180-FOOT AQUIFER 5 Wells



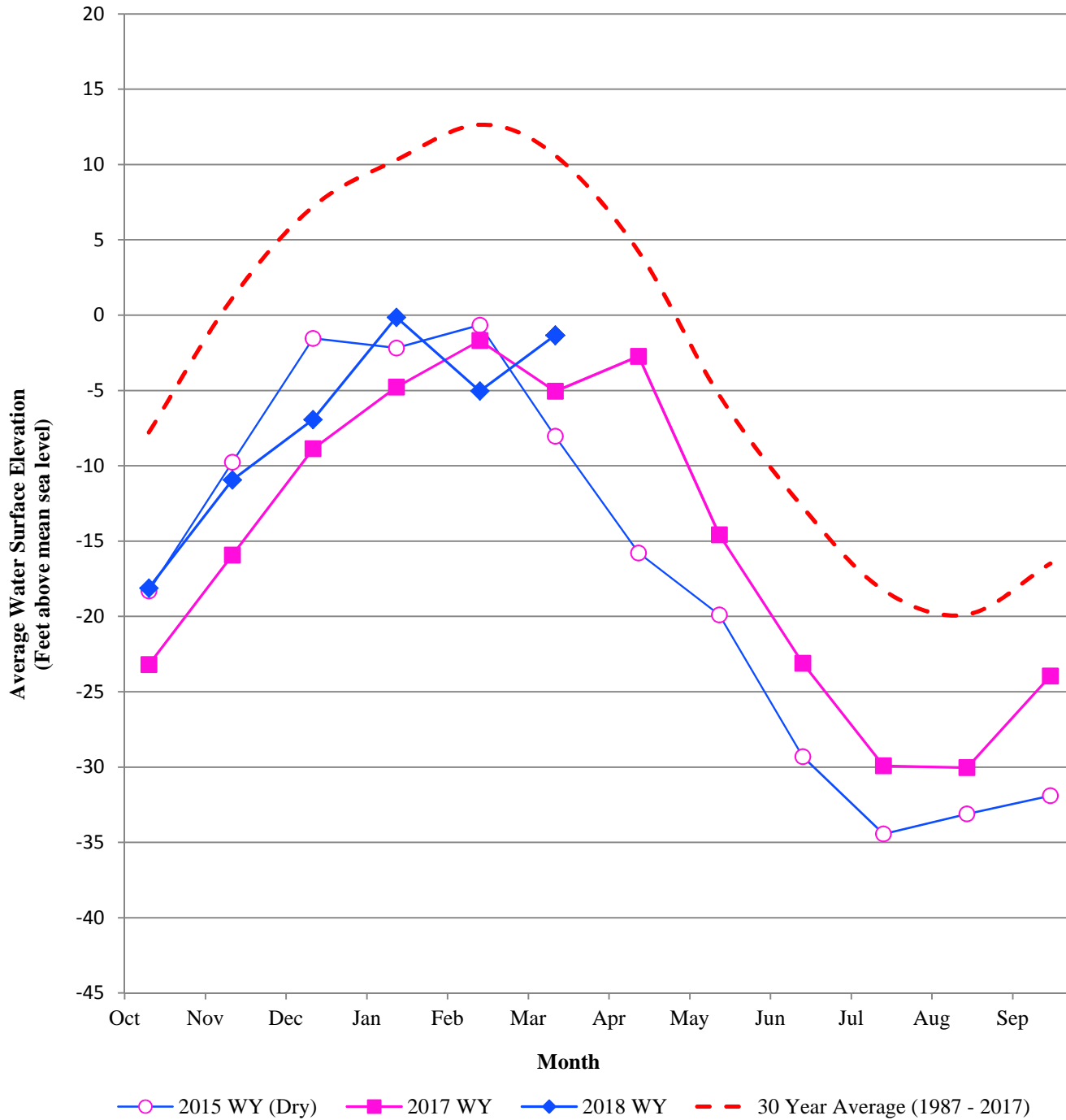
GROUNDWATER TRENDS PRESSURE 400-FOOT AQUIFER 11 Wells



GROUNDWATER TRENDS

EAST SIDE SUBAREA

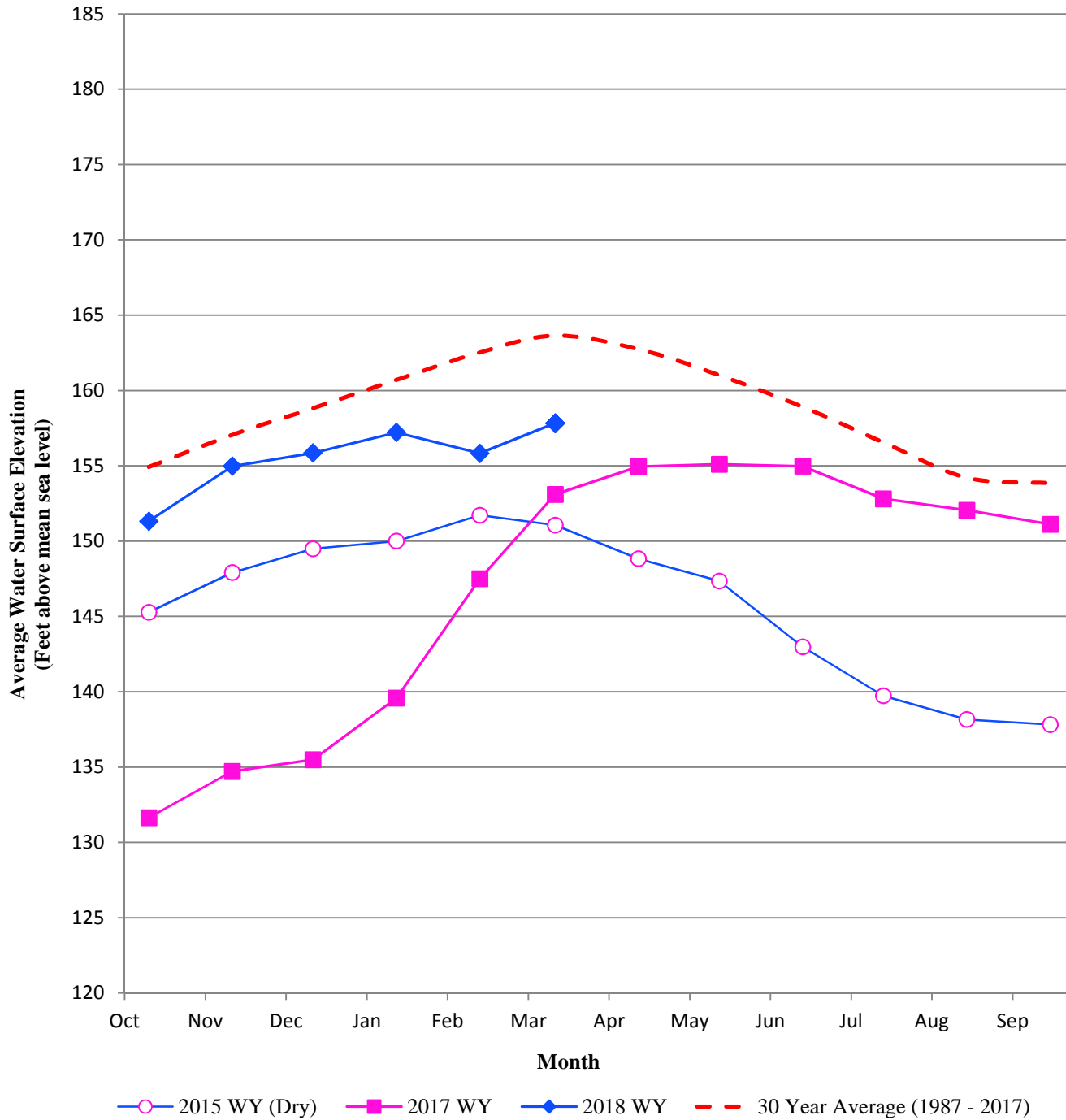
11 Wells



GROUNDWATER TRENDS

FOREBAY SUBAREA

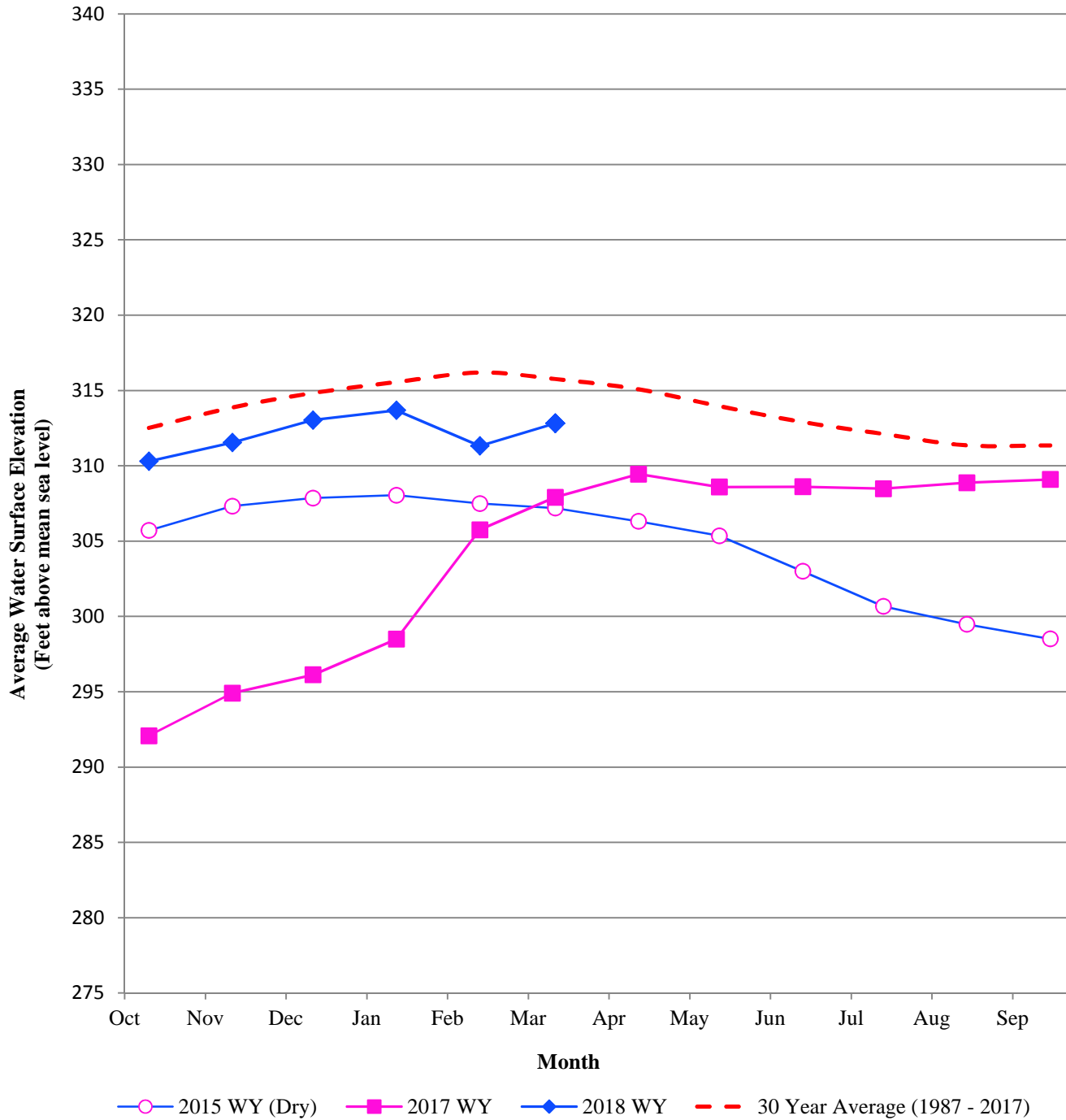
10 Wells



GROUNDWATER TRENDS

UPPER VALLEY SUBAREA

9 Wells



Groundwater Trends Summary

March 2018

Area	March 2018 Groundwater Elevation (ft msl)	1 Year Change	Difference from 30 year Average Elevation	1 Month Change
Pressure 180-Foot Aquifer	14 '	up 2 '	down 8 '	up 1 '
Pressure 400-Foot Aquifer	2 '	up 2 '	down 4 '	up 3 '
East Side Subarea	-1 '	up 4 '	down 12 '	up 4 '
Forebay Subarea	158 '	up 5 '	down 6 '	up 2 '
Upper Valley Subarea	313 '	up 5 '	down 3 '	up 2 '