HYDROLOGIC DATA BRIEF FOR THE EDWARDS AQUIFER THROUGH JANUARY 2016

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2015 Rainfall

County	Total Rainfall 2015	Average Rainfall	Difference for 2015	Percent of Average
Uvalde	32.73	24.07	+8.66	136%
Medina	26.52	28.56	-2.04	93%
Bexar	44.22	29.07	+15.15	152%
Comal	35.27	35.50	-0.23	99%
Hays	47.66	33.75	+13.91	141%

UVALDE COUNTY RAINFALL (in inches) for 2016

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Rainfall (2016)	0.86											
Monthly Historical Avg	1.13	1.24	1.32	2.36	3.16	2.83	1.95	2.16	2.60	2.57	1.41	1.34
Difference	**-0.27**											

Historical Yearly Average	**24.07**
Total for January 2016	**0.86**
Historical Average January	**1.13**
Total Difference for Year to Date	**-0.27**
Percent of Average Year to Date	**76%**

Data from EAA rain gauge UV033 located 4.4 miles south of the City of Uvalde.

MEDINA COUNTY RAINFALL (in inches) for 2016

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Rainfall (2016)	0.54											
Monthly Historical Avg	1.43	1.94	1.53	2.66	3.79	3.38	1.88	2.76	3.00	3.03	1.73	1.43
Difference	**-0.89**											

Historical Yearly Average	**28.56**
Total for January 2016	**0.54**
Historical Average January	**1.43**
Total Difference for Year to Date	**-0.89**
Percent of Average Year to Date	**38%**

Data from National Weather Service (NWS) rainfall station at Hondo Airport.

BEXAR COUNTY RAINFALL (in inches) for 2016

	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Rainfall (2016)	1.38											
Monthly Historical Avg	1.56	1.70	1.77	2.74	3.53	3.17	2.17	2.37	3.33	2.82	2.13	1.78
Difference	**-0.18**											

Historical Yearly Average	**29.07**
Total for January 2016	**1.38**
Historical Average January	**1.56**
Total Difference for Year to Date	**-0.18**
Percent of Average Year to Date	**88%**

Data from NWS rainfall station located at San Antonio International Airport.

COMAL COUNTY RAINFALL (in inches) for 2016

	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Rainfall (2016)	1.00											
Monthly Historical Avg	2.36	2.09	1.92	2.68	4.86	4.64	2.02	2.16	3.39	3.84	2.79	2.75
Difference	**-1.36**											

Historical Yearly Average	**35.50**
Total for January 2016	**1.00**
Historical Average January	**2.36**
Total Difference for Year to Date	**-1.36**
Percent of Average Year to Date	**42%**

Data from NWS rainfall station located in New Braunfels.

HAYS COUNTY RAINFALL (in inches) for 2016

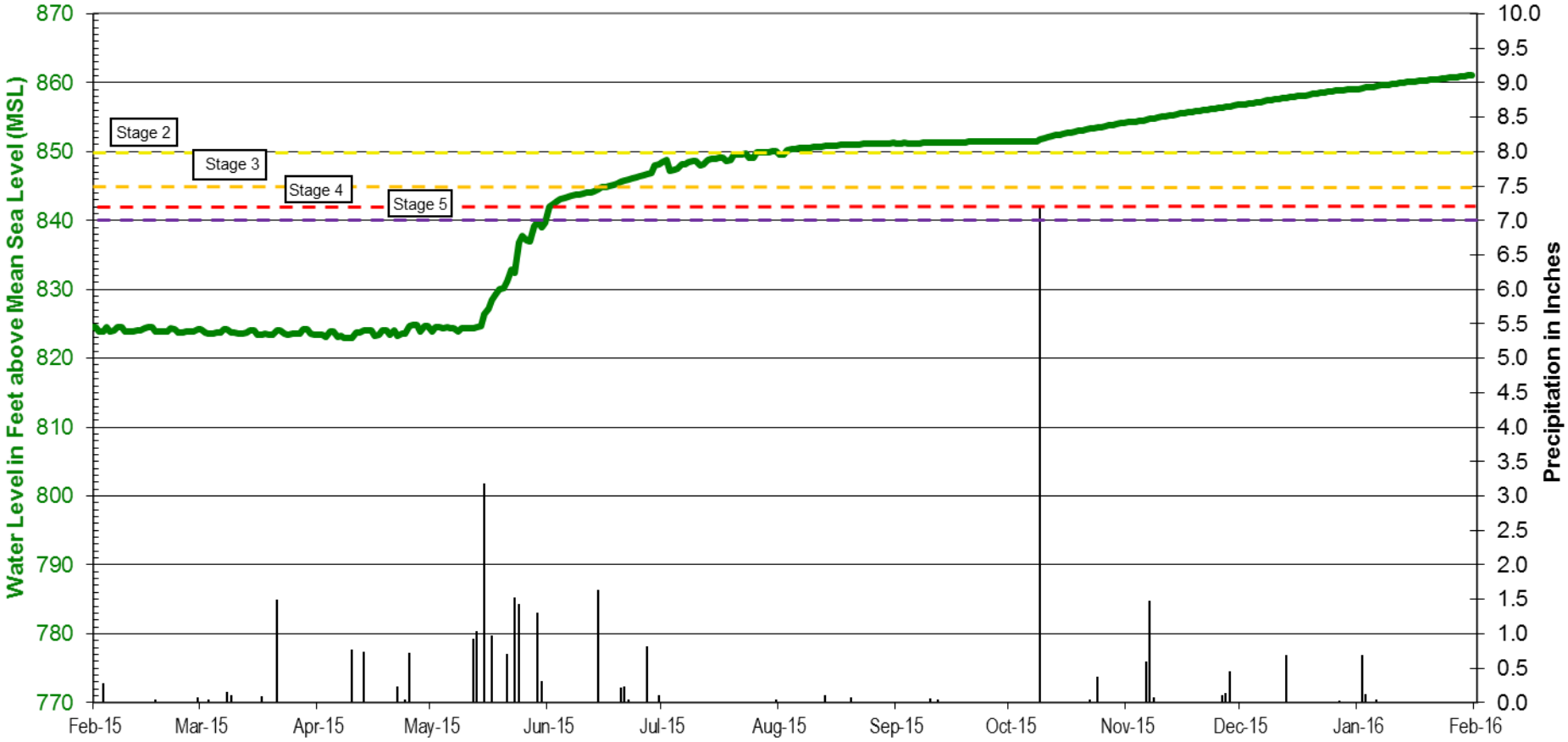
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Rainfall (2016)	0.96											
Monthly Historical Avg	2.00	2.93	1.84	3.29	3.68	3.56	1.77	2.31	4.52	3.61	2.23	2.01
Difference	**-1.04**											

Historical Yearly Average	**33.75**
Total for January 2016	**0.96**
Historical Average January	**2.00**
Total Difference for Year to Date	**-1.04**
Percent of Average Year to Date	**48%**

Data provided by EAA rain gauge HA158 located 0.25 miles west of Bobcat Stadium.
FAA Rainfall Station: San Marcos Airport - out of service.

Hydrograph of the Uvalde County Index Well (J-27) and Precipitation at Uvalde

(EAA Rain Gauge: UV033 located 4.4 miles south of the City of Uvalde)



Stage 1 - None
Stage 2 - Critical Period - 10-day avg. < 850' MSL
Stage 3 - Critical Period - 10-day avg. < 845' MSL
Stage 4 - Critical Period - 10-day avg. < 842' MSL
Stage 5 - Critical Period - 10-day avg. < 840' MSL

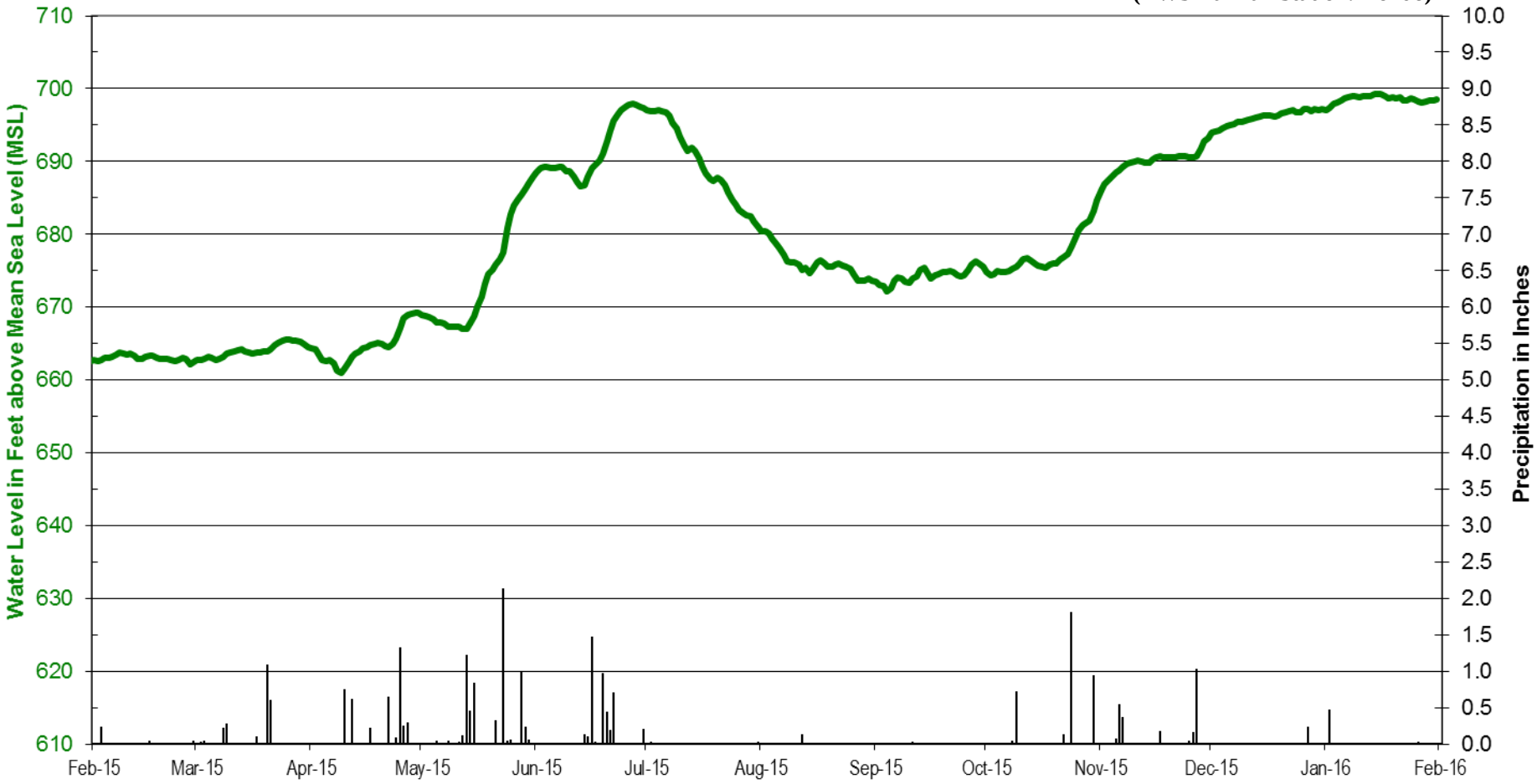
Date

Historical High - 889' MSL (6/15/87)
Historical Low - 811' MSL (4/13/57)

J-27 Water Level Precipitation at Uvalde

Hydrograph of the Medina County Hondo City Well and Precipitation at Hondo

(NWS Rainfall Station: Hondo)



CPM in Medina County is triggered by:
the10-day average water level at J-17 or
the10-day average springflow at Comal Springs or at San Marcos Springs

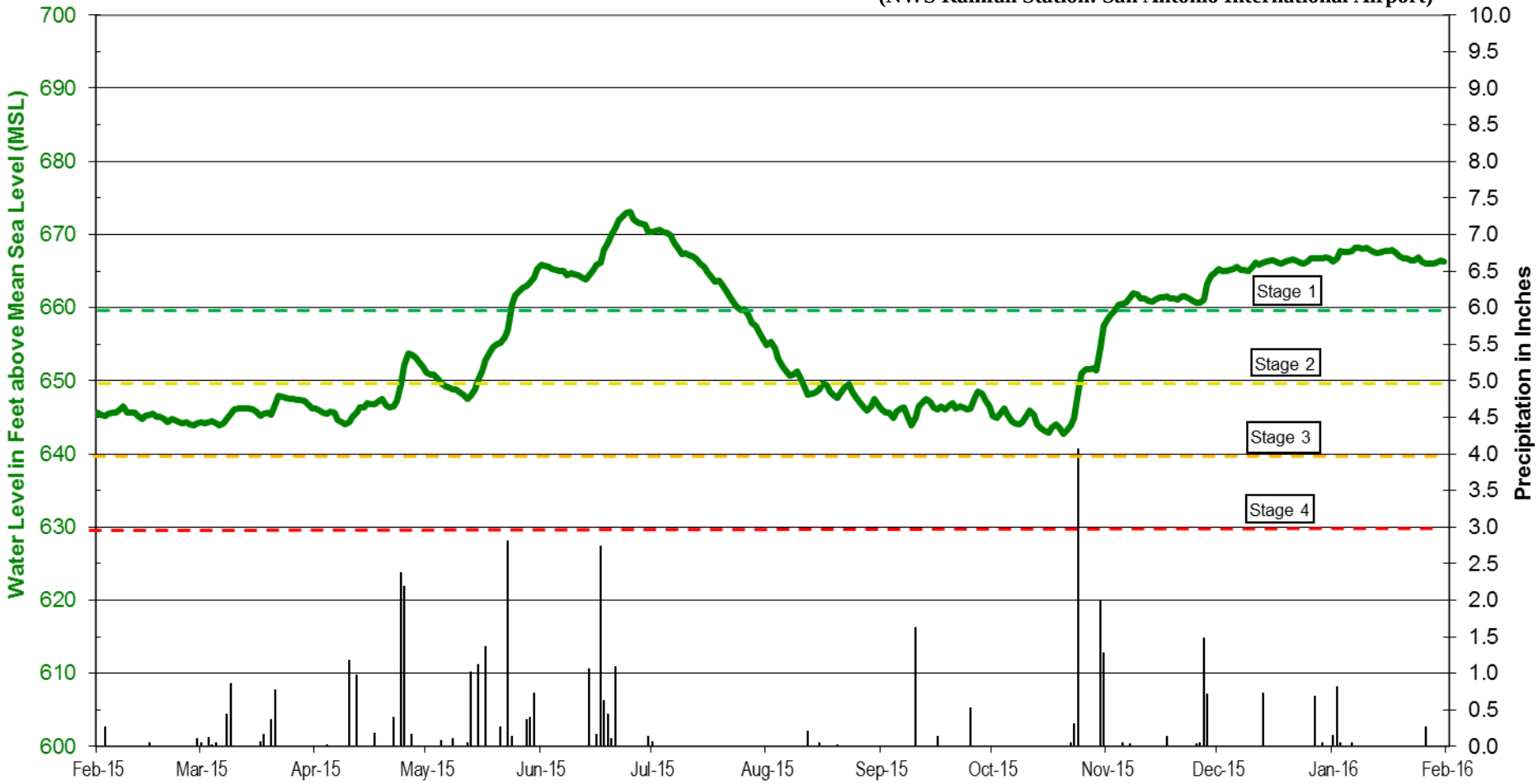
Date

Historical High - 779' MSL (6/15/92)
Historical Low - 651' MSL (6/30/90)

Hondo Water Level Precipitation at Hondo

Hydrograph of the Bexar County Index Well (J-17) and Precipitation at San Antonio

(NWS Rainfall Station: San Antonio International Airport)



Stage 1 - Critical Period - 10-day avg. < 660' MSL
Stage 2 - Critical Period - 10-day avg. < 650' MSL
Stage 3 - Critical Period - 10-day avg. < 640' MSL
Stage 4 - Critical Period - 10-day avg. < 630' MSL
Stage 5 - Critical Period - 10-day avg. < 625' MSL

Date

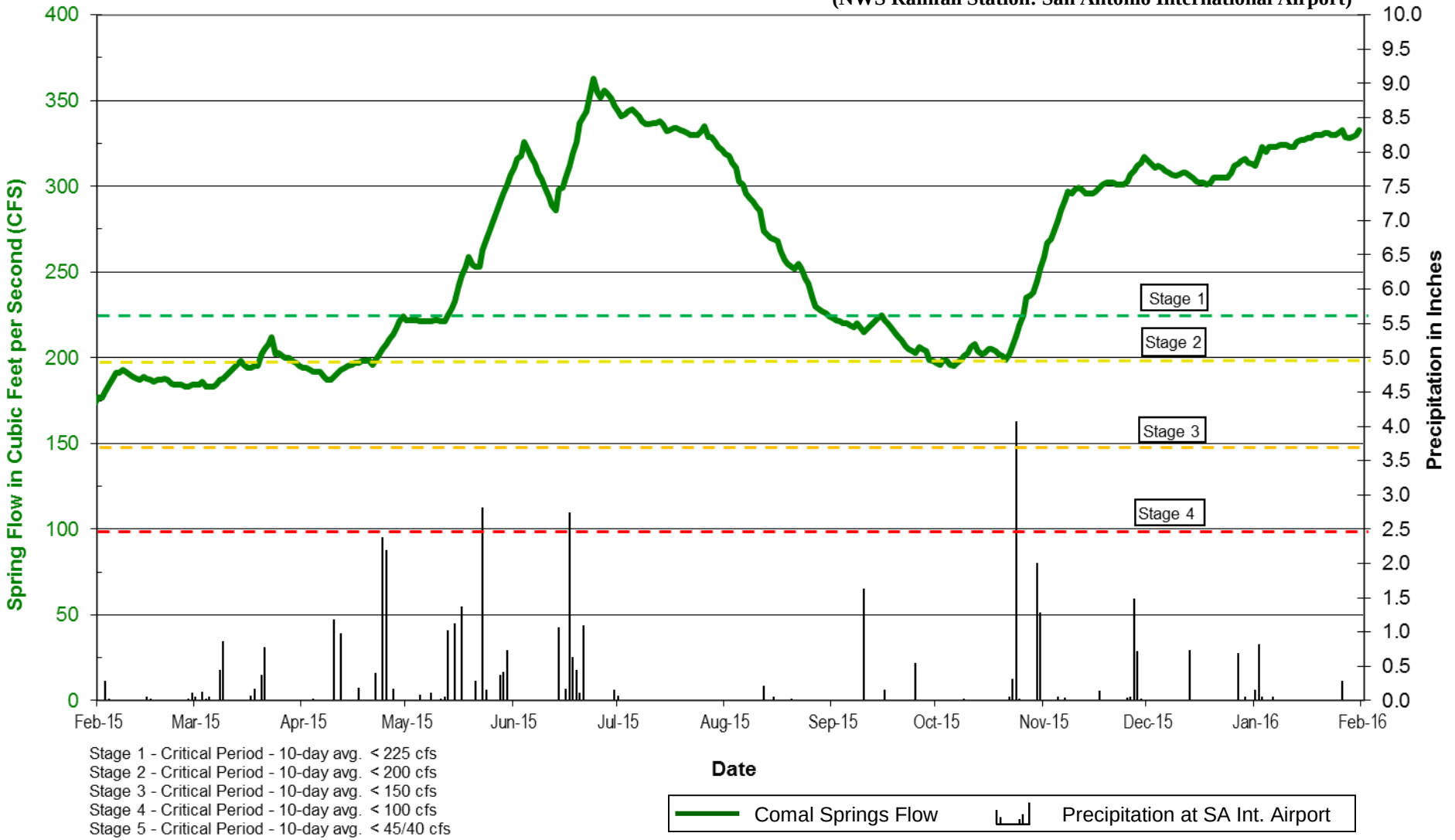
Historical High - 703.3' MSL (6/14/92)
Historical Low - 612.5' MSL (8/17/56)

J-17 Water Level

Precipitation at SA Int. Airport

Hydrograph of the Comal Springs Discharge and Precipitation at San Antonio

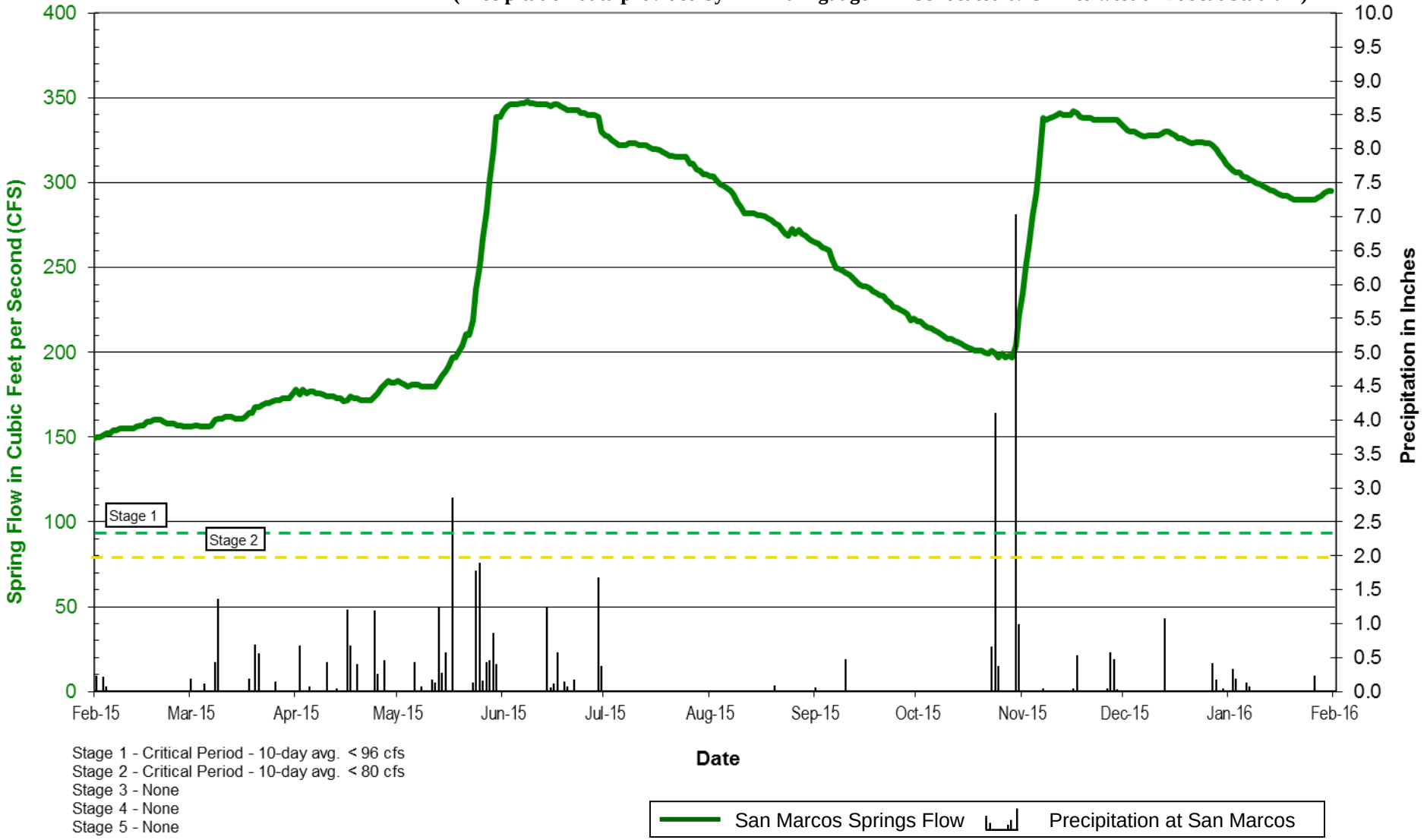
(NWS Rainfall Station: San Antonio International Airport)



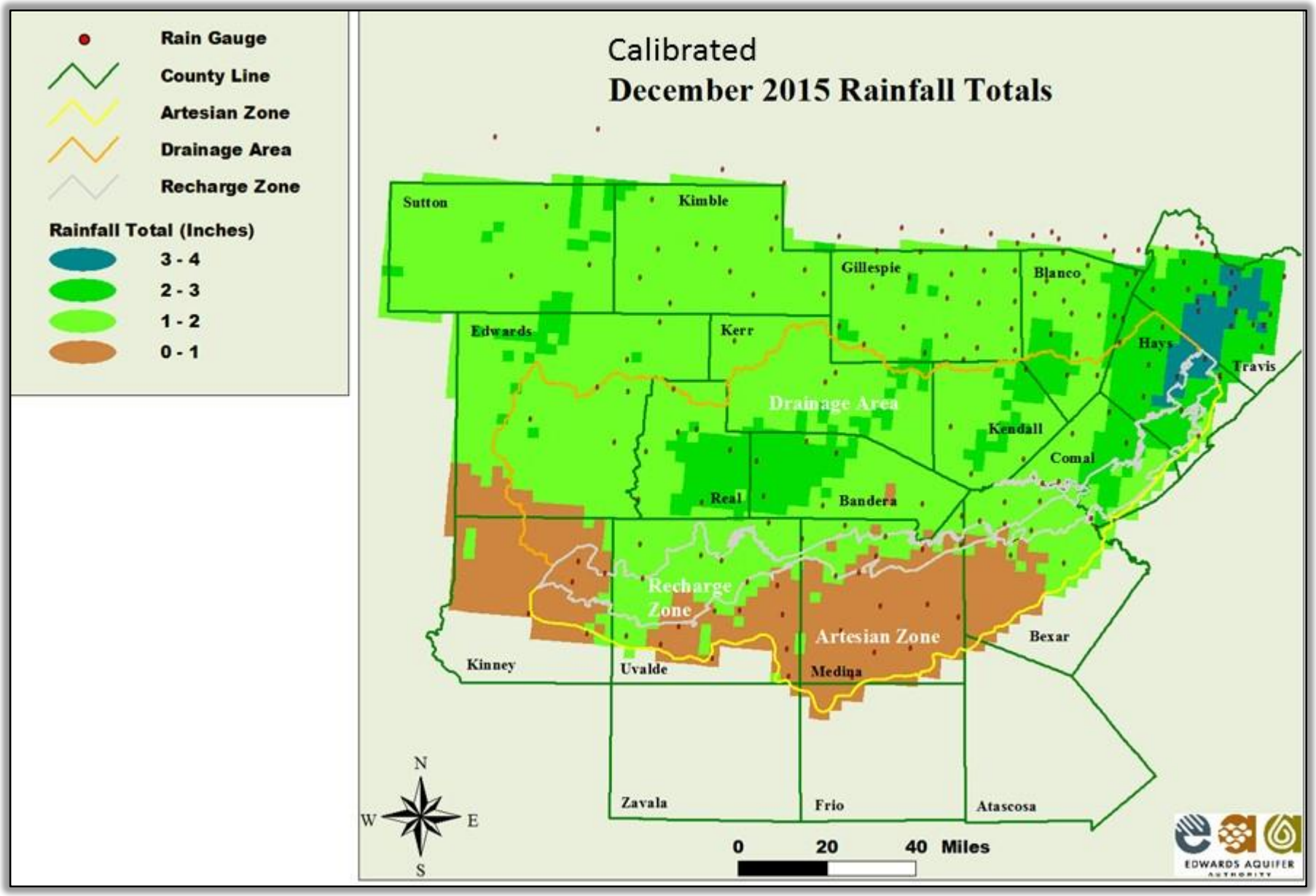
Stage 1 - Critical Period - 10-day avg. < 225 cfs
Stage 2 - Critical Period - 10-day avg. < 200 cfs
Stage 3 - Critical Period - 10-day avg. < 150 cfs
Stage 4 - Critical Period - 10-day avg. < 100 cfs
Stage 5 - Critical Period - 10-day avg. < 45/40 cfs

Hydrograph of the San Marcos Springs Discharge and Precipitation at San Marcos

(Precipitation data provided by EAA rain gauge HA158 located 0.25 miles west of Bobcat Stadium)



Stage 1 - Critical Period - 10-day avg. < 96 cfs
Stage 2 - Critical Period - 10-day avg. < 80 cfs
Stage 3 - None
Stage 4 - None
Stage 5 - None


Rain Gauge
County Line
Artesian Zone
Drainage Area
Recharge Zone
Rainfall Total (Inches)
3 - 4
2 - 3
1 - 2
0 - 1
Calibrated
December 2015 Rainfall Totals
Sutton
Kimble
Gillespie
Blanco
Edwards
Kerr
Hays
Travis
Drainage Area
Kendall
Comal
Real
Bandera
Recharge Zone
Artesian Zone
Bexar
Kinney
Uvalde
Medina
N
W
E
S
Zavala
Frio
Atascosa
0
20
40 Miles
EDWARDS AQUIFER AUTHORITY

Real-time Precipitation Gauging System and Hydrologic Data Collection

The Edwards Aquifer Authority (EAA) operates 74 "real-time" precipitation gauges that record data on six-minute intervals and transmit these data to the EAA's office via a radio-telemetry system. Rain gauges are located on the Edwards Aquifer Contributing Zone, Recharge Zone, and Artesian Zone. Acquired data have many uses including aquifer recharge calculations, production of rainfall maps, and in a variety of research projects. The EAA also collects water level data from a series of aquifer monitor wells in the region, including two index wells: Well J-27, in Uvalde County and Well J-17, in Bexar County. Water level data from the Hondo City well in Medina County are also included in this data brief. Through a cooperative agreement with the U.S. Geological Survey, the EAA monitors the discharge at Comal Springs and San Marcos Springs.

Rainfall Evaluation – December 2015 Vieux & Associates Doppler Rainfall Map

The calibrated December 2015 Rainfall Totals Map was prepared by Vieux & Associates for the EAA using NEXRAD Doppler Radar and the EAA's precipitation gauge data. Calibrating the NEXRAD data with the EAA's precipitation gauge data improves the accuracy of the precipitation map and is calculated using a four-kilometer grid system. Rain gauge locations are indicated on the map.

For the month of December, most of the rainfall fell over the areas that contribute to the Edwards Aquifer system. The Contributing Zone received most of the rainfall as between 2 and 4 inches was recorded. Localized storms in central to northeastern Hays County recorded between 3 and 4 inches. The Recharge Zone corridor that transcends Kinney, Uvalde, Medina, Bexar, and western Comal and into Hays Counties recorded between 0 and 4 inches of rainfall. The broadest amount of measureable precipitation occurred over the Contributing Zone where rainfall amounts between 1 and 4 inches were recorded. Elsewhere, particularly in the Artesian Zone, only between 0 and 2 inches were recorded.

Rain Evaluation – January 2016 Precipitation Gauge Data

All areas in the region received below average rainfall for the month of January. The January 2016 maximum monthly total rainfall amounts in the EAA's gauges ranged from 0.17 to 1.86 inches. The highest reported 24-hour rainfall event from the EAA's precipitation gauge network in January, by county, were as follows: Bandera, 0.56 inches; Bexar, 0.68 inches; Blanco, 0.30 inches; Comal, 0.56 inches; Edwards, 0.38 inches; Hays, 0.33 inches; Kendall, 0.38 inches; Kinney, 0.61 inches; Medina, 1.18 inches; Real, 0.42 inches; and Uvalde County, 0.94 inches. The highest 24-hour rain event recorded in the region was 1.18 inches of rain that occurred on January 2 at a gauge located on the east side of CR731 (Wiemers Rd), about 25 miles southwest of Yancey in southern Medina County.

Evaluation of January 2016 Aquifer Levels and Spring Discharge

Despite below average rainfall in January, rain events in the right places caused aquifer levels and spring discharges to respond accordingly. The San Antonio Pool Index Well (J-17) *decreased* 0.4 feet to 666.3 feet above mean sea level (msl) while the City of Hondo Well *increased* 1.3 feet to 698.5 feet msl. The Uvalde Pool Well (J-27) *increased* 2.1 feet to 861.1 feet msl.

The January daily average springflow for Comal Springs, *increased* 20 cubic feet per second (cfs) to 330 cfs, which is 28 cfs *above* the January monthly average discharge of 302 cfs while the daily average springflow for San Marcos Springs *decreased* 16 cfs to 295 cfs, which is 124 cfs *above* the monthly average discharge of 171 cfs for January. Please note that the discharge amounts are estimates and may be adjusted up or down as more direct flow measurements are obtained.

Summary of Current Aquifer Levels and Spring Discharge

The official daily high water level for the Uvalde Pool Well (J-27) was estimated to be 861.1 ft. msl on February 3, 2016, which is 6.9 ft. *below* the J-27 February monthly average of 868.0 ft. msl. The daily high water level at the San Antonio Pool Index Well (J-17) was 665.3 ft. msl on February 3, 2016; 3.7 ft. *below* the J-17 February monthly average of 669.0 ft. msl. The daily average discharge at Comal Springs on February 2, 2016, was 328 cfs, 24 cfs *above* the February average of 304 cfs while the daily average discharge at San Marcos Springs on February 2, 2016 was 294 cfs, 120 cfs *above* the February average of 174 cfs.

Summary of Current Regional Aquifer Conditions

The region has received below average rainfall the past two (2) months. However, trigger levels remain above Critical Period Management (CPM) thresholds. The U.S. Department of Agriculture-U.S. Drought Monitor indicated that much of the region remains unchanged with very little in the way of dryness or drought across southcentral Texas. Meanwhile, parts of south Texas remained dry prompting slight expansions in localized areas of dry conditions in the west and south. But, most of Texas has very little in the way of dryness or drought conditions.

The Climate Prediction Center (CPC) forecasts that “a strong El Niño is expected to gradually weaken through spring 2016, and to transition to ENSO-neutral during late spring or early summer 2016.” The US Seasonal Drought Outlook continues to show drought conditions virtually non-existent throughout the state of Texas. The National Weather Service - Climate Prediction Center’s Long Range Outlook forecasts below normal temperatures but above normal precipitation across southcentral Texas (particularly western counties) into April 2016.