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**To:** Mayor and Council

**From:** Albert Lara, P.E., Director of Public Works

**Date:** February 6, 2018

**Re:** Water Forecast as of January 31, 2018

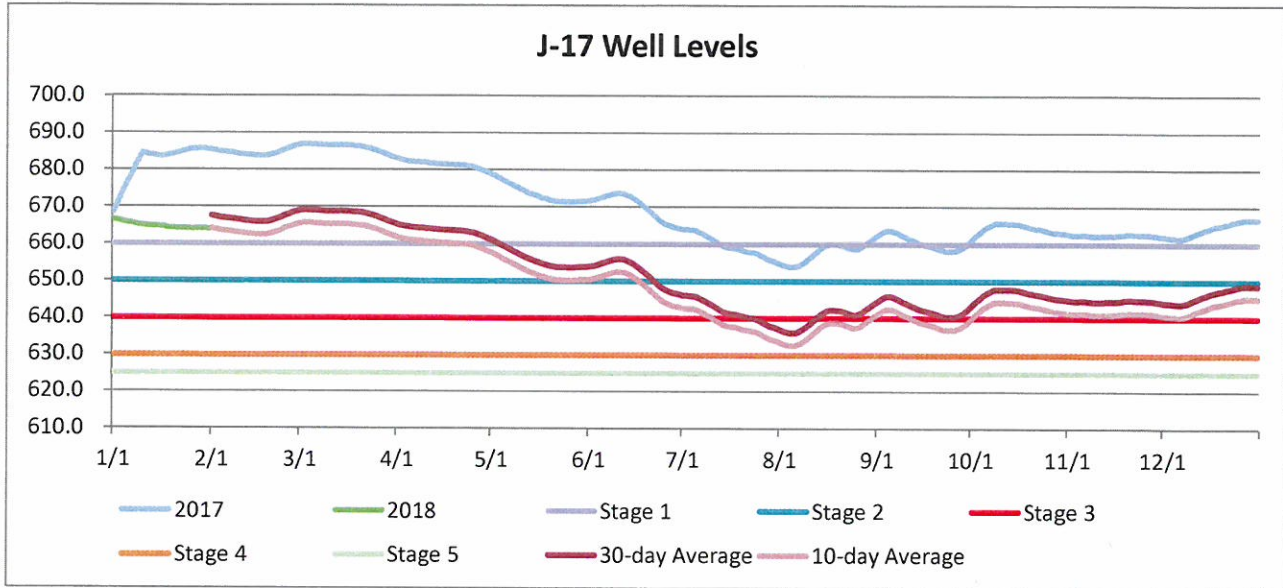
**Background:** The Public Works Department develops a monthly Water Forecast Report to determine our estimated reduced allotment compared to our estimated usage for the remainder of the calendar year. The department uses the Bexar Index Well (J-17) in the San Antonio Pool to determine if Edwards Aquifer Authority (EAA) will implement a critical period stage and associated withdrawal reductions. The EAA uses five stages to define the withdrawal reduction percentage with the trigger based on a ten day average of the J-17 Well. The report projects the number of days in the various stages that regulates our reduced allotment. The City of Hondo possesses an allotment of 2,645.919 acre-feet of unrestricted water based on our permits. The report calculates our usage estimate based on the previous year's actual usage and 8% above and below the actual usage of the previous year. The Airport possesses 362.021 acre feet of Base Irrigation and 517.979 acres feet of Unrestricted for a total of 880.000 acre feet. With no current leases for this water, the Airport holds 180 acre-feet to lease to the City in case of emergency.

**January 2018:** For the month of January, the San Antonio Pool experienced no stage restrictions. The City of Hondo pumped 149.353 acre-feet this year an increase of 0.628 acre-feet from last year for a difference of 0.42%.

**February – December 2018:** The Public Works Department projects that the San Antonio Pool will enter into Stage 1 restrictions on April 22, 2018, Stage 2 restrictions on June 17, 2018, and Stage 3 restrictions on July 11, 2018. Based on the projected reductions, the City of Hondo will reduce our allotment to 2,108.406 acre-feet by year's end for a decrease of 20.61%. The City will exceed our projected allotment if we increase last year's actual usage by an average of 8%.

## City of Hondo Texas Water Forecast

### Step 1 - J-17 Well Levels as of January 31, 2018



The above chart contains 10 day average reads through the date indicated. The remainder of the 2018 is based on two different scenarios. Each scenario uses the 2017 actual for the remainder of the year and adjusts based on the difference between the 2017 and 2018 actuals through the date indicated. The two scenarios are:

- 1 - adjusted for the average daily difference for the last 30 days
- 2 - adjusted for the average daily difference for the last 10 days

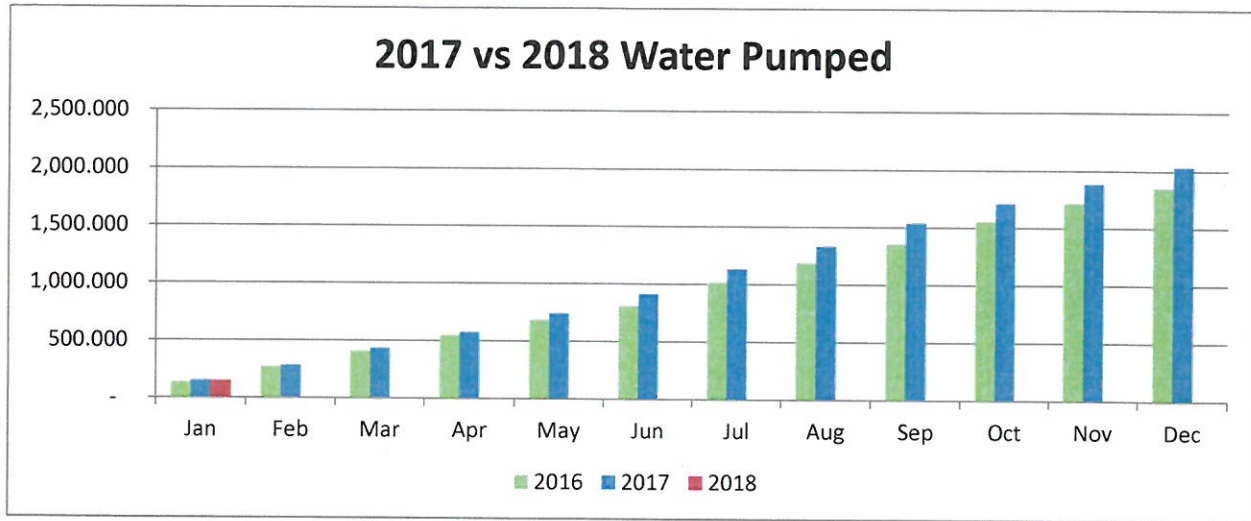
Please note the assumptions assume we have a one-time rise in the aquifer table, similar to last year's.

### Step 2 - Calculating the Reduction based on Step 1

The City has 2,645.919 acre-feet of unrestricted water per calendar year. That allotment will be reduced by the number of days the EAA declares restrictions. The table below shows the restricted allotments using the Scenario based on the 10-day average from Step 1 above.

Stage	Duration Days	Reduction Percentage	Base Daily Amount	Total Reduction	Percent of Annual Allotment
None	111	0%	7.249	-	
Stage 1	56	20%	7.249	81.189	
Stage 2	127	30%	7.249	276.187	
Stage 3	71	35%	7.249	180.138	
Stage 4	0	40%	7.249	-	
Stage 5	0	44%	7.249	-	
<b>Total</b>	<b>365</b>			<b>537.513</b>	<b>20.61%</b>
Annual Allotment				<b>2,645.919</b>	
Adjusted allotment, if the scenario plays out				<b>2,108.406</b>	

**Step 3 - Reviewing actual amounts used (pumped)**



The above graph shows we have pumped more in January - May than we have in the past two-years for the respective months.

The numbers supporting the above chart are:

	2016	2017	2018	2018 - 2017 Difference	Percent Difference
<b>Jan</b>	136.666	148.725	149.353	0.628	0.42%
Feb	272.981	283.224			0.00%
Mar	408.170	433.934			0.00%
<b>Apr</b>	549.348	575.735			0.00%
May	685.770	742.510			0.00%
Jun	812.385	912.715			0.00%
<b>Jul</b>	1,018.184	1,134.486			0.00%
Aug	1,190.262	1,331.671			0.00%
Sep	1,359.821	1,537.991			0.00%
<b>Oct</b>	1,558.760	1,715.516			0.00%
Nov	1,720.389	1,884.386			0.00%
Dec	1,856.317	2,034.609			0.00%

**Step 4 - providing a 2018 estimated usage (pumped), and comparing to Well J-17 Estimate**

	Usage Estimate	Restricted Alloment	Difference
2018 estimate based on 8% below 2017 actual	1,871.84	2,108.41	236.57
2018 estimate as if the same as 2017	2,034.61	2,108.41	73.80
2018 estimate based on 8% above 2017 actual	2,197.38	2,108.41	(88.97)