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HOW GROUNDWATER LEVELS ARE MEASURED

Groundwater levels are measured in “key wells” during the spring of each year (usually late March) and then again in the fall of each year (usually mid October). Key monitoring wells usually have a longer history of monitoring and are representative of other wells. Static (non-pumping) groundwater levels measured in the spring and fall, before and after the most intensive summer pumping season, are better indicators of the groundwater conditions. Static levels versus actual pumping levels during the summer season, provide more accurate tracking data. Actual pumping levels are site-specific and can vary significantly depending upon how the well is constructed and whether water is pumped from it regularly. Groundwater levels are generally deeper in the fall following the summer season of highest water demand. Levels recover, to some degree, each spring after the fall and winter season ends. The extent of spring recovery is dependent on rainfall and snowpack totals.

2015 REVIEW OF SPRING GROUNDWATER LEVELS IN TEHAMA COUNTY

Table 1 on the next page, summarizes the spring groundwater levels measured in key monitoring wells across Tehama County from 2012 through 2015. These recent spring groundwater levels are organized by sub-basin and these spring levels are compared to the "Spring Alert Level 2". The Spring Alert Level 2 is a tentative management objective that has been defined in the Tehama County Groundwater Management Plan for each of these key wells. It represents the deepest spring groundwater levels that has been observed in these key wells over their monitoring history up to 2010. The Spring Alert Level 2 typically represents a spring groundwater level that was observed in a previous drought period such as occurred in 1977, 1991, or as recent as 2007-2009. Spring groundwater levels in 2012 through 2015 that have exceeded the Spring Alert Level 2 are shaded and indicate new historic low spring groundwater levels.

The results of recent years of groundwater level monitoring show that a wide range in spring groundwater levels exist in Tehama County, emphasizing the importance of monitoring groundwater levels in different sub-basins. Also, missing data highlights challenges with establishing and maintaining a complete groundwater level monitoring grid. The recent spring groundwater level measurements point out that the Antelope, Corning East, and Red Bluff East groundwater sub-basins are showing more decline in spring groundwater levels than other sub-basins. The level of decline in spring groundwater levels varies among the key wells within these three sub-basins. For brevity, fall groundwater levels are not reviewed in this article but may be discussed in a fall article.

Table 1. Spring groundwater levels measured in 48 key wells in Tehama County from 2012 through 2015.
(Groundwater levels are not monitored in the South Battle Creek, Bend, and Corning groundwater sub-basins at this time.)

Well ID No.	General Location	Spring Alert Level 2	Spring 2012 Level	Spring 2013 Level	Spring 2014 Level	Spring 2015 Level
ANTELOPE SUB-BASIN						
26N02W17E001M	LeClaire & Decker Ave	19	16.8	19.9	17.8	18.2
27N02W31C001M	Bray & Craig Ave	31	32.7	32.5	32.1	27.9
27N03W10B001M	St. Mary & Trinity Ave	61	60.8	58.4	NA ¹	NA ¹
27N03W16K003M	Roundup Ave.	34	33.1	34.2	42.2	34.4
27N03W23D001M	Hogsback Rd & Hwy 99E	30	31.0	30.4	33.3	29.9
BOWMAN SUB-BASIN						
28N04W04P001M	Hooker Creek Rd & Hooker Rd	127	NA ¹	NA ¹	123.9	124.5
29N03W18M001M	Lake California Drive	34	NA ¹	25.1	25.5	25.3
29N04W15E002M	Draper Rd & Oak Lane	37	36.8	33.7	35.6	38.3
29N04W20A003M	Bowman Rd & Learning Way	38	37.5	38.3	40.8	41.6
29N04W28D001M	Hooker Creek & Jeffries Rd	108	100.4	100.7	103.1	102.4
29N04W35B001M	I-5 & Snively Rd	93	87.0	85.8	88.1	88.0
CORNING EAST SUB-BASIN						
23N02W16B001M	Near Cattle Drive	44	34.0	36.1	42.2	46.8
23N02W28N004M	5 th & Moller Aves	LD ²	39.4	44.1	47.3	49.7
23N03W05G001M	Liberal Ave & Cushman Lane	60	NA ¹	52.0	57.0	52.3
23N03W13C006M	Capay & Hall Rds	44	42.1	45.9	51.8	52.8
23N03W24A002M	Capay Rd & Sour Grass Creek	43	38.1	41.6	47.2	50.4
23N03W25M004M	Ingram Ave & TC Canal	LD ²	59.1	64.1	69.9	71.9
24N02W29N003M	New York & Hall Rds	40	38.6	43.2	46.6	48.3
24N03W03R002M	Highway 99W & Finnell Ave	35	36.3	38.7	46.1	49.0
24N03W29Q001M	Chittenden Rd & Mt. Shasta Ave	77	77.4	82.2	86.0	89.1
24N04W14N002M	Corning Rd & Freeman School House Rd	79	NA ¹	83.6	91.9	98.6

FOOTNOTES:

NA¹ Data not available. Key well temporarily in accessible or monitoring has been discontinued.

LD² Limited data, Recently constructed dedicated dedicated monitoring wells, insufficient monitoring

Highlighted measurements indicate the groundwater levels are deeper than Spring Alert Level 2 (defined in AB 3030 Plan)

Well ID No.	General Location	Spring Alert Level 2	Spring 2012 Level	Spring 2013 Level	Spring 2014 Level	Spring 2015 Level
DYE CREEK SUB-BASIN						
26N02W14G001M	Foothill Rd	81	77.3	78.1	79.2	81.2
26N02W15C001M	68 th Ave & Hwy 99E	38	NA ¹	35.7	37.7	37.3
26N02W16C001M	68th & Schafer Ave	19	17.8	25.4	18.7	18.7
26N02W21Q001M	9th Ave & Hwy 99E	21	17.8	19.4	18.9	20.9
26N02W29R001M	5 th Ave	9	4.7	4.4	4.4	4.3
27N02W30C002M	Cone Grove Rd	36	33.6	33.1	NA ¹	NA ¹
LOS MOLINOS SUB-BASIN						
24N02W02E001M	Tehama Vina St	5	6.6	NA ¹	NA ¹	NA ¹
25N01W32P001M	Leninger Rd & Deer Crk	78	78.2	78.7	79.7	81.3
25N02W09G001M	Buena Vista Ave	43	40.6	42.8	40.9	39.4
25N02W21B001M	Lee & Sherman St	15	NA ¹	NA ¹	NA ¹	NA ¹
25N02W34K001M	Hwy 99 E & Dye Creek	17	15.1	NA ¹	NA ¹	NA ¹
RED BLUFF EAST SUB-BASIN						
25N03W10L001M	Rodeo & Central Ave	51	42.0	54.5	48.1	55.2
25N03W11B001M	99W & Gerber Rd	32	23.2	31.3	28.8	35.8
25N03W19N001M	Gyle Rd	60	66.6	71.6	73.0	88.5
26N03W17B001M	Cody Drive	55	56.0	57.1	59.7	64.3
26N04W25J001M	Ottman Ave & Paskenta Rd	58	57.9	61.4	62.7	66.0
RED BLUFF WEST SUB-BASIN						
27N04W35E001M	Live Oak & Red Bank Rd	124	111.4	116.9	116.8	119.3
27N04W05G002M	Hwy 36	47	43.0	47.3	NA ¹	46.4
ROSEWOOD SUB-BASIN						
29N05W14L001M	Old Gold Rd	37	35.6	34.1	38.9	36.9
29N05W21H001M	Farquhar Rd	142	NA ¹	NA ¹	147.7	149.2
29N05W33A004M	Farquhar Rd	42	40.0	40.6	42.0	41.8

FOOTNOTES:

- NA¹ Data not available. Key well temporarily in accessible or monitoring has been discontinued.
- LD² Limited data, Recently constructed dedicated dedicated monitoring wells, insufficient monitoring
- Highlighted measurements indicate the groundwater levels are deeper than Spring Alert Level 2 (defined in AB 3030 Plan)

UPDATE ON 2015 SPRING GROUNDWATER LEVELS IN GLENN COUNTY

Glenn County Code 20.03 and Ordinance 1237, "Groundwater Coordinated Resource Management Plan", includes an element of groundwater monitoring in Glenn County. Table 1 provides the Spring groundwater levels from 2012 through 2015 for each key well. The groundwater levels are expressed in feet below ground surface. Spring groundwater levels dating back to 1977, another period of severe drought, are also given for comparison for those key wells where records were available. The data indicate a wide range in groundwater levels. Levels that are shaded denote levels deeper than those recorded in 1977.

Table 2. Summary of Spring Groundwater Levels from 2012 - 14 measured in 55 key monitoring wells in Glenn County (Source: California Department of Water Resources, Water Data Library and Glenn County Department of Agriculture).

Well ID Number	General Location	1977 Level	2012 Level	2013 Level	2014 Level	2015 Level
----(feet below ground surface)----						
22N03W34A01M	Rd 20 & Rd M	21.8	17.7	14.6	22.5	24.2
22N03W30C01M	Between Rds 15 & 17 & Rd DD	103.0	109.3	112.7	118.2	124.8
22N03W21F02M	Rd 14 & Rd HH	29.5	26.1	21.2	29.1	24.2
22N03W17E01M	Rd 200 & Cedar Ave	17.3	20.1	15.3	20.2	14.5
22N03W12Q03M	Rd 9 & Rd O	39.9	35.2	36.1	42.7	42.4
22N03W03D01M	Rd 3 & Hwy 99W	78.9	77.1	79.7	NM	NM
22N02W31C01M	Rd 20 & Rd P	26.0	23.7	22.0	29.7	32.3
22N02W21D01M	6th Ave & Hwy 32	33.1	25.8	26.0	41.5	NM
22N02W20Q01M	Rd 16 & Rd XX	21.4	16.7	15.2	26.4	17.4
22N02W11Q01M	Rd 9 & Between 1st & 2nd Aves	25.9	25.5	29.0	30.7	32.3
22N01W29K01M	Rd 206 & Hamilton City	19.4	17.5	17.9	20.1	19.5
21N04W24A03M	Rd 28 & Rd D	NA	124.7	134.4	143.3	158.1
21N04W24A02M	Rd 28 & Rd D	113.5	NM	NM	NM	NM
21N03W33A04M	Hwy 99W & Rd 31	55.0	55.6	68.4	68.4	83.0
21N03W31H01M	Rd 31 & Rd F	81.9	73.9	81.8	88.5	100.4
21N03W24P01M	Rd 30 & Rd P	56.1	46.2	50.9	58.4	NM
21N03W22H01M	Rd 30 & Rd M	67.6	54.9	58.9	NM	90.2
21N03W18B02M	Rd 28 & Rd F	86.2	120.1	NM	140.9	159.9
21N03W12C02M	Rd 25 & Rd NN	42.7	34.4	33.6	40.8	42.0
21N03W11G01M	Rd 25 & Rd N	43.2	35.8	NM	NM	NM

Continued on the next page....

Table 2 Continued

UPDATE ON 2015 SPRING GROUNDWATER LEVELS IN GLENN COUNTY

Well ID Number	General Location	1977	2012	2013	2014	2015
		Level	Level	Level	Level	Level
----(feet below around surface)----						
21N02W31M01M	Rd 33 & Rd P	NM	33.5	39.5	44.1	44.8
21N02W23G01M	Rd 29 & Rd V	31.0	25.9	NM	37.3	34.8
21N02W09M02M	Rd 25 & Rd S	45.0	37.9	40.6	50.0	NM
21N02W02B02M	Rd V V & Rd 24	33.0	25.6	26.0	37.4	34.4
21N01W04N01M	Rd 23 & Rodgers Ranch Road	21.5	NM	20.0	22.8	21.0
20N04W12F02M	Rd 35 & Rd D	77.6	51.6	56.8	62.8	69.0
20N03W33J01M	Rd 45 & Rd J	33.4	10.1	10.4	15.4	16.1
20N03W23G02M	Rd 39 & Rd P	36.3	25.3	26.5	31.0	29.9
20N03W17P01M	Rd 39 & Rd H	57.0	19.3	31.5	22.8	29.4
20N03W12C01M	Rd 35 & Rd P	44.0	33.9	37.0	44.5	45.1
20N03W07K03M	Rd 35 & Rd D	77.4	40.3	44.4	48.7	58.5
20N02W29G01M	Rd 44 & Rd S	8.0	6.1	6.3	7.3	7.2
20N02W13G01M	Rd 37 & Rd W W	6.8	2.6	5.3	4.7	5.9
20N02W11A03M	Rd 35 & Rd W	NM	18.1	21.0	19.9	33.2
20N02W11A02M	Rd 35 & Rd W	NM	11.9	13.8	15.0	19.4
20N02W11A01M	Rd 35 & Rd W	NM	8.8	9.5	9.3	11.2
20N02W02J01M	Rd 34 & Rd W	12.6	6.6	9.9	11.5	12.7
19N03W26P01M	Rd 60 & Hwy 99W	4.7	0.0	0.0	1.6	2.0
19N02W36H01M	Rd 61 & Between Hwy 45 & Rd WW	8.6	10.5	10.4	9.6	9.4
19N02W34F01M	Rd U & Rd 61	7.2	3.4	4.7	3.1	4.5
19N02W29Q01M	Rd 60 & Rd SS	4.8	2.8	4.2	2.8	4.4
19N02W13J01M	Rd 56 & Between Hwy 45 & Rd WW	14.0	12.6	12.5	11.6	11.4
19N01W27R01M	Hwy 162 & Rd Y	15.8	12.8	11.6	11.2	9.5
19N01W15D01M	Rd 50 and Rd Y	15.6	11.4	NM	NM	NM
19N01W13Q01M	Hwy 162 & Rd Z	NM	4.0	5.0	3.0	3.5
18N02W36B01M	Dodge Road & Hwy 45	11.4	5.5	12.1	13.5	11.8
18N02W18K01M	Norman Rd & Lambert Lane	11.1	7.4	8.0	7.1	10.5
18N01W22L01M	Rd 69 & Rd Y	8.7	6.3	NM	6.0	NM
18N01W17G01M	Rd 67 & Levee Rd	19.8	18.4	17.7	19.1	17.9
18N01E05D01M	Hwy 162 & Rd Z	NM	NM	3.9	3.8	6.7
KWD-3	Rd 65 & D	NM	8.6	15.6	23.6	14
KWD-2	Rd 60 & Rd B	NM	8.7	10.7	14.7	18
KWD-1	Hwy 162 & Rd D	NM	9.7	12.7	16.7	24
GWD-3	Rd 45 & Rd D	NM	27.3	19.3	22.3	29
GWD-2	Rd 45 & Rd D	NM	17.8	19.8	25.8	32
GWD-1	Rd 43 & Rd D	NM	27.3	27.3	30.3	49
CALWater 002-01	Within the City of Willows	NM	20.0	14.7	19.0	20

Footnotes:

Highlighted measurements indicate that groundwater levels are deeper than measured in 1977 drought. NM indicates no groundwater level measurement was available.



RECAP OF WATER DIALOGUE MEETING, APRIL 30, 2015, CORNING CA

Approximately 200 water users in the northern Sacramento Valley participated in a “Water Dialogue” meeting in Corning, California on April 30, 2015. Surface water and groundwater supplies and conditions were discussed. Experiences from the 2014 drought year and strategies for the 2015 summer were discussed. Background and steps towards implementation of the Sustainable Groundwater Management Act (SGMA) were also discussed. An upcoming webinar series sponsored by the University of California Extension designed to assist with implementing sustainable groundwater management was also discussed. All of the presentations from the meeting are available at:

http://cctehama.ucanr.edu/Water__Irrigation_Program/Irrigation_Management_-_Water_Resource_Meetings/

TCFCWCD PROPOSES TO FILE NOTICE OF INTENT TO BE SUSTAINABLE GROUNDWATER MANAGEMENT FOR TEHAMA COUNTY

The Tehama County Flood Control and Water Conservation District (District) Board of Directors conducted a public hearing on June 2, 2015, to determine whether to adopt a resolution directing the District to submit a Notice of Intent to the California Department of Water Resources stating that the District will be the Groundwater Sustainability Agency (Agency) for all portions of the eleven (11) Groundwater Subbasins located within Tehama County.

The Sustainable Groundwater Management Act (SGMA) became effective on January 1, 2015 and established a new structure for managing California’s groundwater resources at a local level. SGMA mandates that all groundwater basins identified in Bulletin 118 must be managed by a Groundwater Sustainability Agency by June 30, 2017. Each Agency will then develop a Groundwater Sustainability Plan (Plan) by January 30, 2022, which will include measurable objectives and milestones that assist the Agencies in achieving groundwater sustainability within 20 years of Plan adoption.

The District is uniquely qualified to become the Agency for all eleven (11) groundwater basins located within the County due to its current jurisdiction which extends throughout the County, its background in groundwater monitoring and water conservation issues, a Board of Directors which is comprised of elected officials representing the entire County, and additional representation from a technical advisory committee to the Board which is comprised of representatives from Agriculture, Domestic/Industrial Water Providers, Natural Resources, and representatives from the cities of Corning, Red Bluff, and Tehama.

The District submitted a Notice of Intent at the June 2, 2015 Public Hearing for the following subbasins or the portions of those subbasins located within the County: Rosewood, Bowman, Red Bluff, Corning, Colusa, Vina, Los Molinos, Dye Creek, Antelope, Bend, and South Battle Creek. For questions or additional information on the Sustainable Groundwater Management Act please contact Ryan Teubert, Tehama County Flood Control/Water Resources Manager, 530-385-1462, or refer to <http://www.water.ca.gov/cagroundwater/>.



Water & Land Resource Manager Newsletter

TEHAMA, GLENN, COLUSA, AND SHASTA COUNTIES

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Allan Fulton, UC Farm Advisor

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