TEHAMA COUNTY GROUNDWATER SUSTAINABILITY AGENCY & CURRENT GROUNDWATER CONDITIONS

Tehama County Farm Bureau Meeting November 14, 2018

1957 TEHAMA COUNTY FLOOD CONTROL AND WATER CONSERVATION ACT

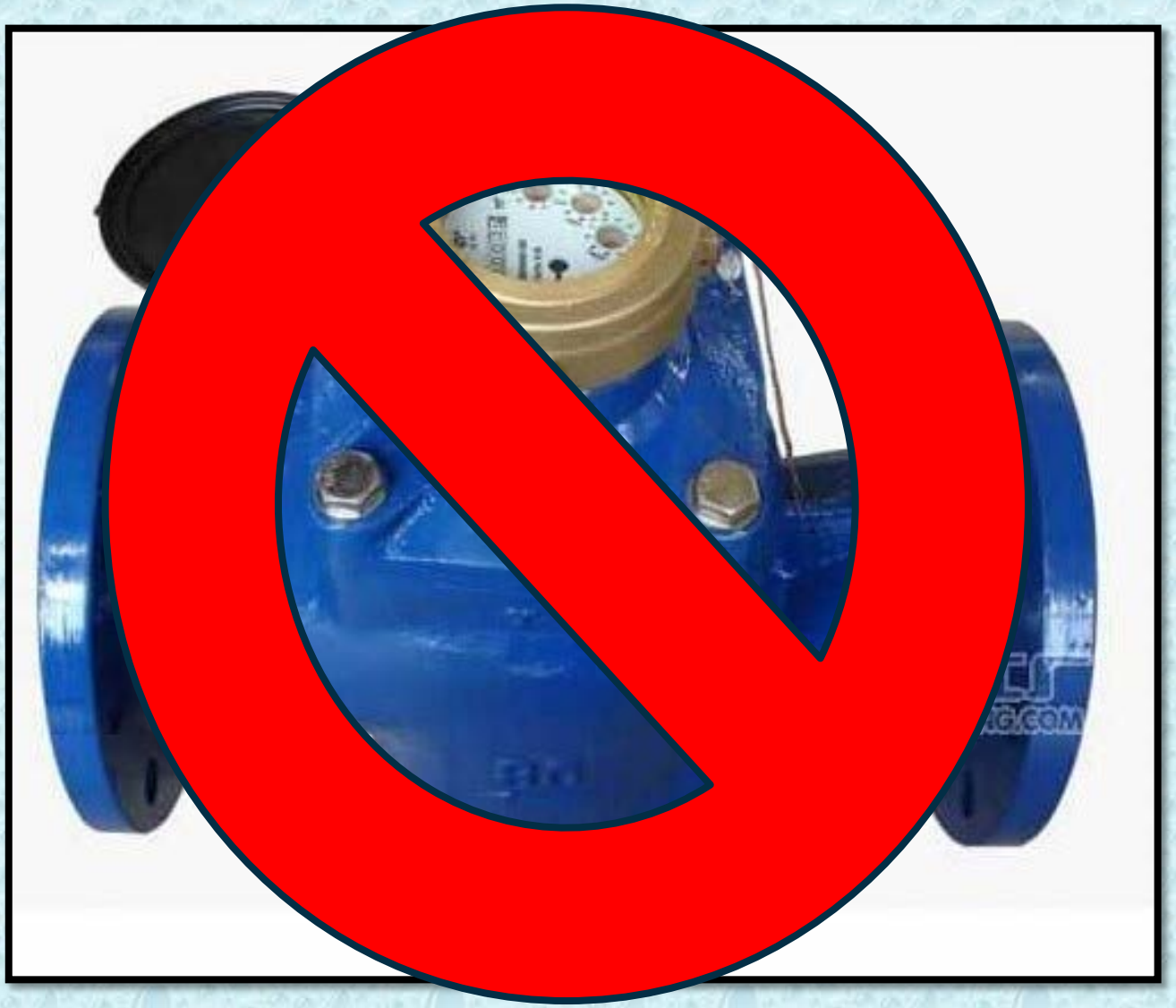
To provide for the control and conservation of flood and storm waters and the protection of watercourses, watersheds, public highways, life and property from damage or destruction from such waters; to provide for the acquisition, retention, and reclaiming of drainage, storm, flood, and other waters and to save, conserve, and distribute such waters for beneficial use in said district.

- Maintain 14 miles of levee along Deer and Elder Creeks
- Coordinate emergency flood repair projects
- Staff the Tehama County Groundwater Sustainability Agency
- Completed the 2018 update to the County's Multi-jurisdictional Hazard Mitigation Plan
- Participate in the six county Northern Sacramento Valley Integrated Regional Water Management Planning Group
- Participate on the County's Drought Task Force and the Mass Casualty Incident Working Group

- **Brief Review of the Sustainable Groundwater Management Act (SGMA)**
- **Tehama County Groundwater Sustainability Agency (GSA)**
- **Update on Groundwater Levels**

Questions?

Water Meters



Sustainable Groundwater Management Act (SGMA)

- On September 16, 2014, Governor Brown signed SB1168, AB1739, and SB1319 into law, enacting SGMA

- SGMA became effective on January 1, 2015

What is SGMAs purpose?

- **Promote sustainable management** of groundwater basins
- Enhance **local management** of groundwater, state to step in if necessary
- **Improve data collection and understanding** of groundwater resources and management
- Avoid or minimize impacts for **land subsidence**

Sustainable Groundwater Management Act Timeline

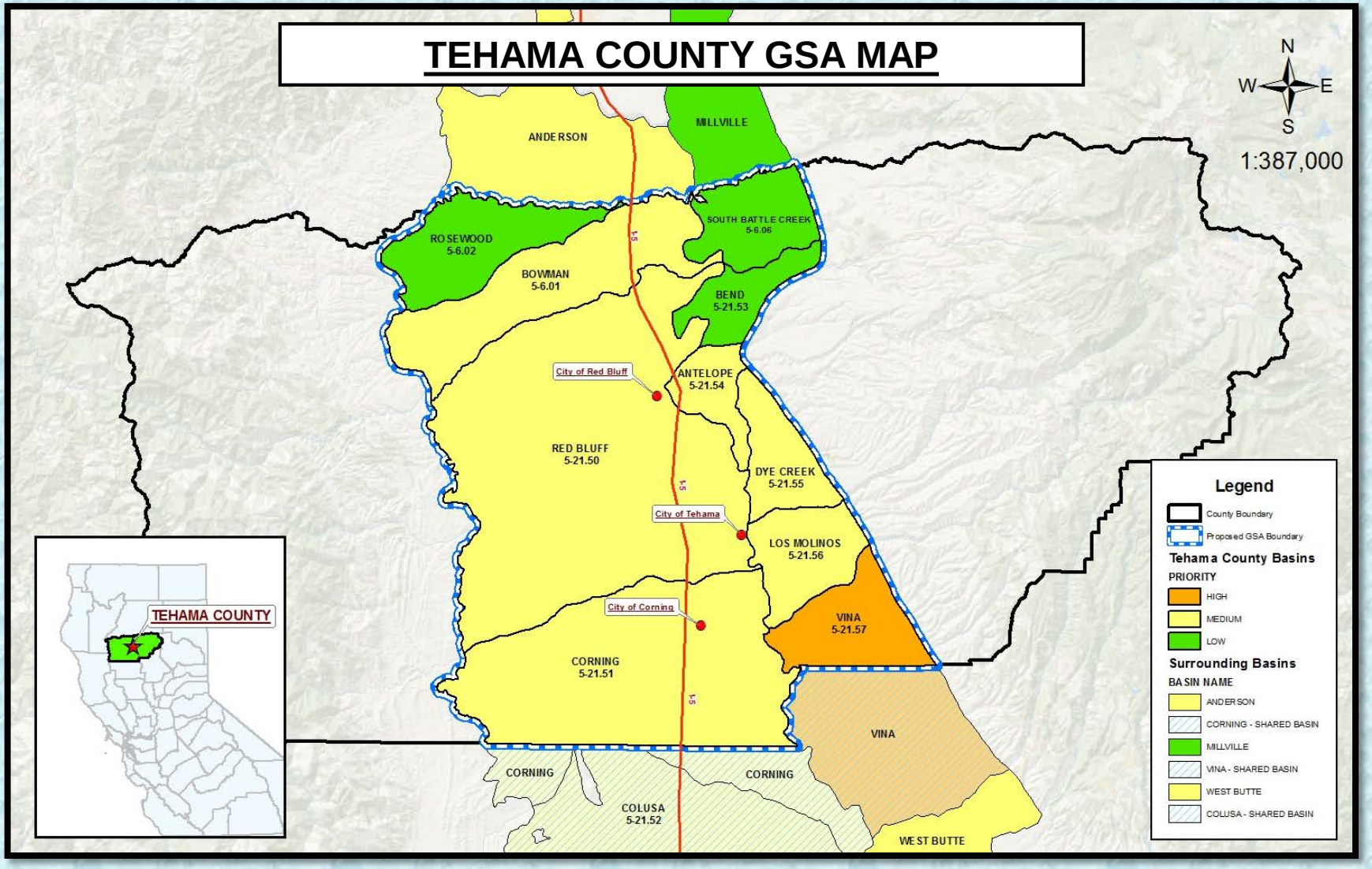
- **January 31, 2022:** Groundwater Sustainability Plans required for all high and medium priority groundwater basins
- **January 31, 2042:** Basins must achieve sustainability

- **California currently has 43 High Priority and 84 Medium Priority Basins**

- **DWR to release 2016 Re-Prioritization soon. Addition information can be found at https://water.ca.gov/Programs/Groundwater-Management/Basin-Prioritization**

- **DWR to release 2018 Re-Prioritization in May of 2019.**

Tehama County Groundwater Sustainability Agency

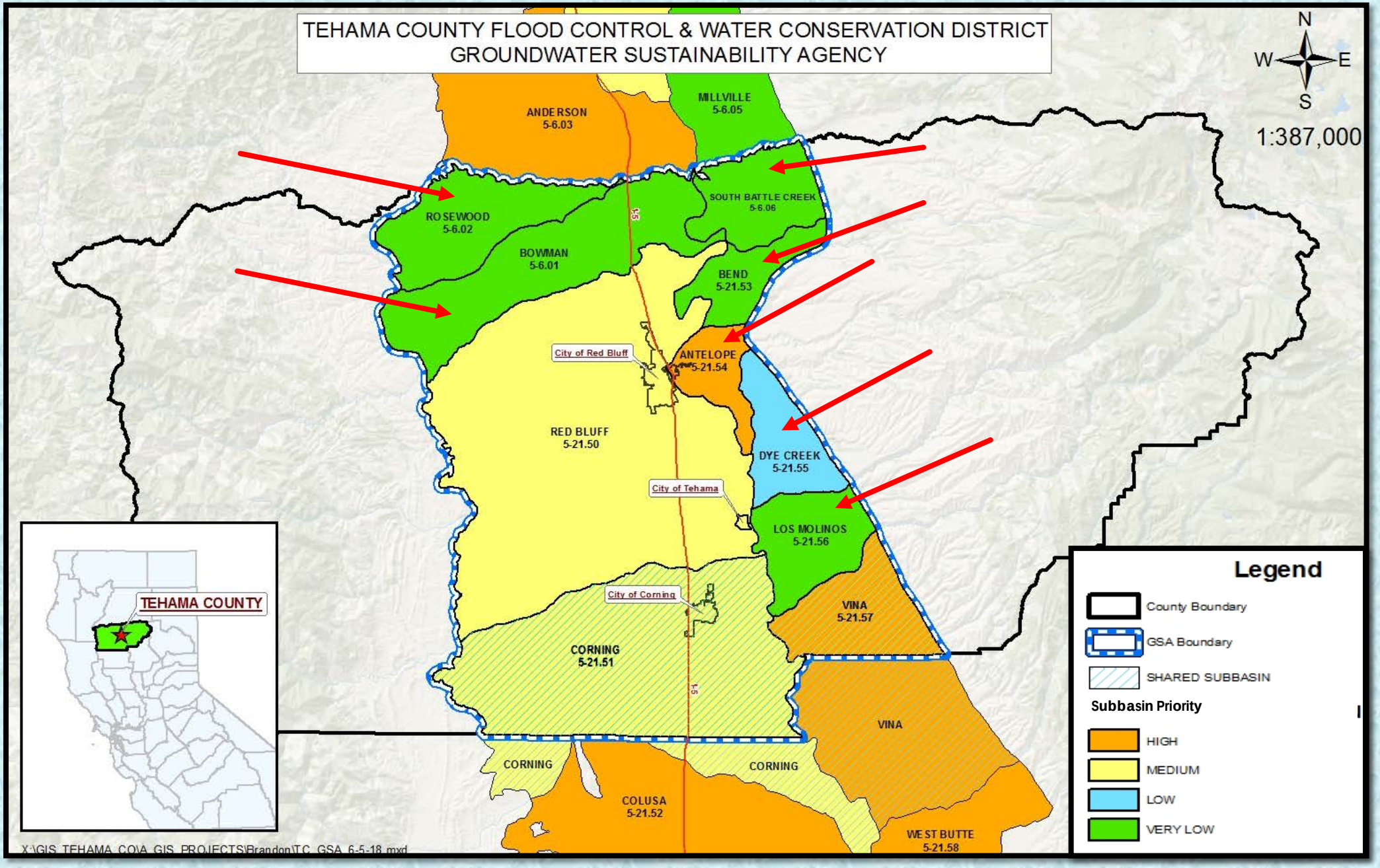


- **10 Subbasins originally**
  - 1 High Priority
  - 6 Medium Priority
  - 3 Low Priority
- **Public Hearing process during 2015**
- **Submitted Notice of Intent in November 2015**
- **Recognized as Exclusive GSA by DWR in February 2016**

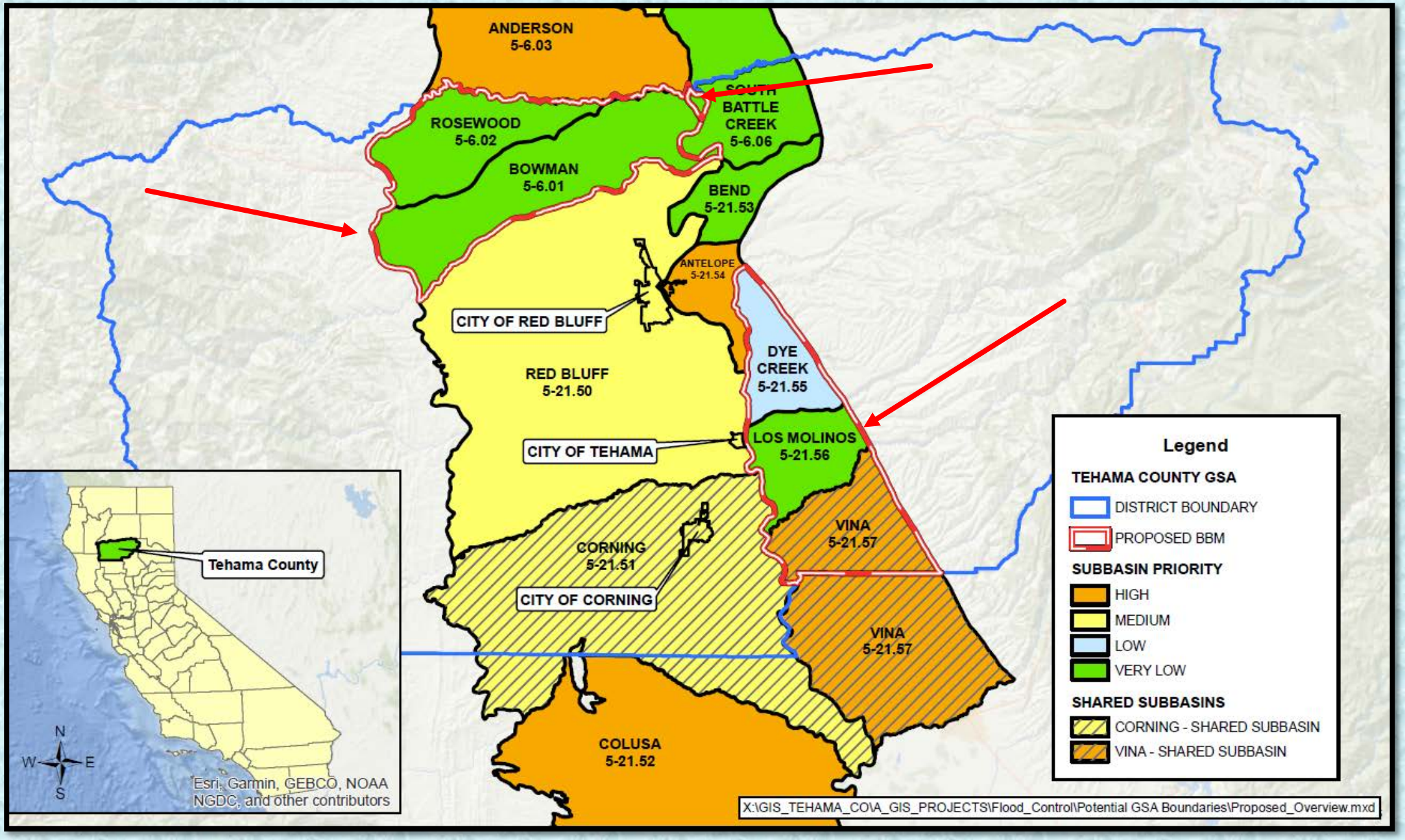
GROUNDWATER SUSTAINABILITY PLANNING GRANT SUBBASINS

- District Applied for 1.5 Million Dollars in October of 2017 for the 5 groundwater subbasins located entirely within Tehama County
- Vina Subbasin
- Corning Subbasin
- Low Priority Subbasins

May 2018 Draft Basin Reprioritization



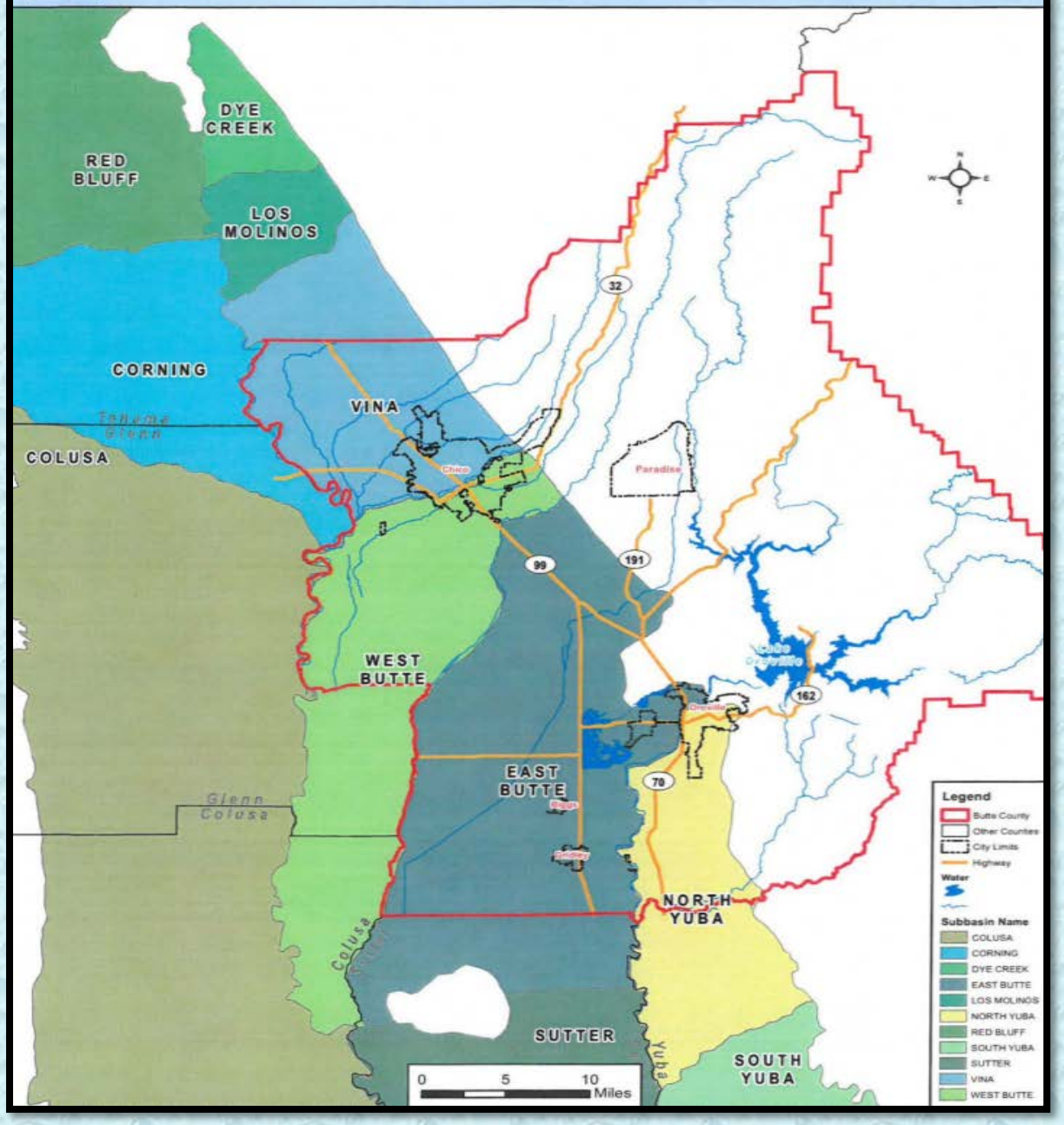
Proposed Basin Boundary Modifications

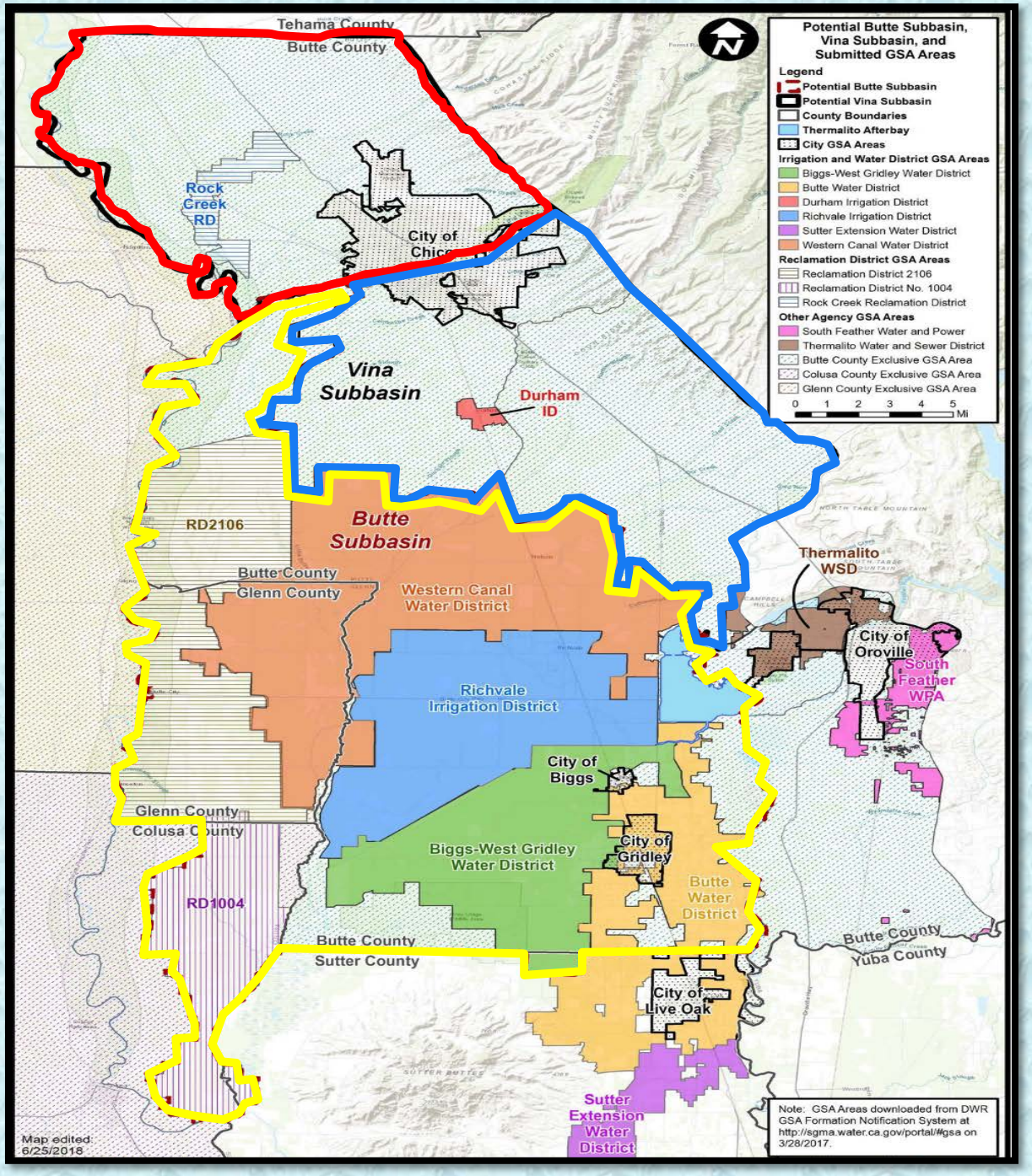


Tehama County GSA

EXHIBIT C

Butte County Groundwater Subbasins





Tehama County GSA Governance Structure

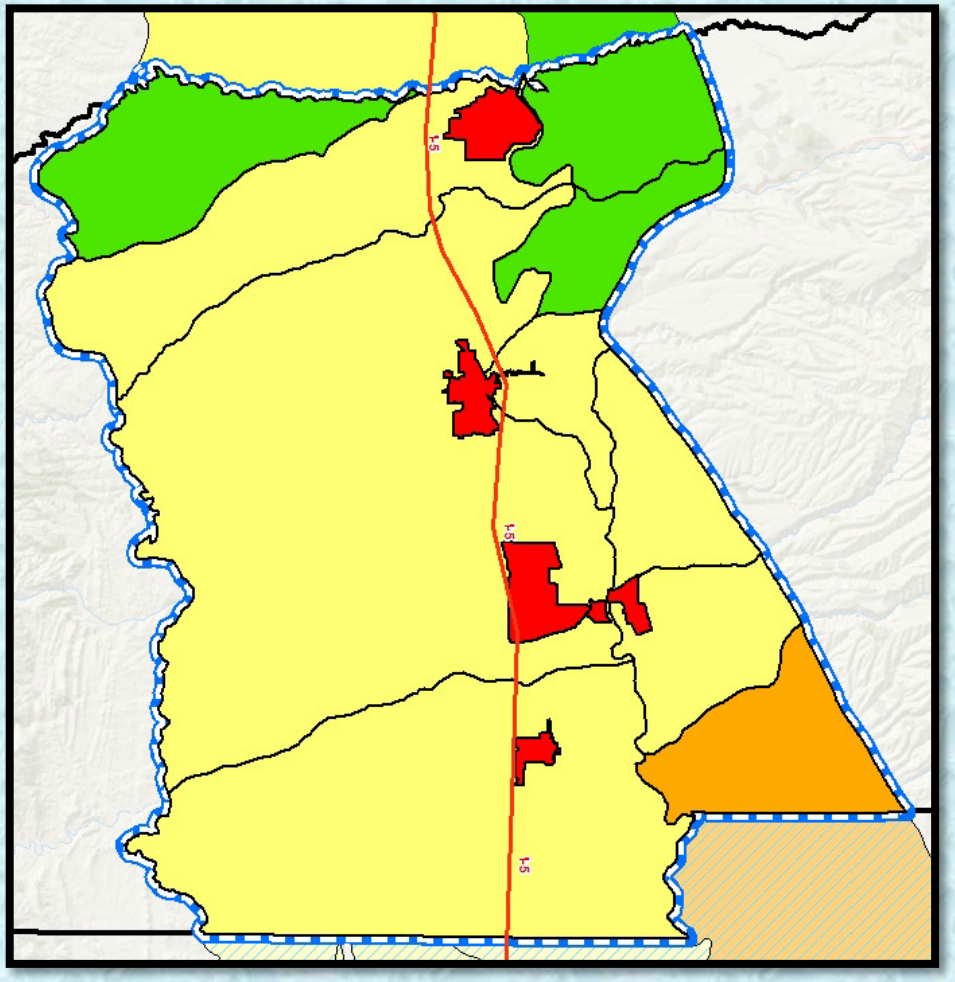
- Governing Board – Tehama County Flood Control & Water Conservation District Board of Directors (County Board of Supervisors)

Questions?

- Groundwater Commission (similar to Planning Commission)
- Technical Advisory Committee

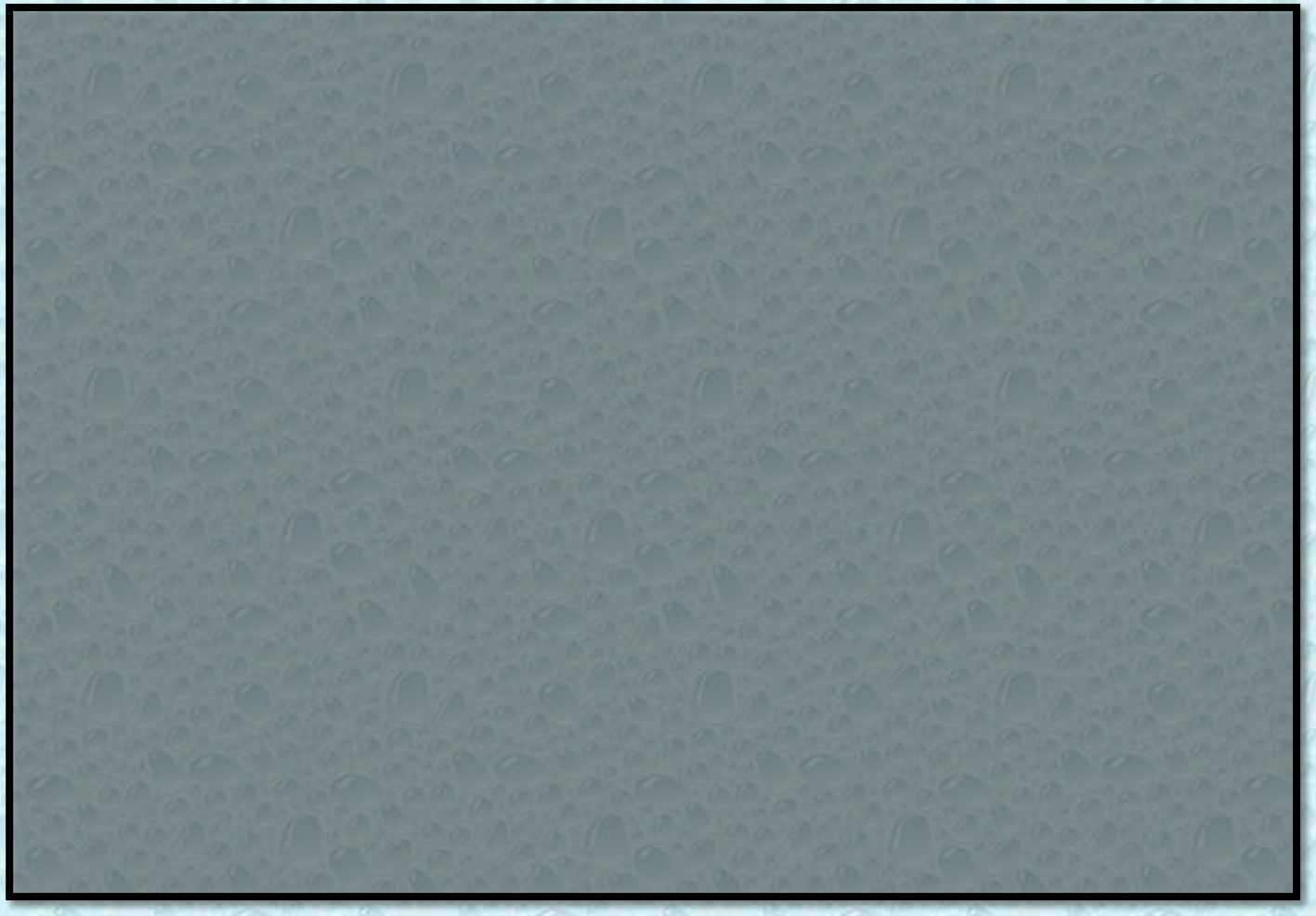
Groundwater Commission

- **The Commission will be made up of 11 members**
- **6 agencies will have designated seats on the Commission and appoint their own members.**
  - 1 – City of Corning – 773 million gallons per year (GPY)
  - 1 – City of Red Bluff – 1.18 billion GPY
  - 1 – City of Tehama – 35 million GPY
  - 1 – El Camino Irrigation District – 2.28 billion GPY
  - 1 – Los Molinos Community Services District – 70 million GPY
  - 1 – Rio Alto Water District – 241 million GPY



Additional Members will Include 1 Representative from each 5 County Supervisorial Districts

- Members should be a resident, property owner, or groundwater user within Tehama County;



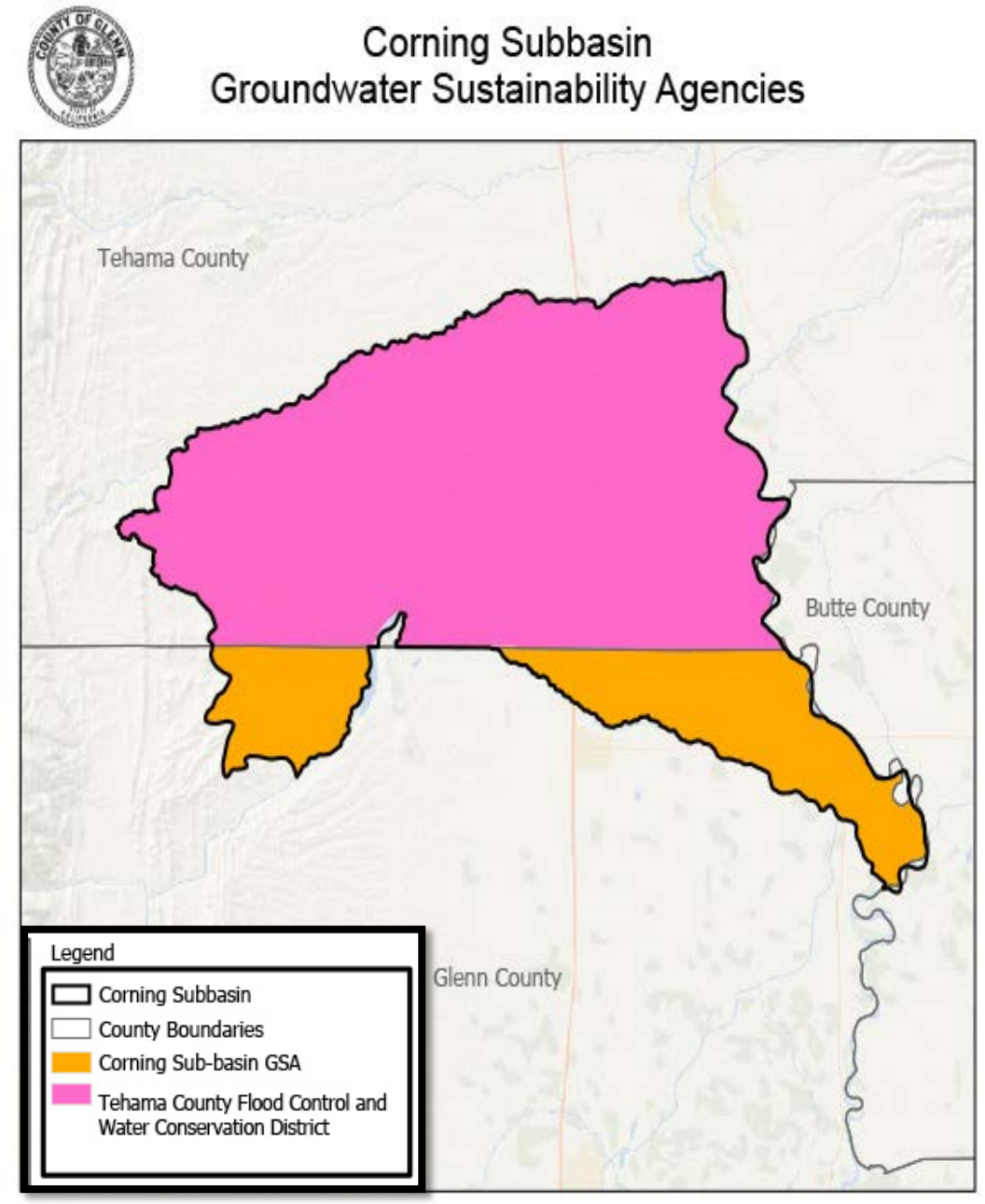
- 2 members should represent surface water agencies/districts;
- 2 members should represent private pumpers;
- 1 member should represent the general public.

Groundwater Commission Members

- City of Corning – Vacant
- City of Red Bluff – Clay Parker
- City of Tehama – Bill Borror
- El Camino Irrigation District – Kris Lamkin
- Los Molinos Community Services District – Todd Hamer
- Rio Alto Water District – Martha Slack
- District 1 – Harley North, private pumper
- District 2 – Sam Mudd, general public
- District 3 – Bart Fleharty, surface water agency/district
- District 4 – Hal Crain, surface water agency/district
- District 5 – David Lester, private pumper

Groundwater Commission Duties

- Develop GSP and all GSA ordinances, rules, and regulations, making final recommendations to the Board of Directors.
- Conduct investigations to determine the need for groundwater management, monitor compliance and enforcement, and propose fee increases.
- Review all proposed grant applications
- Decision-making authority for permits or similar entitlements
- Make quasi-judicial decisions in GSA enforcement matters

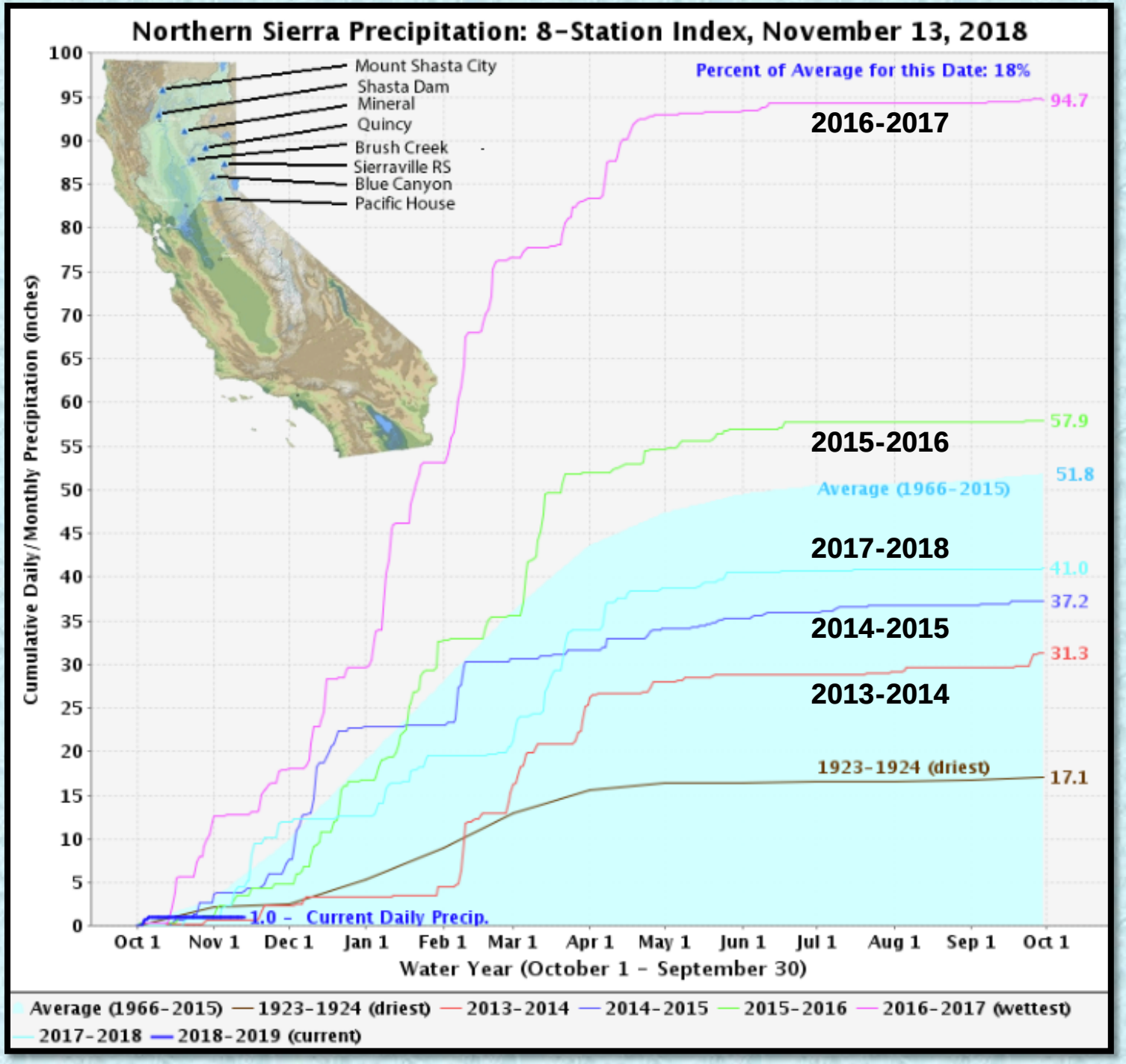


- **GSA Agencies**
- **GSP Grant – 1 million**
- **Proposed Basin Boundary Modification**
- **Co-Management of the Subbasin**
  - Governance
  - GSP vs GSPs
  - Management Areas
  - Facilitation Support
  - Basin Setting Contract
- **Develop GSP**
  - Hydrologic Model
  - Improve monitoring network
  - Outreach and Communications Plan
  - Minimum Thresholds and Measurable Objectives
  - Projects and Management Actions
  - Define Interim Milestones

Task	2018											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Submit Basin Boundary Adjustments												
GSP Grant Contract Development												
Develop Consultant Bid Documents and Contracts												
Coordinate with Surrounding GSA's												

- Submit completed GSP by January 31, 2022
- Achieve Sustainability by January 31, 2042

SGMA QUESTIONS ?



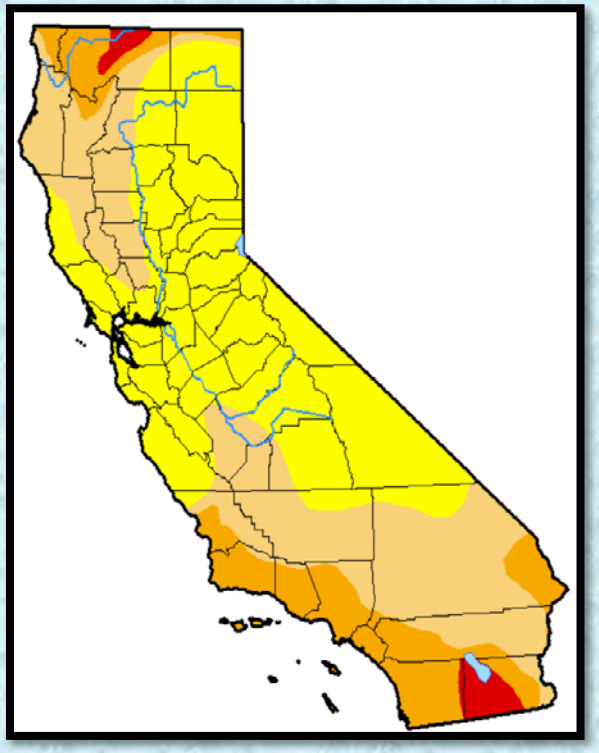
http://cdec.water.ca.gov/precipapp/get8SIPrecipIndex.action

11/03/2015

06/21/2016

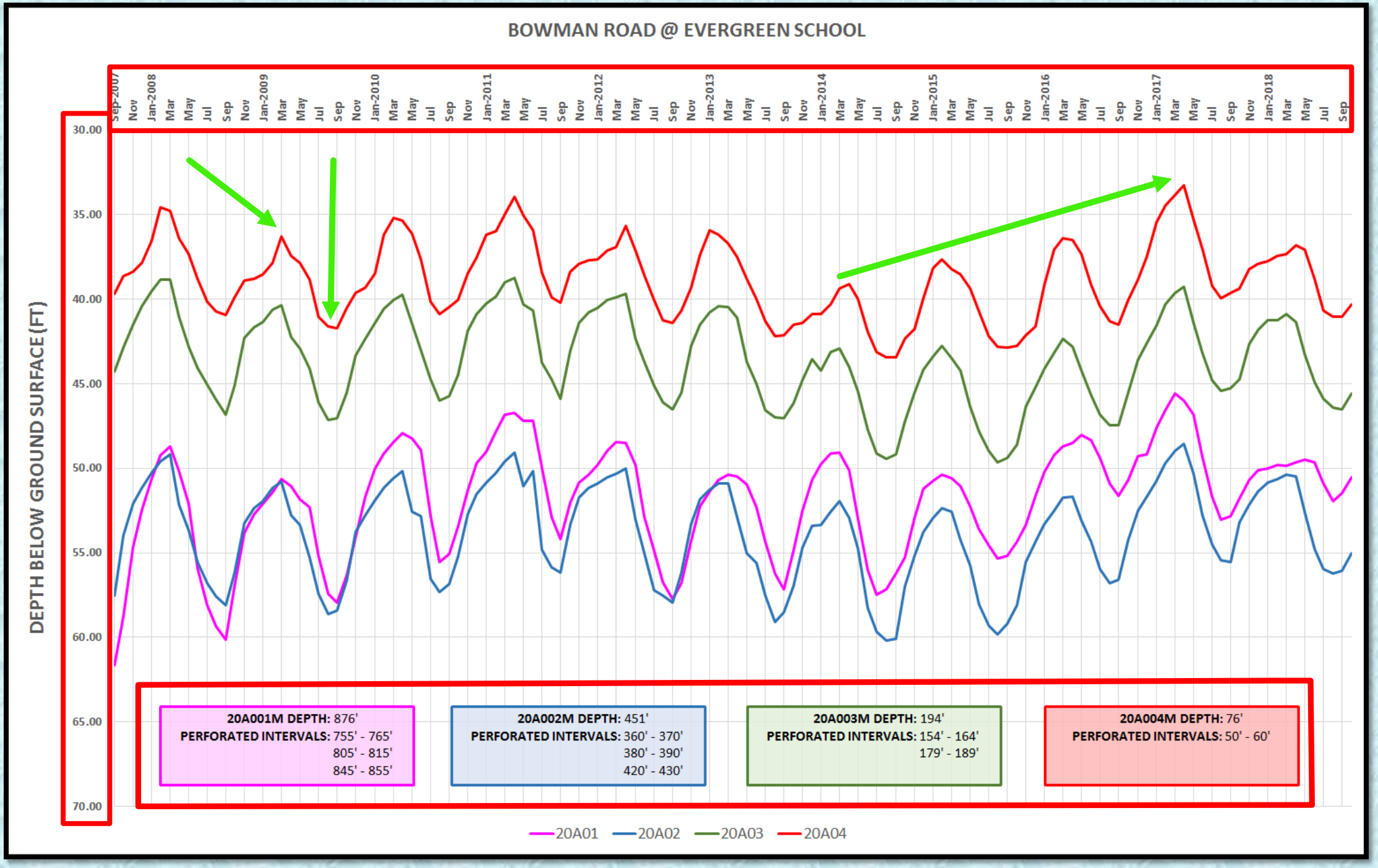
05/16/2017

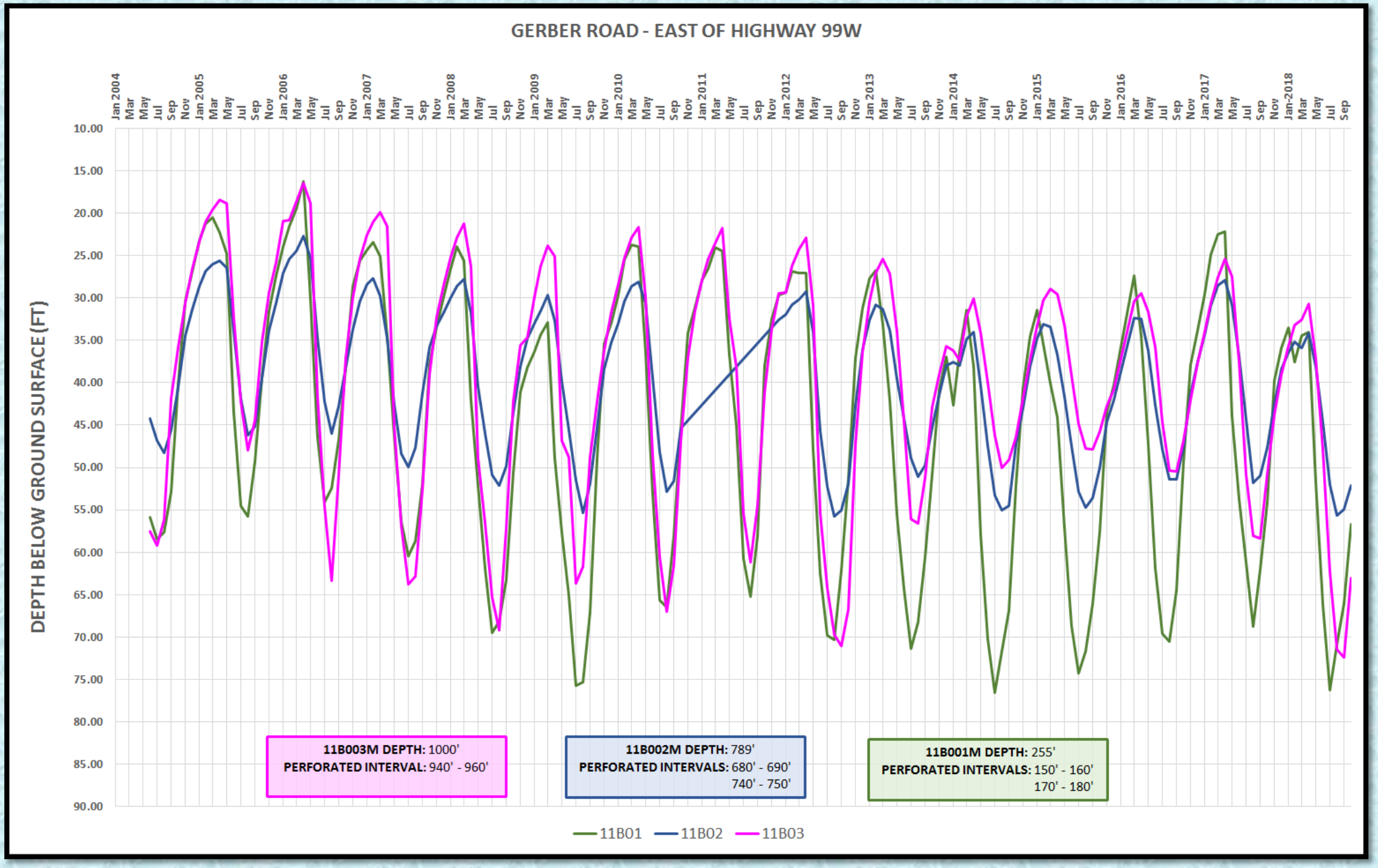
11/06/2018

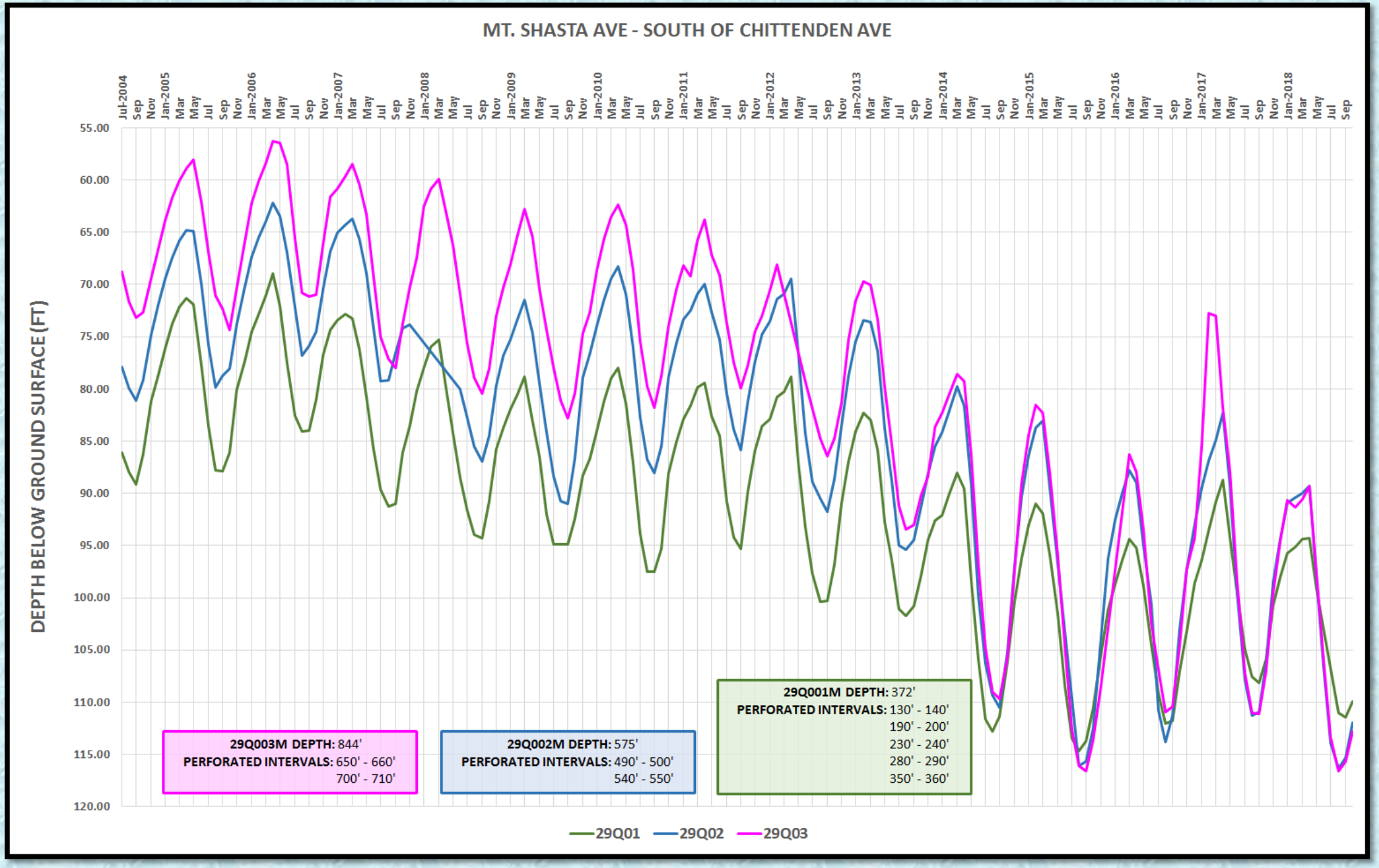


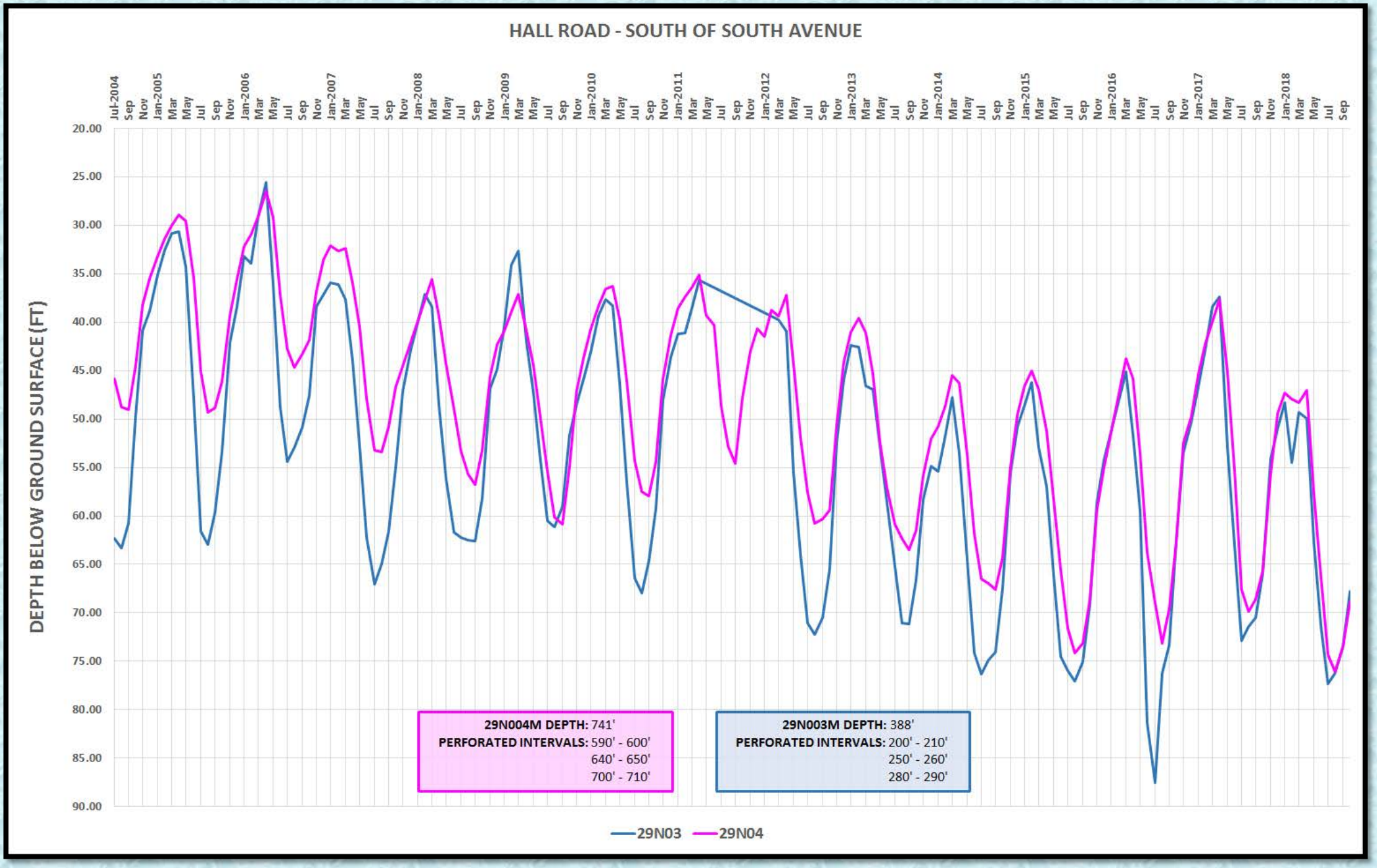
http://droughtmonitor.unl.edu/data/png/current/current_ca_cat.png

http://www.tehamacountypublicworks.ca.gov/flood/wells.html

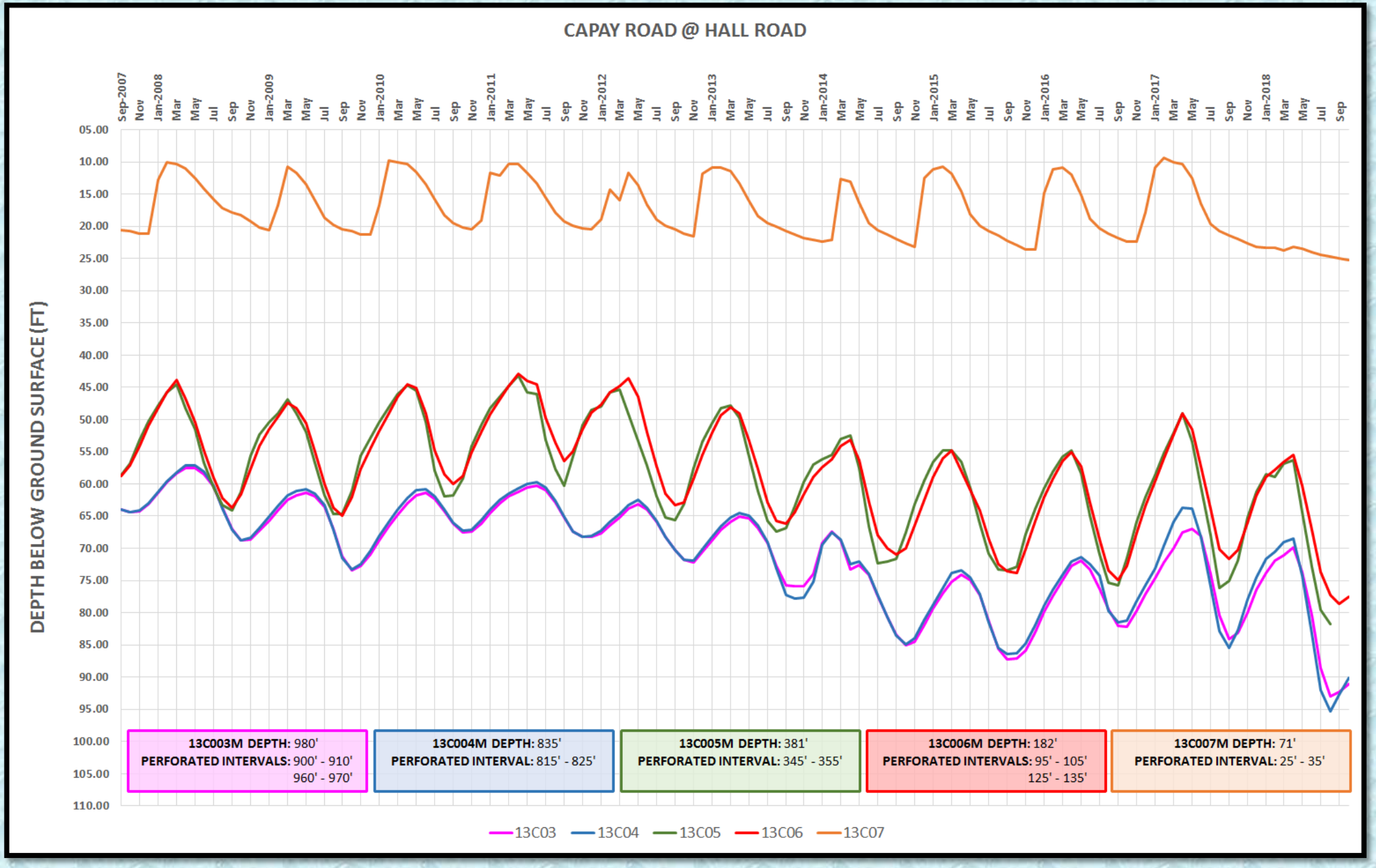

BOWMAN ROAD @ EVERGREEN SCHOOL
DEPTH BELOW GROUND SURFACE (FT)
30.00
35.00
40.00
45.00
50.00
55.00
60.00
65.00
70.00
Sep-2007
Nov
Jan-2008
Mar
May
Jul
Sep
Nov
Jan-2009
Mar
May
Jul
Sep
Nov
Jan-2010
Mar
May
Jul
Sep
Nov
Jan-2011
Mar
May
Jul
Sep
Nov
Jan-2012
Mar
May
Jul
Sep
Nov
Jan-2013
Mar
May
Jul
Sep
Nov
Jan-2014
Mar
May
Jul
Sep
Nov
Jan-2015
Mar
May
Jul
Sep
Nov
Jan-2016
Mar
May
Jul
Sep
Nov
Jan-2017
Mar
May
Jul
Sep
Nov
Jan-2018
Mar
May
Jul
Sep
20A001M DEPTH: 876'
PERFORATED INTERVALS: 755' - 765'
805' - 815'
845' - 855'
20A002M DEPTH: 451'
PERFORATED INTERVALS: 360' - 370'
380' - 390'
420' - 430'
20A003M DEPTH: 194'
PERFORATED INTERVALS: 154' - 164'
179' - 189'
20A004M DEPTH: 76'
PERFORATED INTERVALS: 50' - 60'
20A01
20A02
20A03
20A04

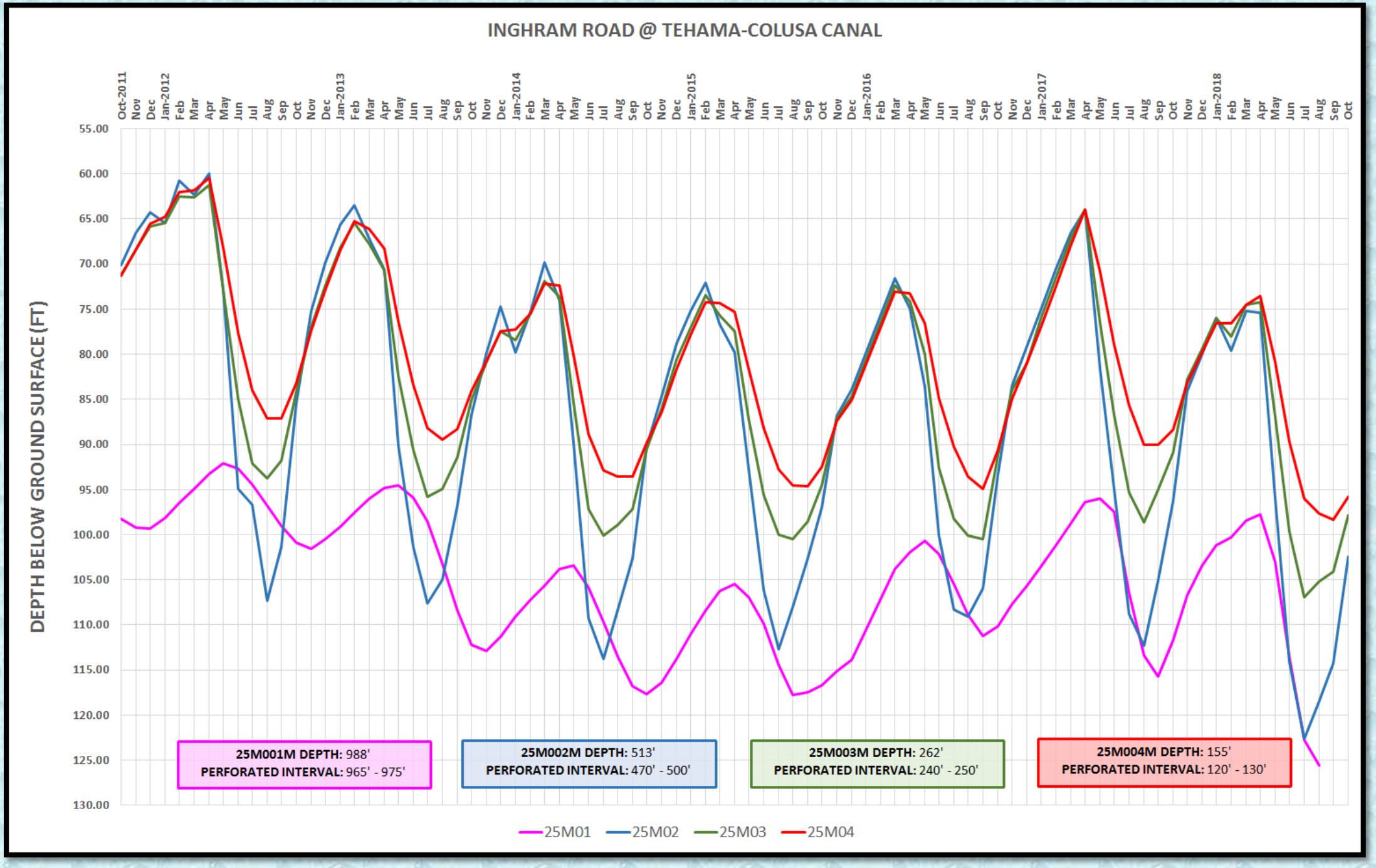

GERBER ROAD - EAST OF HIGHWAY 99W
DEPTH BELOW GROUND SURFACE (FT)
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
55.00
60.00
65.00
70.00
75.00
80.00
85.00
90.00
Jan 2004
Jan 2005
Jan 2006
Jan 2007
Jan 2008
Jan 2009
Jan 2010
Jan 2011
Jan 2012
Jan 2013
Jan 2014
Jan 2015
Jan 2016
Jan 2017
Jan-2018
11B003M DEPTH: 1000'
PERFORATED INTERVAL: 940' - 960'
11B002M DEPTH: 789'
PERFORATED INTERVALS: 680' - 690'
740' - 750'
11B001M DEPTH: 255'
PERFORATED INTERVALS: 150' - 160'
170' - 180'
11B01
11B02
11B03

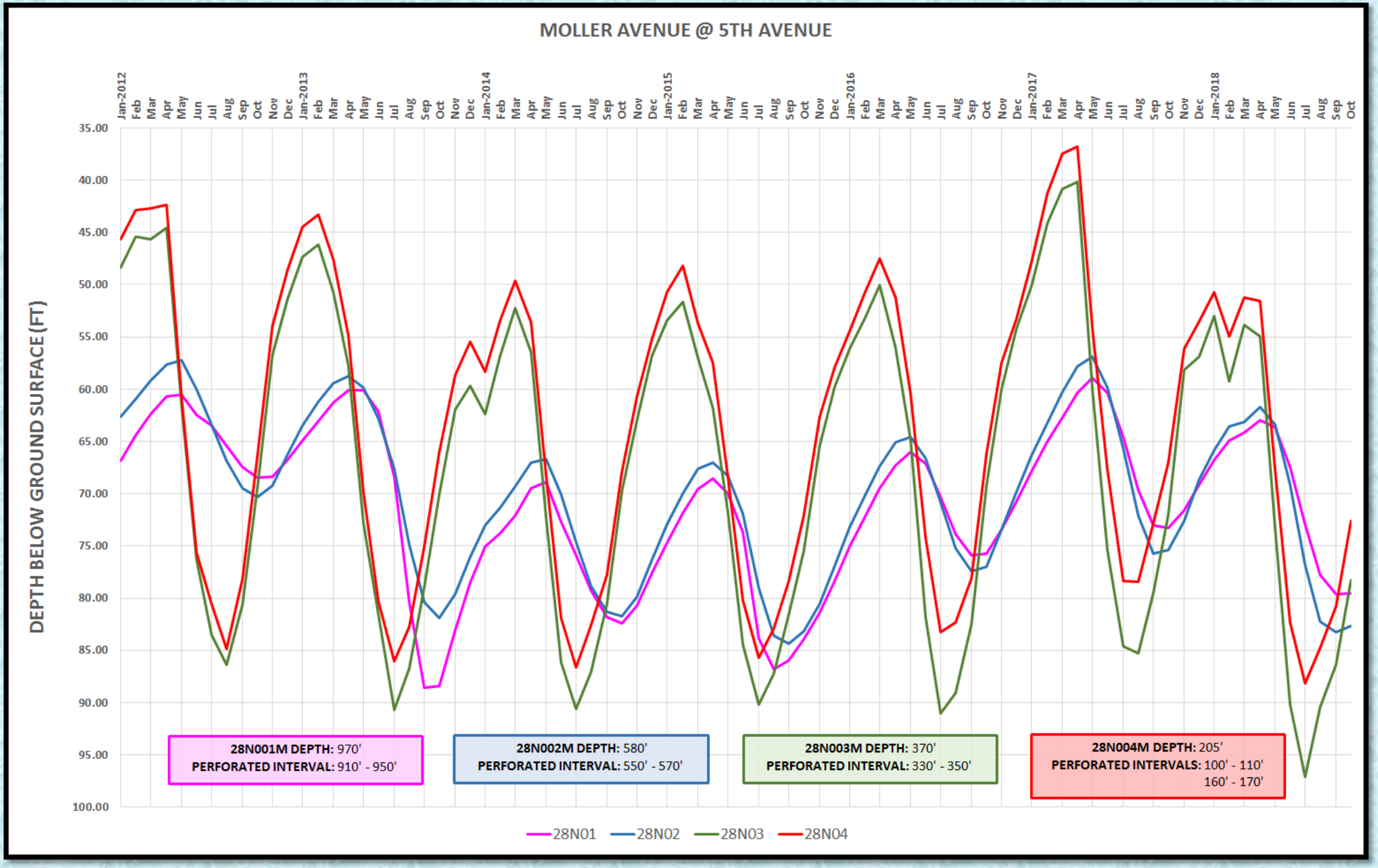

MT. SHASTA AVE - SOUTH OF CHITTENDEN AVE
DEPTH BELOW GROUND SURFACE (FT)
55.00
60.00
65.00
70.00
75.00
80.00
85.00
90.00
95.00
100.00
105.00
110.00
115.00
120.00
Jul-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
29Q003M DEPTH: 844'
PERFORATED INTERVALS: 650' - 660'
700' - 710'
29Q002M DEPTH: 575'
PERFORATED INTERVALS: 490' - 500'
540' - 550'
29Q001M DEPTH: 372'
PERFORATED INTERVALS: 130' - 140'
190' - 200'
230' - 240'
280' - 290'
350' - 360'
29Q01
29Q02
29Q03

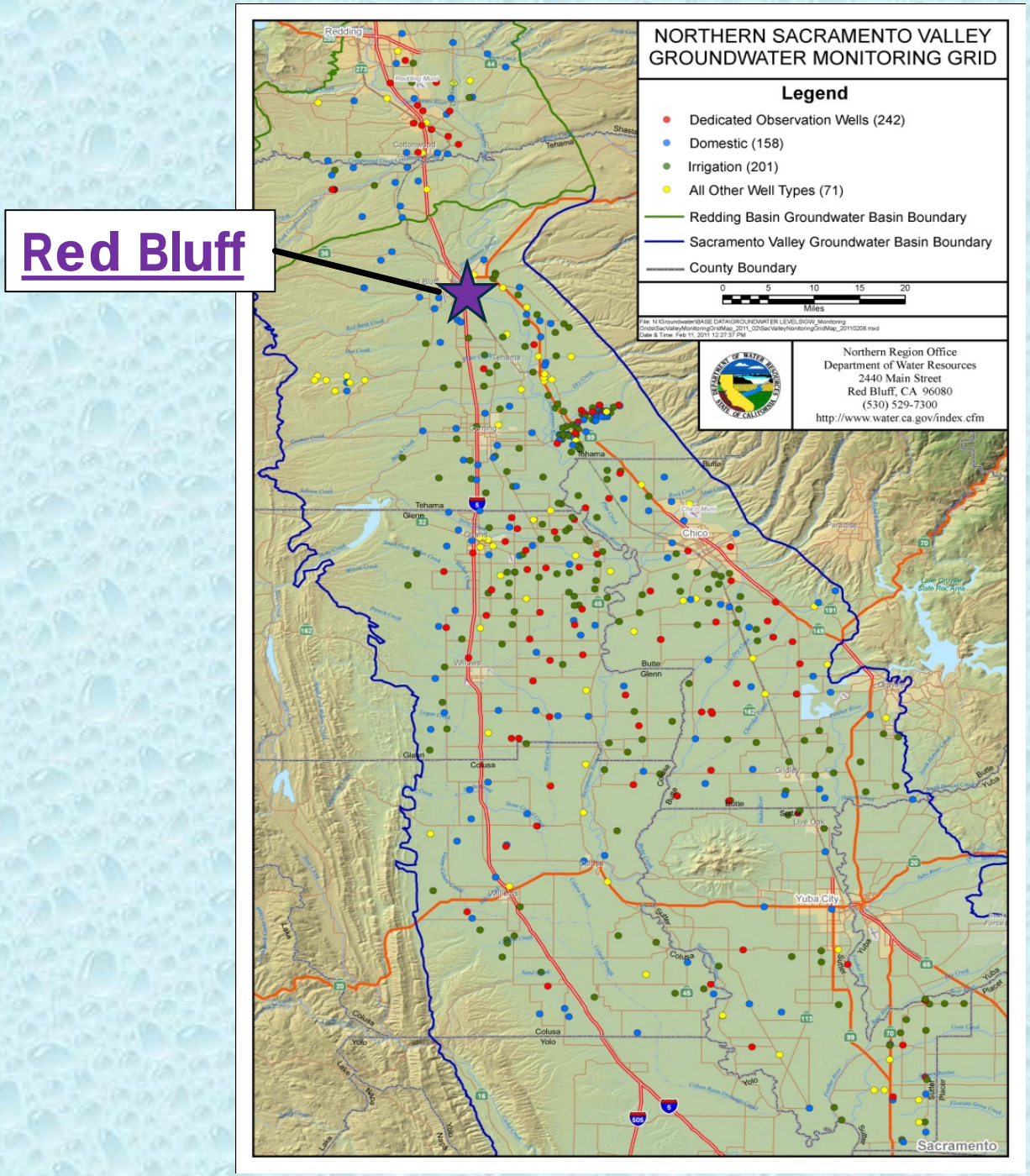

HALL ROAD - SOUTH OF SOUTH AVENUE
DEPTH BELOW GROUND SURFACE (FT)
20.00
25.00
30.00
35.00
40.00
45.00
50.00
55.00
60.00
65.00
70.00
75.00
80.00
85.00
90.00
Jul-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
29N004M DEPTH: 741'
PERFORATED INTERVALS: 590' - 600'
640' - 650'
700' - 710'
29N003M DEPTH: 388'
PERFORATED INTERVALS: 200' - 210'
250' - 260'
280' - 290'
29N03
29N04

http://www.tehamacountypublicworks.ca.gov/flood/wells.html

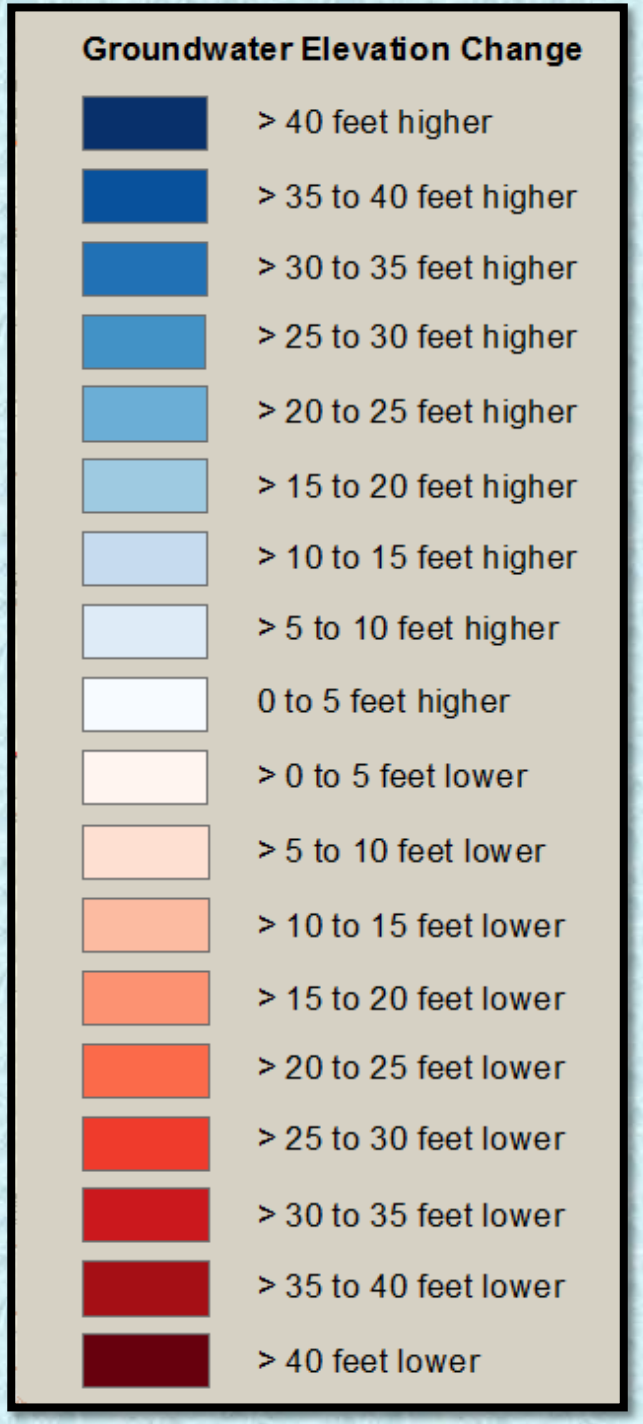

CAPAY ROAD @ HALL ROAD
DEPTH BELOW GROUND SURFACE (FT)
05.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
55.00
60.00
65.00
70.00
75.00
80.00
85.00
90.00
95.00
100.00
105.00
110.00
Sep-2007
Nov
Jan-2008
Mar
May
Jul
Sep
Nov
Jan-2009
Mar
May
Jul
Sep
Nov
Jan-2010
Mar
May
Jul
Sep
Nov
Jan-2011
Mar
May
Jul
Sep
Nov
Jan-2012
Mar
May
Jul
Sep
Nov
Jan-2013
Mar
May
Jul
Sep
Nov
Jan-2014
Mar
May
Jul
Sep
Nov
Jan-2015
Mar
May
Jul
Sep
Nov
Jan-2016
Mar
May
Jul
Sep
Nov
Jan-2017
Mar
May
Jul
Sep
Nov
Jan-2018
Mar
May
Jul
Sep
13C003M DEPTH: 980'
PERFORATED INTERVALS: 900' - 910'
960' - 970'
13C004M DEPTH: 835'
PERFORATED INTERVAL: 815' - 825'
13C005M DEPTH: 381'
PERFORATED INTERVAL: 345' - 355'
13C006M DEPTH: 182'
PERFORATED INTERVALS: 95' - 105'
125' - 135'
13C007M DEPTH: 71'
PERFORATED INTERVAL: 25' - 35'
13C03
13C04
13C05
13C06
13C07


INGHRAM ROAD @ TEHAMA-COLUSA CANAL
DEPTH BELOW GROUND SURFACE (FT)
55.00
60.00
65.00
70.00
75.00
80.00
85.00
90.00
95.00
100.00
105.00
110.00
115.00
120.00
125.00
130.00
Oct-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
25M001M DEPTH: 988'
PERFORATED INTERVAL: 965' - 975'
25M002M DEPTH: 513'
PERFORATED INTERVAL: 470' - 500'
25M003M DEPTH: 262'
PERFORATED INTERVAL: 240' - 250'
25M004M DEPTH: 155'
PERFORATED INTERVAL: 120' - 130'
25M01
25M02
25M03
25M04


MOLLER AVENUE @ 5TH AVENUE
DEPTH BELOW GROUND SURFACE (FT)
35.00
40.00
45.00
50.00
55.00
60.00
65.00
70.00
75.00
80.00
85.00
90.00
95.00
100.00
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
28N001M DEPTH: 970'
PERFORATED INTERVAL: 910' - 950'
28N002M DEPTH: 580'
PERFORATED INTERVAL: 550' - 570'
28N003M DEPTH: 370'
PERFORATED INTERVAL: 330' - 350'
28N004M DEPTH: 205'
PERFORATED INTERVALS: 100' - 110'
160' - 170'
28N01
28N02
28N03
28N04



SACRAMENTO VALLEY MONITORING GRID

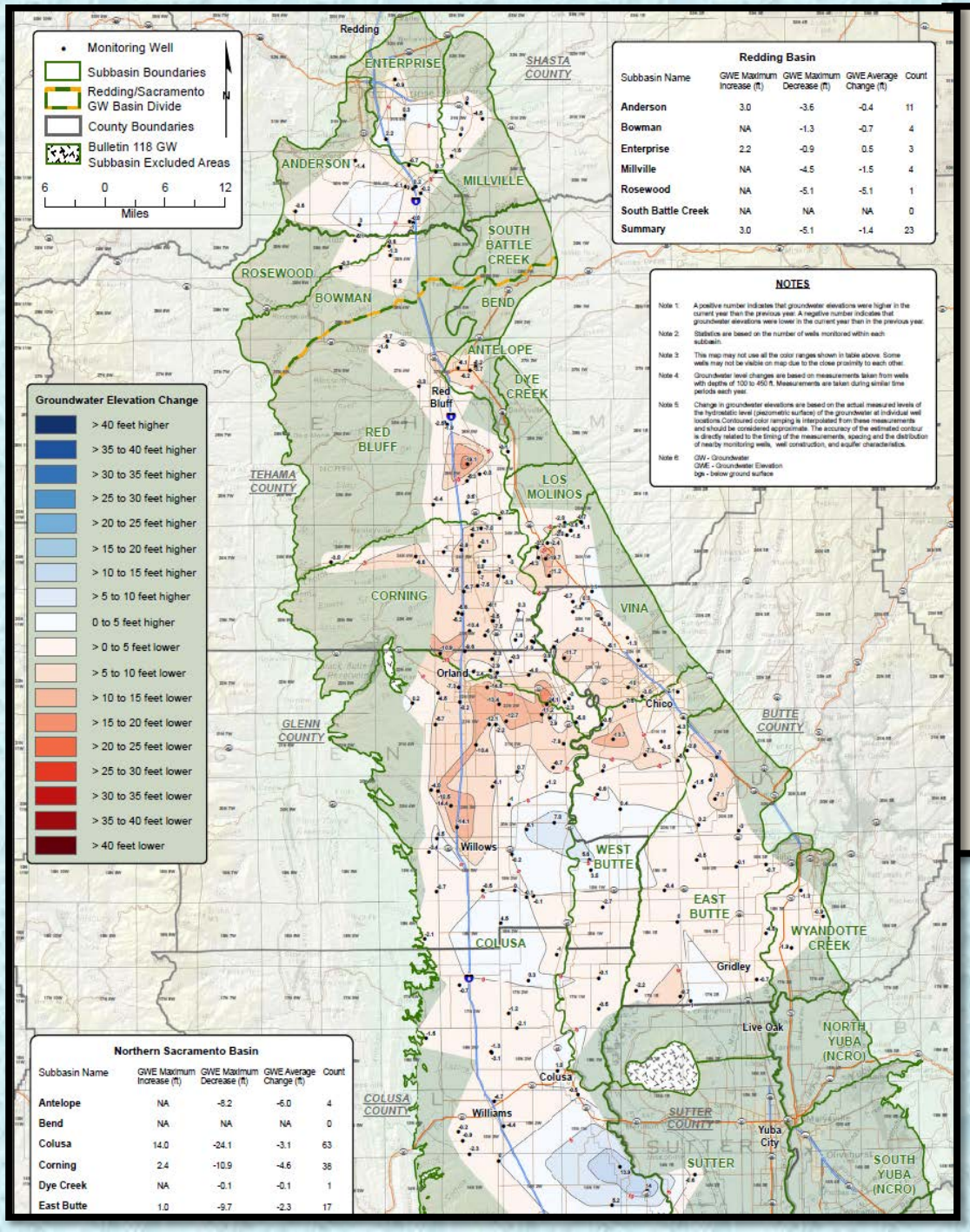


GROUNDWATER CHANGE MAPS

100 - 450 FT DEEP WELLS (~70% OF ALL WELLS)

Comparison Between:

- Summer 2018-2017
- Summer 2018-2011
- Summer 2018-2004
- Summer 2018-2015



Redding Basin

Subbasin Name	GWE Maximum Increase (ft)	GWE Maximum Decrease (ft)	GWE Average Change (ft)	Count
Anderson	3.0	-3.6	-0.4	11
Bowman	NA	-1.3	-0.7	4
Enterprise	2.2	-0.9	0.5	3
Millville	NA	-4.5	-1.5	4
Rosewood	NA	-5.1	-5.1	1
South Battle Creek	NA	NA	NA	0
Summary	3.0	-5.1	-1.4	23

NOTES

Note 1: A positive number indicates that groundwater elevations were higher in the current year than the previous year. A negative number indicates that groundwater elevations were lower in the current year than in the previous year.

Note 2: Statistics are based on the number of wells monitored within each subbasin.

Note 3: This map may not use all the color ranges shown in table above. Some wells may not be visible on map due to the close proximity to each other.

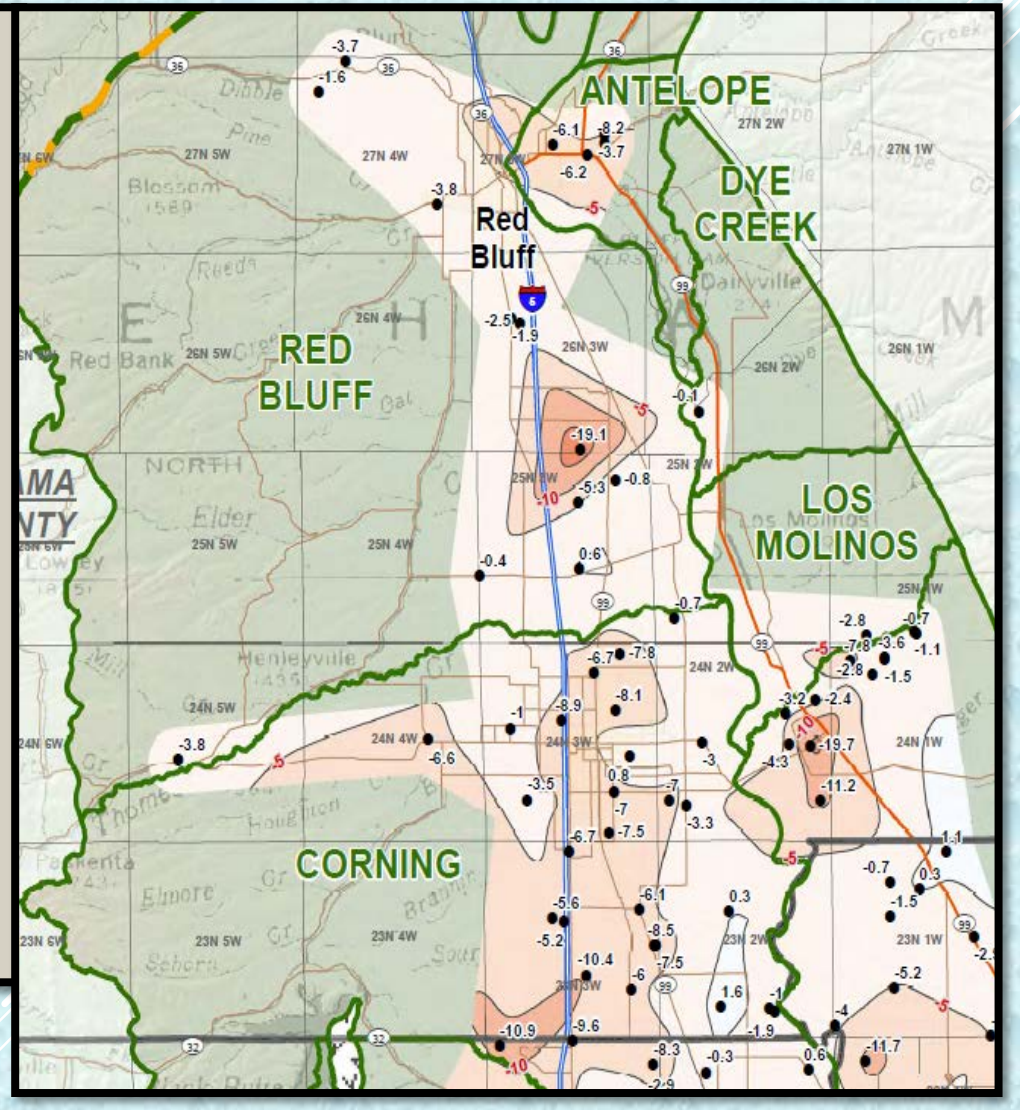
Note 4: Groundwater level changes are based on measurements taken from wells with depths of 100 to 450 ft. Measurements are taken during similar time periods each year.

Note 5: Change in groundwater elevations are based on the actual measured levels of the hydrostatic level (piezometric surface) of the groundwater at individual well locations. Contoured color ramping is interpolated from these measurements and should be considered approximate. The accuracy of the estimated contour is directly related to the timing of the measurements, spacing and the distribution of nearby monitoring wells, well construction, and aquifer characteristics.

Note 6: GW - Groundwater
GWE - Groundwater Elevation
bgs - below ground surface

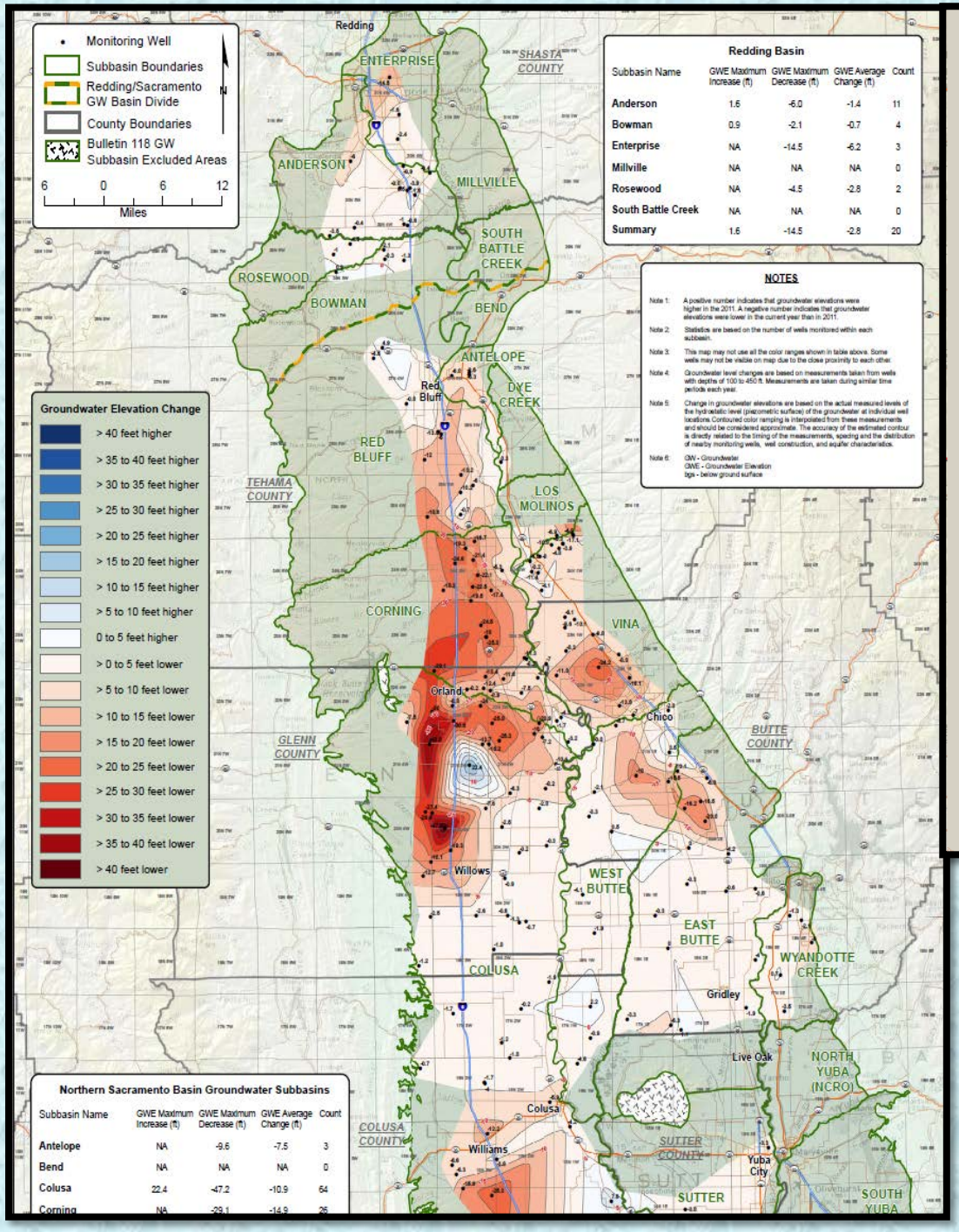
Northern Sacramento Basin

Subbasin Name	GWE Maximum Increase (ft)	GWE Maximum Decrease (ft)	GWE Average Change (ft)	Count
Antelope	NA	-8.2	-6.0	4
Bend	NA	NA	NA	0
Colusa	14.0	-24.1	-3.1	63
Corning	2.4	-10.9	-4.6	38
Dye Creek	NA	-0.1	-0.1	1
East Butte	1.0	-9.7	-2.3	17



WELLS BETWEEN 100-450 FT 2018-2017

Map courtesy of DWR



Redding Basin

Subbasin Name	GWE Maximum Increase (ft)	GWE Maximum Decrease (ft)	GWE Average Change (ft)	Count
Anderson	1.6	-6.0	-1.4	11
Bowman	0.9	-2.1	-0.7	4
Enterprise	NA	-14.5	-6.2	3
Millville	NA	NA	NA	0
Rosewood	NA	-4.5	-2.8	2
South Battle Creek	NA	NA	NA	0
Summary	1.6	-14.5	-2.8	20

NOTES

Note 1: A positive number indicates that groundwater elevations were higher in the 2011. A negative number indicates that groundwater elevations were lower in the current year than in 2011.

Note 2: Statistics are based on the number of wells monitored within each subbasin.

Note 3: This map may not use all the color ranges shown in table above. Some wells may not be visible on map due to the close proximity to each other.

Note 4: Groundwater level changes are based on measurements taken from wells with depths of 100 to 450 ft. Measurements are taken during similar time periods each year.

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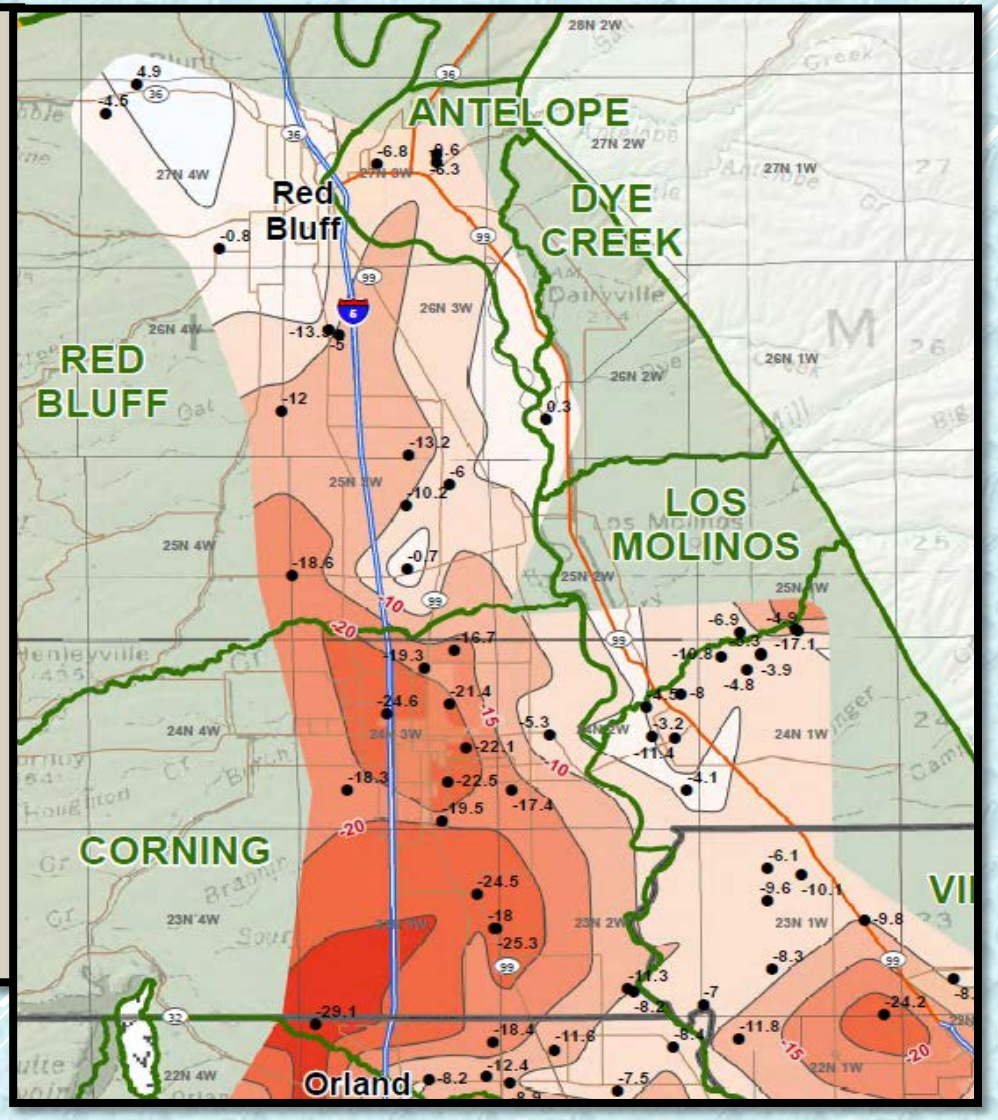
Note 6: GW - Groundwater
GWE - Groundwater Elevation
bgs - below ground surface

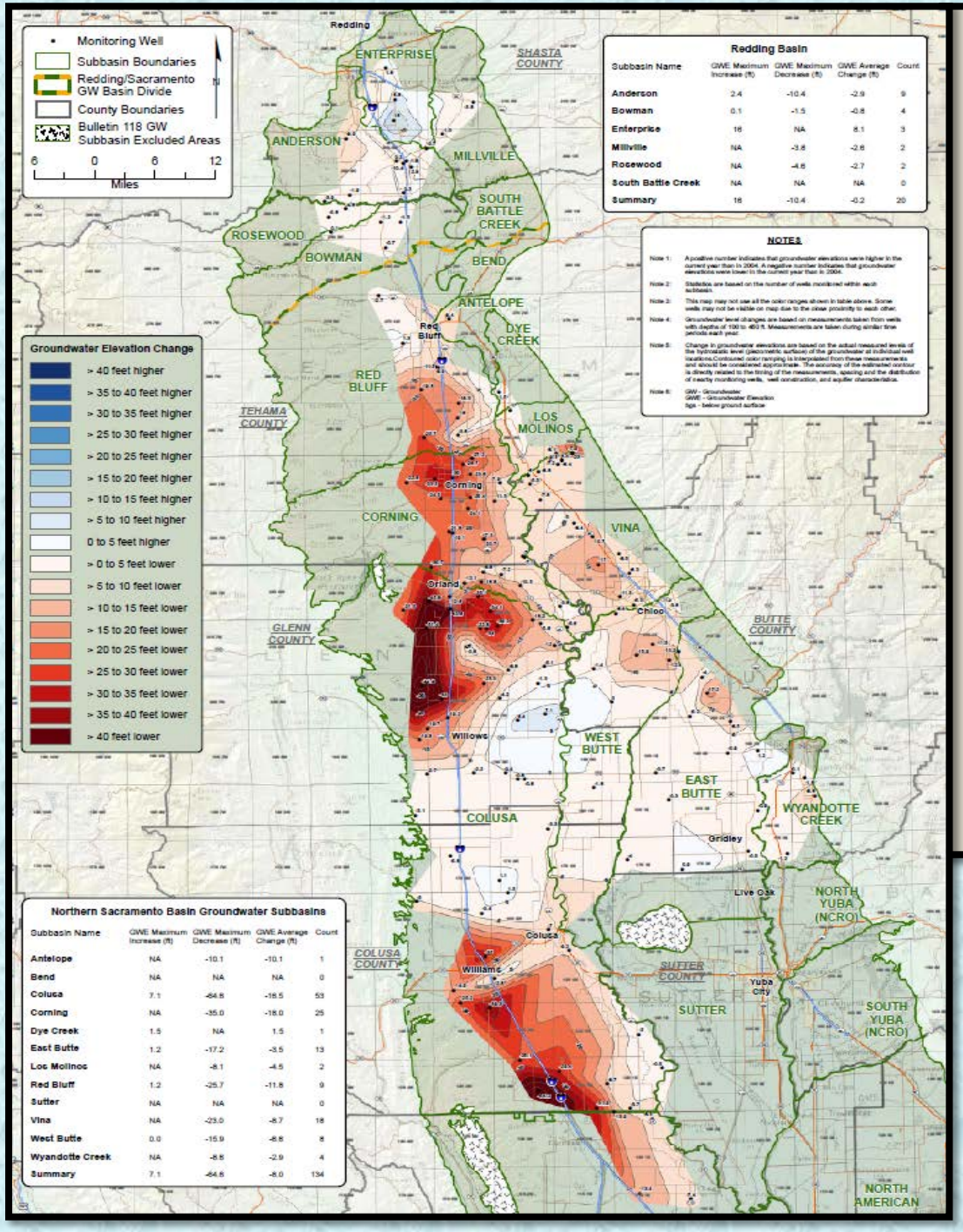
Northern Sacramento Basin Groundwater Subbasins

Subbasin Name	GWE Maximum Increase (ft)	GWE Maximum Decrease (ft)	GWE Average Change (ft)	Count
Antelope	NA	-9.6	-7.5	3
Bend	NA	NA	NA	0
Colusa	22.4	-47.2	-10.9	64
Corning	NA	-29.1	-14.9	26



WELLS BETWEEN 100-450 FT 2018-2011

Map courtesy of DWR



Redding Basin

Subbasin Name	GWE Maximum Increase (ft)	GWE Maximum Decrease (ft)	GWE Average Change (ft)	Count
Anderson	2.4	-10.4	-2.9	9
Bowman	0.1	-1.5	-0.8	4
Enterprise	16	NA	8.1	3
Millville	NA	-3.8	-2.8	2
Rosewood	NA	-4.6	-2.7	2
South Battle Creek	NA	NA	NA	0
Summary	16	-10.4	-0.2	20

NOTES

Note 1: A positive number indicates that groundwater elevations were higher in the current year than in 2004. A negative number indicates that groundwater elevations were lower in the current year than in 2004.

Note 2: Statistics are based on the number of wells monitored within each subbasin.

Note 3: This map may not use all the color ranges shown in table above. Some wells may not be visible on map due to the close proximity to each other.

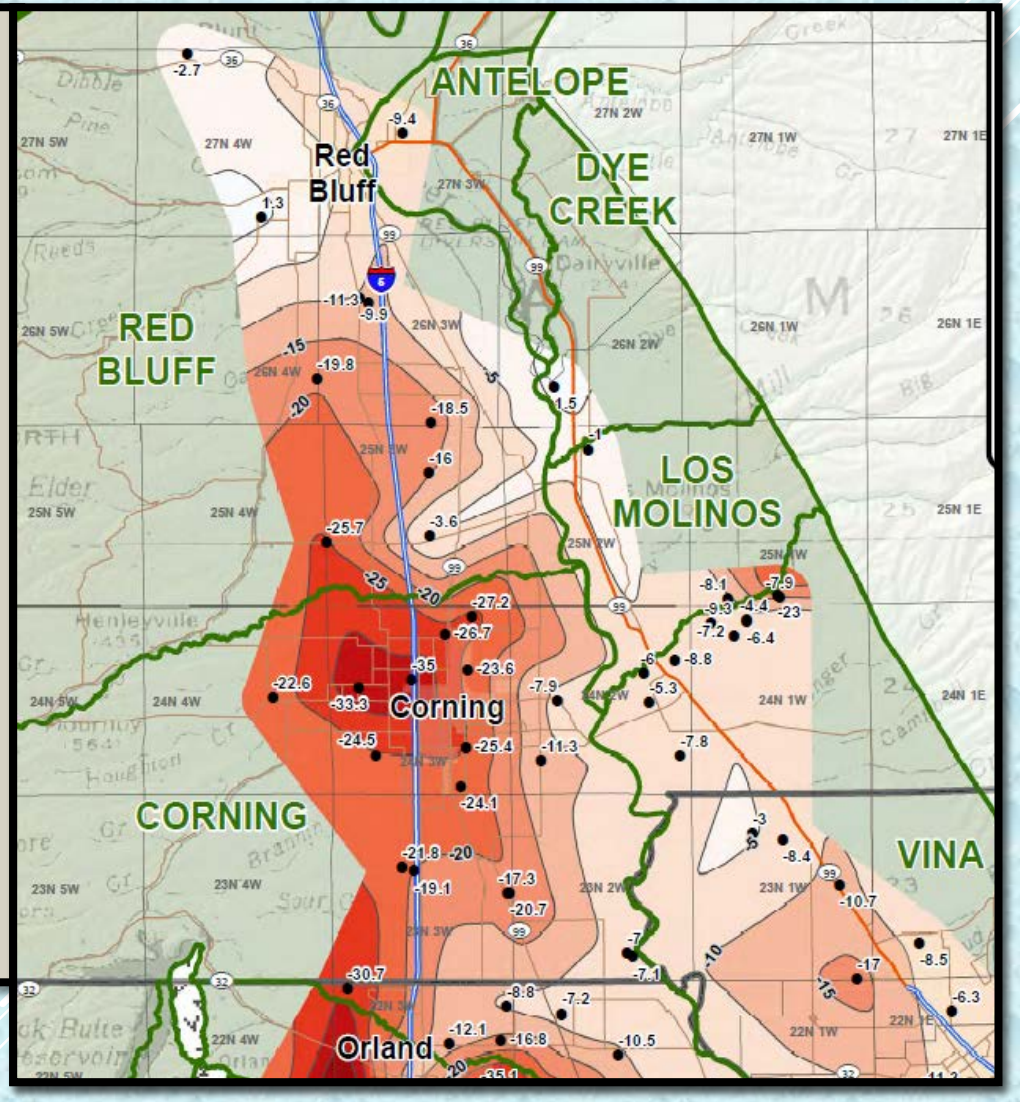
Note 4: Groundwater level changes are based on measurements taken from wells with depths of 100 to 450 ft. Measurements are taken during similar time periods each year.

Note 5: Change in groundwater elevations are based on the actual measured levels of the hydrostatic level (piezometric surface) of the groundwater at individual well locations.Contoured color ramping is interpolated from these measurements and should be considered approximate. The accuracy of the estimated contour is directly related to the fitting of the measurements, spacing and the distribution of nearby monitoring wells, well construction, and aquifer characteristics.

Note 6: GW - Groundwater
GWE - Groundwater Elevation
bgs - below ground surface

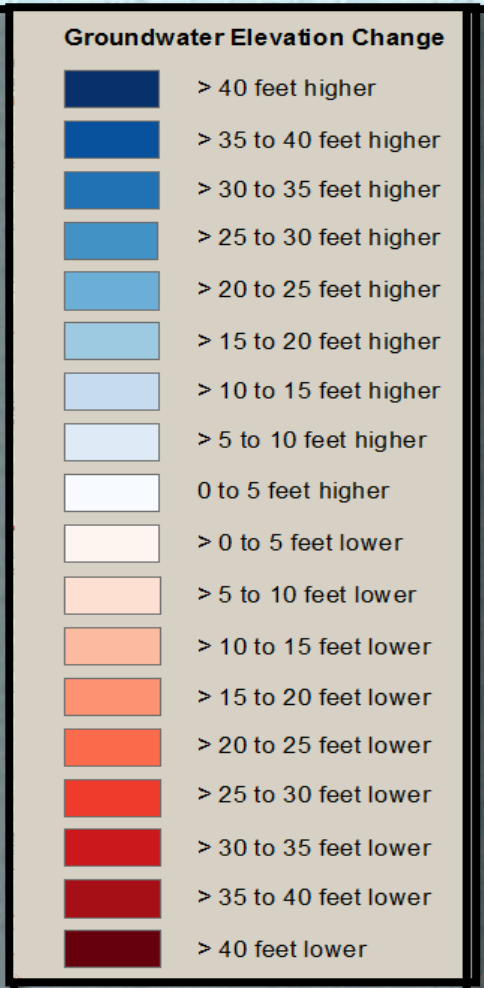
Northern Sacramento Basin Groundwater Subbasins

Subbasin Name	GWE Maximum Increase (ft)	GWE Maximum Decrease (ft)	GWE Average Change (ft)	Count
Antelope	NA	-10.1	-10.1	1
Bend	NA	NA	NA	0
Colusa	7.1	-64.6	-18.5	53
Corning	NA	-35.0	-18.0	25
Dye Creek	1.5	NA	1.5	1
East Butte	1.2	-17.2	-3.5	13
Los Molinos	NA	-8.1	-4.5	2
Red Bluff	1.2	-25.7	-11.8	9
Sutter	NA	NA	NA	0
Vina	NA	-23.0	-8.7	18
West Butte	0.0	-15.9	-8.8	8
Wyandotte Creek	NA	-8.8	-2.9	4
Summary	7.1	-64.6	-8.0	134



WELLS BETWEEN 100-450 FT 2018-2004

Map courtesy of DWR



WELLS BETWEEN 100-450 FT 2018-2015

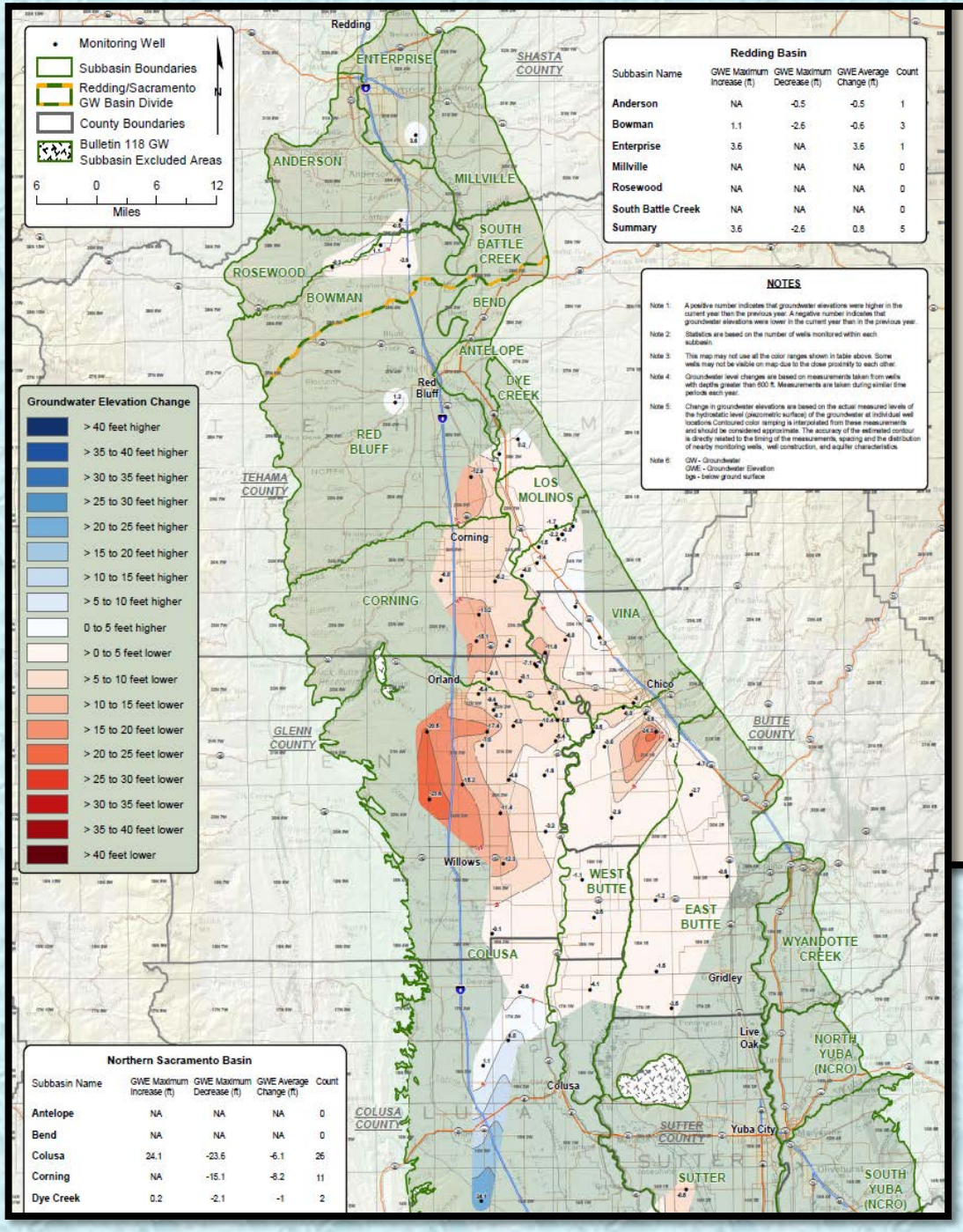
Map courtesy of DWR

GROUNDWATER CHANGE MAPS

>600 FT DEEP WELLS

<u>Comparison Between:</u>

- Summer 2018-2017
- Spring 2017-2004



Redding Basin

Subbasin Name	GWE Maximum Increase (ft)	GWE Maximum Decrease (ft)	GWE Average Change (ft)	Count
Anderson	NA	-0.5	-0.5	1
Bowman	1.1	-2.6	-0.6	3
Enterprise	3.6	NA	3.6	1
Millville	NA	NA	NA	0
Rosewood	NA	NA	NA	0
South Battle Creek	NA	NA	NA	0
Summary	3.6	-2.6	0.8	5

NOTES

Note 1: A positive number indicates that groundwater elevations were higher in the current year than the previous year. A negative number indicates that groundwater elevations were lower in the current year than in the previous year.

Note 2: Statistics are based on the number of wells monitored within each subbasin.

Note 3: This map may not use all the color ranges shown in table above. Some wells may not be visible on map due to the close proximity to each other.

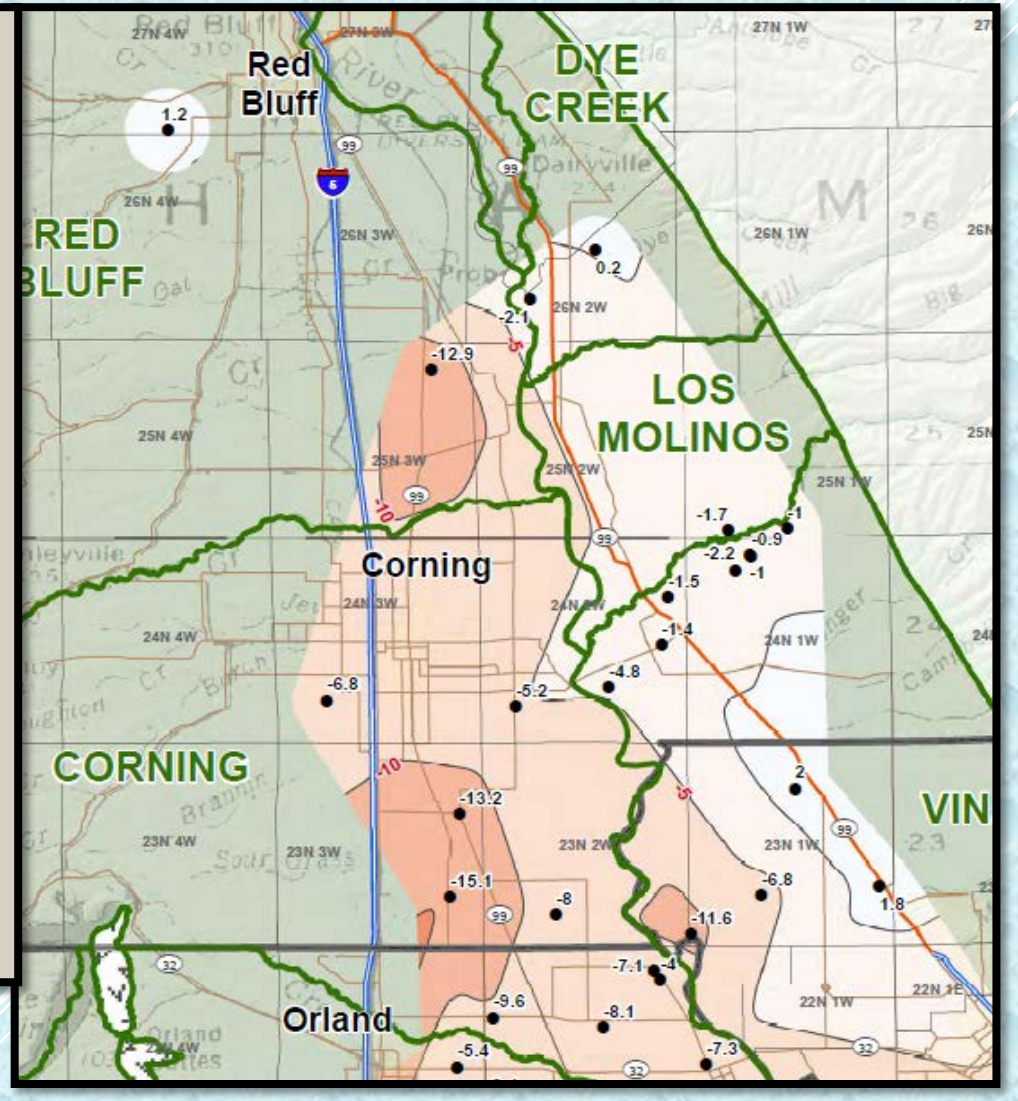
Note 4: Groundwater level changes are based on measurements taken from wells with depths greater than 600 ft. Measurements are taken during similar time periods each year.

Note 5: Change in groundwater elevations are based on the actual measured levels of the hydrostatic level (piezometric surface) of the groundwater at individual well locations. Contoured color ramping is interpolated from these measurements and should be considered approximate. The accuracy of the estimated contour is directly related to the timing of the measurements, spacing and the distribution of nearby monitoring wells, well construction, and aquifer characteristics.

Note 6: GW - Groundwater
GWE - Groundwater Elevation
bgs - below ground surface

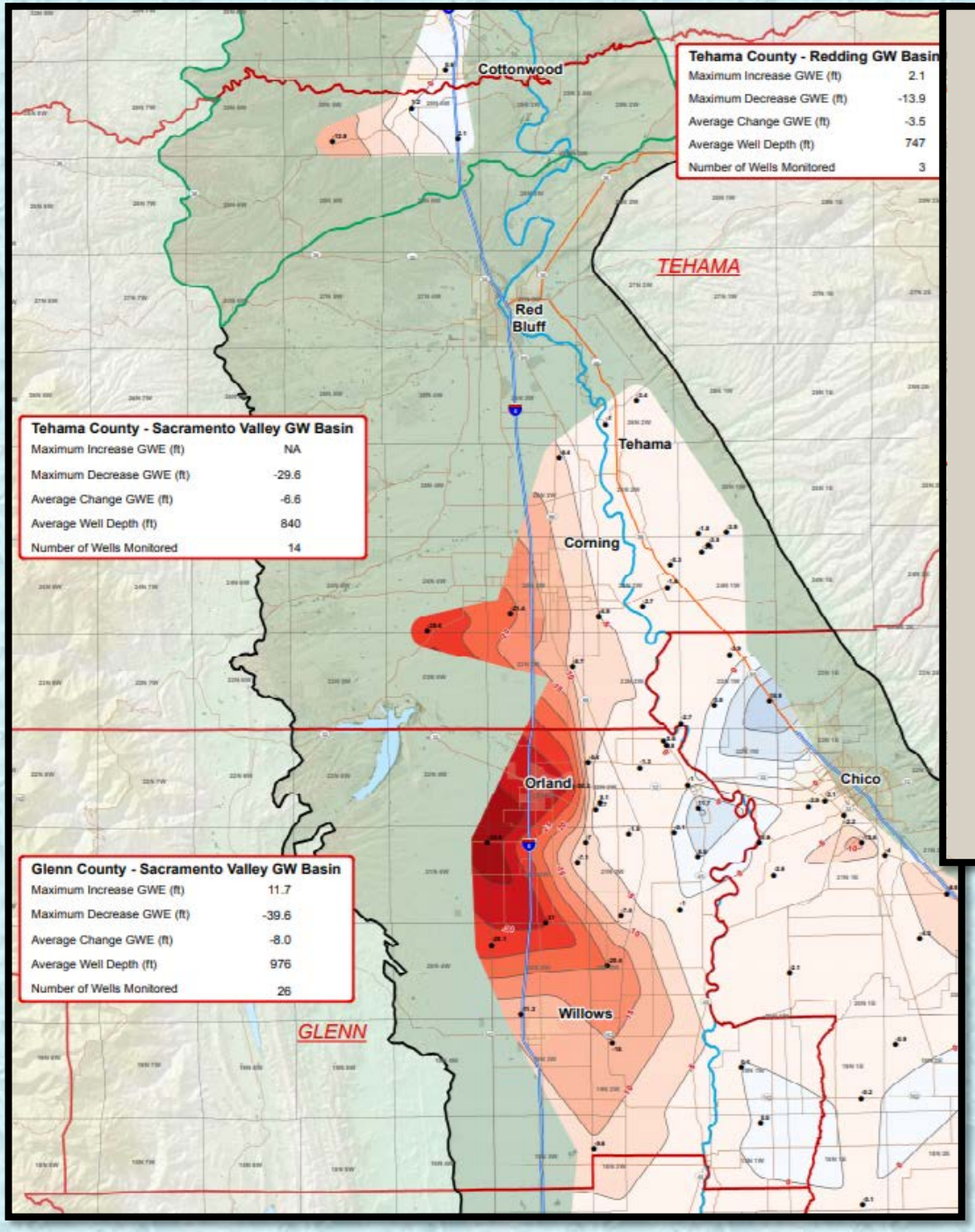
Northern Sacramento Basin

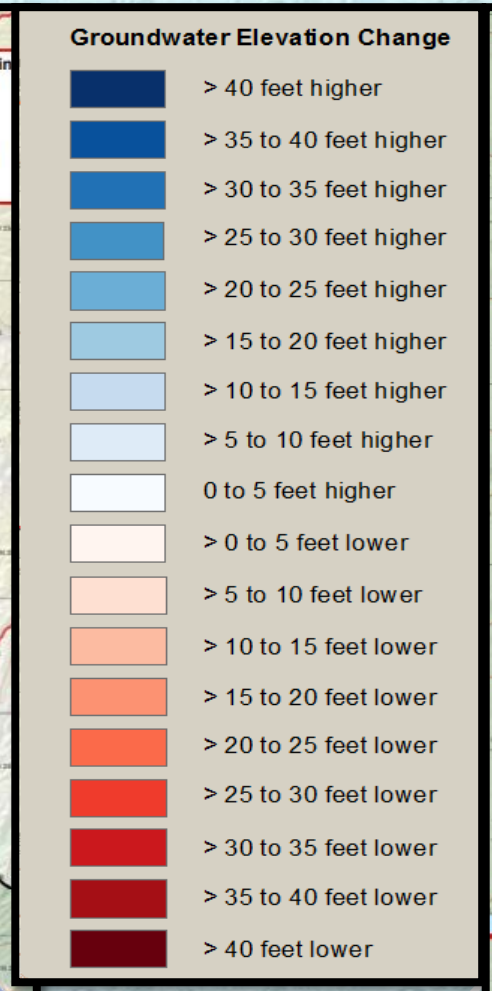
Subbasin Name	GWE Maximum Increase (ft)	GWE Maximum Decrease (ft)	GWE Average Change (ft)	Count
Antelope	NA	NA	NA	0
Bend	NA	NA	NA	0
Colusa	24.1	-23.6	-6.1	26
Corning	NA	-15.1	-8.2	11
Dye Creek	0.2	-2.1	-1	2

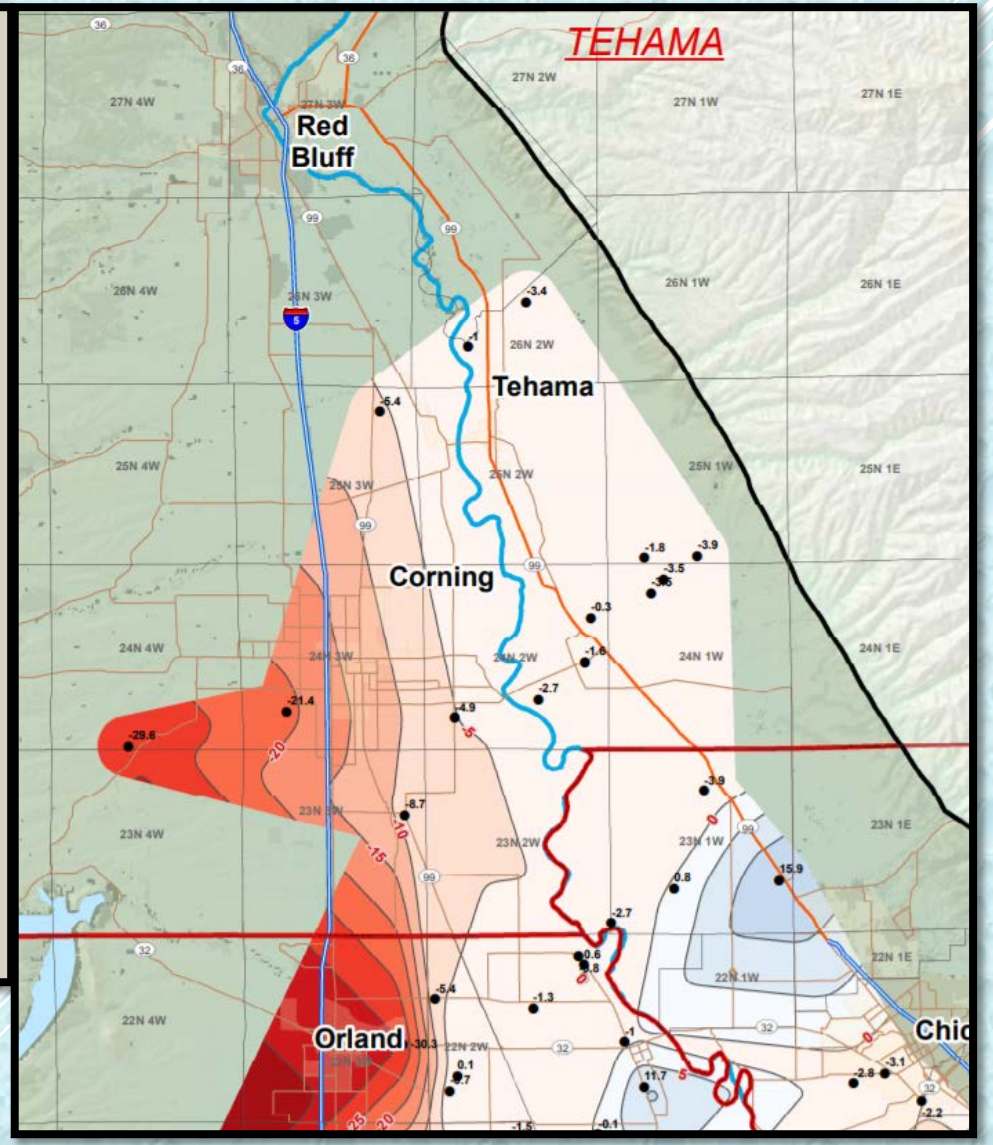


WELLS DEEPER THAN 600 FT 2018-2017

Map courtesy of DWR







WELLS DEEPER THAN 600 FT 2017-2011

Map courtesy of DWR

http://www.tehamacountypublicworks.ca.gov/flood/

Questions

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http://www.tehamacountywater.ca.gov

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https://water.ca.gov/Programs/Groundwater-Management