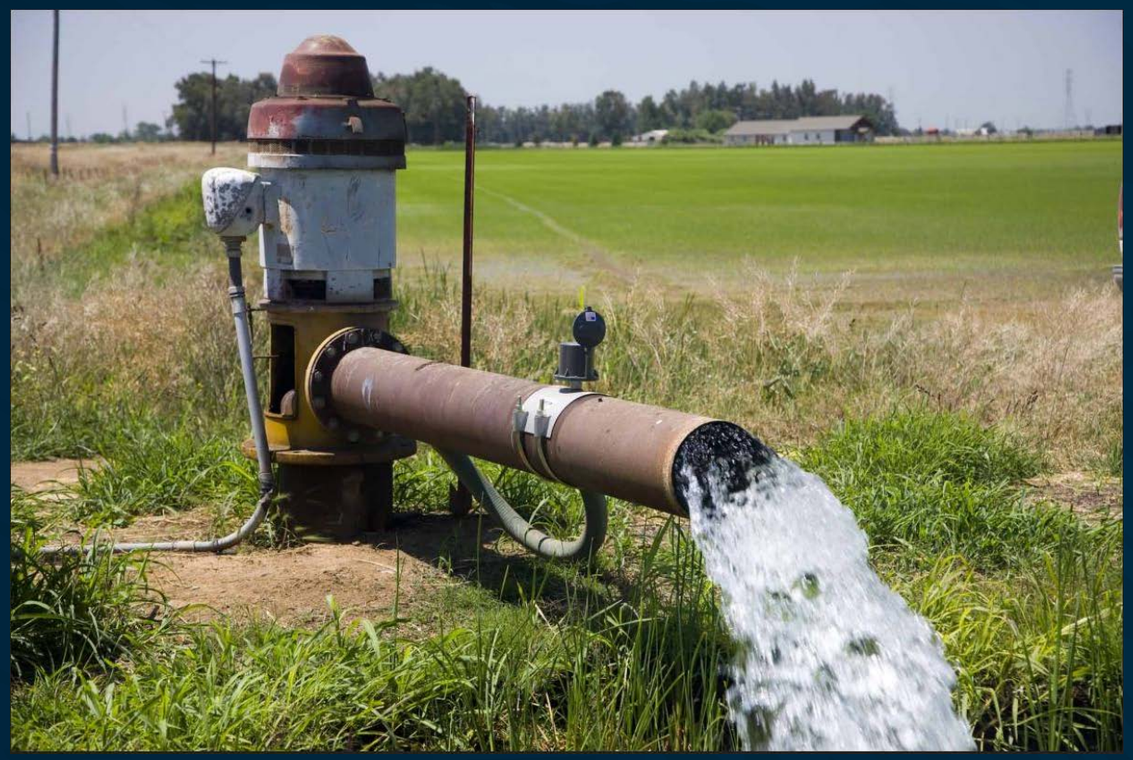
Update on San Joaquin Valley Groundwater Conditions



CALIFORNIA DEPARTMENT OF WATER RESOURCES
SUSTAINABLE GROUNDWATER MANAGEMENT PROGRAM

C. Michael McKenzie
Senior Engineering Geologist
Division of Integrated Water Management

Outline

- Measured Precipitation
- Groundwater Conditions
- Groundwater and Land Subsidence
- Questions and Answers

CALIFORNIA DEPARTMENT OF WATER RESOURCES
SUSTAINABLE GROUNDWATER MANAGEMENT PROGRAM

San Joaquin Precipitation
Central Sierra – 5 year annual average

Measured Precipitation:

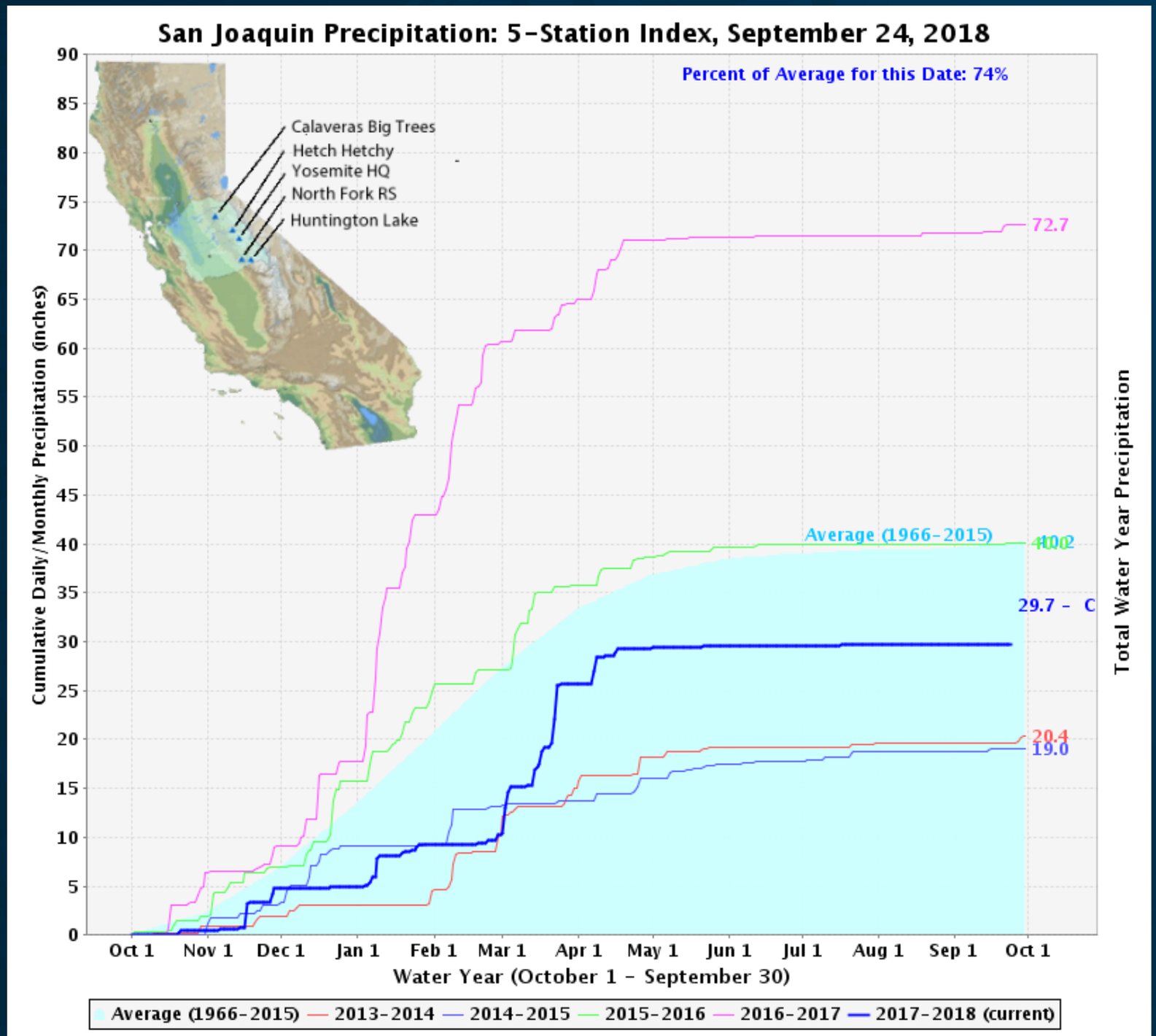
2013-14: 51%

2014-15: 48%

2015-16: 99%

2016-17: 179%

2017-18: 74%



Source: CDEC

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Tulare Basin Precipitation
Southern Sierra – 5 year annual average

Measured Precipitation:

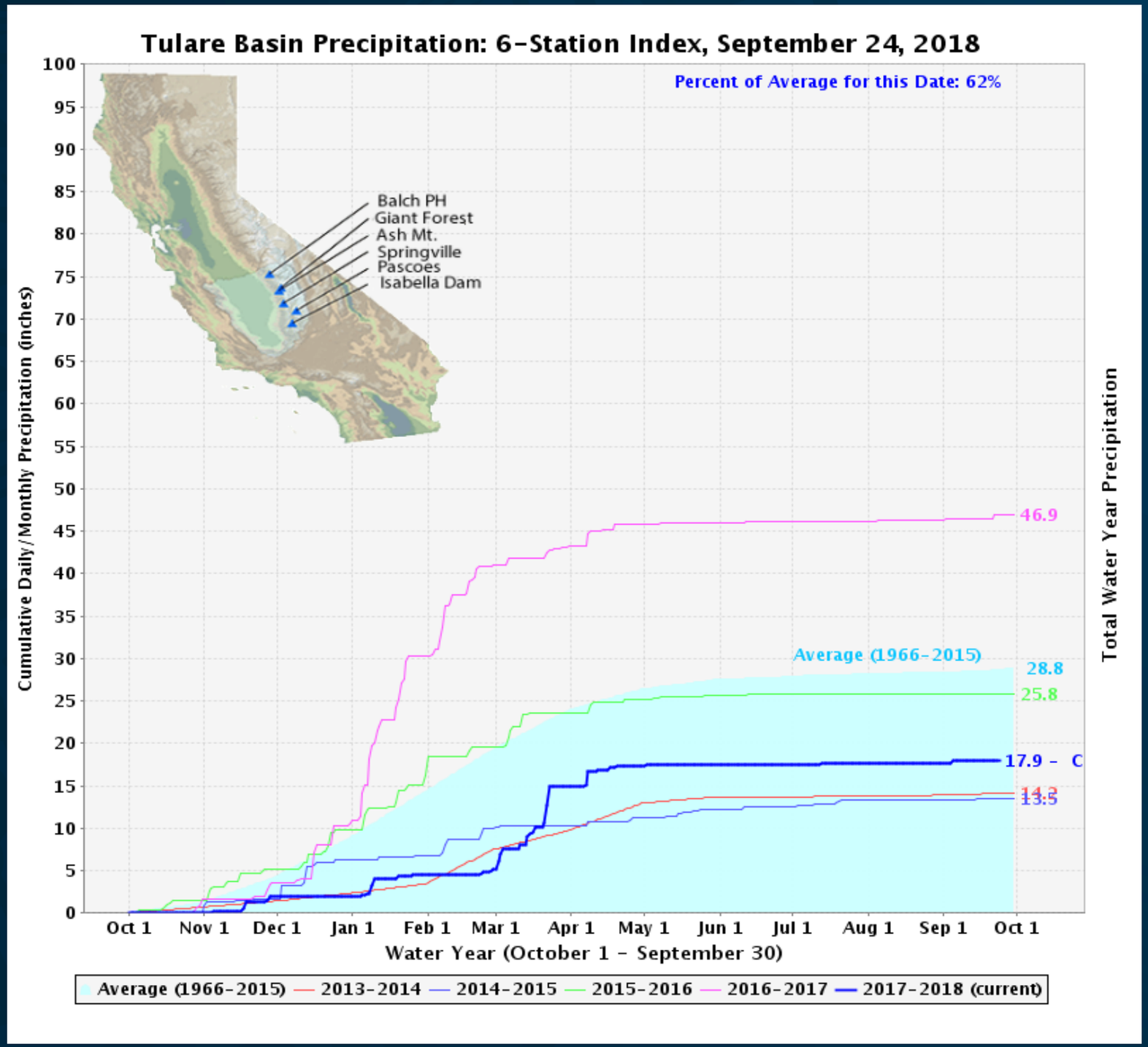
2013-14: 49%

2014-15: 47%

2015-16: 90%

2016-17: 162%

2017-18: 62%



Source: CDEC

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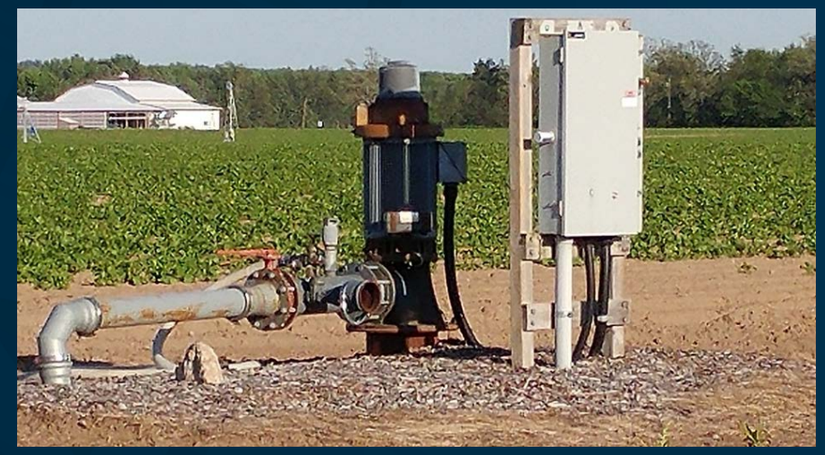
Water Level Measurements
San Joaquin Valley

Measurement by Well Type:

- Industrial: 1
- Irrigation: 549
- Observation: 271
- Residential: 56
- Stock Watering: 5
- Unknown: 416
- Total: 1,298



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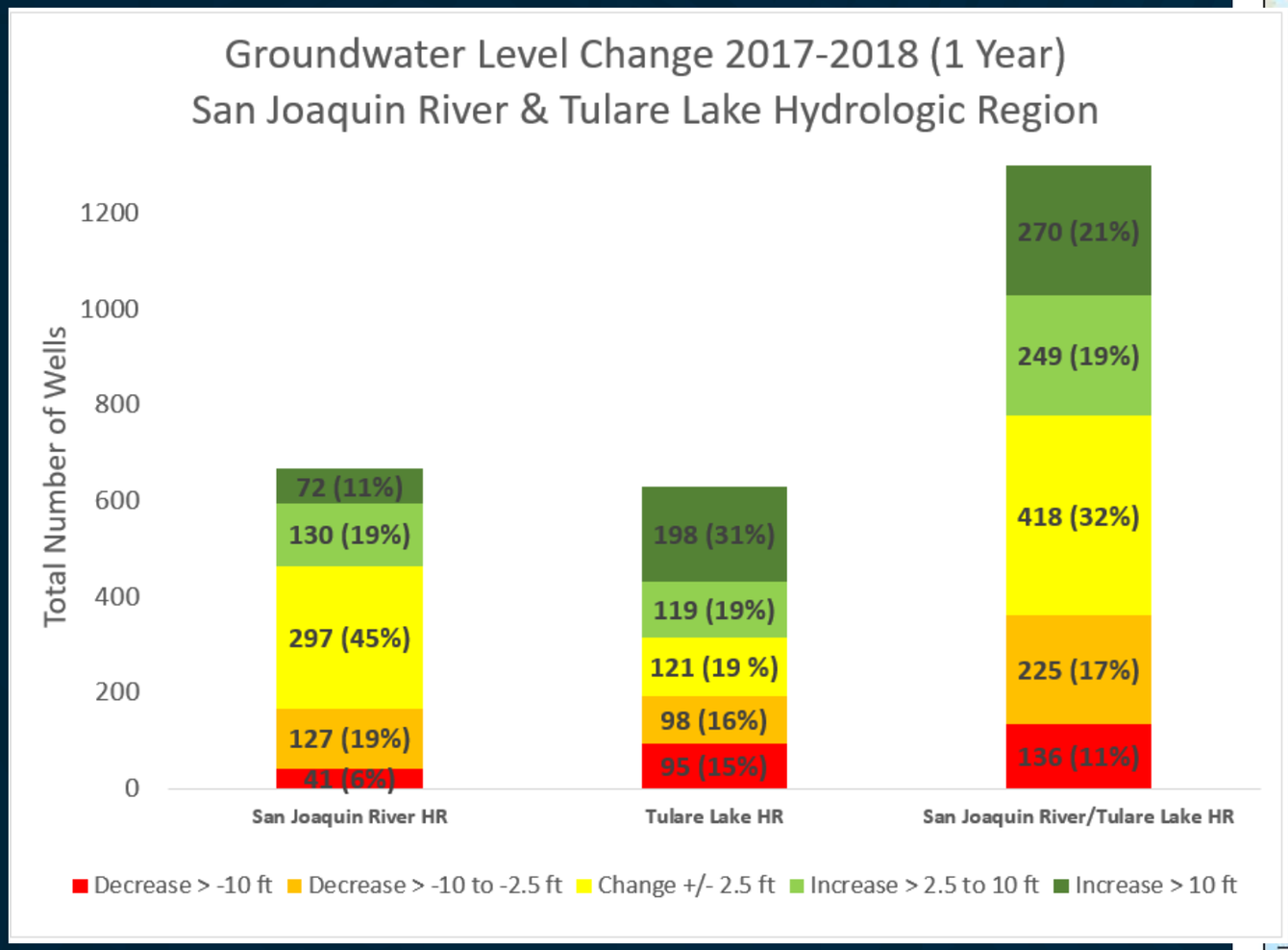
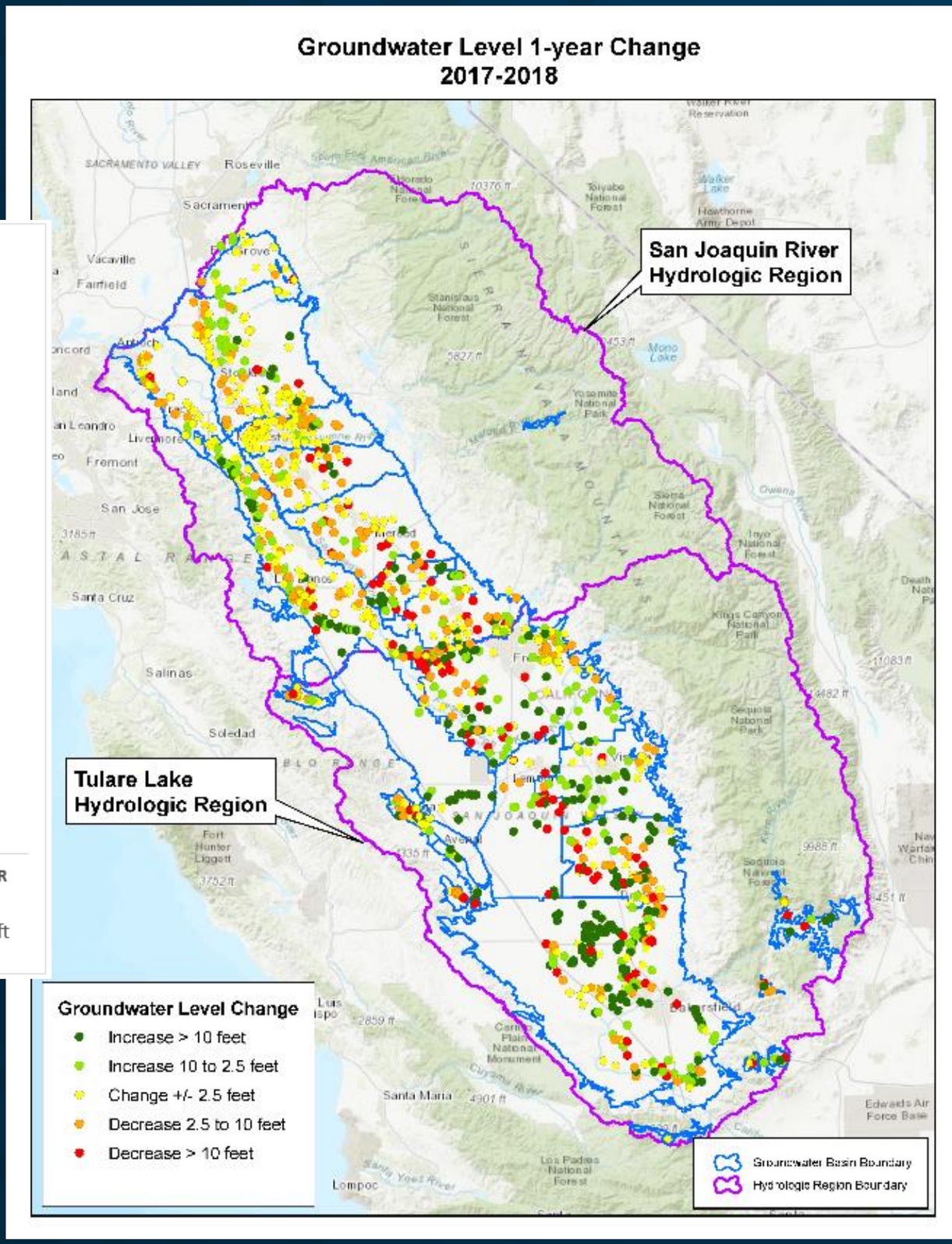
Groundwater Level Change 2017-2018





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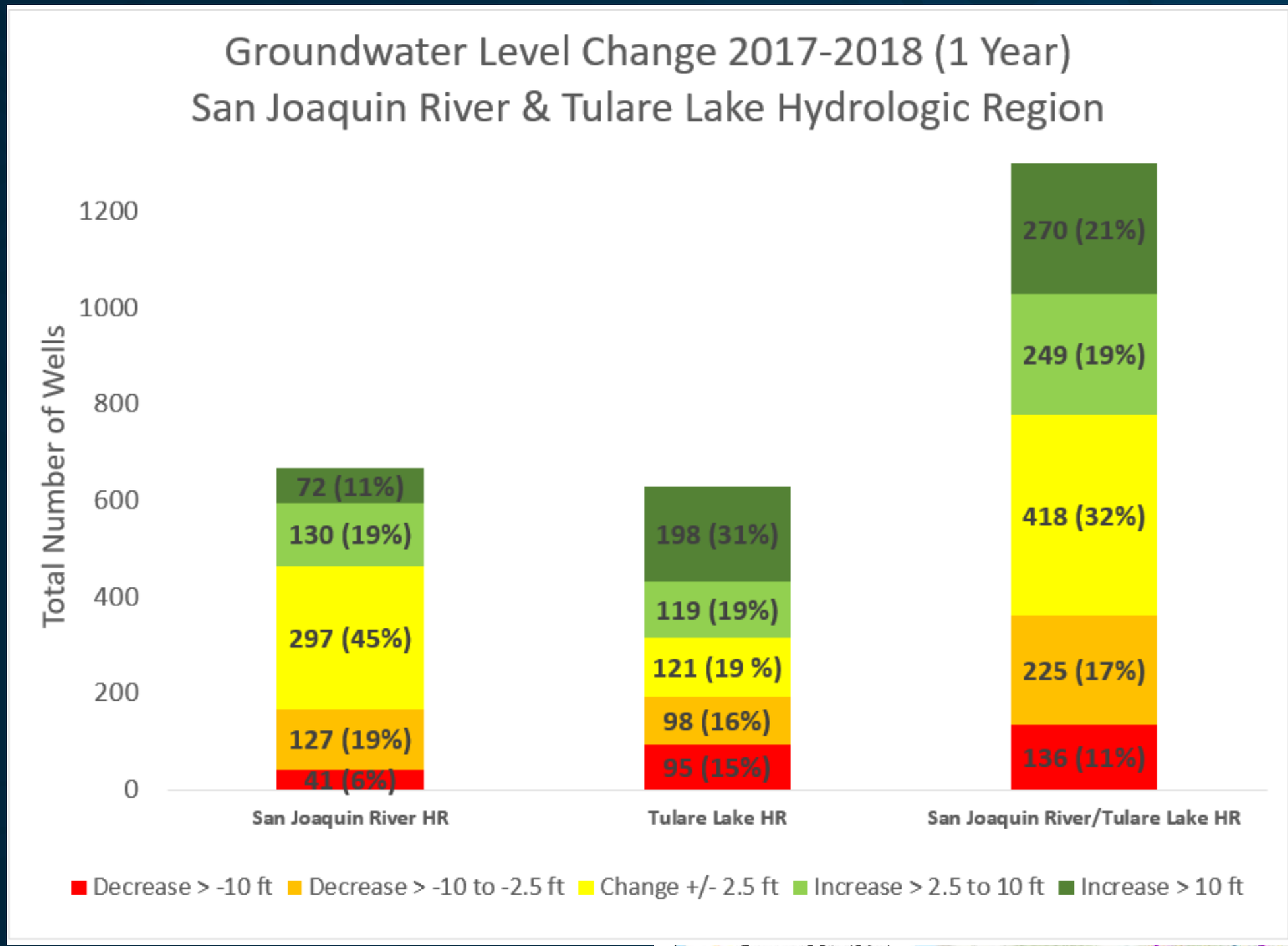
Groundwater Level Change 2017-2018



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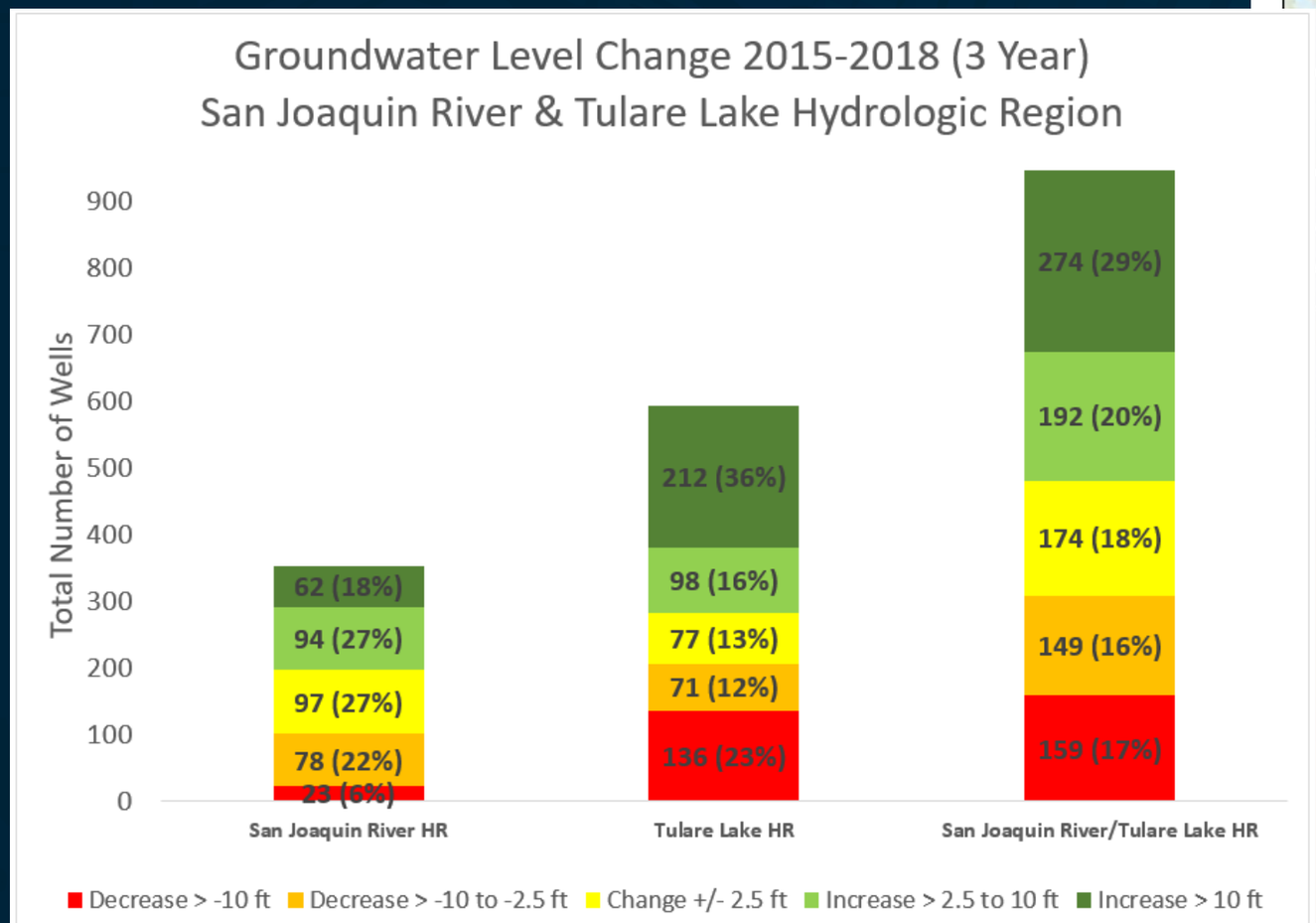
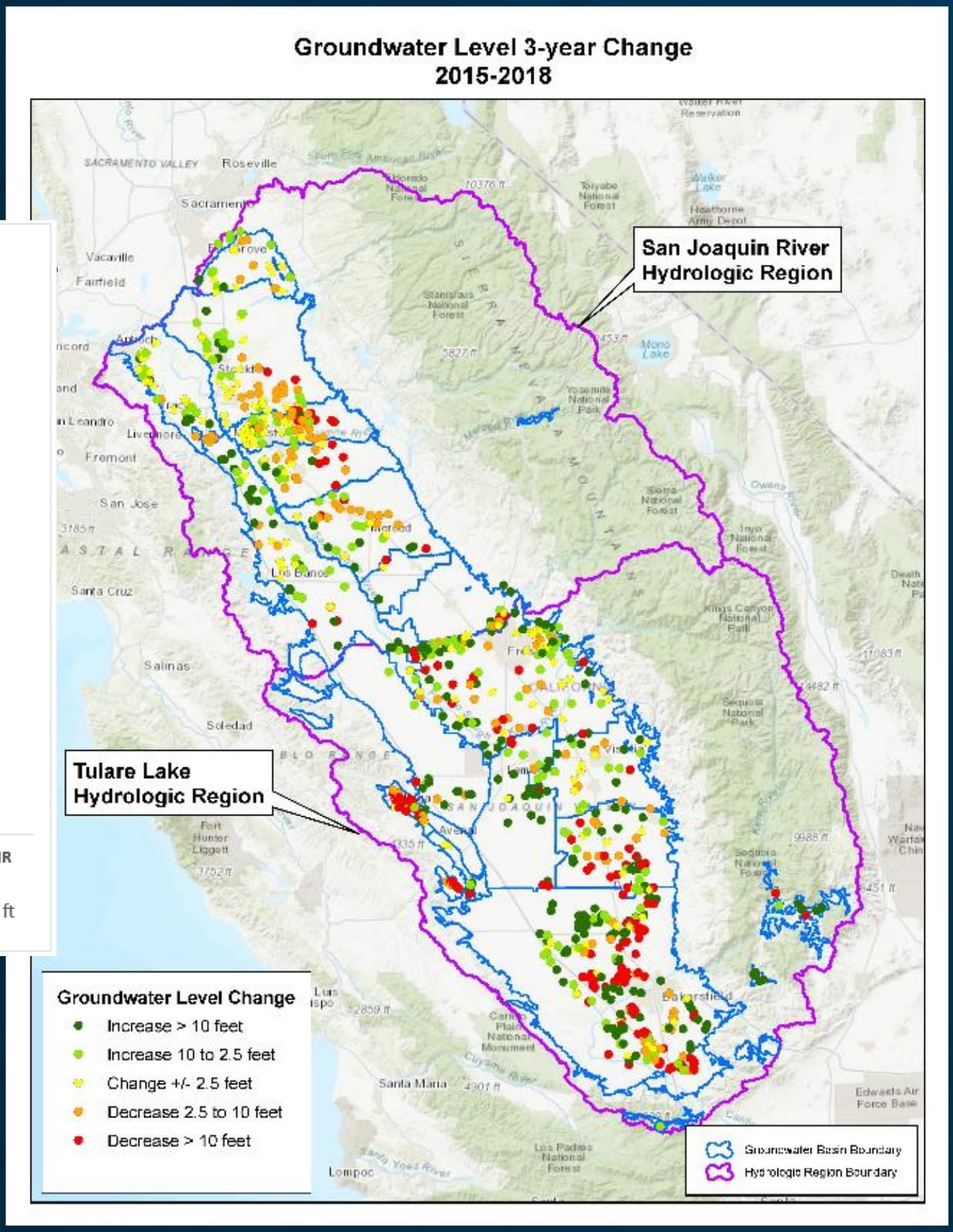
Groundwater Level Change 2015-2018





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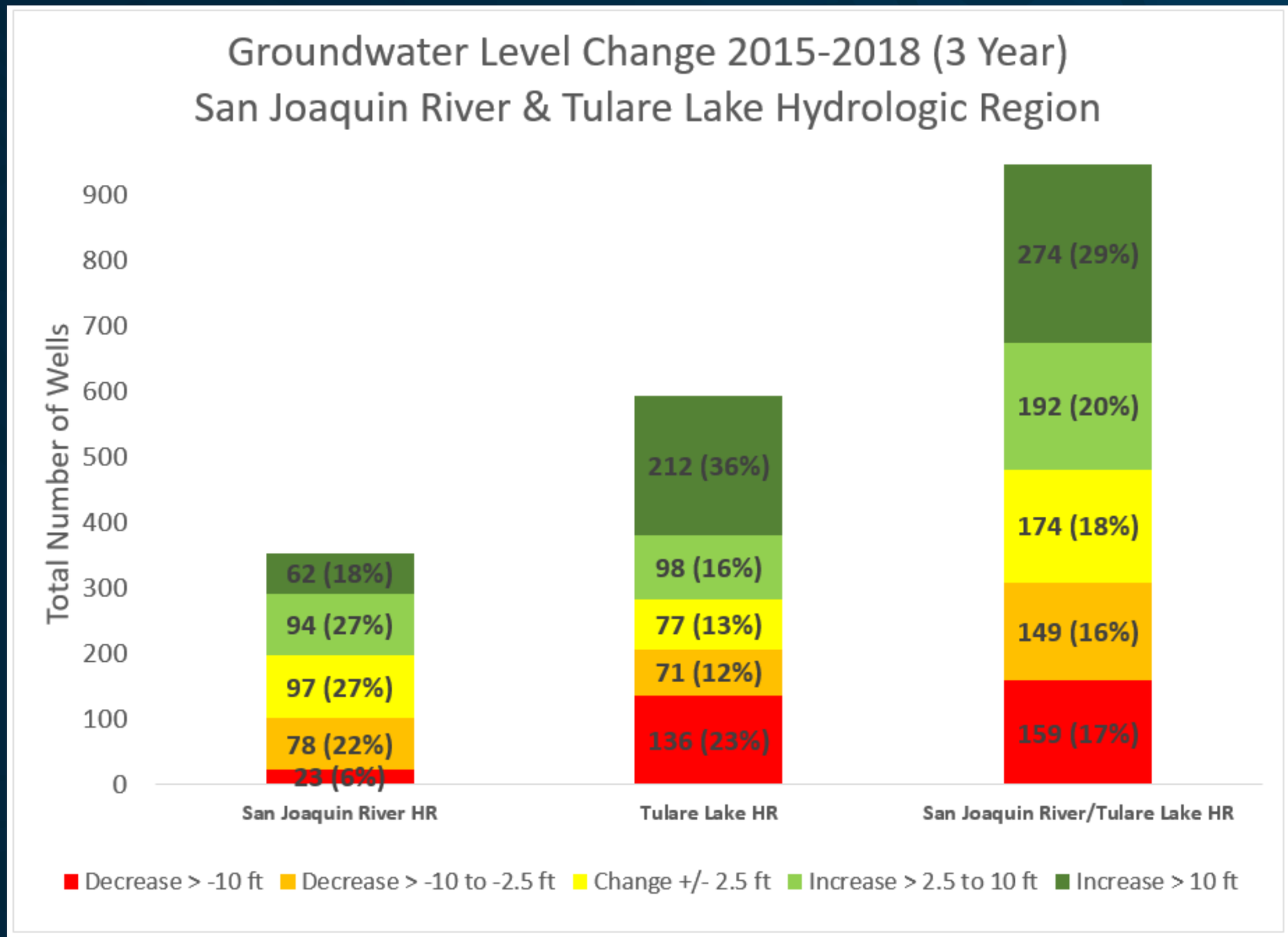
Groundwater Level Change 2015-2018



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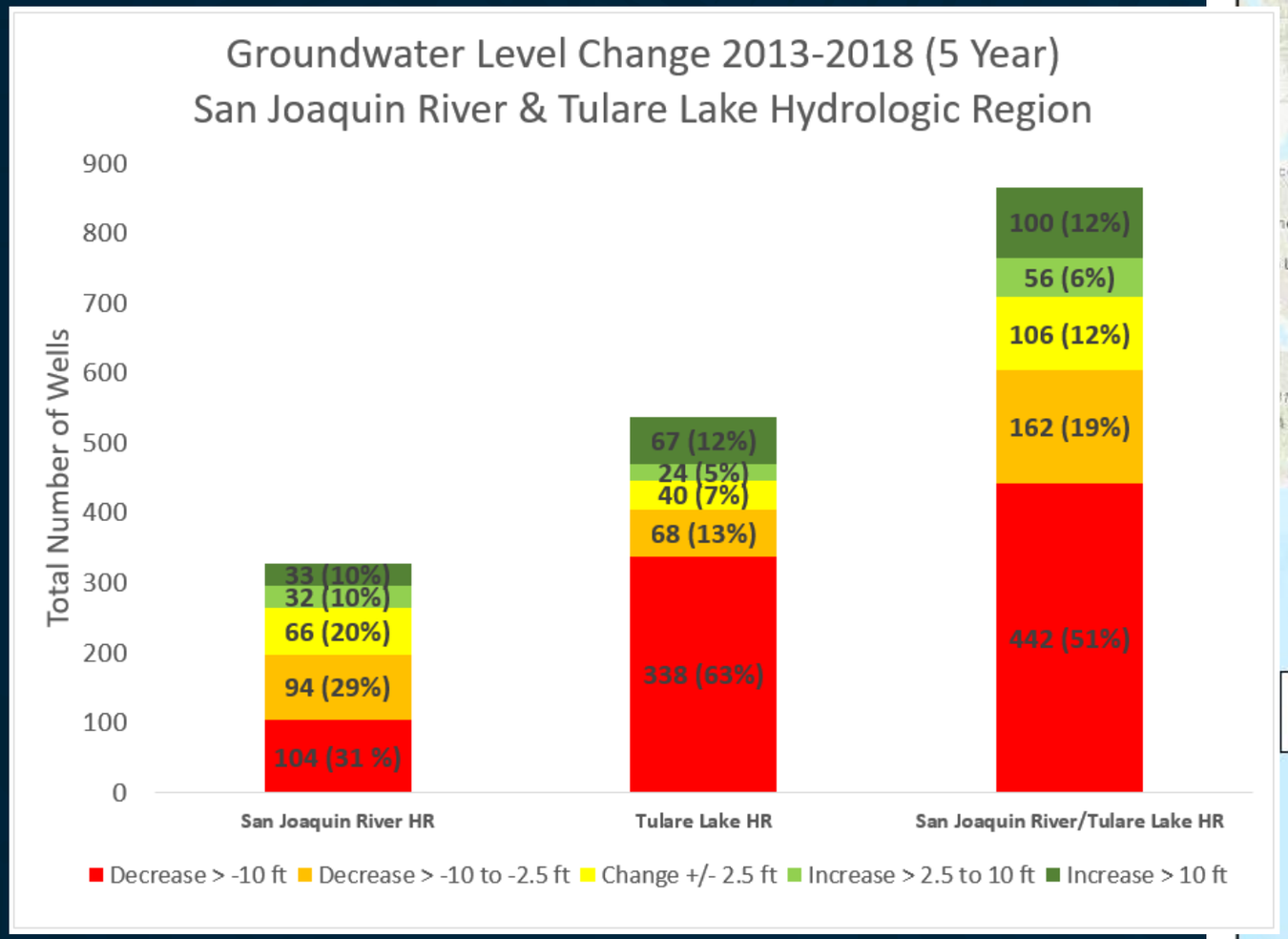
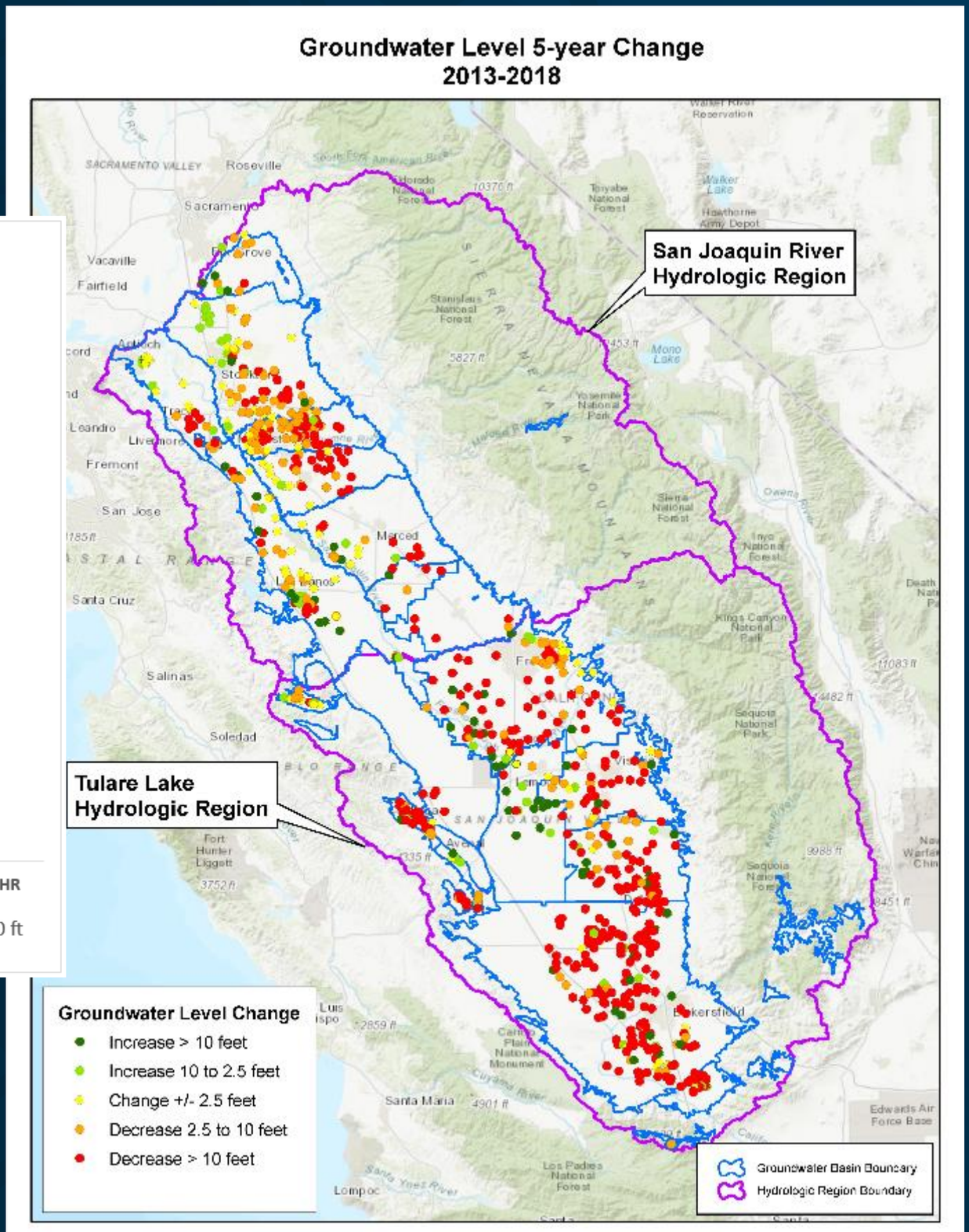
Groundwater Level Change 2013-2018





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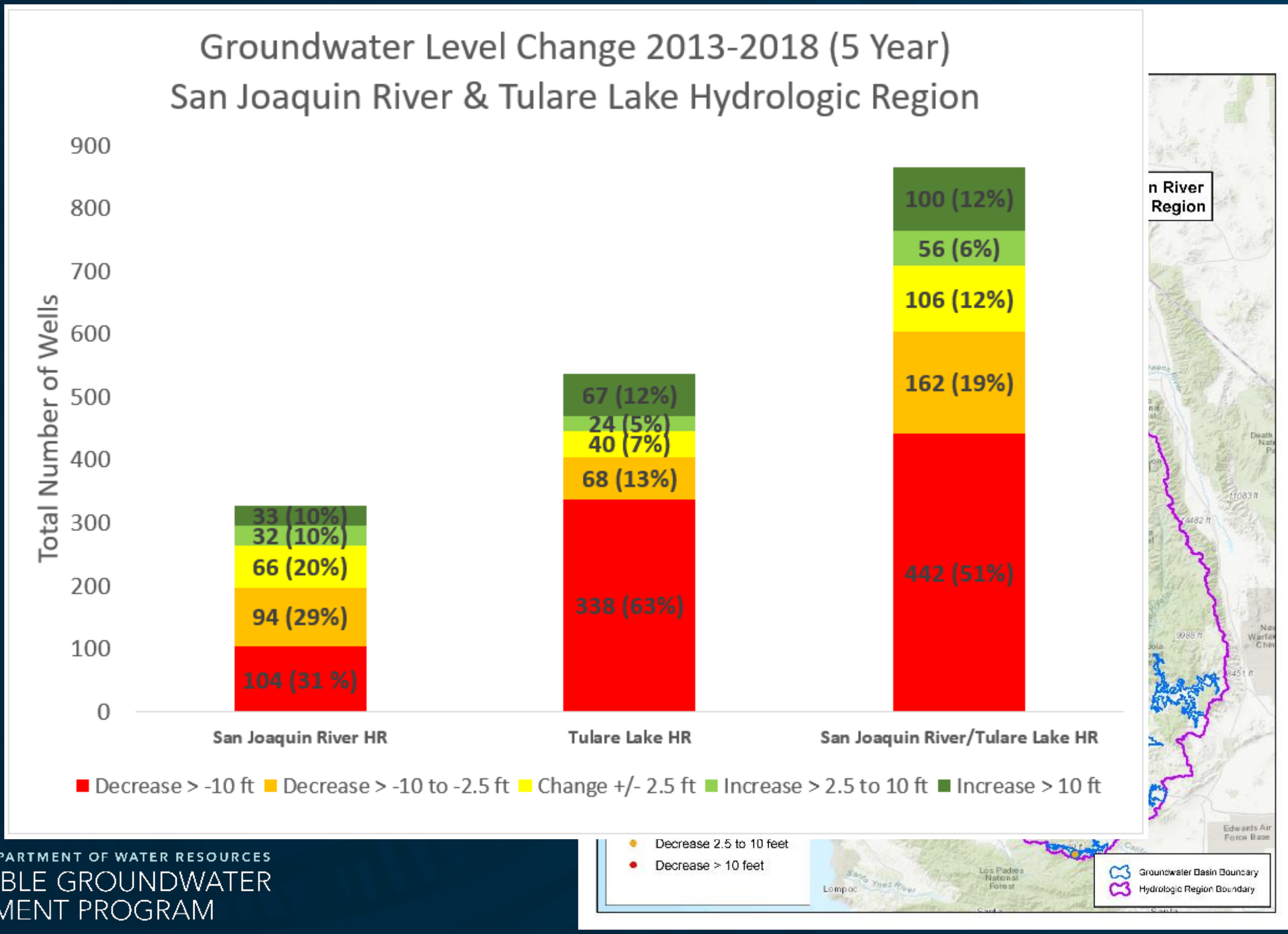
Groundwater Level Change 2013-2018



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San Joaquin River Hydrologic Region Groundwater Level Findings:

- 2017-2018: 30% increased by 2.5 feet or greater
  - 25% declined by 2.5 feet or greater
- 2015-2018: 45% increased by 2.5 feet or greater
  - 28% declined by 2.5 feet or greater
- 2013-2018: 60% declined by 2.5 feet or greater.
  - 20% increased by 2.5 feet or greater

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Tulare Lake Hydrologic Region Groundwater Level Findings:

- 2017-2018: 50% increased by 2.5 feet or greater.
  - 31% declined by 2.5 feet or greater

- 2015-2018: 52% increased by 2.5 feet or greater.
  - 35% declined by 2.5 feet or greater

- 2013-2018: 76% declined by 2.5 feet or greater.
  - 17% increased by 2.5 feet or greater

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SJ & TL Hydrologic Region Groundwater Level Findings:

- 2017-2018: 40% increased by 2.5 feet or greater.
  - 28% declined by 2.5 feet or greater
- 2014-2018: 49% increase by 2.5 feet or greater.
  - 33% decreased by 2.5 feet or greater
- 2013-2018: 71% declined by 2.5 feet or greater.
  - 18% increased by 2.5 feet or greater

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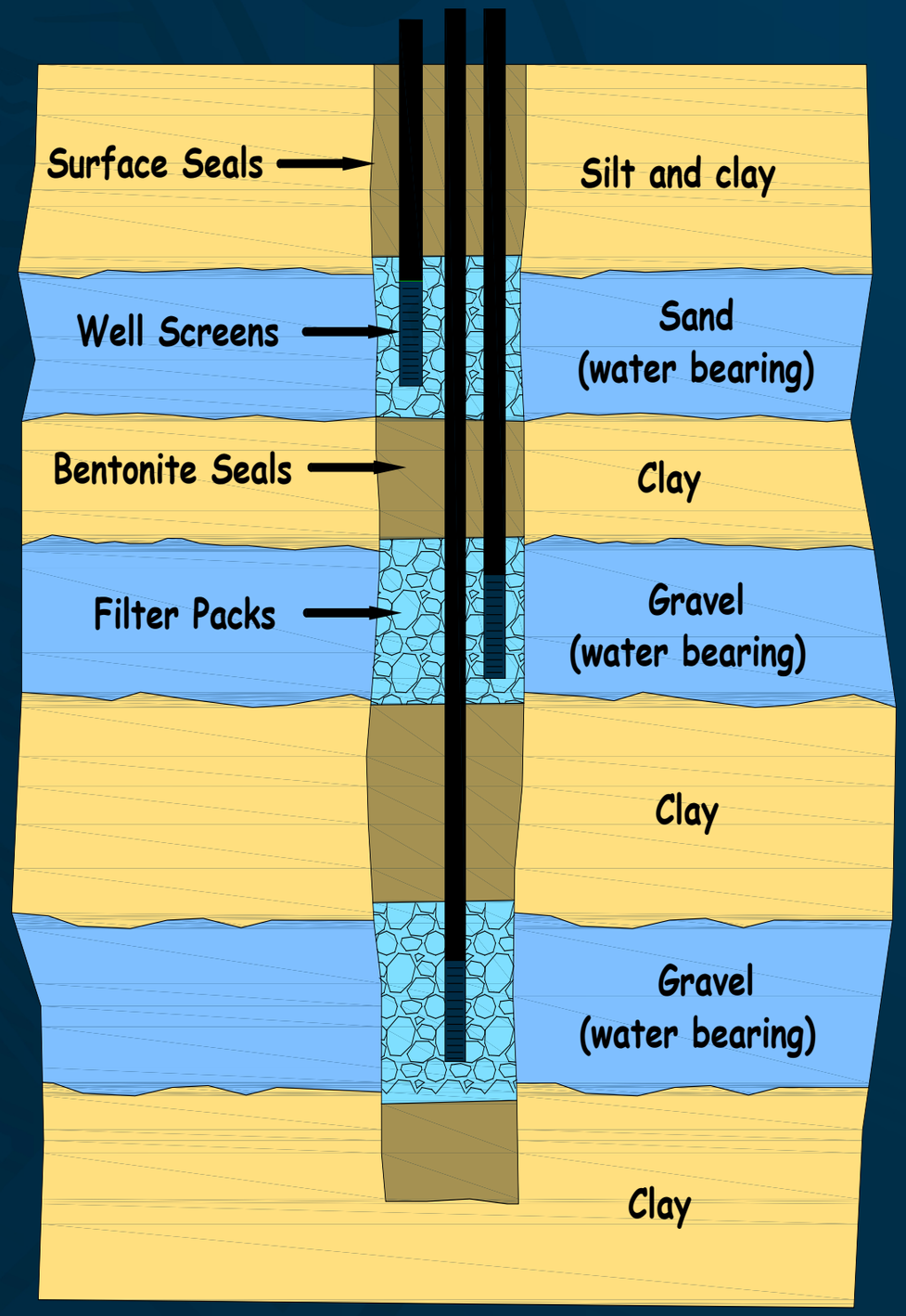
Water Level Measurement Information

Reporting Well Data:

- Spring 2017-2018: 1,298 wells
- Spring 2015-2018: 948 wells
- Spring 2013-2018: 866 wells

Variations in Reporting due to:

- CASGEM
- Reduction in monitoring
- No Measurement/Pumping/Other
- Loss of wells from grid- drought
- QA/QC of data



Groundwater and Land Subsidence

- California Aqueduct
- Friant/Kern Canal
- El Nido Area/Merced

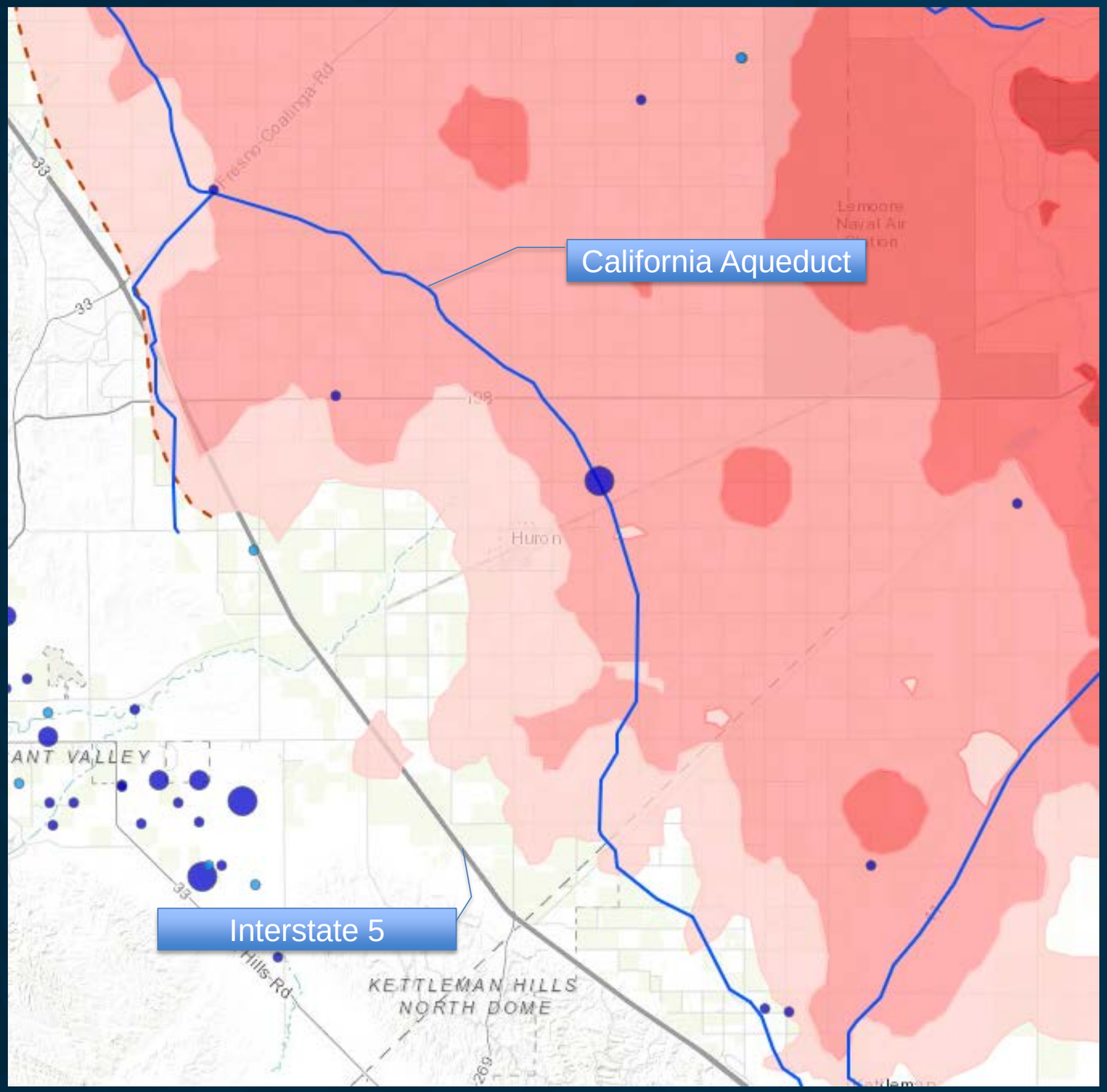
CALIFORNIA DEPARTMENT OF WATER RESOURCES
SUSTAINABLE GROUNDWATER MANAGEMENT PROGRAM

California Aqueduct Subsidence

Subsidence

Subsidence Contours (2008-2010)

- 25 mm (estimated)
- 25mm
- 50-100mm
- 100-150mm
- 150-280mm
- 280-410mm
- 410-540mm
- >540mm



Source: USGS

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SUSTAINABLE GROUNDWATER MANAGEMENT PROGRAM

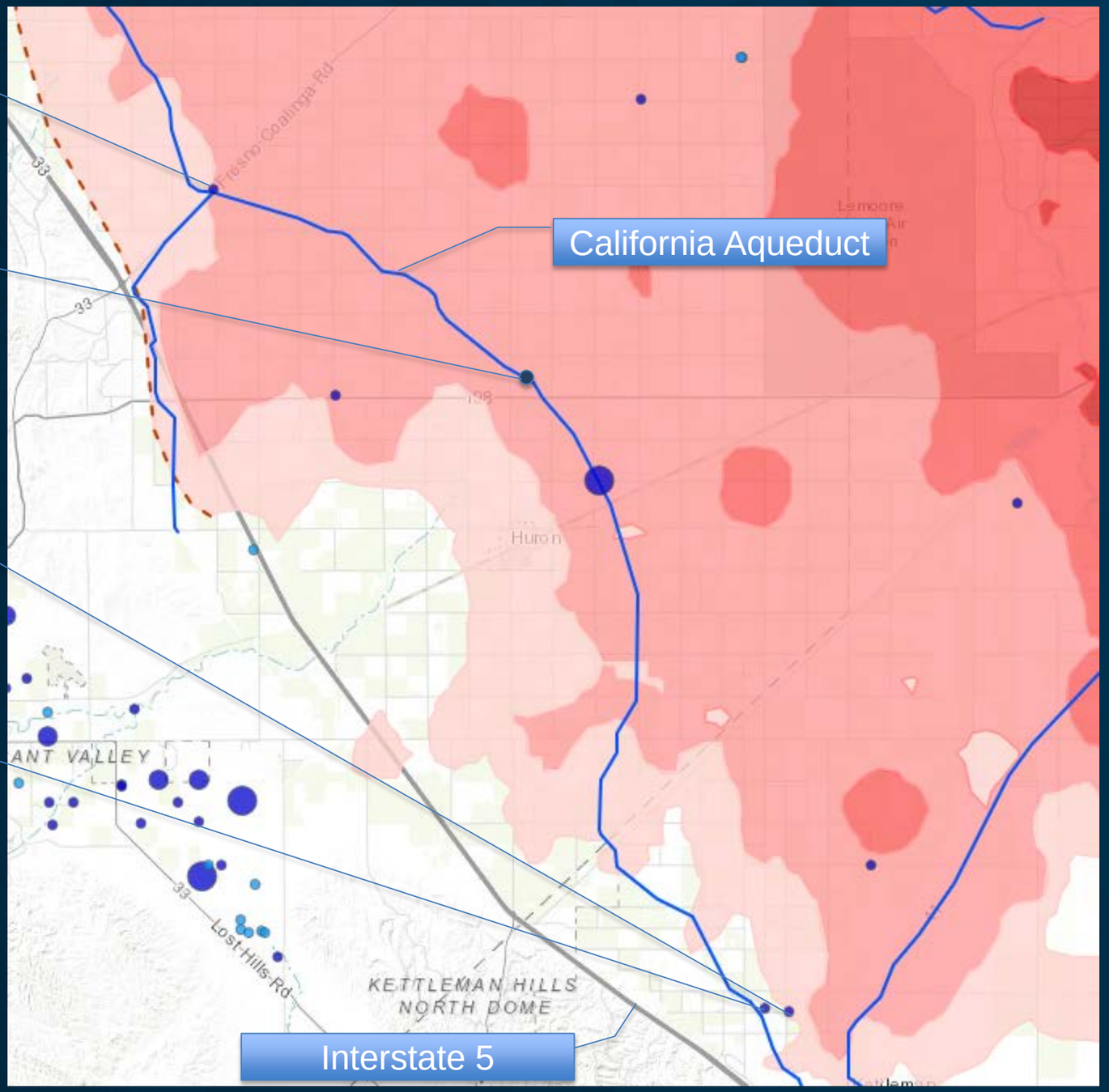
California Aqueduct Subsidence/GW Levels

SWN# 18S16E33A004M
Period of record: 1968-1994
Total GWL Decline: 38 feet

SWN# 19S17E16C002M
Period of Record: 1992-2018
Total GW Level Decline: 107.71 feet

SWN# 22S18E01E002M
Period of Record: 2009-2018
Total GW Level Decline: 80.25 feet

SWN# 21S19E020D001M
Period of Record: 2008-2017
Total GW Level Decline: 84.98 feet
2008-2010 Decline: 27 feet



Source: USGS

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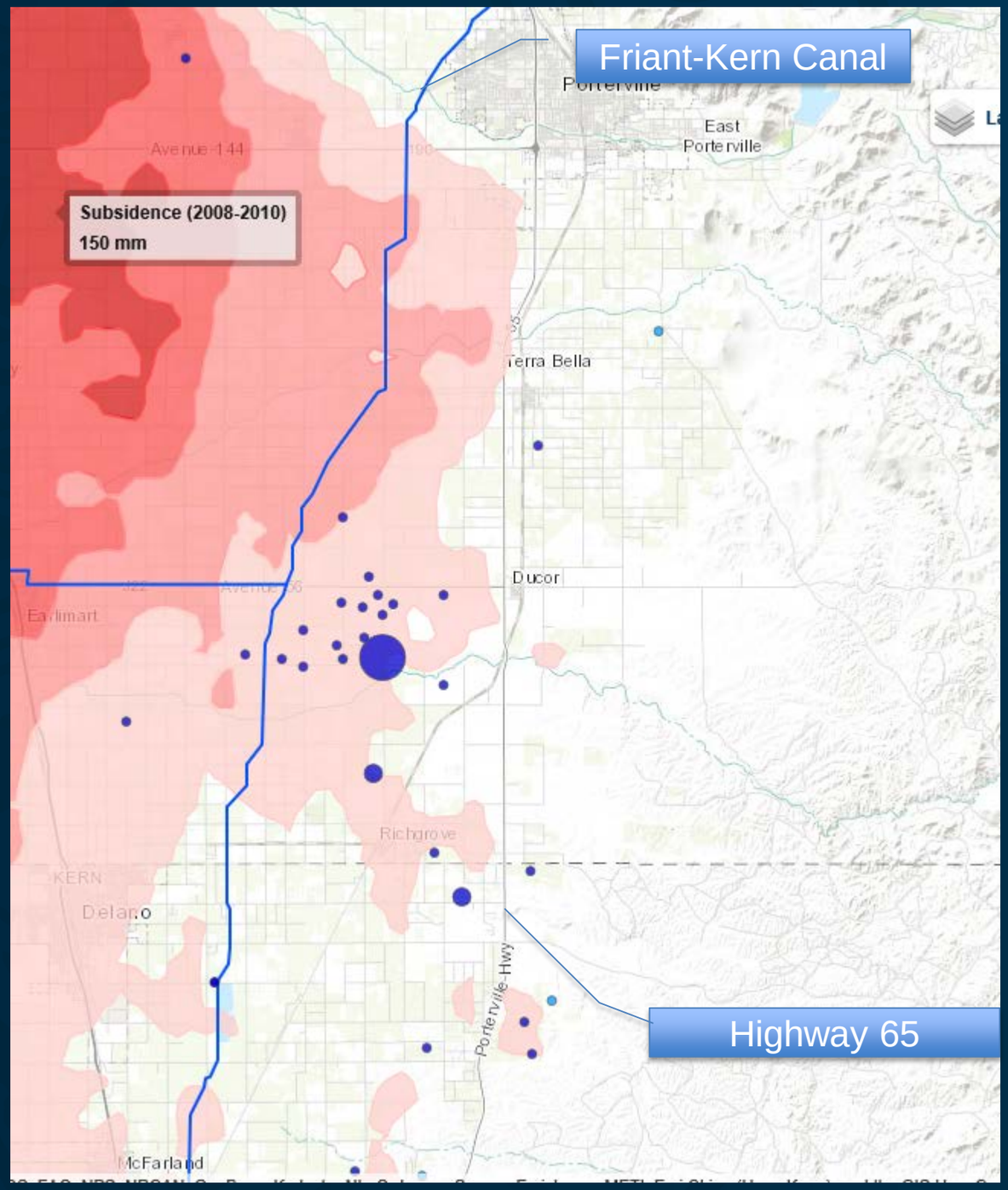
SUSTAINABLE GROUNDWATER MANAGEMENT PROGRAM

Friant-Kern Canal Subsidence



Source: USGS

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SUSTAINABLE GROUNDWATER MANAGEMENT PROGRAM

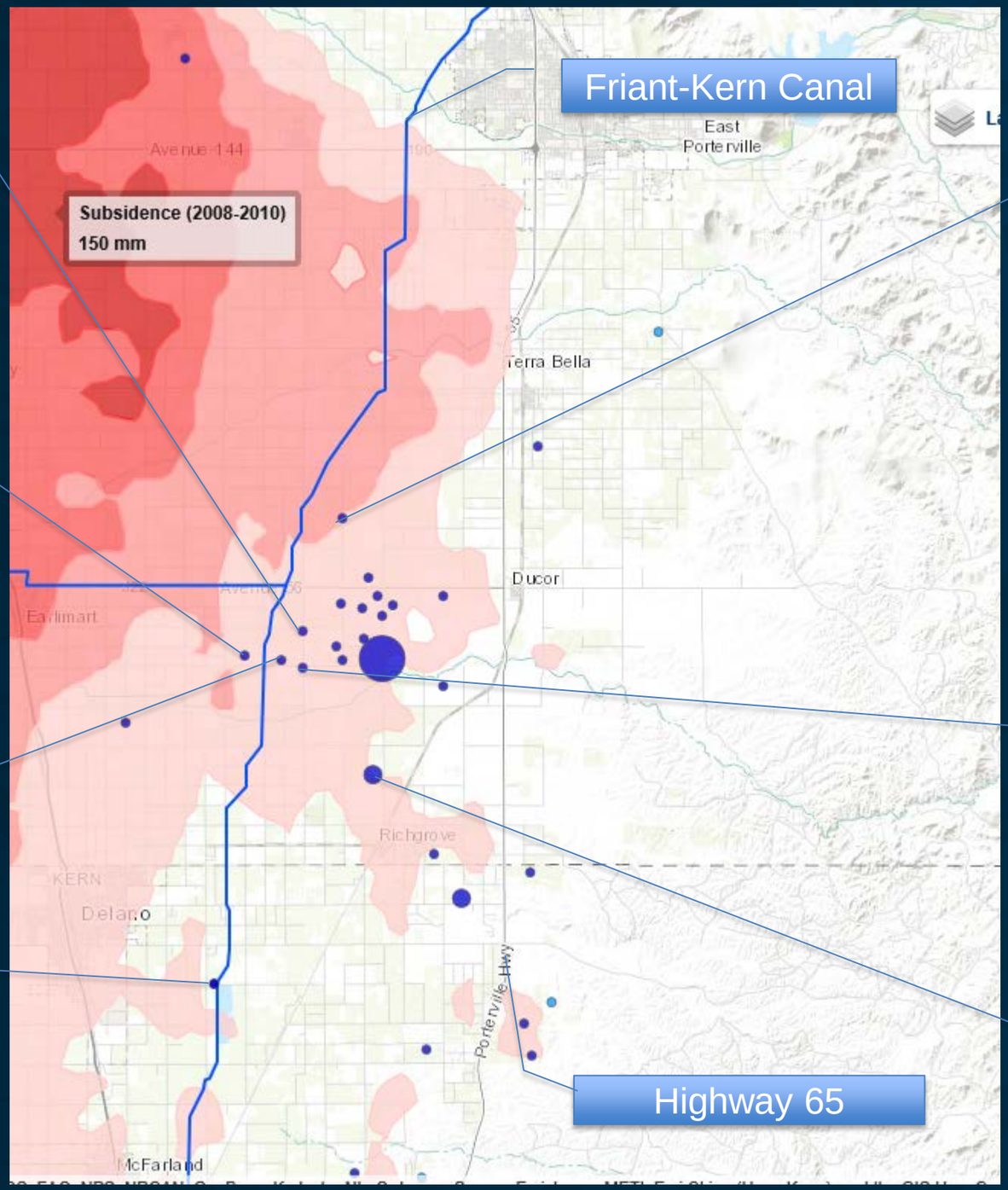
Friant-Kern Canal Subsidence/GW Levels

SWN# 24S26E03A001M
Period of record: 1979-2018
Total GWL Decline: 54 feet
2008-2010 Decline: 16 feet

SWN# 24S26E04P001M
Period of record: 1979-2017
Total GWL Decline: 71 feet
2008-2010 Decline: 14 feet

SWN# 24S26E03P002M
Period of record: 1979-2018
Total GWL Decline: 61 feet
2008-2010 Decline: 4 feet

SWN# 25S26E16P001M
Period of record: 1959-2018
Total GWL Decline: 84.4 feet
2008-2010 Decline: 16 feet



Source: USGS

SWN# 23S26E23H001M
Period of record: 1979-2018
Total GWL Decline: 42 feet
2008-2010 Decline: 16 feet

SWN# 24S26E10A001M
Period of record: 1979-2017
Total GWL Decline: 66 feet

SWN# 24S26E24Q001M
Period of record: 1987-2018
Total GWL Decline: 54 feet
2008-2010 Decline: 14 feet

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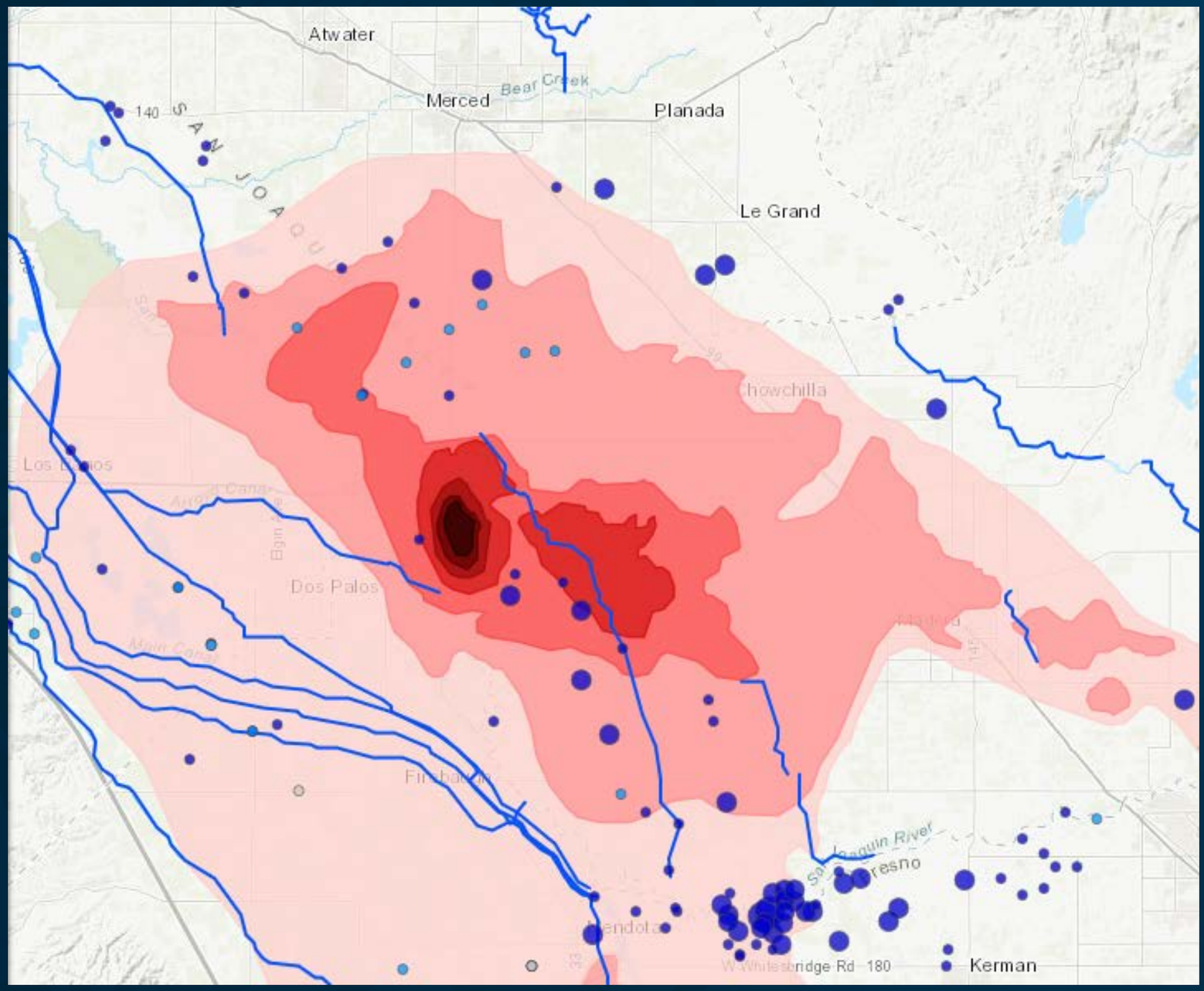
SUSTAINABLE GROUNDWATER MANAGEMENT PROGRAM

El Nido Area Subsidence

Subsidence

Subsidence Contours (2008-2010)

- 25 mm (estimated)
- 25mm
- 50-100mm
- 100-150mm
- 150-280mm
- 280-410mm
- 410-540mm
- >540mm



Source: USGS

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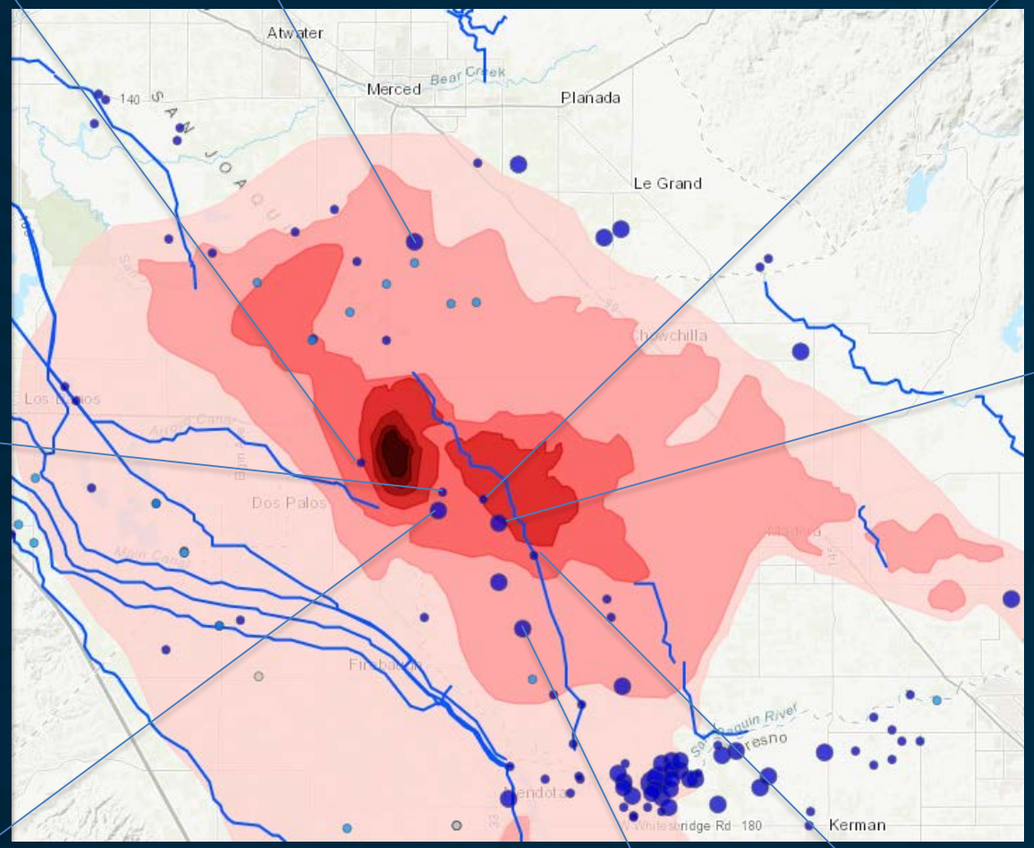
El Nido Area Subsidence/GW Levels

SWN# 08S14E32L001M
Period of Record: 1964-2008
Total GW Level Decline: 54.5 feet

SWN# 10S13E35K001M
Period of Record: 1960-2017
Total GW Level Decline: 10 feet

SWN# 11S14E12E001M
Period of Record: 1976-2009
Total GW Level Decline: 25.76 feet



Source: USGS

SWN# 11S14E09A003M
Period of Record: 1961-2017
Total GW Level Decline: 75.6 feet
2008-2010 Decline: 1.6 feet

SWN# 11S14E13R001M
Period of Record: 1963-2017
Total GW Level Decline: 120.4 feet

SWN# 11S14E16A001M
Period of Record: 1961-2018
Total GW Level Decline: 48.6 feet

SWN# 12S15E17E001M
Period of Record: 1952-2008
Total GW Level Decline: 55 feet

SWN# 11S15E29H001M
Period of Record: 1949-2017
Total GW Level Decline: 31.6 feet

CALIFORNIA DEPARTMENT OF WATER RESOURCES
SUSTAINABLE GROUNDWATER MANAGEMENT PROGRAM

Contact Information

South Central Region Office

Mission Statement: To carry out the Department's work within the South Central Region's boundaries and to maintain close contact with local interests to facilitate communication on integrated water-related matters, towards sustainable water resources management.

Service Area

The South Central Region Office, headquartered in Fresno, covers 14 counties including Fresno, Kings, Madera, Mariposa, Merced, Monterey, San Benito, Santa Cruz, Stanislaus, and Tulare Counties as well as portions of Kern, Tuolumne, Stanislaus and San Joaquin Counties.

Region Office Location

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FAX: (559) 230-3301
Office Hours: 8:00-4:30, Monday-Friday

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Main Contact
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Questions?

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