

# Agenda

## Upper San Luis Rey Groundwater Subbasin G.S.A Executive Team

Wednesday, June 30, 2021 3:00 P.M.  
34928 Valley Center Road, Pauma Valley, California

**This meeting will be held via Zoom.**

### AGENDA TOPICS

**I. Call to Order**

Roll Call - Executive Team

**II. ACTION DISCUSSION**

**1. GSP Development Update**

A. Review / Discussion of the Basin Setting Chapter and the Water Model

*Background: The Basin Setting Chapter was reviewed by the Executive Team on June 2, 2021 and presented to the Stakeholders on June 16, 2021. This is another opportunity for the team to discuss any concerns or questions with the Geoscience team in relation to this chapter.*

B. Discussion: Sustainability Goals

Background: The Geoscience Team will discuss the desired sustainability goals with the Executive Team.

**III. OTHER BUSINESS**

**IV. ADJORNMENT**



*Groundwater Sustainability Plan  
Upper San Luis Rey Groundwater Subbasin*

***GEOSCIENCE***







The First Name in Groundwater

***GSA Meeting***

*June 30, 2021*

# Sustainability Goals

The goal of SGMA is groundwater sustainability, which includes:

SUSTAINABILITY INDICATOR	 <b>CHRONIC LOWERING OF GROUNDWATER LEVELS</b>	 <b>REDUCTION OF GROUNDWATER STORAGE</b>	 <b>INTER-CONNECTED SURFACE WATER DEPLETIONS</b>	 <b>WATER QUALITY DEGRADATION</b>	 <b>LAND SUBSIDENCE</b>	 <b>SEAWATER INTRUSION</b>
METRIC(S) USED	Groundwater elevation	Total volume	Volume or rate of surface water depletion	<ul style="list-style-type: none"> <li>- Migration of plumes</li> <li>- # of Supply wells</li> <li>- Volume</li> <li>- Location of Isocontour</li> </ul>	Rate and extent of land subsidence	Chloride Concentration Isocontour

# *“Sustainability” is Defined Locally*

---

## Potential Guiding Principles Informing the USLR GSP:

**1**

Available groundwater supply **reliably supports diverse needs** in the Basin.

**2**

Stored groundwater cost-effectively supports **water supply resilience.**

**3**

Groundwater quality is maintained at a **standard to maintain beneficial use** to meet diverse Basin needs.

**4**

Cost of maintaining sustainable groundwater levels is **fair, feasible, and fiscally-responsible.**

Pauma Valley GSA

**GEOSCIENCE**

# ***SGMA Terminology***

---

## **Sustainable Management Criteria Must:**

- Include a **Sustainability Goal**, which is a succinct big-picture statement of the GSA's objectives and desired conditions and how they will be reached;
- Define **Significant and Unreasonable Effects**
- Identify **representative monitoring sites**
- Develop **measurable objectives**
- Define **minimum thresholds**
- Determine **undesirable results**
- Develop **Interim Milestones**, which are five-year check-ins to measure progress

# Achieving Sustainability

## Basin-Wide Sustainability Goal

Set minimum thresholds and measurable objectives for all Sustainable Management Criteria



SUSTAINABLE MANAGEMENT CRITERIA

Measure and monitor at each representative monitoring well



REPRESENTATIVE MONITORING WELLS

Achieve goals using projects and management actions, if necessary



PROJECTS & MANAGEMENT ACTIONS

## Basin-Wide Sustainability Goal

Pauma Valley GSA  
*GEOSCIENCE*

# *SGMA Requirements*

---

**SGMA requires that Significant and Unreasonable Effects be described for each Sustainability Indicator**

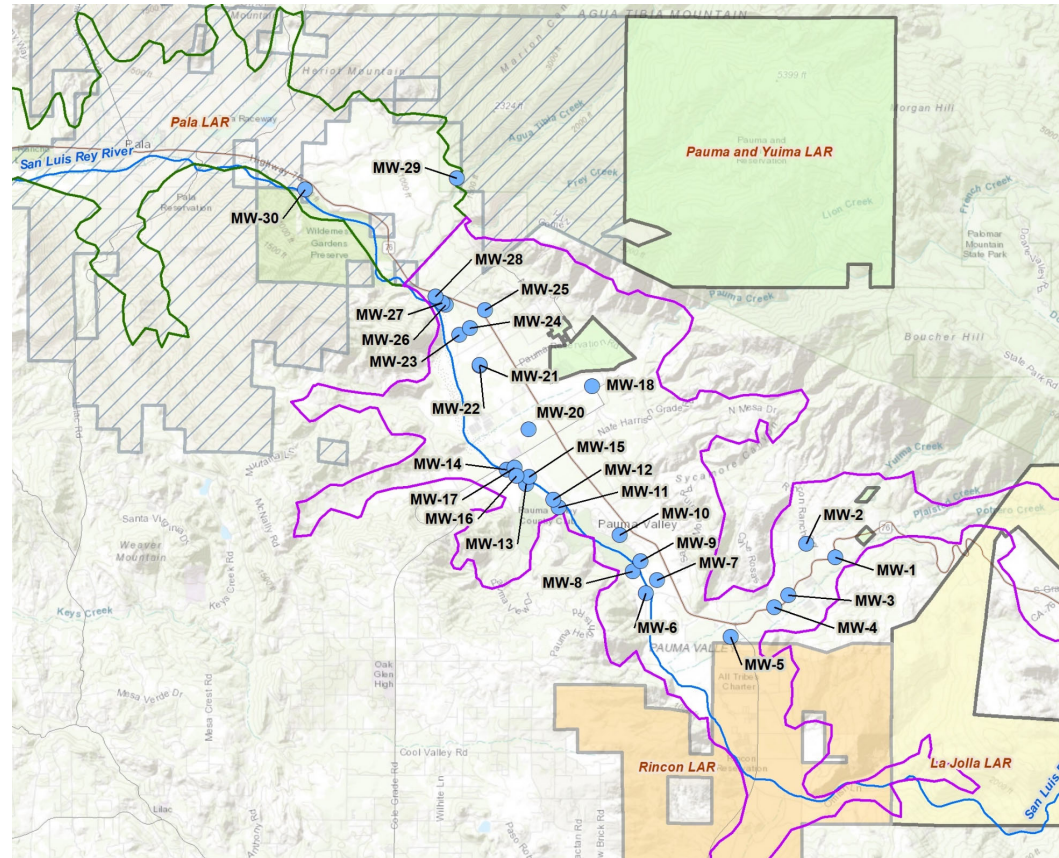
What we don't want to happen . . .



# SGMA Requirements

SGMA requires that the GSA identify Representative Monitoring Points

- Monitoring Points Should Be Selected Based on Sustainability Goal(s)





# *SGMA Requirements*

---

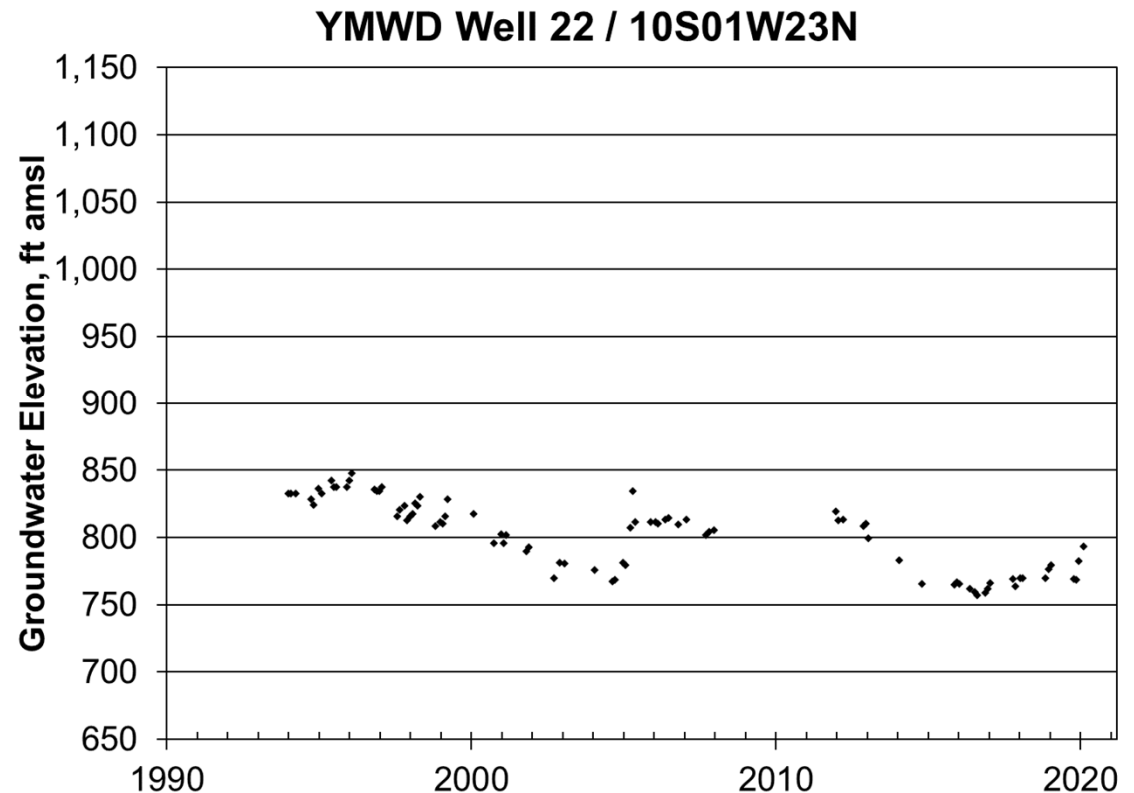
**Undesirable  
Results are the  
worst-case  
scenario**



# SGMA Requirements

## SGMA requires that GSAs develop Minimum Thresholds

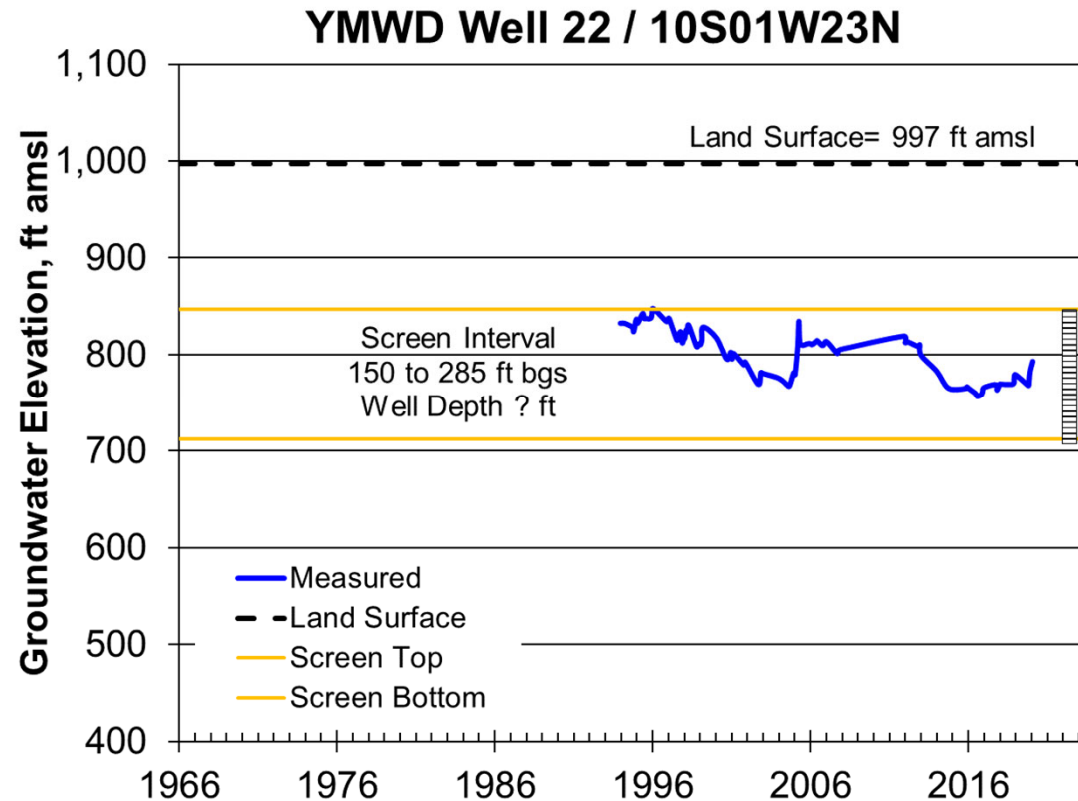
- Thresholds are the **quantitative, measurable** lines in the sand that we don't want to cross.



# SGMA Requirements

## SGMA requires that GSAs develop Measurable Objectives

- Objectives are **specific, quantifiable** goals to maintain or improve groundwater conditions



# *SGMA Requirements*

---

**Projects and Management Actions may need to be identified to achieve sustainability**

## **WHAT IS A GROUNDWATER SUSTAINABILITY PLAN?**

A plan that will serve as a blueprint for the community's vision of a sustainably managed groundwater basin. The plan will include four main components.

**Basin and Aquifer Description**

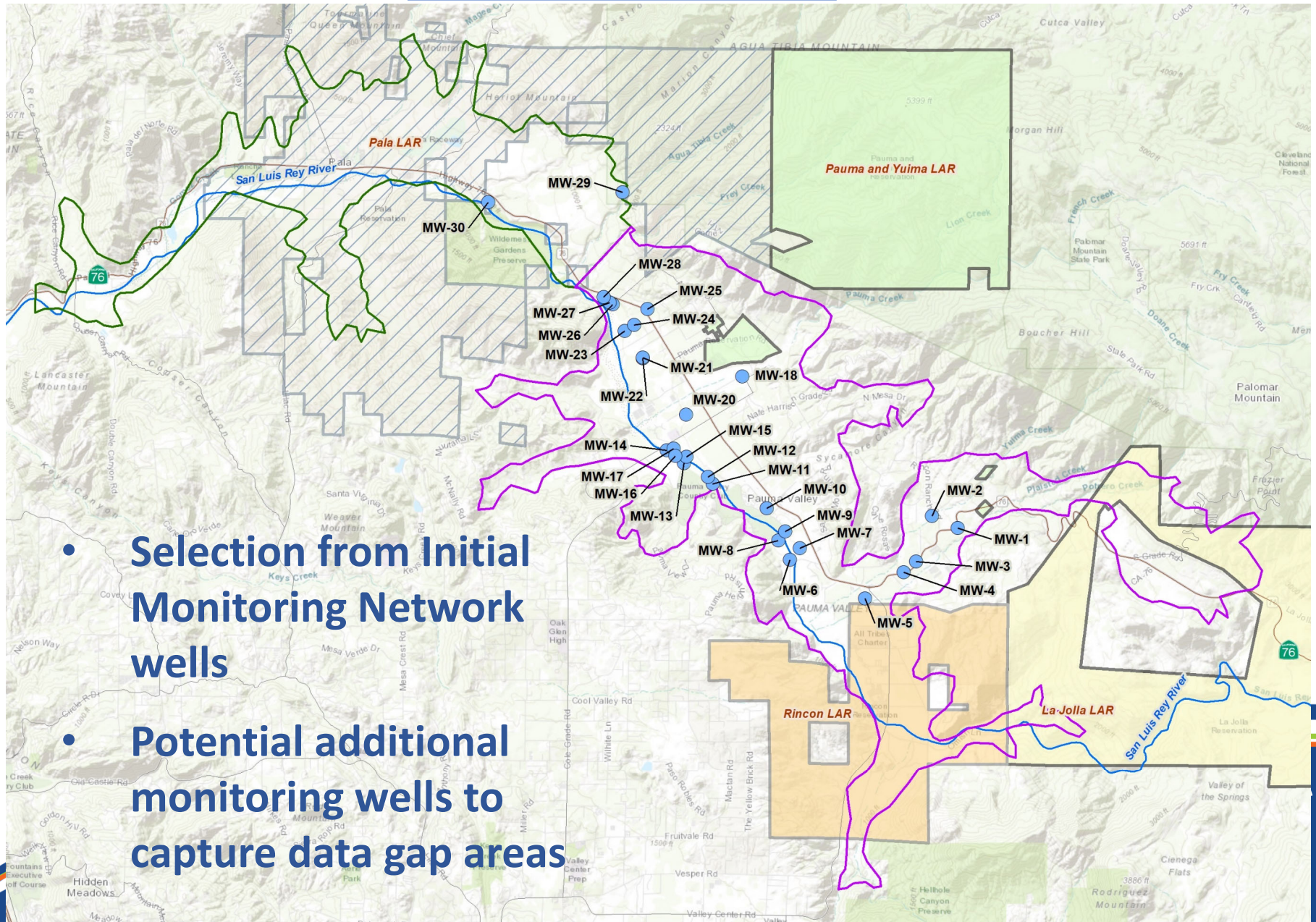
**Sustainability Goal to Avoid Undesirable Results**

**GROUNDWATER SUSTAINABILITY PLAN**

**Actions to Achieve the Subbasin's Sustainability Goal**

**Monitoring Plan**







# Selection of Representative Monitoring Points



- Selection from Initial Monitoring Network wells
- Potential additional monitoring wells to capture data gap areas

# Sustainability Goals

## Approach for Sustainability of Groundwater Levels

SUSTAINABILITY INDICATOR	 <b>CHRONIC LOWERING OF GROUNDWATER LEVELS</b>	 <b>REDUCTION OF GROUNDWATER STORAGE</b>	 <b>INTER-CONNECTED SURFACE WATER DEPLETIONS</b>	 <b>WATER QUALITY DEGRADATION</b>	 <b>LAND SUBSIDENCE</b>	 <b>SEAWATER INTRUSION</b>
METRIC(S) USED	Groundwater elevation	Total volume	Volume or rate of surface water depletion	<ul style="list-style-type: none"> <li>- Migration of plumes</li> <li>- # of Supply wells</li> <li>- Volume</li> <li>- Location of Isocontour</li> </ul>	Rate and extent of land subsidence	Chloride Concentration Isocontour

# *Sustainability Goals for Groundwater Levels*

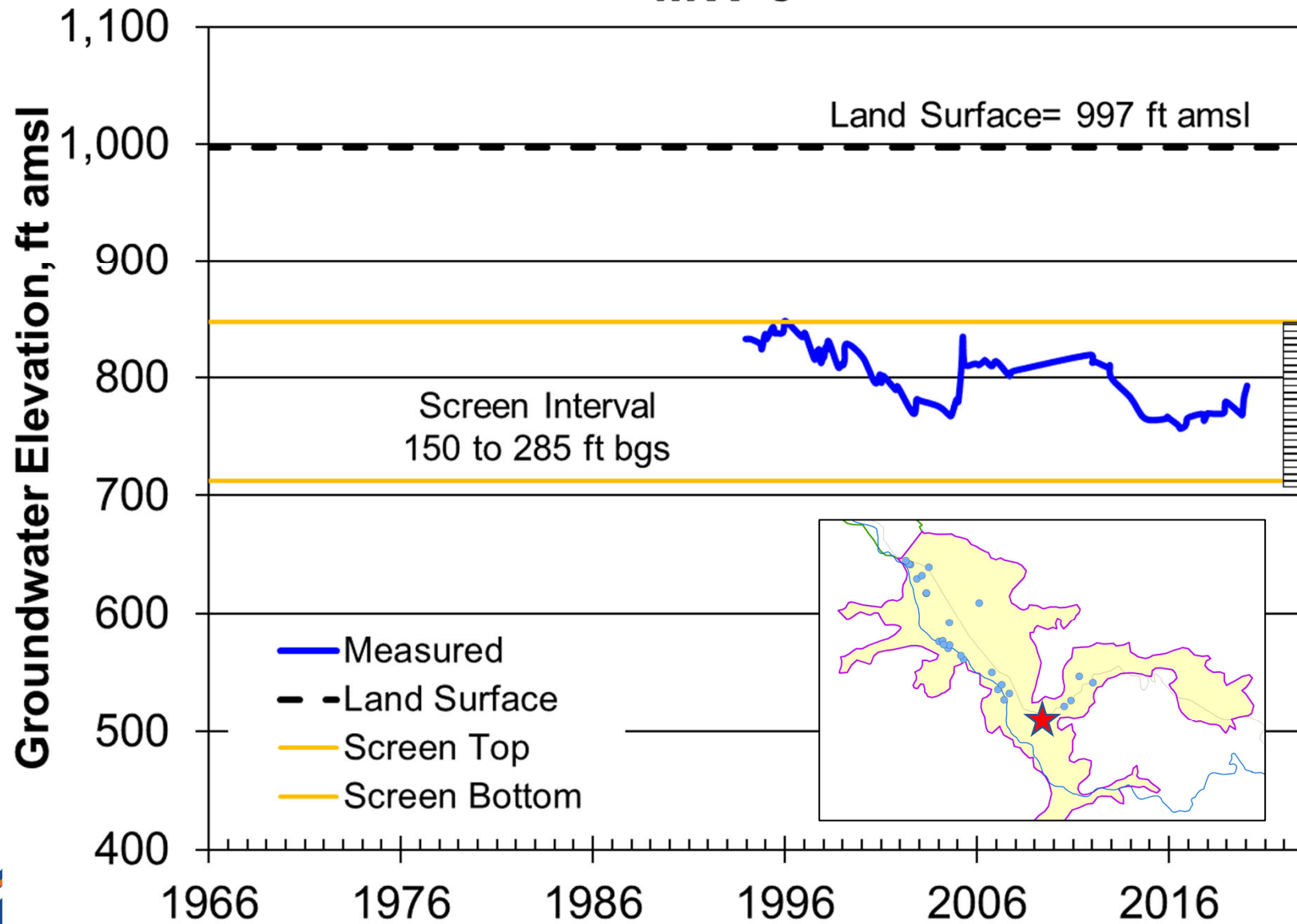
---

## Potential Considerations:

- SGMA does not provide recommendations
- Screen interval in current pumping wells

# Selected Hydrographs

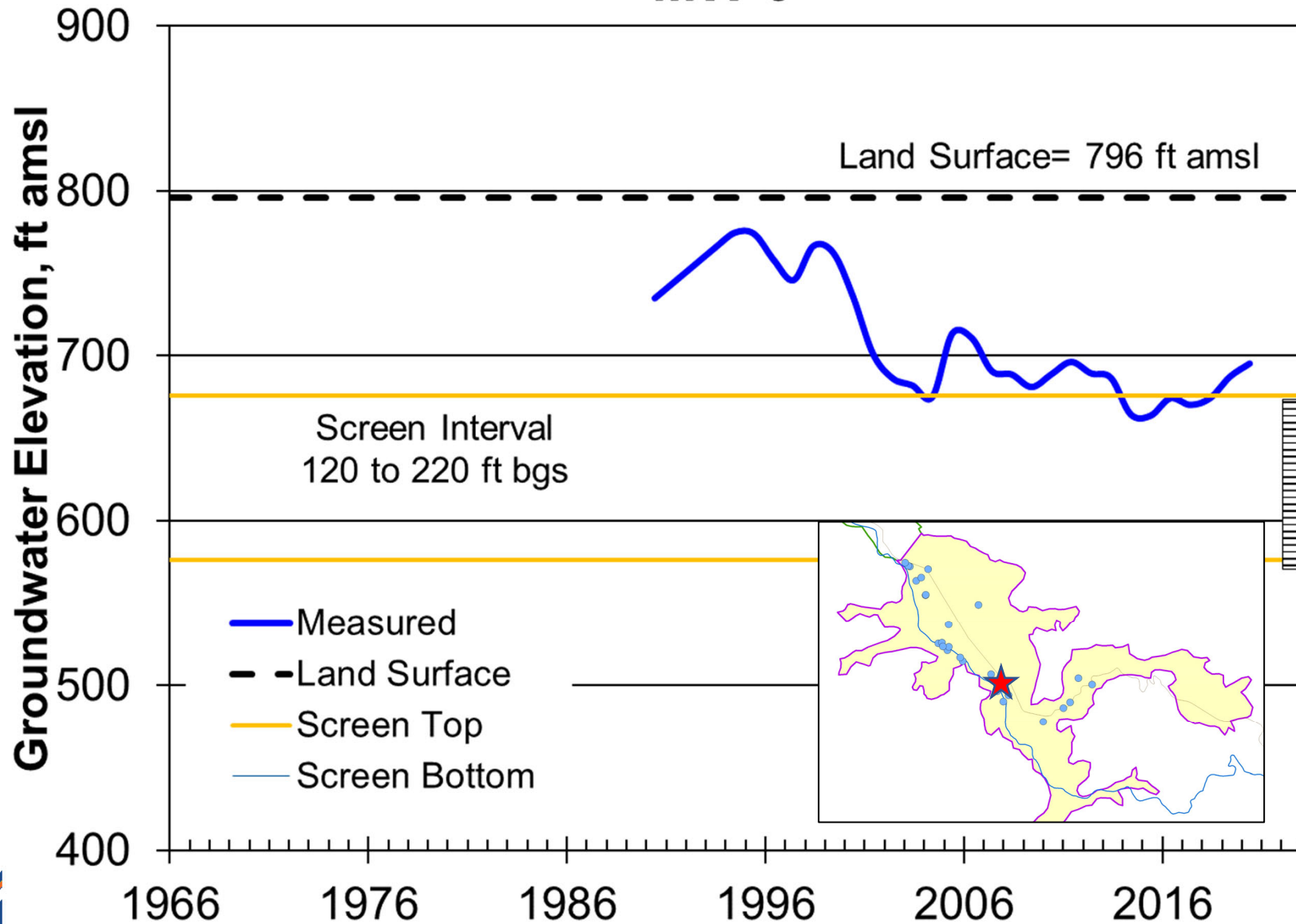
## MW-5





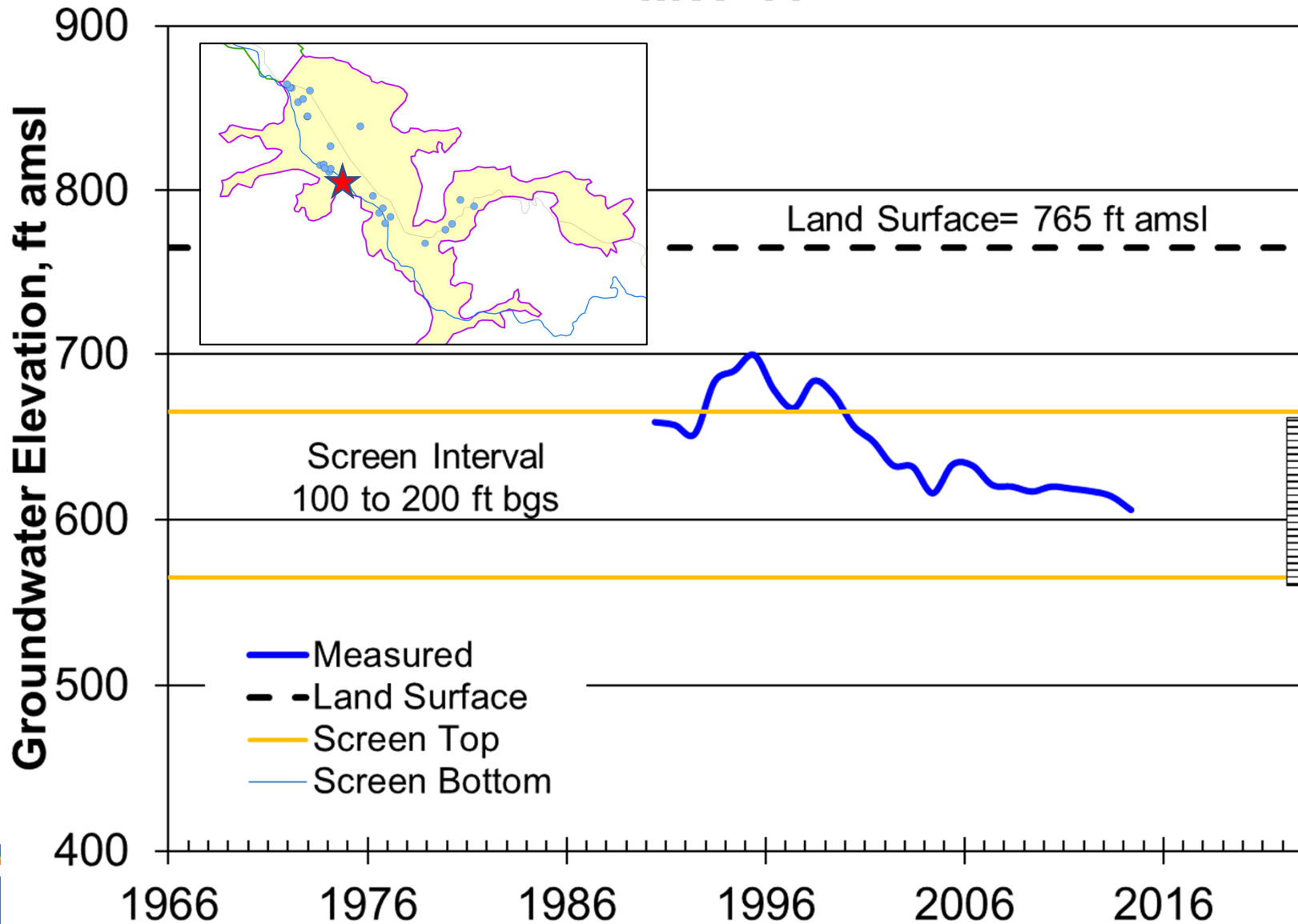
# Selected Hydrographs

## MW-9



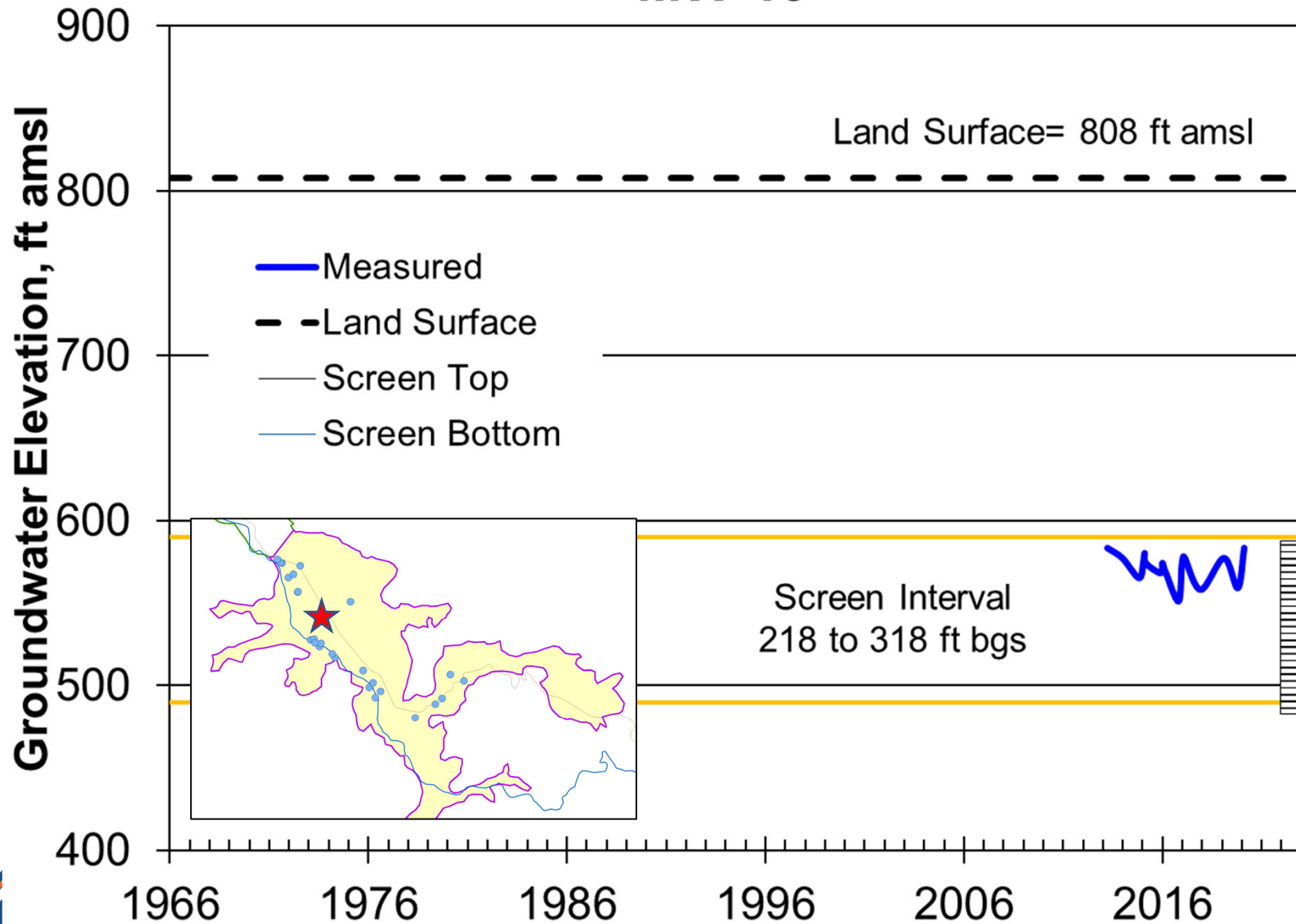
# Selected Hydrographs

## MW-11



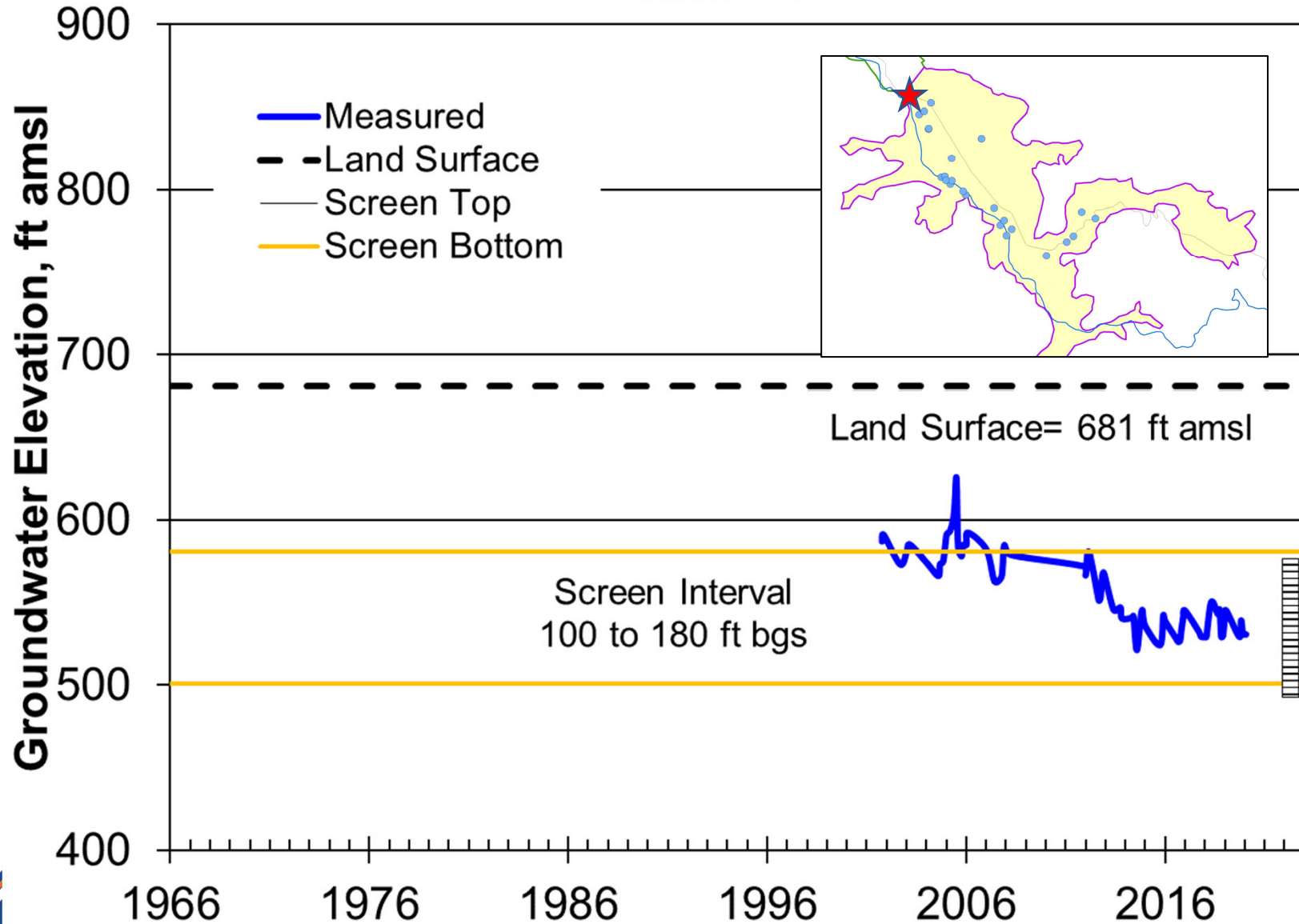
# Selected Hydrographs

## MW-19









# Selected Hydrographs

## MW-27



# Sustainability Goals

## Approach for Sustainability of Groundwater Storage

<p><b>SUSTAINABILITY INDICATOR</b></p>	 <p><b>CHRONIC LOWERING OF GROUNDWATER LEVELS</b></p>	 <p><b>REDUCTION OF GROUNDWATER STORAGE</b></p>	 <p><b>INTER-CONNECTED SURFACE WATER DEPLETIONS</b></p>	 <p><b>WATER QUALITY DEGRADATION</b></p>	 <p><b>LAND SUBSIDENCE</b></p>	 <p><b>SEAWATER INTRUSION</b></p>
<p><b>METRIC(S) USED</b></p>	<p>Groundwater elevation</p>	<p>Total volume</p>	<p>Volume or rate of surface water depletion</p>	<ul style="list-style-type: none"> <li>- Migration of plumes</li> <li>- # of Supply wells</li> <li>- Volume</li> <li>- Location of Isocontour</li> </ul>	<p>Rate and extent of land subsidence</p>	<p>Chloride Concentration Isocontour</p>

# *Sustainability Goals for Groundwater Storage*

---

## Potential Considerations:

- **SGMA does not provide recommendations**
- **Normal year storage**
  - Evaluate storage needed to sustain average pumping year, based on average hydrology
- **Single dry year storage**
  - Evaluate storage needed to sustain pumping during a single dry year
- **5-year drought storage**
  - Evaluate storage needed to sustain pumping during a 5-year drought period
  - Can be based on groundwater elevations before and after previous 5-year drought experienced in Basin
    - *Example: 2012 - 2016*

# 5-Year Drought Conditions

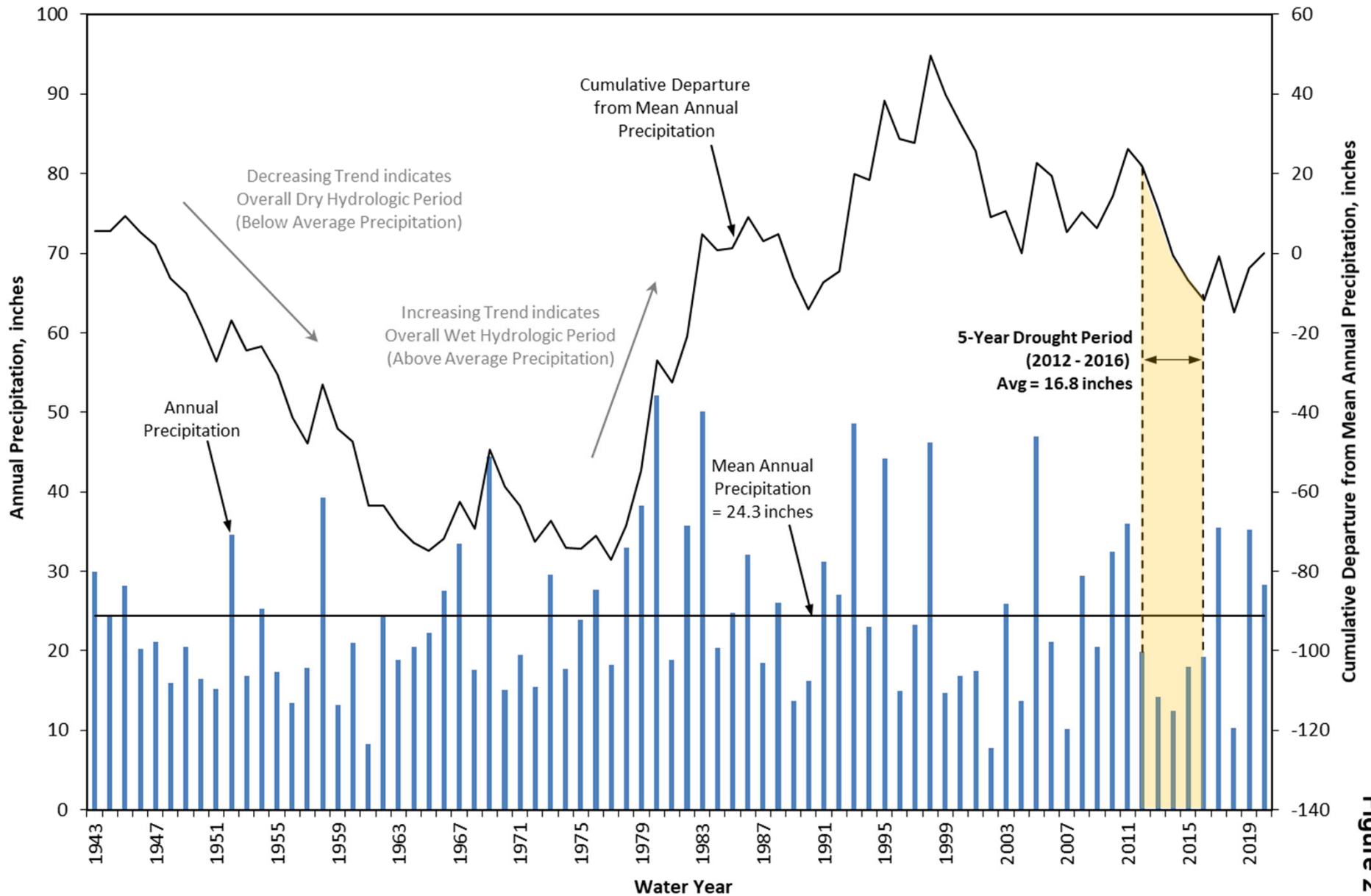
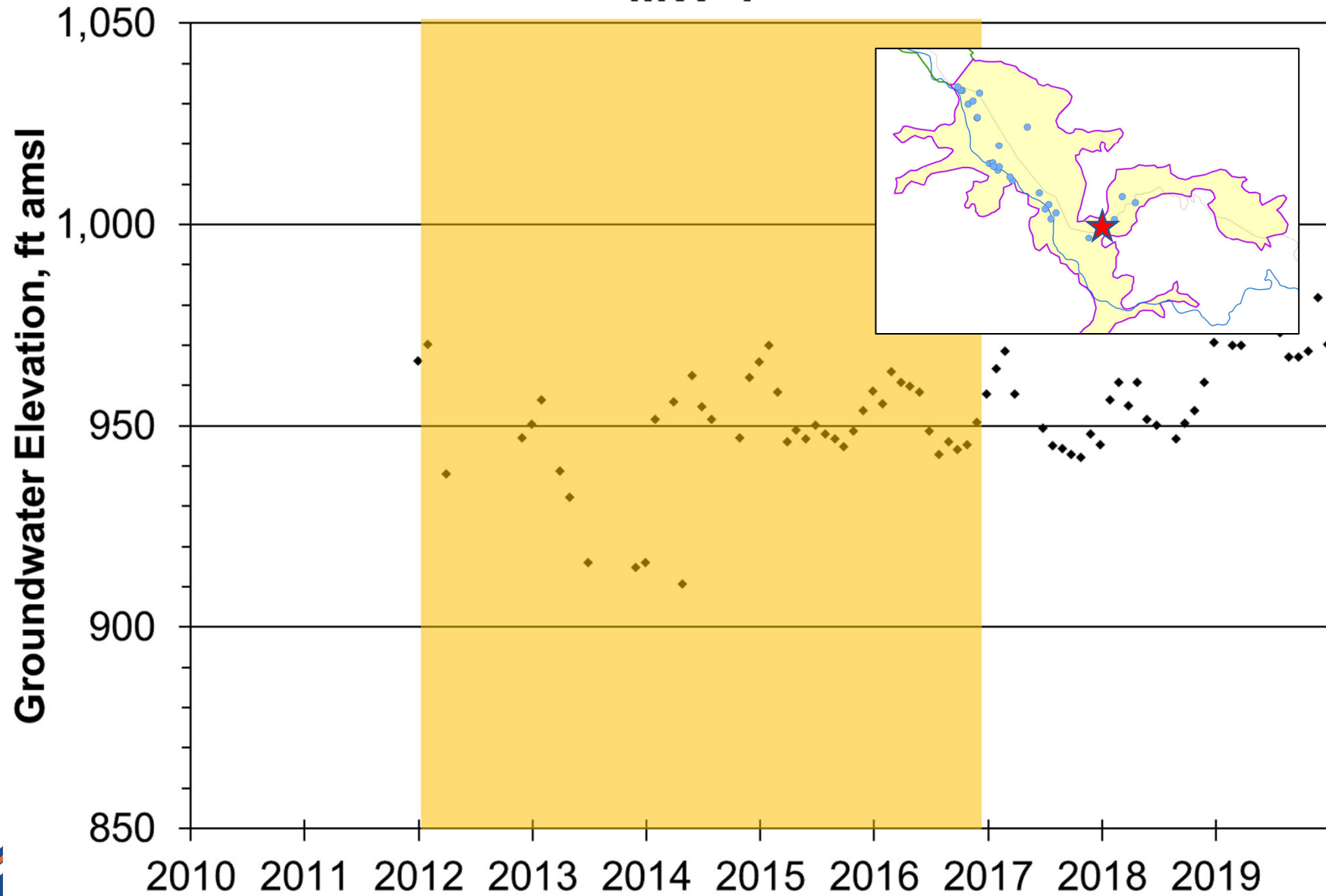


Figure 2

# *Selected Hydrographs*

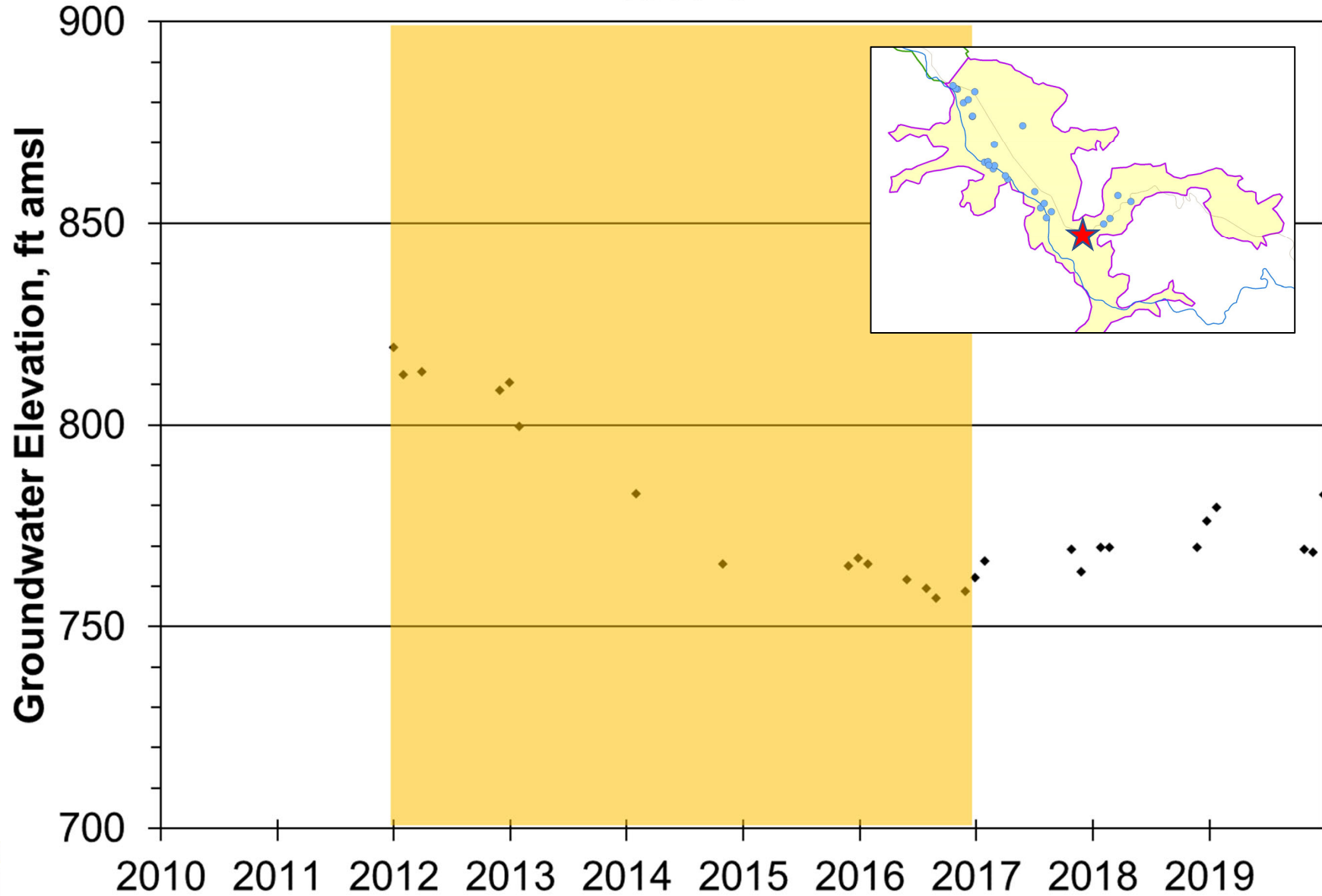
## MW-4





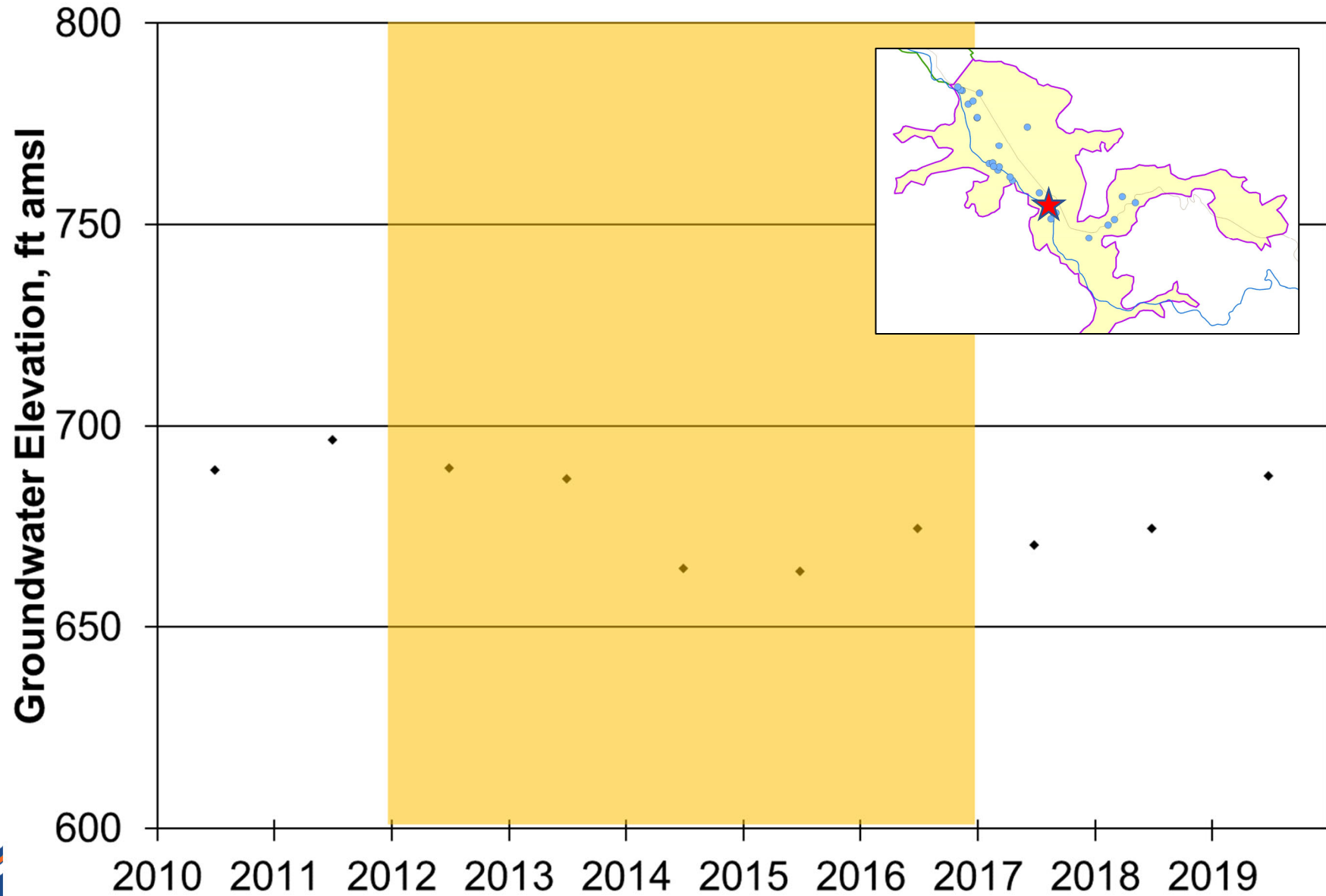
# *Selected Hydrographs*

## MW-5



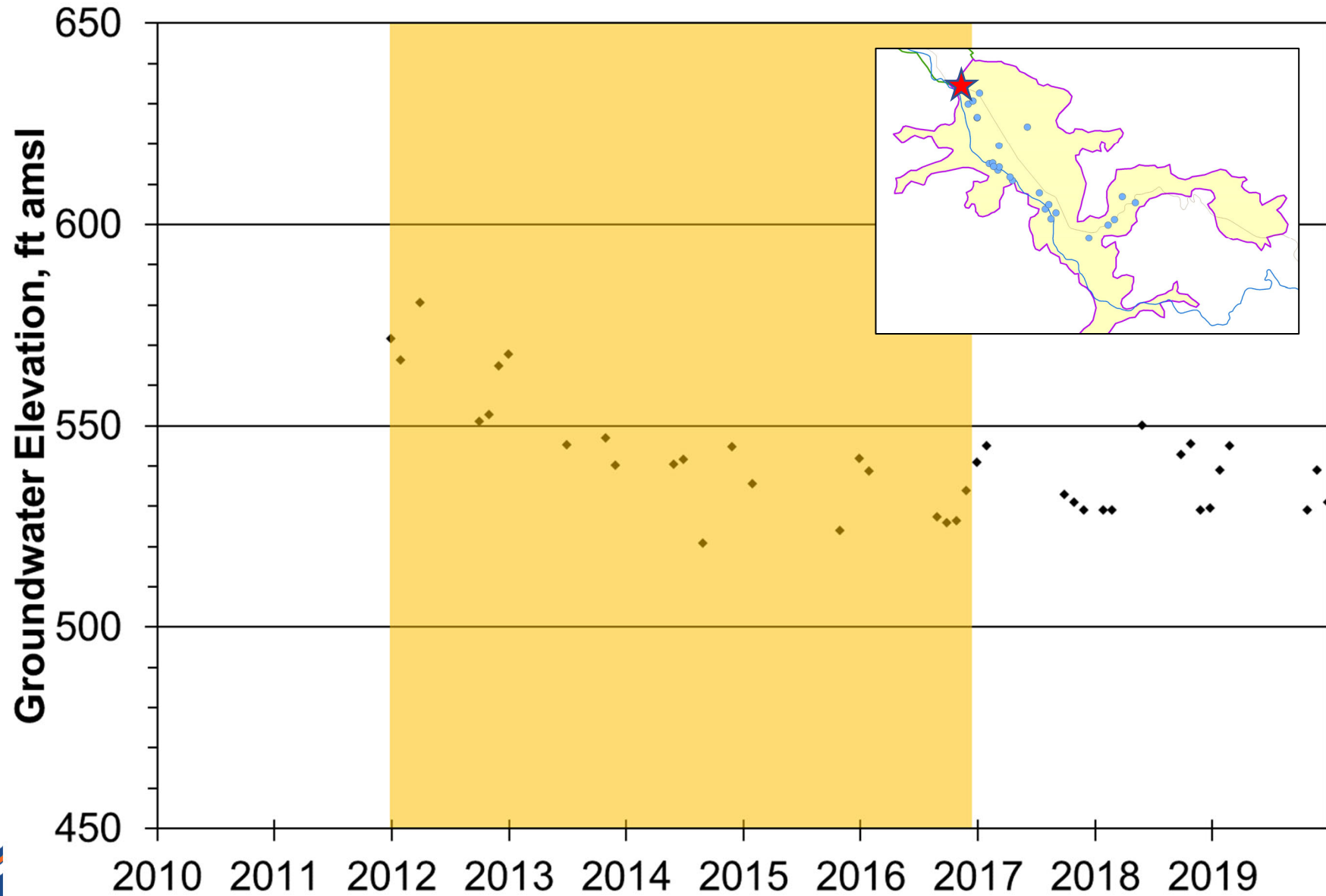
# *Selected Hydrographs*

**MW-9**









# *Selected Hydrographs*

**MW-27**

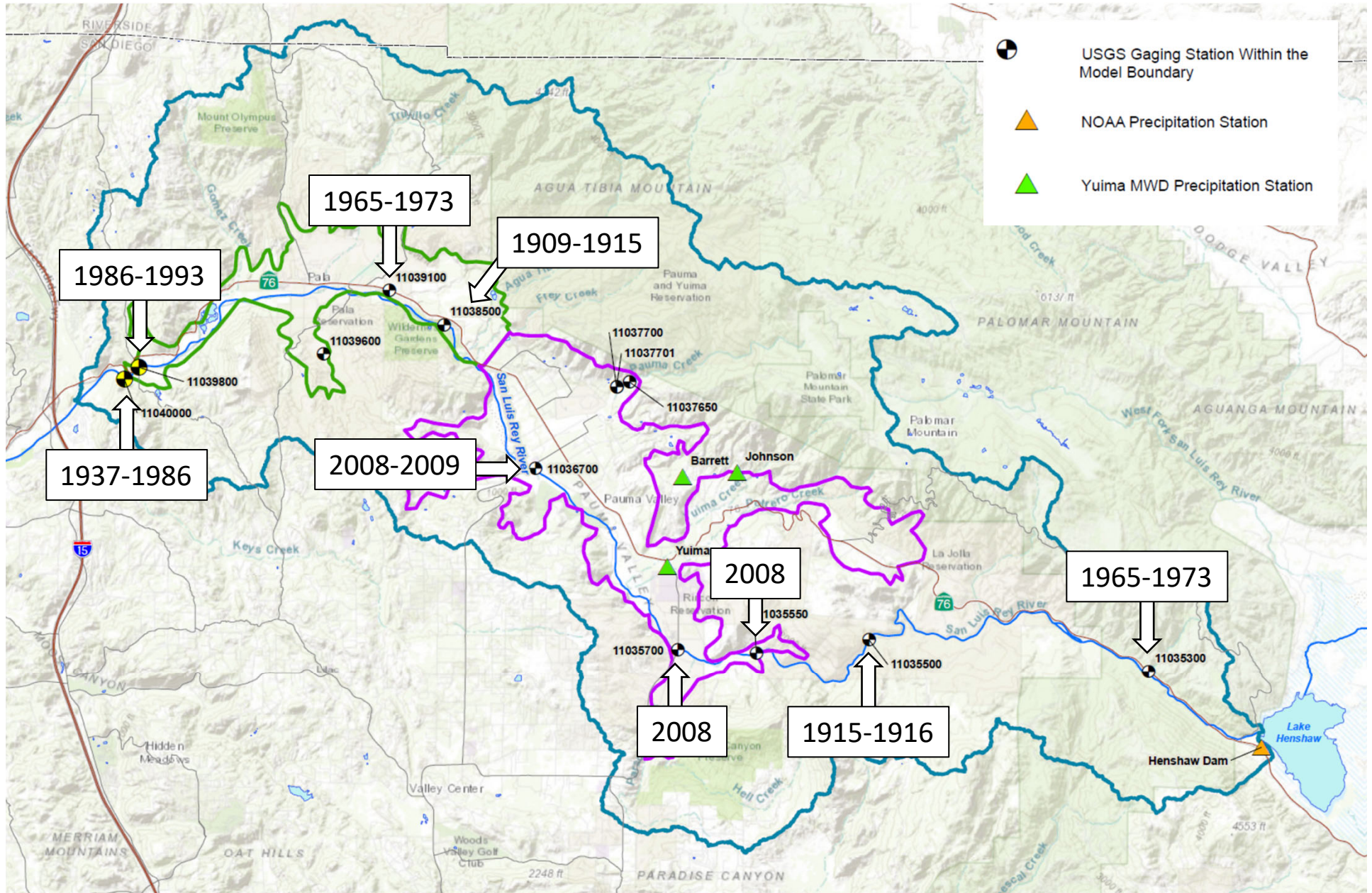


# Sustainability Goals

## Approach for Sustainability of Interconnected Surface Water



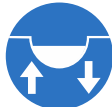



<p><b>SUSTAINABILITY INDICATOR</b></p>	 <p><b>CHRONIC LOWERING OF GROUNDWATER LEVELS</b></p>	 <p><b>REDUCTION OF GROUNDWATER STORAGE</b></p>	 <p><b>INTER-CONNECTED SURFACE WATER DEPLETIONS</b></p>	 <p><b>WATER QUALITY DEGRADATION</b></p>	 <p><b>LAND SUBSIDENCE</b></p>	 <p><b>SEAWATER INTRUSION</b></p>
<p><b>METRIC(S) USED</b></p>	<p>Groundwater elevation</p>	<p>Total volume</p>	<p>Volume or rate of surface water depletion</p>	<ul style="list-style-type: none"> <li>- Migration of plumes</li> <li>- # of Supply wells</li> <li>- Volume</li> <li>- Location of Isocontour</li> </ul>	<p>Rate and extent of land subsidence</p>	<p>Chloride Concentration Isocontour</p>

# Surface Water Flow – SLR River Gaging Stations



# Sustainability Goals

## Approach for Sustainability of Water Quality

<p><b>SUSTAINABILITY INDICATOR</b></p>	 <p><b>CHRONIC LOWERING OF GROUNDWATER LEVELS</b></p>	 <p><b>REDUCTION OF GROUNDWATER STORAGE</b></p>	 <p><b>INTER-CONNECTED SURFACE WATER DEPLETIONS</b></p>	 <p><b>WATER QUALITY DEGRADATION</b></p>	 <p><b>LAND SUBSIDENCE</b></p>	 <p><b>SEAWATER INTRUSION</b></p>
<p><b>METRIC(S) USED</b></p>	<p>Groundwater elevation</p>	<p>Total volume</p>	<p>Volume or rate of surface water depletion</p>	<ul style="list-style-type: none"> <li>- Migration of plumes</li> <li>- # of Supply wells</li> <li>- Volume</li> <li>- Location of Isocontour</li> </ul>	<p>Rate and extent of land subsidence</p>	<p>Chloride Concentration Isocontour</p>

# *Sustainability Goals for Groundwater Quality*

---

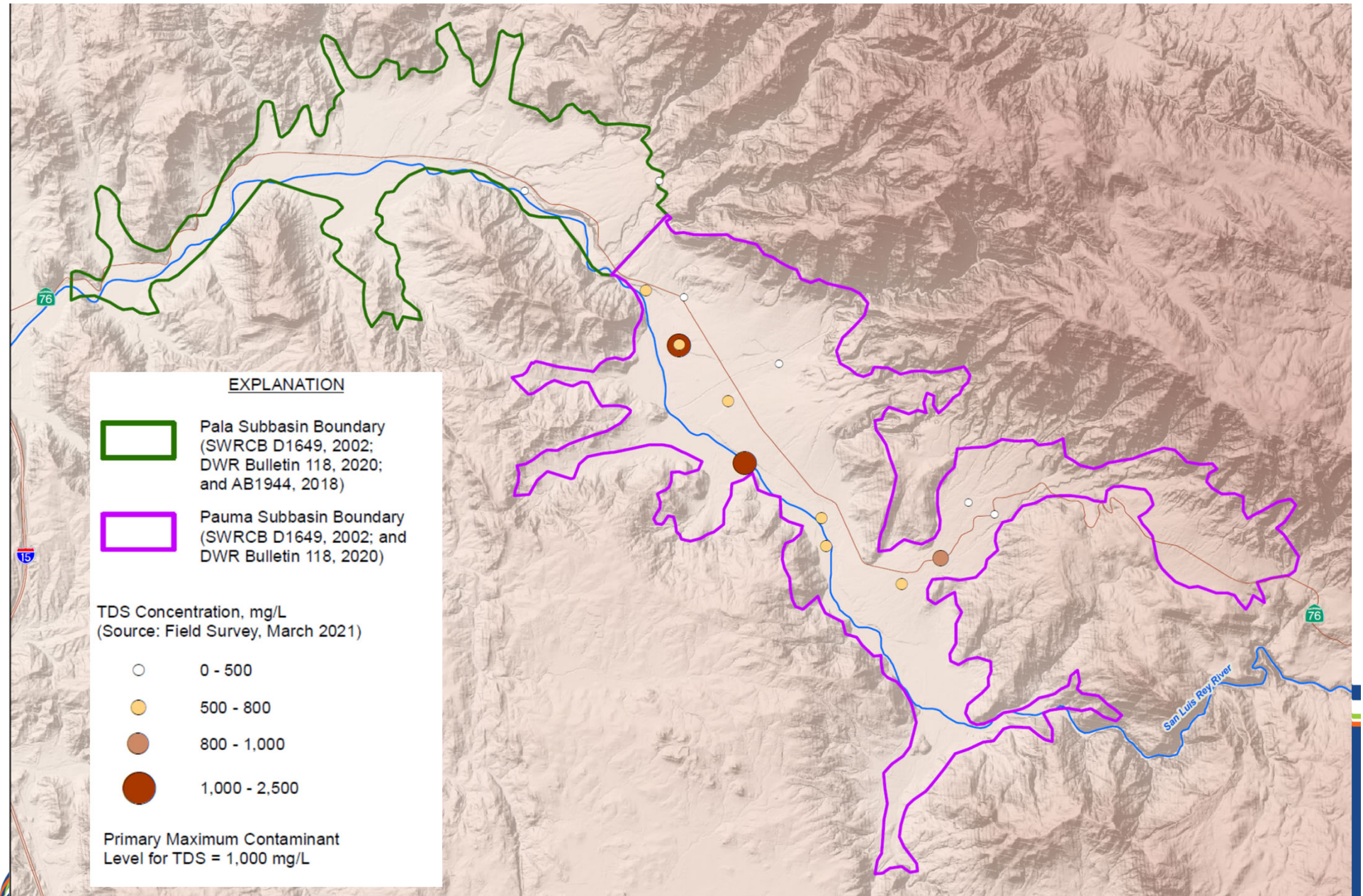
## Potential Considerations:

- **SGMA poses two questions:**
  1. Were undesirable results occurring as of the SGMA baseline of January 2015?
  2. Is there a potential for future undesirable results?
- **Other Considerations:**
  - Current groundwater quality objectives
    - *TDS = 800 mg/L (Pauma) and 900 mg/L (Pala)*
    - *Nitrate (as NO<sub>3</sub>) = 45 mg/L (Pauma and Pala)*
  - Suitability of groundwater for agricultural use
    - *Per Stetson (1984) yield is impaired when TDS surpasses:*
      - *575 mg/L for avocados*
      - *700 mg/L for citrus*
  - Average groundwater concentration?

Pauma Valley GSA

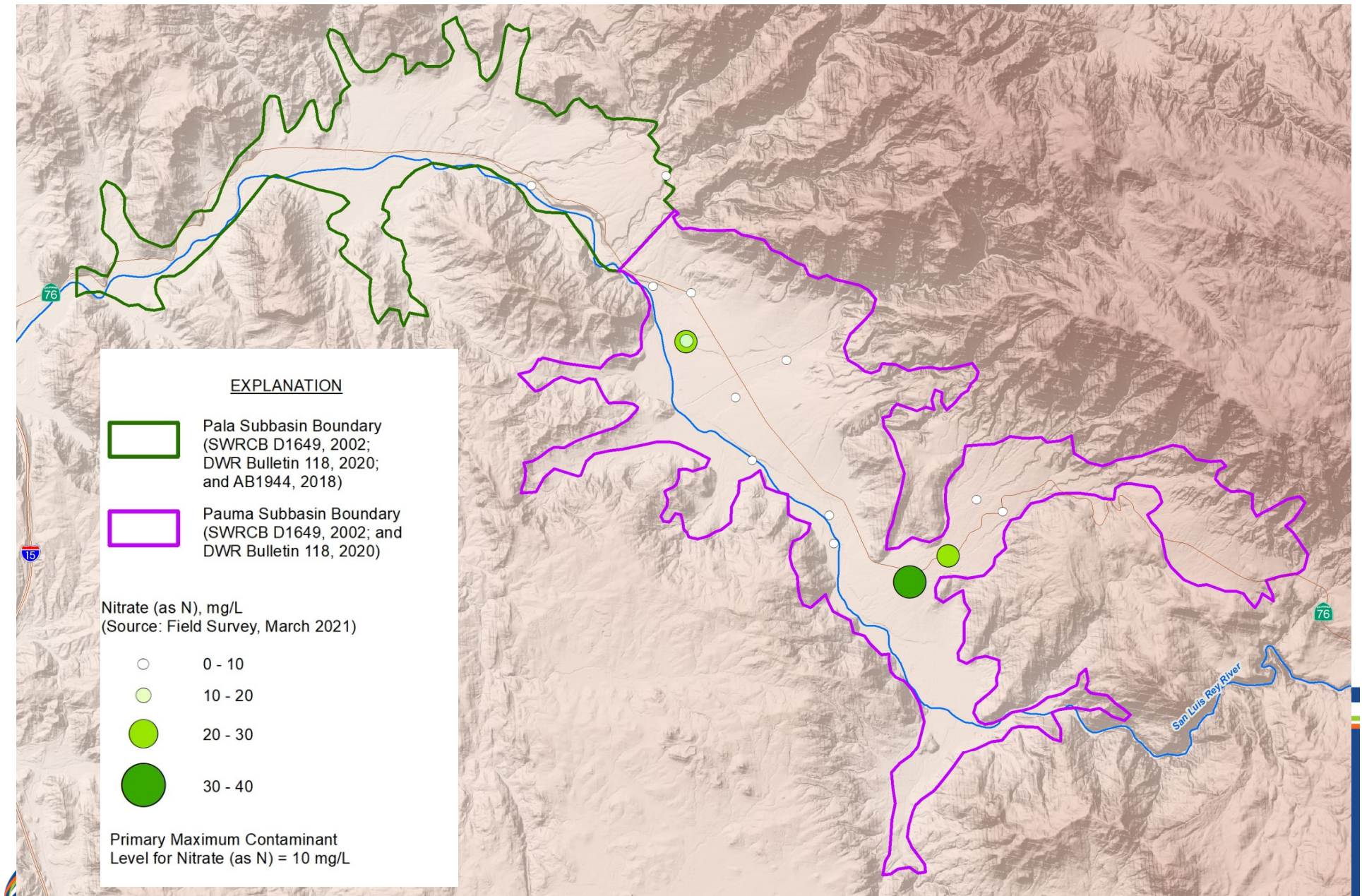
*GEOSCIENCE*

# Current Groundwater Quality – TDS





# Current Groundwater Quality – Nitrate



# Current Groundwater Quality

Monitoring Well	Nitrate		TDS
	as N	as NO <sub>3</sub> *	
	[mg/L]		
	State MCL = 10	Basin Obj. = 45	Basin Obj. = 800 State MCL = 1,000
MW-1	9.3	41.2	400
MW-2	8.7	38.5	490
MW-4	<b>21</b>	<b>93.0</b>	<b>850</b>
MW-5	<b>32</b>	<b>141.7</b>	760
MW-6	3.4	15.1	680
MW-9	2.5	11.1	530
MW-12	2.8	12.4	<b>1,400</b>
MW-18	< 0.20	< 0.9	240
MW-19	9.8	43.4	540
MW-21	10	44.3	530
MW-22	<b>23</b>	<b>101.8</b>	<b>1,100</b>
MW-25	1.6	7.1	340
MW-27	4.7	20.8	530
MW-29	< 0.20	< 0.9	120
MW-30	4.2	18.6	310

\*estimated based on measured Nitrate as N concentration (= [N] x 4.4268)