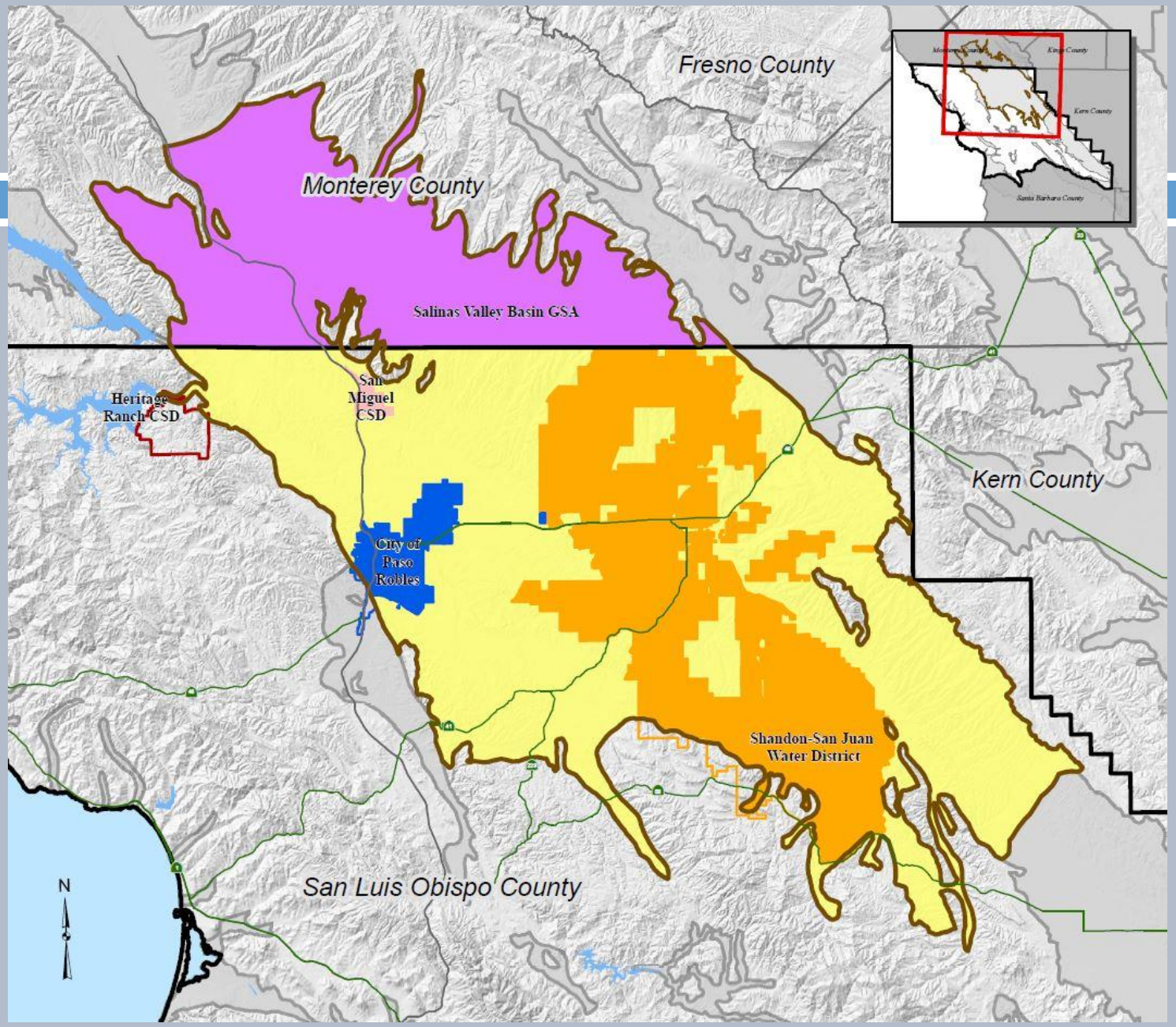
- City of Paso Robles GSA Coverage Area
- Heritage Ranch CSD GSA Coverage Area
- Paso Basin – County of San Luis Obispo GSA Coverage Area
- Salinas Valley Basin GSA- Monterey County Coverage Area
- San Miguel CSD GSA Service Area
- Shandon-San Juan Water District GSA Coverage Area



PASO ROBLES SUBBASIN GSP DEVELOPMENT

Project Status and SMC Update

Paso Robles Basin GSAs

City of Paso Robles

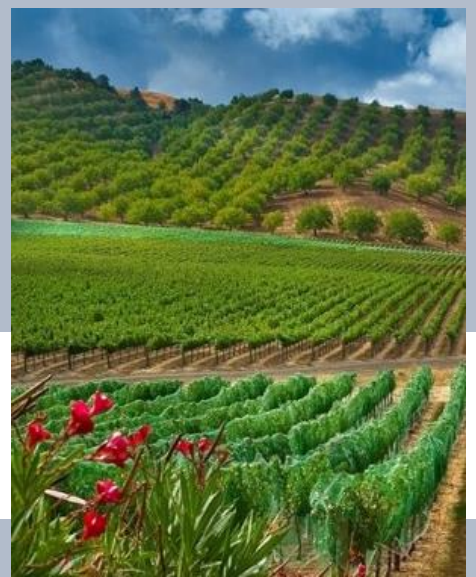
County of San Luis Obispo

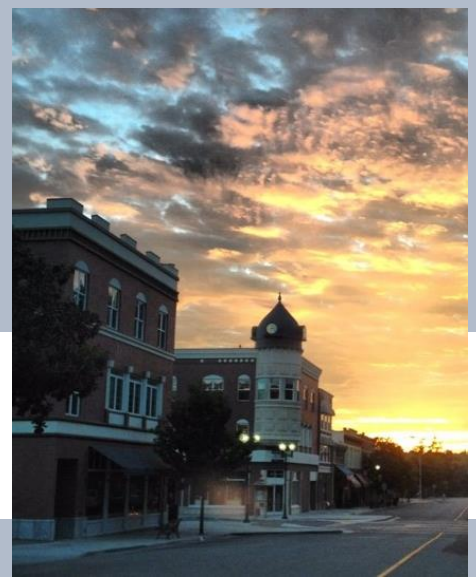
Heritage Ranch CSD

San Miguel CSD

Shandon-San Juan Water District

October 4, 2018



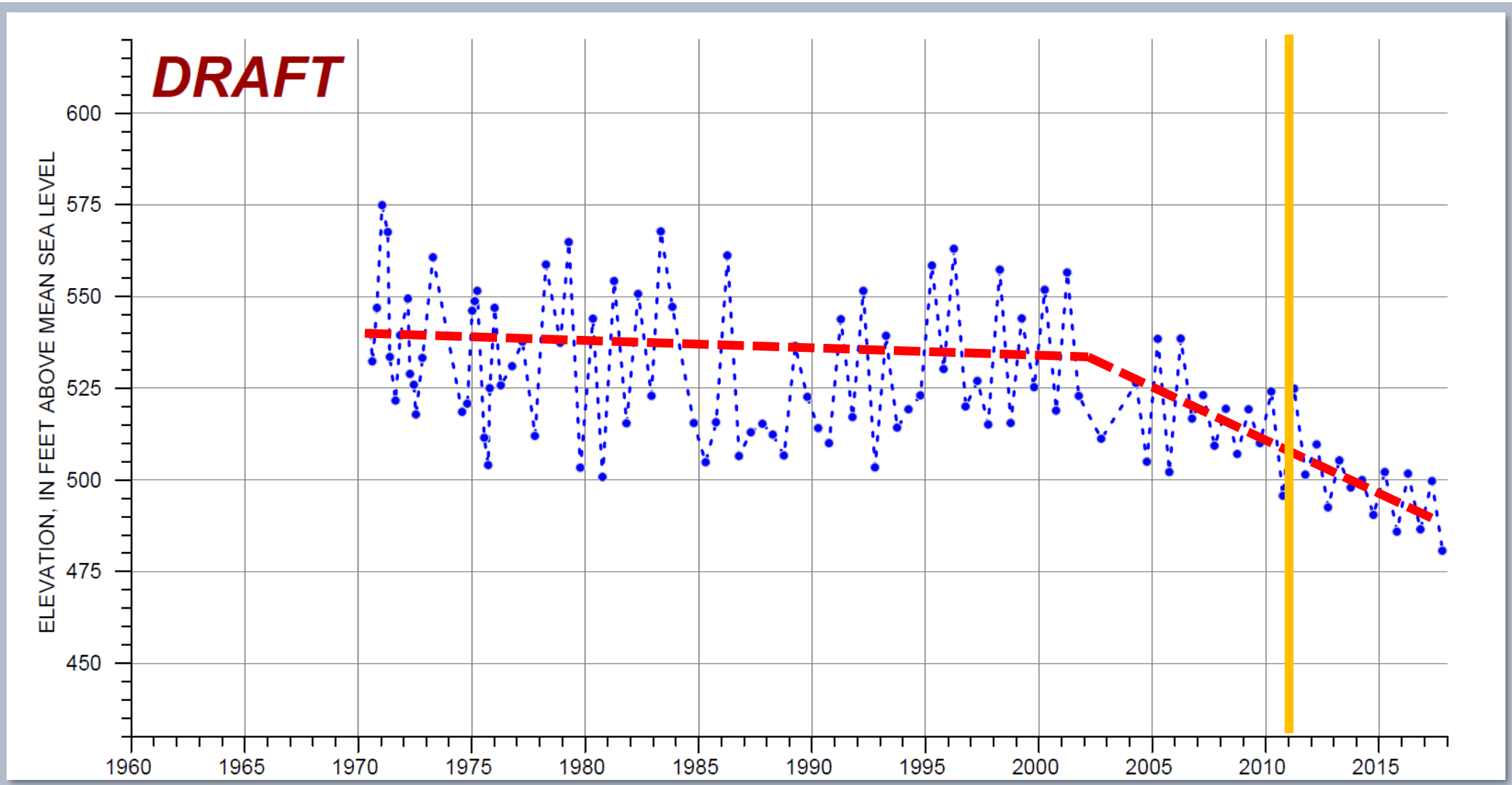


Presentation Outline

- Groundwater Conditions and Water Budgets
- Sustainable Management Criteria

Groundwater Conditions and Water Budgets

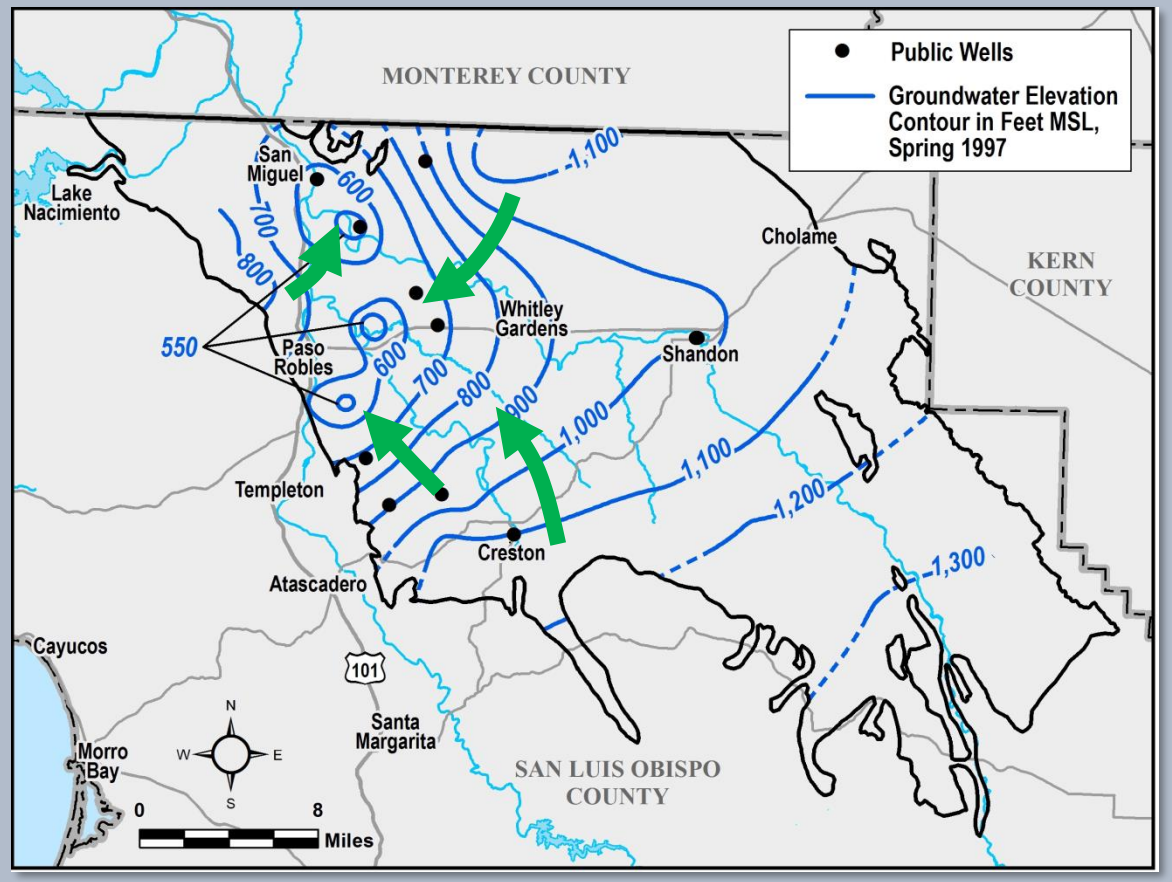
Example Groundwater Elevation Hydrograph



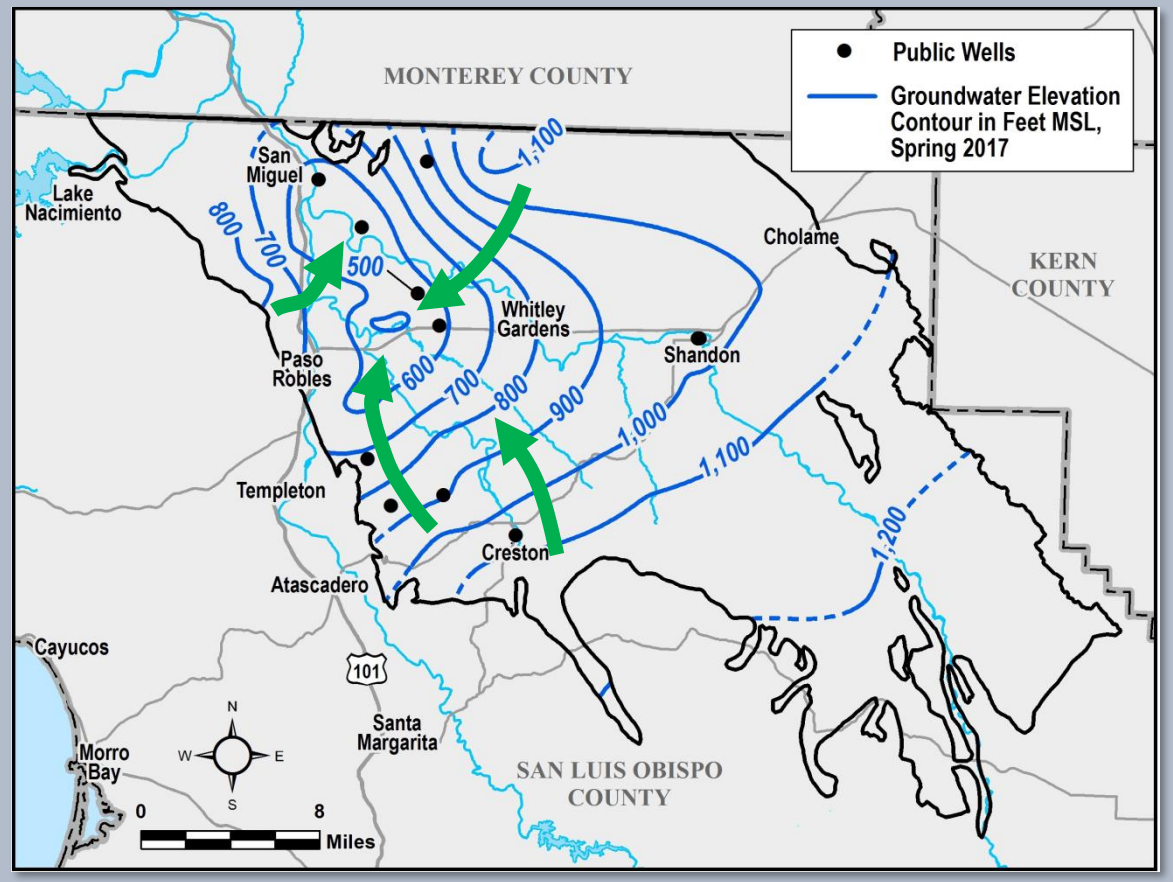
Groundwater Elevation Contour Maps

Paso Robles Formation Aquifer

1997



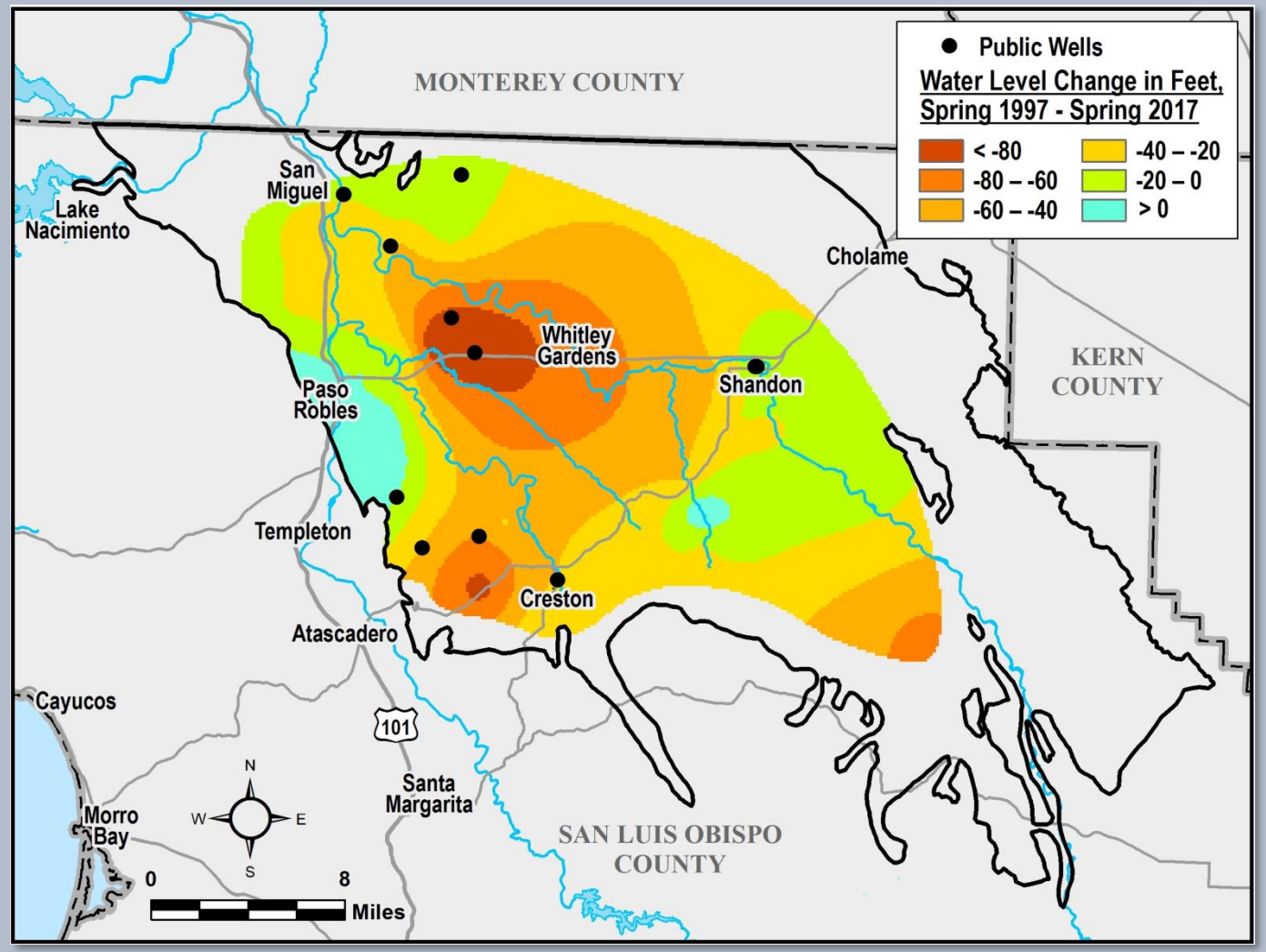
2017



Inferred Groundwater Flow Direction

Change in Spring Groundwater Elevations

1997 to 2017 – Paso Robles Formation Aquifer



Observations:

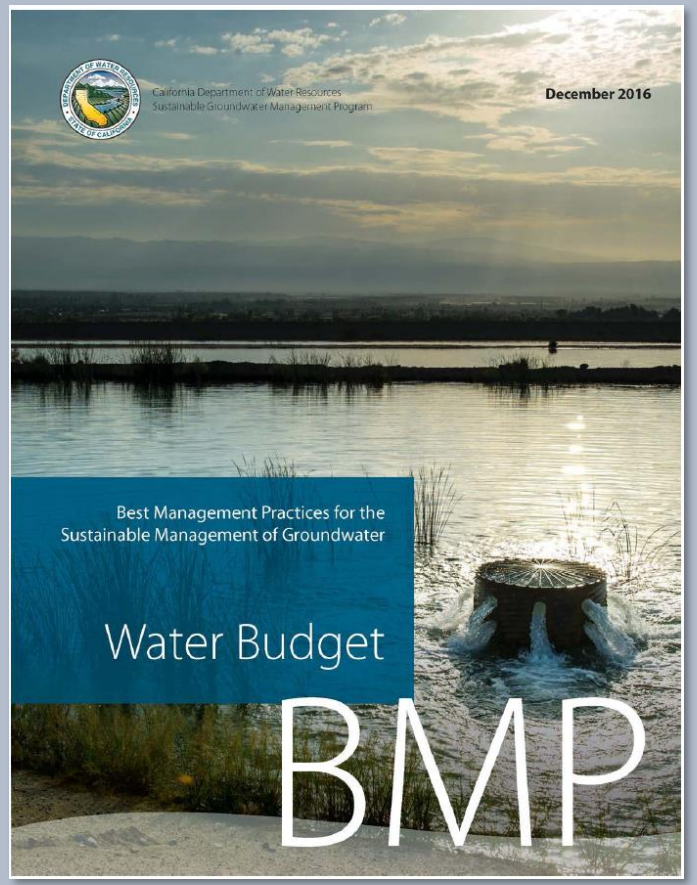
- Decline in GW elevation over most of subbasin
- Areas of largest decline in Estrella and Creston areas
- Declines in groundwater elevations result in depletion of groundwater in storage

Basics of Water Budgets

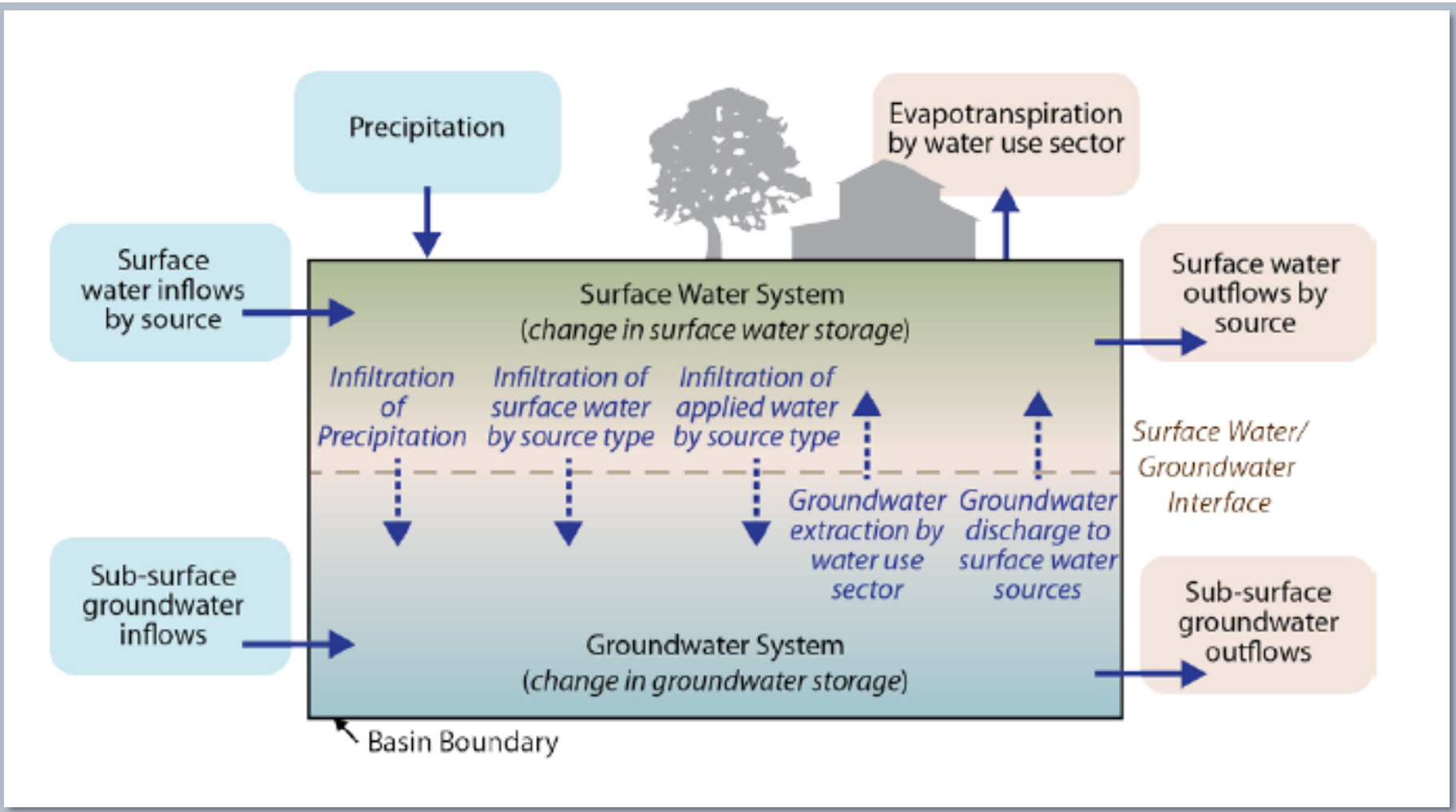
- CA CCR §354.18 & Best Management Practices document

- Three water budgets for GSP:
  1. Historic (1981-2011)
  2. Current (2012-2016)
  3. Future (2020-2070)

- Water budget must include:
  - Inventory all inflows (supply) and outflows (demand)
  - Evaluate changes in groundwater storage
  - Estimate groundwater overdraft
  - Estimate sustainable yield



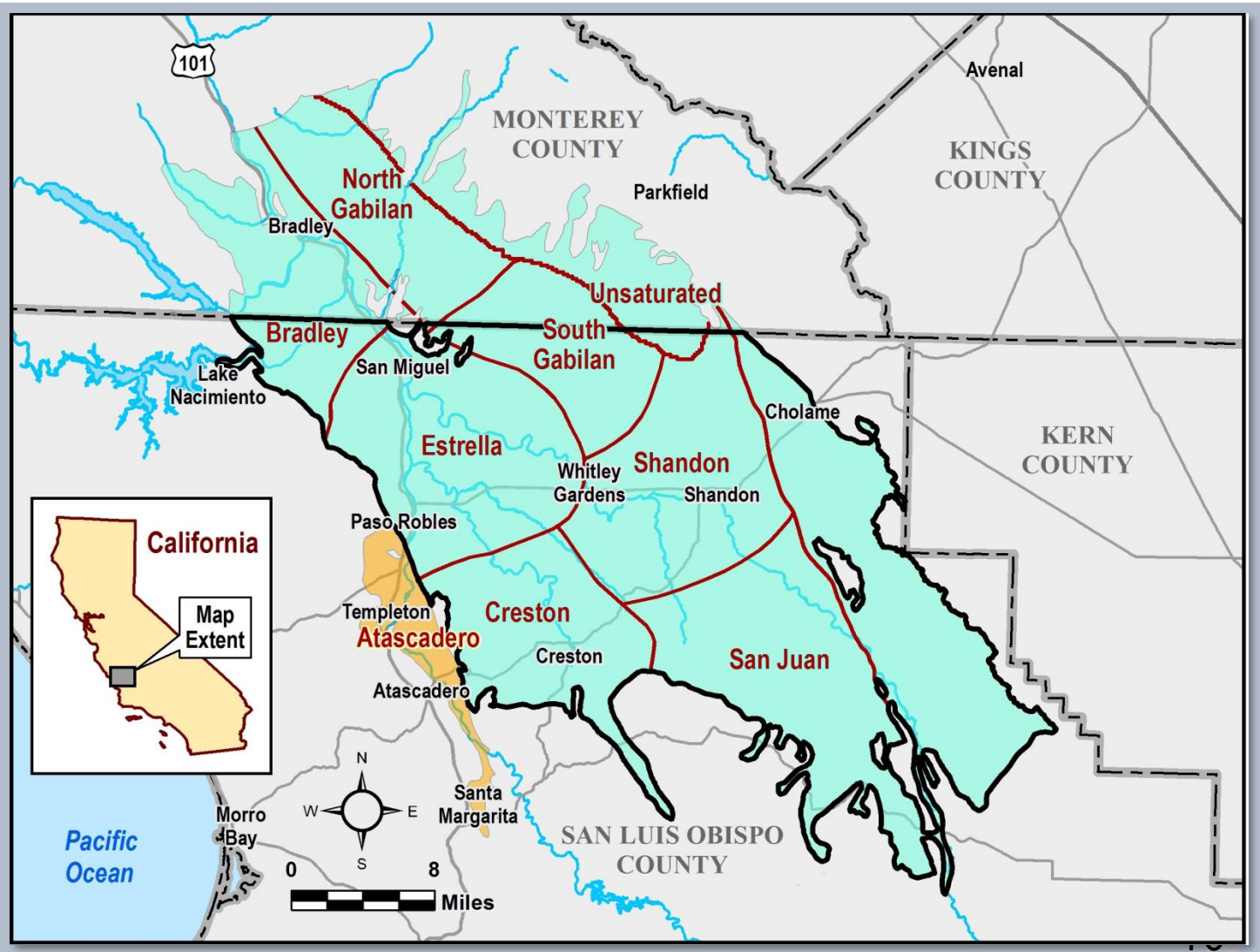
Water Budget Diagram



California Department of Water Resources, 2016

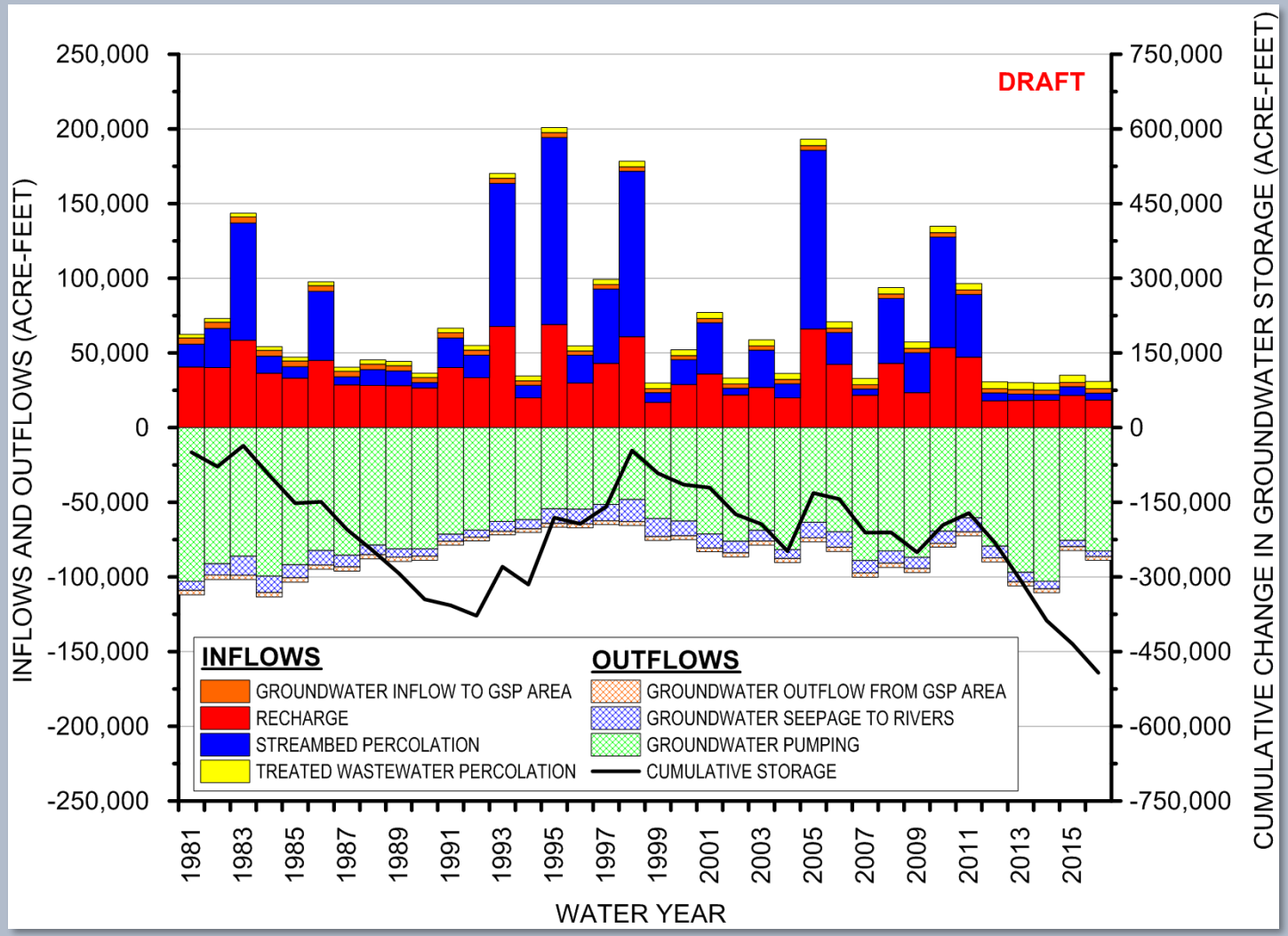
GSP Water Budgets

- Previous water budgets:
  - Entire Paso Robles Subbasin
  - Included Atascadero Subbasin
- GSP water budgets:
  - GSP area* (outlined in black)
  - Informal subareas



* Paso Robles Subbasin within County of SLO

Water Budget for GSP Area



Observations

- Streambed percolation important for recharging Subbasin
- Groundwater pumping dominant outflow
- Loss of groundwater in storage
  - 1981 to 2011 about 170,000 AF
  - 1981 to 2016 about 490,000 AF

Estimated Groundwater Overdraft (GSP Area)

- Hydrogeologic definition of overdraft: *long-term condition of total outflow (including pumping) exceeding total inflow*
- Overdraft causes a loss of groundwater in storage
- Estimated overdraft conditions:
  - 1981 – 2011 (pre-drought): 5,500 AFY
  - 1981 – 2016 (includes drought): 13,700 AFY
- Provides basis for developing projects & management actions

Groundwater Overdraft (Subareas)

Subarea	1981 to 2011 Average Overdraft (AFY)	1981 to 2016 Average Overdraft (AFY)
Estrella	- 6,100	- 8,400
San Juan	- 2,800	- 4,100
Creston	300	- 1,900
Shandon	700	- 700
Bradley	-	- 200
North Gabilan	100	100
South Gabilan	2,200	1,500

AFY = acre feet per year

Estimated Sustainable Yield for GSP Area

- Definition: *maximum quantity of water, calculated over a base period representative of long-term conditions in the basin, and including temporary surplus that can be pumped annually from groundwater supply without causing an undesirable result* (DWR, 2016)

- 1981 to 2011 *
  - Total estimated groundwater pumping: 74,000 AFY
  - Estimated overdraft: 5,500 AFY
  - Estimated sustainable yield: 68,500 AFY

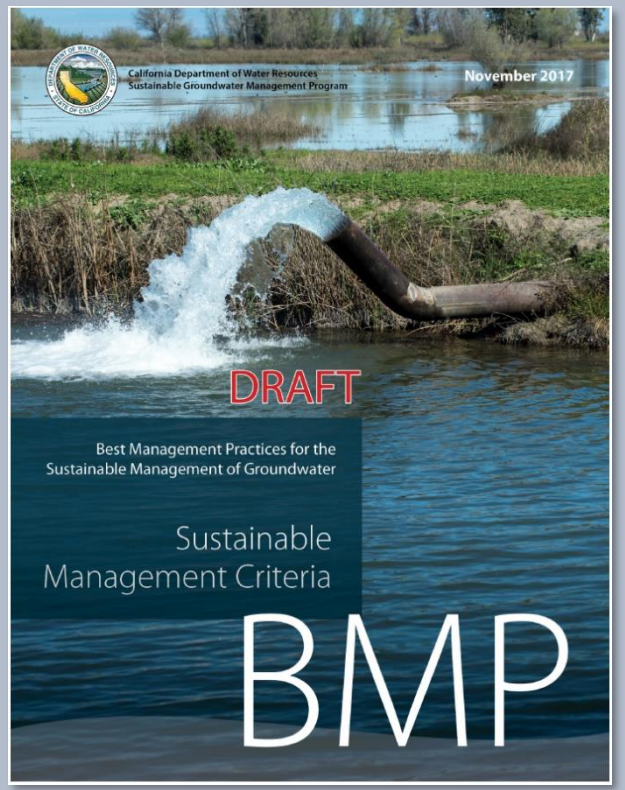
- 1981 to 2016 *
  - Total estimated groundwater pumping: 76,000 AFY
  - Estimated overdraft: 13,700 AFY
  - Estimated sustainable yield: 62,300 AFY

* All values are annual averages

Future Water Budgets

- In progress
- Purpose is to project overdraft if existing land uses continued
- Conceptual approach:
  - Use average historical precipitation, evapotranspiration, streamflow data
  - Use existing agricultural and rural residential demands
  - Include effects of future changes in urban water demand
  - Include effects of climate change based on DWR data
- Supports evaluation of sustainability projects and management actions

Sustainable Management Criteria (SMC)



Two Primary Functions of a GSP

- Define sustainability
  - The goal of what your basin will look like in 20 years (where are we going)
  - Defined using Sustainable Management Criteria
  - Today's focus
- Develop projects and actions to achieve sustainability
  - A description of how you're going to get to your goal (how are we getting there.
  - Roll out ideas in October – December

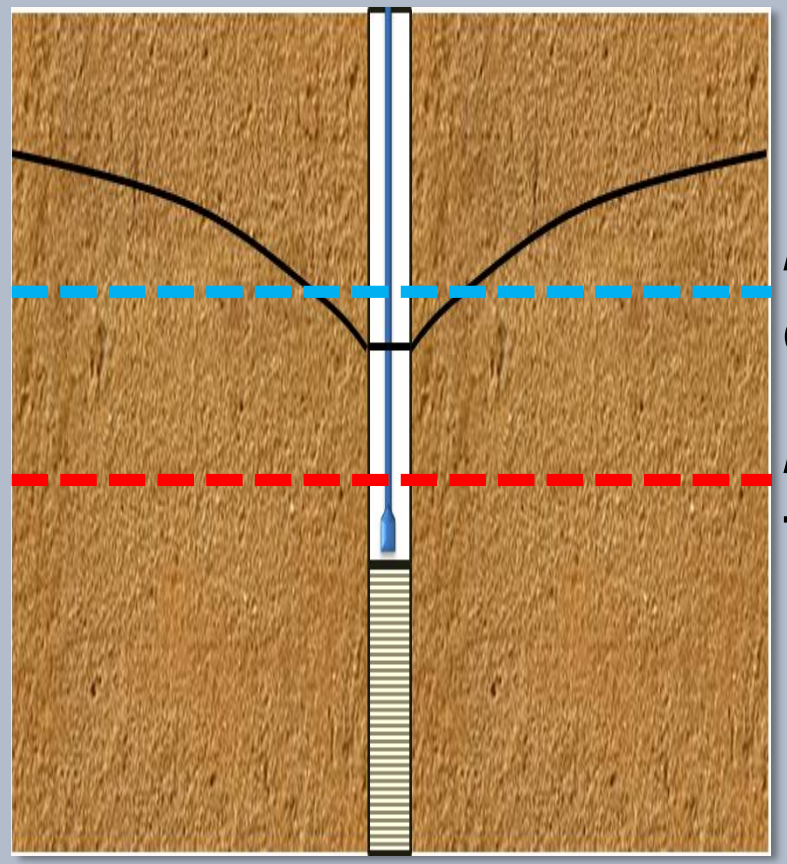
These two functions are closely related. This is an iterative process

Sustainability Indicators

- Establish three SMC for applicable sustainability indicators
  - Measurable Objectives
  - Minimum Thresholds
  - Undesirable Results
- Today's presentation focuses on
  - Chronic lowering of GW levels
  - Measurable Objectives and Minimum Thresholds

Measurable Objectives and Minimum Thresholds
Chronic Lowering of Groundwater Levels

- Measurable Objectives
  - Average water levels in wells in 2040
  - Include operational flexibility (e.g., account for droughts)
- Minimum Thresholds
  - Minimum water levels in wells
  - Exceedance may lead to undesirable result (e.g., wells going dry)

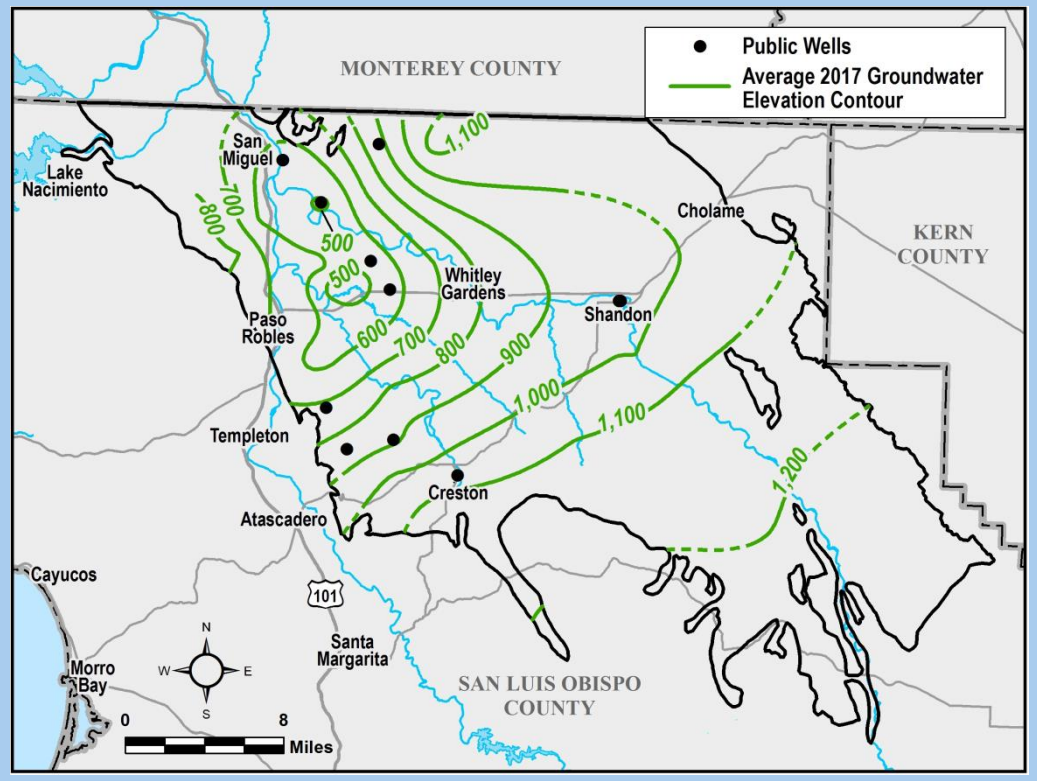


Information Used for Paso Robles GSP Measurable Objectives and Minimum Thresholds

- Groundwater levels at wells
  - "Measurable Objectives shall be based on quantitative values"
- Preferences of basin stakeholders from survey
- Check to avoid undesirable conditions
  - Undesirable conditions are adverse impacts to beneficial groundwater uses and users
  - Rural residential, agriculture, & municipalities need access to the groundwater resource

Process for Establishing Measurable Objectives
Chronic Lowering of Groundwater Elevations

2017 Average Groundwater Levels

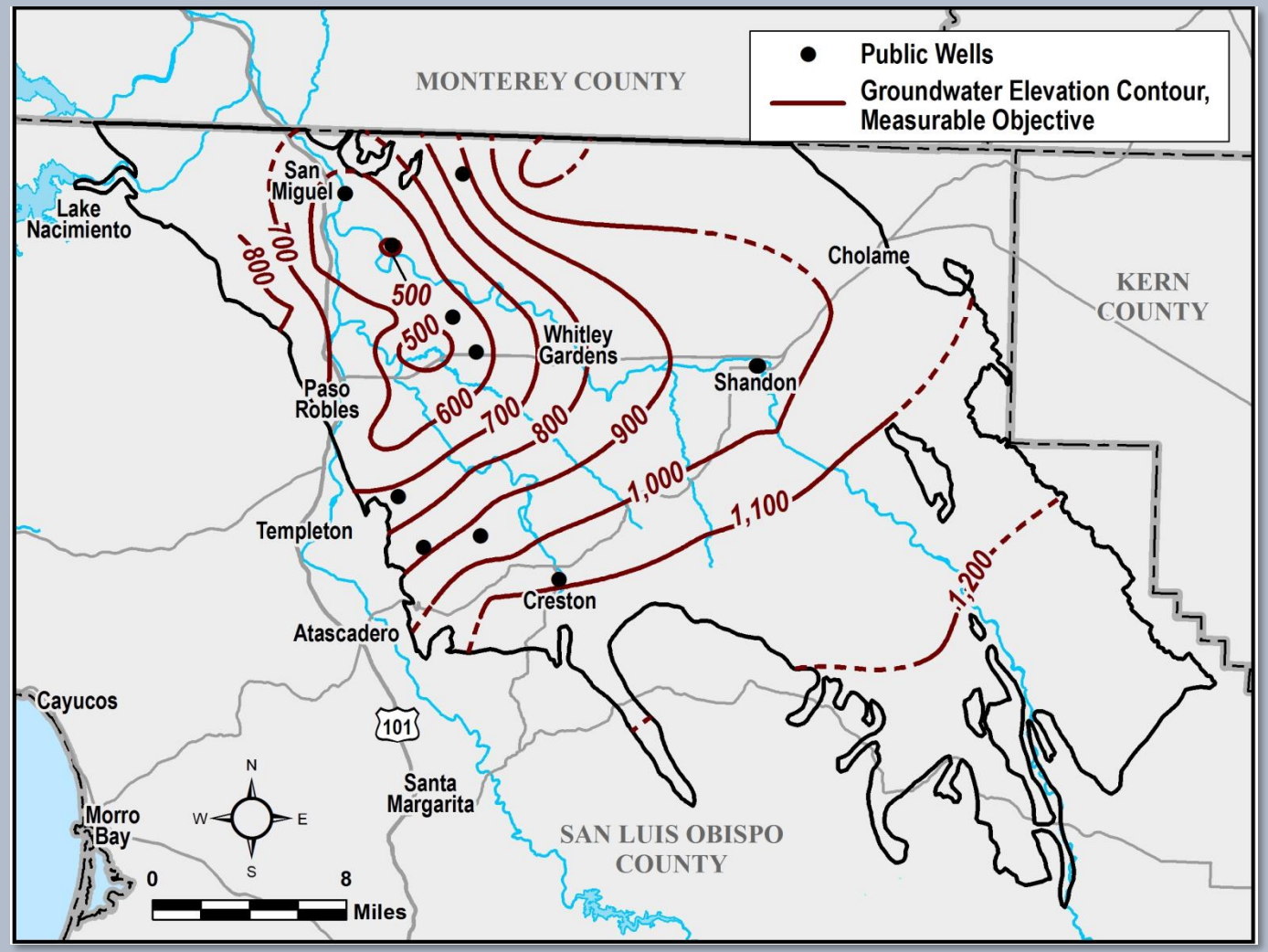


SMC Survey Results

- Estrella – majority prefer current WLs
- Creston – majority prefer higher WLs similar to 10 years ago
- Shandon – majority prefer current WLs

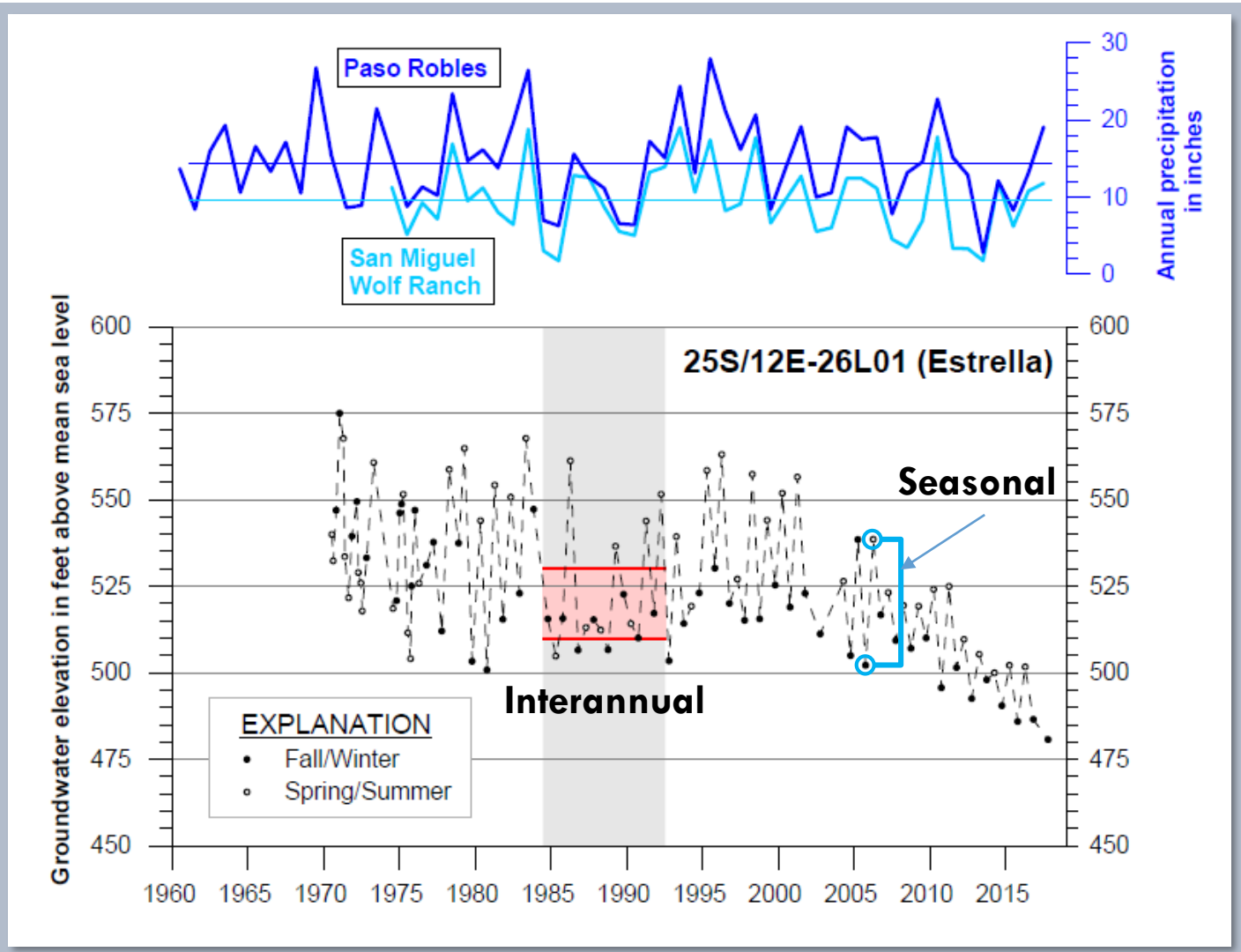
Map of Measurable Objectives

Preliminary Measurable Objectives Map
Chronic Lowering of Groundwater Elevations

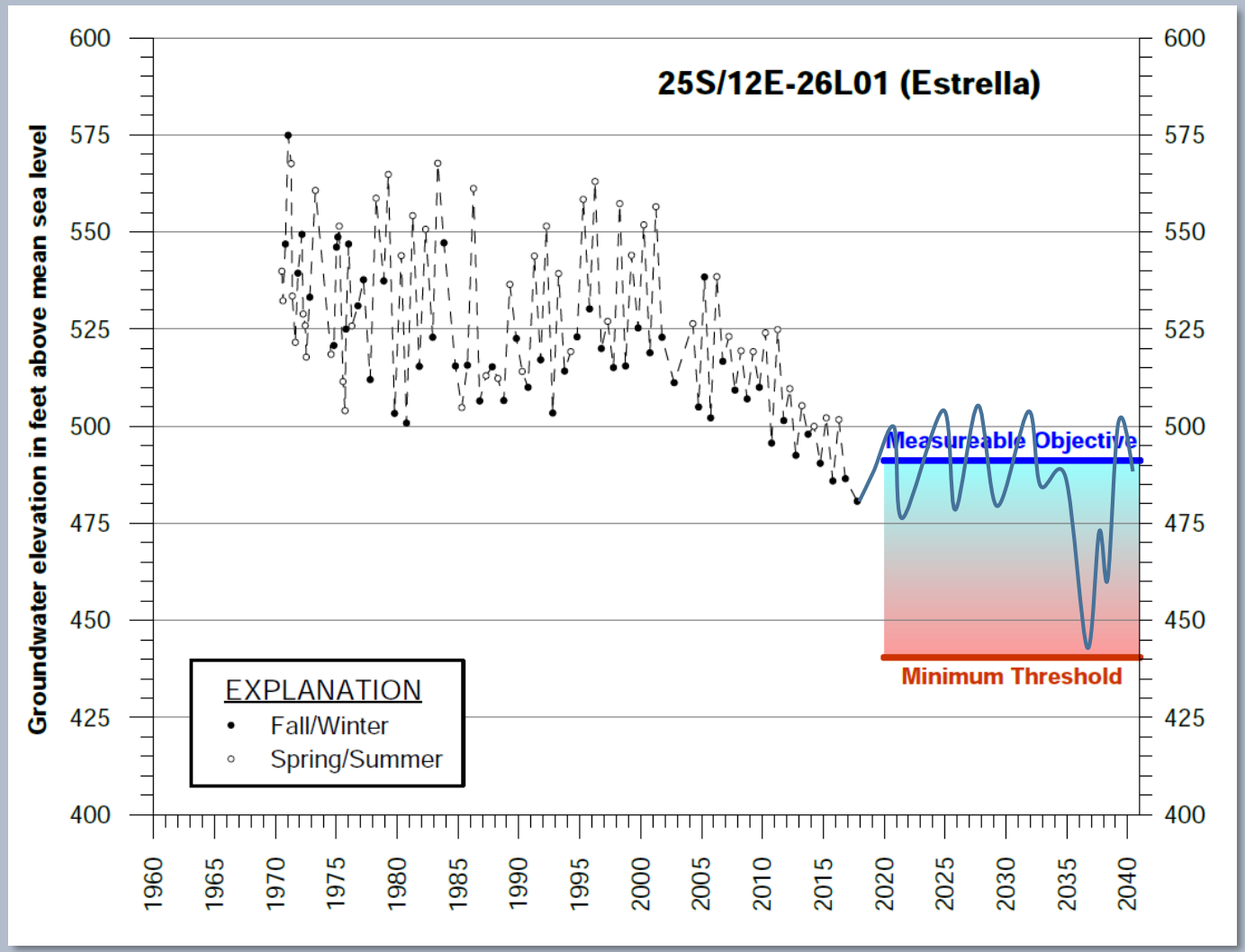


Map shows conceptual groundwater elevations in 2040

Variability in Groundwater Elevation



Measurable Objective and Minimum Threshold at Example Estrella Well



Survey indicated current groundwater elevations in Estrella are preferred

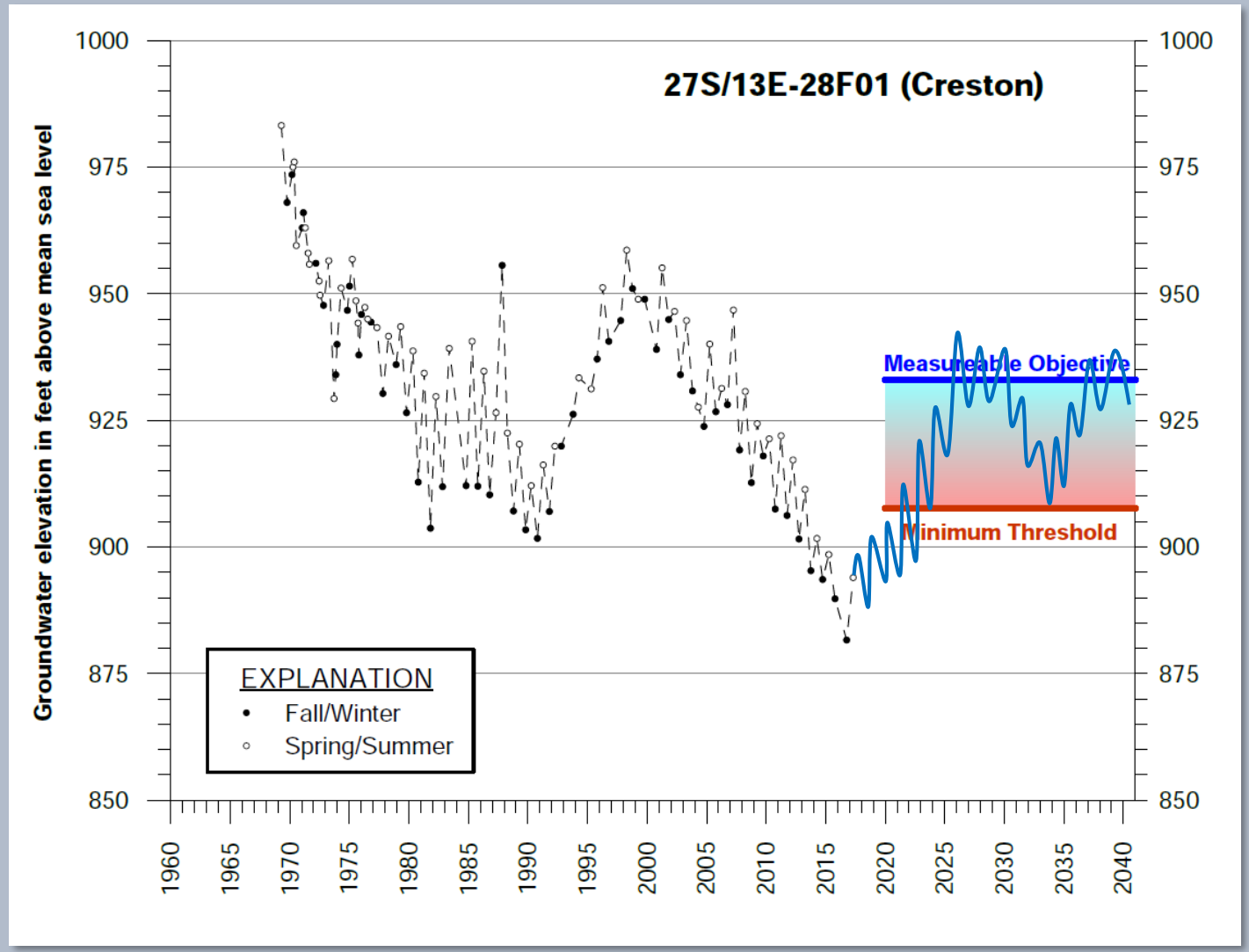
Measurable Objective

- Average 2017 groundwater elevation (~490 ft MSL)

Minimum Threshold

- 50 feet lower than Measurable Objective to account for groundwater level variability

Measurable Objective and Minimum Threshold at Example Creston Well



Survey indicated higher groundwater elevations in Creston are preferred (about 2007)

Measurable Objective

- Average 2007 groundwater elevation (~933 ft MSL)

Minimum Threshold

- 26 feet lower than Measurable Objective to account for groundwater level variability

SMC Hydrograph Questions

- Are the measurable objectives acceptable to you?
- Are the minimum thresholds acceptable to you?
- Are you willing to pay more if you want to raise the minimum thresholds?
- Have we understood the concerns about groundwater levels correctly?

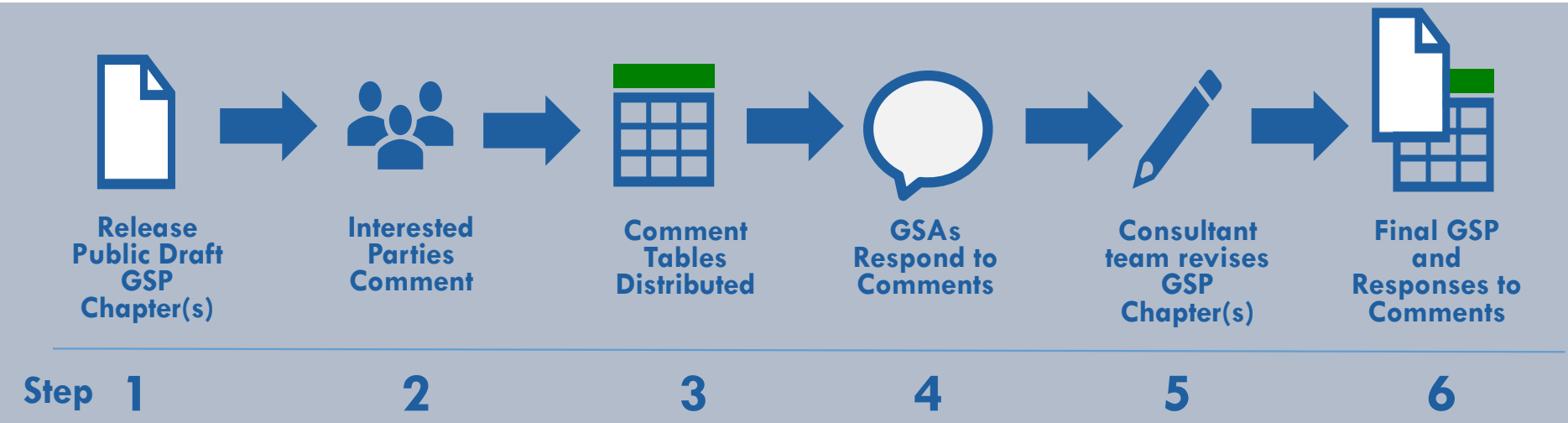
How can you get involved?

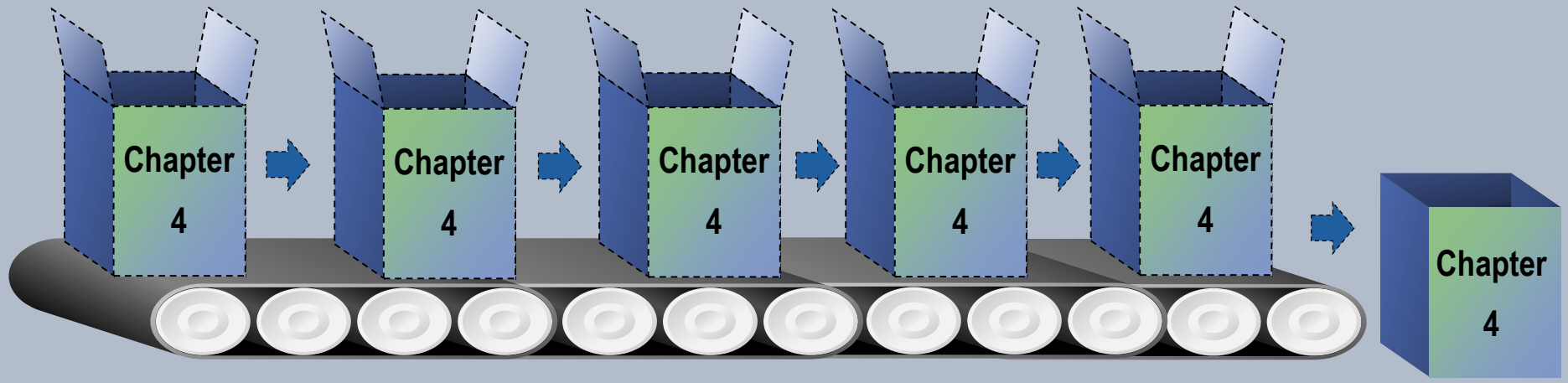
- Visit www.pasogcp.com
  - Join email list & stay informed
  - View draft GSP Sections
  - Download & submit Comment Form

- Visit www.slocountywater.org/sgma
  - Join email list & stay informed
  - Check interactive map

- Attend **Cooperative Committee meetings**

Public Comment Process





Thank you!

For more information, join our email list:
www.slocountywater.org/sgma