San Benito County Water District
Groundwater Sustainability Agency

Workshop

Sustainable Groundwater Management: North San Benito Groundwater Basin

December 9, 2020

Agenda

- **Overview: Sustainable Groundwater Management Act (SGMA) and Groundwater Sustainability Plan (GSP)**
- North San Benito Basin
- Water Budget and Sustainable Yield
- Sustainability Criteria
- Next Steps: Monitoring and Management

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Sustainable Groundwater Management Act (SGMA)

Landmark legislation in 2014- based on local control

Includes comprehensive requirements and deadlines for:

- Forming a groundwater sustainability agency (GSA)
- Preparing a groundwater sustainability plan (GSP)
- Implementing the GSP
  - Expanded groundwater monitoring and annual reporting
  - Five-year updates
  - Projects and management actions/programs

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SGMA and the GSP Process

June 2017: GSAs formed:
San Benito County Water District GSA
Santa Clara Valley Water District GSA
(Valley Water)

June 2018: GSP started

January 2022: GSP completion

2040/2042
Achieve and
demonstrate
sustainability

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The GSP builds on existing management

- Management of local groundwater
- Development of local surface water supplies
- Importation of CVP water
- Water recycling and water conservation
- Monitoring
- Collaboration with local agencies
- Annual Groundwater Reports

SGMA has rigorous requirements and reporting

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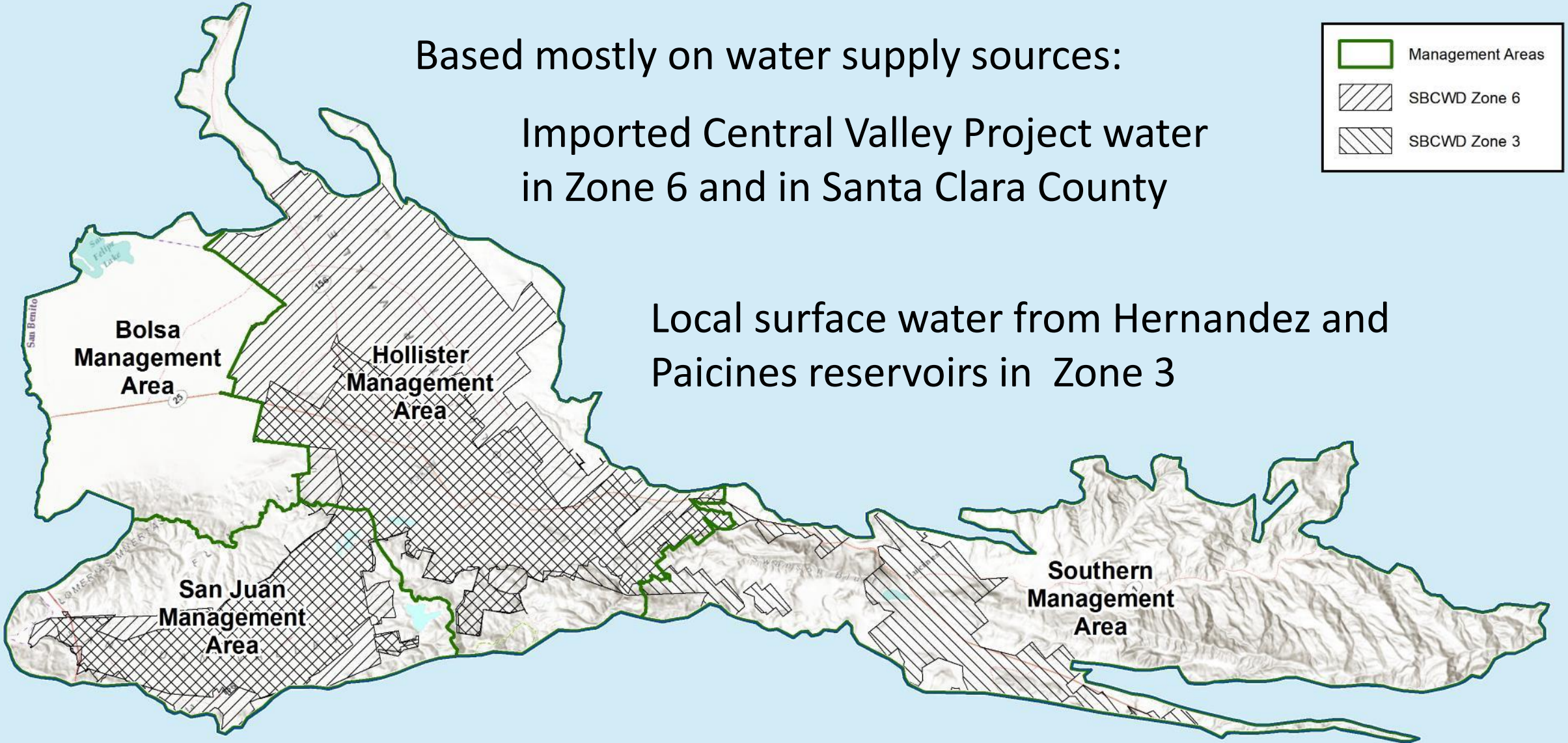
North San Benito Groundwater Basin
Merced County
San Benito County
Santa Clara County
San Benito County
Pacheco Creek
Arroyo de las Viboras
Pacheco Creek
Hollister
Tres Pinos
Tres Pinos Creek
San Benito River
San Benito River
Pajaro River
San Juan Bautista
Paicines
DIABLO RANGE
SANTA ANA VALLEY
COYOTE VALLEY
DAIRY FLAT
CALL MOUNTAIN
FLINT HILLS
MESSIC MOUNTAIN
THREE SISTERS
ELEPHANT HEAD
BULLARD MOUNTAIN
CHRISTENSEN RANCH AIRPORT
HOLLISTER MUNI AIRPORT
Bolsa Rd
McCloskey Rd
Union Rd
San Juan Rd
Panoche Rd
Cienega Rd
Hollister Rd
Shore Rd
Fairview Rd
San Benito St
San Felipe Rd
Crittenden Rd
San Juan Hwy
Airline Hwy
25
0
6,000
12,000
Scale in Feet

One Basin with Four Management Areas (MAs)

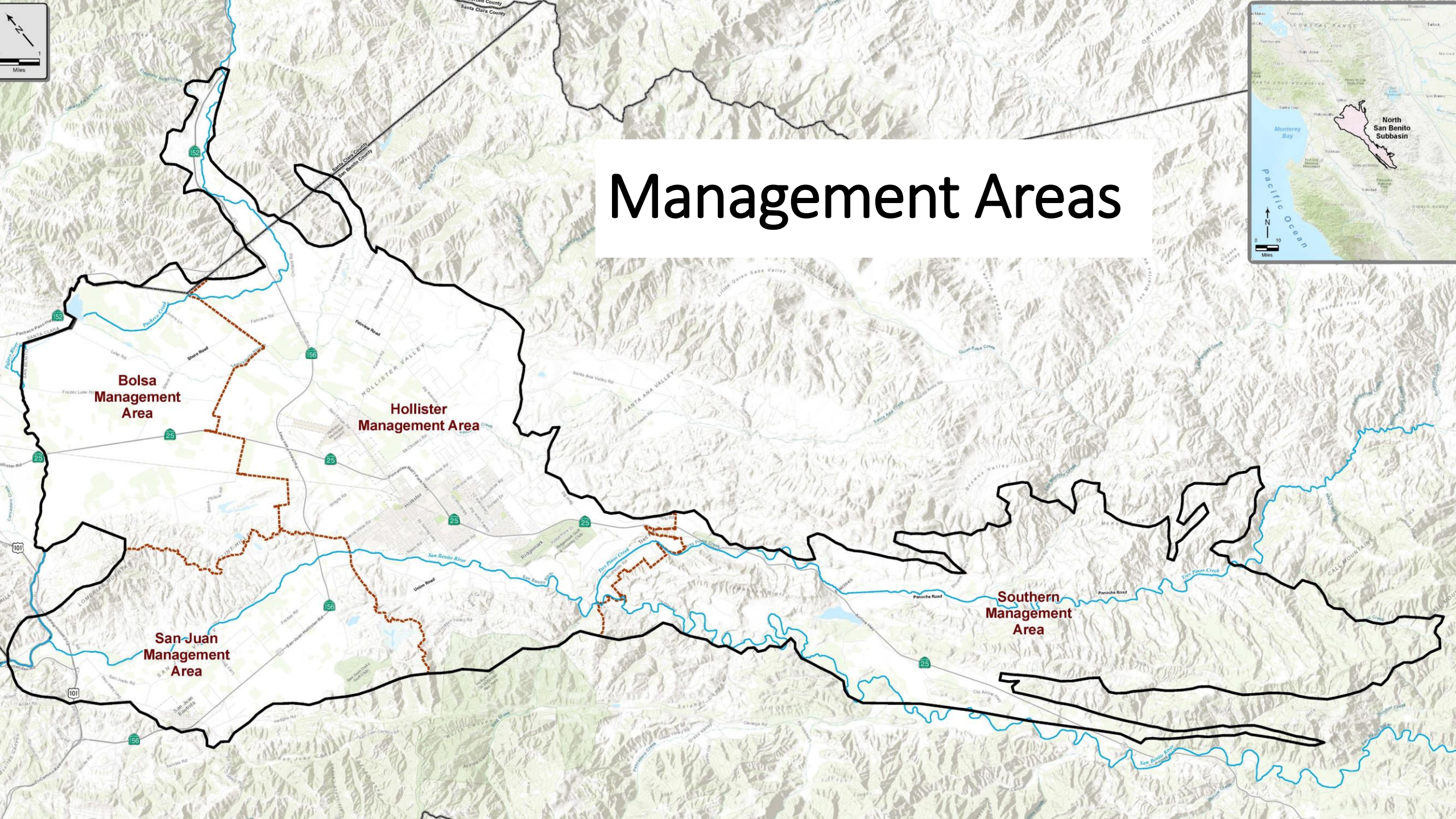
Based mostly on water supply sources:

Imported Central Valley Project water in Zone 6 and in Santa Clara County

Local surface water from Hernandez and Paicines reservoirs in Zone 3



Management Areas



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What is a Water Budget?

Inflows – Outflows = Change in Storage

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Water Budget

- Addresses climate, surface water and groundwater
- Quantified using linked computer models to:

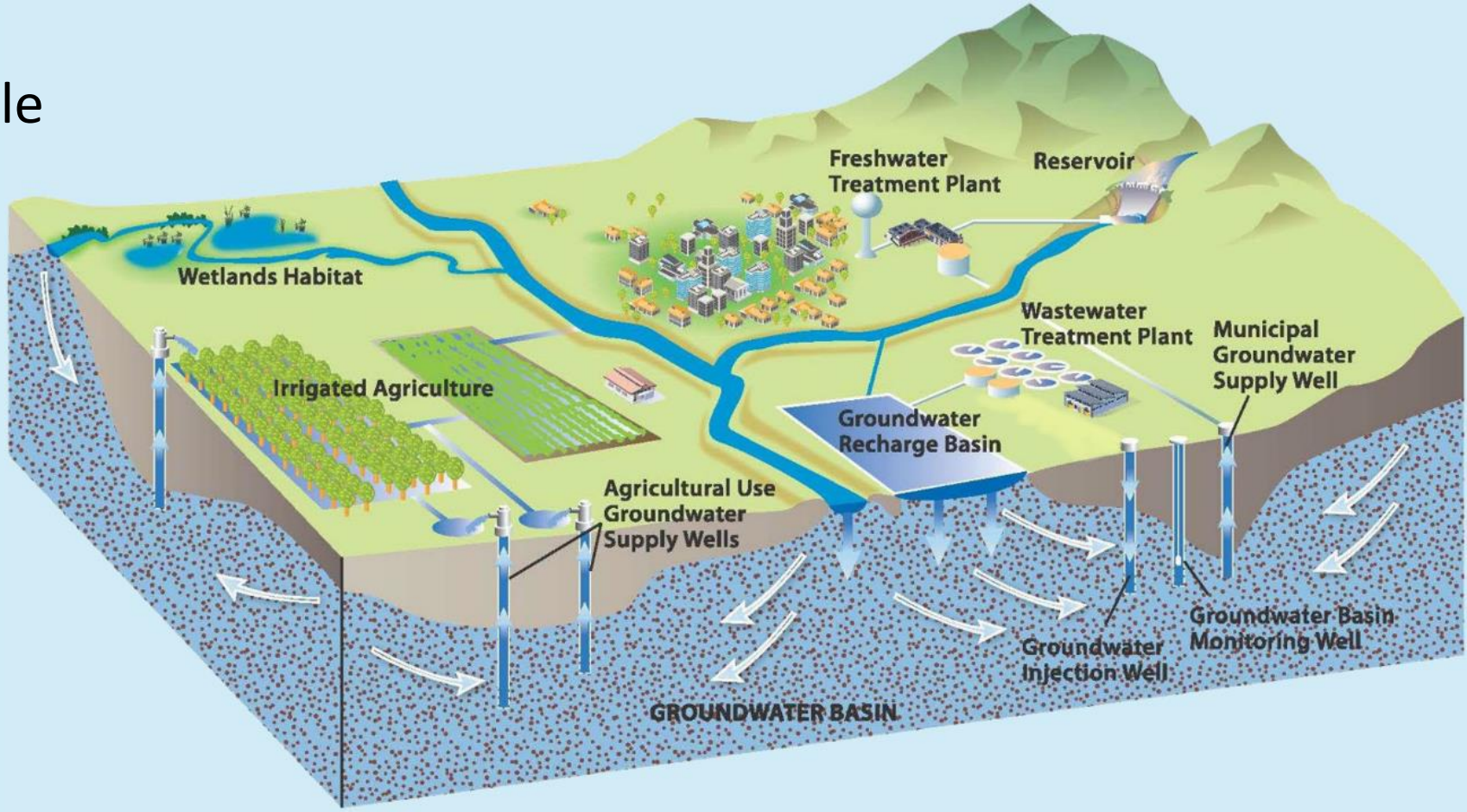
✓Incorporate all available data

✓Produce estimates of unmeasured variables

✓Enforce consistency among variables

✓Quantify uncertainty

✓Simulate alternatives



Sustainable Yield

- Sustainable yield is not a fixed, inherent characteristic of the Basin.
- It is affected by land use, water and wastewater management, imported water, and even locations of wells with respect to streams.
- For planning purposes, a “forward looking” estimate of sustainable yield based on the future baseline simulation is most useful:
  - Yield is estimated as simulated pumping such that storage is not depleted over the long term

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Sustainable Yield Estimate

How much groundwater can be pumped

However, sustainable yield can be constrained by the occurrence of **undesirable results**, separate from this water balance approach!

	Future Baseline 2018-2067		
Management Area	**Agricultural Pumping**	**M&I Pumping**	**TOTAL**
Southern	6,911	142	7,053
Hollister	39,043	5,627	44,670
San Juan	18,350	652	19,002
Bolsa	29,737	24	29,761
TOTAL	**94,041**	**6,445**	**100,486**

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What is sustainable management?

The management and use of groundwater in a manner that can be maintained without causing ***undesirable results****:*

Chronic lowering of groundwater levels

Reduction of groundwater storage

Seawater intrusion: *Not applicable here!*

Degraded water quality

Land subsidence

Depletions of connected surface water with impacts on beneficial uses including groundwater dependent ecosystems

Sustainability Criteria

- Undesirable results
  - What are undesirable results that we want to avoid?
- Minimum thresholds (MT)
  - How do we measure that? For example, how low is too low for water levels?
- Measurable objectives (MO)
  - What is the goal? For example, what is the desired range of water levels?

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Groundwater Levels

Background:

- Hollister and San Juan MAs: following start of CVP imports in early 1990s, overdraft was halted, and groundwater levels rose
- All MAs: water levels decline during droughts and recover afterwards

Objective:

- Avoid widespread loss of well output during droughts

Groundwater Level Minimum Threshold

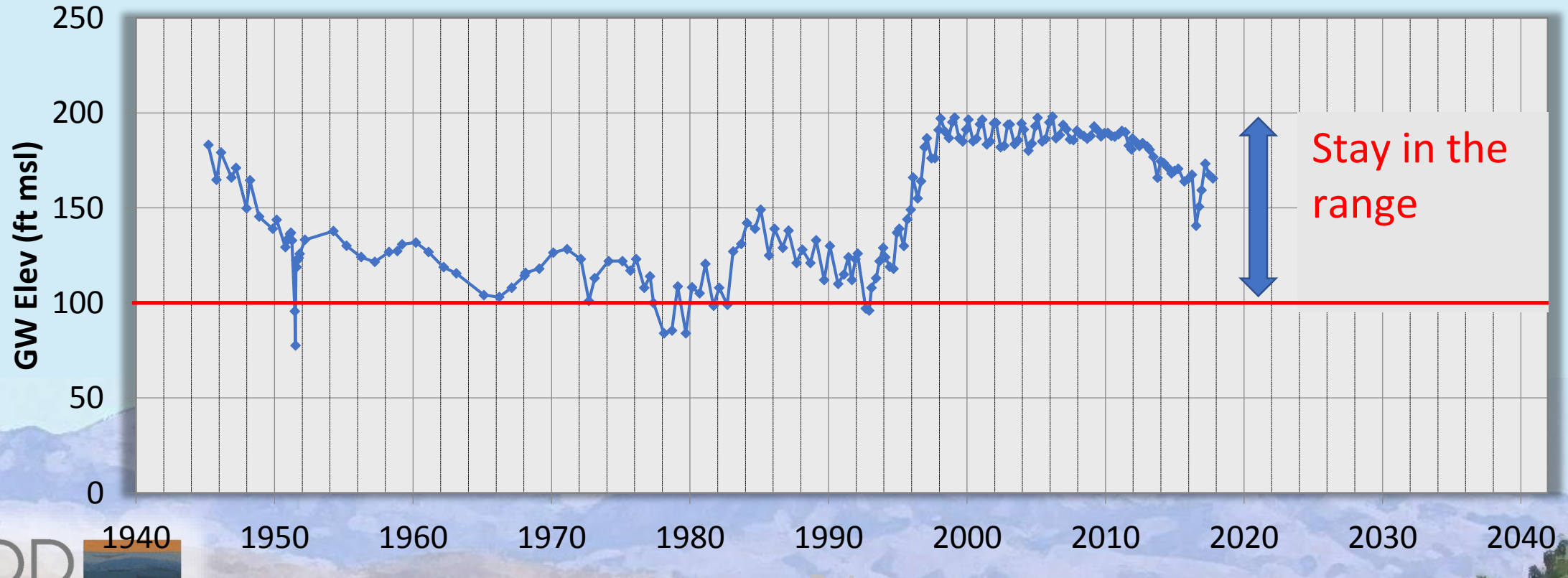
- Minimum threshold = lowest historical water level
- Adjusted upward where historical overdraft caused excessively low water levels (to protect relatively shallow wells)
- Selected Key Wells for comparing against threshold

➢Undesirable if water levels go below MT two consecutive times in two consecutive years in 60 percent or more of the Key Wells in each Management Area

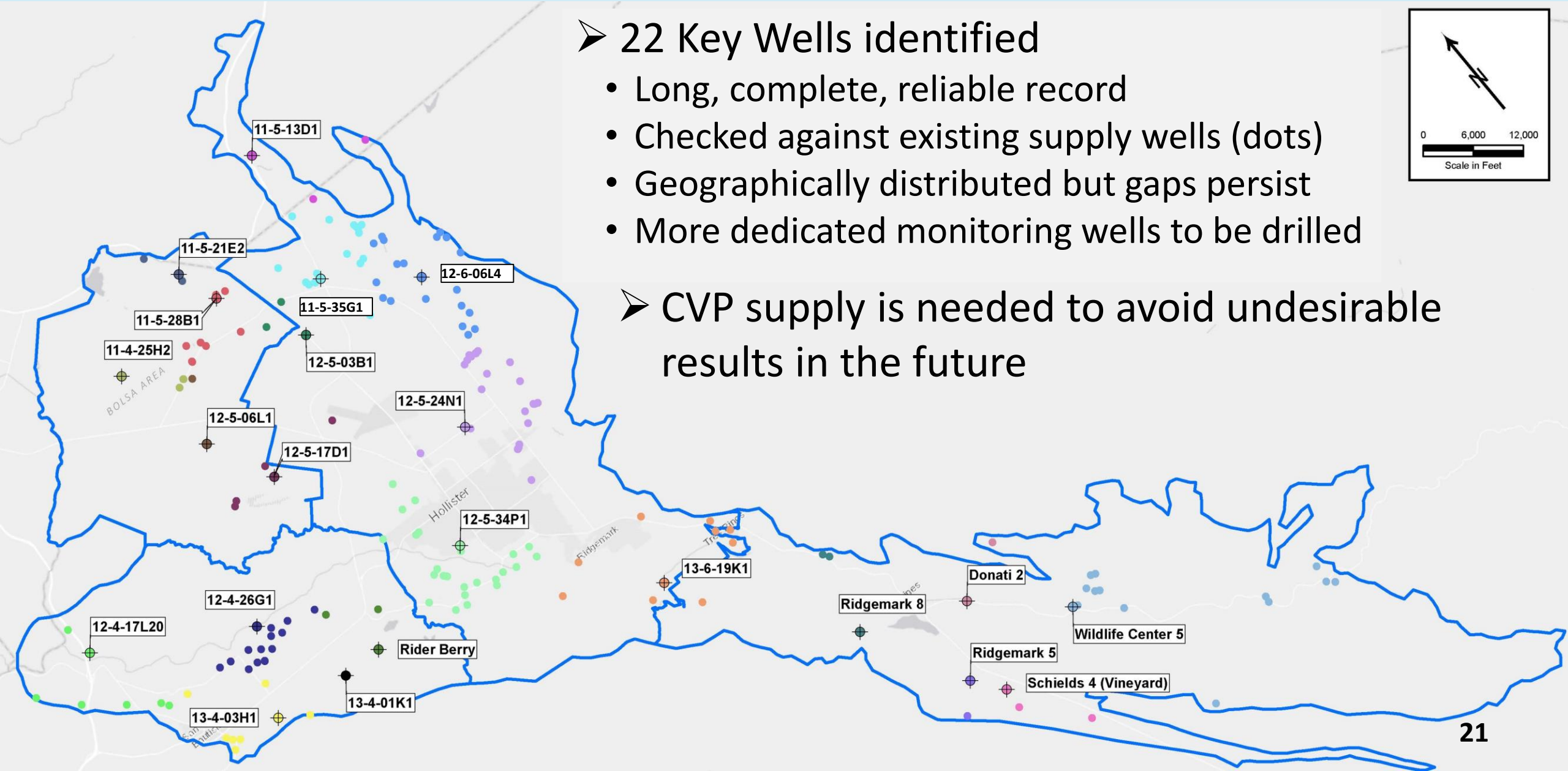
Minimum Threshold and Measurable Objective

Minimum Threshold: historical low level at Key Well adjusted upward

Measurable Objective: maintain levels in the historical operating range



Key Wells will track groundwater levels



- 22 Key Wells identified
  - Long, complete, reliable record
  - Checked against existing supply wells (dots)
  - Geographically distributed but gaps persist
  - More dedicated monitoring wells to be drilled
- CVP supply is needed to avoid undesirable results in the future

Groundwater Storage

Objective:

Provide reliable storage for water supply resilience during drought

Approach:

Use the numerical model to evaluate change in groundwater storage:

- How much storage has been used during past droughts?
- How much will we need to withstand future droughts?

Groundwater storage

Findings:

- ✓ Groundwater basin has provided water supply during prolonged and severe droughts (1922-1934, 1987-1990)
- ✓ The amount of storage in the operating range of water levels is enough to meet demands during future droughts
- ✓ The basin is sustainably managed relative to storage: no overdraft since CVP imports

Water Quality

Background

- General mineral quality is naturally poor
- Salt and nitrate loading has occurred for decades due to human activities
- Beneficial uses have not yet stopped due to poor water quality (agriculture, municipal, rural, and environmental)
- Accordingly, current conditions are considered sustainable.

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Objective and GSA responsibilities

Objective: protect and improve groundwater quality

- Manage groundwater without *causing* undesirable results-water quality degradation
- Address significant and unreasonable effects that are common throughout the basin
- Avoid duplication of existing programs that address pollutant discharges and site cleanup
- Avoid management actions that spread localized contamination

Approach

- Identify constituents of concern: TDS and nitrate
- Refer to Regional Water Quality Control Board Basin Plan Objectives
- Quantify current conditions (2015-2017) based on all available data
- Recognize data gaps and uncertainties (e.g. water quality vs. depth)

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What is significant and unreasonable? How many wells?

The **Minimum Threshold for nitrate** for each MA is defined initially as the percentage of wells with concentrations exceeding the nitrate MCL (45 mg/L) based on current conditions (2015-2017).

MCL and Basin Plan Objective	Percent Wells with Concentration over 45 mg/L, Current Conditions, 2015-2017			
	Bolsa MA	San Juan MA	Hollister MA	Southern MA
45 mg/L	11%	26%	14%	5%

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What is significant and unreasonable? How many wells?

The **Minimum Threshold for TDS** for each MA is defined initially as the percentage of wells with concentrations exceeding the TDS value of 1,200 mg/L based on current conditions (2015-2017).

General Basin Plan Objective	Percent Wells with Concentration over 1,200 mg/L, Current Conditions, 2015-2017			
	Bolsa MA	San Juan MA	Hollister MA	Southern MA
1,200 mg/L	26%	45%	24%	27%

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Approach

- Data gaps exist in terms of wells being sampled, geographic distribution of constituents, and vertical distribution and migration of constituents
- Legacy loading means:
  - Quality could get worse despite improved practices now
  - Short-term monitoring data reflect past practices
  - Sustainability criteria based on such data must be viewed in context

➢Respond with GSP implementation:

- monitoring improvements including investigations of nitrate and salt loading
- management actions that will reduce nitrate and salt loading in the long run

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Water quality management actions

- Improve monitoring (data gaps)
- Increase municipal use of CVP water (expanded treatment capacity)
- Improve quality of recycled water (nitrate removal where not being done now)
- Reduce salt loading from water softeners
- Existing irrigated lands regulatory program (ILRP) to continue reducing nitrate loading

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Land subsidence

- No undesirable results have been reported
- But potential exists for undesirable results
  - Reduction in drainage capacity; drainage problems
  - Impacts on grade of facilities, e.g. pipelines, roads, runways
  - Subsidence around a wellhead, e.g., casing collapse
  - Non-recoverable loss of storage capacity in the aquifers

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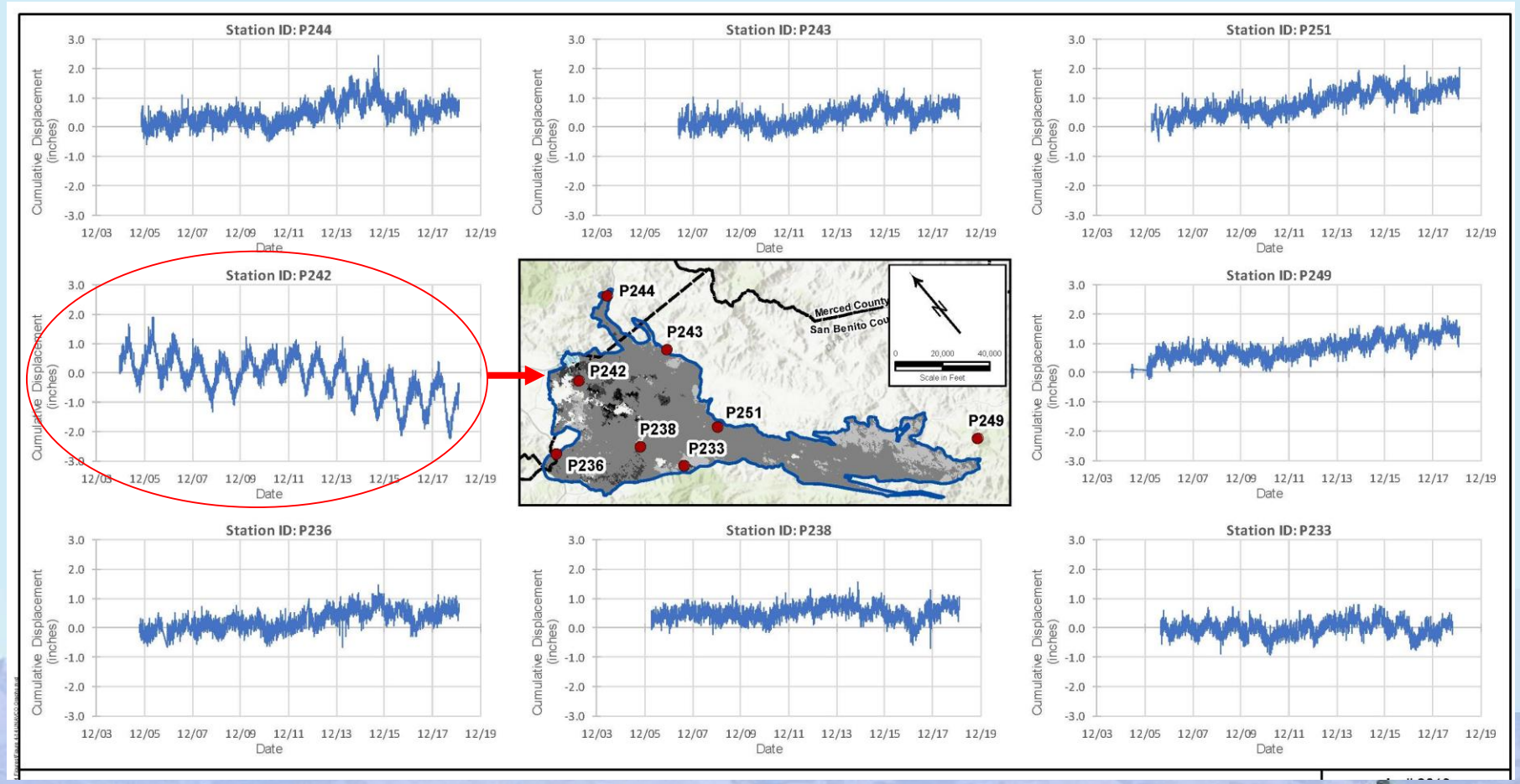
Satellite data on land surface changes indicate local land subsidence



Minimum Threshold

The **Minimum Threshold** for land subsidence
is the rate and extent that interferes with surface land use

Recommended definition:

a. Decline of more than 0.2 feet in any 5-year period
b. Cumulative decline of more than 1 foot since 2015 (the SGMA start date)

- More monitoring and mapping is needed

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Measurable Objective

The Measurable Objective is to prevent subsidence.

Management Action

- No specific action for subsidence
- The water level Minimum Threshold will prevent future subsidence

Interconnected Surface Water and Groundwater Dependent Ecosystems (GDEs)

Objective:

Protect beneficial uses of connected surface waters

- Downstream water users
- Off-channel wetlands, seasonal streams, rivers
- Riparian vegetation
- Animals, such as steelhead

Approach

Identify potentially connected surface waters

- Review data on stream flow and depths to groundwater

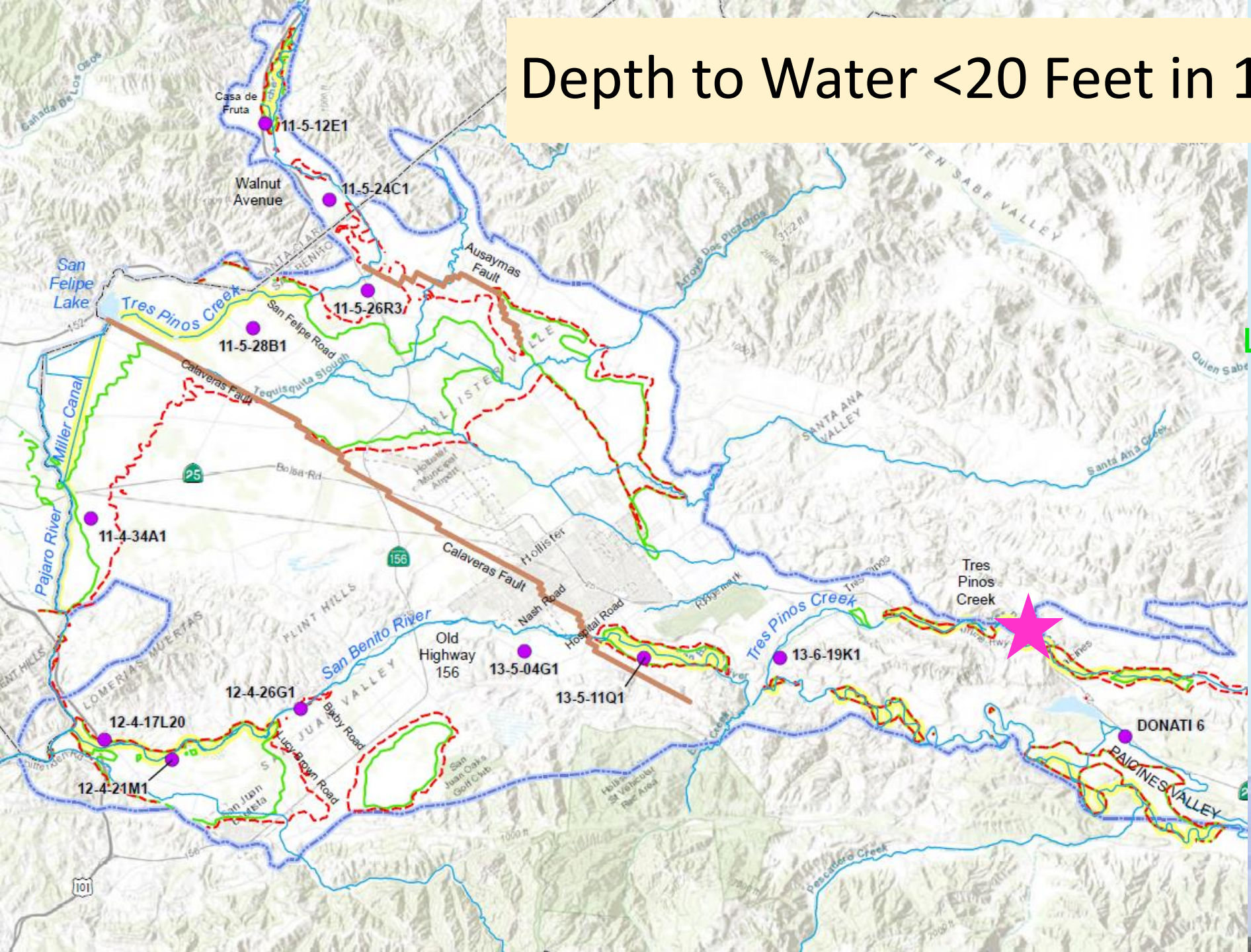
Relate groundwater levels to riparian vegetation health

- Examine aerial photography and satellite imagery/online GDE mapping
- Identify recent drought impacts

Simulate pumping effects on stream flow with numerical model

Assess passage flows for steelhead

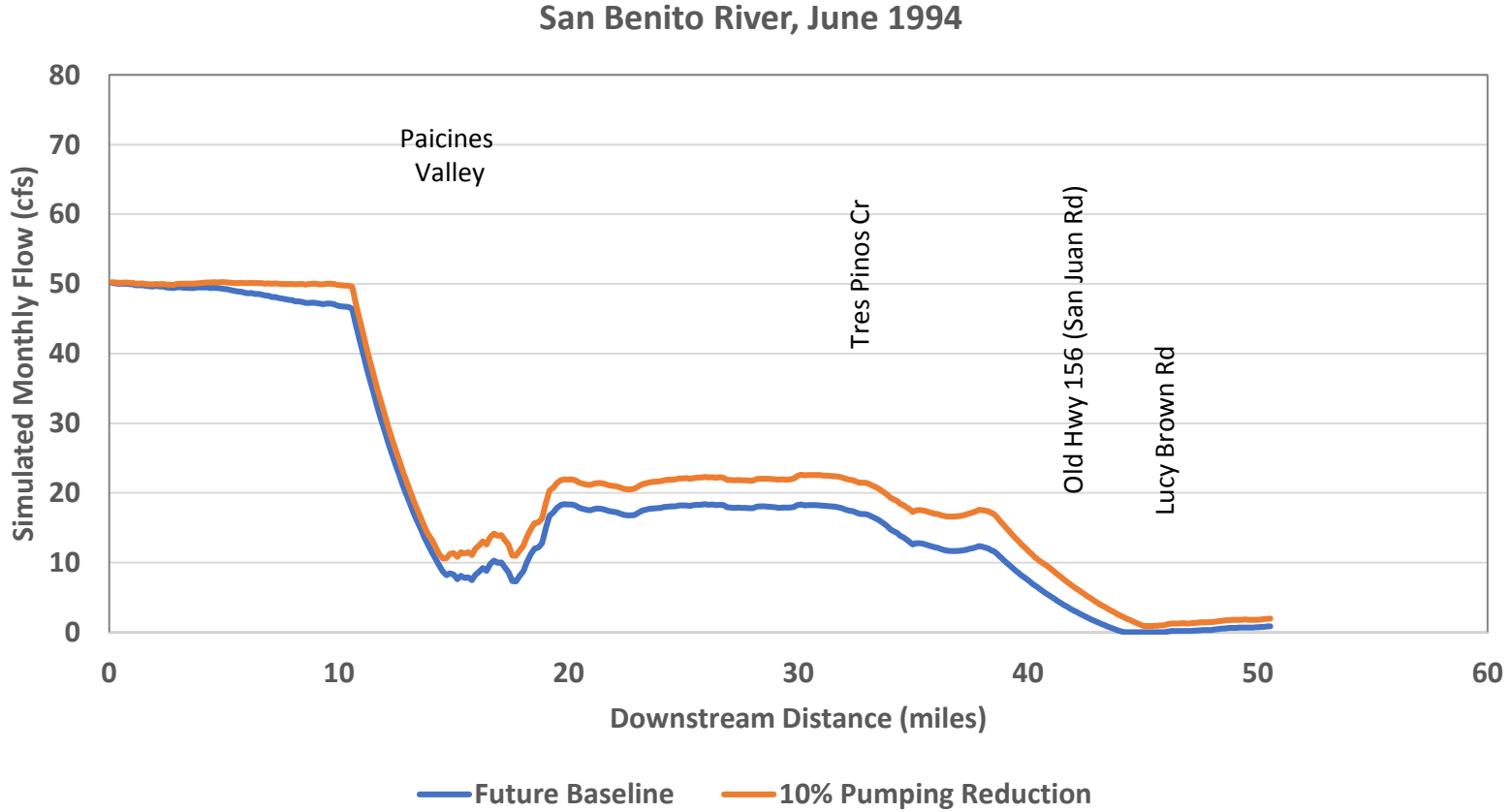
Depth to Water <20 Feet in 1992 and 1998



October 1992 (end of drought)

April 1998 (end of wet period)

Steelhead Passage Opportunity: San Benito River



Evaluated flow profiles for June (pumping season) in selected years (e.g., 1994 "normal")

Negligible pumping effects on flow; 6 cfs difference in flow, but still dry near Lucy Brown Lane

Definition of Minimum Threshold

Undesirable results are defined to occur:

if >25% of wells within 1 mile of a riparian reach have a static spring water level lower than the lowest spring water level during 1987-1992 drought

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Next steps: Monitoring and reporting program

GSP is updating and expanding the monitoring program to:

- Track changes
- Identify problems
- Demonstrate sustainability
- Report

➢ New dedicated monitoring wells being sited now

Next steps: Management actions and projects

Build on existing management projects, programs, policies

- Managed Aquifer Recharge alternatives being evaluated now
  - Farmland recharge
  - Basins
  - Injection wells

GSP Overview

2021

2020

2019

2018

Plan Development

Adoption hearing
Nov or Dec 2021

Management Actions / Monitoring

Draft GSP workshop

Implementation workshop

Sustainability Criteria

Actions workshop

Management Areas / Water Budgets

Water budget/sustainability
September 23, 2020

Hydrogeologic Conceptual Model / Groundwater

HCM-GW Conditions
June 18, 2019

Data Compilation / Data Management System

Kickoff workshop November 7, 2018

Plan Area / Institutional Setting

Upcoming Meetings

Board of Director's Meeting	Monitoring Program	December 16, 2020
Board of Director's Meeting	Annual Groundwater Report	January 11, 2021
TAC Meeting No. 14	Management Actions	January ??, 2021
Public Workshop No. 5	Management Actions	February ??, 2021

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www.sbcwd.com/sustainable-groundwater-management/

San Benito County Water District

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Sustainable Groundwater Management

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For many decades, the San Benito County Water District (SBCWD) has been a steadfast steward of groundwater resources in San Benito County, actively managing the groundwater basins to protect water quality and maintain a reliable and sustainable water supply. For SBCWD and other water agencies, it's getting more and more difficult to ensure long-term groundwater sustainability, with climate variability, growth in both urban and agricultural land use, changes in types of agricultural uses, availability and cost of imported water, and other factors.

To assist water agencies like SBCWD in meeting these significant groundwater challenges, the state-wide Sustainable Groundwater Management Act was passed in 2014. This law outlines new requirements and tools for ensuring the long-term sustainability of these critical sources of water supply.

Updates:

October 2018

Preparation of the GSP document is underway. The GSP process—involving

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SBCWD activities

Information is available at www.sbcwd.com