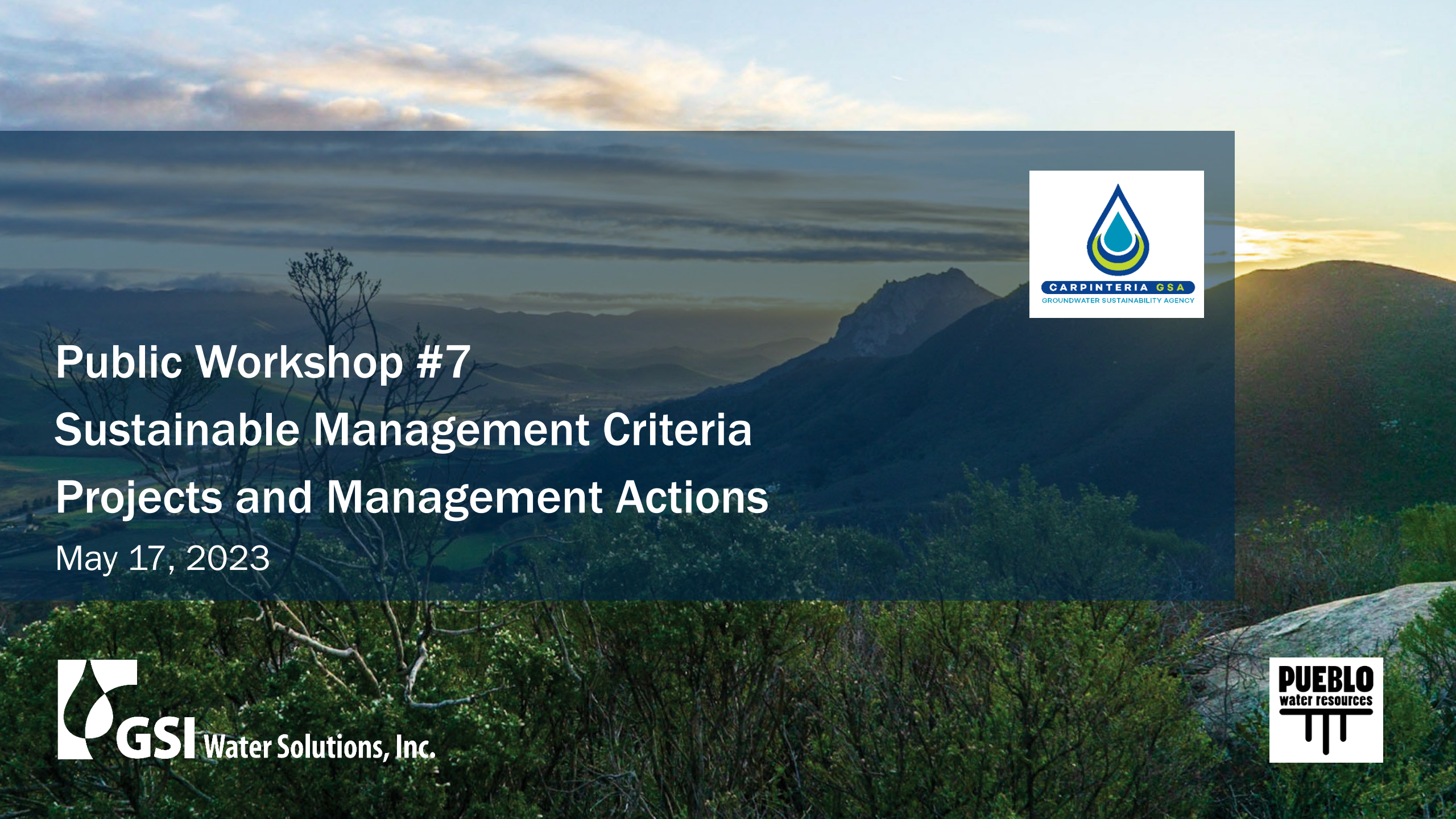


CARPINTERIA GSA
GROUNDWATER SUSTAINABILITY AGENCY

Public Workshop #7
Sustainable Management Criteria
Projects and Management Actions

May 17, 2023

GSI Water Solutions, Inc.

PUEBLO water resources

Presentation Outline

Pathway to Sustainability

1. Brief review of GSP Development, Sustainability Management Criteria

2. Review of Proposed SMCs
    - GW Level Decline/Reduction of Storage

3. Introduction to Projects and Management Actions
    - Carpinteria Advanced Purification Project (CAPP)
    - Seawater Barrier Project
    - Aquifer Storage and Recovery
    - Recharge Enhancement
        - Recharge Basins
        - De-lining of creeks

GSP Project Approach

BUILD TRUST THROUGH CLARITY, CONSISTENCY, AND INVOLVEMENT

Complete

PHASE 1

FACT REPORTING AND EDUCATION

- GSP Kickoff
- C& E Plan
- Plan Area and Basin Setting: Hydrogeologic Conceptual Model, Current Historical GW Conditions, and Water Budget
- Groundwater Model Update

March 2022 to December 2022

In Progress

PHASE 2

SUSTAINABLE GOAL SETTING

- Sustainable Management Criteria: Management Areas
- Sustainability Goal, Measurable Objectives, Minimum Threshold, and Undesired Results

January 2023 to May 2023

In Progress

PHASE 3

PLAN TO SUSTAINABILITY

- Projects and Management Actions to Achieve Sustainability: Projects and Management Actions
- Plan Implementation: Estimate Costs and Schedule

May 2023 to September 2023

Fall 2023

PHASE 4

GSP DOCUMENTATION

- Administrative Draft GSP
- Public Comment Period
- Final GSP
- GSP Adoption
- GSP submittal to DWR

September 2023 to November 2023

DEFENSIBLE PLAN

GSP Development Schedule

May- July 2023

- Delivery of Draft Chapter 5 – Sustainable Management Criteria for public comment in late July
- Projects and Management Actions and Plan Implementation for public comment in early August

September – November 2023

- Final Production and Publication of entire GSP for public review
- Response to public comments
- GSP Adoption by GSA Board

Quick Review of SGMA and Sustainable Management Criteria (SMCs)

SIX SUSTAINABILITY INDICATORS

Pathway to Sustainability

Seawater Intrusion

Water Quality Degradation

Chronic Lowering of Groundwater Levels

Interconnected Surface Water Depletions

Reduction of Groundwater Storage

Land Subsidence

SMC Definitions

Pathway to Sustainability

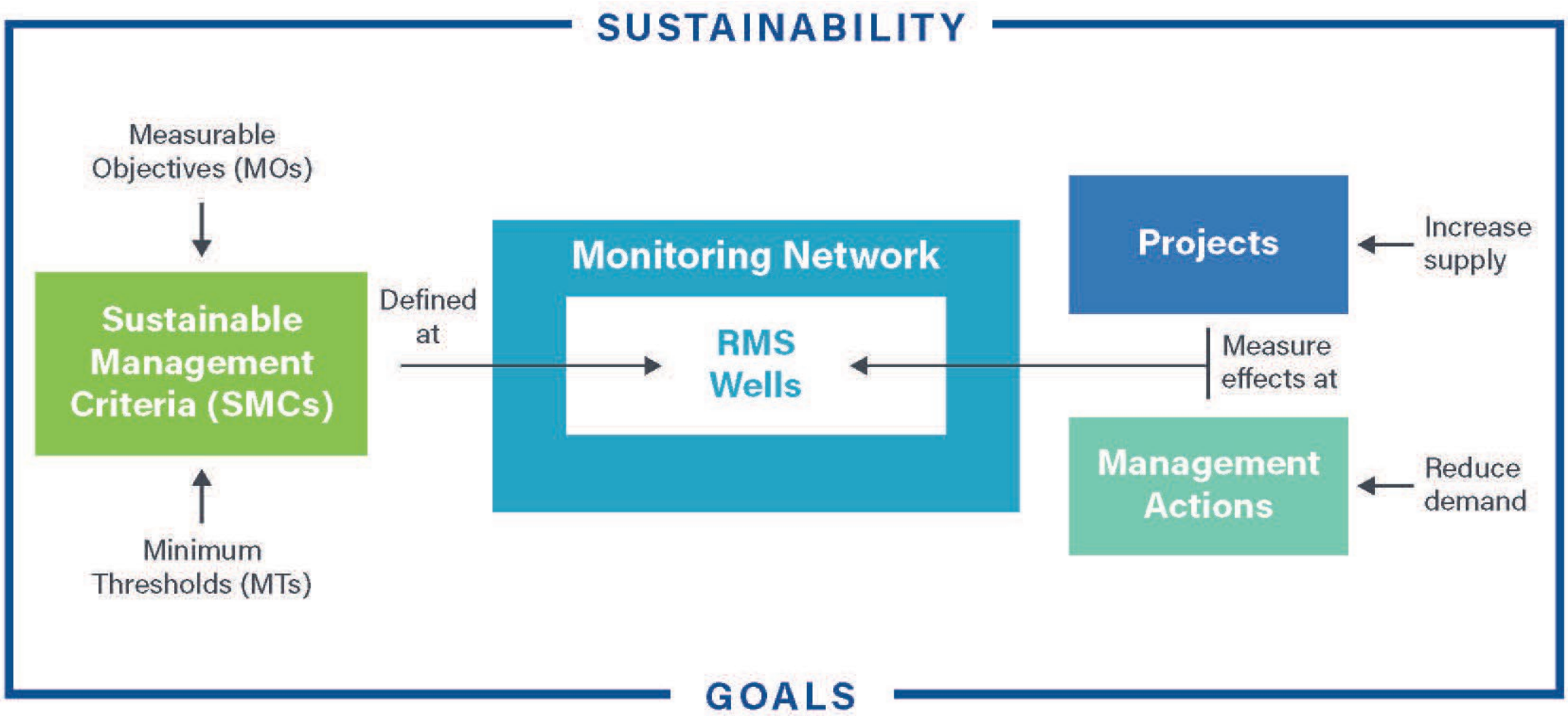
Representative Monitoring Sites (RMS) A subset of a basin's complete monitoring network, where minimum thresholds, measurable objectives, and interim milestones are set.

SMCs

Minimum Threshold (MT) -The value that represents groundwater conditions at an RMS that, when exceeded individually or in combination with minimum thresholds at other monitoring sites, may cause an *undesirable result*(s) in the basin.

Measurable Objective (MO) - Measurable objectives are goals that reflect the basin's desired groundwater conditions and allow the GSA to achieve the sustainability goal within 20 years.

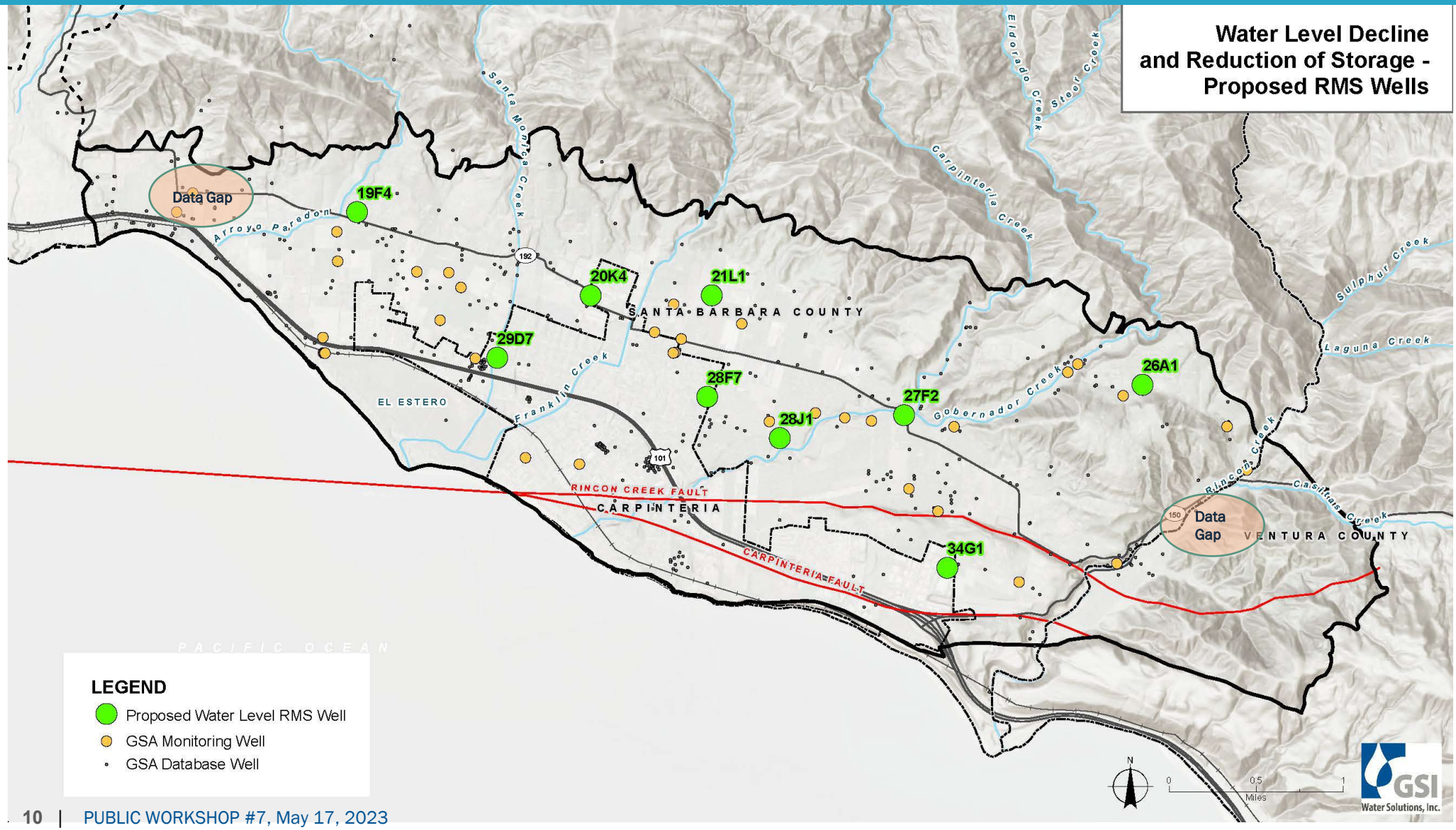
Getting to Sustainability – RMS Wells



CHRONIC LOWERING OF GROUNDWATER LEVELS &

REDUCTION OF GROUNDWATER STORAGE

Water Level Decline and Reduction of GW in Storage
Proposed RMS Wells



Example Undesirable Results of Lowered GW Levels & Reduction in Storage

Conditions causing undesirable results must be *significant* and *unreasonable*

- **Domestic supply wells not an issue in Carpinteria Basin.**
- **Water levels falling below top of screen for Municipal production wells.**
- **Reduced yield of agricultural wells necessitating changed planting, fallowing, etc.**

Reduction in Storage SMCs are defined as water levels identical to the Water Level Decline SMCs.

GW Level Declines & Reduction in Storage

Considerations for MOs.
Review water levels at RMS wells.

- Recent “average” operational water levels.
- SGMA Baseline: Consider 2015 conditions

Conditions causing undesirable results must be *significant* and *unreasonable*

GW Level Declines & Reduction in Storage

Revised Approach to MTs.

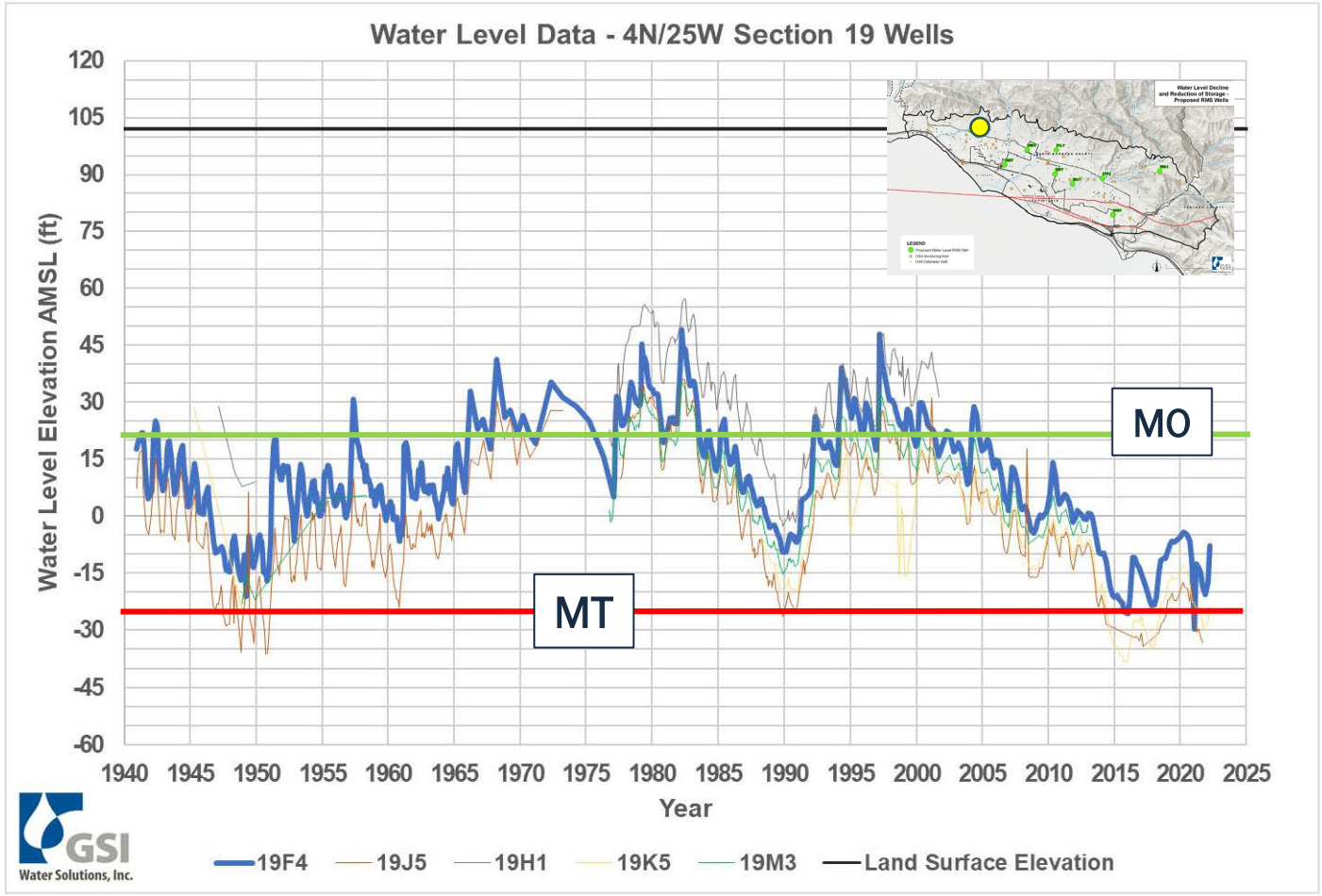
Review historical water level data at RMS wells:

- Were undesirable effects observed recently?
  - None reported.
- Identify low WL during recent drought.
- Define MT as recent low water level.
- Define undesirable conditions as three successive fall measurements of exceedance before triggering action.
- May be written as representing normal conditions (with possible exceptions from management actions during significant drought)

Water Level Decline and Reduction of GW in Storage
Summary of MTs/MOs

Well	MT	MO	Land Surface Elevation
19F4	-25	20	102
20K4	-77	0	47
21L1	-85	10	69
27F2	-92	20	136
26A1	140	220	425
28J1	-40	30	103
28F7	-90	15	65
29D7	115	35	28
35E1	12	50	243

SMCs presented as Groundwater Elevation AMSL



CARPINTERIA GSA
GROUNDWATER SUSTAINABILITY AGENCY

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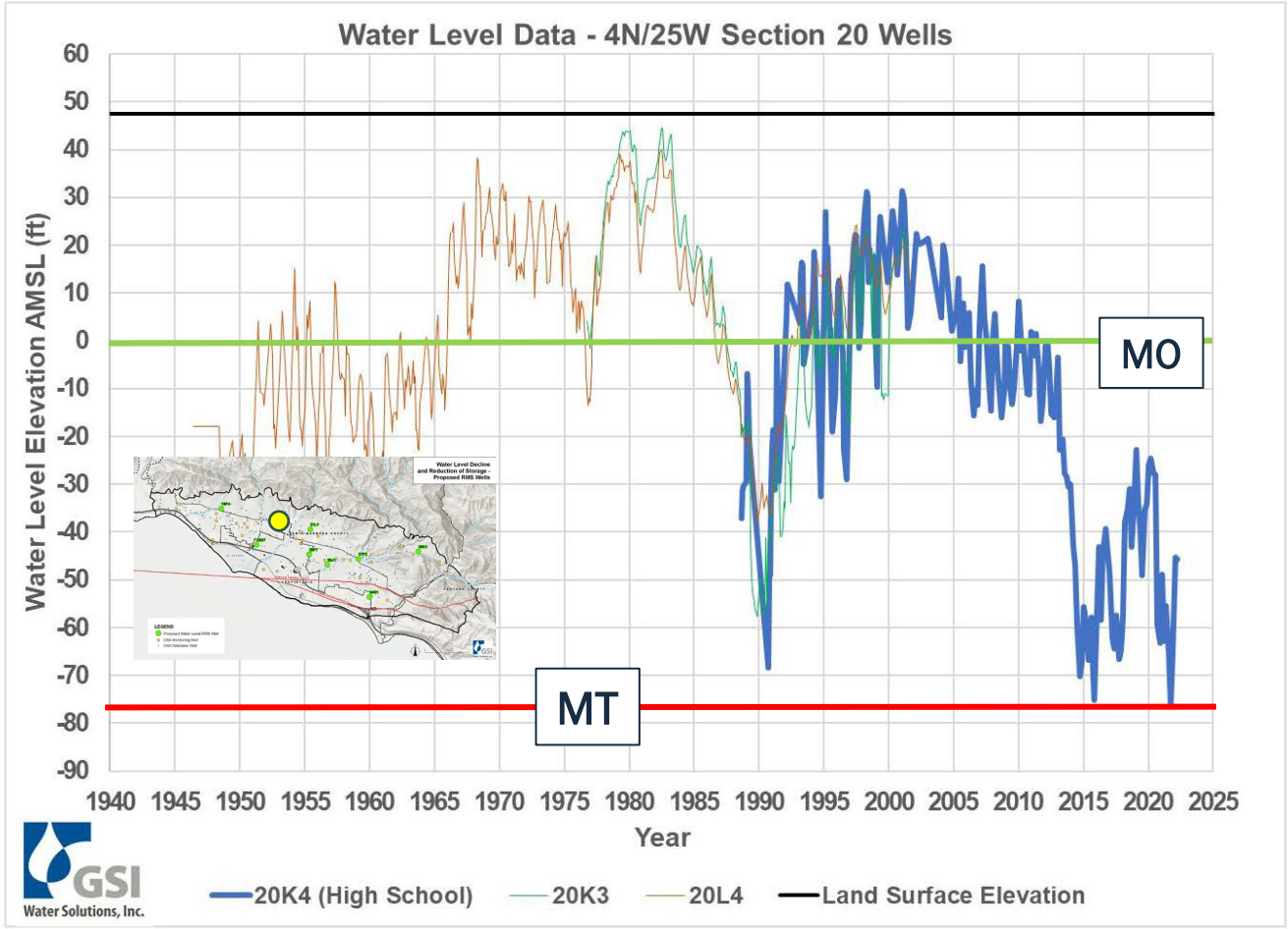

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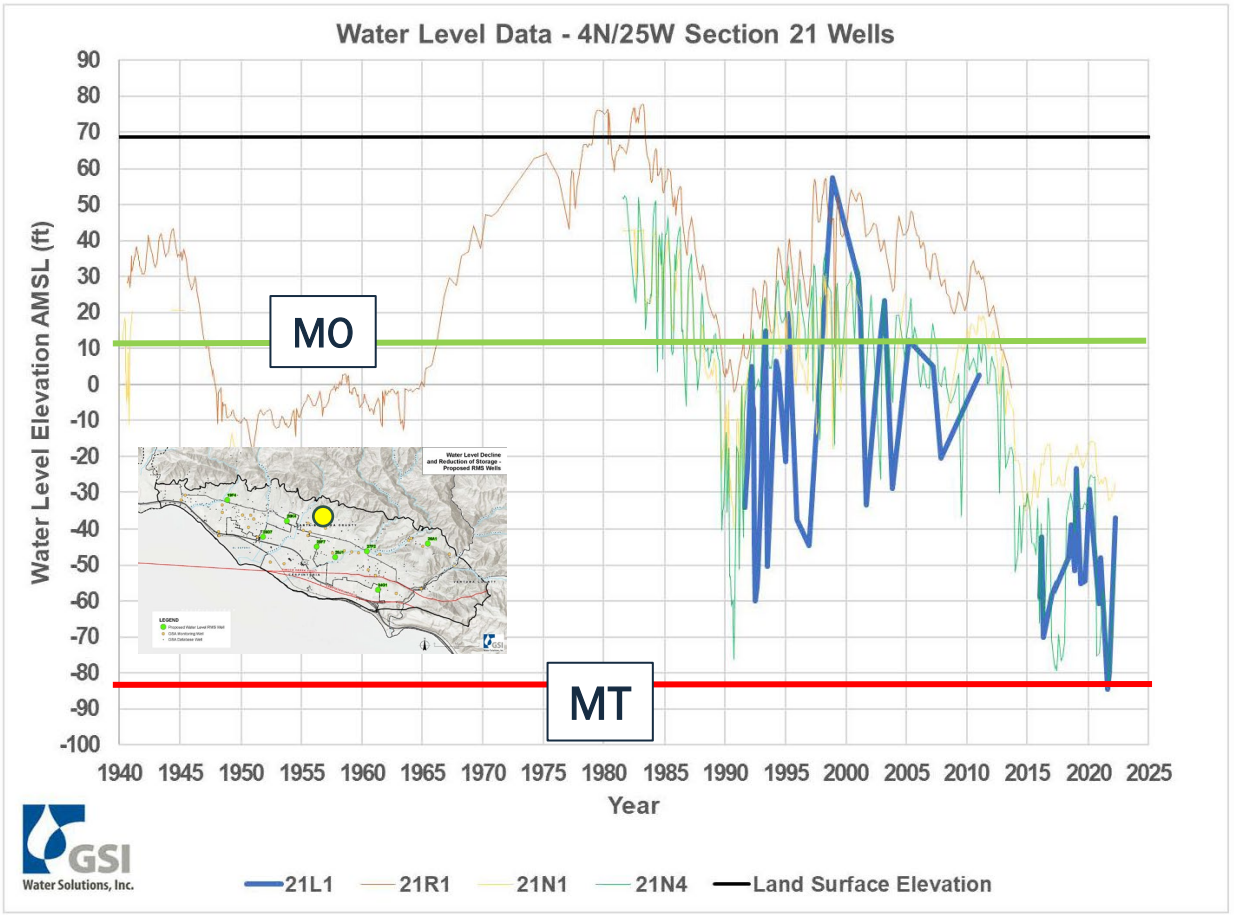

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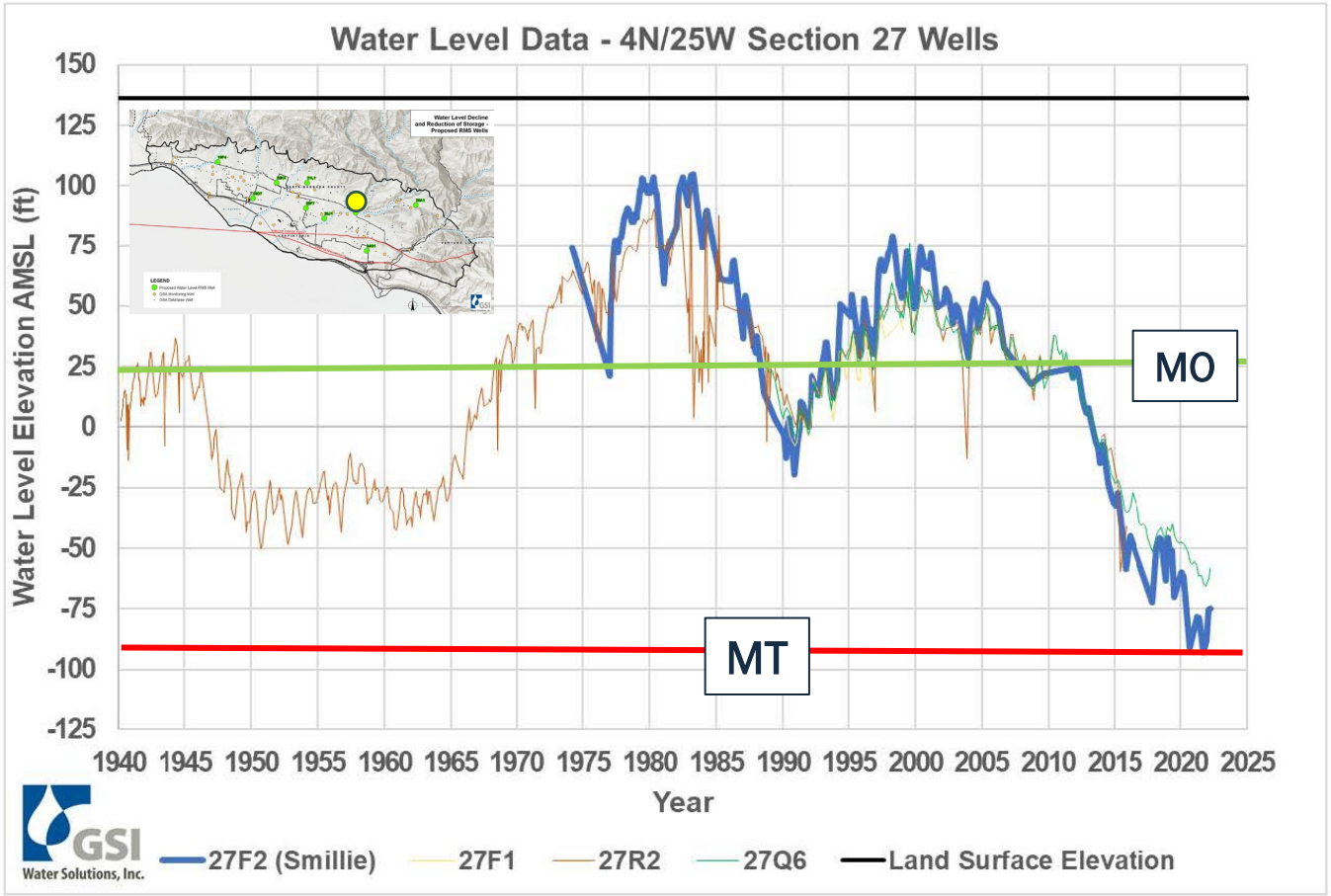

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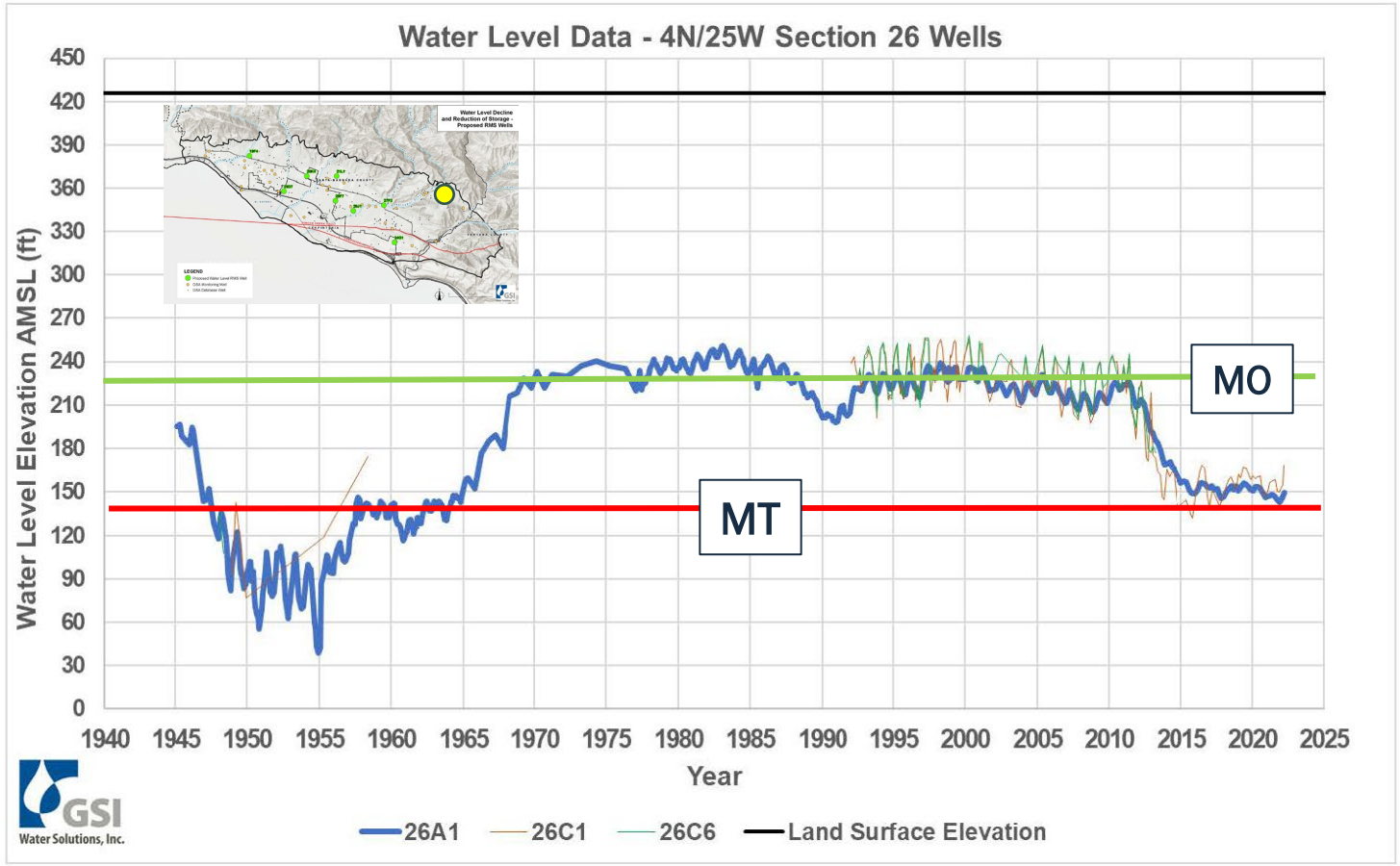

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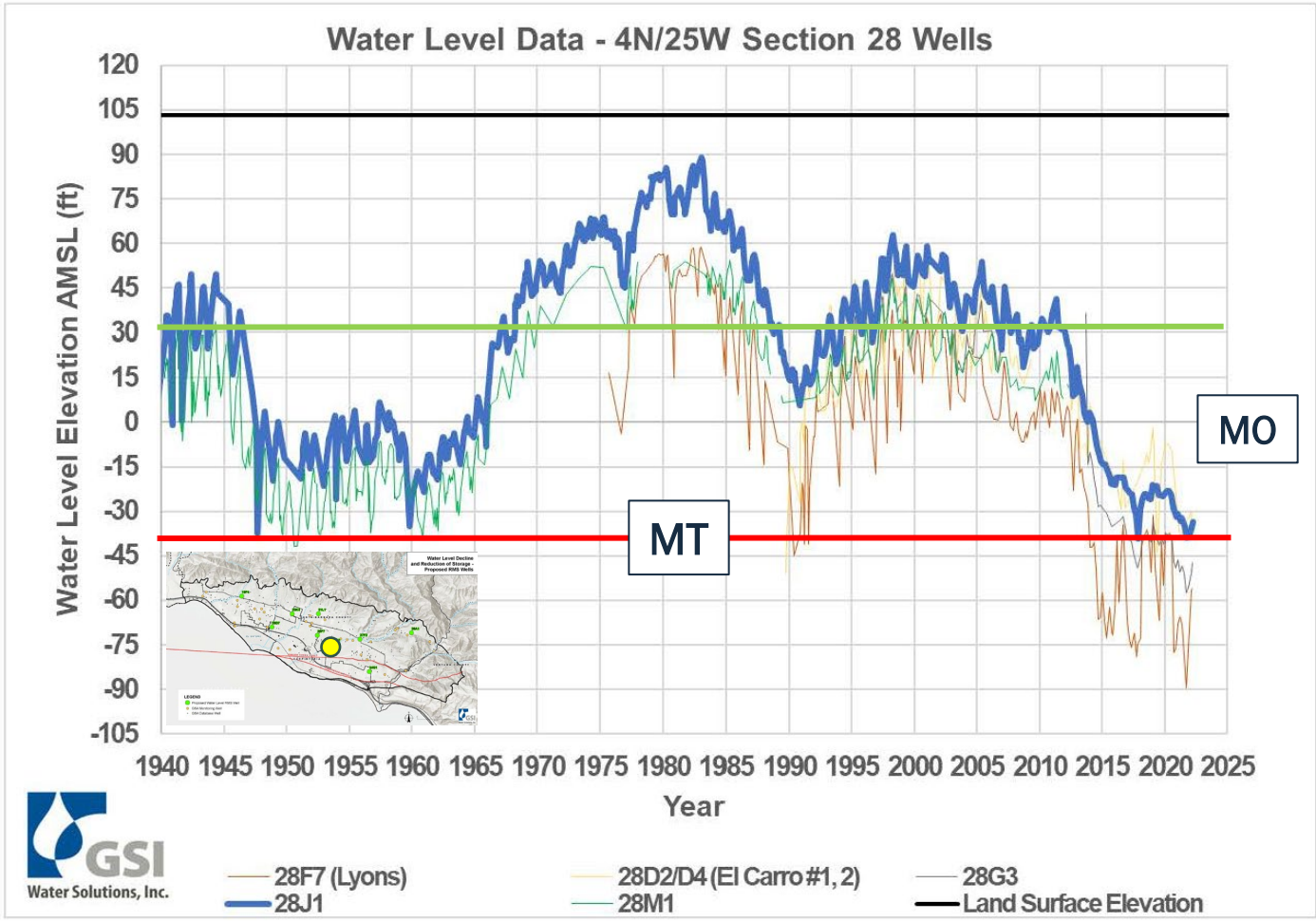

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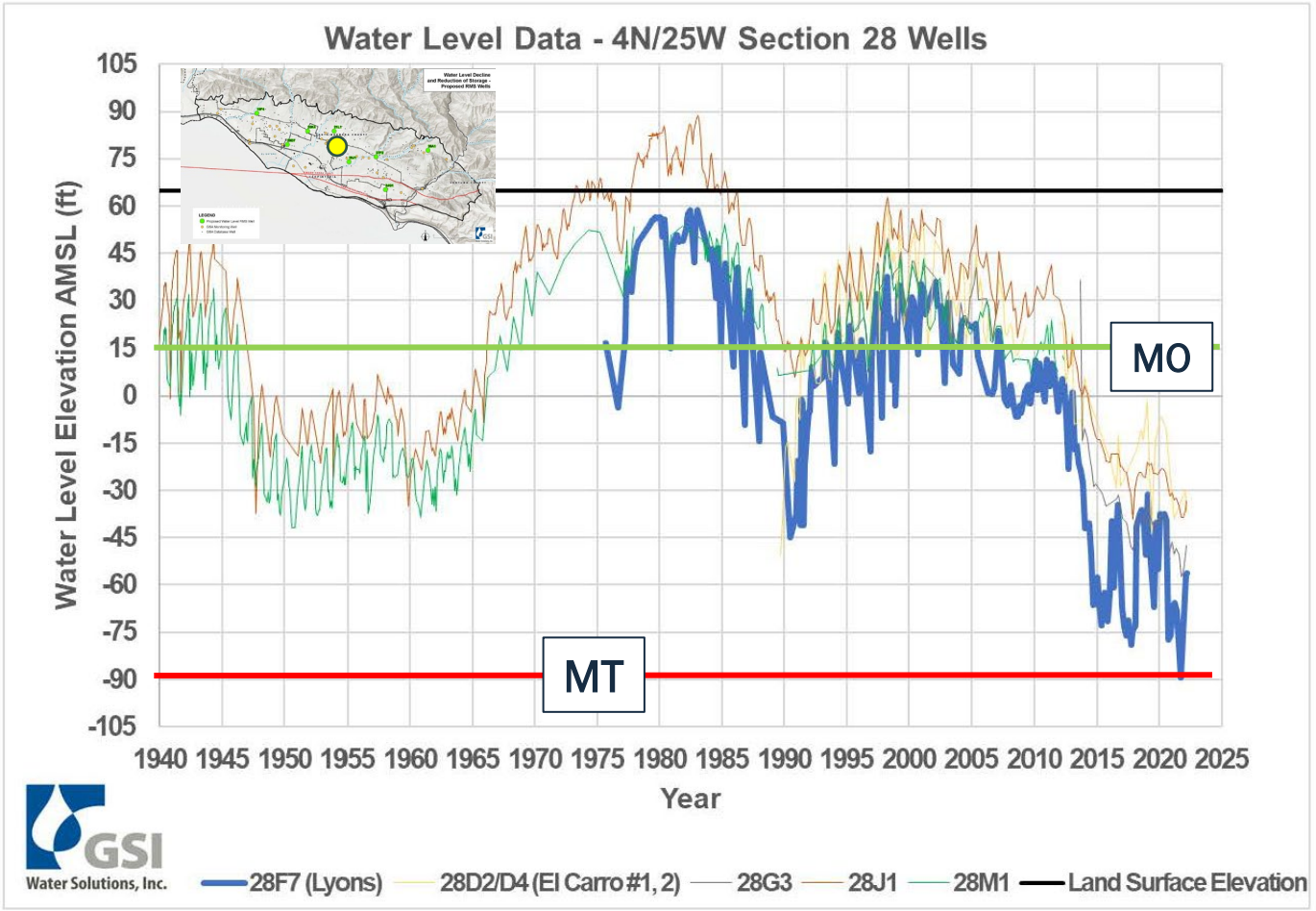

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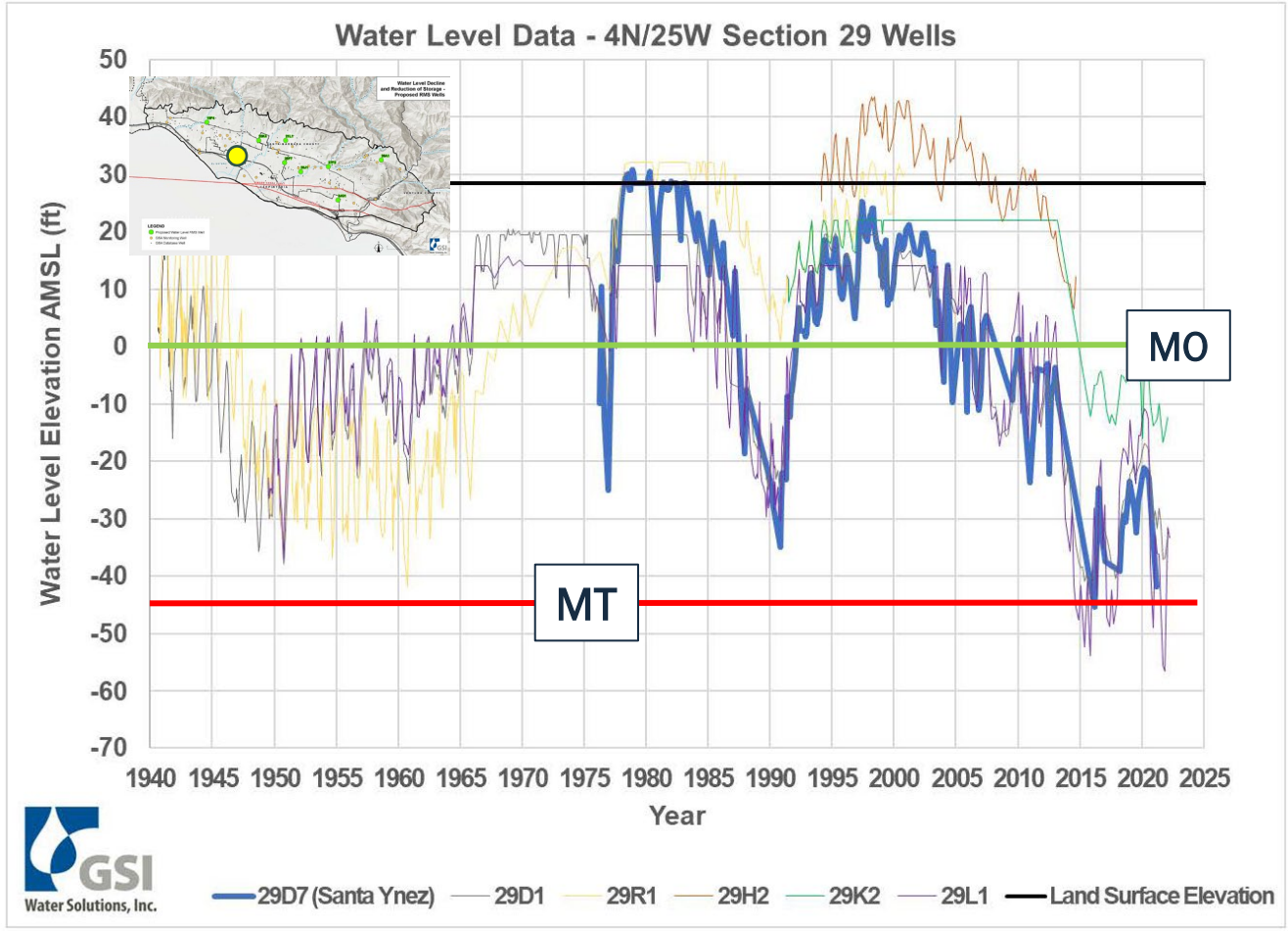

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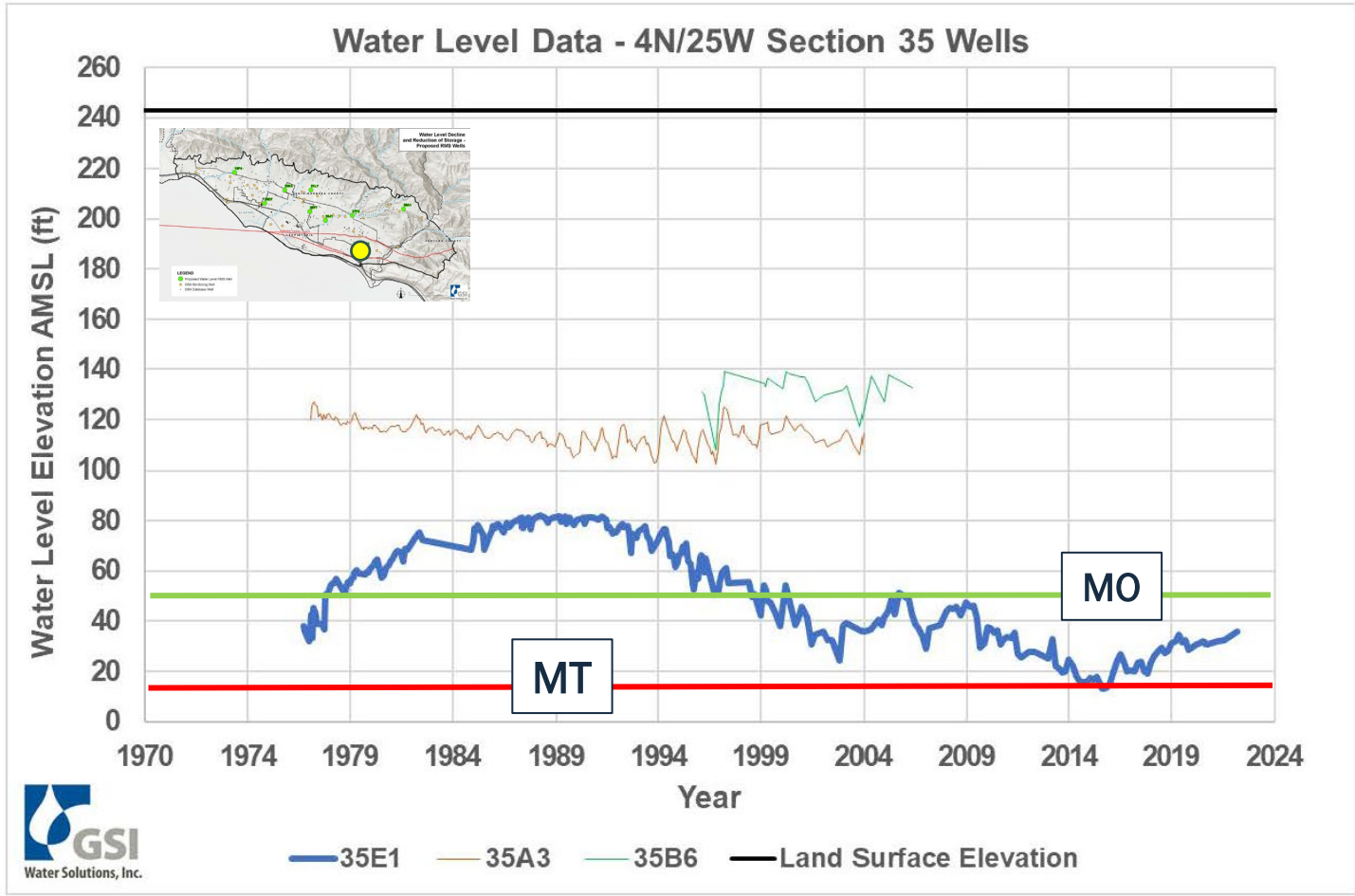


CARPINTERIA GSA
GROUNDWATER SUSTAINABILITY AGENCY

Projects and Management Actions

Potential Projects

- Carpinteria Advanced Purification Project (CAPP) – Treated wastewater for Aquifer Recharge
- Seawater Barrier Project – Injection Wells along Coast (including additional monitor wells)
- Aquifer Storage and Recovery
- Recharge Enhancement
  - Recharge Basins
  - De-lining of creeks

CAPP Project

Project Drivers

- Primary project driver is water supply
- Project will also provide benefits to groundwater sustainability efforts under SGMA
- Project will reduce ocean discharge volumes from WWTPs consistent with the California Ocean Protection Council Strategic Plan Goal 1.2.3

Project Drivers- Water Supply

CVWD Water Supply (~1400 AFY)

Cachuma Project (2813 AFY)

State Water Project (2200 AFY)

Project Drivers- Drought impacts

Lake Cachuma

2012

2014

2016

Project Drivers- Drought impacts

State Water Project

CVWD Allotment of 2200 AFY

Year	% Delivery	AF Delivery
2012	65%	1430 AF
2013	35%	770 AF
2014	5%	110 AF
2015	20%	440 AF
2016	60%	1320 AF
2017	85%	1870 AF
2018	30%	660 AF
2019	75%	1650 AF
2020	20%	440 AF
2021	5%	110 AF

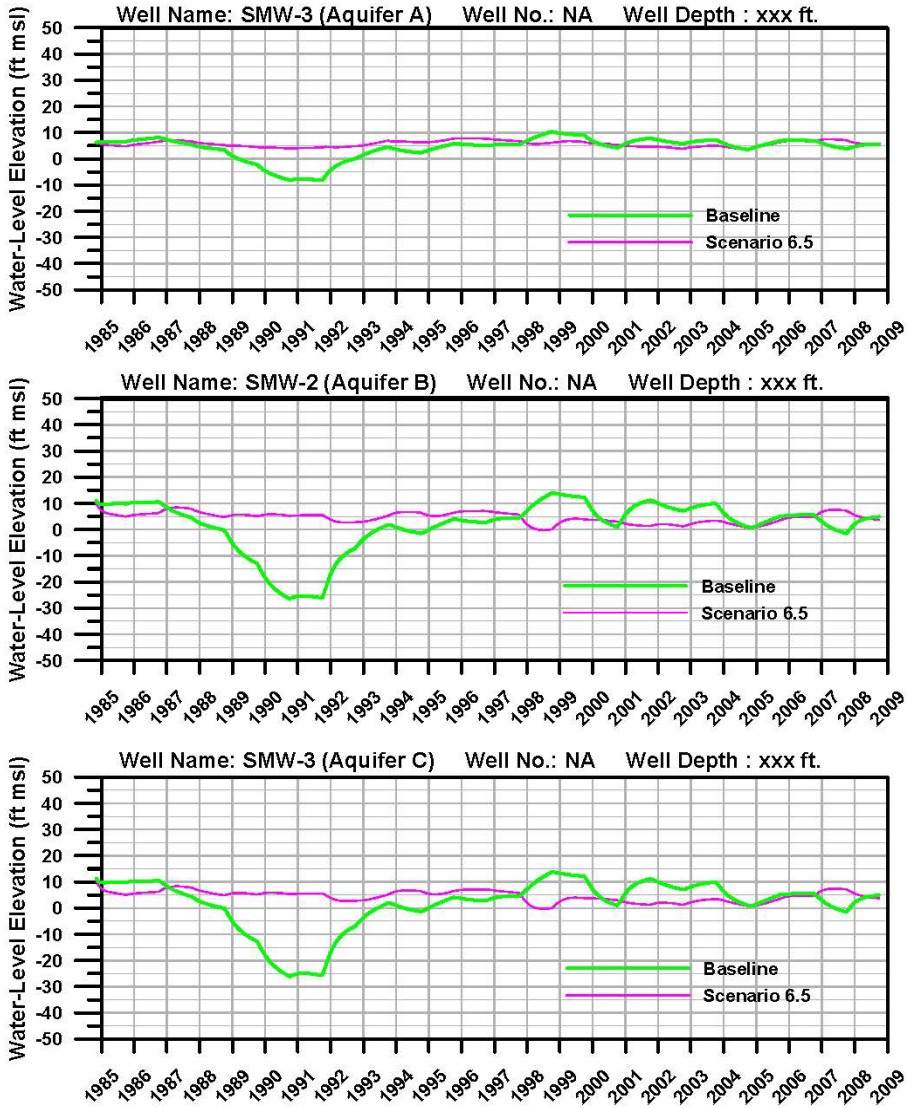
Project Drivers- Drought impacts

Local Groundwater

- Basin has a long-term Op. Yield of ~3900 AFY
- District's Long-term extraction is ~1400 AFY
- Private pumpers Long-term extraction is ~2500 AFY
- Groundwater extractions during the drought has averaged 5300 AFY
- Recharge over the same period has averaged ~2500 AFY
- Groundwater level have declined below sea level during the drought.
- Groundwater storage has fallen by ~50K AF since 2013

Non- Water Supply
Project Drivers

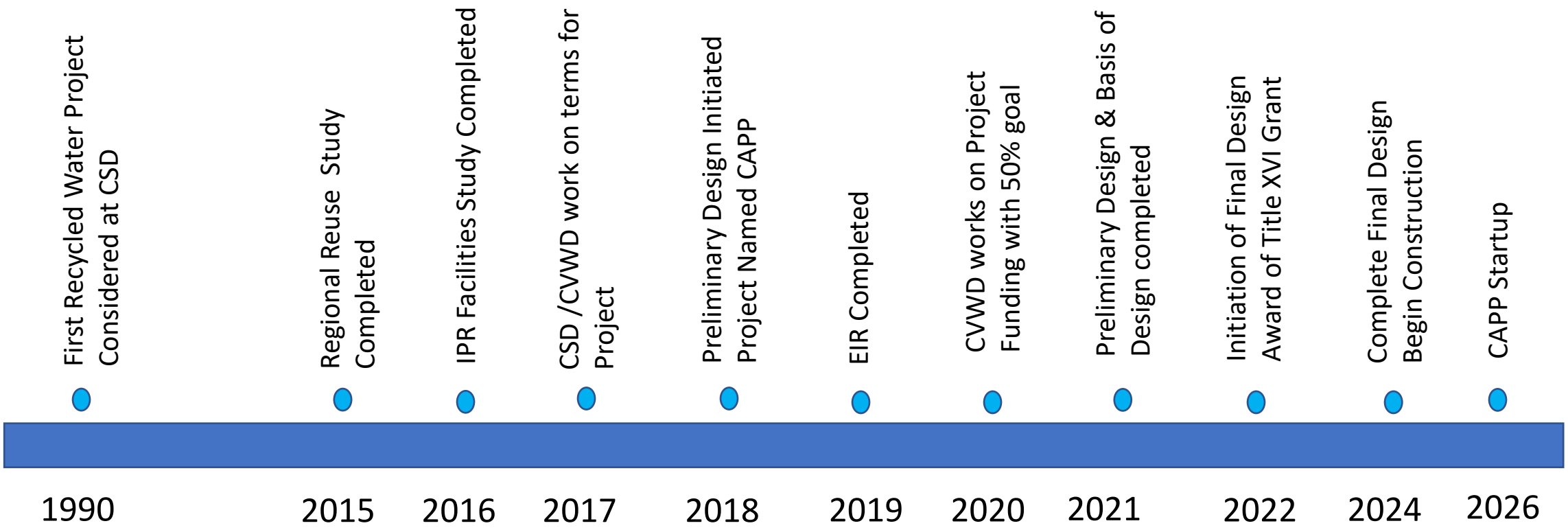
- Model results indicate groundwater levels in the CGB will be less impacted during droughts if CAPP is implemented
- CAPP will reduce ocean discharge volume of discharge by 80%



Project Drivers- Water Supply

- CAPP will reuse wastewater being discharged to the ocean for beneficial uses
- CAPP will create 1100 AFY of local, drought proof, sustainable water supply
- CAPP will provide 25% of CVWDs water supply

Project History



Project Details

- Advanced Water Purification Facility (AWPF)
- Booster Pump Station
- Ocean Outfall Modifications
- 1.3 miles of Conveyance Pipelines
- Two Injection Wells
- Four Monitoring Wells

CAPP | Replenishing Our Groundwater for the Future

CARPINTERIA Sanitary District

Project Details

Partnerships

- ❖CVWD and CSD are partners on the moving the CAPP forward
- ❖CVWD/CSD have been in discussion with Montecito Water and San Districts to identify potential reuse projects
- ❖CVWD & CGSA believe CAPP supports the common goal of groundwater sustainability

Synergies

- CAPP will provide water supply reliability& resilience
- Capp will help CVWD/CSD to adapt to climate change
- CAPP will reduce dependance on imported water
- CAPP will reduce ocean discharges
- CAPP will support groundwater sustainability
- CAPP will help prevent seawater intrusion into groundwater basin

Costs

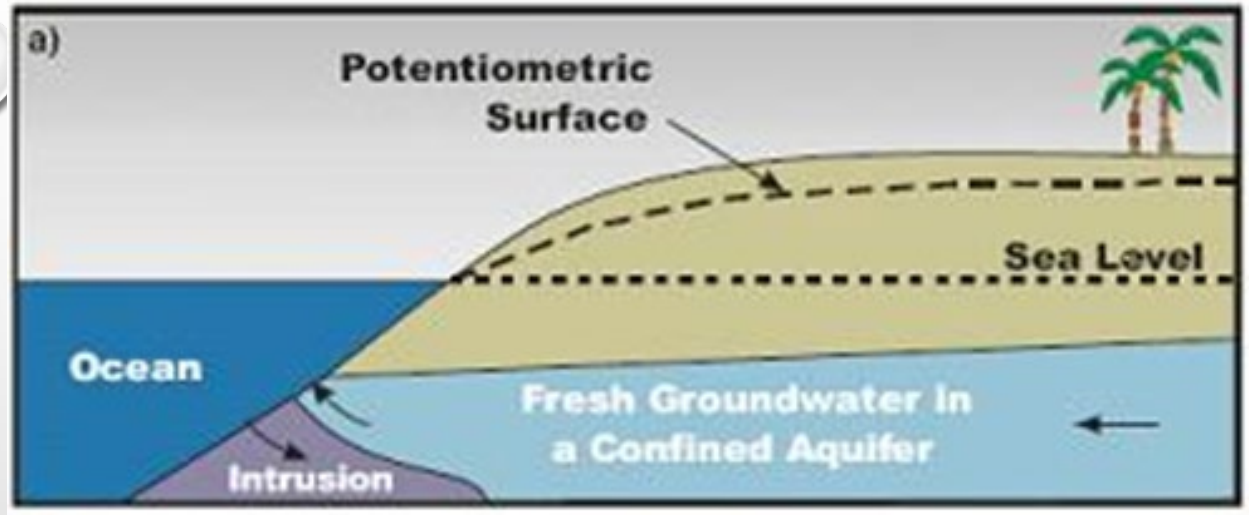
Final Design Phase (through Fall 2024)	
Item	**Fee Estimate**
Program Management	$1.1 M
Final Design	$3.8 M
Groundwater Modeling	$0.1 M
Community Engagement	$0.1 M
Land Acquisition	$0.3 M
Total Final Design Phase	**$5.3 M**

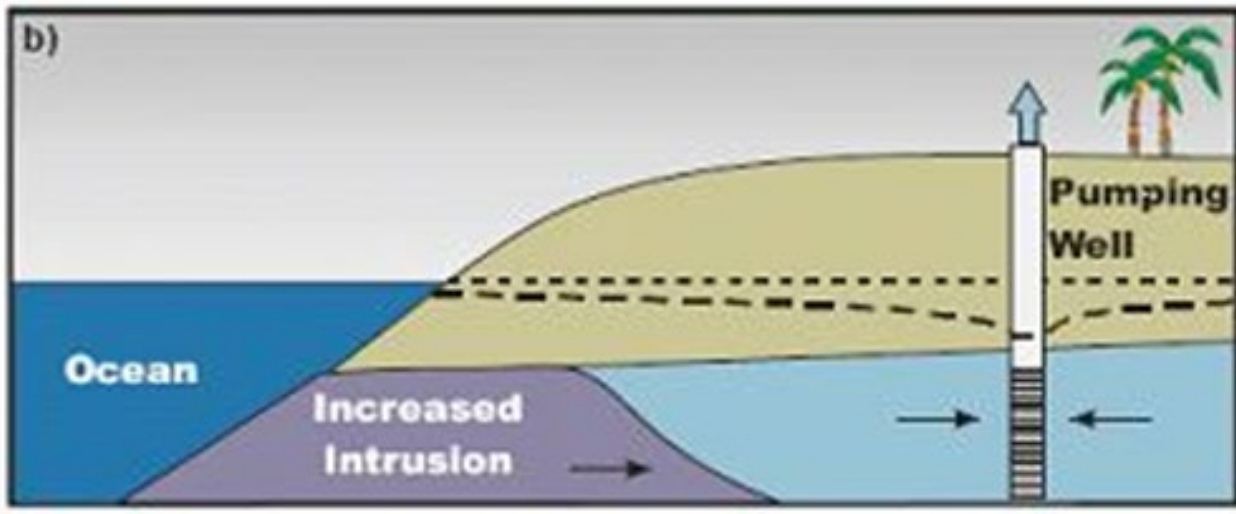
Construction Phase (Fall 2024 - Spring 2026)	
Item	**Fee Estimate**
Construction Contractor	$38.0 M
Construction Management	$2.3 M
Engineering Services	$2.9 M
Regulatory Compliance	$0.1 M
Total Construction Phase	**$43.3 M**

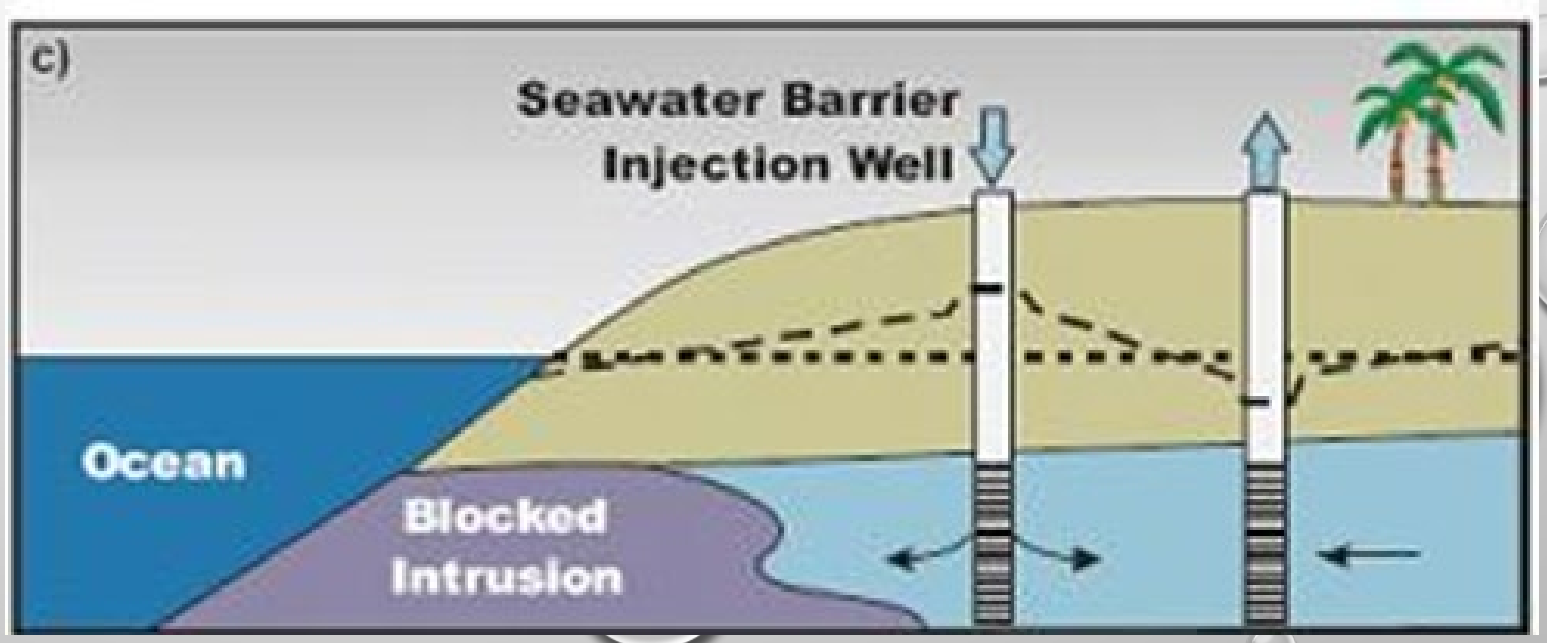
Item	Cost
Previous Costs	$2.0 M
Cost Projections	$48.6 M
Total Project Costs	**$50.6 M**

Seawater Barrier Project

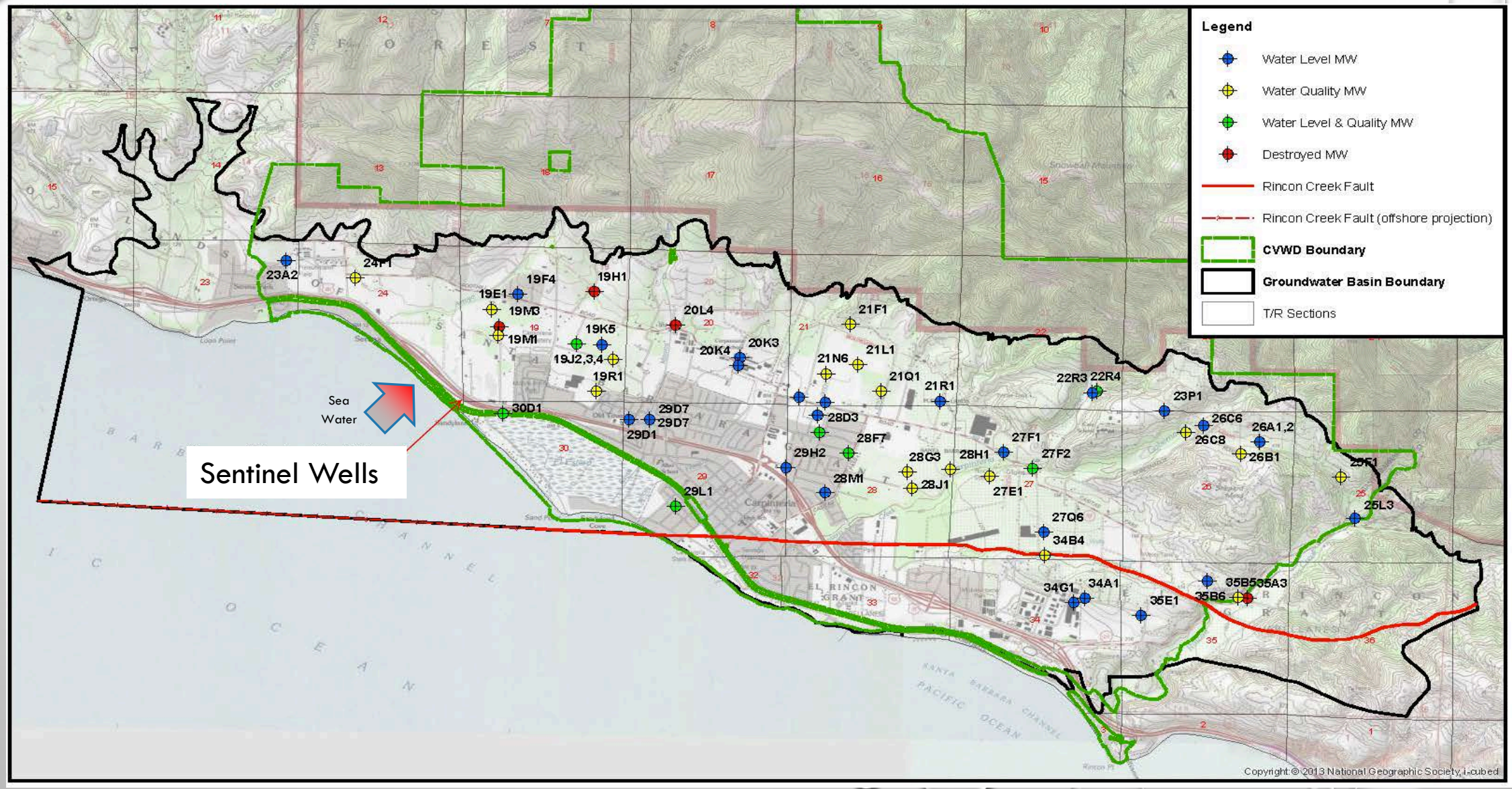
SEA WATER INTRUSION BARRIER WELLS PROJECT CONCEPT







COASTAL BASINS AND
SEAWATER INTRUSION



COASTAL BASINS AND
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Source: Carpinteria Valley Water District

COASTAL BASINS AND
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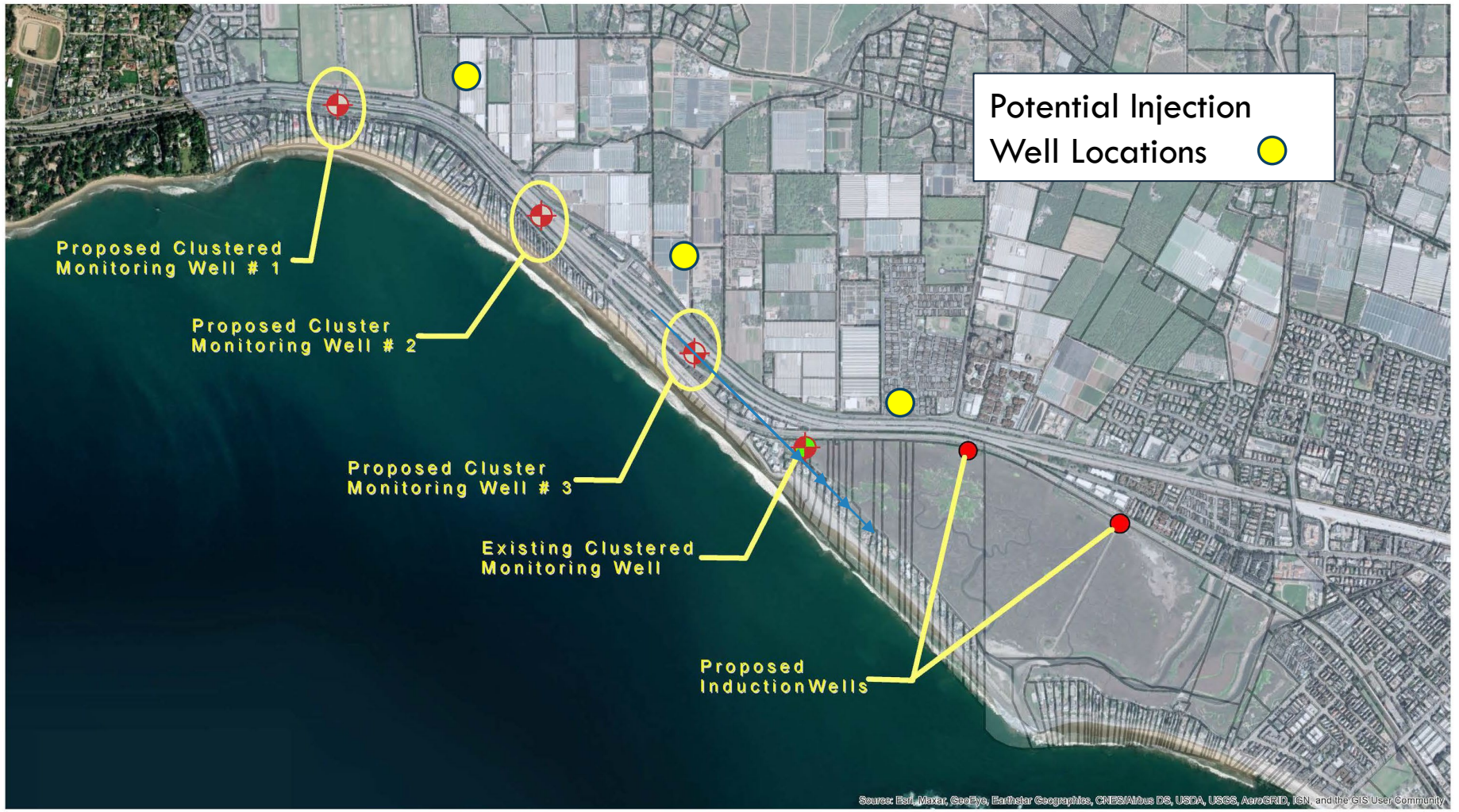

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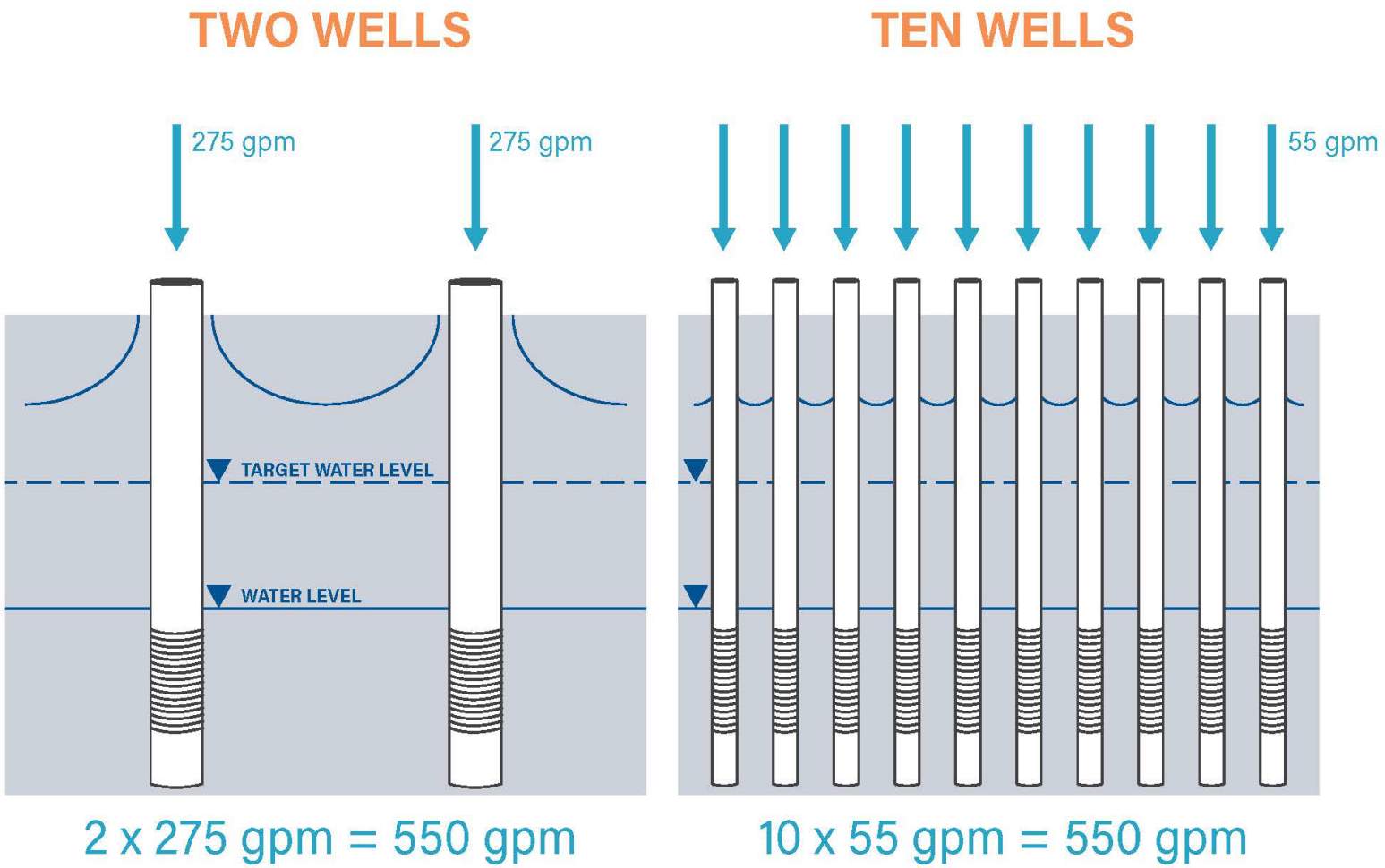
Hydrogeologic Engineering Variables



- Preliminary modeling performed
- Combined injection rate of ~550 gpm adequate to increase GW elevations to protective levels
- Fewer wells, less $$, but water levels may be at surface
- More wells, more $$, but keeps water levels below land surface
- Field testing before final design to determine optimal well layout

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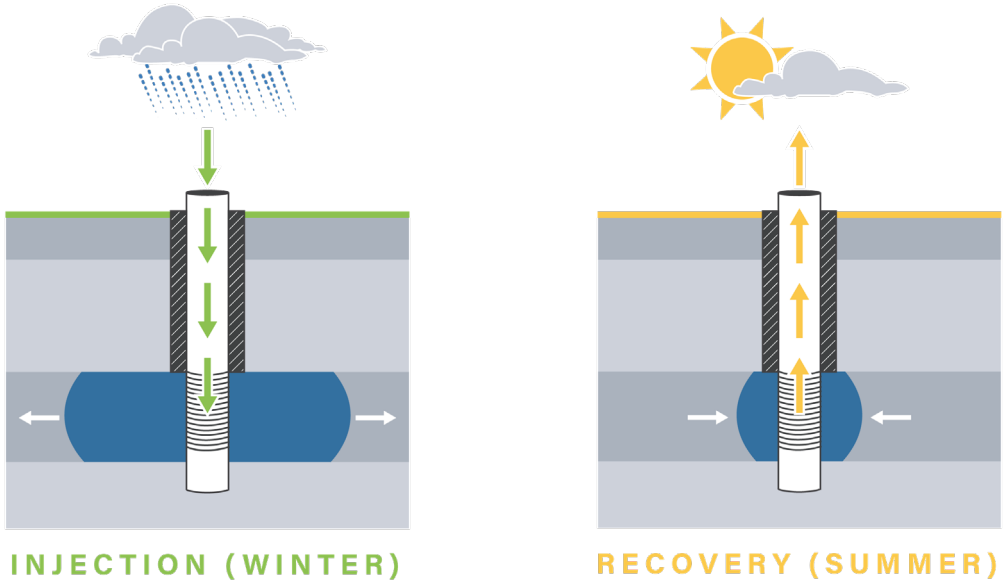
Sea Water Barrier Project Sequencing

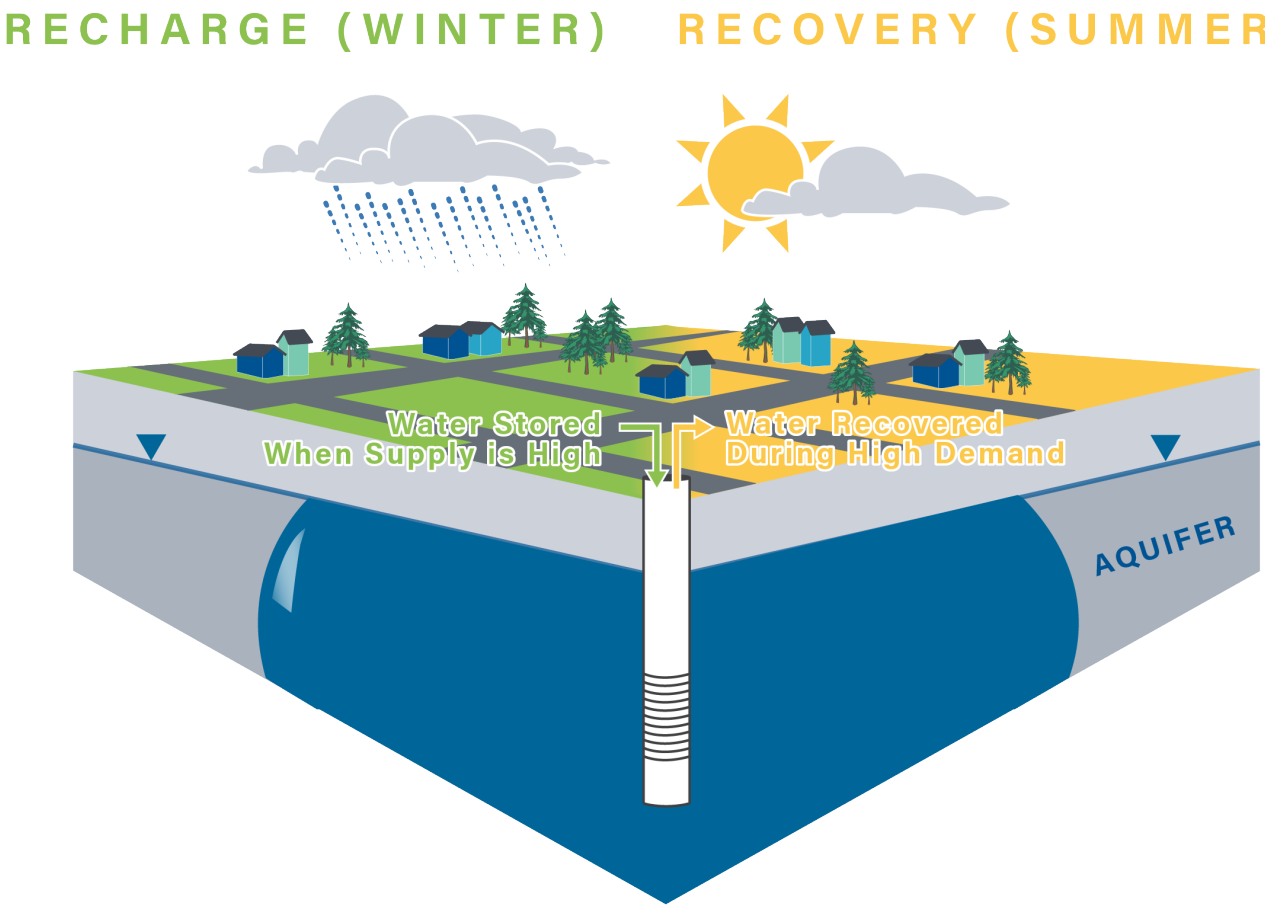
- Monitoring Wells (Grant Funding Application Submitted)
- Additional Modeling to refine conceptual design
- Engineering Analysis (Feasibility, Cost Estimates, etc.)
- Field testing

Aquifer Storage and Recovery

ASR Project Concept

- Uses Aquifer for temporary storage
- Inject water when supply is available
- Recover water during high demand periods
- Seasonal or longer (drought) storage/recovery cycles





Recharge Enhancement

Recharge Enhancement Possibilities

- Recharge Basins
  - Identify possible land and source water availability
- Creek De-lining
  - Santa Monica and Franklin creeks were lined in 70s to mitigate flood risk
  - Removal of lining would allow percolation of stream water during flow events
  - Preliminary modeling performed indicates an average of ~200 AFY of additional recharge could be achieved.

MANAGEMENT ACTIONS

Potential Management Actions

- Technical assistance for conservation/efficiency
- Well metering
- To be discussed and included in GSP to maintain qualification for future funding

WHAT'S NEXT

WHAT'S NEXT: Upcoming Public Workshops

SMCs

Projects and Management Actions, Implementation Plan

Public Presentations Completed!
Commence writing GSP chapter…

PUBLIC WORKSHOP.

GSA Public Workshop
June 21, 2023
6:00pm-8:00pm

Learn more or take action at
CarpGSA.org

GSPAC Schedule and Topics

- May 27, 2023
  - Recharge projects
  - Discussion of fee structures and GSA budget
  - Discussion of Management Areas
  - Discussion of SMCs

- June 27, 2023
  - Implementation Plan
  - Discussion of Metering
  - Discussion of Imported Water

QUESTIONS?