
# Benefits of Groundwater Modeling and Piezometers

JANUARY 11, 2021

# Purpose

To quantify potential effects of CCSD operations on groundwater outflow to lower San Simeon Creek and the lagoon:

- Well field pumping
- Wastewater percolation
- Well 9P7 pumping (gradient control well)
- Sustainable Water Facility (SWF) operation

Plus superimposed effects of Clyde Warren (9P4)pumping

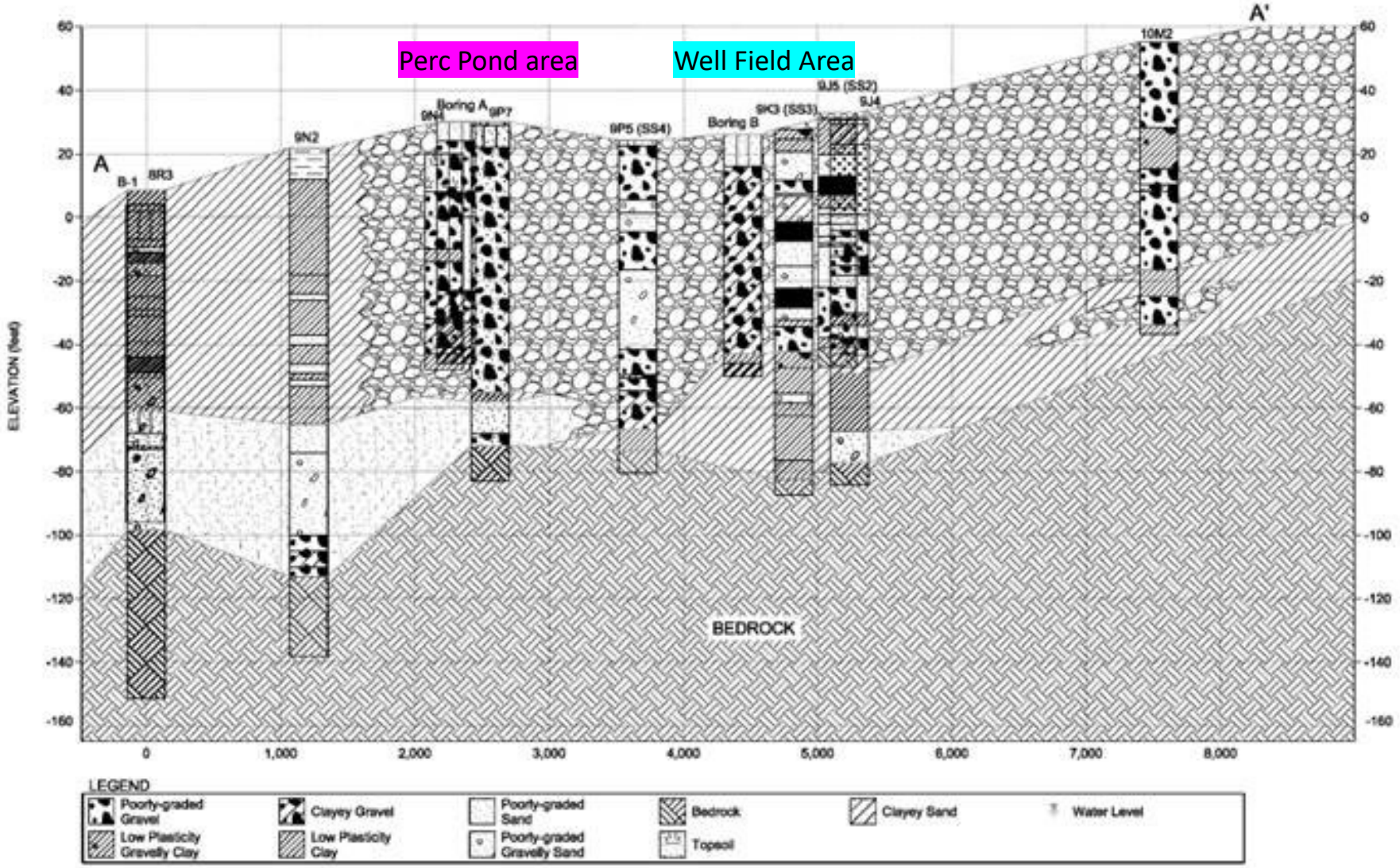
# Groundwater Model

Can be used for CDP, Instream Flow Study, Adaptive Management Plan, Water Shortage Contingency Plan, Basin Management Plan, etc.

- CDM Smith developed the current model in 2014 based on prior modeling by Gus Yates
- Model area in Percolation Basin
  - Good spatial detail
  - Accuracy is limited
    - Availability of measured water levels and flows for calibration

# Groundwater Model

# Groundwater Model



# How Does Pumping Affect Creek/Lagoon

- Negligible effect when creek is flowing in winter (>2 cfs)
- During dry (no-flow) season, groundwater gradually discharges into lower creek and lagoon
  - Partly derived from winter recharge
  - Partly derived from wastewater percolation

# How Does Pumping Affect Creek/Lagoon

- Source of water pumped by well near creek:
  - Initially from local storage depletion
  - Eventually by intercepting water that would flow into creek
- When creek flows again, basin is reset to “full”

# Piezometers

Piezometer: a shallow monitoring well screened at the water table

Purpose: provide water level measurements to support calibration of aquifer properties in the model.

- Capture any pumping activity during the measured intervals; every 10 minutes
- Will be maintained long term

# Groundwater Model

# Piezometer Construction

- Four locations
- 25 feet deep with 10-foot screen  (bottom)
- 2-inch PVC casing
- Installation by hollow-stem auger (no drilling fluids or mud)
- Surface seal and construction per state standards

# Modeling Scenarios

After calibration to piezometer data, model will be used to simulate scenarios:

- UWMP water shortage stages
- Various types and durations of drought
- SWF operations

# Multiple Benefits

## COASTAL DEVELOPMENT PERMIT

- Simulate effects of SWF pumping and injection on inflow to creek, pools and lagoon
- Improve District's ability to implement Adaptive Management Plan to prevent impacts
- Evaluate effectiveness of mitigation discharges

## URBAN WATER MANAGEMENT PLAN & RELATED STUDIES

- Help define water shortage stages based on real-time groundwater availability in dry year
- Simulate effects on water budget, water levels and lagoon inflow:
  - Decreased well field pumping
  - Decreased wastewater percolation
  - SWF pumping and injection

# TIMELINE

**JAN 2021**

Model Activation and Calibration

**FEB-MARCH 2021**

Todd Groundwater to provide support to WSC using activated model to provide best information available for UWMP supply projections

**APRIL 2021**

Piezometer installation

**APRIL-SEPT 2021**

Piezometer monitoring. Staff will collect data regularly and transmit to Todd Groundwater for inclusion in modeling

**OCT-NOV 2021**

SWF scenario definitions and simulations are developed based on actual groundwater levels and calibrated model

**DEC 2021**

**Technical Memo delivered to CCSD from Todd Groundwater summarizing results of modeling**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# Questions?