

CEQA and Groundwater Management Planning

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Agenda

- How do SGMA “Undesirable Results” compare with CEQA Thresholds
- What types of projects may be developed to achieve SGMA goals
- What types of impacts and mitigation actions may result



Who Am I

- Tom Barnes, ESA Southern California Water Group Director and Vice President
- Over 25 years experience in environmental consulting
- Focus on water, wastewater and recycled water infrastructure environmental assessments including groundwater-recharge projects



Introduction

- Preparation and adoption of Groundwater Sustainability Plans (GSPs) doesn't require CEQA compliance...

but projects proposed in the GSPs will.

SGMA Undesirable Results of Groundwater Use

1. Chronic lowering of groundwater levels
2. Reduction of groundwater storage
3. Seawater intrusion
4. Degraded water quality
5. Land subsidence
6. Depletions of interconnected surface water



SGMA Undesirable Results Compared to CEQA Thresholds

1. Chronic lowering of groundwater levels...
 - The Project would **deplete groundwater supplies** or interfere substantially with groundwater recharge such that there would be a **net deficit in aquifer volume or a lowering of the local groundwater table level**
2. ...reduction of groundwater storage
 - **...violate any water quality standards or waste discharge requirements**
3. ...seawater intrusion
 - **...otherwise substantially degrade water quality**
4. ...degraded water quality
 - ...located on a geologic unit or soil that is unstable, or that **would become unstable as a result of** the project and potentially result in on or off-site landslide, lateral spreading, **subsidence**, liquefaction or collapse
5. ...land subsidence
 - **...substantial adverse effect on any riparian habitat or other sensitive natural community**
6. ...surface water
 - **...substantial adverse effect on federally protected wetlands** as defined by Section 404 of the Clean Water Act
 - **...interfere substantially with the movement of any native resident or migratory fish or wildlife species**

Groundwater Management Projects

- Groundwater recharge

- Imported water
- Recycled water
 - Spreading basins
 - Injection wells



- Diverted surface water
 - Urban runoff capture and treat
 - Discharge reductions for recycled water
- Stormwater
 - Rubber dams
 - Off-channel diversion/In-channel

Groundwater Management Projects

- Groundwater Banking (Aquifer Storage and Recovery)
- Extraction Wells
- Wellhead Treatment
- Desalters
- Injection Barriers
 - Recycled water
 - Imported water
- Remediation Systems
- Monitoring Programs



Groundwater Project Impacts

- Groundwater Levels and Storage
- Seawater Intrusion
- Groundwater Quality
- Subsidence
- Water Supply
- Surface Water and Downstream Beneficial Uses
 - Water rights/supplies
 - Water quality
 - Habitat
 - Recreation

Groundwater Quality

Impacts

- Recharge water quality
 - Imported water, storm water, surface water, recycled water
 - TDS, nitrogen, CECs, sediment
- Entrainment
 - Legacy contamination
 - Minerals
- Extraction
 - Remediation system interference

Management Actions

- Recharge water pre-treatment
- Wellhead treatment
- Monitoring
- Salt and Nutrient Management Plan Consistency



Groundwater Level

Impacts

- Extraction
 - Lower water levels in nearby wells
 - Increased pumping costs
 - May dry up nearby wells or require lowering pumps
 - May dewater root-zones
- Recharge
 - Groundwater mounding
 - Subsurface infrastructure impacts

Management Actions

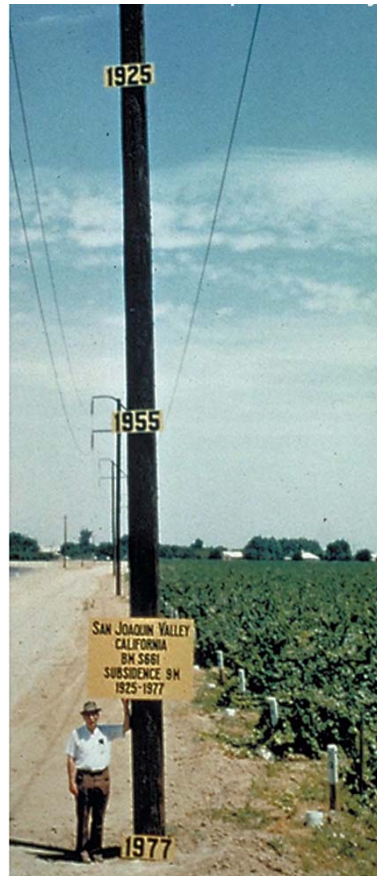
- Groundwater Monitoring Program
- Compensation for impacted nearby wells
- Habitat monitoring and compensation



Groundwater Storage/Overdraft

Impacts

- Overdraft of Groundwater Basin



Management Actions

- Implement Existing Groundwater Management Plan (AB 3030)
- Implement Groundwater Sustainability Plan (SGMA)
- Limit pumping and/or enhance recharge

Subsidence

Impacts

- Subsiding ground surface resulting from groundwater withdrawal

Management Actions

- Subsidence monitoring
- Imposing extraction limits



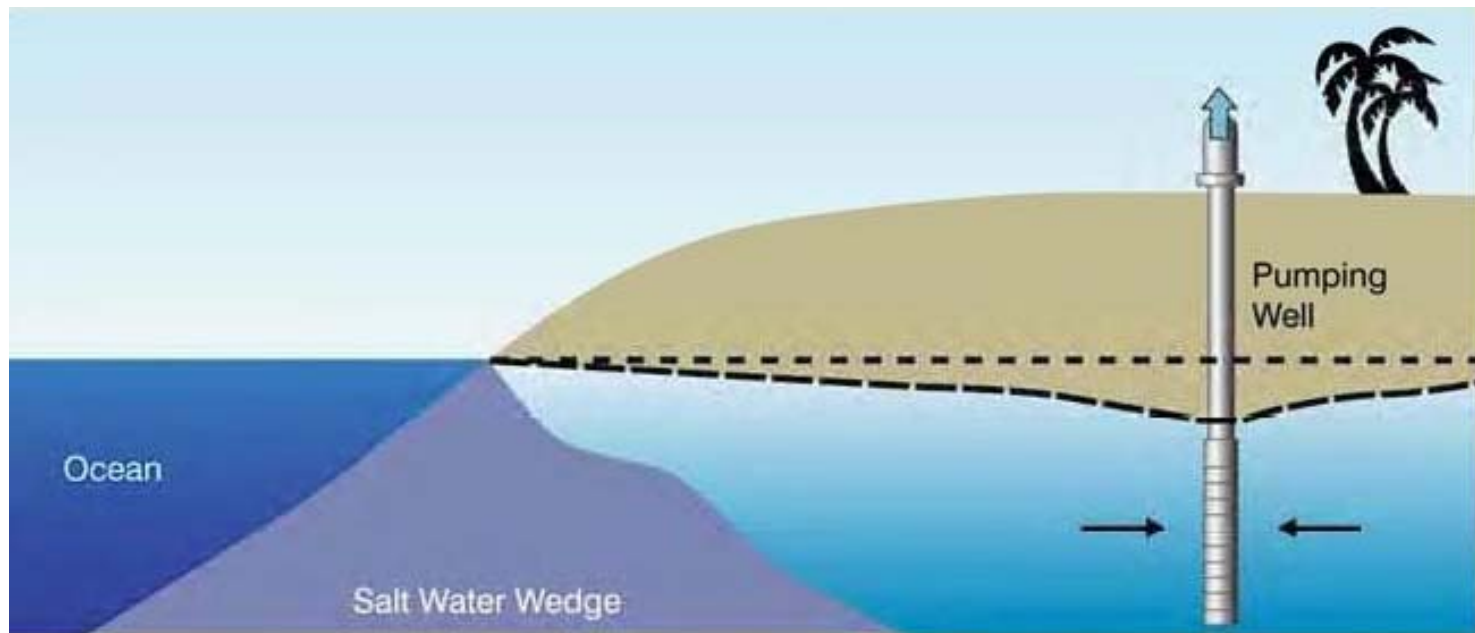
Seawater Intrusion

Impacts

- Inland migration of subsurface seawater from groundwater extraction

Management Actions

- Construct intrusion barrier (injection well arrays)
- Impose extraction limits



Water Supply

Impacts

- Use of groundwater supplies others are relying on
- Reduction or loss of recharge water supplies

Management Actions

- Assessment of maximum withdrawal caps
- Develop alternative supplies



Surface Water and Downstream Beneficial Uses

Impacts

- Reduced stream flow due to discharge diversions
 - Riverine habitat
 - Downstream water rights
 - Downstream recreation
- Reduce stream infiltration from lowered groundwater
- Lower groundwater below root-zone

Management Actions

- Compensation of downstream beneficial uses
- Habitat improvement commitments

