Proposed Seawater Intrusion Prevention Policy

Water Issues Committee
July 9, 2014
Since the early 1900s, the threat of seawater intrusion has accompanied groundwater basin utilization.
Seawater barriers have allowed increased groundwater production and basin operational storage.
The intent of the proposed policy is to support programs and actions that:

1. Prevent groundwater quality degradation from seawater intrusion.
2. Effectively operate and evaluate the performance of the seawater barrier facilities.
3. Identify and track trends in seawater intrusion in susceptible coastal areas and take action as needed.
Key seawater intrusion programs include:

- **Effective Barrier Operations (Talbert, Alamitos)**
  - Maintain protective elevations, where applicable
  - Injection facilities O&M and reporting

- **Barrier Performance Monitoring and Evaluation**
  - Regular water level and water quality monitoring and analysis
  - Maintain adequate geographic coverage
  - Annual reporting
Susceptible Coastal Area Monitoring and Evaluation

- Areas away from barriers, e.g., Bolsa and Sunset Gaps
- Adequate water level and water quality monitoring
- Annual reporting

Coastal Groundwater Management

- Additional management programs to reduce risk of seawater intrusion, e.g., CPTP, coastal in-lieu, decrease accum. OD
Staff recommends board adoption of the following Seawater Intrusion Policy:

The Orange County groundwater basin is a valuable natural resource that must be protected for future generations. Seawater intrusion represents a significant water quality threat to the groundwater basin. The control and prevention of seawater intrusion will continue to be one of the Orange County Water District’s key basin management responsibilities. The District will take actions necessary to:

- Prevent degradation of the quality of the groundwater basin from seawater intrusion.
- Effectively operate and evaluate the performance of the District’s seawater barrier facilities.
- Adequately identify and track trends in seawater intrusion in susceptible coastal areas and evaluate and act upon this information, as needed, to protect the groundwater basin.
End of Presentation
Protective elevations are based on the relative density of freshwater and seawater (Ghyben-Herzberg Principle).

Seawater is 2.5% (or 1/40) denser than freshwater.
GW elevations in Shallow Aquifer illustrate protective conditions (June 2012).
GW elevations in Lambda Aquifer (June 2012) illustrate inland flow from mergence zone and barrier to areas of groundwater production.
Shallow GW flows into deeper aquifers through mergence zones.
Protective elevations maintained since 2010 due to increased injection and reduced overdraft.

GWRS Injection on-line January 2008

Well M26

Accumulated Overdraft (AF)

Injection (MGD)
The Bolsa-Fairview fault largely impedes seawater intrusion in Bolsa Gap.