

Local Water Supply and Salinity Impacts

Salinity Seminar
June 18, 2008

Ken Weinberg, Director of Water
Resources
Toby Roy, Water Resources Manager
San Diego County Water Authority

Presentation Overview

- Local Water Supply Situation
- What is salinity?
- What is the problem?
- Why is salinity increasing?
- Who is affected and who contributes to the problem?
- What does the future hold?
- What are the potential solutions?

San Diego Region Water Supply Update



Governor Proclaims Statewide Drought – June 4, 2008



- Critically dry conditions in 2007 and 2008
 - Snowpack water content at 67% of normal
 - Runoff forecast at 55% of normal
 - Driest spring on record in northern California
 - Reservoir levels low – Oroville at 50%
- Largest court-ordered delivery restriction in state history
 - Deliveries from Delta – one-third of allocation
(Drought impacts and Judge Wanger Ruling on Delta Smelt)



Lake Oroville

June 2005: 897.12 Feet Elevation - 3,492,262 Acre Feet



Lake Oroville

February 2008: 719.86 Feet Elevation - 1,412,524 Acre Feet

State Water Project Fish Challenges



- Court ruling imposed interim restrictions on SWP pumping to protect Delta smelt (threatened)
 - In CY 2008, 500,000+ AF lost to SWP; another 300,000+ AF loss to CVP to date.
- Potential for additional pumping restrictions
 - Longfin Smelt (designated candidate species)
 - 12-month review starting July 2008.
 - Central Valley Steelhead/Chinook Salmon (w/s)
 - Wanger ruling in April 2008 invalidated Biological Opinion.

Colorado River Hydrologic Conditions

- 2007 was 8th year of historic drought
 - 2003: surplus water no longer available
 - CRA half-full
- 2008 above average
 - 117% of normal snow pack
- Reservoirs are at ~50%
 - 60 MAF
 - Will take many years to refill



Lake Meade "bathtub ring" stands 120' high

San Diego Supply Situation - 2008



- 30% cutbacks to Interim Agricultural Water Customers in 2008
- Region likely to avoid municipal and industrial cutbacks from MWD *this year*
- The region has entered a multi-year era of:
 - Diminished core imported water supplies
 - Increased reliance on water supply reserves
 - Increased vulnerability to weather changes

What is Salinity?

- Measured as Total Dissolved Solids or Electrical Conductivity
- Ions Dissolved in Water
 - Calcium, Magnesium, Sodium, Potassium, Bicarbonate, Sulfate, Chloride, Nitrate, Bromide

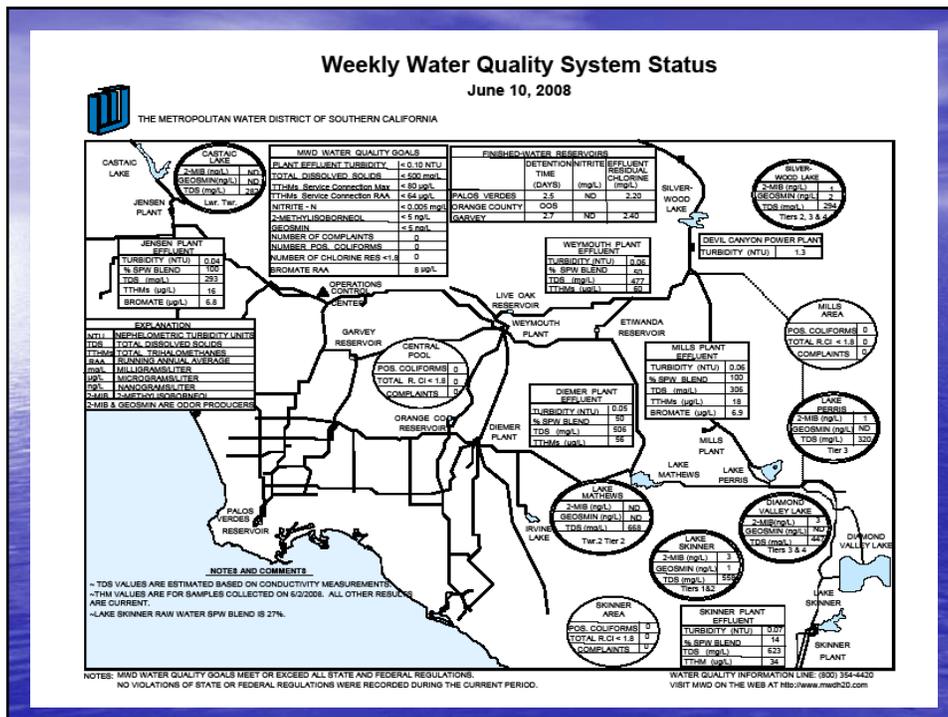


What is the Problem?

- Salt is accumulating in soils
- Salinity is increasing in surface waters
- Salinity is increasing in groundwater
- High salts limit the ability to beneficially use water in the San Diego Region

Why is Salinity Increasing?

- Salinity increases from upstream to downstream due to water diversions, consumptive use, and discharges.
- Salt is exported out of the Sacramento/Bay Delta/Colorado River Basins.
- Changes in our imported water supply mix effect salinity levels.



Who is Affected and Who Contributes to the Problem?

- Residential Users
- Industry
- Agriculture
- Wetlands
- Drinking Water, Wastewater Agencies

Residential Users

- Effects
 - Objectionable taste in drinking water
 - Bottled water or home treatment devices purchased
 - Health impacts – sodium and nitrate
 - Corrosion or build-up in pipes and appliances
- Salt Contributions
 - Water consumption
 - Water softeners and garbage disposals
 - Fertilizers and soil amendments
 - Personal care and cleaning products
 - Salt residuals in irrigated landscapes

Industry

- Effects
 - Increased pretreatment
 - More stringent discharge requirements
- Salt Contributions
 - Discharges to surface waters and groundwaters
 - Brine discharges to sewer system

Agriculture

- Effects
 - Limits crop production
 - Salt tolerant crops
 - Land fallowing
- Salt Contributions
 - Crops use water and leave salts behind
 - Fertilizers and soil amendments
 - Drainage contains more salt than irrigation water

Wetlands

- Salt Contributions
 - Water evaporates and salts are concentrated
 - High salinity water is discharged to surface waters or groundwater

Drinking Water and Wastewater Agencies

- Effects
 - More advanced treatment
 - Limits ability to recycle wastewater and recharge groundwater (increased use and development of groundwater and recycled water supplies key strategies to diversify San Diego's Water Supply Portfolio)
 - More stringent discharge requirements for wastewater dischargers
- Salt Contributions
 - TDS increases by about 300 to 500 mg/L between source water and wastewater

What Does the Future Hold?

- MORE SALT
- Increased regulation
- Population Growth
 - More water diversions
 - More discharges
- Climate Change
 - Less snow and more rain = more difficulty capturing high quality water for later use
 - More demand for local supplies



What are the Potential Solutions?

- Short-term
 - Actions to improve water quality in the Bay/Delta, Colorado river
 - Management practices
- Long-term
 - Peripheral canal or other conveyance to improve quality of water pumped from Delta
 - Drain or brine line to the ocean
 - Desalination facilities

Summary

- Large amounts of salt are imported into the San Diego region.
- High salts limit the ability to beneficially use water
- Consumptive use of water increases salinity.
- It is imperative that we develop a salt management plan and address this problem.
- We (individuals, urban, agriculture, industry) are all part of the problem and we must work together to address salinity in the San Diego Region.

Progress May Be Slow But We
Don't Have a "No Action"
Alternative

