Stakeholder Meeting on Desalination Facilities and Brine Disposal

April 18, 2011

State Water Resources Control Board

Division of Water Quality

Ocean Unit

Background

- Several new desalination projects have been proposed along the California coast to alleviate water shortages
- Desalination is the process by which dissolved minerals are removed from brackish or salt water to produce water suitable for human use
- Brine (concentrated salts and minerals) is a waste product produced by the desalination process or treatment of wastewater for recycling purposes

Background

- Brine wastes discharged into the ocean may form a dense plume that tends to settle to the ocean floor
- The effects of exposing benthic marine life to a dense highly saline plume is not well understood
- A 1992 SCCWRP study showed that purple sea urchin embryos were reduced 56-75% in salinities of 36.5g/kg
  - 33.5g/kg average nearshore salinity along California coast, but varies

Background

- Currently, desalination facilities are regulated under the NPDES program by the Regional Water Boards
- No provisions currently in the Ocean Plan specifically addressing **intakes** or **brine discharges** from desalination facilities
  - The Ocean Plan does not include a salinity objective

Background

- **Intake impacts**
  - Withdrawal of ocean or estuarine water may entrain or impinge aquatic life
- Porter-Cologne Section 13142.5(b) requires:
  - That a “new or expanded power plant or other inducstrial installation using seawater for cooling, heating, or industrial processing [use] the best available site, design, technology, and mitigation measures feasible…to minimize the intake and mortality of all forms of marine life.”
- Once-through cooling water policy (effective October 1, 2010)

Scoping Meeting June 26, 2007

- Desalination brine and salinity objective were among many Ocean Plan amendments issues covered at the 2007 scoping meeting

2011-2013 Triennial Review of the California Ocean Plan

- Required under the Federal Clean Water Act and California Water Code
- Public Hearing was held on September 22, 2010
- Workplan adopted on March 15, 2011

2011-2013 Triennial Review Workplan

- 26 issues summarized
  - Staff resources identified
  - Includes projected dates for amendments
- Only very high priority and certain high priority amendments may be completed within the Workplan period
  - 6 very high priority issues identified, including:
  - Desalination Facilities and Brine Disposal targeted for adoption in 2012 (1.5 PY)

Desalination Facilities and Brine Disposal

- Preliminary Staff Recommendation:
  - Narrative water quality objective: Salinity not to exceed 10% of natural background
  - Implementation – compliance at edge of zone of initial dilution (ZID)
  - Intakes addressed to:
    - prevent or minimize impingement and entrainment
    - prohibit intakes from impaired enclosed bays for ocean disposal

Narrative vs. Numeric Objectives

- ***Numeric*** objectives are absolute concentrations or values
- ***Narrative*** objectives are not absolute concentrations or values, but may refer to the difference from "natural" conditions

  e.g., dissolved oxygen and pH:

  – The dissolved oxygen concentration shall not at any time be depressed more than 10 percent from that which occurs naturally, as the result of the discharge of oxygen demanding waste* materials.

  – The pH shall not be changed at any time more than 0.2 units from that which occurs naturally.

Studies Planned

- Brine Toxicity Study
  (Granite Canyon Laboratory)
- Brine Disposal Expert Review
  (Modeling)
- Intake Impacts and Mitigation
  (Expert Review Panel)

Next Steps

- Consider Public Comments
- Second Scoping Meeting
- Board level workshop
- Complete Studies
- Prepare Draft Substitute Environmental Document (SED) and Draft Amendments
  - Ocean Plan Amendment
  - Enclosed Bays and Estuaries Plan Amendment