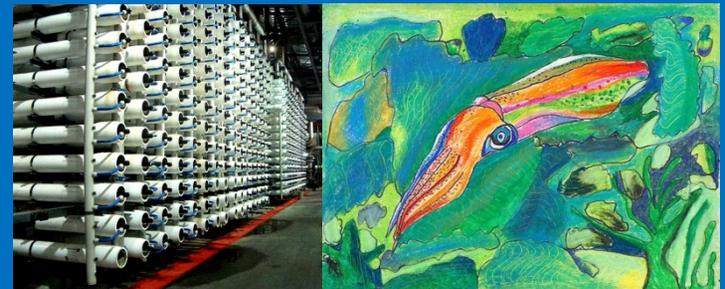


# Proposed Amendment to the Water Quality Control Plan for Ocean Waters to Address Desalination Facilities

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State Water Resources Control Board



**Public Workshop  
August 6, 2014**



*Art By: Avi Jagdish, 2nd Grade, 2012*

# Purpose

- Workshop Purpose:
  - Introduce proposed Desalination Amendment;
  - Solicit comments and questions during the comment period.
- No action to be taken by the State Water Board.



# Documents Available for Review

- Proposed Desalination Amendment
- Staff Report with Substitute Environmental Documentation (SED)
- Released July 3, 2014
- Available here:

[http://www.swrcb.ca.gov/water\\_issues/programs/ocean/desalination/](http://www.swrcb.ca.gov/water_issues/programs/ocean/desalination/)

- Comment Deadline: August 19, 2014  
at 12:00 pm



# Issue

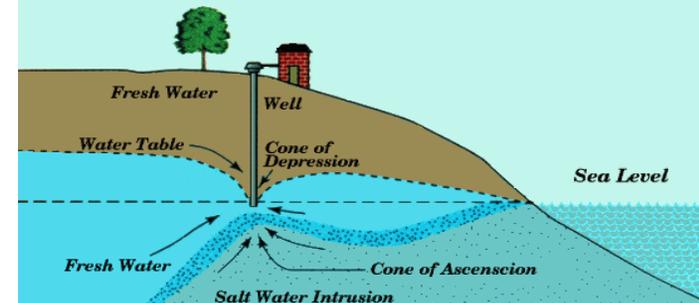
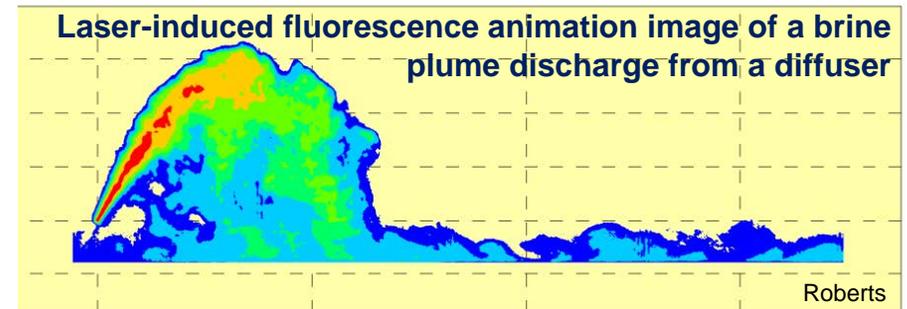
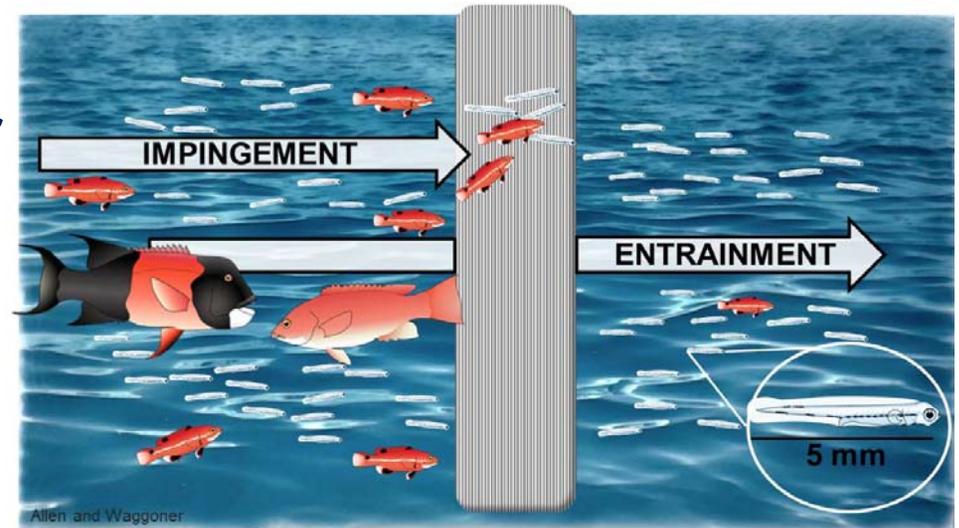
- Desalination projects have been proposed along the California coast to alleviate current and future municipal water shortages.
- 2011-2013 Ocean Plan Triennial Review State Water Board Priority.
- Desalination activities have the potential to negatively affect water quality and other beneficial uses.

## Statewide Proposed Desalination Facilities



# Potential Threats to Water Quality and Beneficial Uses

- 1) **Intakes:** Withdrawal of seawater may impinge or entrain marine life.
- 2) **Discharges:** Brine plumes may settle on the seafloor, shear organisms, and harm marine life.
- 3) **Construction**
- 4) **Seawater Intrusion**



# Current Regulations

- 2012 Ocean Plan does not address desalination facility intakes or discharges.



- Regional Water Boards permit desalination facilities on a project-specific basis (Waste Discharge Requirements or National Pollutant Discharge Elimination System permits).

Statewide Existing Desalination Facilities



Map created by J. Weston & C. Waggoner February 25, 2013

# Amend Statewide Water Quality Control Plan

- To address desalination intakes, brine discharges, and incorporate other non-substantive changes (Desalination Amendment) in the California Ocean Plan.
- Overarching goal is to ensure California has a diverse water supply portfolio while protecting marine resources.

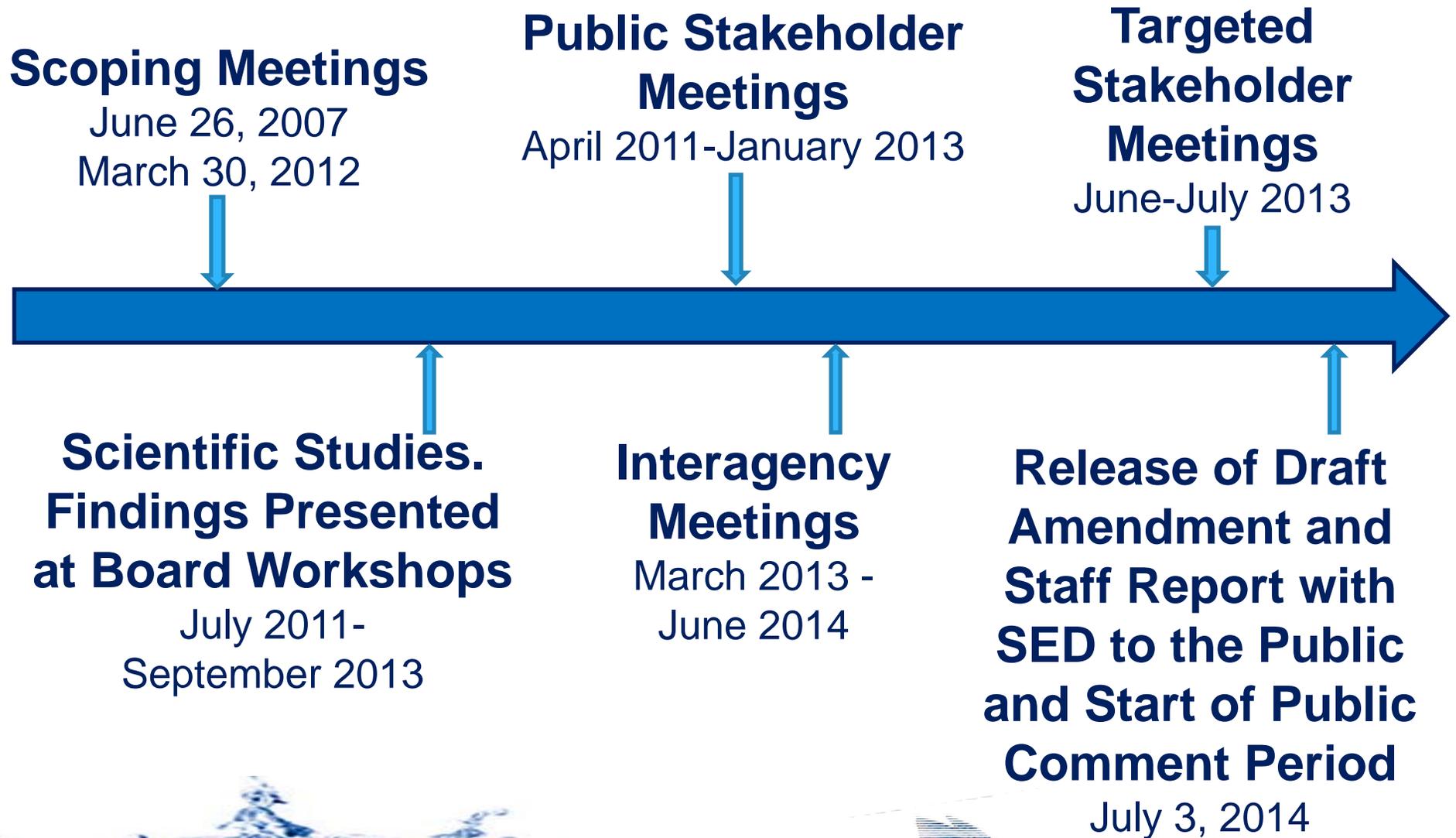


# Project Goals

- 1) Provide a consistent statewide approach based on best available science for minimizing intake and mortality of marine life, protecting water quality, and related beneficial uses of ocean waters.
- 2) Flexibility for facility-specific considerations and future technological advances.
- 3) Promote interagency collaboration.



# Previous Steps



# Proposed Desalination Amendment

- 1) Applicability and general provisions that include definitions of new, expanded, and existing facilities
- 2) Direction for the Regional Water Boards regarding the determination for new, expanded, and conditionally permitted desalination facilities required by California Water Code § 13142.5(b)
- 3) Narrative receiving water limitation for salinity
- 4) Monitoring and reporting requirements



# Applicability and General Provisions

- Applies to desalination facilities using seawater
- Exceptions:
  - Small, portable facilities operated by a government agency
  - Facilities operating as a critical, short term water supply during a state of emergency, that have been granted a temporary waiver
- Includes definitions of new, expanded, and existing facilities



# Applicability and General Provisions

- Regulation of intakes vs. discharges
- Intakes: CA Water Code § 13142.5(b)  
*“For each new or expanded coastal powerplant or other industrial installation using seawater for cooling, heating, or industrial processing, the best available site, design, technology, and mitigation measures feasible shall be used to minimize the intake and mortality of all forms of marine life.”*
- Discharges: CA Water Code § 13263 authorizes the Water Boards to prescribe requirements for waste discharges into waters of the state



# Water Code §13142.5(b) Determinations

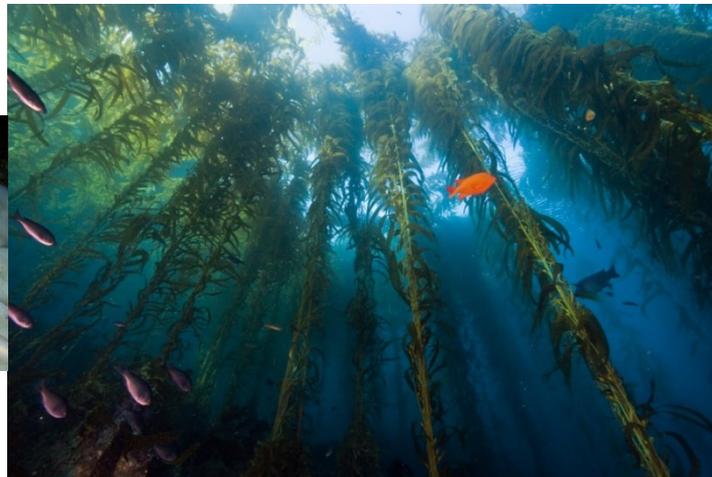
*“First analyze separately as independent considerations a range of feasible alternatives for the best site, the best design, the best technology, and the best mitigation measures to minimize intake and mortality of marine life.”*

*“Then, consider all four factors collectively, and include the best combination of alternatives that in combination minimize intake and mortality of marine life.”*



**Site:** Onshore and offshore location of a new or expanded facility

- Determine whether a proposed facility site best minimizes intake and mortality of marine life
  - Consider regional need for desalinated water
  - Analyze the presence of existing infrastructure
  - Avoid impacts to sensitive habitats, sensitive species, Marine Protected Areas, and State Water Quality Protected Areas



**Design:** The layout, form, and function of a facility, including the configuration and type of infrastructure, including intake and outfall structures.

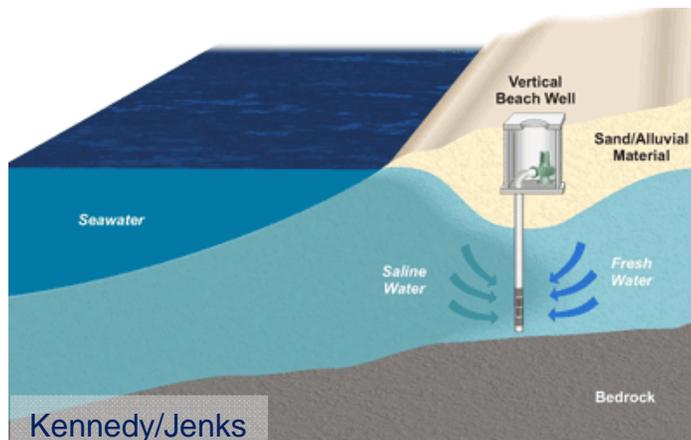
- Determine whether a proposed facility design best minimizes intake and mortality of marine life
  - Minimize entrainment of organisms
  - Avoid the formation of dense, negatively-buoyant plumes outside the brine mixing zone
  - Minimize the suspension of benthic sediments at the discharge



**Technology:** The type of equipment, materials, and methods that are used to construct and operate the design components of the desalination facility.

- **Considerations for Intake Technology**

- Subsurface intakes required unless infeasible
- Surface intakes must be screened with a 0.5, 0.75, or 1.0 mm slot-sized screen. *A single slot size will be selected after consideration of public comments.*
- Opportunity to apply to use an alternative screening technology



**Technology:** the type of equipment, materials, and methods that are used to construct and operate the design components of the desalination facility.

- **Considerations for Brine Discharge Technology**

- Commingling brine with wastewater is the preferred technology

- Multiport diffusers are the next best method for discharging brine



To view the diffuser discharge video, paste the following link into your browser:  
<http://youtu.be/w1hhIXT2y-s>

- Alternative brine disposal technologies may be used if they provide comparable protection

- Provisions allow technological innovations

- Provisions to specifically address flow-augmentation

**Mitigation:** The replacement of marine life or habitat that is lost due to the construction and operation of a desalination facility after minimizing marine life mortality through site, design, and technology measures.

- Marine Life Mortality Report: Projection of marine life mortality from construction and operation of the facility

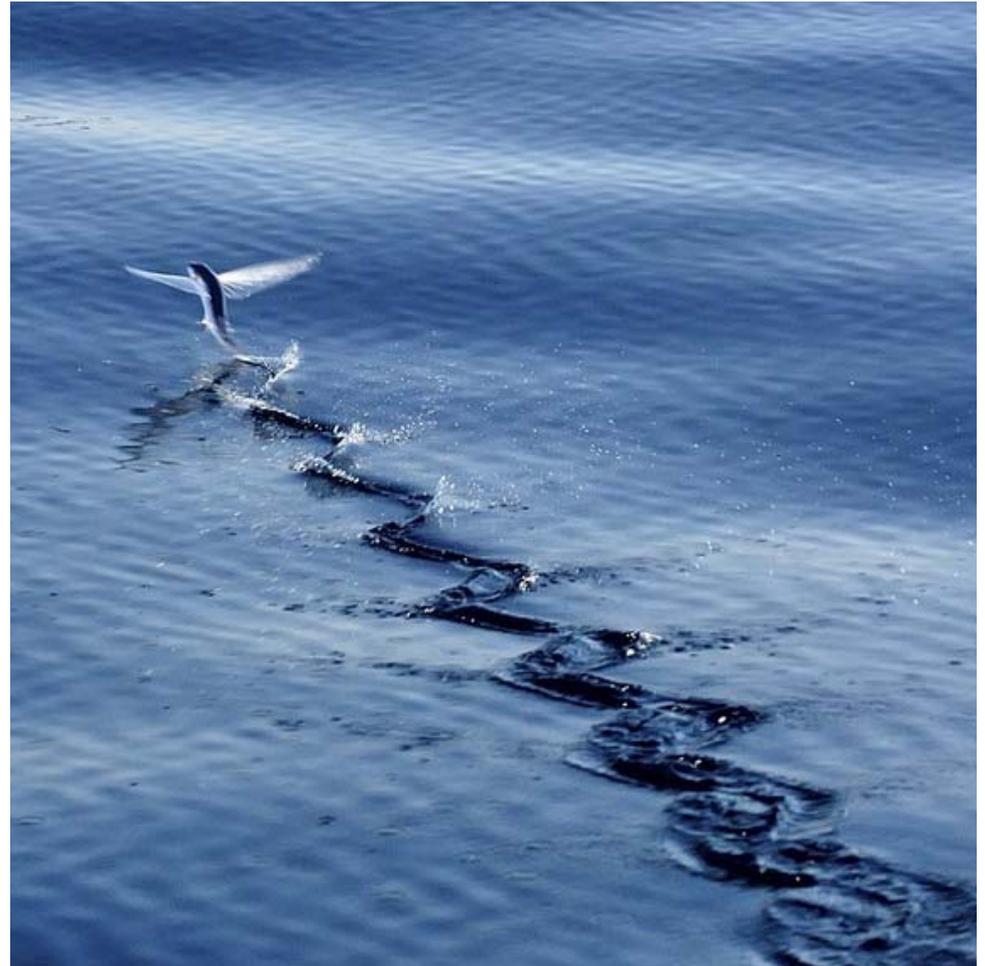
**Mitigation Option 1**  
Complete a  
Mitigation Project

**Mitigation Option 2**  
Fee-based  
Mitigation Program



# Water Code §13142.5(b) Determinations

- The best combination of alternatives may not always include the best alternative under each individual factor.
- New, expanded, and conditionally permitted facilities will need a Water Code §13142.5(b) determination.



# Narrative Receiving Water Limitation for Salinity

- Applicable to all desalination facilities

*“Discharges shall not exceed a daily maximum of 2.0 parts per thousand above natural background salinity to be measured as total dissolved solids (mg/L) measured no further than 100 meters (328 ft) horizontally from the discharge. There is no vertical limit to this zone.”*
- An owner or operator may submit a proposal to the Regional Water Board for approval of an alternative salinity receiving water limitation.

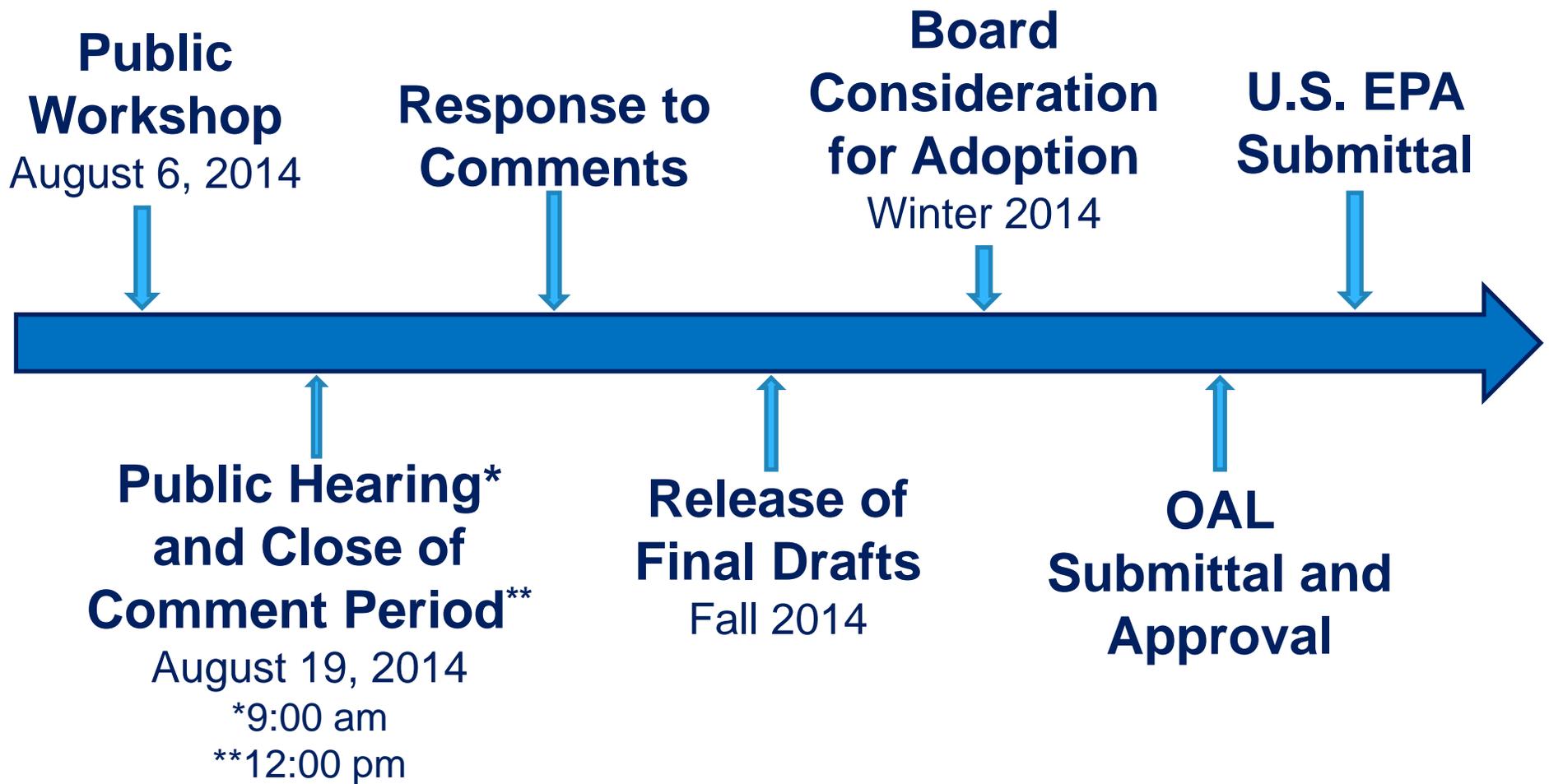


# Monitoring and Reporting Requirements

- Submit a Monitoring and Reporting Plan.
- Follow current model monitoring requirements in the Ocean Plan.
- Facility-specific monitoring is required until the Regional Water Board determines regional monitoring is appropriate.
- Must conduct Before-After Control-Impact biological surveys.



# Next Steps





## **Contact Information**

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**CALIFORNIA**  
**Water Boards**  
STATE WATER RESOURCES CONTROL BOARD  
REGIONAL WATER QUALITY CONTROL BOARDS

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