

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

Claire Waggoner

Environmental Scientist

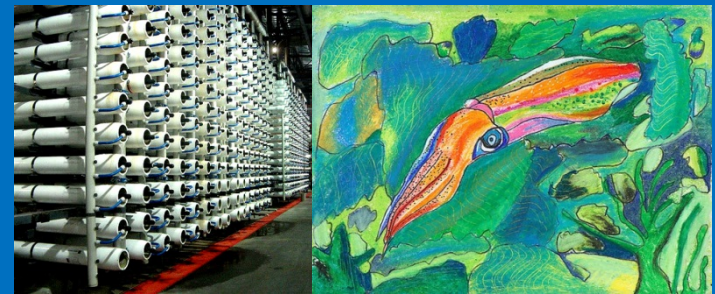
Waste Discharge Unit II

Division of Water Quality

State Water Resources Control Board



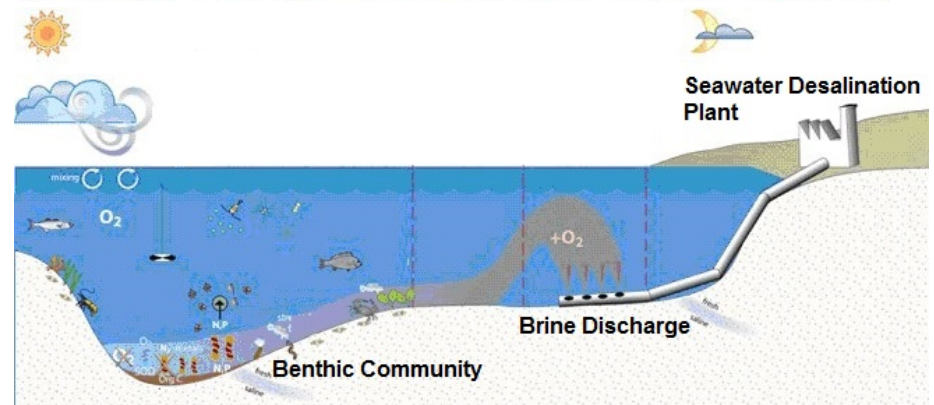
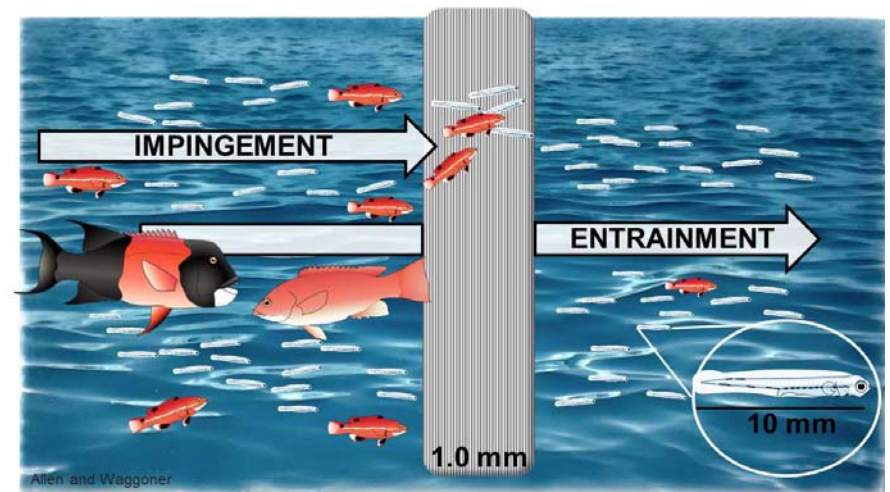
**Consideration of
Adoption
May 6, 2015**



Art By: Avi Jagdish, 2nd Grade, 2012

Seawater Desalination













- Tool to address local water needs.
- Intakes and discharges have the potential to harm marine life.



Address Seawater Desalination Facilities in the Ocean Plan

- Provide more regulatory certainty and direction on how to best assess and minimize environmental impacts.
- Ensure California has a diverse water supply portfolio while protecting marine resources and water quality.



Project Milestone	Timeframe
Scoping Meetings 	June 26, 2007 and March 30, 2012
Scientific Studies and Board Workshops 	2011-2013
Public Stakeholder Meetings 	2011-2013
Interagency Meetings 	2012-2015
Targeted Stakeholder Meetings 	Summer 2013
First Release of Draft Amendment and SR/SED	July 3, 2014
Public Workshop 	August 6, 2014
Public Hearing 	August 19, 2014
Close of First Comment Period (30 letters/ 740 comments) 	August 19, 2014
Second Release of Draft Amendment, SR/SED, response to comments, and peer review. 	March 20, 2015
Targeted Stakeholder Meetings 	Mar. and Apr. 2015
Close of Second Comment Period (17 letters/ 150 comments) 	April 9, 2015
Third Release of Draft Final Amendment, SR/SED and RTC	April 24, 2015
Consideration of Adoption of Draft Final Amendment and SR/SED 	May 6, 2015
OAL Submittal and Approval	Summer 2015
U.S. EPA Submittal	Summer 2015

Proposed Desalination Amendment

- 1) Applicability and general provisions.
- 2) Direction for the Regional Water Boards for Water Code § 13142.5(b) determinations.
- 3) Narrative receiving water limitation for salinity.
- 4) Monitoring and reporting requirements.



Change from Section L to M

Trash



Maylina D. 8th Grade, 2012

Desal



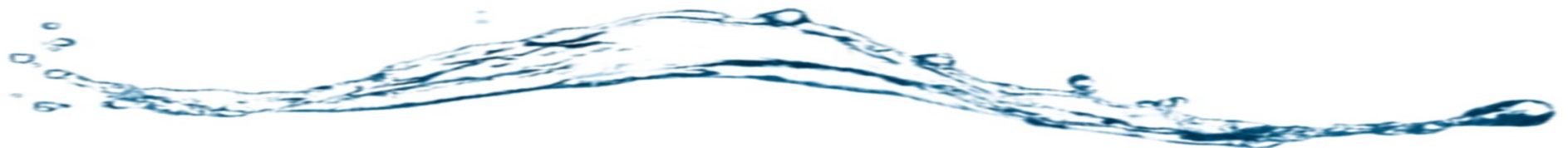
Avi Jagdish, 2nd Grade, 2012



Definitions of Existing Facilities

Chapter III.M.1.b.(1):

“For purposes of chapter III.M, “existing facilities” means desalination facilities that have been issued an NPDES permit and all building permits and other governmental approvals necessary to commence construction for which the owner or operator has relied in good faith on those previously-issued permits and approvals and commenced construction of the facility beyond site grading prior to [effective date of this Plan]. ~~Existing facilities do not include a facility for which permits and approvals were issued and construction commenced after January 1, 1977, but for which a regional water board did not make a determination of the best site, design, technology, and mitigations measures feasible, pursuant to Water Code section 13142.5, subdivision (b) (hereafter Water Code section 13142.5(b)).~~”*



Existing Seawater Desal Facilities?

Station ID	Operator/ Location	Production Capacity (MGD)	Status
1	Monterey Bay Aquarium	0.04	Active
2	Marina Coast Water District	0.3	Temporarily idle
3	Duke Energy, Moss Landing	0.5	Active
4	Sand City	0.3	Active
5	City of Morro Bay	0.6	Intermittent use
6	Duke Energy	0.4	Not known
7	Pacific Gas & Electric (PG&E)	0.6	Not known
8	Chevron USA	0.4	Active
9	City of Santa Barbara	2.8-8.9	Temporarily idle
10	U.S. Navy	0.02	Not known
11	Southern California Edison (SCE)	0.12	Inactive

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Definition of Feasible

- CEQA Definition

“Feasible’ means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.” (Public Resources Code § 21061.1; § 30108).



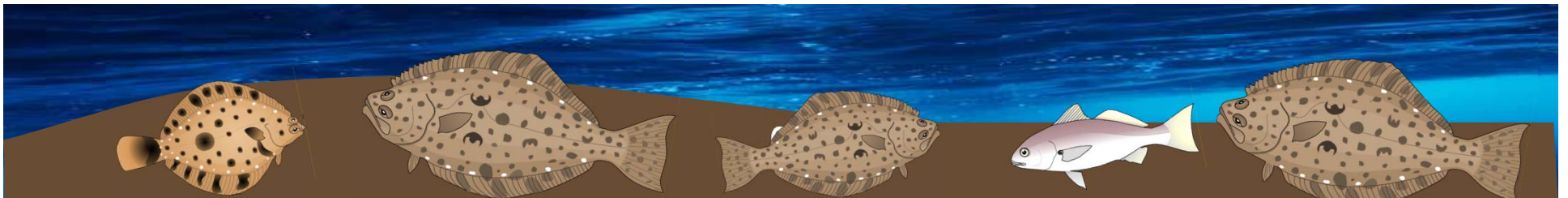
Feasibility and Cost

- Chapter III.M.2.d.(1)(a)i revised
- Removed factors not necessarily related to intake and mortality of all forms of marine life.
- Other factors related to subsurface feasibility addressed by CEQA lead agency.
- Subsurface intakes shall not be determined to be economically infeasible solely because subsurface intakes may be more expensive than surface intakes.



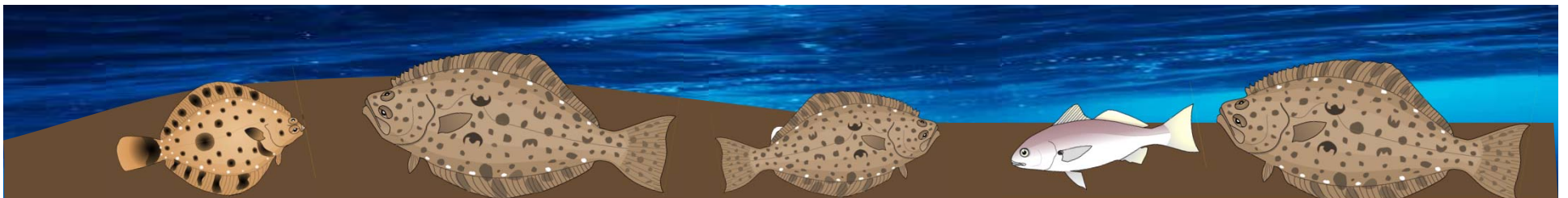
Alternative Brine Discharge Technologies

- Allows for:
 - Future technological innovations
 - Flow augmentation using subsurface intakes
- Prohibits flow augmentation using surface intakes with a potential exception.



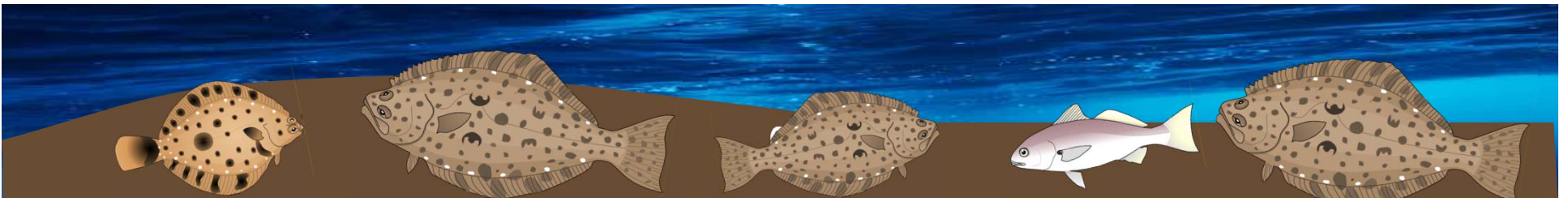
Flow Augmentation Using Surface Intakes

- A facility that has received a conditional 13142.5(b) determination and is over 80 percent constructed may apply for an exception.
- Such facility must demonstrate that the system provides comparable intake and mortality of all forms of marine life as preferred technologies and their associated brine mixing zones.



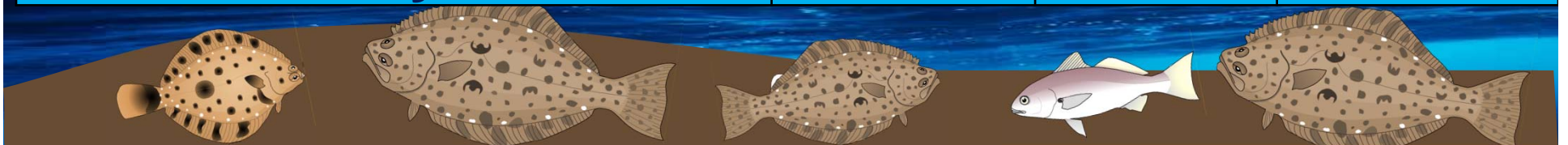
Brine Mixing Zones

- Area where salinity may exceed 2 ppt or an approved alternative.
- Mitigate for impacts and monitor.
- Standard BMZ -limited to 100 m from *each discharge point*. All facilities.
- Alternative BMZ -limited to 200 m from the discharge point. Limited to a facility with a conditional determination that is over 80 percent constructed.



Comparative Analysis of Total Mortality

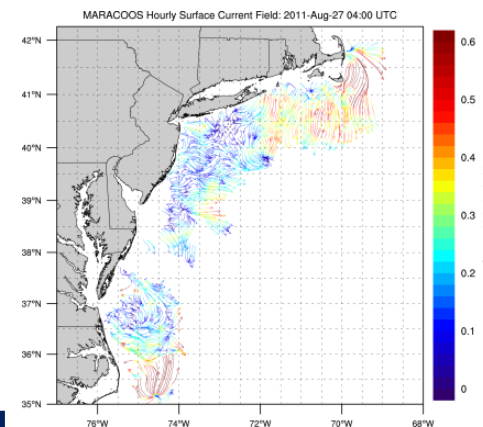
Source of Mortality	Commingling	Diffusers	Surface Flow Augmentation
Intake-related Entrainment	0	0	X
Through-system Osmotic Stress	0	0	X
Turbulence (Water Conveyance and Mixing)	0	0	X
Osmotic Stress in Brine Mixing Zone	0/X	X	X
Turbulence/Shearing at Discharge	0/X	X	0/X
Size of the Brine Mixing Zone	0/X	X	X
Other Factors	X	X	X
Total Mortality	A	B	C



Optional Additional Mitigation Language

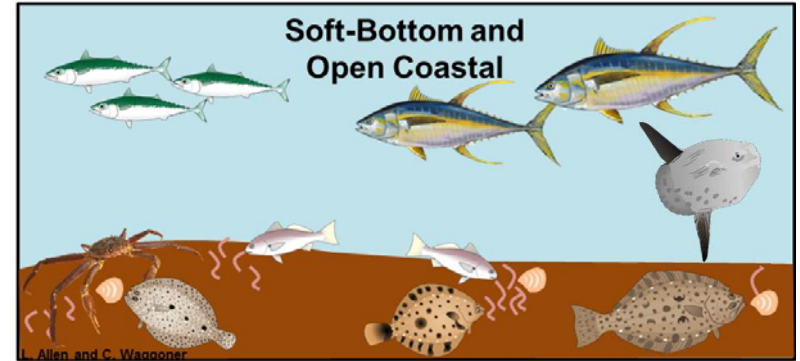
Chapter III.M.2.e.(1)(a), the alternative method must:

- Assess intake and mortality of all forms of marine life,
- Translate into mitigation acres,
- Be peer reviewed by a neutral third party expert review panel, and
- Be approved by the regional water board in consultation with the State Water Board staff.



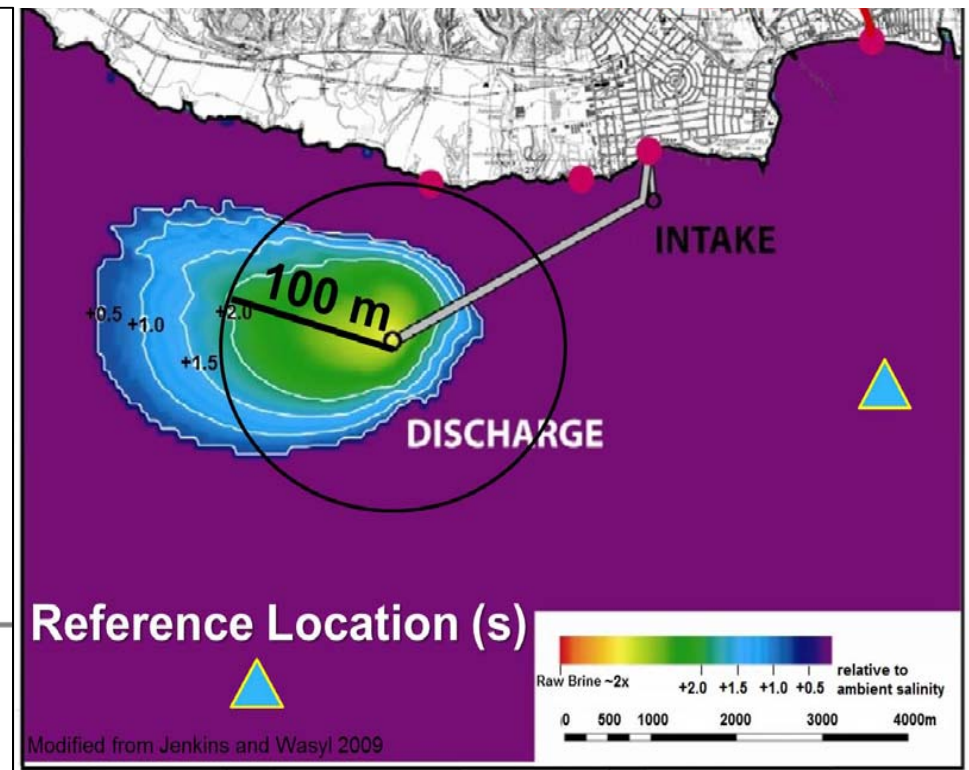
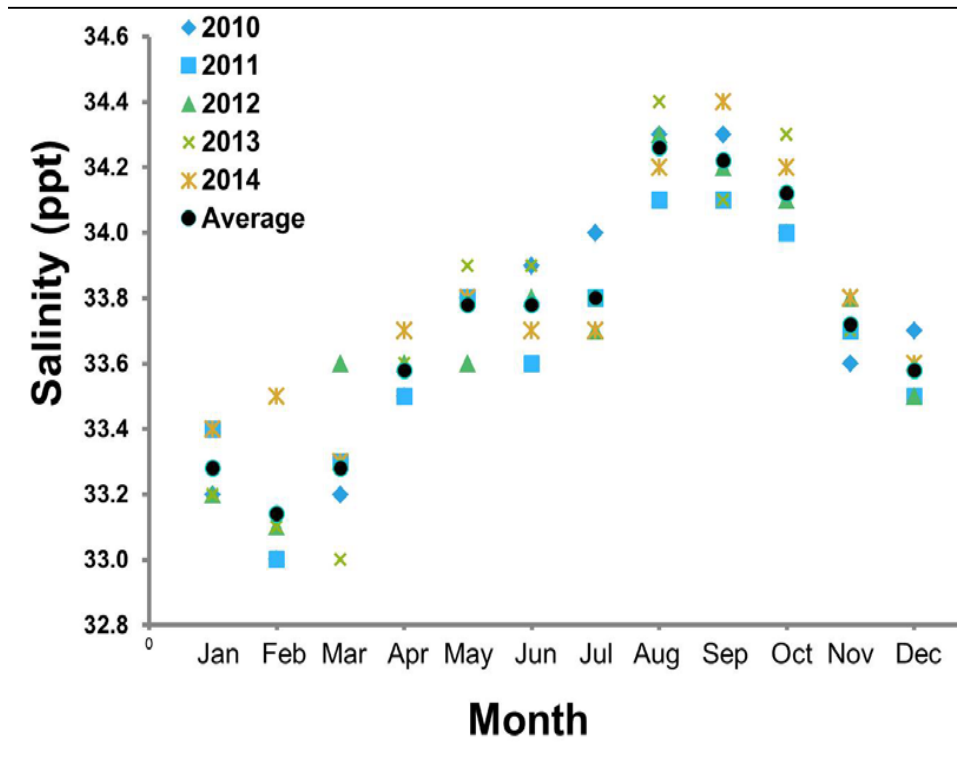
Mitigation

- Out-of-kind mitigation only for:
 - soft-bottom
 - open ocean
- Mitigation ratios:
 - Based on relative productivity of habitats
 - Can be adjusted to account for uncertainty
- Conditionally permitted or expanded facilities:
 - Account for previously-approved mitigation projects
 - Require additional mitigation when making a new 13142.5(b) determination



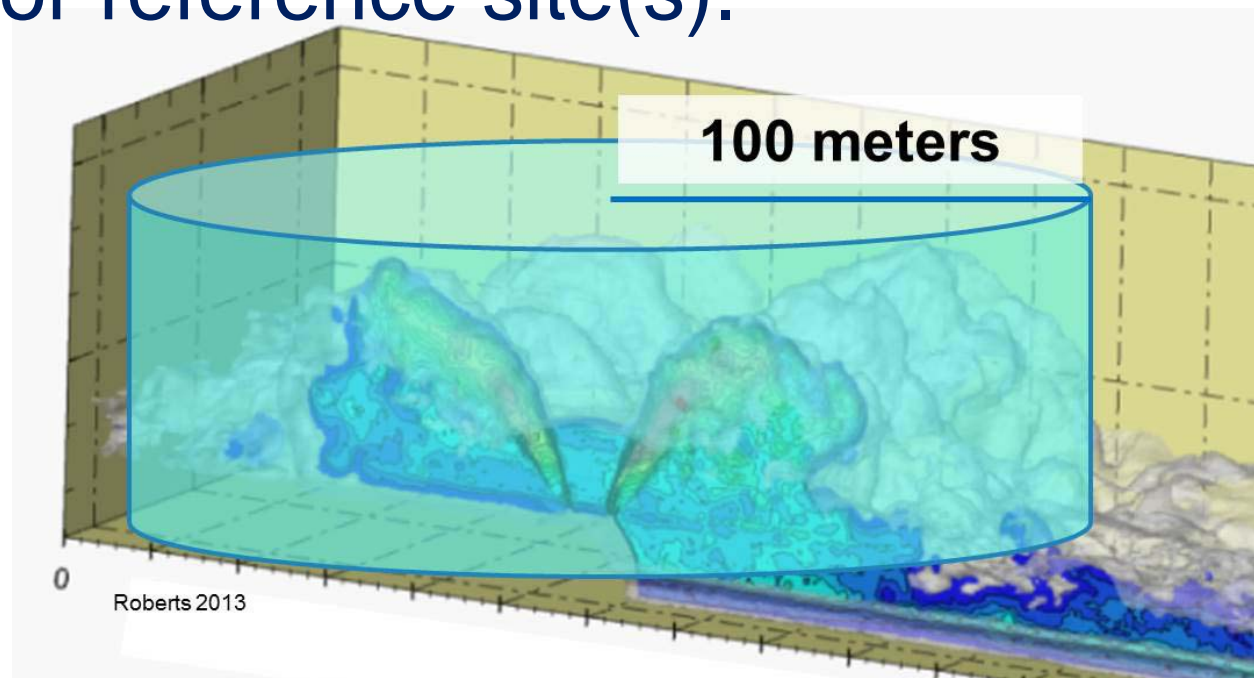
Natural Background Salinity

(1) Historical Average (2) Reference Site(s)



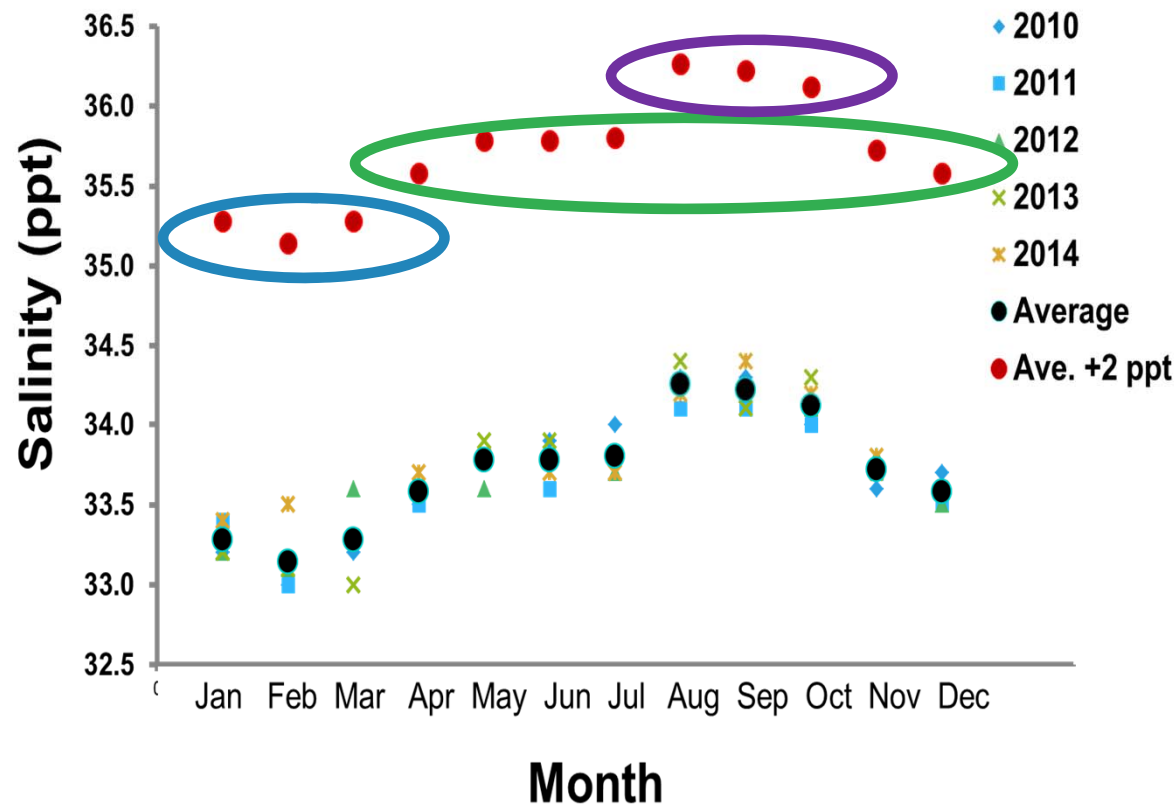
Demonstrating Compliance with the Receiving Water Limit for Salinity

- Daily sampling at 100 meter distances around the point(s) of discharge and throughout the water column.
- Compare receiving water salinity to historical data or reference site(s).



Develop Effluent Limitation(s) for Salinity

- Include a single effluent limitation or monthly, or seasonal limits in the permit.
- Update upon permit renewal.





Kyle McBurnie, California
Harbor seal (*Phoca vitulina*) in a kelp forest at Cortes bank, near San Diego, CA.