

A large bird, possibly a frigatebird, is shown in flight over a body of blue water. The bird is the central focus, with its wings spread wide. The background is a deep blue, textured water surface.

Salton Sea

Ecosystem Restoration Program

Doug Osugi
Colorado River and Salton Sea Office

Department of Water Resources



Salton Sea Ecosystem Restoration Program Staff

Colorado River & Salton Sea Office

- Dale Hoffman-Floerke – Chief
- Doug Osugi
- Jerry Boles
- Vic Nguyen
- Marti Kie
- Marcella Keppler
- Ramona Malinowski

Southern District

- Chuck Keene

Department of Fish & Game

- Dee Sudduth
- Kim Nicol
- Arturo Delgado
- Juliet Virtue
- Chris Hayes
- Curt Taucher

Consultant Team

- CH2M Hill
- DRI
- UC Davis



Location of the Salton Sea



California

Arizona

Los Angeles

Palm Springs

Salton Sea

Colorado River

U.S.

San Diego

Tijuana

Mexico

Pacific Ocean

Gulf of California

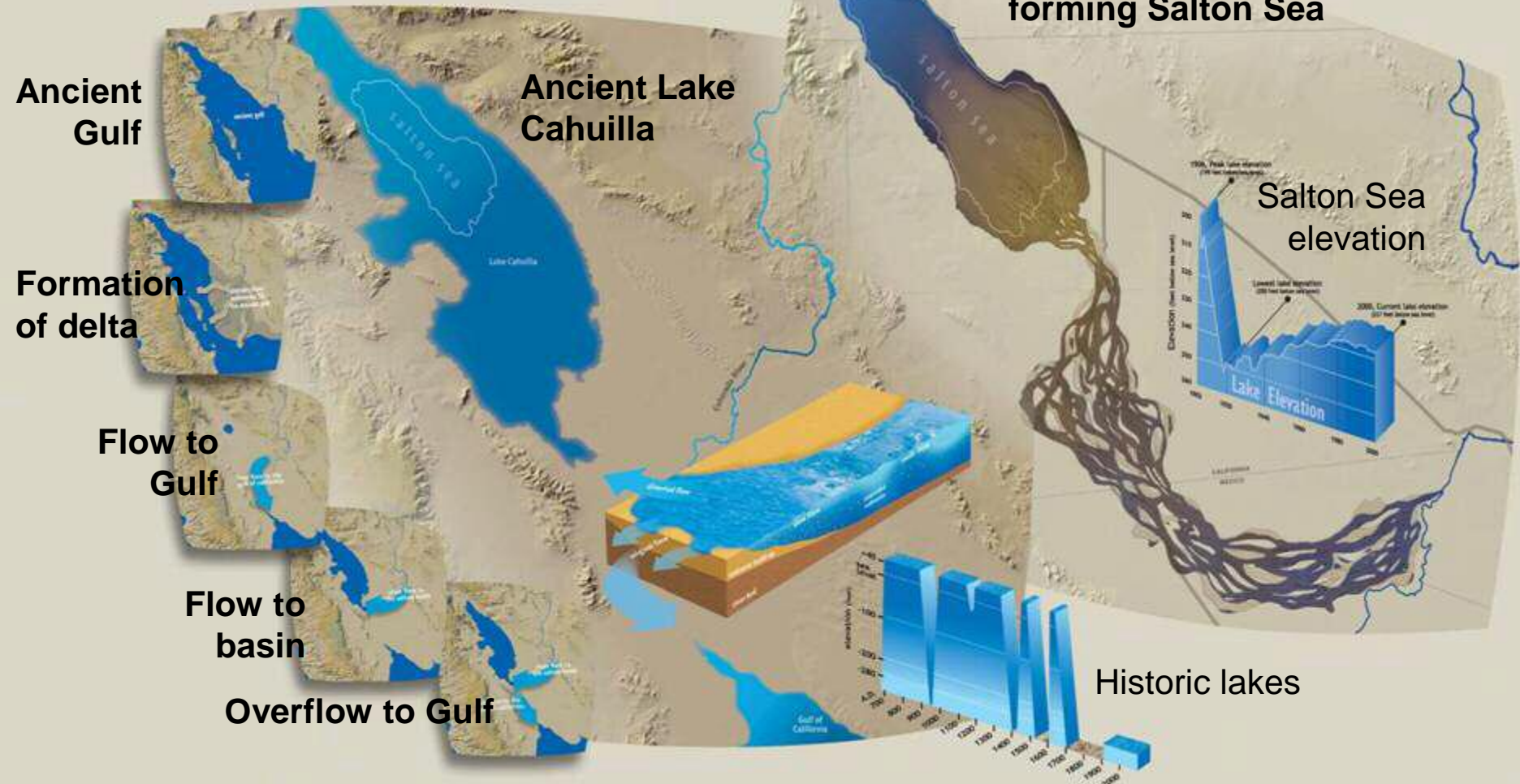
Formation of the Salton Sea

SALTON SEA



Ancient sea shoreline

1905 flood breached irrigation canal, forming Salton Sea



Salton Sea Basin: Important Ecological and Economic Resource

America's Winter 'Bread Basket'



Over 6 million acres of farmland



\$1.5 billion annual agricultural industry



200,000 visitors annually



Bird watching, boating, fishing, and more ...



Salton Sea Restoration Program – Habitat

Agricultural lands



Irrigation drains



Islands



Upland (riparian and desert woodland, and non-agricultural upland)



Shoreline (rocky shoreline, mudflats, barnacle bars)



Shallow Water and Shoreline Pools



Deep Salt Water



Marsh and shallow open water



Ecological Importance of the Salton Sea

400+ species of birds 70% of all the bird species in California

1/3 of California breeding bird species
breed within Salton Sea ecosystem

19 species of high conservation concern



Salton Sea: An International Avian Airport



Number of Banded Birds
 Scientists at the University of Redlands expected the bird banding data to illustrate the importance of the Salton Sea for birds migrating along the Pacific Flyway. However, the data clearly show a much broader significance of the Sea for migrating birds across all of Western North America.



20,000 bird band records

Birds recovered from as far away as Russia and Peru

2/3 of all migrating birds in the continental U.S. visit the Salton Sea

Salton Sea in the Summer



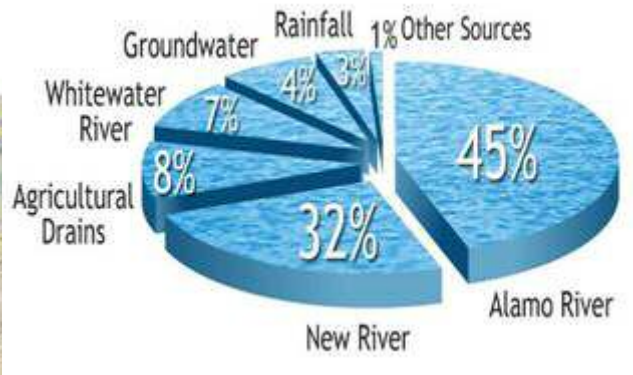
Salton Sea in the Winter



Salton Sea: White and Brown Pelicans



Salton Sea Hydrology

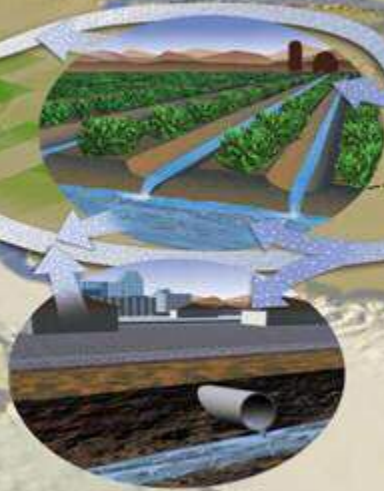
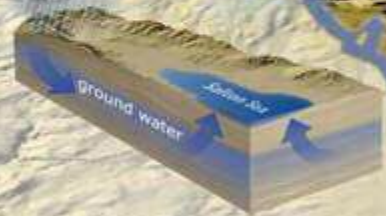


Inflow = 1.346 maf/yr
Evaporation = 5.78 ft/yr
Salinity = 46,000 mg/L

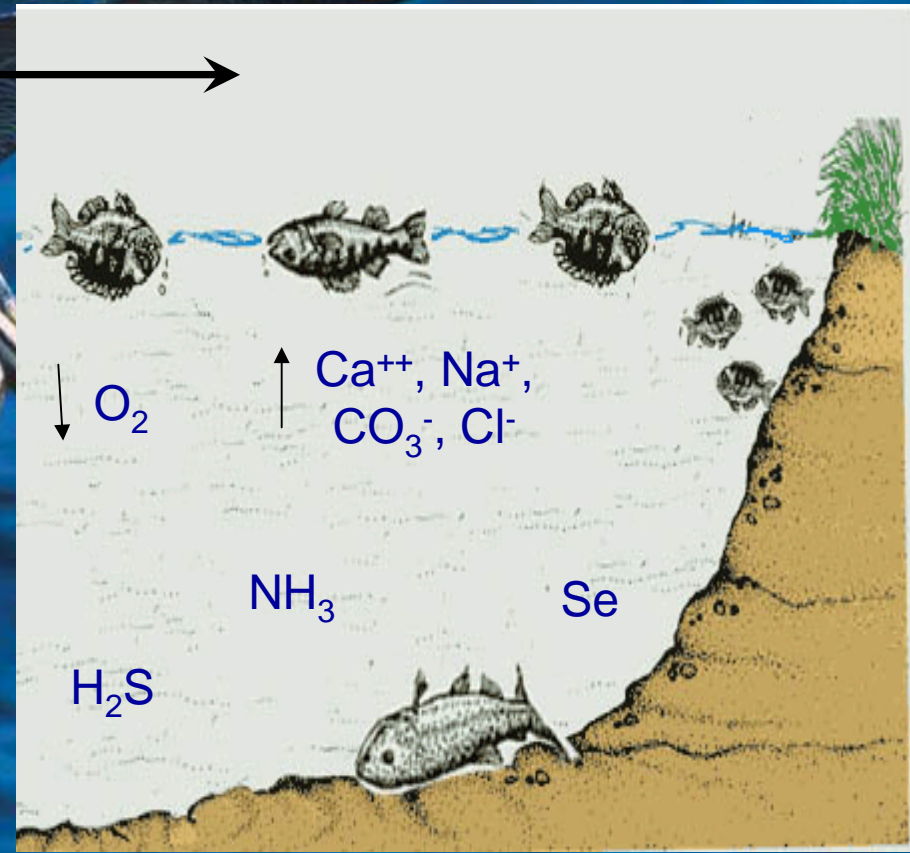
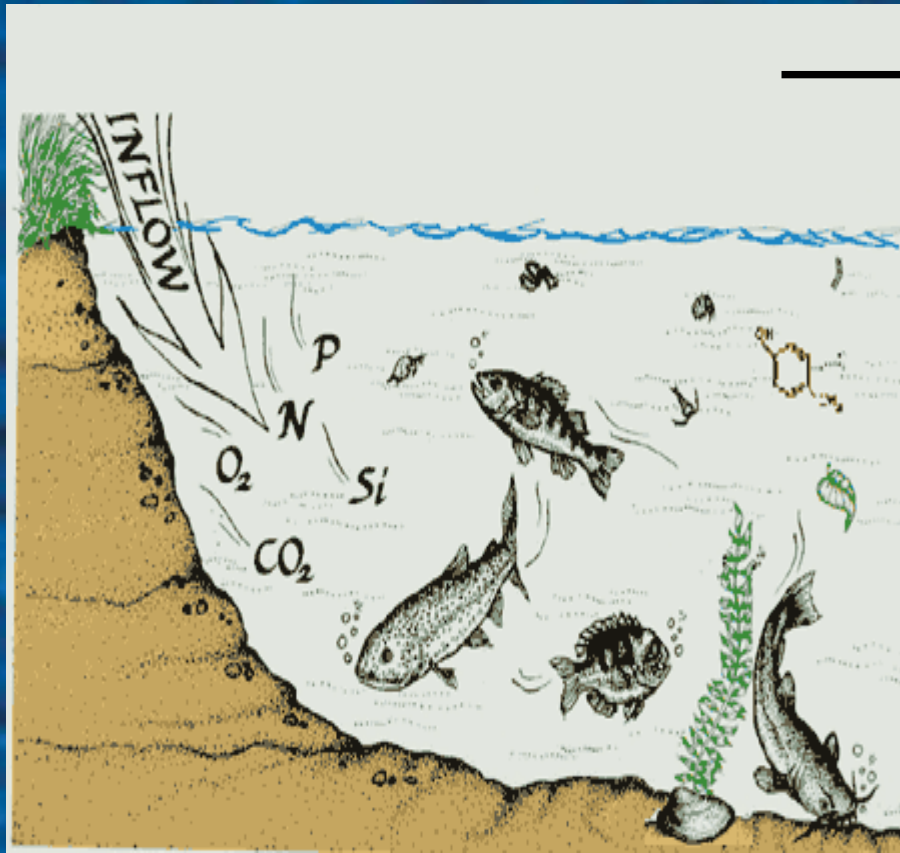
Whitewater River

Alamo River

New River

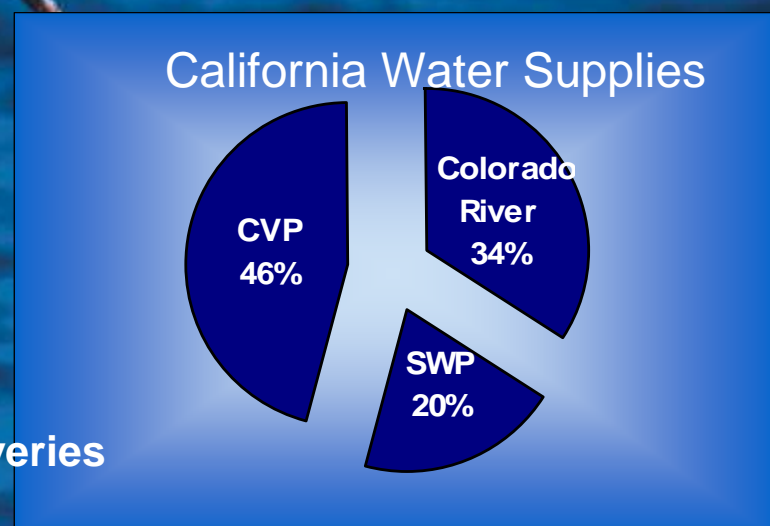
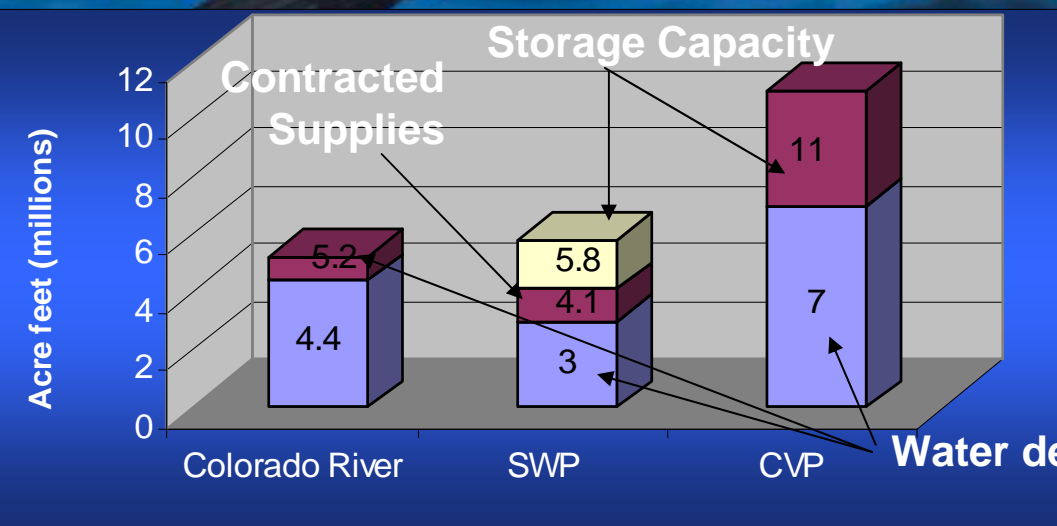


Declining Water Quality



2003 Colorado River Quantification Settlement Agreement

- ❖ **Colorado River apportionment for California**
 - 4.4 million acre-feet per year (plus ½ of any surplus flows)
 - historically used ~800,000 acre-feet more than basic apportionment
- ❖ **By early 1990s Arizona and Nevada neared use of full apportionments**
- ❖ **Negotiations among users of Colorado River culminated in QSA in October 2003**
 - local agencies agreed to reduce use of Colorado River water to basic apportionment
 - water transfers from Imperial IID to SDCWA and to CVWD
 - reduces inflows of agricultural runoff that constitute the sea's chief source of fresh water



QSA Effects to Salton Sea

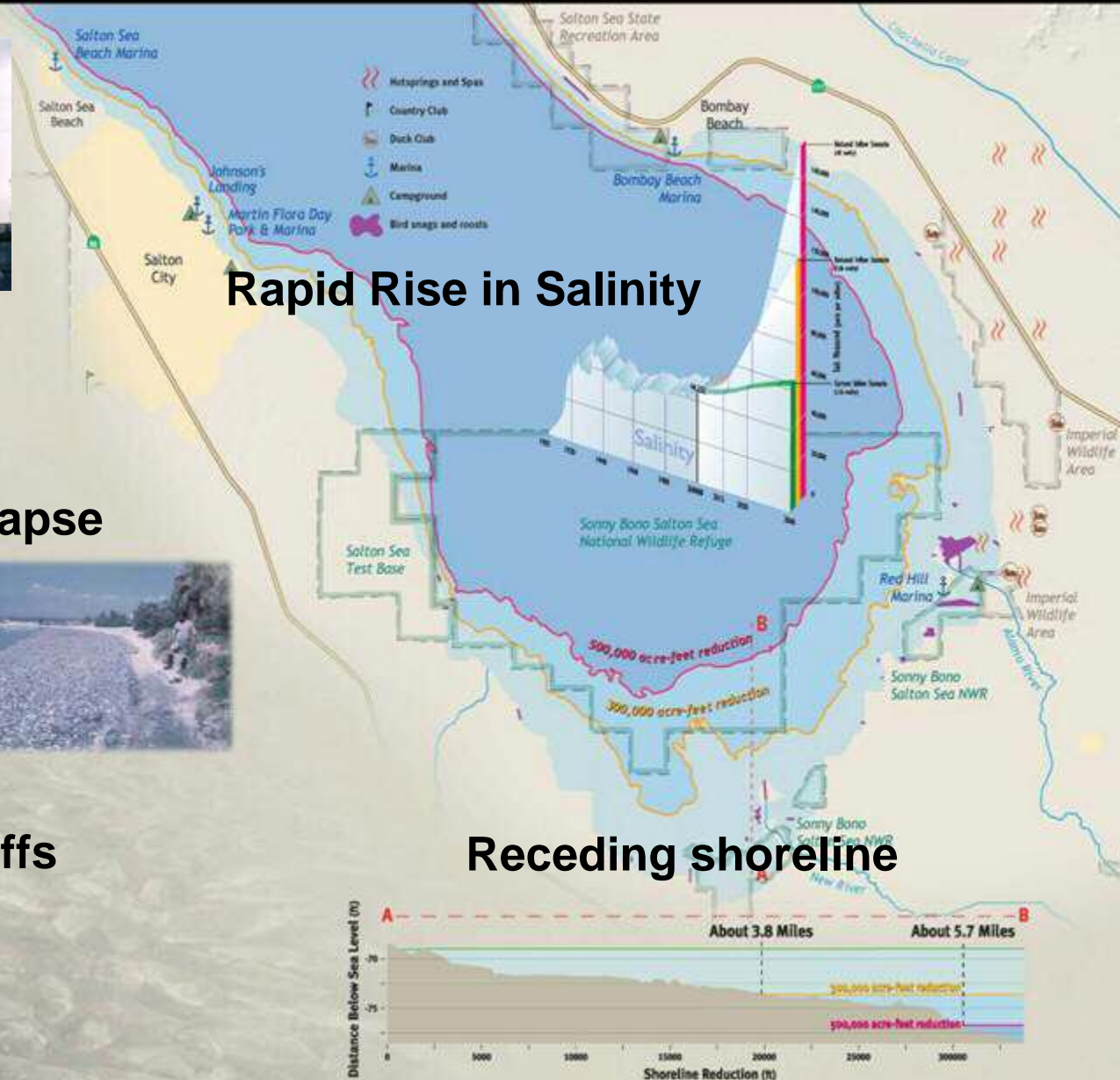


Exposure of soils to winds

Fishery Collapse



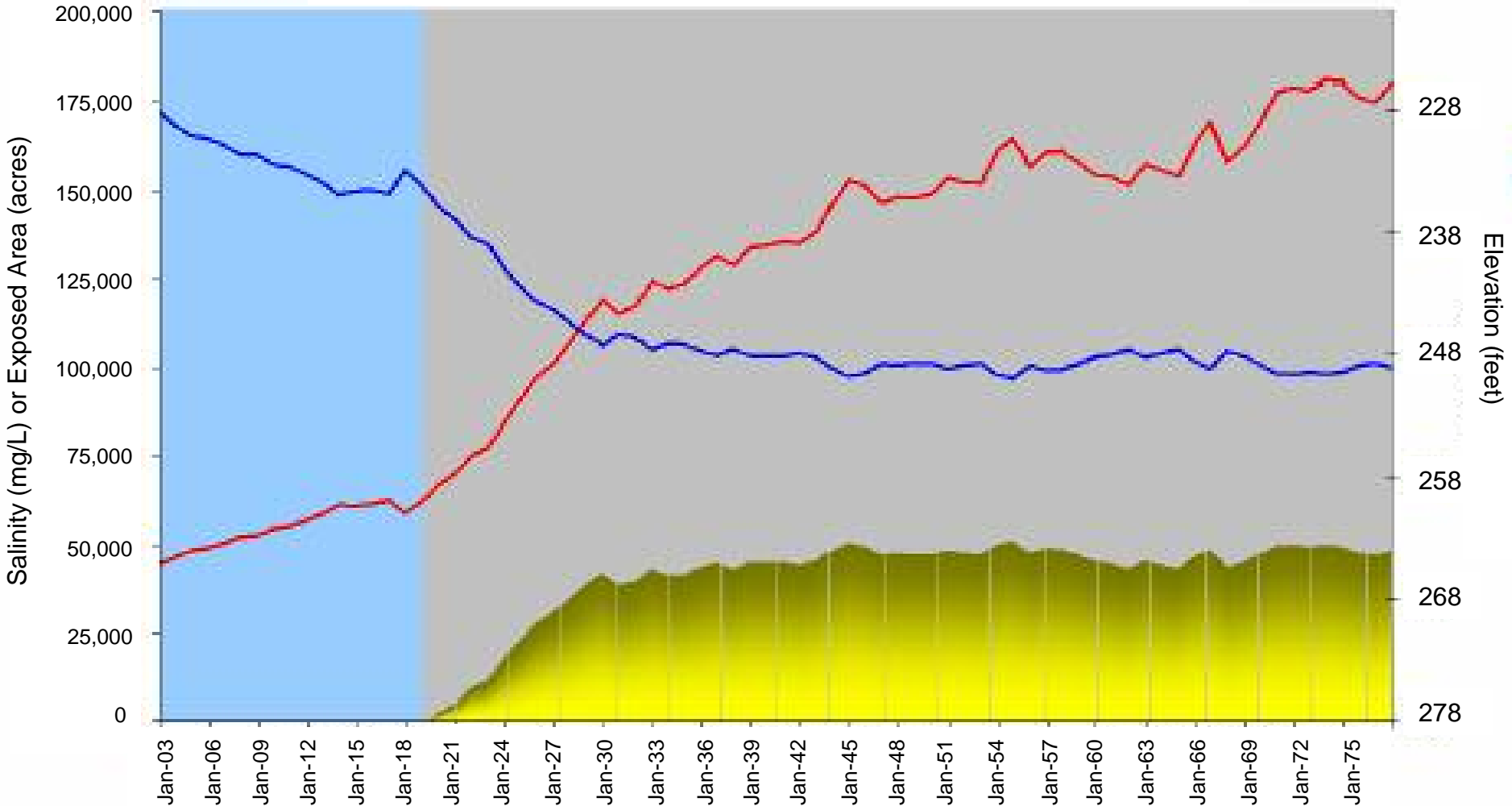
Bird Die-Offs



QSA Effects on Sea Elevation and Salinity

No Action Alternative

No AQM
 With AQM
 Exposed Area
 Salinity
 Elevation



QSA Implementing Legislation

Salton Sea Restoration Act

- “it is the intent of the Legislature that the State of California undertake the restoration of the Salton Sea ecosystem and the permanent protection of the wildlife dependent on that ecosystem
- Requires the Secretary of the Resources Agency to undertake a restoration study to determine a preferred alternative for restoration of the Salton Sea ecosystem, and to prepare:
 - Ecosystem Restoration Plan
 - Programmatic Environmental Impact Report
 - Funding Plan
- Due to the Legislature on or before December 31, 2006

QSA Implementing Legislation

The preferred alternative shall provide the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea
- Elimination of air quality impacts from the restoration projects
- Protection of water quality

“The Salton Sea ecosystem shall include, but is not limited to, the Salton Sea, the agricultural land surrounding the Salton Sea, and the tributaries and drains within the Imperial and Coachella Valleys that deliver water to the Salton Sea.”

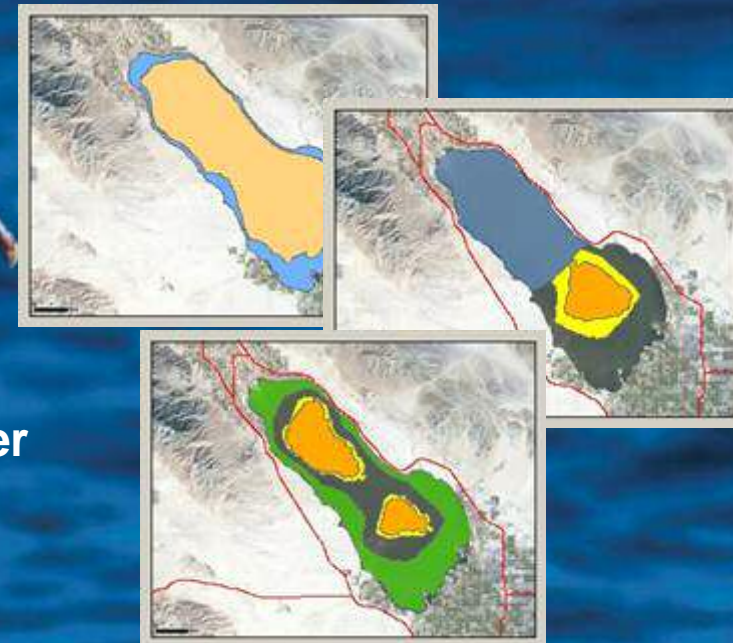
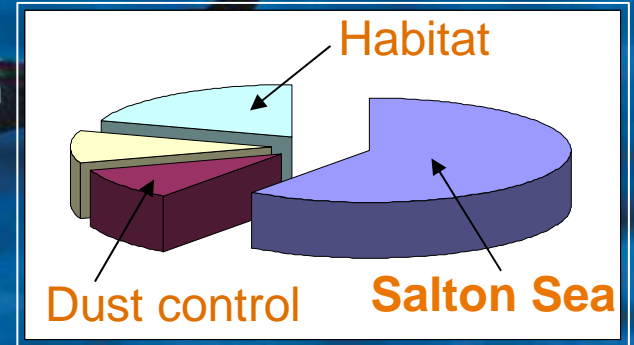
RESTORATION PLANNING ELEMENTS



Salton Sea Restoration Program - Inflows

- Projected hydrology defines the water budget which can be allocated to various project components
- Inflows affect the design and performance of alternative configurations

- **Uncertainties:**
 - Mexico inflows to New and Alamo Rivers
 - IID inflows to New River, Alamo River, direct drains
 - CVWD inflows to Whitewater River, drains, and groundwater discharge/recharge
 - Local watershed surface runoff and groundwater inflows
 - Local evaporation rate

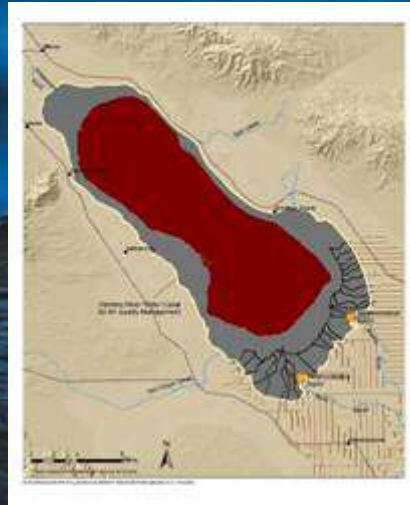


Salton Sea Restoration Program – Infrastructure Configurations

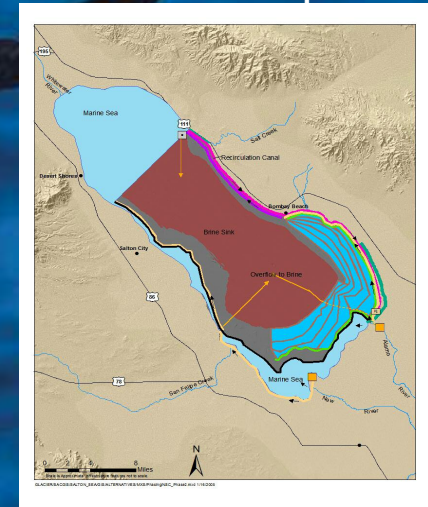
No Action - CEQA



No Action - Variability



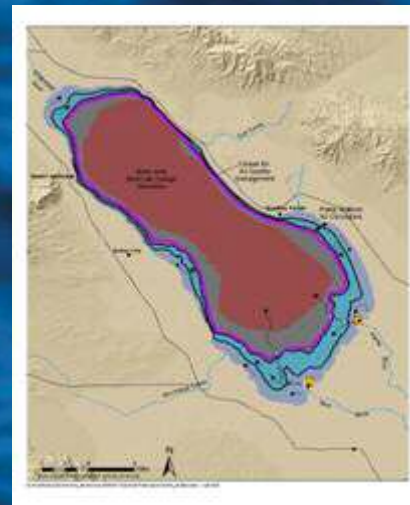
North Sea w/Saline Habitat Complex



South Sea w/Saline Habitat Complex



Concentric Rings



Saline Habitat Complex



Salton Sea Restoration Program – Infrastructure Configurations

Construction Considerations for all Configurations

Pre- Construction considerations:

- Environmental compliance and permitting
- Availability of construction materials
- Limitations of existing infrastructure (rail, roads, etc.)
- Power needs
- Right Right-of of-way acquisition

Phased construction may take decades

Studies, pilot projects and demonstration projects are being initiated

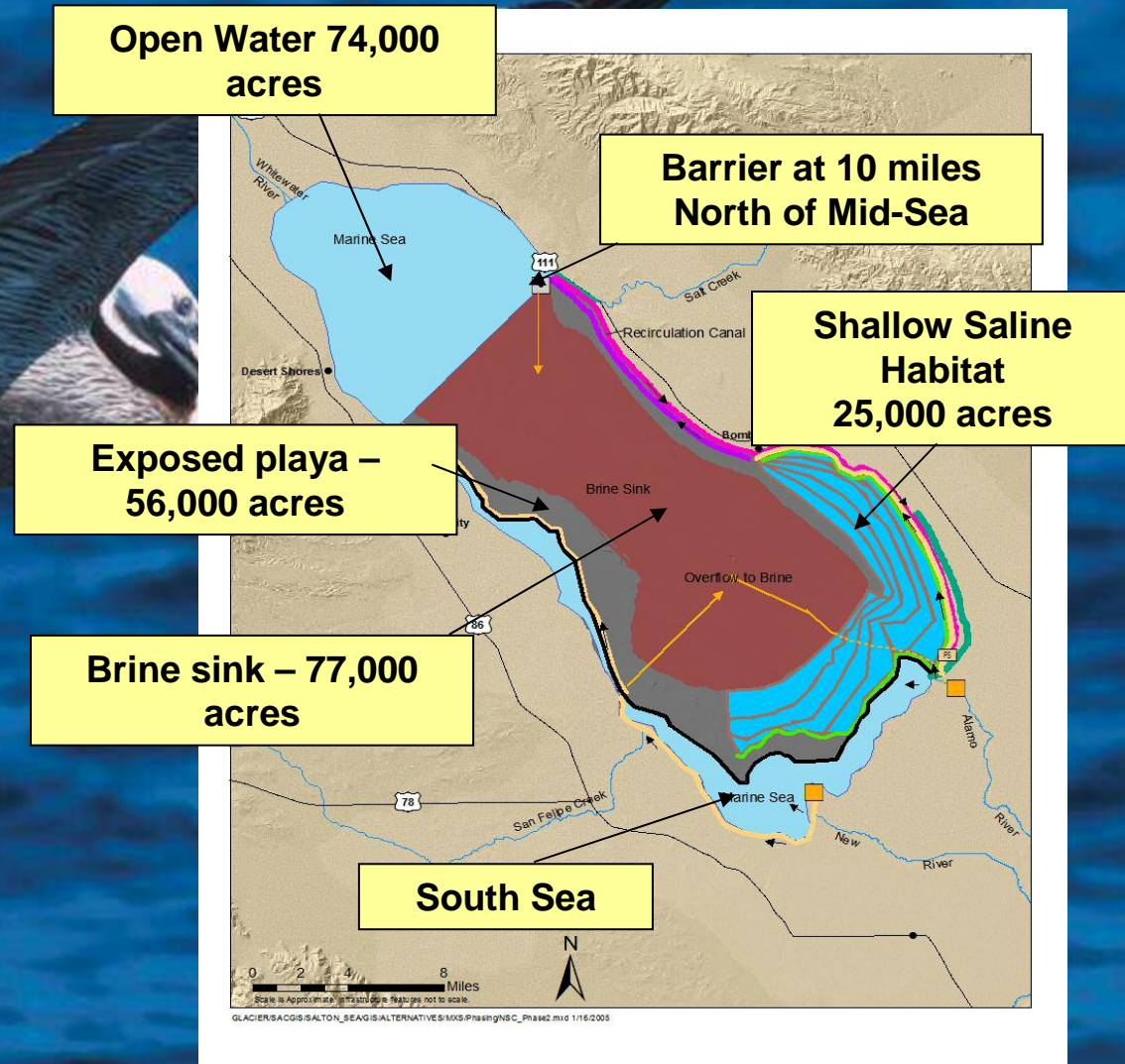


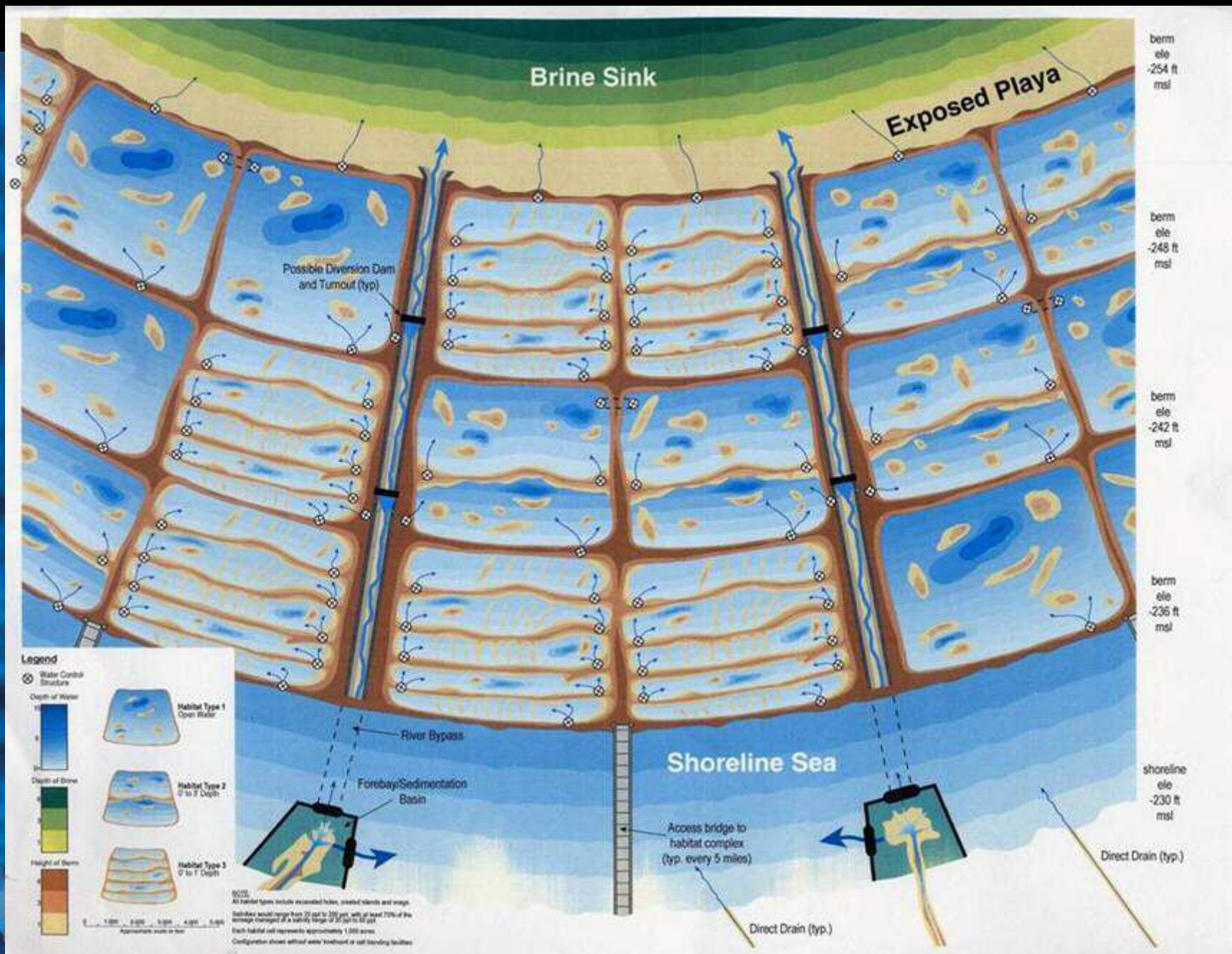
Salton Sea Restoration Program – Habitat

North Sea Combined with SHC Configuration

- Overall goal
 - Restoration of the Salton Sea ecosystem and the permanent protection of the wildlife dependent on that ecosystem

- Habitat objective
 - Restore long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea

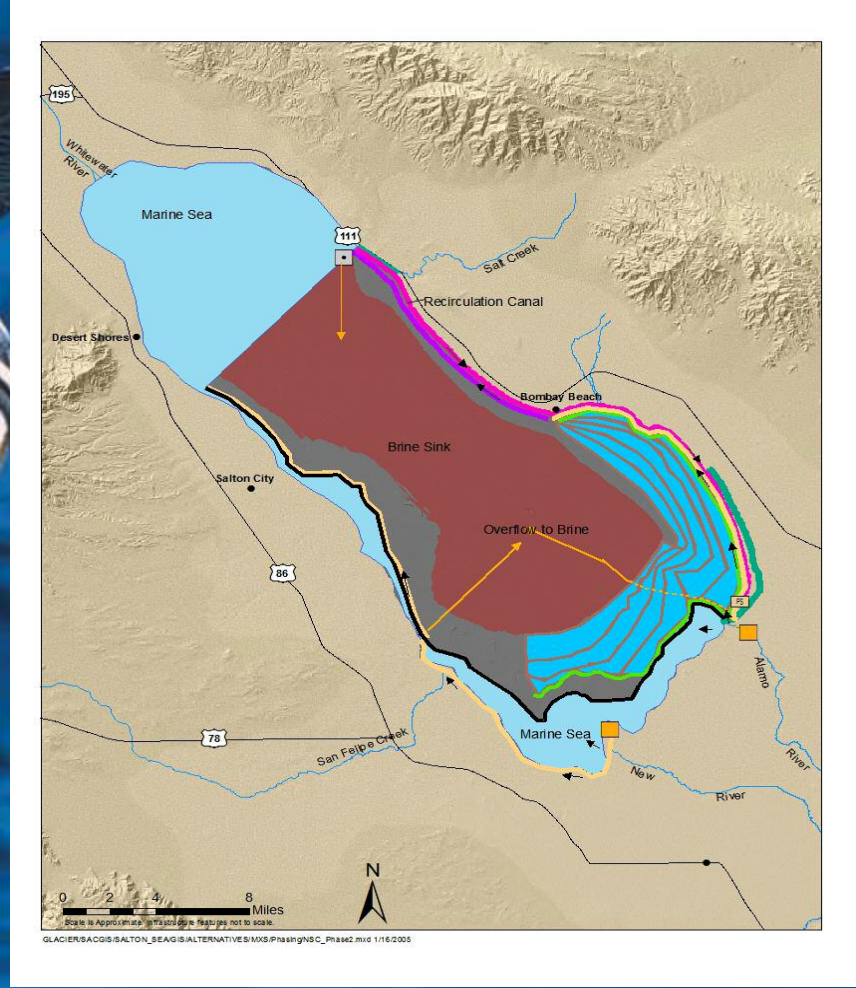
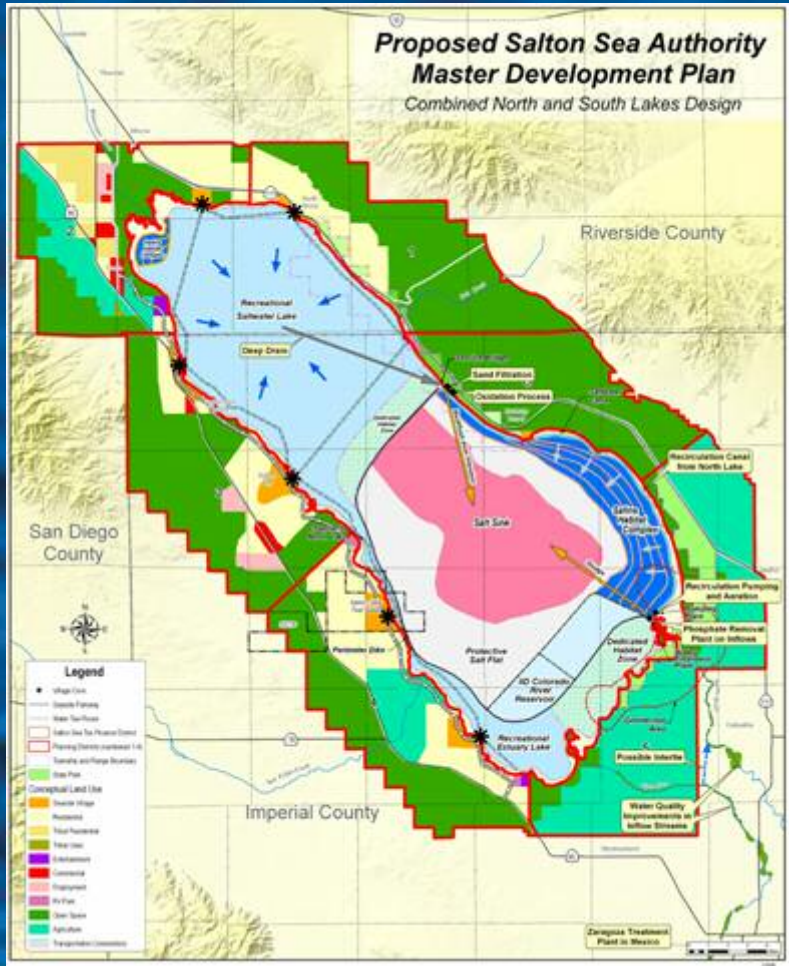




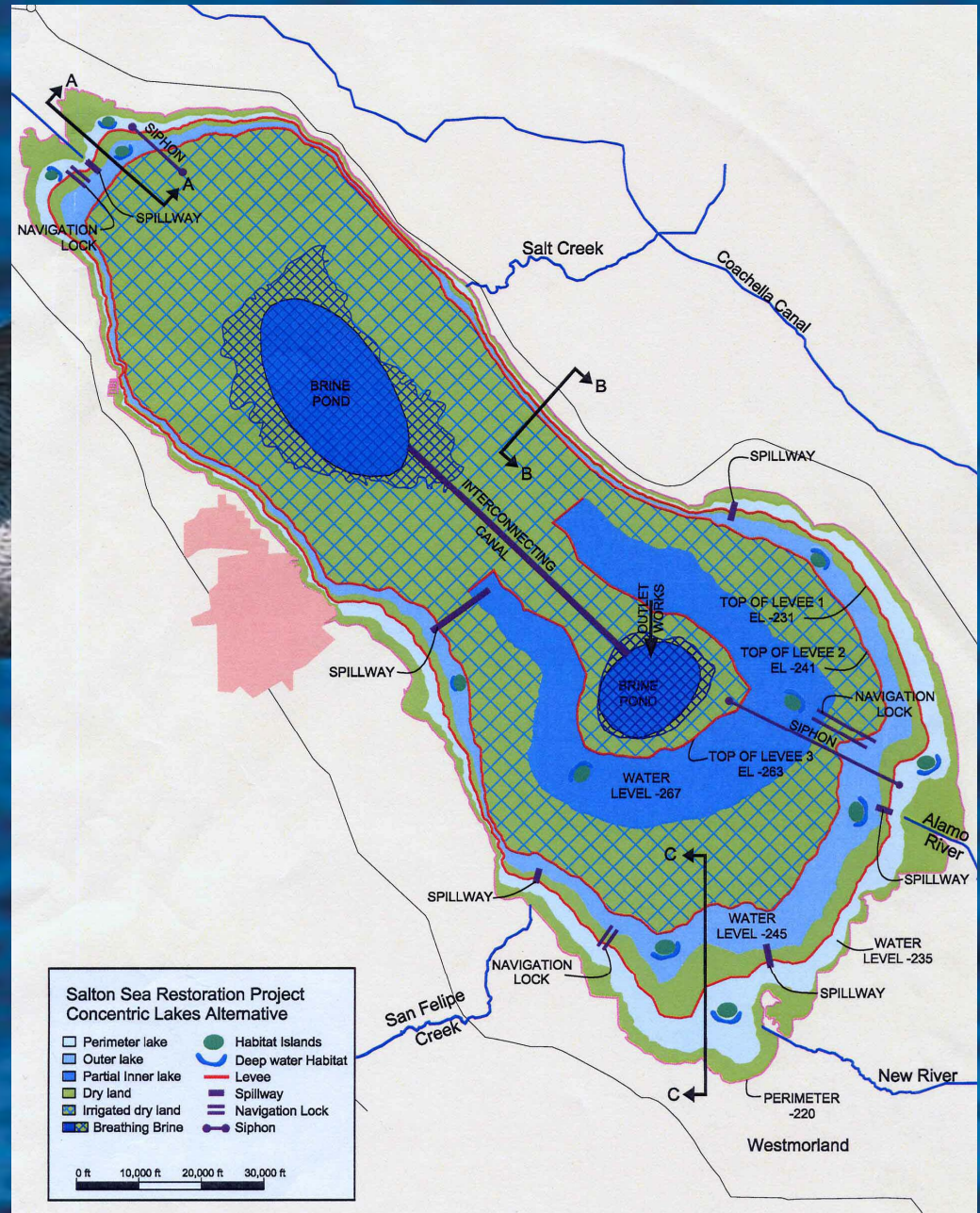
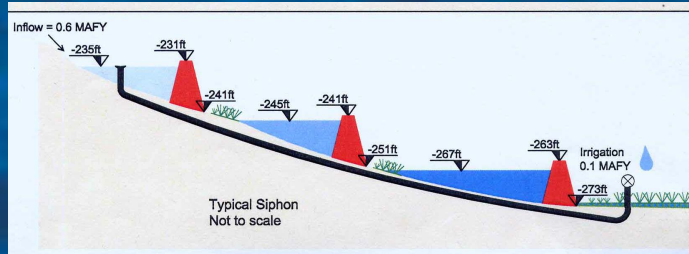
Salton Sea Restoration: Competing Visions

Salton Sea Authority

North Lake Combined w/Saline
Habitat Complex



Imperial Group



Salton Sea Restoration Program – Schedule

Implementation Schedule for Programmatic Environmental Impact Report and Ecosystem Restoration Study

- ❖ Draft PEIR and ERS published in March/April 2006
- ❖ Final PEIR and ERS published in late fall 2006
- ❖ Secretary for Resources submits plan to Legislature by December 31, 2006
- ❖ Decision by State Legislature



Questions?

