Salton Sea Ecosystem Restoration Draft Program Environmental Impact Report

Southern California Association of Governments
Water Policy Task Force
December 13, 2006

Context

Colorado River

Colorado River Basin Facilities

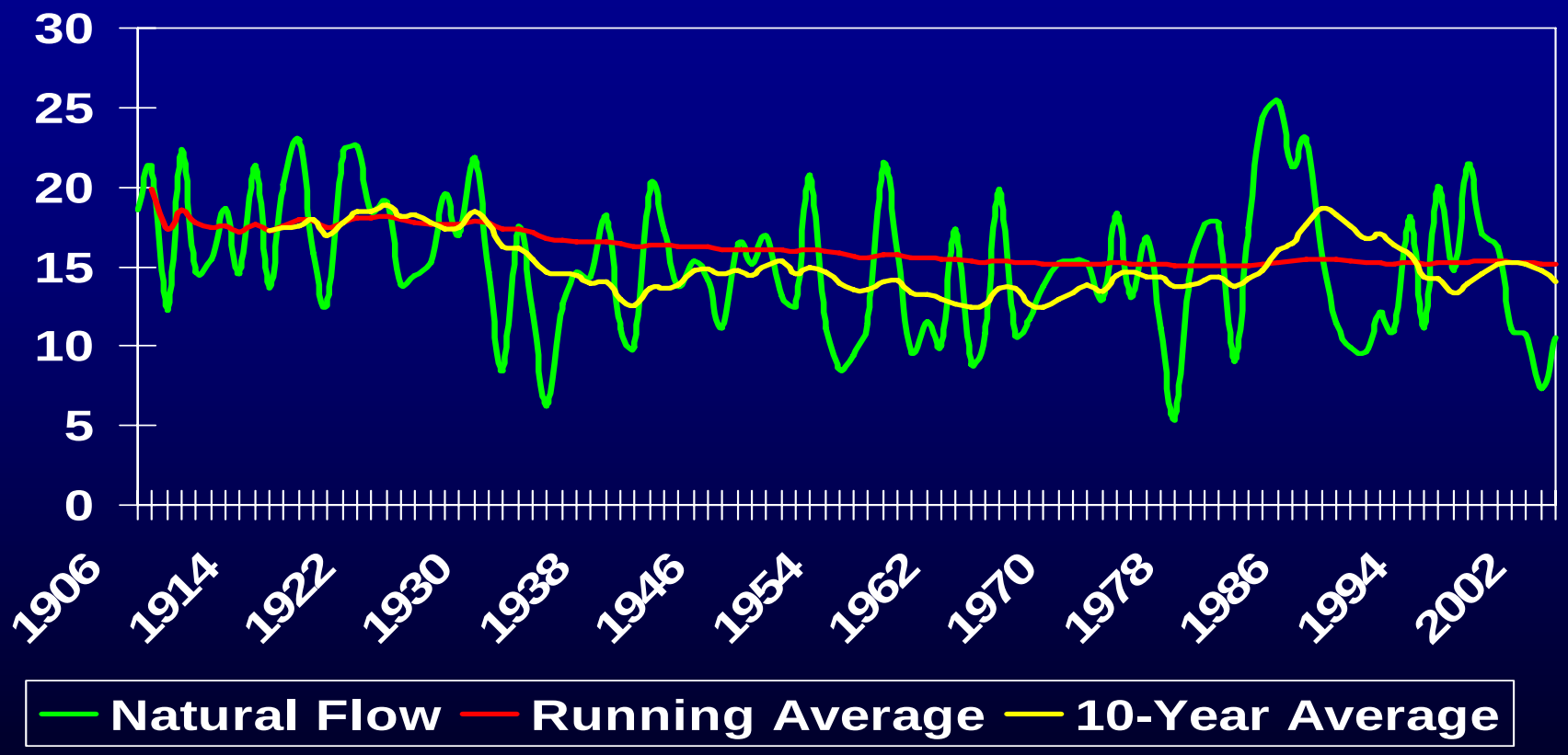
Upper Basin Dams

- Fontenelle
- Flaming Gorge
- Aspinall Unit
- Navajo
- Glen Canyon

Lower Basin Dams

- Hoover
- Davis
- Parker

Lees Ferry Natural Flow



California Service Areas
NV
LAKE MEAD
HOOVER DAM
LAKE MOHAVE
CA
DAVIS DAM
COLORADO RIVER
AZ
CALIFORNIA AQUEDUCT
LAKE HAVASU
PARKER DAM
COACHELLA VALLEY W.D.
COLORADO R. AQUEDUCT
PALO VERDE I.D.
COACHELLA CANAL
MWD
SALTON SEA
IMPERIAL DAM
IMPERIAL I.D.
YUMA PROJECT
USA
MEXICO
ALL AMERICAN CANAL

Slide No. 5

Law of the River

- 1922 Colorado River Compact
- 1928 Boulder Canyon Project Act
- 1929 California Limitation Act
- 1931 Seven Party Agreement
- 1944 Mexican Water Treaty
- 1963 *Arizona* v. *California*
- 1968 Colorado River Basin Project Act
- 2003 Quantification Settlement Agreement

1929 California Limitation Act

- Condition precedent of Boulder Canyon Project Act
- California's irrevocable and unconditional agreement to limit use to:
  - 4.4 maf/yr of 7.5 maf/yr Lower Basin apportionment, and
  - one-half of surplus

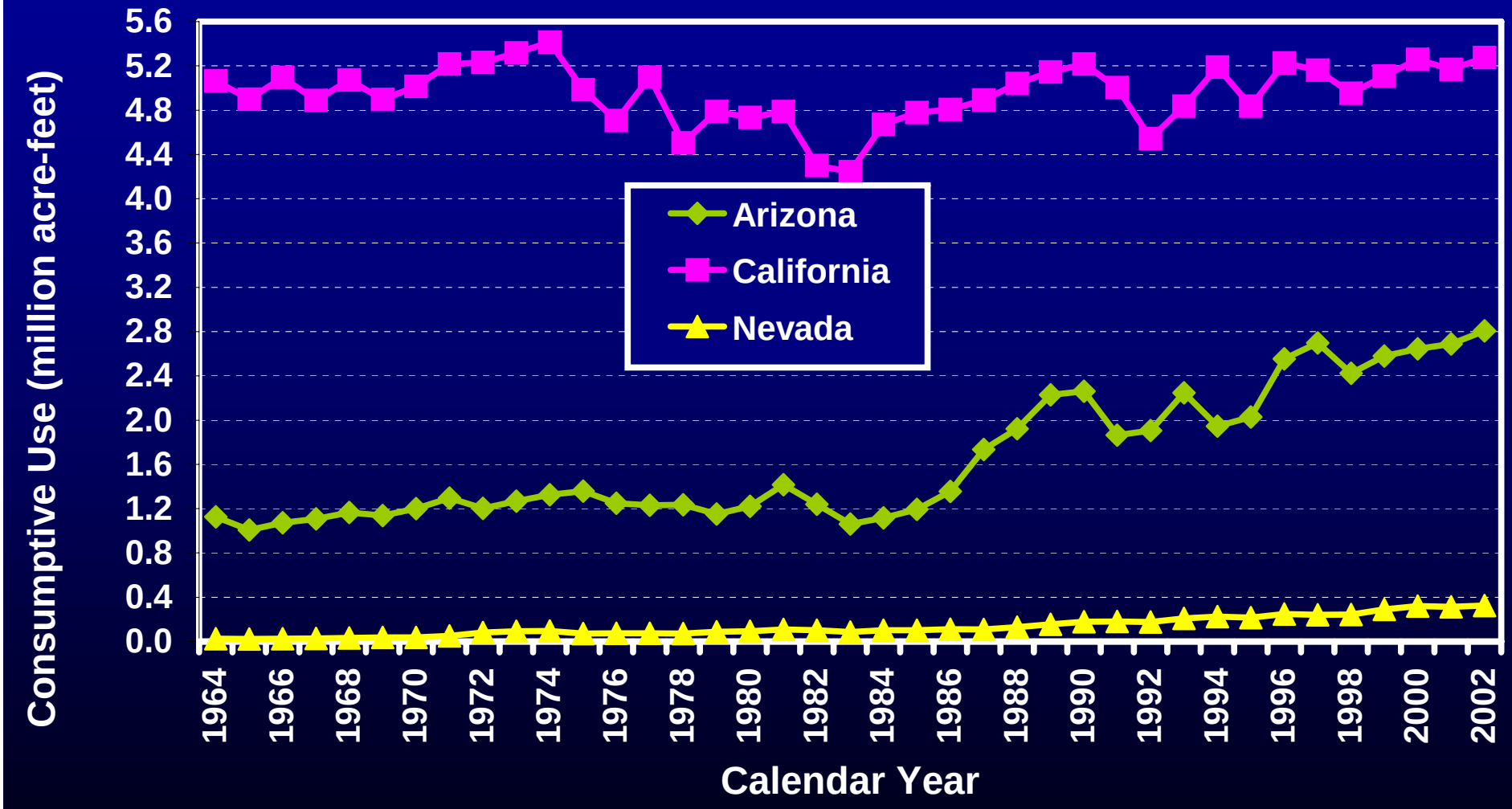
Lower Basin State Apportionmnts

	Acre-feet
Arizona	2,800,000
California	4,400,000
Nevada	300,000
Total Lower Basin (mainstream)	7,500,000

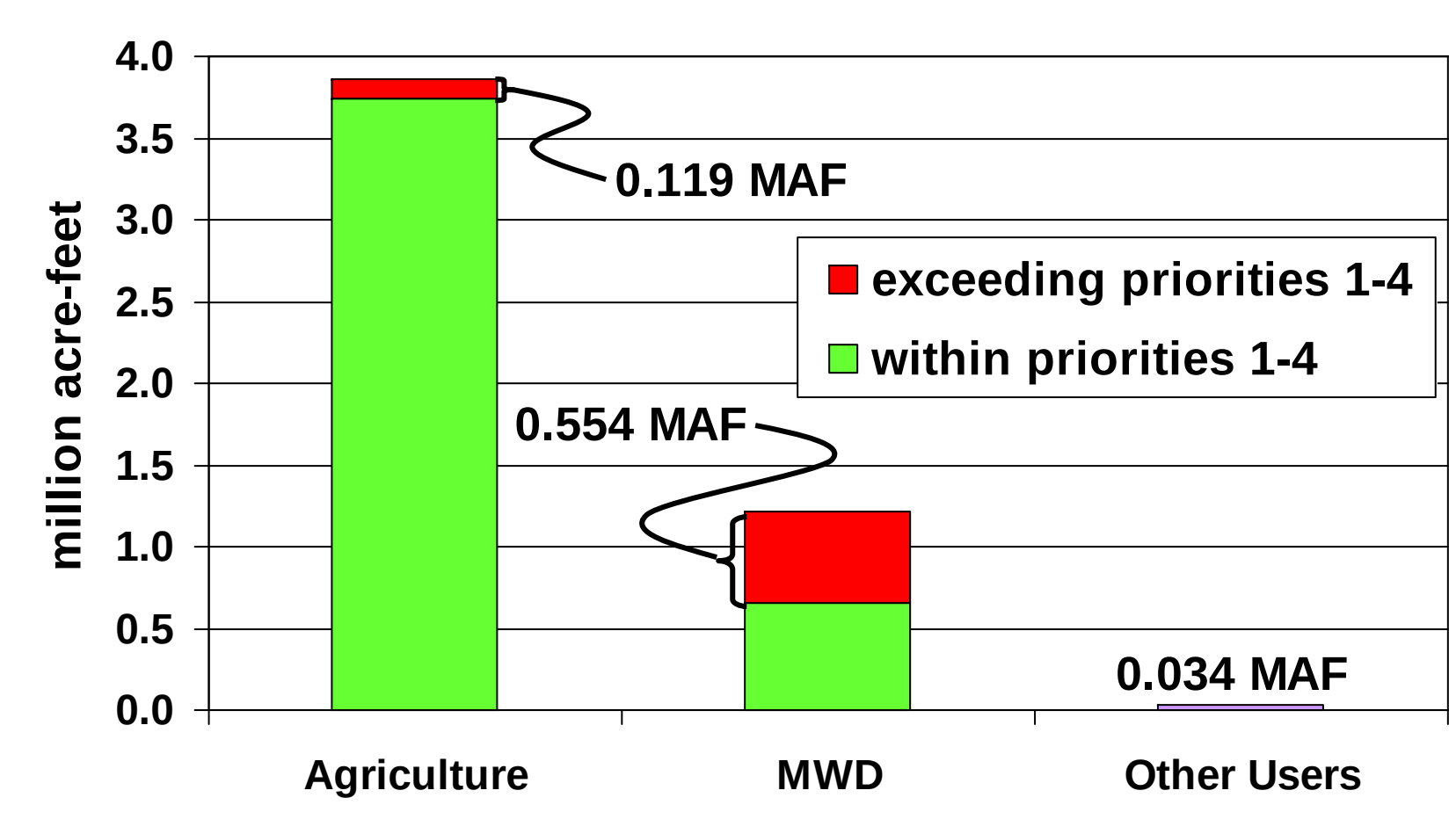
1931 Seven Party Agreement

	maf
1. PVID (104,500 acres)	
2. Yuma Project (25,000 acres)	
3. (a) IID/CVWD	3.850
(b) PVID (16,000 acres)	
4. MWD	0.550
Subtotal	4.400
5. MWD	0.662
6. IID/CVWD/PVID	0.300
Total	5.362

Use by Arizona, California and Nevada



1999 California Net Diversions



Quantification Settlement Agreement

October 10, 2003

- **110,000 AF/yr – MWD/IID conservation**
- **200,000 AF/yr –IID/SDCWA Transfer**
- **94,000 AF/yr – Canal lining to SDCWA & Settlement Parties**
- **Salton Sea Restoration**

Background

Salton Sea

Salton Sea Facts:

→California's largest lake at 360 square miles

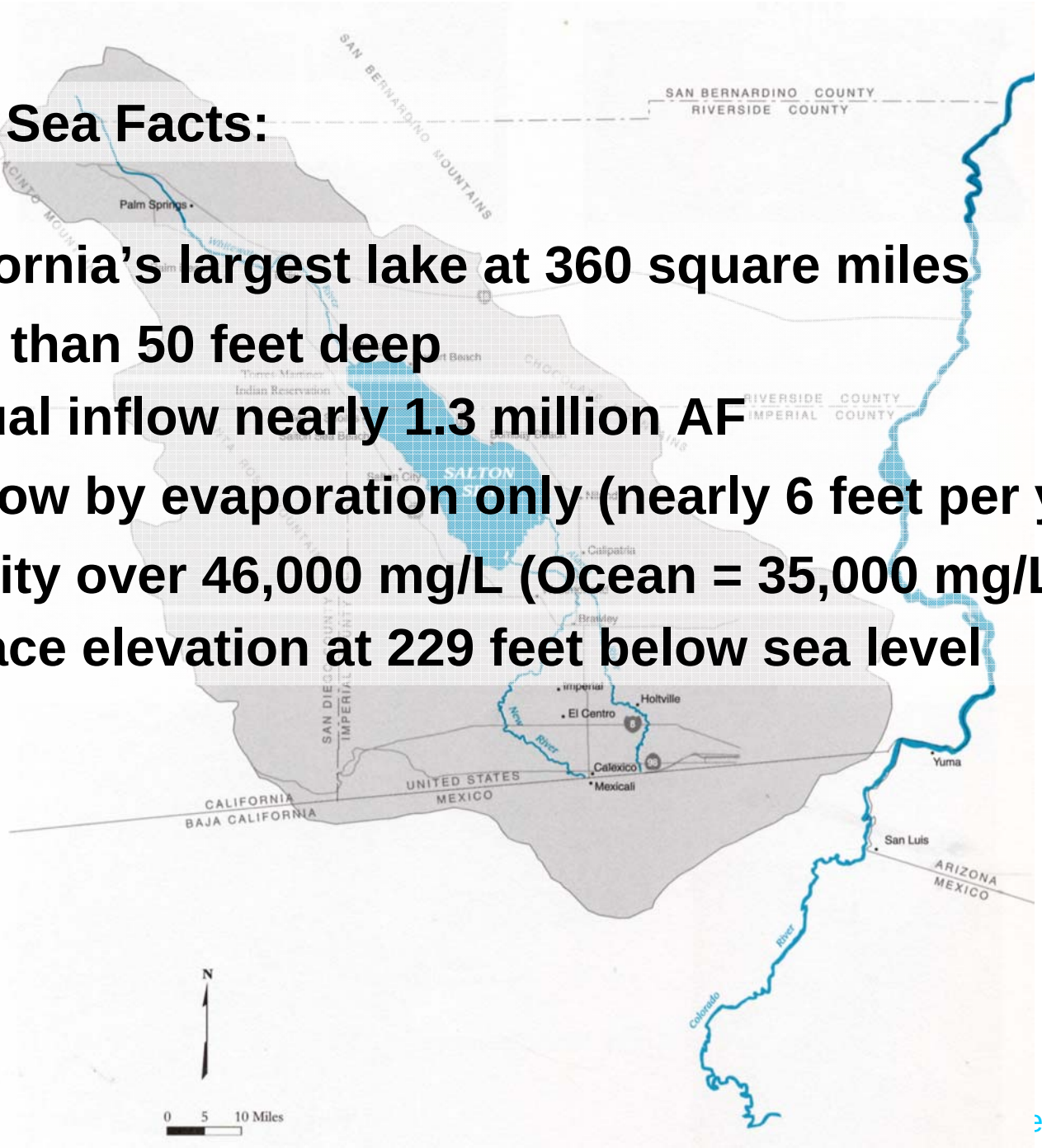
→Less than 50 feet deep

→Annual inflow nearly 1.3 million AF

→Outflow by evaporation only (nearly 6 feet per year)

→Salinity over 46,000 mg/L (Ocean = 35,000 mg/L)

→Surface elevation at 229 feet below sea level



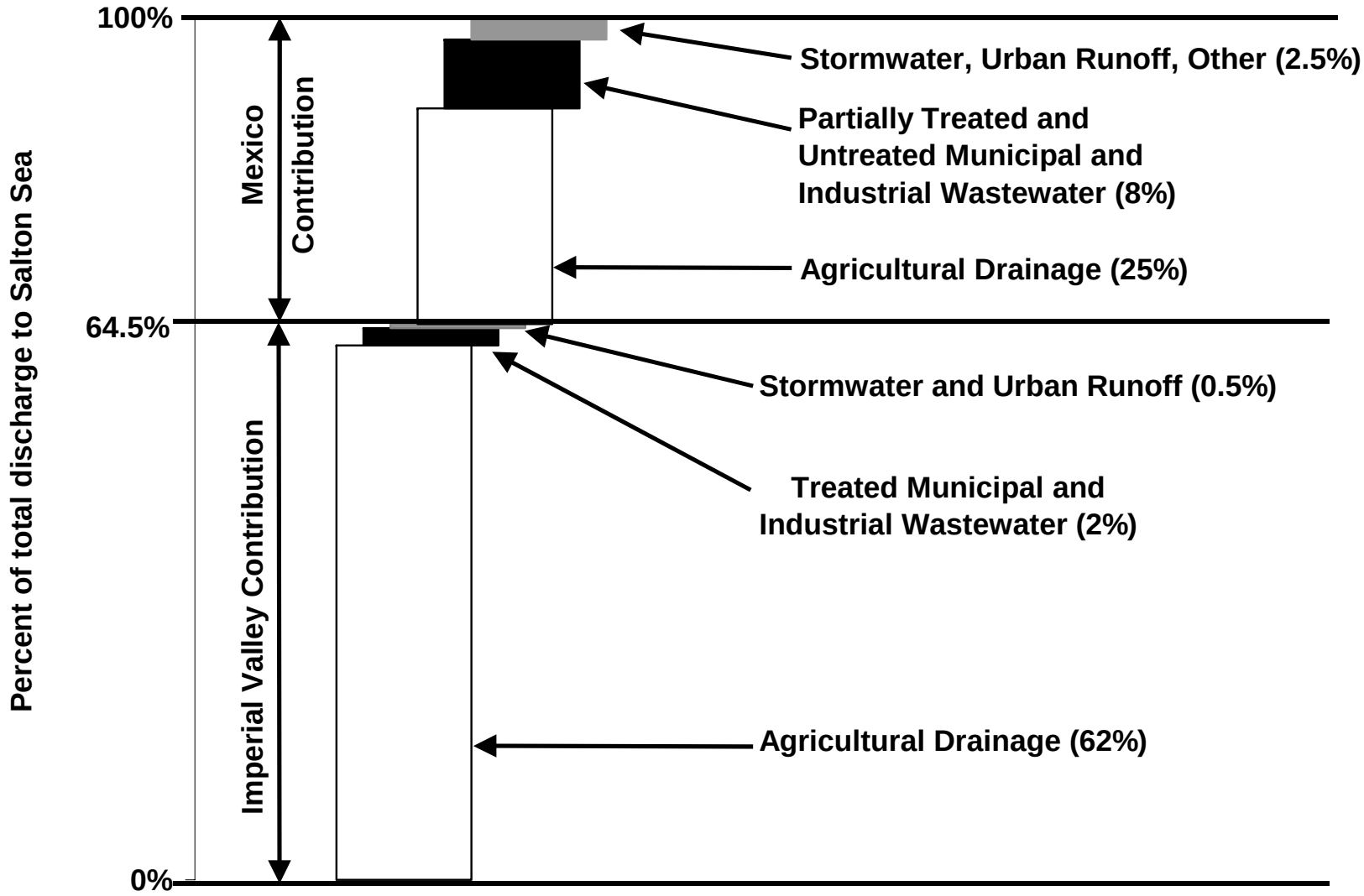
Salton Sea Environmental Issues

- Terminal water body/Continually rising salinity
- Poor quality inflow
- Dramatic decline in once prolific fishery
- Avian disease

- Reduced inflows
  - water conservation and transfers
  - developments in Mexico

Sources of Inflow

New River Example



Agricultural Drainage

Imperial Valley Water Quality Issues

- **Selenium**
  - At or above aquatic habitat criterion
  - Bioaccumulation in Salton Sea food chain
  - At a level of concern for wildlife toxicity
- **Nutrients (nitrogen, sulfur, phosphorous)**
  - Contributes to eutrophication problems at Sea
  - Significant phosphorous load already in-Sea
- **Pesticides**

State Legislative Solution

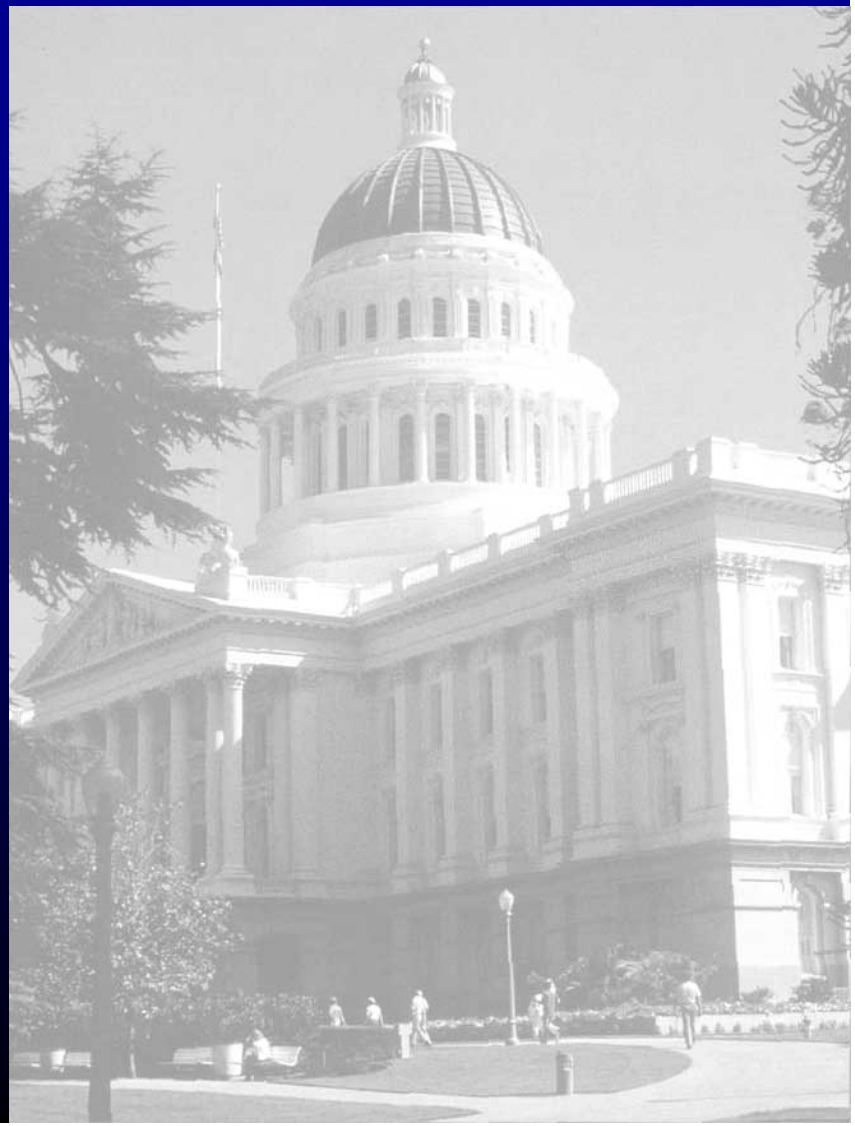
QSA Implementation Legislation

- Mitigation for the QSA transfers from IID
  - Authorized QSA Joint Powers Authority
    - IID, CVWD, SDCWA, and DFG
  - IID, CVWD, SDCWA costs up to $133 million
  - DFG to absorb costs over $133 million
- State to undertake restoration of Salton Sea
  - Salton Sea Restoration Study
- Established Salton Sea Restoration Fund

Salton Sea Restoration Study

Objectives set by Legislature

- Restore long-term stable aquatic and shoreline habitat
- Provide for diversity of fish and wildlife
- Elimination of air quality impacts
- Protection of water quality

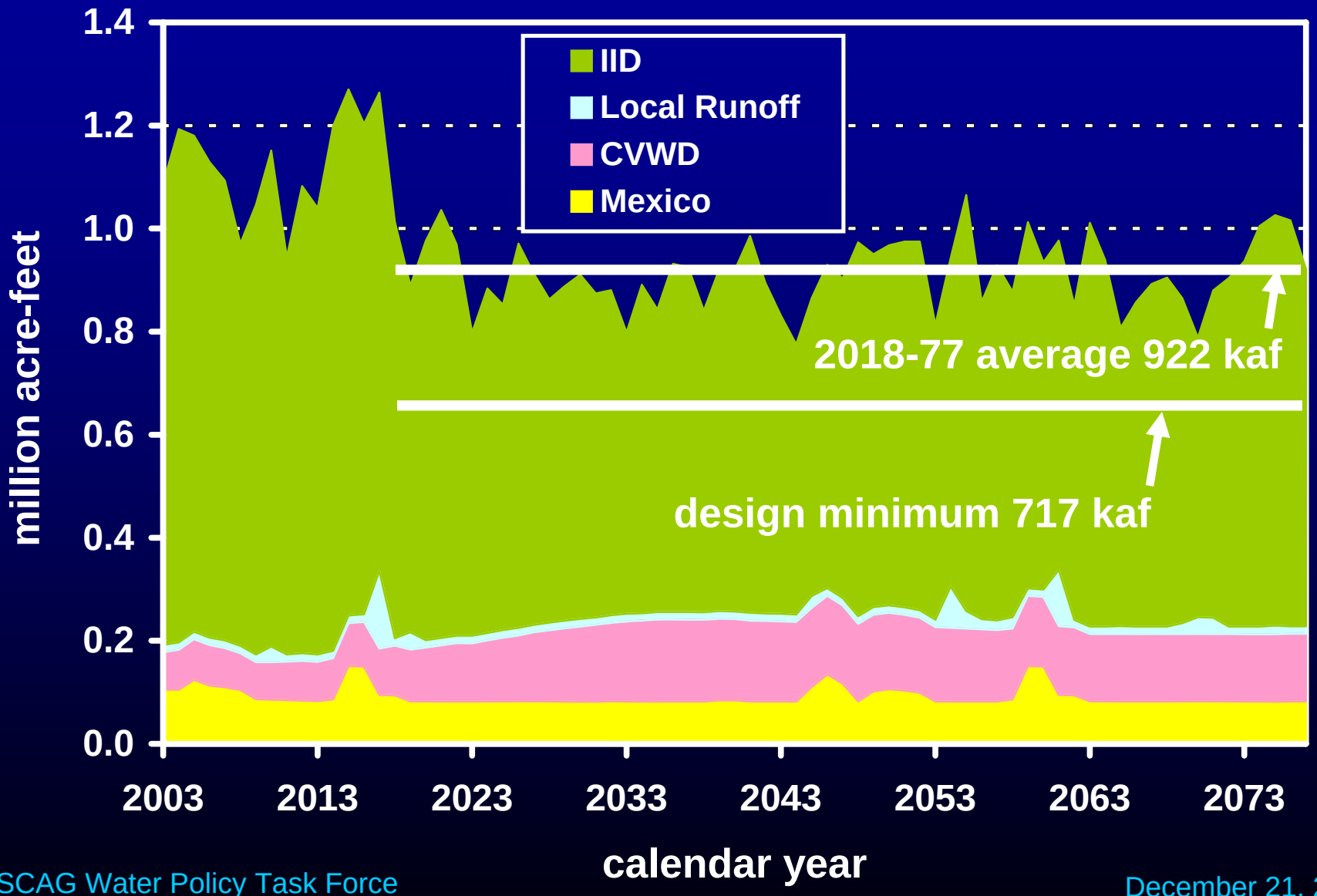


Salton Sea Restoration Study

Scope of Study
As Specified by Legislature

- Evaluate alternatives
  - Cost to construct, operate, and maintain
  - Include a most cost-effective, technically feasible, alternative
- Consider strategies for:
  - Salinity and other water quality controls
  - Habitat creation and restoration
  - Different shoreline and surface area configurations
- Consider the range of possible inflow conditions

Projected Inflows



Salton Sea Restoration Study

Process

- Prepare Salton Sea Ecosystem Management Plan
  - Programmatic Environmental Impact Report (PEIR)
  - Resources Agency is Lead Agency
- Resources Secretary consultations with stakeholders
  - Salton Sea Advisory Committee
  - Salton Sea Authority
  - Others
- Recommendations of the Resources Secretary
  - Submittal to Legislature in April 2007
  - Funding plan

Salton Sea Advisory Committee

29 Members

Federal Agencies

Bureau of Reclamation
Fish and Wildlife Service
Geological Survey

Indian Tribes

Torres-Martinez Desert Cahuilla Indians
Cabazon Band of Mission Indians

State Agencies

State Water Resources Control Board
Regional Water Quality Control Board

Water Agencies

San Diego County Water Authority
Imperial Irrigation District
Coachella Valley Water District
Metropolitan

Local Government Agencies

County of Imperial
County of Riverside
Imperial County Air Pollution Control District
Coachella Valley Association of Governments

Salton Sea Advisory Committee
(continued)

Non-government environmental advocacy organizations

Imperial County Farm Bureau
Planning and Conservation League
Defenders of Wildlife
California Waterfowl Association
Pacific Institute
United Anglers of Southern California
Audubon California
Sierra Club

Fish and Wildlife Habitats

- Marine Sea
  - Fishery
- Saline Habitat Complex
  - Shoreline
  - Islands
  - Shallow water
- Marsh
- Irrigation Drains
- Agriculture

Marine Sea Habitat

- Similar to 1990s condition
  - 35,000 mg/L to 50,000 mg/L
  - Support fishery forage for piscivorous birds
  - Sport fishery not a priority
- Smaller area sufficient to meet fishery objective
- Low priority

Saline Habitat Complex

- Shallow water depths
  - Zero to 10 feet
- Range of salinities
  - 20,000 to 60,000 mg/L
- Highly productive habitat

Air Quality
Issues

- Threat from exposed sediments
  - Considerable wind fetch
  - Small particulates
- Construction impacts
  - Quarry
  - Material transport
  - Earthwork

Construction Impacts to Air Quality

- Some alternatives would exceed *de minimis* thresholds for NO_x and PM10
  - Trigger demonstration of conformity to State Implementation Plans (SIPs)
- SIP conformity would lengthen construction
  - 20 to 25 years for mid-Sea barrier
- Updated SIPs may provide for restoration
  - Imperial County Air Pollution Control District
  - South Coast Air Quality Management District
  - California Air Resources Board

Metropolitan
Position on Restoration Study

- Not an advocate of any alternative
- Report to Legislature
  - Incorporate sound science and the most complete information available
  - Identify costs and benefits of various alternatives
- Permit the Legislature to make an informed decision

Salton Sea Restoration Fund

- Administered by Director of Fish and Game
- Permitted uses upon appropriation by Legislature:
  - Environmental and engineering studies
  - Wildlife conservation at Salton Sea and lower Colorado River
  - Salton Sea restoration

Salton Sea Restoration Fund

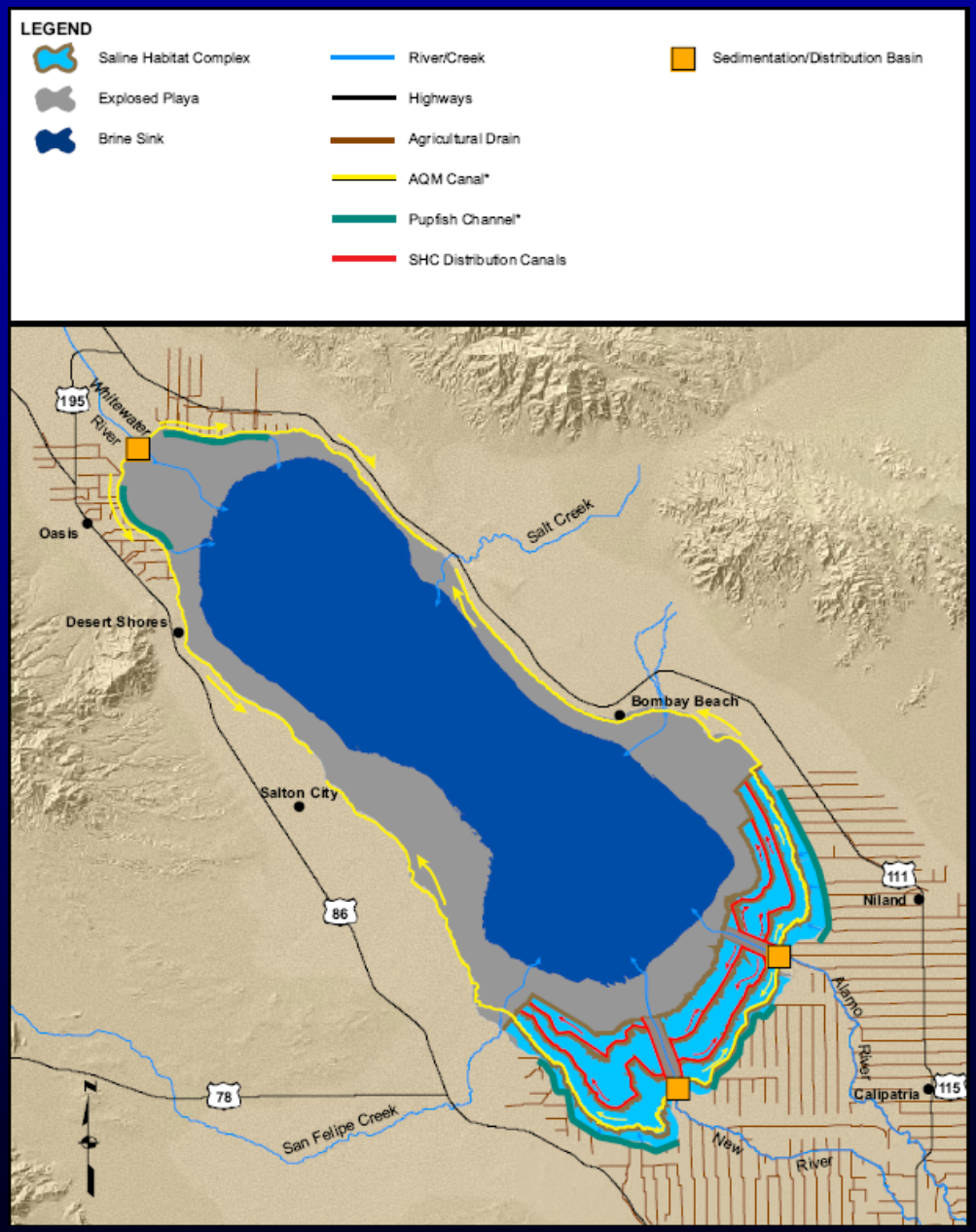
Funding Sources

- $30 million from QSA JPA
- $47 million from Proposition 84
- Metropolitan
  - $20 per AF Surcharge for "Special Surplus"
  - Net proceeds from conditional transfer from IID to Metropolitan (Not likely)

Description of Alternatives

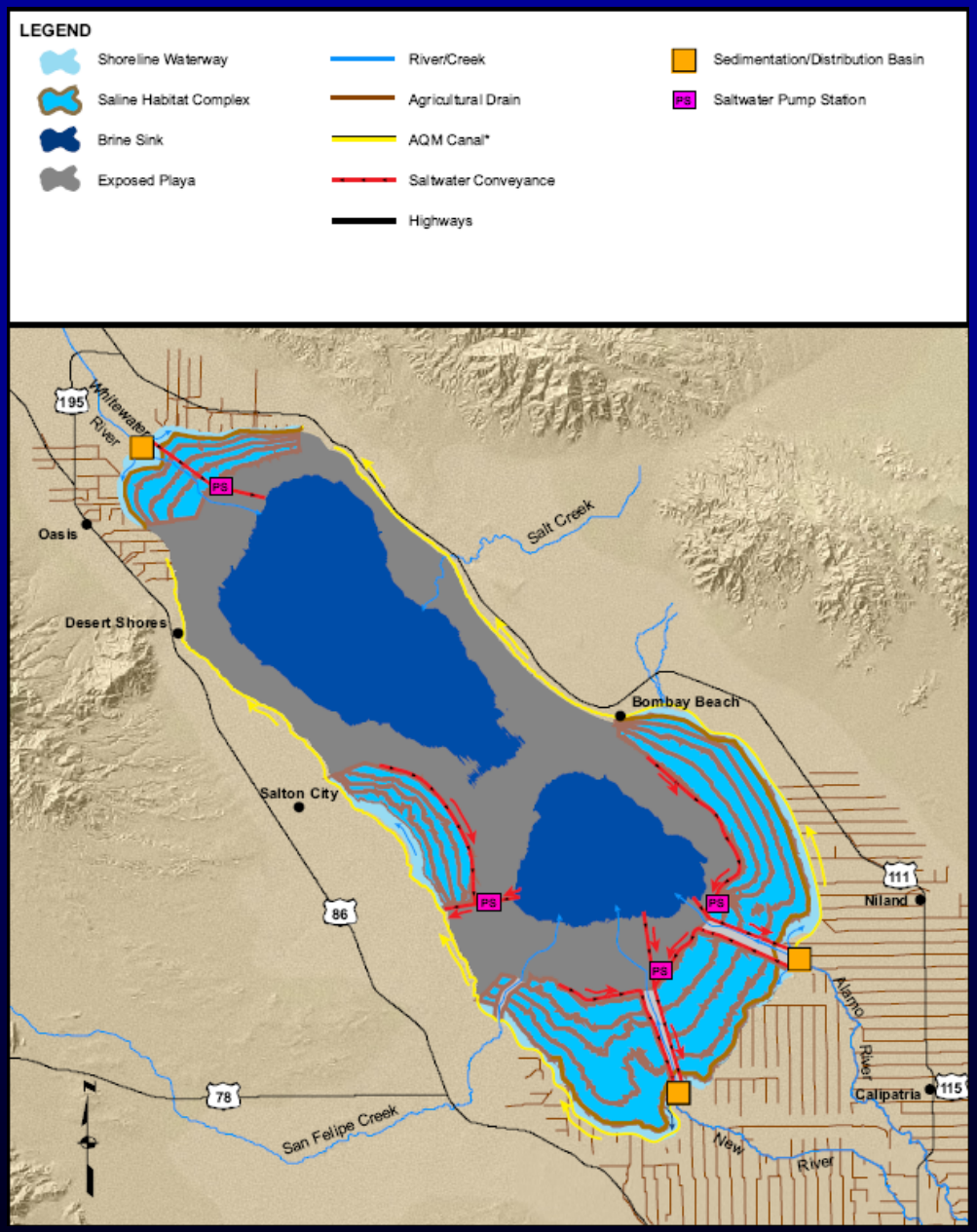
Alternatives and Estimated Costs

	Alternative	Capital (billion $)	Annual O&M (million $)
	No Action (2)	0.8	48
1.	Saline Habitat Complex I	2.3	91
2.	Saline Habitat Complex II	3.3	107
3.	Concentric Rings	4.9	138
4.	Concentric Lakes	2.3	20
5.	North Sea	4.5	134
6.	Combined North Sea	5.9	148
7.	Combined North and South Lakes	5.2	82
8.	Combined South Sea	5.8	145



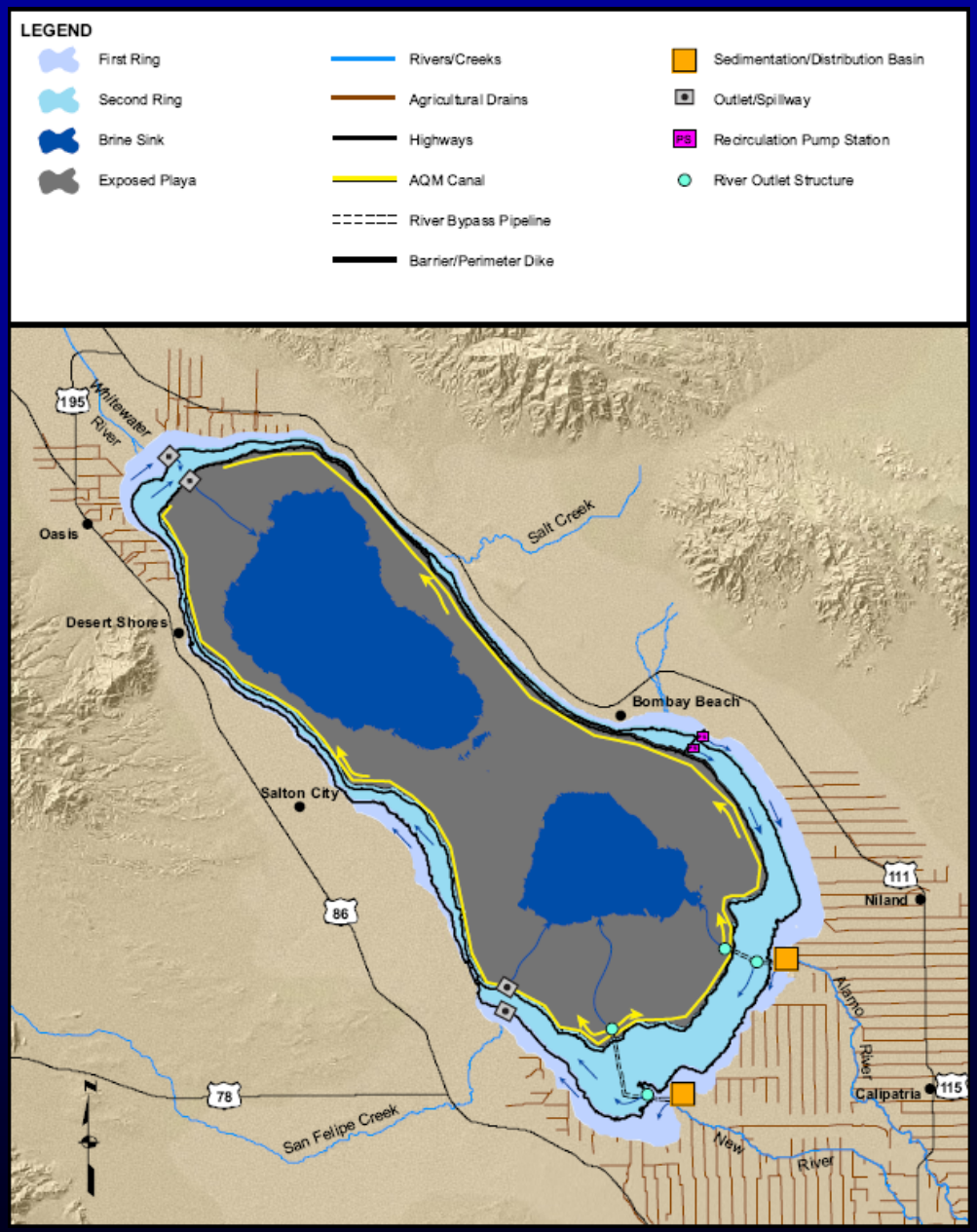
1. Saline Habitat Complex

- No marine sea
- 38,000 acres saline habitat complex
- Mixing of inflows with Sea water
- $2.3 billion Capital
- $91 million annual O&M
- Earthwork: 84 million cubic yards



2. Saline Habitat Complex

- No marine sea
- 75,000 acres saline habitat complex
- Mixing of inflows with Sea water
- $3.3 billion Capital
- $107 million annual O&M
- Earthwork: 148 million cubic yards



3. Concentric Rings

- Perimeter dikes create 2-tiered water body rings
  - Outer ring 20,000 mg/L
  - Inner ring 40,000 mg/L
- Recirculation to maintain water quality
- "Environmentally Superior"

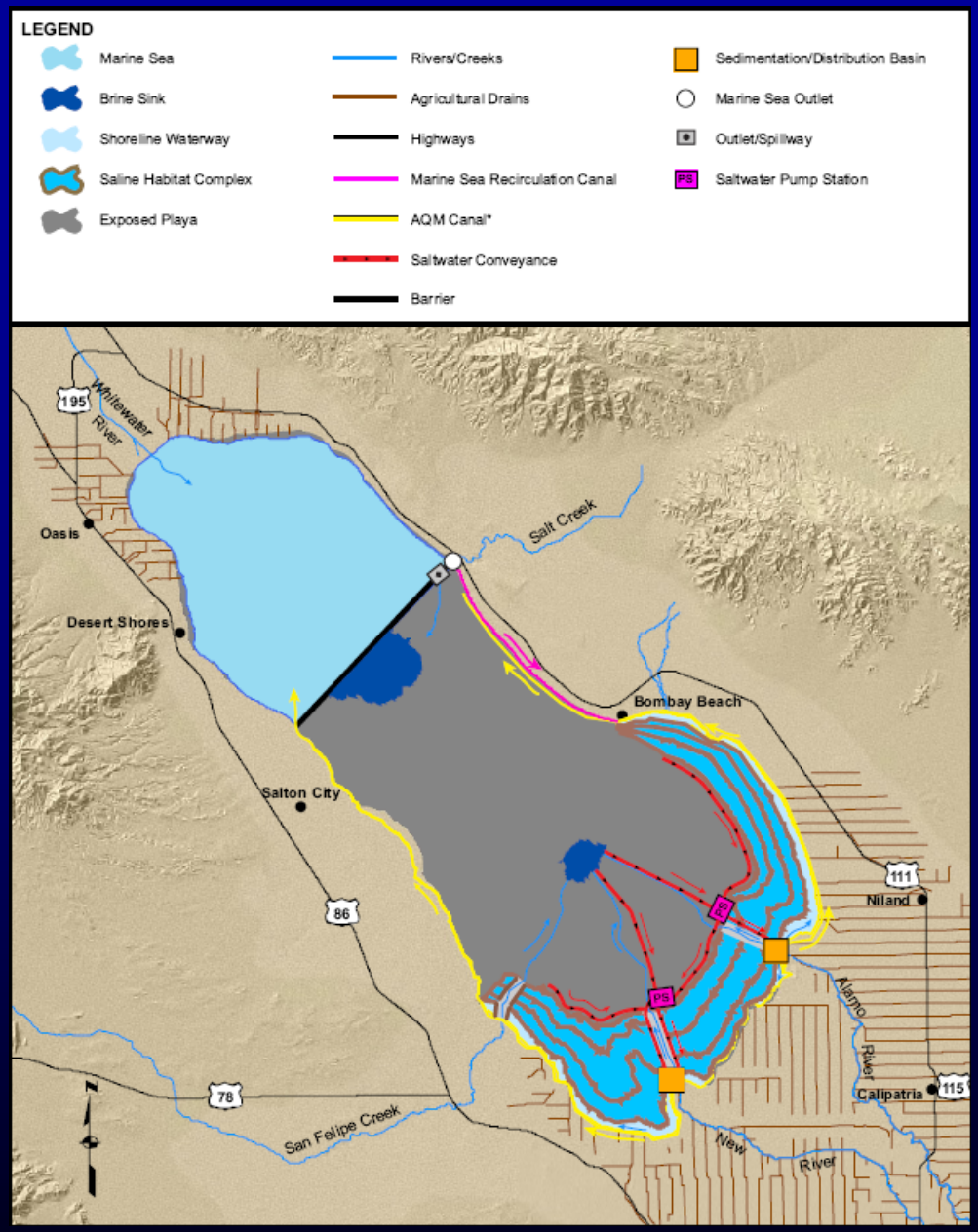
- $4.9 billion Capital
- $138 million annual O&M
- Earthwork: 104 million cubic yards

4. Concentric Lakes

Proposed by Imperial Group

- **Perimeter dikes create 4-tiered water bodies**
  - **Outer lake 20,000 mg/L**
  - **2nd lake 35,000 mg/L**
  - **3rd lake 45,000**
  - **Inner lake 60,000 mg/L**
- **No pumping required**

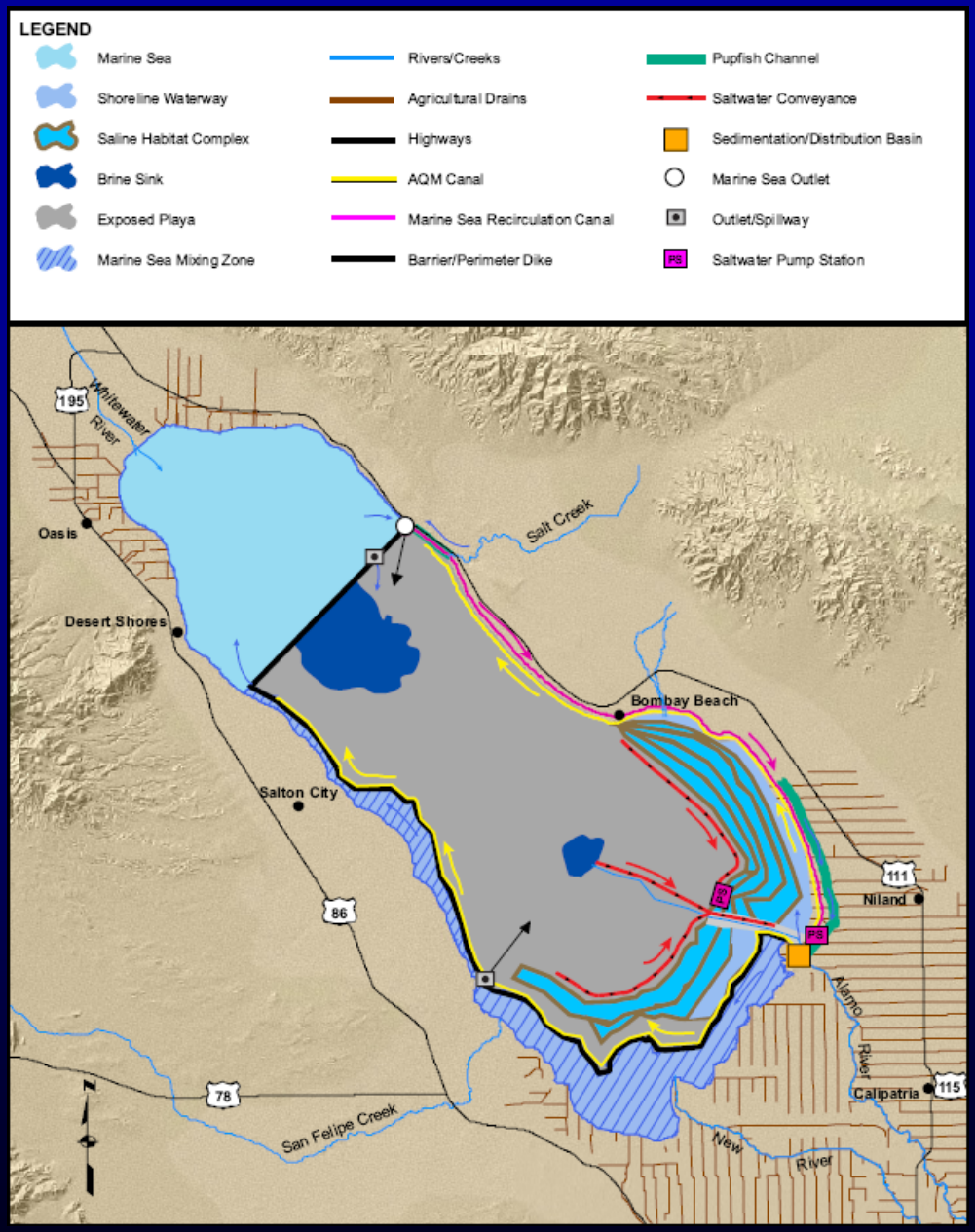
- **$2.3 billion Capital**
- **$20 million annual O&M**
- **Earthwork: 162 million cubic yards**



5. North Sea

- Mid-Sea barrier
- 62,000 acres marine sea
- 45,000 acres saline habitat complex
- Circulate salt water to saline habitat complex

- $4.5 billion Capital
- $134 million annual O&M
- Earthwork: 140 million cubic yards

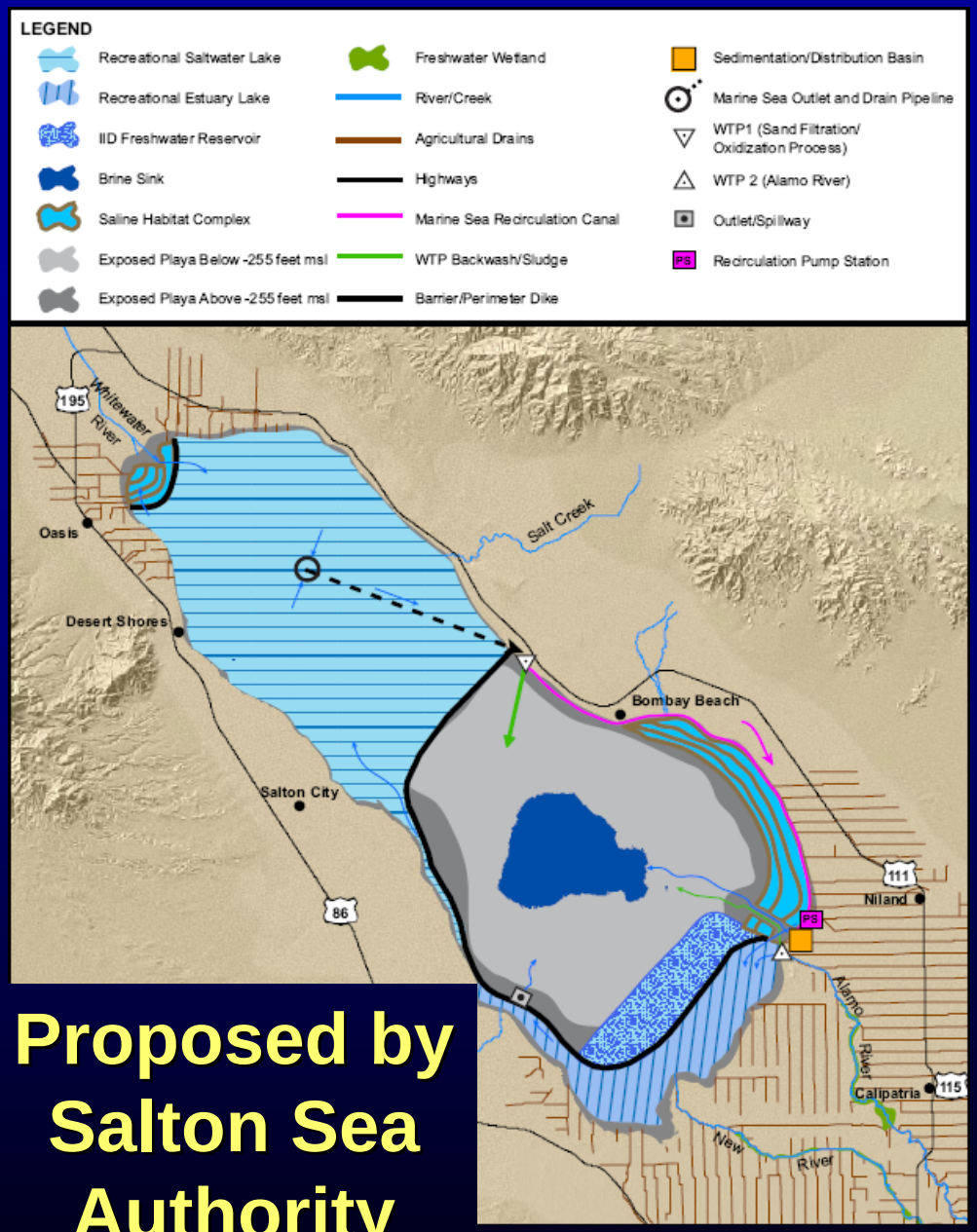


6. North Sea Combined

- Mid-Sea barrier
- 74,000 acres marine sea and mixing zone
- 29,000 acres saline habitat complex
- Circulate salt water to saline habitat complex

- $5.9 billion Capital
- $148 million annual O&M
- Earthwork: 161 million cubic yards

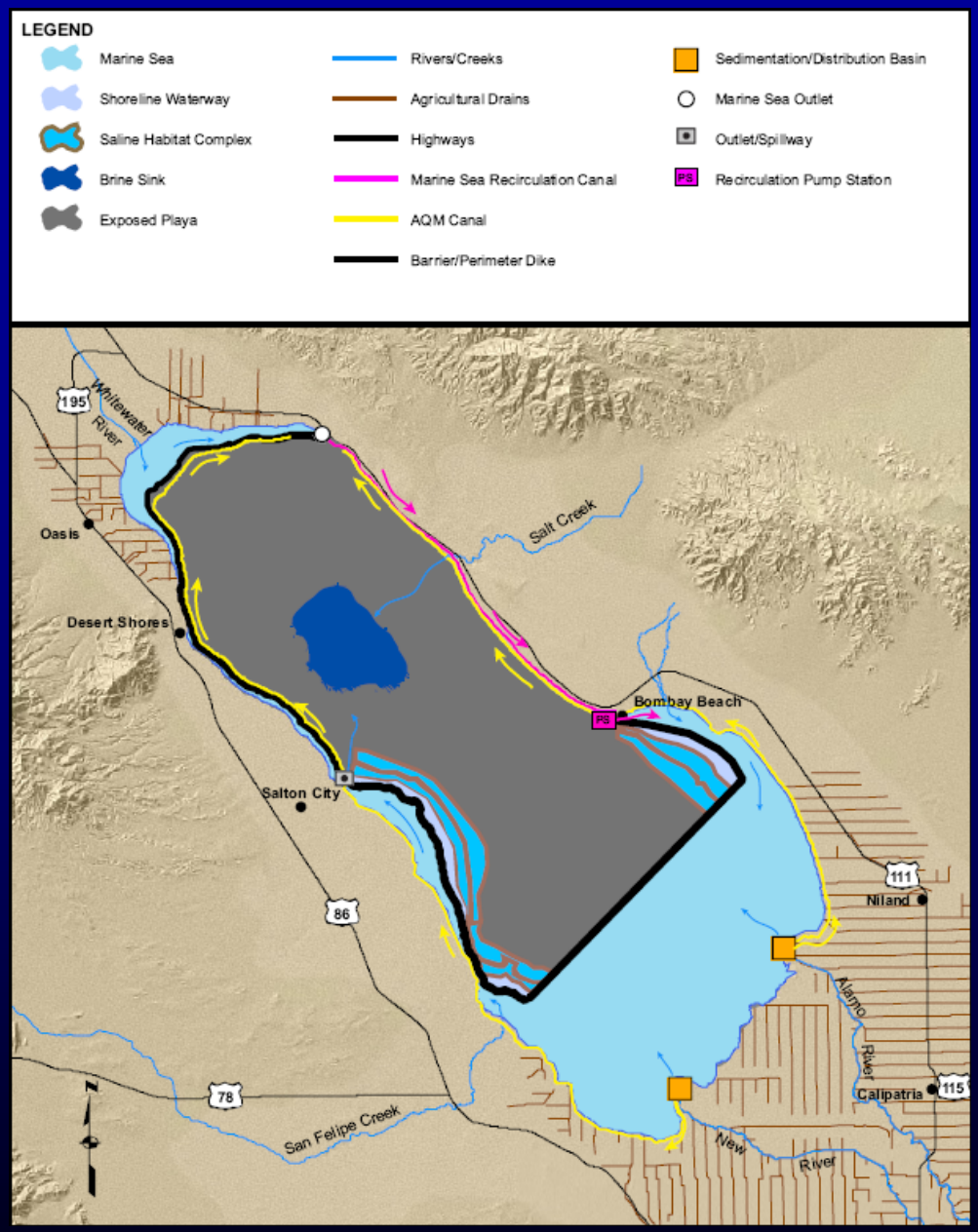
7. Combined North and South Lakes



Proposed by Salton Sea Authority

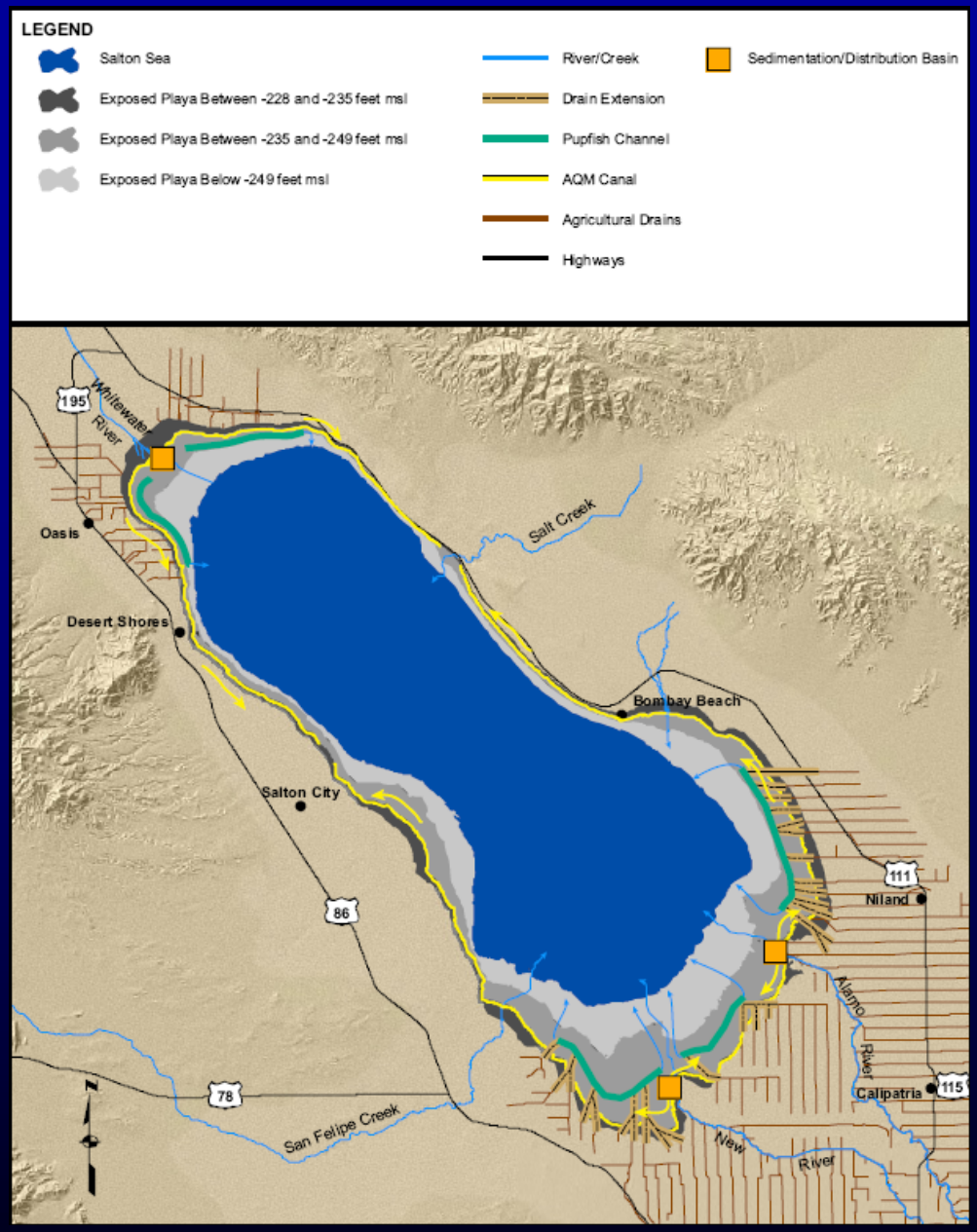
- Mid-Sea barrier
- 104,000 acres marine sea
- 12,000 acres saline habitat complex
- Water circulation and treatment
- IID supply reservoir
- $5.2 billion Capital
- $82 million annual O&M
- Earthwork: 113 million cubic yards

8. South Sea Combined



- Mid-Sea barrier
- 83,000 acres marine sea
- 18,000 acres saline habitat complex
- Circulation of sea water

- $5.8 billion Capital
- $145 million annual O&M
- Earthwork: 147 million cubic yards



No Action

"Variability Conditions"

- Wider range of inflows based upon potential changed conditions
- State obligations under QSA JPA
  - Air quality
  - Desert pupfish
- $0.8 billion Capital
- $49 million annual O&M
- Earthwork:
  6.7 million cubic yards

Questions?