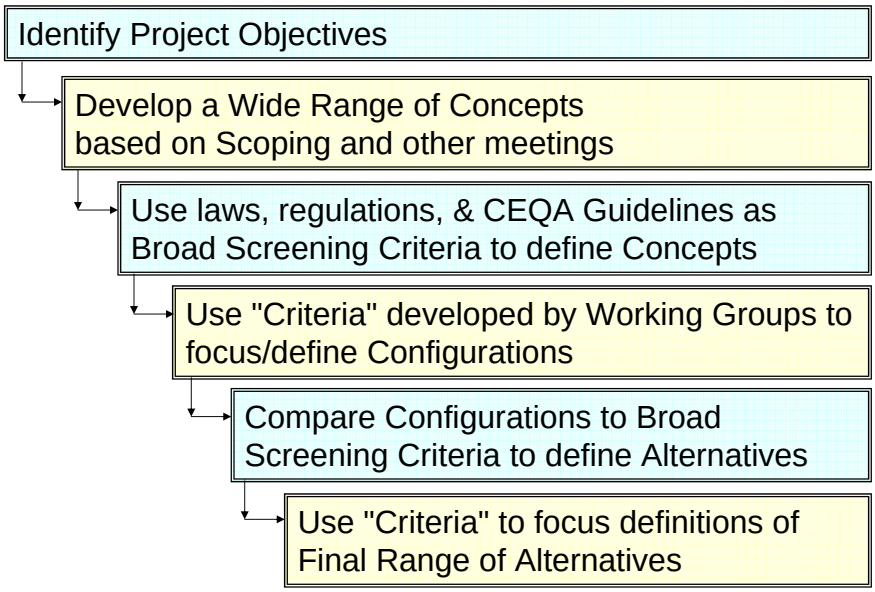
Proposed Final Range of Alternatives

Advisory Committee
January 31, 2006
Sacramento, California

Purpose of this Session

- **Review method to present alternatives in the PEIR**
- **Identify Proposed Final Range of Alternatives**
  - Describe Alternatives
  - Consider potential construction phasing and resultant impacts on salinity of Salton Sea during construction

Approach to Define Alternatives



Description of Alternatives in PEIR

- **Chapter 2 of the PEIR will include:**
  - Brief description of the Alternatives Development process - including use of broad screening criteria
  - List of all Concepts considered, brief description of each, and results of applying broad screening criteria
  - More detailed description of the Configurations - including the Import/Export Configuration and results of applying broad screening criteria
  - Very detailed description of the Final Alternatives and summary of the PEIR impact assessment

Description of Alternatives in PEIR - Continued

- **Ecosystem Restoration Study Appendix will include:**
  - Detailed description of each Concept and results of the application of broad screening criteria
  - More detailed descriptions of each Configuation, including cost and phasing details
    - Including Import/Export Configuration with a range of water sources and "next steps" to consider those water sources

Proposed Final Range of Alternatives

- **No Action Alternative - CEQA Condition**
- **No Action Alternative - Variability Condition**
- **North Sea Combined with Saline Habitat Complex**
- **North Sea with Saline Habitat Complex**
- **South Sea Combined with Saline Habitat Complex**
- **Concentric Rings**
- **Maximum Saline Habitat Complex**
- **Minimal Infrastructure with Saline Habitat Complex**

Outline of Alternatives Description

- **Describe basic features**
  - Acreage of Marine Sea, Saline Habitat Complex, Exposed Playa, and Brine Sink
- **Describe potential construction phasing and impacts/benefits to habitat**
- **Describe cost factors**
  - Barriers and perimeter dikes
  - Saline Habitat Complex
  - Conveyance
  - Air Quality Management

Two Phasing Scenarios Considered

- **Scenario 1 - Fast-Tracked**
  - Pre-design completed during preparation of the site-specific environmental documents
  - Permitting completed during design
    - Assumes no additional studies or redesign for Air Quality Management, Corps of Engineers, Department of Fish and Game, and US Fish and Wildlife Service permits
    - Available rock/aggregate without permitting
  - Assumes State Implementation Plan for Air Quality is modified to accommodate project
  - Assumes land acquisition occurs during design
  - Assumes funding is obtained without delay

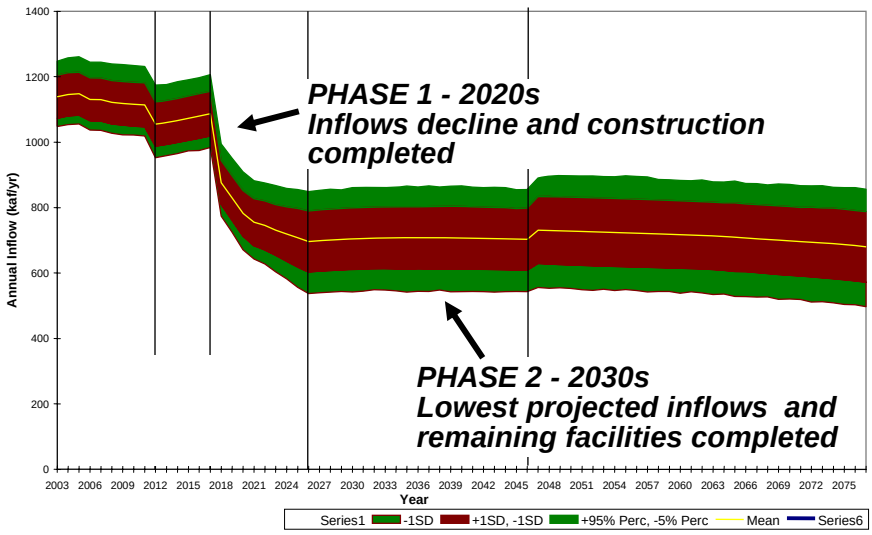
Scenario 2 for Phasing - Traditional

- **Pre-design completed following site-specific environmental documents**
- **Permitting completed during design**
  - Additional studies for permits
  - Possible studies for quarry development
- **Assumes State Implementation Plan for Air Quality is modified longer construction period**
- **Assumes land acquisition occurs during design and funding is obtained without delay**

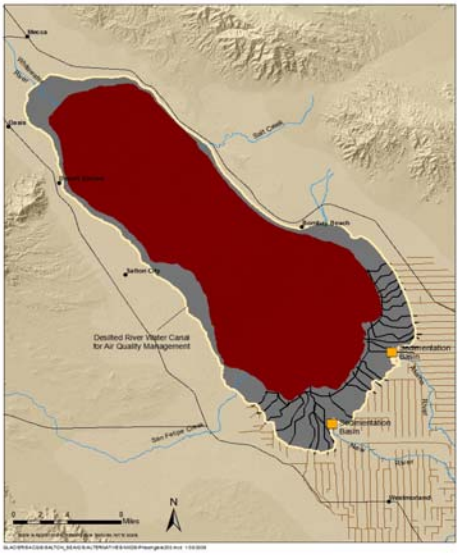
Construction Phasing

Completed by	Scenario 1	Scenario 2
PEIR	2006	2006
Funding Approved	2007	2007
Project Specific EIRs	2008	2010
Preliminary Design	2008	2011
Final Design	2009	2013
Permits	2009	2013
Award Contract	2010	2014
Major Construction	2018	2030s??
Final Construction	2040	2050s??

Construction Phases for Scenario 1



No Action Alternative – CEQA Condition



Purpose and Major Components

- **Provide a basis for the evaluation of impacts of the other alternatives**
- **Required by CEQA**
- **Includes future actions to mitigate pupfish and air quality impacts of the IID Water Conservation and Transfer Project**
- **Average Annual Inflows**

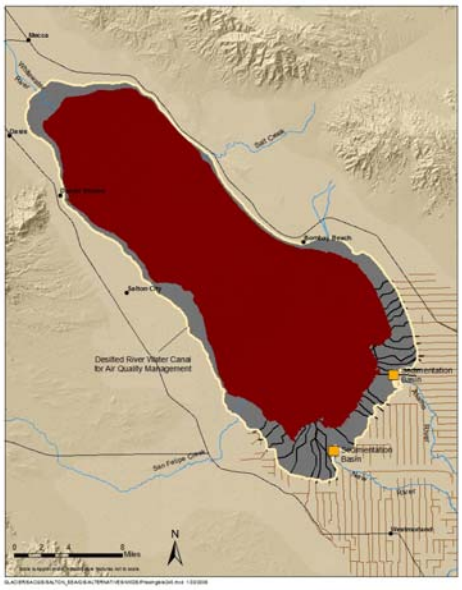
  2003-2077: 965,000 af/yr
  2018-2077: 922,000 af/yr

No Action Alternative - CEQA Condition

- **Year 2020**
  - Elevation -236 feet msl
  - Salinity 64,000 mg/L
- **Brine Sink**
  - 229,000 acres
- **Exposed Playa**
  - 3,000 acres
- **Pupfish connectivity in Salton Sea**

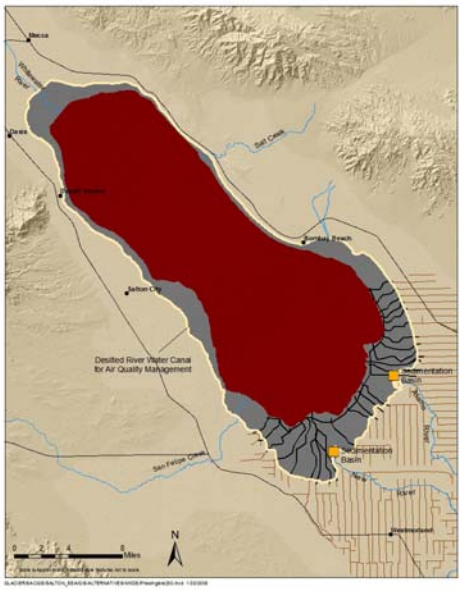
No Action Alternative - CEQA Condition

- **Year 2030**
  - Elevation -246 feet msl
  - Salinity 100,000 mg/L
- **Brine Sink**
  - 195,000 acres
- **Exposed Playa**
  - 37,000 acres
- **Drains connected for pupfish when salinity exceeds 90,000 mg/L**

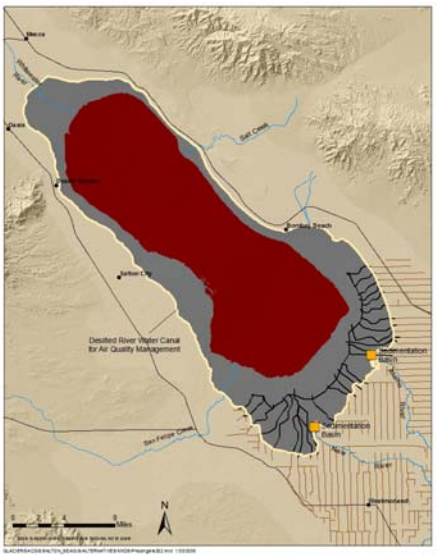


No Action Alternative - CEQA Condition

- **Year 2077**
  - Elevation -250 feet msl
  - Salinity 160,000 mg/L
- **Brine Sink**
  - 166,000 acres
- **Exposed Playa**
  - 66,000 acres below: -228 feet msl
  - 51,000 acres below -235 feet msl
- **Drains connected for pupfish**



No Action Alternative – Variability Condition



Purpose and Major Components

- **Provide a basis for the evaluation of uncertainty/risk**
- **Same as No Action Alternative - CEQA Condition with lower inflows**
- **Average Annual Inflows**

  2003-2077: 737,000 af/yr

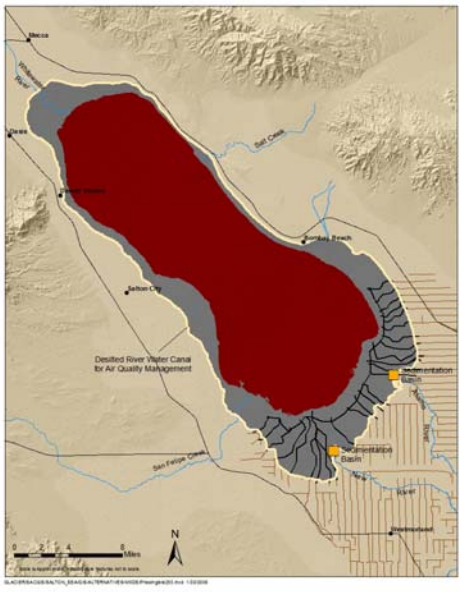
  2018-2077: 650,000 af/yr

No Action Alternative - Variability Condition

- **Year 2020**
  - Elevation -239 feet msl
  - Salinity 72,000 mg/L
- **Brine Sink**
  - 220,000 acres
- **Exposed Playa**
  - 12,000 acres
- **Pupfish connectivity in Salton Sea**

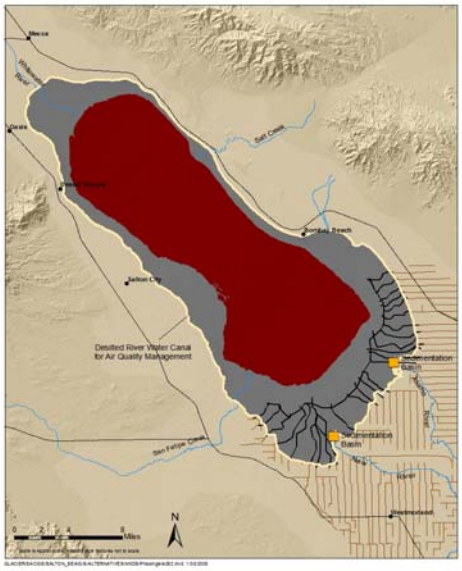
No Action Alternative - Variability Condition

- **Year 2030**
  - Elevation -255 feet msl
  - Salinity 180,000 mg/L
- **Brine Sink**
  - 163,000 acres
- **Exposed Playa**
  - 69,000 acres
- **Drains connected for pupfish when salinity exceeds 90,000 mg/L**

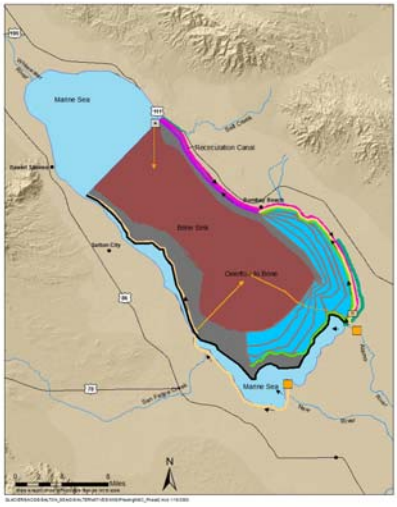


No Action Alternative - Variability Condition

- **Year 2077**
  - Elevation -262 feet msl
  - Salinity >> 200,000 mg/L
- **Brine Sink**
  - 127,000 acres
- **Exposed Playa**
  - 105,000 acres below -228 feet msl
  - 90,000 acres below -235 feet msl
- **Drains connected for pupfish**



North Sea Combined with Saline Habitat Complex

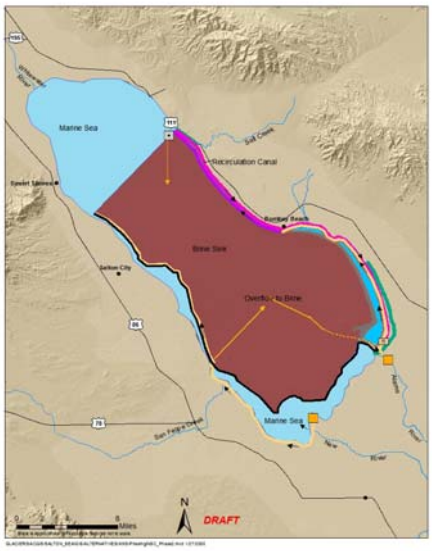


Purpose and Major Components

- **Provide a deep, marine sea habitat in the northern and western portions**
- **Marine Sea target elevation of -230 ft msl and salinity similar to ocean water**
- **Saline Habitat Complex to provide remaining habitat**
- **Air Quality Management for Exposed Playa**
- **Pupfish connectivity below existing shoreline**
- **Salt recirculation to maintain salinities**

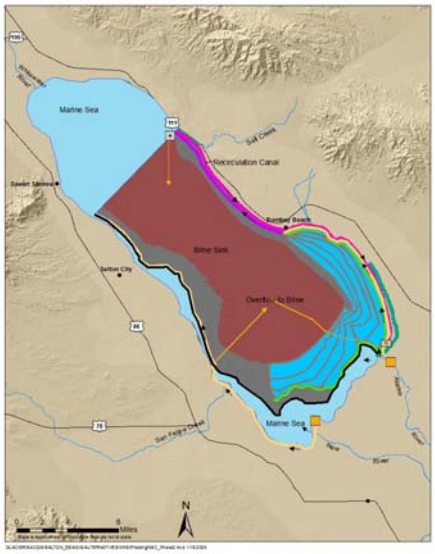
North Sea Combined with Saline Habitat Complex

- **Year 2019 Barrier Constructed**
- **Marine Sea**
  - 74,000 acres
  - Barrier: 10 miles north of mid-Sea
- **Brine Sink**
  - 151,000 acres at -242 ft msl
  - Salinity: 90,000 mg/L
- **Exposed Playa**
  - 3,000 acres
- **Saline Habitat Complex**
  - 4,000 acres



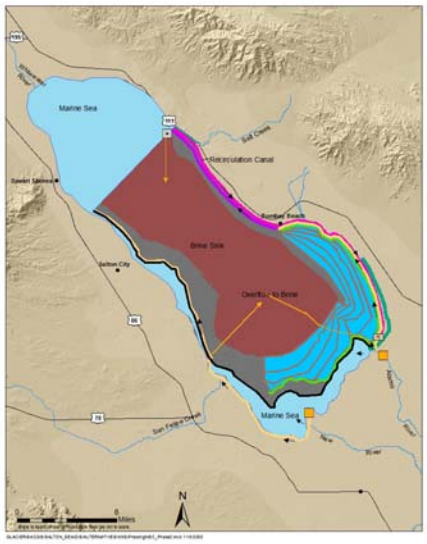
North Sea Combined with Saline Habitat Complex

- **Year 2035**
- **Marine Sea**
  - 74,000 acres
  - Barrier: 10 miles north of mid-Sea
- **Brine Sink**
  - 83,000 acres at -266 ft msl
  - Salinity: >>200,000 mg/L
- **Exposed Playa**
  - 50,000 acres
- **Saline Habitat Complex**
  - 25,000 acres

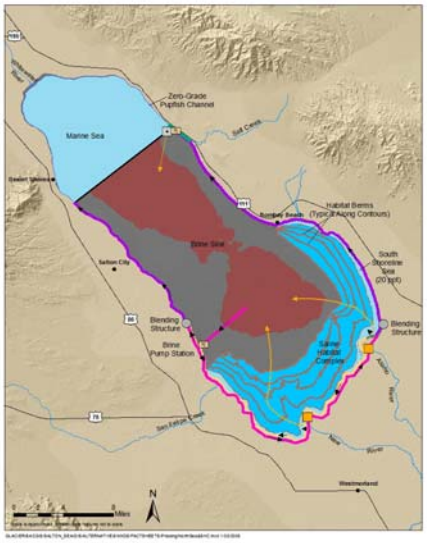


North Sea Combined with Saline Habitat Complex

- **Year 2077**
- **Marine Sea**
  - 74,000 acres
  - Barrier: 10 miles north of mid-Sea
- **Brine Sink**
  - 77,000 acres at -270 ft msl
  - Salinity: >>200,000 mg/L
- **Exposed Playa**
  - 56,000 acres
- **Saline Habitat Complex**
  - 25,000 acres



North Sea with Saline Habitat Complex

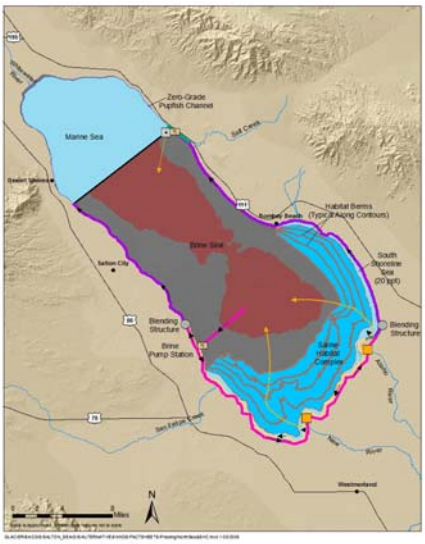


Purpose and Major Components

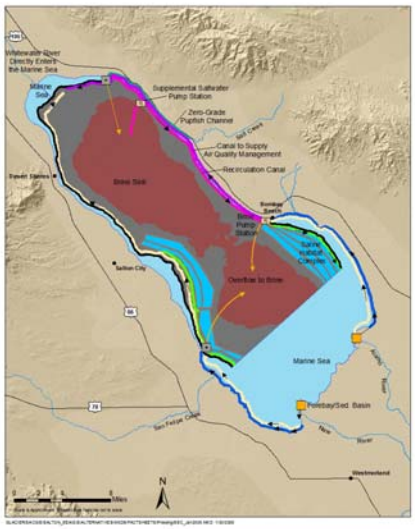
- **Provide a deep, marine sea in the northern portion of Salton Sea**
- **Maximize saline habitat in the south with remaining water**
- **Marine Sea target elevation of -230 ft msl and target salinity similar to ocean water**
- **Other components similar to North Sea Combined with Saline Habitat Complex**

North Sea with Saline Habitat Complex

- **Year 2077**
- **Marine Sea**
  - 46,000 acres
  - Barrier: 8 miles north of mid-Sea
- **Brine Sink**
  - 80,000 acres at -270 ft msl
  - Salinity: >>200,000 mg/L
- **Exposed Playa**
  - 56,000 acres
- **Saline Habitat Complex**
  - 50,000 acres



South Sea Combined with Saline Habitat Complex

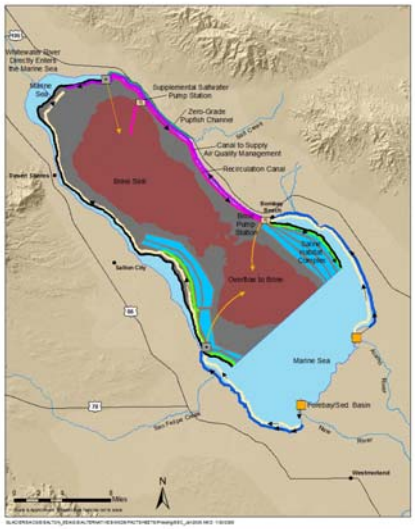


Purpose and Major Components

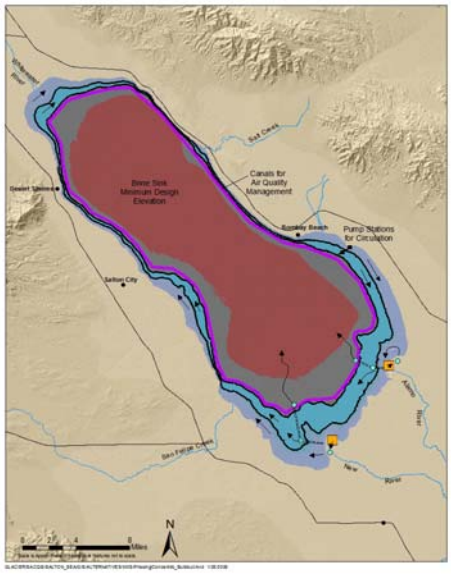
- **Provide a deep, marine sea in the southern, western, and northern portions of Salton Sea**
- **Provide saline habitat along eastern and western shores with remaining water**
- **Marine Sea target elevation of -230 ft msl and target salinity similar to ocean water**
- **Other components similar to North Sea Combined with Saline Habitat Complex**

South Sea Combined with Saline Habitat Complex

- **Year 2077**
- **Marine Sea**
  - 74,000 acres
  - Barrier: 10 miles south of mid-Sea
- **Brine Sink**
  - 77,000 acres at -270 ft msl
  - Salinity: >>200,000 mg/L
- **Exposed Playa**
  - 56,000 acres
- **Saline Habitat Complex**
  - 25,000 acres



Concentric Rings

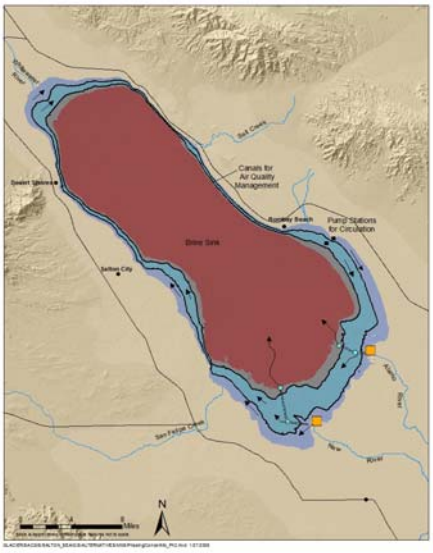


Purpose and Major Components

- **Preserve and expand existing shoreline water**
  - First perimeter dike constructed at -240 ft msl, water at -230 ft msl
  - Second perimeter dike constructed at -250 ft msl, water at -240 ft msl
- **Air quality management, pupfish connectivity, and salt recirculation as in North Sea Combined with Saline Habitat Complex**
- **Habitat provided without Saline Habitat Complex**

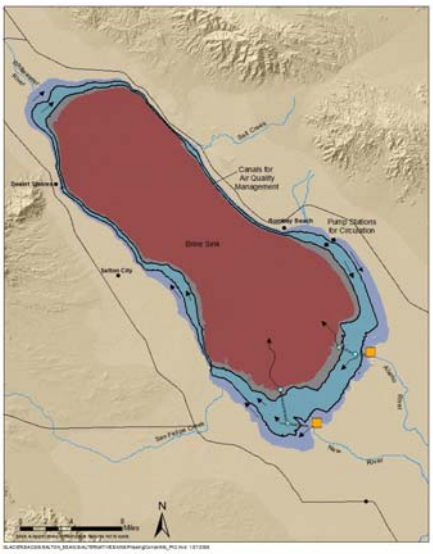
Concentric Rings

- **Year 2017 First Ring Complete**
- **First Ring**
  - 30,000 acres
- **Second Ring**
  - Not constructed in 2017
- **Brine Sink**
  - 202,000 acres at -240 ft msl
  - Salinity: 64,000 mg/L
- **Exposed Playa**
  - None



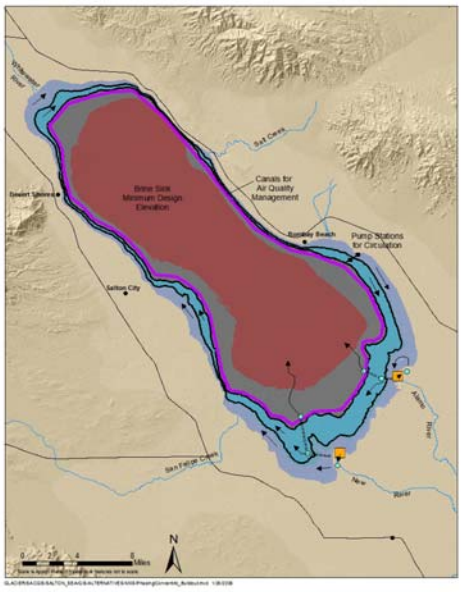
Concentric Rings

- **Year 2030**
- **First Ring**
  - 30,000 acres
- **Second Ring**
  - 36,000 acres
- **Brine Sink**
  - 115,000 acres at -265 ft msl
  - Salinity: >>200,000 mg/L
- **Exposed Playa**
  - 51,000 acres

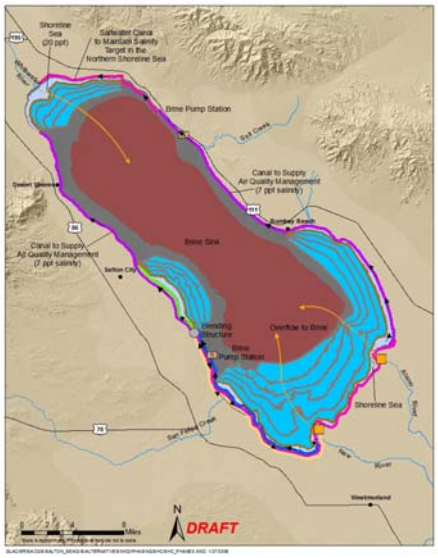


Concentric Rings

- **Year 2077**
- **First Ring**
  - 30,000 acres
- **Second Ring**
  - 36,000 acres
- **Brine Sink**
  - 111,000 acres at -266 ft msl
  - Salinity: >>200,000 mg/L
- **Exposed Playa**
  - 55,000 acres



Maximum Saline Habitat Complex

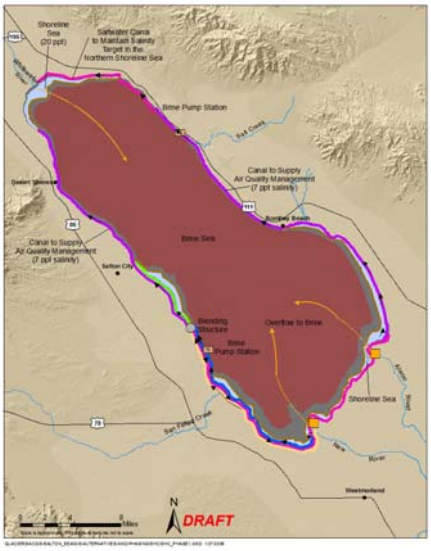


Purpose and Major Components

- **Provide substantial amount of created saline habitat areas along the shorelines of the Sea**
- **Saline Habitat Complex at northern portion relies only upon flows from Whitewater River**
- **Air Quality Management, Pupfish Connectivity, and Salt Recirculation similar to North Sea Combined with Saline Habitat Complex**

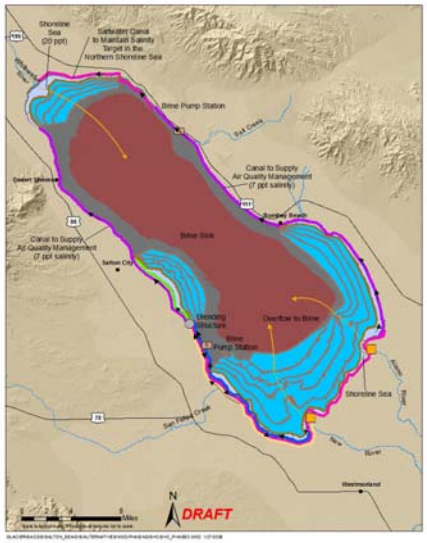
Maximum Saline Habitat Complex

- **Year 2020**
- **Saline Habitat Complex**
  - 32,000 acres
- **Brine Sink**
  - 194,000 acres at -242 ft msl
  - Salinity: 75,000 mg/L
- **Exposed Playa**
  - 6,000 acres



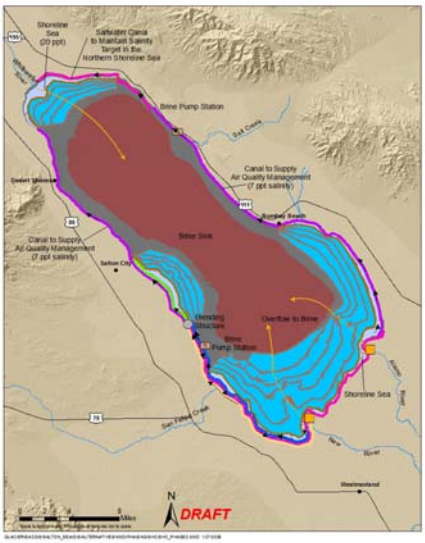
Maximum Saline Habitat Complex

- **Year 2030**
- **Saline Habitat Complex**
  - 75,000 acres
- **Brine Sink**
  - 110,000 acres at -266 ft msl
  - Salinity: >>200,000 mg/L
- **Exposed Playa**
  - 47,000 acres

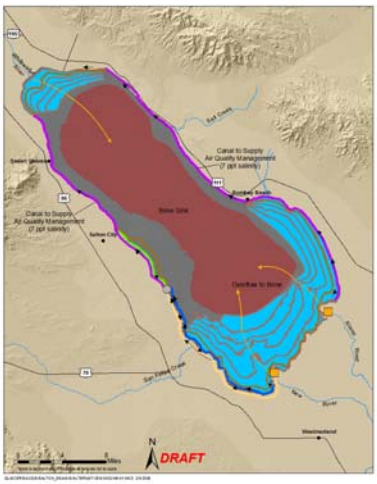


Maximum Saline Habitat Complex

- **Year 2077**
- **Saline Habitat Complex**
  - 75,000 acres
- **Brine Sink**
  - 102,000 acres at -267 ft msl
  - Salinity: >>200,000 mg/L
- **Exposed Playa**
  - 55,000 acres



Minimal Infrastructure with Saline Habitat Complex

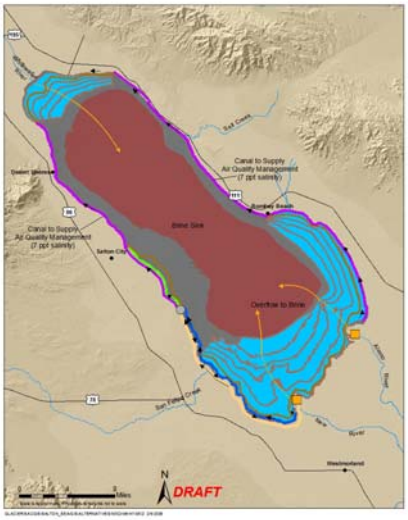


Purpose and Major Components

- **Water supplies for saline habitat areas:**
  - Drains supply first tier of cells along the southern shoreline
  - New and Alamo Rivers supply next tiers
  - Whitewater River supplies cells along northern shoreline
- **No salt recirculation**
  - Salt water will be added initially and flows managed to maintain salinity
- **Pupfish connectivity above shoreline**
- **Air Quality Management similar to other alternatives**

Minimal Infrastructure with Saline Habitat Complex

- **Year 2077**
- **Saline Habitat Complex**
  - 60,000 acres
- **Brine Sink**
  - 101,000 acres at -267 ft msl
  - Salinity: >>200,000 mg/L
- **Exposed Playa**
  - 70,000 acres



Summary of Proposed Alternatives

- **Construction of barriers, perimeter dikes, and Saline Habitat Complex would be completed by Early 2020s**
- **Salinity of Sea would be less than 90,000 mg/L until construction is completed**
  - Tilapia would probably disappear prior to 2020
  - Pupfish should be able to survive
- **Saline Habitat Complex may be completed prior to 2020 to provide habitat for tilapia**

Summary of Preliminary Capital Costs

- **Based on December 2005 costs without Treatment**
- **Costs are being recalculated**
  - No Action Alternative - CEQA Condition: $1.08B
  - No Action Alternative - Variability Condition: $1.94B
  - North Sea Combined with Saline Habitat Complex: $7.25B
  - North Sea with Saline Habitat Complex: $7.49B
  - South Sea Combined with Saline Habitat Complex: $6.38B
  - Concentric Rings: $4.98B
  - Maximum Saline Habitat Complex: $4.39B
  - Minimal Infrastructure with Saline Habitat Complex: Being developed