

Salton Sea

Ecosystem Restoration Program

FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT REPORT | **VOLUME I: PEIR**



SALTON SEA ECOSYSTEM RESTORATION PROGRAM

Volume I: Final Programmatic Environmental Impact Report

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Table of Contents

Items	Page
CHAPTER 1 INTRODUCTION	
Public Review Process	1-1
California Environmental Quality Act Compliance Steps	1-1
Responses to Comments	1-1
Final Programmatic Environmental Impact Report Organization	1-2
CHAPTER 2 EDITS TO THE DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT REPORT	
CHAPTER 3 DESCRIPTION OF THE PREFERRED ALTERNATIVE	
Methodology to Recommend the Preferred Alternative	3-1
Summary of Alternatives Considered in Draft PEIR.....	3-1
No Action Alternative	3-1
Range of Alternatives Considered in the Draft PEIR.....	3-2
Results of the Impact Assessment	3-3
Salton Sea Advisory Committee Recommendations	3-3
Identification and Evaluation of Attributes Used for Comparison of Alternatives	3-3
Habitat Working Group Recommendations	3-4
Air Quality Working Group Recommendations.....	3-5
Water Quality Science Panel Recommendations.....	3-6
Overall Preferred Alternative Process Working Group Recommendations	3-7
Salton Sea Advisory Committee Recommendations on February 27, 2007	3-7
Salton Sea Advisory Committee Recommendations on March 27, 2007.....	3-8
Consideration of Comments on the Draft PEIR	3-8
Most Cost-Effective, Technically Feasible Alternative	3-9
Preferred Alternative	3-10
Components of the Preferred Alternative.....	3-10
Inflow Assumptions in the Preferred Alternative.....	3-10
Location and Sizing of the Components.....	3-14
Saline Habitat Complex.....	3-14
Early Start Habitat	3-15
Marine Sea	3-15
Sedimentation/Distribution Basins.....	3-16
Air Quality Management.....	3-16
Brine Sink	3-17
Desert Pupfish Connectivity	3-17
Area for Geothermal Development.....	3-17
Land Ownership Assumptions.....	3-18
Implementing Entities Assumptions	3-18
Construction Materials Assumptions	3-18

Implementation Schedule.....	3-19
Period I: Five Year Plan/Pre-construction - 2008 to 2014	3-19
Demonstration Project and Early Start Habitat.....	3-19
Biological Investigations in the First Five Years	3-20
Inflows, Water Quality, and Sediment Quality Investigations in the First Five Years	3-20
Air Quality Investigations in the First Five Years	3-20
Geotechnical Investigations and Surveys in the First Five Years.....	3-20
Construction Methods and Materials Investigations Within the First Five Years	3-21
Coordination with the Torres Martinez Tribe	3-21
Access and Utility Agreements.....	3-21
Project-Level Environmental Documentation and Final Design	3-21
Bidding Period	3-21
Period II: Major Construction - 2014 to 2025.....	3-25
Period III: Construction Completion - 2025 to 2035	3-25
Period IV: Operations and Maintenance - 2035 to 2078	3-26
Estimated Construction Costs.....	3-26
CHAPTER 4 FEDERAL AGENCY COMMENTS	
CHAPTER 5 TRIBAL AGENCY COMMENTS	
CHAPTER 6 STATE AGENCY COMMENTS	
CHAPTER 7 LOCAL AGENCY COMMENTS	
CHAPTER 8 INTEREST GROUPS COMMENTS	
CHAPTER 9 INDIVIDUALS COMMENTS	

List of Appendixes

APPENDIX A LARGE ATTACHMENTS TO COMMENT LETTERS
APPENDIX B INDIVIDUALS THAT SUBMITTED FORM LETTERS

List of Tables

Items	Page
Table 3-1 Comparison of Infrastructure Features in the Preferred Alternative	3-13
Table 3-2 Next Steps to be Considered during Project-Level Analyses	3-22
Table 3-3 Estimated Capital and Operations and Maintenance Costs for Preferred Alternative	3-26
Table 3-4 Estimated Cash Flow for the Preferred Alternative.....	3-27

List of Figures

Items	Page
Preferred Alternative	3-11

CHAPTER 1
Introduction

CHAPTER 1

INTRODUCTION

This Final Programmatic Environmental Impact Report (Final PEIR) and Salton Sea Ecosystem Restoration Study consists of the Draft Programmatic Environmental Impact Report (Draft PEIR) for the Salton Sea Ecosystem Restoration as revised (errata is presented in Chapter 2 of the Final PEIR), comments on the Draft PEIR, and responses to those comments. The public comment period for the Draft PEIR was from October 19, 2006 to January 16, 2007. Comments on the Draft PEIR were received through the California Department of Water Resources (DWR) Salton Sea Ecosystem Restoration Program website, and by mail, fax, email, and comment cards submitted at public workshops.

PUBLIC REVIEW PROCESS

The public comment period for the Draft PEIR began October 19, 2006 with an announcement of the availability of the Draft PEIR. The Draft PEIR along with a Notice of Completion was provided to the State Clearinghouse for distribution to interested state agencies. A Notice of Availability was filed in Riverside, Imperial, and San Diego counties and published in *The Press Enterprise*, *The San Diego Union-Tribune*, *The Desert Sun*, *Imperial Valley Press*, and *Borrego Sun*.

The public comment period closed January 16, 2007. Public workshops were held in El Centro (November 15, 2006 and January 11, 2007), Bombay Beach (November 16, 2006 and January 11, 2007), Salton City (January 10, 2007), Palm Desert (January 10, 2007), San Diego (December 6, 2006), Oakland (December 4, 2006), and Sacramento (December 4, 2006). Only written comments were received during these workshops.

The Draft PEIR was made available online at DWR's Salton Sea Ecosystem Restoration Program website (www.saltonsea.water.ca.gov) and at 30 libraries in Riverside, Imperial, San Diego, and Sacramento counties. Approximately 2,000 copies of the Executive Summary with a CD of the entire document were distributed. Over 30,000 comment letters were received during the public comment period. These comments were considered and responded to during preparation of this Final PEIR. Responses to these comments are presented in this Final PEIR.

CALIFORNIA ENVIRONMENTAL QUALITY ACT COMPLIANCE STEPS

To certify the Final PEIR, the Resources Agency must find that the Final PEIR has been completed in compliance with the California Environmental Quality Act (CEQA). Under the programmatic approach for preparation of the Final PEIR, additional technical analyses and environmental compliance will be necessary prior to implementation of future actions. Findings of fact regarding significant effects of implementation need to be addressed in the future project-level analyses and environmental documentation. Mitigation monitoring and reporting programs related to future implementation also would be developed as part of project-level environmental documentation.

RESPONSES TO COMMENTS

CEQA requires lead agencies to respond to substantive public comments on a draft environmental impact report. All comments received during the public comment period are responded to in this Final PEIR. The range of possible responses includes explanation of the alternatives and analyses, making factual corrections, describing actions for the project-level analyses, selecting the preferred alternative, and explaining why comments do not warrant further agency response. When there has been significant public response, CEQA allows the lead agency to summarize or consolidate similar comments, as long as all substantive issues are represented. The Final PEIR contains responses to comments from agencies,

recognized interest groups, and unique comments from individuals. There were substantial numbers of letters that contained similar, if not identical, comments. Responses to these similar comments are provided once and the names of the commentors are provided with the representative comment letter.

FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT REPORT ORGANIZATION

The Final PEIR is organized in the following sections:

- **Chapter 1, Introduction** - This chapter introduces methods used in obtaining and reviewing comments on the Draft PEIR and discussion of compliance with CEQA;
- **Chapter 2, Edits to the Draft Programmatic Environmental Impact Report** - This chapter presents errata to the Draft PEIR;
- **Chapter 3, Description of the Preferred Alternative** - This chapter presents the methodology used to select the Preferred Alternative, a description of the Preferred Alternative, and summarizes the Next Steps that would be considered in subsequent project-level analyses;
- **Chapter 4, Federal Agency Comments** - This chapter presents comments from federal agencies and responses to these comments;
- **Chapter 5, Tribal Agency Comments** - This chapter presents comments from the Torres Martinez Tribe and responses to these comments;
- **Chapter 6, State Agency Comments** - This chapter presents comments from State agencies and responses to these comments;
- **Chapter 7, Local Agency Comments** - This chapter presents comments from non-federal or non-state agencies and responses to these comments;
- **Chapter 8, Interest Groups Comments** - This chapter presents comments from Stakeholder Interest Groups and responses to these comments;
- **Chapter 9, Individuals Comments** - This chapter presents comments from individuals and responses to these comments;
- **Appendix A, Large Attachments to Comment Letters** - This appendix includes large attachments to comment letters. These attachments appeared to be included for informational purposes and did not include specific comments on the Draft PEIR;
- **Appendix B, Individuals that Submitted Form Letters** - This appendix presents a list of individuals that submitted one of the five form letters as comment letters on the Draft PEIR.

CHAPTER 2

Edits to the Draft Programmatic Environmental Impact Report

CHAPTER 2

EDITS TO THE DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT REPORT

The following corrections and/or clarifications have been made to the Draft PEIR text. These include minor corrections to improve writing clarity, grammar, typographical errors, and consistency; corrections or clarifications in accordance with specific responses to comments, as described in Chapters 4 through 9; or staff-initiated text changes to incorporate information in the PEIR as discussed with the Salton Sea Advisory Committee and the public. The text revisions are organized by the chapter, section, and page number that appear in the Draft PEIR. Deletions are indicated by “cross-out” text (~~Deleted text~~) and new text is indicated by underlined text (underlined). Text, table, and figure revisions are itemized below.

Changes were made in the following chapters and appendices:

- Table of Contents;
- Executive Summary
- Chapters 1 through 7, 9 through 21, 23, 25, and 28; and
- Appendices D through H.

Table of Contents

Chapter 3; page v:

~~Evaluation of~~ Transfers Allowed under the Quantification Settlement Agreement 3-79

List of Figures; page xxix:

5-1	Salton Sea Watershed and Major Contributing Streams.....	5-3
5-2	Long Term Average Monthly Temperature, Precipitation, and Evapotranspiration at Brawley	5-7
5-3	Imperial Irrigation District Water Service Area	5-11
5-4	Coachella Valley Water District Water Service Area	5-15
5-5	Estimated Historical Inflows to the Salton Sea	5-19
5-6	Projected Salton Sea Inflows for No Action Alternative-CEQA Conditions	5-27
5-7	Example of Stochastic Results	5-29
5-8	Projected No Action Alternative-Variability Conditions Inflows.....	5-31
5-9	Projected No Action Alternative-CEQA Conditions Inflows	5-31
5-9	Projected No Action Alternative-Variability Conditions Inflows.....	5-35
5-10	Salton Sea Surface Water Elevation under the No Action Alternative- CEQA Conditions	5-37
5-11	Salton Sea Surface Water Elevation under the No Action Alternative- Variability Conditions.....	5-39
5-12	Brine Sink Surface Water Elevation under Alternative 1	5-43
5-13	Brine Sink Surface Water Elevation under Alternative 2	5-45
5-14	Brine Sink Surface Water Elevation under Alternative 3	5-47
5-15	Brine Sink Surface Water Elevation under Alternative 4	5-51
5-16	Brine Sink Surface Water Elevation under Alternative 5	5-55
5-17	Marine Sea Surface Water Elevation under Alternative 5	5-57
5-18	Brine Sink Surface Water Elevation under Alternative 6	5-59
5-19	Marine Sea Surface Water Elevation under Alternative 6	5-61
5-20	Brine Sink Surface Water Elevation under Alternative 7	5-65
5-21	Recreational Saltwater Lake Surface Water Elevation under Alternative 7	5-67
5-22	Brine Sink Surface Water Elevation under Alternative 7	5-69
5-23	Marine Sea Surface Water Elevation under Alternative 7	5-71

Executive Summary

The Salton Sea, second paragraph; page ES-4:

Though the current Salton Sea has existed only since 1905, a much larger lake known as Lake Cahuilla filled the Salton Sink on several occasions in past centuries. The Colorado River periodically changed course, and sometimes flowed into the Salton Sink. After flow in the river returned to the Gulf of ~~Mexico~~California, Lake Cahuilla would gradually disappear through evaporation until the next time the Colorado River changed course. Current water development and control projects in the Colorado River Basin prevent the river from returning to the Salton Sink.

Alternative 4 - Concentric Lakes, first paragraph; page ES-17:

Alternative 4 was defined by the Imperial Group, which is a coalition of Imperial Valley farmers. This alternative is comprised of four separate lakes that provide habitat similar to Saline Habitat Complex without individual cells, with design salinity of 20,000 to

60,000 mg/L. Brine Sink, ~~and~~ desert pupfish connectivity, ~~and air quality management~~ components are included.

Alternative 6 - North Sea Combined, fourth paragraph; page ES-19:

The primary benefit of this alternative would be to provide habitat that would support marine sport fish as well as tilapia, invertebrates, and a wide variety of birds. Water along the southern shoreline would minimize changes to the microclimate in the agricultural lands. This alternative also would provide habitat and water ~~along the shoreline~~ along the western and northern shorelines. Alternative 6 could also provide opportunities for fishing, use of motorized and non-motorized boats, water skiing, bird watching, hiking, hunting, swimming, camping, and day use activities.

Figure ES-1, Estimated Construction Schedule for Alternatives 1 through 8; page ES-23:

Revised figure is on the following page.

Table ES-1, table head; pages ES-31 and ES-32:

Table ES-1
Comparison of Infrastructure Features in Alternatives

Component	Alternatives									
	No Action Alternative - CEQA Conditions	No Action Alternative - Variability Conditions	Alternative 1 Saline Complex Habitat I Complex	Alternative 2 Saline Habitat Complex II	Alternative 3 Concentric Rings	Alternative 4 Concentric Lakes	Alternative 5 North Sea	Alternative 6 North Sea Combined	Alternative 7 Combined North and South Lakes	Alternative 8 South Sea Combined

Chapter 1

The Future of the Salton Sea without Restoration, third paragraph; page 1-7:

Tilapia serve as the primary forage species for piscivorous (fish-eating) birds at the Salton Sea. Tilapia may be present until salinity exceeds 60,000 mg/L (~~which could occur as early as 2021~~). Tilapia could likely continue to persist in lower salinity areas where the rivers, creeks, and drains enter the smaller Salton Sea. How long fish would persist in these areas would depend on the size of the areas and whether wind events would cause enough mixing to increase salinity to levels above fish tolerance.

Chapter 2

Import Water from the Gulf of California, second paragraph; page 2-9:

As described above for the previous Whole Sea concept, the amount of imported water would need to be adequate to replace the evaporated water and the saltwater removed to maintain salinity. To provide a Whole Sea with a stable salinity and to maintain a stable water surface elevation of -230 feet msl, about 3,400,000 acre-feet/year would need to be imported and 2,730,000 acre-feet/year would need to be removed. The amount of imported water would be based upon the salinity of the Gulf of California and the Whole Sea when the conveyance facilities become operational. The facilities probably would not be designed, permitted, and constructed before 2020. At that time, the salinity of the Whole Sea would be 76,000 mg/L. The Gulf of California salinity ranges from 37,000 to 39,000 mg/L. Because the Gulf of California water salinity is relatively high, the projected salinity of the Whole Sea would be 44,000 mg/L in 2078. This salinity is greater than marine water salinity and would not support the defined habitat objectives

described in previous sections of this chapter. These flows are almost 40 times higher than flows described above for importation of Colorado River because more water with salinity of 37,000 to 39,000 mg/L would be required to dilute the Whole Sea salinity than Colorado River water with salinity of 500 to 1,500 mg/L

Locations of the Partial Sea, paragraph after the bulleted list; page 2-23:

The Barrier and Perimeter Dike locations in these configurations were developed to provide a high reliability that the water surface elevation and salinity objectives would be achieved ~~in at least 80 percent of the years in~~ during the 2018 to 2078 period with a conservative range of projected inflows under the No Action Alternative-Variability Conditions. The statistical analysis used to determine the design inflow criteria is described in Appendix H-2. Due to the high level of reliability, the Barrier locations would be located several miles from the mid-Sea location. Therefore, with respect to the North Sea and the South Sea configurations, water would not be adjacent to the majority of the communities along the western and eastern shorelines.

Application of Screening Criteria to Range of Configurations, final paragraph; page 2-26:

Construction and operations and maintenance of facilities located in Mexico would require extensive agreements between the United States and Mexico. Many of the previous studies have evaluated importing water from and exporting water to the Gulf of California in conjunction with establishment of an extension of the Gulf of California to either Laguna Salada or Mexicali, as described above. If such a connection was constructed with approvals from ~~governments~~ agencies in Mexico, it may be possible to extend the facilities to provide water into the United States. However, there would remain an issue of reliability if those facilities were not maintained for the purpose of providing water to the Whole Sea..

Chapter 3

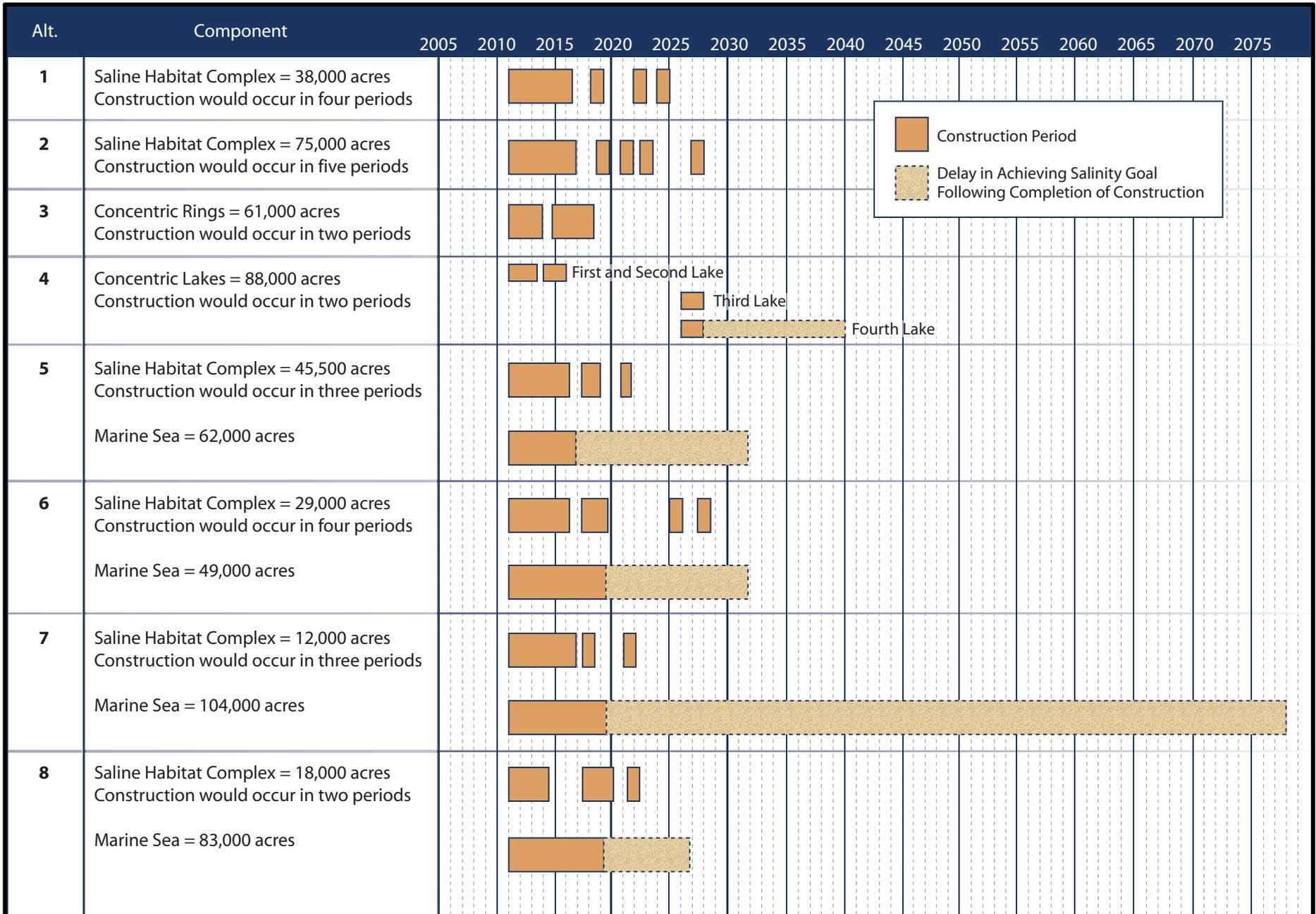
Figure 3-1, Estimated Construction Schedule for Alternatives 1 through 8; page 3-7:

Revised figure is on the following pages.

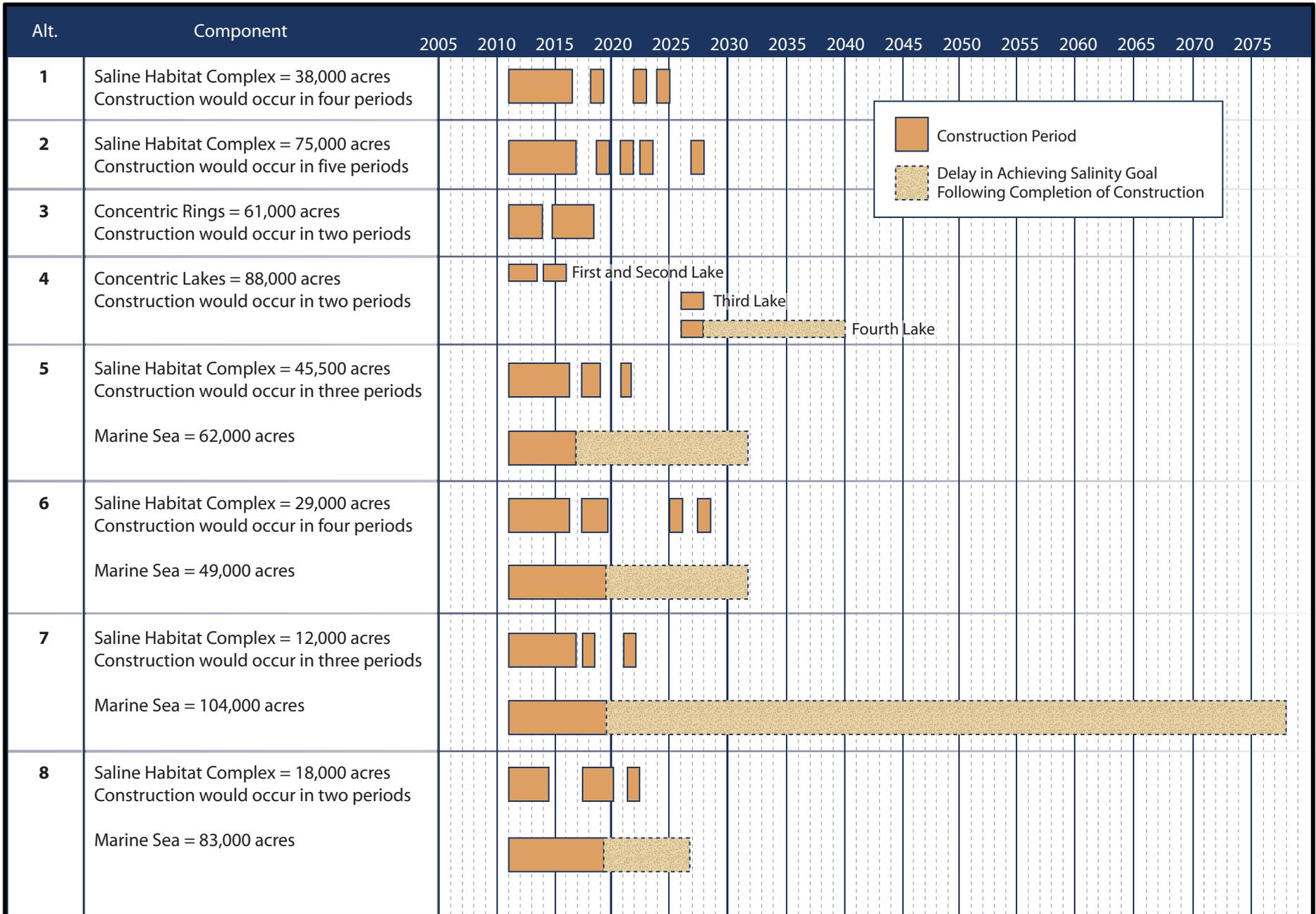
Table 3-2, table head; pages 3-51 and 3-52:

Table 3-2
Comparison of Infrastructure Features in Alternatives

Component	Alternatives									
	No Action Alternative - CEQA Conditions	No Action Alternative - Variability Conditions	Alternative 1 Saline Complex Habitat I Complex	Alternative 2 Saline Habitat Complex II	Alternative 3 Concentric Rings	Alternative 4 Concentric Lakes	Alternative 5 North Sea	Alternative 6 North Sea Combined	Alternative 7 Combined North and South Lakes	Alternative 8 South Sea Combined



**FIGURE ES-1
ESTIMATED CONSTRUCTION SCHEDULE
FOR ALTERNATIVES 1 THROUGH 8**



**FIGURE 3-1
ESTIMATED CONSTRUCTION SCHEDULE
FOR ALTERNATIVES 1 THROUGH 8**

Table 3-3, Note; page 3-54:

Add the following note:

Due to rounding of elevation values to the nearest foot, different acreage values are shown for the same elevation values.

Air Quality Management, first paragraph; page 3-56:

Implementation of the QSA and the related IID Water Conservation and Transfer Project would result in the additional exposure of playa. The area estimated in hydrologic modeling, as described in Appendix H2, is located at elevations between -235 and -248 feet msl. The specific area would be determined through observation as the area exposed prior to cessation of (c)(2) water in 2017. To mitigate the potential air quality impacts from this area, the IID Water Conservation and Transfer Project Mitigation Monitoring and Reporting Plan included the following four-step air quality mitigation and monitoring plan:

Evaluation of Transfers Allowed Under the Quantification Settlement Agreement, section heading; page 3-79:

**~~EVALUATION OF~~ TRANSFERS ALLOWED UNDER THE
QUANTIFICATION SETTLEMENT AGREEMENT**

Table 3-13; page 3-80:

**Table 3-13
Schedule for Delivery of Potential Transfer Water under the Quantification Settlement Agreement**

Year	(c)(2) Water ^a (acre-feet)	(c)(1) Water ^b (acre-feet)	Total (acre-feet)
2003	5,000	0	5,000
2004	10,000	0	10,000
2005	15,000	0	15,000
2006	20,000	0	20,000
2007	25,000	0	25,000
2008	25,000	20,000	45,000
2009	30,000	40,000	70,000
2010	35,000	60,000	95,000
2011	40,000	80,000	120,000
2012	45,000	100,000	145,000
2013	70,000	100,000	170,000
2014	90,000	100,000	190,000
2015	110,000	100,000	210,000
2016	130,000	100,000	230,000
2017	150,000	100,000	250,000

Notes:

^a Water to be provided to the Salton Sea through fallowing

^b Water to be provided to the Salton Sea through efficiency methods

Transfers Allowed under the Quantification Settlement Agreement, second paragraph; page 3-81:

Under Alternatives 1 and 2, transfer of (c)(2) or (c)(1) water could be beneficial because areas for Saline Habitat Complex would be exposed earlier than without the water transfers. However, these benefits would only occur if the environmental documentation, design efforts, and easement or land acquisitions could be completed prior to ~~2016~~2014 when construction of the Saline Habitat Complex would be initiated without the water transfer.

Table 3-15, table head; pages 3-86 through 3-98:

**Table 3-15
Summary of Impacts and Benefits**

Alternative	Basis of Comparison	Changes by Phase ^a				Next Steps
		I	II	III	IV	

Chapter 4

Colorado River-Tijuana Aqueduct Enlargement, first paragraph; page 4-12:

The Colorado River-Tijuana Aqueduct (know as the ARCT for its Spanish acronym) was built in 1975 and conveys water from the Colorado River to the cities of Tecate and Tijuana to the west. In order to satisfy the growing demand in these water short regions, the capacity of the aqueduct is being increased from 141 to 187 cubic feet/second (cfs) (COSAE, 2005). Design was initiated in the summer of 2005. The source of water to be conveyed through the enlarged aqueduct has not yet been contracted, but the ~~National Water Commission~~ [State of Baja California](#) of Mexico has indicated that the supply will be developed through transfers from agricultural users in the Mexicali Valley, recovery of seepage losses, reclamation of wastewater, and/or through improved efficiency in the use of water (CEA, 2005).

Imperial Irrigation District Water Conservation and Transfer Project, first paragraph; page 4-13:

The IID Water Conservation and Transfer Project is **up to** a 75-year water conservation program by IID to conserve up to 300,000 acre-feet/year of Colorado River water and transfer the water to SDCWA, CVWD, and/or Metropolitan Water District of Southern California (Metropolitan). The terms of the project are set forth in the Agreement for Transfer of Conserved Water (commonly referred to as the IID/SDCWA Transfer Agreement) initially executed by IID and SDCWA in 1998, and in various subsequently amended agreements associated with the QSA (see discussion below).

Imperial Irrigation District Water Conservation and Transfer Project, fourth through sixth paragraphs on page 4-13 and first and second paragraphs on page 4-14:

[In July 2002, Reclamation initiated an Endangered Species Act \(ESA\) compliance process by submitting a Biological Assessment to the U.S. Department of the Interior, Fish and Wildlife Service \(Service\) and requesting consultation pursuant to Section 7 of the federal ESA \(Reclamation, 2002b\). The Service issued a Biological Opinion in December 2002 \(Service, 2002\), which describes the voluntary conservation proposed by Reclamation, the conservation agreements to be entered into by Reclamation and the](#)

California water agencies, and their effects on federally listed species and designated critical habitat. The Biological Opinion requires the establishment of at least two major roost sites along the California coast to offset the potential take of California brown pelicans at the Salton Sea as a result of a reduction in fish abundance.

In addition to the conservation measures proposed by Reclamation, the Biological Opinion describes a 15-Year Minimization Plan required by the SWRCB Board Order 2002-13 to minimize the impacts on salinity and inflows to the Salton Sea. The 15-Year Minimization Plan requires a reduction in the volume of conserved water transferred to SDCWA for the first 15 years of the project.

~~Impacts of the project are related to the reduction of inflow from agricultural runoff into the Salton Sea, which accelerates the rate that salinity of the Salton Sea would increase. The Salton Sea fishery has historically supported several piscivorous (fish-eating) birds, some of which are listed as threatened or endangered species under federal and State Endangered Species Acts. During the first 15 years of the project, (c)(2) water would be delivered to the Salton Sea to reduce the increase in salinity and the reduction in elevation, as described in Chapter 1 (IID and Reclamation, 2003e).~~

Approval of the IID Water Conservation and Transfer Project by the State Water Resources Control Board (SWRCB) resulted in Revised Board Order WRO 2002-0013, issued on December 20, 2002, which requires IID to implement all of the measures in the EIR/EIS and the Habitat Conservation Plan (HCP) (SWRCB, 2002). In addition, IID must implement all of the measures in the California Endangered Species Act Permit (2081.1 permit) for the project. Key components of the project include:

- Measures to address increasing salinity in the Salton Sea which include 15 years of mitigation water to the Salton Sea as part of the Salton Sea Habitat Conservation Strategy, which is generally referred to as (c)(2) water in this PEIR;
- Measures for conserving selected species including desert pupfish and burrowing owl;
- Measures for conserving selected species associated with tamarisk scrub, IID drains, and desert areas along IID canals; ~~and~~
- Development and implementation of an Air Quality Mitigation and Monitoring Plan, including providing for dust control on areas of the Sea Bed that are exposed due to this project ~~and located below 235 feet msl.; and~~
- A subsequent Natural Community Conservation Plan is to be completed by IID by 2006.

~~In July 2002, Reclamation initiated an Endangered Species Act (ESA) compliance process by submitting a Biological Assessment to the U.S. Department of the Interior, Fish and Wildlife Service (Service) and requesting consultation pursuant to Section 7 of the federal ESA (Reclamation, 2002b). The Service issued a Biological Opinion in December 2002 (Service, 2002), which describes the voluntary conservation proposed by Reclamation, the conservation agreements to be entered into by Reclamation and the California water agencies, and their effects on federally listed species and designated critical habitat. The Biological Opinion requires the establishment of at least two major roost sites along the California coast to offset the potential take of California brown pelicans at the Salton Sea as a result of a reduction in fish abundance.~~

~~In addition to the conservation measures proposed by Reclamation, the Biological Opinion describes a 15-Year Minimization Plan required by the SWRCB Board Order~~

~~2002-13 to minimize the impacts on salinity and inflows to the Salton Sea. The 15-Year Minimization Plan requires a reduction in the volume of conserved water transferred to SDCWA for the first 15 years of the project. A subsequent Natural Community Conservation Plan is to be completed by IID by 2006.~~

IID prepared the *Amended and REstated Addendum to the EIR/EIS for the IID Water Conservation and Transfer Project* in September 2003 to provide an environmental assessment of changes made to the Transfer Project and its mitigation measures in September 2003 (IID 2003c). The changes assessed in the Addendum included revisions to the QSA terms and water delivery schedule, refinements to the Salton Sea related measures in the HCP, and changes to reflect legislation adopted in 2002 and 2003. The addendum modified and supplemented the IID Water Conservation and Transfer Project Final EIR/EIS and was approved by IID in October 2003.

Impacts of the project are related to the reduction of inflow from agricultural runoff into the Salton Sea, which accelerates the rate that salinity of the Salton Sea would increase. The Salton Sea fishery has historically supported several piscivorous (fish-eating) birds, some of which are listed as threatened or endangered species under federal and State Endangered Species Acts. During the first 15 years of the project, (c)(2) water would be delivered to the Salton Sea to reduce the increase in salinity and the reduction in elevation, as described in Chapter 1 (IID and Reclamation, 2003c).

Relationship to the Salton Sea Ecosystem Restoration, first paragraph; page 4-15:

The Imperial County General Plan directs the location and ~~to some extent, the~~ amount of land use changes in the county. These land use changes may affect the Salton Sea and are considered in the No Action Alternative-CEQA Conditions and No Action Alternative-Variability Conditions.

Quantification Settlement Agreement, third paragraph; pages 4-15 and 4-16:

In a major step toward achieving this goal, the Colorado River Board of California developed the California's draft Colorado River Water Use Plan (CRBC, 2000). Incorporating many of the concepts of the Water Use Plan, three of the major Colorado River water users in California (CVWD, IID, and Metropolitan) negotiated the QSA, which established a framework of water conservation actions and transfers between the participating agencies, CVWD, IID, and Metropolitan, for a period of up to 75 years. The QSA provides an important mechanism for California to reduce diversions of Colorado River water to the 4.4 million acre-foot normal year apportionment.

Salton Sea Unit 6, CE Obsidian Energy LLC, first paragraph; page 4-17:

Salton Sea Unit 6 is planned to be a ~~185-215~~ megawatt geothermal power plant consisting of a geothermal Resource Production Facility, a merchant class geothermal-powered Power Generation Facility, and associated facilities. Unit 6 will be located adjacent to the southern shore of the Salton Sea in Imperial County. The Salton Sea Unit 6 Project is owned by CE Obsidian Energy LLC and will be operated by an affiliate of CE Obsidian Energy. The transmission lines are owned and operated by IID. Unit 6 will supply capacity and energy to California's electricity market. IID has contracted for 85 percent of the plants output for a period of 20 years following the completion of the plant. The remaining energy will either be sold to the California Independent System Operator or contracted to third parties via IID. The California Energy Commission approved Unit 6 in 2003 and approved modifications to the plant and an increase in capacity in 2005. The power plant project is in the Salton Sea Known Geothermal Resource Area, which

extends from about Bombay Beach to Calipatria. Additional information on the Salton Sea Known Geothermal Resource Area is provided in Chapter 21.

Total Maximum Daily Load Implementation, final paragraph; page 4-18:

Currently, TMDLs have been adopted [by the CRBRWQCB and approved by the USEPA](#) for siltation/sedimentation in the New and Alamo rivers and Imperial Valley drains, ~~pending approval by the U.S. Environmental Protection Agency (USEPA)~~, and for pathogens in the New River, as described in Chapter 6. [A Trash TMDL for the New River was adopted by the CRBRWQCB and is in the process of being approved by the SWRCB and the USEPA.](#) The CRBRWQCB is considering TMDLs for nutrients, ~~and~~ selenium, [salinity, dissolved oxygen, bacteria, and pesticides](#) as related to the Salton Sea and the major tributaries.

Chapter 5

Water Rights, final paragraph; page 5-2:

Metropolitan Water District of Southern California (Metropolitan), [as stated in their applications to the SWRCB](#), has applied to divert ~~uncontrolled tailwater or~~ agricultural ~~return drain~~ flows on the New and Alamo rivers. The initial owner of the water is IID. The application for water on the New River is to divert 700 cfs with a limit of 433,400 acre-feet/year. The application for water on the Alamo River and unnamed tributaries is to divert 800 cfs with a limit of 475,000 acre-feet/year. The SWRCB requires an applicant to complete an analysis of availability of unappropriated water that addresses methods to prevent harm to other legal users of the water or to the environment, including considerations for water released by upstream water users to maintain habitat along the water course, and compliance with the Water Quality Control Plan prepared by the Colorado River Basin Regional Water Quality Control Board (CRBRWQCB). ~~Water~~ [A water rights](#) issued by the SWRCB for ~~return flows or treated wastewater~~ [agricultural drain](#) flows generally includes a statement that does not guarantee that the flows would be constant or necessarily continue into the future. Following the completion of an application, the SWRCB would initiate preparation of environmental documentation and issue a public notice for a 60-day review period during which protests can be filed. Following responses to protests, if any, supplemental information may be required of the applicant prior to completion and release of the draft environmental documentation for public review. The SWRCB would hold a hearing to consider comments and protests prior to completion of final documentation. Following resolution of comments and protests, if any, the final environmental documentation would be completed and a water rights permit would be issued. ~~The Metropolitan's~~ [applications](#) ~~is~~ [are](#) currently being reviewed by the SWRCB.

Federal Regulations, first paragraph; page 5-5:

The Federal Water Pollution Control Act Amendments of 1972, also known as the Clean Water Act, established the institutional structure for the U.S. Environmental Protection Agency (USEPA) to regulate discharges of pollutants into the waters of the United States, establish water quality standards, conduct planning studies, and provide funding for specific grant projects. The Clean Water Act has been amended by Congress several times since 1972. [USEPA](#) has provided most states with the authority to administer many of the provisions of the Clean Water Act. In California, the SWRCB has been designated by [USEPA](#) to develop and enforce water quality objectives and implementation plans.

The SWRCB has delegated the specific responsibilities for the development and enforcement actions to the CRBRWQCB.

Inflows from Mexico, first and second paragraphs; page 5-9:

Water used in the Mexicali Valley comes from two primary sources, the Colorado River and groundwater. Under Article 10(a) of the *Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande—Treaty between the United States of America and Mexico* (Treaty) dated February 3, 1944, Mexico is entitled to 1,500,000 acre-feet/year of Colorado River water. Under Article 10(b) of the Treaty, Mexico may schedule up to an additional 200,000 acre-feet when “there exists a surplus of waters of the Colorado River in excess of the amount necessary to ~~satisfy~~ [supply](#) uses in the United States.” Mexico diverts the vast majority of its Colorado River water at Morelos Dam, located on the Colorado River near the northern United States-Mexico border crossing of the Colorado River. Historically, ~~the United States has delivered flows in excess of the Treaty obligations to Mexico due to water not diverted in the United States and flood waters upstream of Morelos Dam, the main river channel carries water that is delivered to Mexico pursuant to the 1944 Water Treaty, along with occasional high flows.~~

Agricultural return flows and municipal and industrial wastewater effluent ~~flow~~ from Mexico [that flow](#) to the New and Alamo rivers and become part of the Salton Sea inflows.

Inflows from Mexico, subsection *Alamo River*, first paragraph; page 5-10:

The Alamo River originates in the Mexicali Valley and flows north into the United States. Flows at the United States-Mexico border are primarily the result of drainage from irrigated agricultural in the Mexicali Valley. Pursuant to an agreement between the United States and Mexico, a weir was constructed in 1997 at the Alamo River in Mexico, about 100 feet upstream of the United States-Mexico border with the intent of preventing dry weather flows from Mexico from flowing into the Alamo River into the United States. Although the weir is currently in place, lack of operation and maintenance of drainage channels upstream has caused the water to continue to flow into the United States (CRBRWQCB, 2001). Alamo River flows at the United States-Mexico border have been estimated by IID (2003a), but details regarding the methods and sources are not included in those documents. The United States [Section of the](#) International Boundary and Water Commission (USIBWC) reports that flows from 1949 to 1992 were estimated based on historical daily measurements of gage height at the Cipolleti weir and rating curves developed from monthly current meter measurements. From 1992 to the present, continuous gage height recordings and daily discharge measurements are available from IID (USIBWC, 2002). The values provided by IID have been adopted for use in this analysis. Average flow in the Alamo River at the United States-Mexico border is 1,646 acre-feet/year with a minimum and maximum of 324 and 2,274 acre-feet/year, respectively.

Inflows from the Imperial Valley, second paragraph; page 5-10:

The IID water supply is diverted from the Colorado River near Imperial Dam and conveyed in the 82-mile long All-American Canal. Several canals convey water from the All-American [Canal](#) including the Coachella Canal that diverts water to CVWD. Between 1986 and 1999, 2,400,000 to 3,100,000 acre-feet/year was diverted for use by IID through the All-American Canal.

Imperial Valley Drains, sixth paragraph; page 5-13:

~~Except in fields with tailwater recovery systems, tailwater is not available for~~[Tailwater may be used for](#) on-farm use ~~and is or~~ discharged into either the drainage system or rivers within the IID water service area.

Inflows and Climate Assumptions for No Action Alternative-CEQA Conditions, first paragraph; page 5-22:

The projected inflows were developed based upon historical inflows to the Salton Sea and adjusted for actions included in the No Action Alternative-CEQA Conditions. The actions considered in the No Action Alternative-CEQA Conditions are described in Chapter 3. The actions ~~that could affect~~ [considered in the](#) inflows ~~analysis to~~ [for](#) the Salton Sea include:

Inflows and Climate Assumptions for No Action Alternative-Variability Conditions, fourth paragraph; page 5-26:

Inflows from Coachella Valley beyond those represented in the No Action Alternative-CEQA Conditions were modified for the No Action Alternative-Variability Conditions based upon potential delayed implementation or modifications of the Coachella Valley Water Management Plan and reduced agricultural return flows due to reduced Colorado River salinity. Inflows from the ~~Imperial~~ [Coachella](#) Valley under the No Action Alternative-Variability Conditions could be 94,000 acre-feet/year and 98,000 acre-feet/year for the 2003 to 2078 and 2018 to 2078 periods, respectively, based on the mean of all traces generated in the Monte Carlo analysis.

Chapter 6

Federal Regulations, fourth paragraph; page 6-1:

Section 404 of the Clean Water Act requires that an entity obtain permits before discharging dredge or fill material into navigable waters, their tributaries, and associated wetlands. Activities regulated by 404 permits include, but are not limited to, dredging, bridge construction, flood control actions, and some fishing operations. [The U.S. Army Corps of Engineers administers the Section 404 permit program in the study area.](#)

Federal Regulations, sixth paragraph and Table 6-1; page 6-2:

The California Environmental Protection Agency, SWRCB, and CRBRWQCB have identified water bodies within the Salton Sea watershed that do not comply with applicable water quality standards. The Salton Sea and all of the principal inflow sources are listed as impaired water bodies. Sedimentation/Siltation TMDLs for the New and Alamo rivers [and the Imperial Valley drains](#) and Pathogen TMDL for the New River were adopted by the CRBRWQCB and approved by the SWRCB and USEPA. ~~The Sedimentation/Siltation A Trash~~ TMDL for ~~Imperial Valley drains~~ [the New River](#) has been adopted by the CRBRWQCB and is being reviewed by the SWRCB ~~and USEPA~~. Other TMDLs are in the development and review processes, as shown in Table 6-1.

**Table 6-1
Impaired Water Bodies Within Salton Sea Watershed**

Water Body	Pollutant of Concern	Type of Concern			TMDL Completion Date
		Irrigation Flows	Imported Salts	Other	
Coachella Valley Stormwater Channel (Whitewater River)	Bacteria	Source Unknown			Draft Published in April 2006
Alamo River	Pesticides	X			201 4 9
	Selenium	X	X		201 0 9
	Sedimentation/Siltation	X			Adopted Approved by USEPA on June 28, 2002
Imperial Valley Drains	Pesticides	X			201 4 9
	Selenium	X	X		20 08 19
	Sedimentation/Siltation	X			Draft Published Approved by USEPA on September 30, 2005
New River	Nutrients	X		X	20 4 09
	Pesticides	X		X	201 4 9
	Sedimentation/Siltation	X			Adopted Approved by USEPA on August 28, 2002
	Dissolved Oxygen			X	200 6 8
	Trash			X	Draft Published Adopted by Regional Board on June 21, 2006 and is under SWRCB consideration
	Chloroform			X	20 4 08
	Toluene			X	20 4 08
	p-Cymene			X	200 9 8
	1,2,4-trimethylbenzene			X	200 9 8
	m,p,-Xylene			X	2008
	o-Xylenes			X	2008
	p-DCB			X	20 4 08
	Pathogens			X	Adopted Approved by USEPA on August 4, 2002
Salton Sea	Nutrients	X		X	Draft Published 2009
	Salt	X	X		Not Identified 2019
	Selenium	X	X		201 0 9

CRBRWQCB, 2006

Salinity, first paragraph; page 6-8:

Average salinity in the Salton Sea is currently estimated at about 48,000 mg/L, but varies depending on location. Lower salinity frequently occurs near the tributaries and near the shoreline of the Salton Sea due to dilution by inflows. Higher salinity generally occurs in the center of the Salton Sea. The primary source of salts in the Salton Sea watershed is from imported Colorado River water. These salts are applied to fields with irrigation water and are carried off by tailwater or tilewater into surface drains. The annual salt load delivered to the Salton Sea is about 3,500,000 to 4,000,000 tons. Beginning in the mid-1980s to early 1990s, precipitation of significant quantities of salts (primarily gypsum and calcite) began and has been estimated to be about 1,500,000 tons/year. [This salt precipitation value is at the high end of the range of previous independent estimates \(Amrhein et. al. 2001\) and is similar to that of Tostrud \(1997\).](#) The primary constituents associated with salinity in the Salton Sea are sodium, calcium, chloride, and sulfate.

Temperature, new first paragraph; page 6-17:

[Water temperature has extremely important biological, chemical, and physical effects in aquatic systems. Water temperature determines the types of species that can occur in a body of water, and affects the level of biological activity, with greater biological activity and more rapid growth at increasing water temperature, within the tolerance limits of an organism. Aquatic organisms have a preferred water temperature range in which they can survive and reproduce optimally. Water temperature also influences water chemistry, with rates of chemical reactions generally increasing with increasing temperature. Temperature regulates the solubility of gases and minerals, with the solubility of important gases, such as oxygen, decreasing and the solubility of most minerals increasing with increasing temperature. Temperature also affects the physical characteristics of lakes, with the most important effect related to thermal stratification. Gradual heating during the spring and summer results in warm surface water overlying colder water at the bottom of the lake. Temperature stratification limits exchange of oxygen between the surface and bottom layers, which, in highly productive systems, generally results in development of hydrogen sulfide and ammonia in the lower water layer from the decomposition of organic materials that settle from the upper layer. Cooler air temperatures during the fall result in the gradual breakdown of thermal stratification, with eventual mixing of the water column.](#)

Application of Significance Criteria, all three ticks under the first bulleted item; pages 6-26 and 6-27:

- **Salinity:** The CRBRWQCB Water Quality Control Plan identifies a salinity objective of 35,000 mg/L for the Salton Sea to support fish and wildlife, [unless it can be demonstrated that a different level of salinity is optimal for the sustenance of the Sea's wild and aquatic life. This document discusses several considerations to be taken in order to implement this salinity water quality objective](#) and states that it will be difficult to meet this objective in the Salton Sea. The Imperial County General Plan includes a provision to maintain the salinity in the Salton Sea at 40,000 mg/L or less to support habitat and recreation uses, as described in Chapter 11.
- **Selenium:** [Selenium:](#) The CRBRWQCB Water Quality Control Plan identifies a selenium objective of 5 µg/L (0.005 mg/L) based on a four-day average and 20 µg/L (0.002 mg/L) on a one-hour average as measured in the Salton Sea. As previously described, the existing waterborne concentrations in the Salton Sea are less than 2 µg/L (0.002 mg/L). Because there are no specific actions that would decrease selenium concentrations in the inflows during the study period, it is anticipated that the inflow selenium loads would not change unless tile drainage flows, and related

- selenium loads, decline due to water conservation. Determination of the risk of selenium toxicity in the alternatives was evaluated considering selenium concentrations and exposure pathways related to sediment, surface water inflows, biota, and soil in each of the major components, as described in Appendix F. This analysis recognizes that selenium concentrations in water could be greater than 5 µg/L (0.005 mg/L) in some components especially in areas with soils characterized by high selenium concentrations. The impact assessment associated with meeting a selenium objective is presented in Chapters 8 and 14 and not in this chapter.
- **Phosphorus:** **Phosphorus:** The CRBRWQCB Draft Nutrient TMDL for the Salton Sea identifies an average annual phosphorus target of 35 µg/L (0.035 mg/L) as measured in the Salton Sea. As previously described, the existing [average](#) waterborne [total](#) phosphorus concentration in the Salton Sea is about 69 µg/L (0.069 mg/L). The following analysis compares phosphorus in all of the alternatives to the Draft TMDL target for the Marine Sea, however, this target may not be applicable to the shallow water bodies.

Alternative 1 - Saline Habitat Complex I, third paragraph; page 6-33:

[Although, Construction of the Saline Habitat Complex cells would occur in areas after the water recedes, construction activities near the Brine Sink may result in a temporarily temporary increase in suspended sediment and nutrient cycling in waters near active construction. Resuspended bottom sediments would release previously deposited nutrients, particularly phosphorus, and temporarily stimulate local algae production and reduce water quality conditions. This would be a short term effect during construction and, possibly could be avoided, if construction is delayed until the water has receded sufficiently to allow construction vehicle access without affecting the Brine Sink.](#) However, construction during Phase I would affect tilapia and pupfish.

Chapter 7

First paragraph; page 7-1:

This chapter describes the groundwater resources in the study area and potential changes that could occur due to implementation of the alternatives. [Some of the recharge and groundwater outflow and inflow values to the Salton Sea presented in Chapter 7 are discussed in more detail in Appendix H-2.](#) Groundwater could be affected due to changes in surface water elevations in the Salton Sea or excavation activities during construction.

Regulatory Requirements, first paragraph; page 7-1:

The State regulates groundwater quality; however, groundwater management is primarily carried out by local agencies. The Colorado River Basin Regional Water Quality Control Board (CRBRWQCB) Water Quality Control Plan defines municipal, industrial, and agricultural beneficial uses for groundwater resources in the Imperial and Coachella valleys (CRBRWQCB, 2002a). The Water Quality Control Plan includes the following goals and management principals for protection of groundwater:

Chocolate Valley Basin, second paragraph; page 7-6:

Major water-bearing deposits include unconsolidated younger Quaternary alluvial deposits and the underlying unconsolidated to semi-consolidated older Tertiary to Quaternary alluvial deposits. Depth of the fill is at least 400 feet. The San Andreas Fault crosses the northern and western portions of the basin and may impede groundwater

movement. Groundwater generally moves southwest beneath Salton Creek and discharges to the Salton Sea (DWR, 2003). Recharge to the basin is primarily from infiltration and runoff from adjacent mountains. Groundwater level monitoring has been inconsistent and has generally only occurred at the far western portion of the basin. Groundwater quality is characterized by high concentrations of fluoride, boron, and total dissolved solids. Due to limited availability and high salinity, groundwater is not used for domestic, municipal, or agricultural purposes in this basin.

Chapter 9

Seiches, first paragraph; page 9-17:

Seiches are large waves in lakes produced by either wind or seismic activity. Although there are no documented occurrences of seiches at the Salton Sea, due to the shallowness of the Salton Sea and the seismic activity in the area, there is the potential for a seiche to occur (~~Salton Sea Authority~~ [URS](#), 2004).

Significance Criteria, first paragraph; page 9-21:

The following significance criteria were based on [Appendix G of the CEQA Guidelines](#) and ~~air quality regulatory agency guidance and~~ used to determine if changes as compared to Existing Conditions and the No Action Alternative would:

Chapter 10

Existing Conditions, first paragraph; page 10-7:

The Existing Conditions described in the PEIR are based on data available through 2005, because complete data for 2006 are not yet available. The pollutants of greatest concern in the Salton Sea Air Basin are ozone and the ozone precursors, nitrogen oxides (NO_x) and volatile organic compounds (VOCs), primarily from vehicle and equipment exhaust, and particulate matter (PM₁₀ and PM_{2.5}) from soil disturbance and wind erosion (fugitive dust). Agricultural operations and transport of pollutants ~~from Mexico~~ also contribute to air quality issues in the area.

Table 10-2; page 10-8:

**Table 10-2
Meteorological Data for the Imperial/Coachella Valley Region (2005)**

Station		Temperature (°F)			Relative Humidity (%)			Rain (inches)	Wind (mph)	
CIMIS Number	Name	Max	Min	Avg	Max	Min	Avg		Avg	Max
41	Calipatria/Mulberry	117.1	25.4	70.8	100	0	53.0	13.89	4.55	28.1
68	Seeley	116.9	28.5	73.4	100	6	50.8	4.15	5.08	25.3
87	Meloland	116.2	31.6	72.6	97	9	49.3	3.02	5.19	25.1
118	Cathedral City	112.3	37.4	71.7	100	8	47.5	0.0	6.07	24.9
127	Salton Sea West	112.7	37.4	75.5	100	0	44.3	NA	5.63	26
128	Salton Sea East	116.5	30.5	73.3	100	9	62.1	NA	5.78	32.9
135	Blythe NE	115.8	33.3	72.9	99	6	46.8	0	3.20	14.1
136	Oasis	116.7	38.1	74.3	100	7	49.8	5.64	4.50	24
141	Mecca	112.5	30.2	71.9	100	0	54.3	0	4.50	16.1
151	Ripley	115.8	33.3	72.9	99	6	46.79	0	3.20	14.1
162	Indio	120.3	35.8	74.6	95	4	36.7	NA	6.88	22
175	Palo Verde II	112.8	20.5	69.1	100	10	56.8	3.06	4.34	20.3
176	La Quinta	115.8	33.3	72.9	99	6	46.8	0	3.20	14.1
186	UC San Luise	115.8	33.3	72.9	99	6	46.8	0	3.20	14.1

Source: California Irrigation Management Information System (CIMIS) meteorological stations overseen in the Imperial/Coachella Valley region by DWR, <http://www.cimis.water.ca.gov/cimis/>.

Note: Period of Record – January 2005 through December 2005.

Avg = average
Max = maximum
Min = minimum
NA = not available

Table 10-3; page 10-17:

Table 10-3
Ozone Data Summary for Monitoring Stations in Imperial and Riverside
Counties, 1998-2005

Year	Number of Days Standard Exceeded			Ozone Concentrations in ppm				
	State 1-hour	Federal 1-hour	Federal 8-hour	1-hour			8-hour	
				Maximum	3-Year 4th High	EPDC	Maximum	3-Year Average 4th High
CAAQS	—	—	—	—	—	—	0.090	—
NAAQS	—	—	—	—	0.120	—	—	0.080
Imperial County								
2005	11	0	10	0.122	0.121	0.097115	0.08497	0.415084
2004	6	0	0	0.109	0.118	0.083119	0.0853	0.419085
2003	19	2	8	0.144	0.127	0.092125	0.08792	0.425087
2002	19	0	9	0.122	0.116	0.098121	0.08698	0.424086
2001	13	2	2	0.135	0.142	0.086123	NA0.086	0.423NA
2000	NA	NA	NA	NA	NA	NA	NA	NA
1999	24	10	7	0.145	0.142	0.10729	0.092107	0.429092
1998	12	1	8	0.13	0.13	0.10035	0.092100	0.435092
Riverside County								
2005	41	4	35	0.139	0.13	0.1164	0.10416	0.1304
2004	36	1	32	0.125	0.131	0.10631	0.1046	0.13404
2003	54	4	43	0.141	0.133	0.1435	0.1081	0.13508
2002	49	2	46	0.136	0.132	0.12134	0.10524	0.13405
2001	53	6	39	0.137	0.128	0.1430	0.113	0.1300
2000	40	0	28	0.124	0.133	0.10438	0.099104	0.438099
1999	27	1	20	0.126	0.143	0.40743	0.107	0.14300
1998	40	8	30	0.173	0.155	0.13653	0.10736	0.15307

Source: ARB, 2006b.

Note:

Data for Imperial County is the maximum value from the El Centro, Niland, and Westmorland monitoring stations.

Data for Riverside County is the maximum value for the Indio and Palm Springs monitoring stations.

EPDC = expected peak day concentration

NA = data not available

Table 10-4; page 10-18:

Table 10-4
PM₁₀ Data Summary for Monitoring Stations in Imperial and Riverside Counties, 1998-2005

Year	Estimated Days Above 24-hour Standard		PM ₁₀ Concentration in µg/m ³						
	Federal > 150 µg/m ³	State > 50 µg/m ³	Annual Average		3-Year Average		High 24-Hr Average		EPDC
			Nat'l	State	Nat'l	State	Nat'l	State	
Imperial County									
2005	NA	NA	NA	NA	NA	74	77	75	NA
2004	NA	NA	NA	NA	56	74	201	195	NA
2003	19.1	188.4	74.7	73.8	63	74	840	848	524.5
2002	18.3	124.8	57.3	57.5	56	57	297	301	393.3
2001	6.6	81.3	57.5	42.7	52	54	647	634	291.2
2000	13.2	129.8	54.1	53.6	44	54	250	249	174.1
1999	0	122.5	44.0	44.3	44	44	130	126	NA
1998	0	60.3	38.7	38.7	45	39	90	87	NA
Riverside County (Salton Sea Air Basin portion)									
2005	NA	NA	NA	NA	NA	NA	106	NA	206.1
2004	2.9	74.1	40.2	40.6	50	56	161	161	236
2003	9.1	158.2	56.7	56.1	57	56	309	302	315.4
2002	9	174.1	53.8	53.9	56	54	276	276	308.5
2001	17.6	170.6	59.5	59	56	59	604	604	308.4
2000	8.6	183.2	55.2	55.4	52	55	201	201	171.8
1999	0	19.3	52.7	NA28.9	52	48	119	119	174.3
1998	3.3	146.2	48.1	48.4	53	55	158	158	205.9

Source: ARB (California Almanac of Emissions and Air Quality) www.arb.ca.gov

Notes:

Data for Imperial County is the maximum value from the El Centro, Niland, Westmorland, and Brawley monitoring stations.

Data for Riverside County is the maximum value for the Indio and Palm Springs monitoring stations.

µg/m³ = micrograms/cubic meter

EPDC = [expected peak daily concentration](#)

NA = data not available [from California Air Resources Board](#)

Carbon Monoxide, Nitrites (as NO₂), and Sulfites (as SO₂); page 10-19:

Carbon Monoxide, ~~Nitrites~~ Nitrogen Oxides (as NO₂), and Sulfites Sulfur Oxides (as SO₂)

Table 10-5; page 10-19:

**Table 10-5
Ambient SO₂, NO₂, and CO Concentrations in Imperial and Riverside
Counties, 1998-2005**

Year	Concentrations in ppm						
	SO ₂		NO ₂		CO		
	Maximum 24-hour	Maximum Annual Average	Maximum 1-hour	AAM	Maximum 8-hour	Days > State 8-Hour Standard	Days > National 8-hour Standard
CAAQS ^a	0.04	—	0.25	—	9	—	—
NAAQS ^b	0.14	0.03	—	0.053	9	—	—
Imperial County							
2005	0.002	NA	0.065	0.011	NA	NA	NA
2004	0.003	NA	0.067	0.013	NA	NA	NA
2003	0.001	NA	0.071	0.012	2.38	0	0
2002	0.001	NA	0.096	NA	2.93	0	0
2001	0.002	0.001	0.082	NA	7.14	0	0
2000	0.009	0.002	NA	NA	NA	0	0
1999	0.018	0.002	NA	NA	NA	0	0
1998	0.019	0.003	NA	NA	3.5	0	0
Riverside County (Salton Sea Air Basin)							
2005	NA	NA	0.059	0.011	0.65	0	0
2004	NA	NA	0.066	0.013	0.8	0	0
2003	NA	NA	0.067	0.016	1.29	0	0
2002	NA	NA	0.068	0.016	1.14	0	0
2001	NA	NA	0.081	0.017	1.6	0	0
2000	NA	NA	0.064	0.016	1.59	0	0
1999	NA	NA	0.068	0.018	1.75	0	0
1998	NA	NA	0.07	0.016	1.66	0	0

Source: ARB (California Almanac of Emissions and Air Quality) www.arb.ca.gov

^a CAAQS are not to be exceeded.

^b NAAQS are not to be exceeded more than once per year (except for annual standards).

AAM = annual arithmetic mean

NA = not available [from California Air Resources Board](#)

ppm = parts per million

Summary of Assumptions, new paragraph after bulleted items at bottom of page 10-35:

[Inclusion of these emission sources in the impact analysis would result in higher emissions for each Alternative.](#)

Table 10-14, Assumptions Common to All Alternatives, list item 4; page 10-36:

4. For construction of components, the impact analysis assumed that the transport distance for rock and gravel by truck would be 10 miles one way on paved roads from a quarry or staging site. Placement of rock and gravel by truck assumed an additional 5 miles of travel one way on unpaved roads to a placement location at the construction site. If these travel distances are increased in project-level analyses, emissions associated with transport and placement of construction materials would increase proportionally. [The trucks transporting rock and gravel were assumed to have a 20-cubic-yard capacity.](#)

Table 10-15; pages 10-39 45:

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Criterion: Construction fugitive dust (PM₁₀) emissions exceed local significance thresholds of 150 pounds/day (daily threshold) or 70 tons/year (annual threshold).							
No Action Alternative	Existing Conditions	L	L	L	L	Construction PM10 emissions well below thresholds in Peak Construction Year (Phase I).	Project-level analyses would need to do more detailed emissions estimation, impact analysis, and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		
Alternative 1	Existing Conditions	S	NO	NO	NO	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in Peak Construction Year, even with aggressive dust control (watering) schedule. Annual construction PM10 emissions more than 5 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	NO	NO	NO		
Alternative 2	Existing Conditions	S	NO	NO	NO	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in Peak Construction Year, even with aggressive dust control (watering) schedule. Annual construction PM10 emissions more than 10 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	NO	NO	NO		
Alternative 3	Existing Conditions	S	NO	NO	NO	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in Peak Construction Year, even with aggressive dust control (watering) schedule. Annual construction PM10 emissions more than 20 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	NO	NO	NO		
Alternative 4	Existing Conditions	S	ON	ON	ON	Greater impacts than under No Action Alternative and Existing Conditions. Emissions below thresholds in Peak Construction Year. However, if summed with diesel PM10 emissions, would exceed daily threshold. Annual construction PM10 emissions more than 5 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	ON	ON	ON		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Alternative 5	Existing Conditions	S	ON	ON	ON	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in Peak Construction Year, even with aggressive dust control (watering) schedule. Annual construction PM10 emissions more than 30 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	ON	ON	ON		
Alternative 6	Existing Conditions	S	ON	ON	ON	Greater impacts than under No Action Alternative and Existing Conditions. Emissions greatly exceed thresholds in Peak Construction Year, even with aggressive dust control (watering) schedule. Annual construction PM10 emissions more than 150 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	ON	ON	ON		
Alternative 7	Existing Conditions	S	ON	ON	ON	Greater impacts than under No Action Alternative and Existing Conditions. Emissions greatly exceed thresholds in Peak Construction Year, even with aggressive dust control (watering) schedule. Annual construction PM10 emissions more than 200 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	ON	ON	ON		
Alternative 8	Existing Conditions	S	ON	ON	ON	Greater impacts than under No Action Alternative and Existing Conditions. Emissions greatly exceed thresholds in Peak Construction Year, even with aggressive dust control (watering) schedule. Annual construction PM10 emissions more than 150 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	ON	ON	ON		
Criterion: Hazardous air pollutants (HAPs) in fugitive dust (PM10) emissions associated with construction expose sensitive receptors to substantial pollutant concentrations.							
No Action Alternative	Existing Conditions	S	S	S	S	The No Action Alternative would result in fugitive dust emissions during construction. Analytical results indicate potentially significant levels of constituents of concern in the sediment and soil samples taken at the Salton Sea. Additional study recommended, as described in Appendix E, Attachment E4.	Project-level analyses would need to do more detailed emissions estimation, exposure and health impact analysis, and mitigation planning. Control of fugitive dust would reduce human exposures.
	No Action Alternative	NA	NA	NA	NA		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Alternatives 1 - 8	Existing Conditions	S	ON	ON	ON	All alternatives result in fugitive dust emissions during construction. Analytical results indicate potentially significant levels of constituents of concern in the sediment and soil samples taken at the Salton Sea. Additional study recommended - see Appendix E, Attachment E4.	Same as No Action Alternative.
	No Action Alternative	U	U	U	U		
Criterion: Construction exhaust (NO_x) emissions exceed local significance thresholds of 100 pounds/day or 50 tons/year.							
No Action Alternative	Existing Conditions	L	L	L	L	Construction NO _x emissions well below thresholds in Peak Construction Year (Phase I).	Project-level analyses would need to do more detailed emissions estimation, impact analysis, and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		
Alternative 1	Existing Conditions	L	L	L	L	Greater impacts than under No Action Alternative and Existing Conditions. Emissions below thresholds in Peak Construction Year. Annual construction NO _x emissions about 2 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	L	L	L		
Alternative 2	Existing Conditions	S	ON	ON	ON	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed daily thresholds in Peak Construction Year. Annual construction NO _x emissions about 4 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	ON	ON	ON		
Alternatives 3, 5, and 7	Existing Conditions	S	ON	ON	ON	Greater impacts than under No Action Alternative and Existing Conditions. Emissions greatly exceed thresholds in Peak Construction Year. Annual construction NO _x emissions more than 100 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	ON	ON	ON		
Alternative 4	Existing Conditions	S	ON	ON	ON	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in Peak Construction Year. Annual construction NO _x emissions more than 20 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	ON	ON	ON		
Alternatives 6 and 8	Existing Conditions	S	ON	ON	ON	Greater impacts than under No Action Alternative and Existing Conditions. Emissions greatly exceed thresholds in Peak Construction Year. Annual construction NO _x emissions more than 200 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	ON	ON	ON		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Criterion: Diesel PM₁₀ emissions associated with construction expose sensitive receptors to substantial pollutant concentrations.							
No Action Alternative	Existing Conditions	S	S	S	S	The No Action Alternative would result in diesel PM ₁₀ emissions during construction. The State lists particulate emissions from diesel-fueled engines as air toxics with carcinogenic impacts in exposed human populations. Additional study recommended - see Appendix E, Attachment E4.	Project-level analyses would need to do more detailed emissions estimation, exposure and health impact analysis, and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		
Alternatives 1 - 8	Existing Conditions	S	O N	ON	O N	All alternatives result in diesel PM ₁₀ emissions during construction. The State lists particulate emissions from diesel-fueled engines as air toxics with carcinogenic impacts in exposed human populations. Additional study recommended - see Appendix E, Attachment E4.	Same as No Action Alternative.
	No Action Alternative	S	ON	ON	ON		
Criterion: Operations and maintenance related fugitive dust (PM₁₀) emissions exceed local significance thresholds of 150 pounds/day or 70 tons/year.							
No Action Alternative	Existing Conditions	L	L	L	L	Operations PM ₁₀ emissions well below thresholds in all phases, including the Peak Operations Year.	Project-level analyses would need to do more detailed emissions estimation, impact analysis, and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		
Alternative 1	Existing Conditions	L	L	L	L	Greater impacts than under No Action Alternative and Existing Conditions. Emissions well below thresholds in all phases, including the Peak Operations Year. Annual operations PM ₁₀ emissions more than 5 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	L	L	L		
Alternative 2	Existing Conditions	L	L	L	L	Greater impacts than under No Action Alternative and Existing Conditions. Emissions below thresholds in all phases, including the Peak Operations Year. Annual operations PM ₁₀ emissions more than 10 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	L	L	L		
Alternative 3	Existing Conditions	L	O N	ON	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions under thresholds in Phase I, but exceed daily thresholds in Peak Operations Year. Annual operations PM ₁₀ emissions more than 20 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	ON	ON	S		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Alternative 4	Existing Conditions	L	L	L	L	Greater impacts than under No Action Alternative and Existing Conditions. Emissions well below thresholds in all phases, including the Peak Operations Year because long term Air Quality Management actions are not included in this alternative.	Same as No Action Alternative.
	No Action Alternative	L	L	L	L		
Alternative 5	Existing Conditions	L	<u>Q</u>	<u>Q</u>	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions under thresholds in Phase I, but exceed daily thresholds in Peak Operations Year. Annual operations PM10 emissions more than 30 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	<u>Q</u>	<u>Q</u>	S		
Alternatives 6 and 8	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, including the Peak Operations Year. Annual operations PM10 emissions more than 150 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Alternative 7	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, including the Peak Operations Year based upon the type of Air Quality Management methods used in this alternative. Annual operations PM10 emissions more than 200 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Criterion: Operations and maintenance related exhaust (NO_x) emissions exceed local significance thresholds of 55 pounds/day or 50 tons/year.							
No Action Alternative	Existing Conditions	L	L	L	L	Operations NO _x emissions well below thresholds in all phases, including the Peak Operations Year (Phase IV).	Project-level analyses would need to do more detailed emissions estimation, impact analysis, and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		
Alternative 1	Existing Conditions	L	L	L	L	Greater impacts than under No Action Alternative and Existing Conditions. Emissions well below thresholds in all phases, including the Peak Operations Year. Annual operations NO _x emissions similar to, but slightly higher than, No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	L	L	L		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Alternative 2	Existing Conditions	L	L	L	L	Greater impacts than under No Action Alternative and Existing Conditions. Emissions well below thresholds in all phases, including the Peak Operations Year. Annual operations NOx emissions more than 3 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	L	L	L		
Alternative 3	Existing Conditions	S	<u>Q</u>	<u>Q</u>	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed daily threshold in Phase I, and exceed both thresholds in Peak Operations Year. Annual operations NOx emissions more than 100 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	<u>Q</u>	<u>Q</u>	S		
Alternative 4	Existing Conditions	L	<u>Q</u>	<u>Q</u>	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions under thresholds in Phase I, but exceed daily thresholds in Peak Operations Year. Annual operations NOx emissions more than 15 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	L	<u>Q</u>	<u>Q</u>	S		
Alternatives 5 and 7	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, including the Peak Operations Year. Annual operations NOx emissions more than 100 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Alternatives 6 and 8	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, including the Peak Operations Year. Annual operations NOx emissions more than 200 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Criterion: Fugitive dust (<u>PM_{2.5}</u>, <u>PM₁₀</u>) emissions associated with exposed playa, after air quality management and control measures, exceed local significance thresholds of 150 pounds/day or 70 tons/year.							
No Action Alternative	Existing Conditions	L	L	L	L	Playa PM10 emissions well below thresholds in Phase I, but over thresholds in Phases III and <u>IV</u> . Did not analyze Phase II.	Project-level analyses would need to do more detailed emissions studies and estimation, control measure identification, impact analysis, and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Alternatives 1 and 2	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, even with assumption of aggressive Air Quality Management and control measures. In Phase I, annual playa PM ₁₀ emissions up to 5 times greater than No Action Alternative. In Phase IV, annual emissions similar to, but greater than, No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Alternative 3	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed daily threshold in Phase I, and exceed both thresholds in Phase IV, even with assumption of aggressive Air Quality Management and control measures. In both phases, annual playa PM ₁₀ emissions up to 2 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Alternative 4	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, and greatly exceed thresholds in Phase IV, due to the lack of aggressive Air Quality Management and control measures. In both phases, annual playa PM ₁₀ emissions more than 25 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Alternatives 5 and 6	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, even with assumption of aggressive Air Quality Management and control measures. In Phase I, annual playa PM ₁₀ emissions more than 5 times greater than No Action Alternative. In Phase IV, annual emissions more than 2 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		

**Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality**

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Alternative 7	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed thresholds in all phases, and greatly exceed thresholds in Phase IV, even with assumption of limited Air Quality Management and control measures. In Phase I, annual playa PM ₁₀ emissions more than 90 times greater than No Action Alternative. In Phase IV, annual emissions more than 15 times greater than No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Alternative 8	Existing Conditions	S	S	S	S	Greater impacts than under No Action Alternative and Existing Conditions. Emissions exceed daily threshold in Phase I, and exceed both thresholds in Phase IV, even with assumption of aggressive Air Quality Management and control measures. In Phase I, annual playa PM ₁₀ emissions more than 3 times greater than No Action Alternative. In Phase IV, annual emissions similar to, but greater than, No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Criterion: Hazardous air pollutants (HAPs) in fugitive dust (PM₁₀) emissions associated with playa expose sensitive receptors to substantial pollutant concentrations.							
No Action Alternative	Existing Conditions	S	S	S	S	The No Action Alternative is predicted to result in fugitive dust emissions from Exposed Playa areas, even after aggressive Air Quality Management and control measures are implemented. Analytical results indicate potentially significant levels of constituents of concern in the sediment and soil samples taken at the Salton Sea.	Project-level analyses would need to do more detailed emissions estimation, exposure and health impact analysis, and mitigation planning. Control of fugitive dust would reduce human exposures.
	No Action Alternative	NA	NA	NA	NA		
Alternatives 1 - 8	Existing Conditions	S	S	S	S	All alternatives are predicted to result in fugitive dust emissions from Exposed Playa areas, even after aggressive Air Quality Management and control measures are implemented. Analytical results indicate potentially significant levels of constituents of concern in the sediment and soil samples taken at the Salton Sea.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Criterion: Net Emissions increase of nonattainment pollutants exceed General Conformity <i>de minimis</i> thresholds of 70 tons/year (PM₁₀) and 50 tons/year (NO_x).							
No Action Alternative	Existing Conditions	NA	NA	NA	NA	Not Applicable.	Not Applicable.
	No Action Alternative	NA	NA	NA	NA		
Alternative 1	Existing Conditions	S	L	L	L	Greater impacts than under No Action Alternative and Existing Conditions. NO _x emissions below the threshold in Peak Construction Year and Peak Operations Year. PM ₁₀ emissions above threshold in Peak Construction Year, but slightly below the threshold in the Peak Operations Year.	Project-level analyses would need to do more detailed emissions estimation, impact analysis, and mitigation planning.
	No Action Alternative	S	L	L	L		
Alternative 2	Existing Conditions	S	<u>Q</u>	<u>Q</u>	S	Greater impacts than under No Action Alternative and Existing Conditions. NO _x emissions below the threshold in Peak Construction Year and Peak Operations Year. PM ₁₀ emissions above threshold in Peak Construction Year and the Peak Operations Year, even with aggressive dust control measures.	Same as Alternative 1.
	No Action Alternative	S	<u>Q</u>	<u>Q</u>	S		
Alternative 3	Existing Conditions	S	<u>Q</u>	<u>Q</u>	S	Greater impacts than under No Action Alternative and Existing Conditions. NO _x emissions exceed thresholds in Peak Construction Year, even with requirements for low emission equipment. PM ₁₀ emissions exceed threshold even with aggressive dust control. Exceedances of thresholds are not as great in Peak Operations Year.	Same as Alternative 1.
	No Action Alternative	S	<u>Q</u>	<u>Q</u>	S		
Alternative 4	Existing Conditions	S	<u>Q</u>	<u>Q</u>	S	Greater impacts than under No Action Alternative and Existing Conditions. NO _x emissions above the threshold in Peak Construction Year and below in the Peak Operations Year. PM ₁₀ emissions above threshold in Peak Construction Year and greatly exceed the threshold in the Peak Operations Year, primarily due to the lack of designated Air Quality Management for Exposed Playa.	Same as Alternative 1.
	No Action Alternative	S	<u>Q</u>	<u>Q</u>	S		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Alternative 5	Existing Conditions	S	<u>Q</u>	<u>Q</u>	S	Greater impacts than under No Action Alternative and Existing Conditions. NO _x emissions greatly exceed thresholds in Peak Construction Year, even with requirements for low emission equipment. PM ₁₀ emissions exceed threshold even with aggressive dust control. Exceedances of thresholds are not as great in Peak Operations Year.	Same as Alternative 1.
	No Action Alternative	S	<u>Q</u>	<u>Q</u>	S		
Alternatives 6 and 8	Existing Conditions	S	<u>Q</u>	<u>Q</u>	S	Greater impacts than under No Action Alternative and Existing Conditions. NO _x and PM ₁₀ emissions greatly exceed thresholds in Peak Construction Year, even with requirements for low emission equipment and aggressive dust control. Exceedances of thresholds are not as great in Peak Operations Year.	Same as Alternative 1.
	No Action Alternative	S	<u>Q</u>	<u>Q</u>	S		
Alternative 7	Existing Conditions	S	<u>Q</u>	<u>Q</u>	S	Greater impacts than under No Action Alternative and Existing Conditions. NO _x and PM ₁₀ emissions greatly exceed thresholds in Peak Construction Year, even with requirements for low emission equipment and aggressive dust control. Exceedances of thresholds are not as great in Peak Operations Year, but PM ₁₀ emissions still greatly exceed the threshold.	Same as Alternative 1.
	No Action Alternative	S	<u>Q</u>	<u>Q</u>	S		
Criterion: Net emissions increase of nonattainment pollutants exceed General Conformity <i>de minimis</i> thresholds of 70 tons/year (PM₁₀) and 50 tons/year (NO_x).							
No Action Alternative	Existing Conditions	S	S	S	S	Odorous emissions, such as hydrogen sulfide and ammonia, may occur. In early phases, impacts similar to Existing Conditions. In later phases, after fish are no longer present, impacts may be less than under Existing Conditions.	Project-level analyses would need to do more detailed emissions estimation, exposure and health impact analysis, and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		
Alternatives 1 - 4	Existing Conditions	S	B	B	B	Impacts associated with Brine Sink similar to those associated with the No Action Alternative. Impacts associated with shallower water bodies would be less than those associated with the No Action Alternative and Existing Conditions.	Same as No Action Alternative.
	No Action Alternative	S	B	B	B		

Table 10-15
Summary of Benefit and Impact Assessments to Climate and Air Quality

Alternative	Basis of Comparison	Changes by Phase				Comments	Next Steps
		I	II	III	IV		
Alternatives 5 - 8	Existing Conditions	S	S	S	S	Impacts associated with Brine Sink similar to those associated with the No Action Alternative. Impacts associated with deeper water bodies would be similar or greater than those associated with the No Action Alternative and Existing Conditions.	Same as No Action Alternative.
	No Action Alternative	S	S	S	S		
Criterion: Changes substantially modify the existing microclimate characteristics adjacent to the Salton Sea.							
No Action Alternative	Existing Conditions	S	S	S	S	The No Action Alternative is predicted to result in potentially significant changes in microclimate of shoreline areas where water levels are predicted to recede. Larger scale climatic impacts are not predicted to occur as a result of the alternatives.	Project-level analyses would need to do more detailed microclimatic impact analysis and mitigation planning.
	No Action Alternative	NA	NA	NA	NA		
Alternatives 1 - 8	Existing Conditions	S	S	S	S	All alternatives are predicted to result in potentially significant changes in microclimate of shoreline areas where water levels are predicted to recede, with lesser impacts on shoreline areas that will remain adjacent to water bodies. Larger scale climatic impacts are not predicted to occur as a result of the alternatives.	Same as No Action Alternative.
	No Action Alternative	U	U	U	U		

Legend for Types of Benefits or Impacts in Each Phase:
 S = Significant Impact
 O = No Impact
 L = Less Than Significant
 B = Beneficial Impact
 NA = Not Analyzed and U= Unknown

Chapter 11

West Shores/Salton City, fifth paragraph; page 11-10:

~~The proposed Habitat 2000 development includes 1,720 acres of land between Salton Sea Beach and Vista Del Mar (County of Imperial, 2000) This development includes proposed construction of medium and high density residential units (not to exceed 10,000 units) with retail shops, hotel and spa, health care facility, golf course, lakes, and marinas with build out in about 15 years after initiation. The specific schedule for development was not finalized during preparation of this PEIR.~~

Table 11-4, Criterion: Conversion of agricultural land; page 11-38:

Criterion: Conversion of agricultural land.							
No Action Alternative	Existing Conditions	L	L	L	L	Up to 200 acres of Farmlands of Local Importance near the Whitewater River, 200 acres of Farmlands of Statewide Importance near the New River, and 200 acres of farmland designated as Other Lands near the Alamo River could be converted to Sedimentation/Distribution Basins.	To the extent possible, Sedimentation/Distribution Basins should be located away from agricultural lands.
	No Action Alternative	NA	NA	NA	NA		
Alternatives 1 and 2	Existing Conditions	L	L	L	L	Same as No Action Alternative.	Same as No Action Alternative.
	No Action Alternative	O	O	O	O		
Alternatives 3, 4, 5, and 8	Existing Conditions	L	L	L	L	Up to 200 acres of Farmlands of Statewide Importance near the New River, and 200 acres of farmland designated as Other Lands near the Alamo River could be converted to Sedimentation/Distribution Basins.	Same as No Action Alternative.
	No Action Alternative	B	B	B	B		
Alternatives 6 and 7	Existing Conditions	L	L	L	L	Up to 200 acres of farmland designated as Other Lands near the Alamo River could be converted to Sedimentation/Distribution Basins.	Same as No Action Alternative.
	No Action Alternative	B	B	B	B		

Chapter 12

Historical Perspective, first paragraph; page 12-1:

For the past 100 years, the economic base of Imperial County traditionally has been agriculture with communities of small to moderate size. The Coachella Valley in [the southeastern-central portion of](#) Riverside County also has an agricultural base however urban development has been increasing over the past 20 years, as discussed below.

Significance Criteria, first paragraph; page 12-14:

The following significance criteria were based on [Appendix G of the CEQA Guidelines and air quality regulatory agency guidance](#) and used to determine if changes as compared to Existing Conditions and the No Action Alternative would:

Chapter 13

Imperial County, first paragraph; page 13-3:

Imperial County is a popular recreational area for water and desert-based activities. Recreational facilities within the County include the [Sunbeam Lake County Park](#), Weist Lake County Park, Heber Dunes State Vehicular Recreation Area, the Sonny Bono Salton Sea National Wildlife Refuge, Imperial Wildlife Area, and the southern portion of the Salton Sea SRA. Recreational activities in the irrigation canals in Imperial County is not allowed. However, individuals do fish in various irrigation canals for species such as channel catfish, bass, and sunfish (IID and Reclamation, 1994).

[Sunbeam Lake County Park is located near Seeley and includes facilities for boating, fishing, and picnicking.](#)

Imperial County, fourth paragraph; page 13-3:

Hunting for upland and waterfowl species occurs at the Imperial Wildlife Area, Sonny Bono Salton Sea National Wildlife Refuge, and on [approximately 10,040 acres of](#) private lands including duck clubs ([IID, 2007](#)).

Salton Sea State Recreation Area; page 13-4:

The Salton Sea SRA has been operated by the California State Parks (CSP) since 1955 and is located along 15 miles of the northeastern shoreline of the Salton Sea. During the late 1970s, water levels increased and flooded about 50 percent of the SRA. The campgrounds, Varner Harbor, and associated facilities were reestablished outside of the flooded area. The Salton Sea SRA provides opportunities for campers, boaters, swimmers, waterskiers, and anglers. There is boat launching facilities at Varner Harbor near the park headquarters. [However, the boat launching facility was closed in 2006 while the necessary permits to dredge the harbor channel were obtained.](#) Total visitor use of the Salton Sea SRA has been recorded since 1972. Prior to official records, Salton Sea SRA staff estimate that the highest seasonal use occurred at the Salton Sea during 1961-1962, with about 660,000 visitors. Visitor use at the SRA from 1995 to 2005 is shown on Table 13-1.

Salton Sea State Recreation Area; page 13-4:

The Salton Sea SRA has been operated by the California State Parks (CSP) since 1955

Figure 13-1, Recreation Resources in the Vicinity of the Salton Sea; page 3-5:

Revised figure is on the following page.

Prior to Environmental Impacts, page 13-7:

ENVIRONMENTAL IMPACTS

Analysis Methodology

~~This section addresses both the impacts to existing recreation resources and the potential for the development of future recreational opportunities for each alternative. Impacts to existing recreation resources are evaluated based on the changes to the size, function, or access to existing recreation resources under each of the alternatives.~~

Recreation and Economics Opportunities Survey

In February 2004, the Salton Sea Authority appointed an Outdoor Recreation Advisory Task Force (ORATF) to evaluate the recreational potential of a restored Salton Sea. As part of the Recreation and Economic Opportunities Assessment for the Salton Sea (Salton Sea Authority, 2005), a survey was developed and distributed to ORATF members, mailing lists of stakeholders, and to the general public. Two public meetings were held in April 2005 to solicit comments from the general public and stakeholders. The results were used to develop an overall list of recreation opportunities that could be considered in the future for the Salton Sea, as presented in Table 13-3 (Salton Sea Authority, 2005).

Table 13-3
Results of the Recreation and Economic Opportunities Survey

Prioritization Based on the Survey	Recreational Opportunity	Prioritization Based on the Survey	Recreational Opportunity
1	Birdwatching/Photography	11	Swimming/Sunbathing
2	Power boating/ Sailboating	12	Camping-Guest Rentals
3	Photography-general	13	Horseback Riding
4	Hiking	14	Windsurfing
5	Camping-Tents	15	Private Water Craft
6	Freshwater Fishery	16	Hunting
7	Kayaking	17	Resort-Golf
8	Marine Fishery	18	Resort-Gaming
9	Biking	19	Skydiving
10	Camping-Recreational Vehicles	20	Off-highway Vehicle Use

Source: Salton Sea Authority, 2005

The Recreation and Economic Opportunities Survey provided details on the strategies and factors for implementation of each of the identified recreational opportunities. The analysis in this PEIR assesses the compatibility of alternatives for recreational opportunities, in accordance with the objectives described in Chapter 1. The alternatives include many components, as described in Chapter 3. Potential recreational opportunities that could be provided by each component are shown in Table 13-4. The ability of a component to provide recreational opportunities was based on a determination of compatibility between the recreation activity and the projected function of each component. The listing of potential opportunities does not imply that the component is ideally suited for the recreation activity or that the opportunity would be implemented. During project-level analyses, specific proposals for inclusion of recreational opportunities in each component would be evaluated. It is also possible that a component may be used for a recreational opportunity for a specific period of time and then modified due to implementation of other actions. For example, Saline Habitat Complex may provide more intense recreational activities during Phase I when other opportunities are not provided in other areas of the Sea. However, as other components are completed, recreational activities may be provided in different areas.

ENVIRONMENTAL IMPACTS

Analysis Methodology

This section addresses both the impacts to existing recreation resources and the potential for the development of future recreational opportunities for each alternative. Impacts to existing recreation resources are evaluated based on the changes to the size, function, or access to existing recreation resources under each of the alternatives.

Significance Criteria, first paragraph; page 13-8:

The following significance criteria were based on [Appendix G of the CEQA Guidelines](#) and ~~air quality regulatory agency guidance~~ and used to determine if changes as compared to Existing Conditions and the No Action Alternative would:

Chapter 14

Significance Criteria, first paragraph; page 14-19:

The following significance criteria were based on [Appendix G of the CEQA Guidelines](#) and ~~air quality regulatory agency guidance~~ and used to determine if changes as compared to Existing Conditions and the No Action Alternative would:

Next Steps, sixth paragraph; page 14-27:

To reduce the impact of mosquitoes in the future, [continued coordination with the mosquito abatement agencies \(Coachella Valley Mosquito and Vector Control District and the Imperial County Department of Health Services\) should be conducted throughout the preparation of future project-level analyses. Monitoring programs and worker training to reduce exposure to vectors could also be considered during future project-level analysis and throughout the construction and implementation of the ecosystem restoration project.](#) †The Coachella Valley Mosquito and Vector Control District BioControl Facility (Indio, California) currently is researching the application of organisms, such as mosquitofish, desert pupfish, tadpole shrimp, and copepods, for biological control of vectors. The BioControl Program incorporates naturally occurring pathogenic, parasitic, and predatory organisms against vectors into existing integrated pest management and control programs. [Information from this research could be useful during project-level analysis.](#)

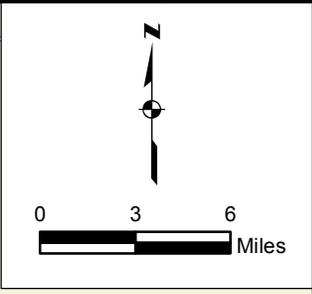
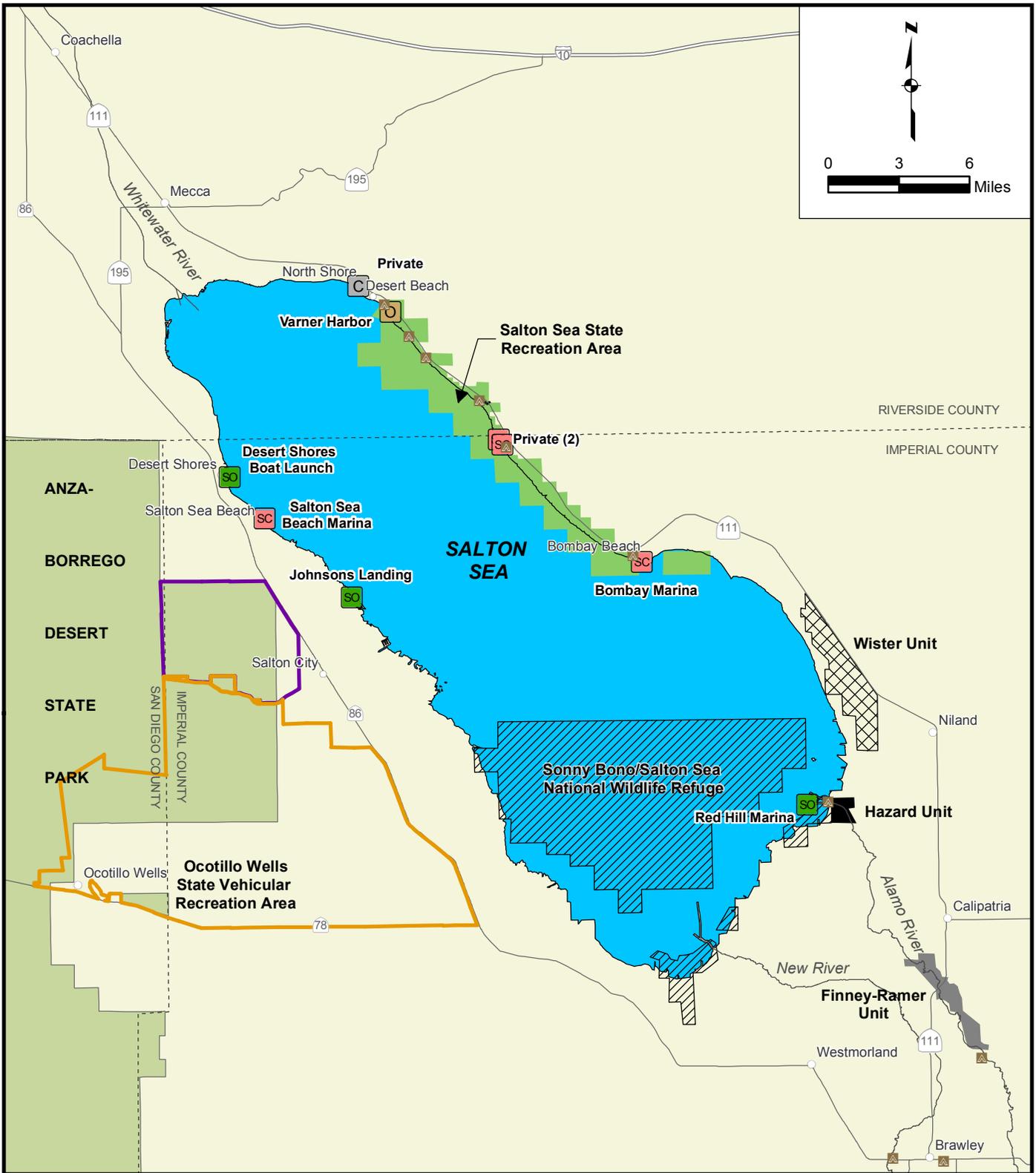
Chapter 15

Sacred Lands, second paragraph; pages 15-7 and 15-8:

The record search of the Native American Heritage Commission Sacred Lands File indicates the presence of Native American cultural resources within the study area. The locations of the Sacred Lands File sites are confidential. ~~However, the resources are generally located within Section 21 of the Kane Springs quadrangle.~~ The search revealed no additional sacred sites in other locations within the study area. In addition, all contacts provided by the Native American Heritage Commission as individuals with knowledge of potential sacred sites within the study area were contacted by letter and telephone and no additional specific sites were identified.

Significance Criteria, first paragraph; page 15-8:

The following significance criteria were based on [Appendix G of the CEQA Guidelines](#) and ~~air quality regulatory agency guidance~~ and used to determine if changes as compared to Existing Conditions and the No Action Alternative would:



LEGEND

Salton Sea State Recreation Area	Seasonal Access - Currently Closed
Sonny Bono/Salton Sea National Wildlife Refuge	Seasonal Access - Currently Open
Salton Sea	Open All Year
Imperial Wildlife Area	Closed
Wister Unit	TruckHaven-Desert Cahuilla acquisition
Finney-Ramer Unit	Ocotillo Wells State Vehicular Recreation Area (OW SVRA)
Hazard Unit	Campground
	Interstate Highway
	Regional Highway
	County Boundary
	Towns and Communities

**FIGURE 13-1
RECREATION RESOURCES
IN THE VICINITY OF THE
SALTON SEA**

Table 15-2, Criterion: Cause substantial adverse change in the significance of a historical or unique archaeological resource or disturb human remains; page 15-10:

Criterion: Cause substantial adverse change in the significance of a historical or unique archaeological resource or disturb human remains.						
No Action Alternative	Existing Conditions	S	S	S	S	Ground disturbing activities could result in the damage and/or disturbance of potentially significant archaeological resources. Water would recede exposing currently submerged resources. Exposure of such resources could lead to unauthorized artifact collection. Such resources also could be subject to wave-induced erosion during operations.
	No Action Alternative	NA	NA	NA	NA	

No Action Alternative, seventh paragraph; page 15-11:

The No Action Alternative would result in adverse impacts as compared to Existing Conditions that would be partially mitigated as a result of the IID Water Conservation and Transfer Project mitigation measures. ~~The area between the shoreline and -235 feet mean sea level (msl) and below -248 feet msl that would be exposed under the No Action Alternative could result in significant and adverse impacts to cultural resources~~ as compared to Existing Conditions.

Alternative 1, third paragraph; page 15-11:

In Phases I through IV, impacts associated with exposure would be similar to those described under the No Action Alternative. ~~It is assumed that IID would implement the mitigation measures as described under the No Action Alternative between -235 to -248 feet msl. Portions of the Sea Bed that would have been exposed under the No Action Alternative would be covered by other components.~~

Next Steps, first paragraph; page 15-13:

During project-level analysis, the preferred alternative would be subject to additional CEQA analysis. Actions involving federal or Tribal lands would be subject to federal oversight following Section 106 of the NHPA, ~~and~~ implementing regulations under 36 CFR 800, as amended, [the Archaeological Resources Protection Act, and any other applicable state and federal laws](#). Mitigation measures such as the following would be considered during the project-level analysis:

Next Steps, new final paragraph; page 15-14:

[During the additional CEQA analysis, the Implementing Agency should work with the Torres Martinez Desert Cahuilla Indians to determine an appropriate process for documenting and mitigating impacts to cultural resources found on lands owned by the Tribe.](#)

Chapter 16

Table 16-1; page 16-4:

**Table 16-1
Generalized Sedimentary Units Mapped in the Study Area by Jennings (1967) and
Rogers (1965) and the Assigned Paleontological Sensitivity**

Map Unit	Name	Paleontologic Sensitivity (provisional)	Remarks
Qs	Dune sand	Low	Regional relationships suggest that surficial eolian sediments within the study area are middle Holocene and younger (the last 6,000 years), with the possibility of older strata beneath aggradational sand sheets on the east side of the Salton Sea. Older and larger dune systems, such as the Algodones (Imperial) Sand Dunes, are well outside the study area.
Qal	Alluvium	Low	Includes both Late Pleistocene and Holocene subaerially deposited bajada sediments; within the study area, generally finer-grained sediments of the distal portions of alluvial fans are found. Generally of low sensitivity.
Ql	Quaternary lake deposits in the axial portion of the valley southeast of the Salton Sea (Imperial Valley area)	Low to Moderate	Low sensitivity in the axial valleys (Imperial and Coachella) of the Salton Trough where, despite extensive excavations in support of agricultural pursuits, there are no recorded paleontological sites from this region. This is consistent with geophysical data that indicate rapid subsidence. Elsewhere, on the east and west margins of the Sea, of moderate sensitivity. At depth, these may be equivalent with the Pleistocene Brawley Formation.
Qal – Qal	Undifferentiated alluvium and lacustrine sediments in the Salton Trough	Low to High <u>Moderate</u>	As noted above, in the axial portions of the Salton Trough these sediments are of low sensitivity, but elsewhere may include strata of high paleontological sensitivity.
Qc	Pleistocene non-marine	Moderate to High	Pleistocene conglomerates and other non-marine clastic sediments, including lacustrine, have yielded fossils in this region.
<u>TI – Ql</u>	<u>Tertiary and Quaternary(?) lake deposits</u>	<u>High</u>	<u>Includes outcrops of the Plio-Pleistocene Barrego Formation; lacustrine mudstones elevated above younger Quaternary sediments. To the east in the Bat Caves Buttes area, includes Palm Springs Group and overlying Borrego Formation sediments (Jefferson, 2005).</u>

Note: Does not include igneous rocks or geologic units outside the study area

Brawley Formation and Ocotillo Conglomerate, second paragraph; pages 16-7 and 16-8:

To the west of State Highway 86, the Brawley Formation is up to 2,000 feet thick and grades into the Ocotillo Conglomerate (Dorsey, 2005). Freshwater molluscan fauna and ~~Ranchlabrean~~ faunal elements, such as mammoth (*Mammuthus*), North American horse (*Equus*), and camel (*Camelops*), are recorded for the Brawley Formation. It should be noted that even though the Ocotillo Conglomerate is composed of chiefly coarse-grained clasts, it is fossiliferous despite the implied high-energy depositional regime. A majority of the proboscidian (mammoths, mastodonts, and their relatives) remains from the Anza-Borrego Desert State Park area are from the Irvingtonian-age Ocotillo Formation (McDaniel and Jefferson, 2003).

Significance Criteria, first paragraph; page 16-10:

The following significance criteria were based on Appendix G of the CEQA Guidelines and air quality regulatory agency guidance and used to determine if changes as compared to Existing Conditions and the No Action Alternative would..

Table 16-3, Criterion: Physical damage to a scientifically useful fossil or unearthing of fossils and removal without appropriate scientific recordation; page 16-12:

Criterion: Physical damage to a scientifically useful fossil or unearthing of fossils and removal without appropriate scientific recordation.						
No Action Alternative	Existing Conditions	S	S	S	S	Ground disturbing activities could result in the damage and/or disturbance of potentially significant <u>archaeological paleontological</u> resources. Water would recede exposing currently submerged resources. Exposure of such resources could lead to unauthorized <u>artifact fossil</u> collection. Such resources also could be subject to wave-induced erosion during operations.
	No Action Alternative	NA	NA	NA	NA	

No Action Alternative, second paragraph; page 16-13:

The No Action Alternative would result in adverse impacts as compared to Existing Conditions due to the disturbance of 35,800 acres of land in the Sea Bed and along the shoreline, and about 5,050,000 cubic yards of Sea Bed material would be excavated or dredged. The impacts would be partially mitigated as a result of the IID Water Conservation and Transfer Project mitigation measures ~~between -235 and -248 feet msl. The area between the shoreline and -235 feet msl and below -248 feet msl that would be exposed under the No Action Alternative would not be subject to mitigation measures by IID.~~

Alternative 1, second paragraph; page 16-13:

Impacts associated with ground disturbing activities would be similar to those described under No Action Alternative. Under Alternative 1, about 136,700 of acres of land would be disturbed in the Sea Bed and along the shoreline, and about 77,140,000 cubic yards of Sea Bed material would be excavated or dredged. ~~It is assumed that HD would implement the mitigation measures as described under the No Action Alternative between 235 to 248 feet msl in portions of the Sea Bed not covered by other components.~~

Alternative 2, second paragraph; page 16-13:

Impacts associated with ground disturbing activities would be similar to those described under No Action Alternative. Under Alternative 2, about 206,400 of acres of land would be disturbed in the Sea Bed and along the shoreline, and about 136,530,000 cubic yards of Sea Bed material would be excavated or dredged. ~~It is assumed that HD would implement the mitigation measures as described under the No Action Alternative between 235 to 248 feet msl in portions of the Sea Bed not covered by other components.~~

Alternative 3, second paragraph; page 16-13:

Impacts associated with ground disturbing activities would be similar to those described under No Action Alternative. Under Alternative 3, about 155,450 of acres of land would be disturbed in the Sea Bed and along the shoreline, and about 18,810,000 cubic yards of Sea Bed material would be excavated or dredged. ~~It is assumed that HD would implement the mitigation measures as described under the No Action Alternative between 235 to 248 feet msl in portions of the Sea Bed not covered by other components.~~

Alternative 4, second paragraph; page 16-14:

Impacts associated with ground disturbing activities would be similar to those described under No Action Alternative. Under Alternative 4, about 96,950 of acres of land would be disturbed in the Sea Bed and along the shoreline, and about 154,215,000 cubic yards of Sea Bed material would be excavated or dredged. ~~It is assumed that HD would implement the mitigation measures as described under the No Action Alternative between 235 to 248 feet msl in portions of the Sea Bed not covered by other components.~~

Alternative 5, second paragraph; page 16-14:

Impacts associated with ground disturbing activities would be similar to those described under No Action Alternative. Under Alternative 5, about 230,450 of acres of land would be disturbed in the Sea Bed and along the shoreline, and about 86,770,000 cubic yards of Sea Bed material would be excavated or dredged. ~~It is assumed that HD would implement the mitigation measures as described under the No Action Alternative between 235 to 248 feet msl in portions of the Sea Bed not covered by other components.~~

Alternative 6, second paragraph; page 16-14:

Impacts associated with ground disturbing activities would be similar to those described under No Action Alternative. Under Alternative 6, about 224,250 of acres of land would be disturbed in the Sea Bed and along the shoreline, and about 66,970,000 cubic yards of Sea Bed material would be excavated or dredged. ~~It is assumed that HD would implement the mitigation measures as described under the No Action Alternative between 235 to 248 feet msl in portions of the Sea Bed not covered by other components.~~

Alternative 7, second paragraph; pages 16-14 and 16-15:

Impacts associated with ground disturbing activities would be similar to those described under No Action Alternative. Under Alternative 7, about 131,950 of acres of land would be disturbed in the Sea Bed and along the shoreline, and about 33,522,000 cubic yards of Sea Bed material would be excavated or dredged. ~~It is assumed that HD would implement the mitigation measures as described under the No Action Alternative between 235 to 248 feet msl in portions of the Sea Bed not covered by other components.~~

Alternative 8, second paragraph; page 16-15:

Impacts associated with ground disturbing activities would be similar to those described under No Action Alternative. Under Alternative 8, about 209,550 of acres of land would be disturbed in the Sea Bed and along the shoreline, and about 47,230,000 cubic yards of Sea Bed material would be excavated or dredged. ~~It is assumed that HD would implement the mitigation measures as described under the No Action Alternative between 235 to 248 feet msl in portions of the Sea Bed not covered by other components.~~

Next Steps, first paragraph; page 16-15:

During the project-level analysis, a Paleontological Resources Monitoring and Recovery Plan (PRMRP) should be developed and implemented for all actions. The PRMRP should include protocols for paleontological resources monitoring in those areas where sediment with moderate to high paleontological sensitivity would be affected by construction related excavations, including sediments with a range of sensitivity that includes moderate or high paleontological sensitivity. The PRMRP also should set forth the following procedures:

Chapter 17

Significance Criteria, first paragraph; page 17-9:

The following significance criteria were based on Appendix G of the CEQA Guidelines ~~and air quality regulatory agency guidance~~ and used to determine if changes as compared to Existing Conditions and the No Action Alternative would:

Chapter 18

Figure 18-10, View to the North from Observation Tower at Sonny Bono Salton Sea National Wildlife Refuge; page 18-21:

Revised figure is on the following page.

Significance Criteria, first paragraph; page 18-31:

The following significance criteria were based on Appendix G of the CEQA Guidelines ~~and air quality regulatory agency guidance~~ and used to determine if changes as compared to Existing Conditions and the No Action Alternative would:

Chapter 19

Water Supply and Treatment, fourth paragraph; page 19-4:

The Golden State Water Company provides water to Calipatria and Niland, and the Seeley County Water District provides water to Seeley. Both water purveyors purchase their water from IID. [The Golden State Water Company](#) ~~and~~ takes delivery through the East Highline Canal [and the Seeley County Water District takes delivery through the Central Main Canal](#). The City of Coachella Water Department and Indio Water Authority provide water to Coachella and Indio, respectively. Both cities rely on groundwater, which is chlorinated and does not require further treatment. Both agencies participate in a replenishment plan with CVWD, which is intended to reduce groundwater overdraft in the Coachella Valley (Lee, 2005; Merrell, 2005).

Chapter 20

Airports, first paragraph; page 20-5:

Local airports that provide passenger service near the Salton Sea include the Imperial County Airport in Imperial ~~and~~, Palm Springs International Airport, [and the Calexico International Airport in Calexico](#). The Holtville Airport is closed indefinitely. Regional airports include San Diego International Airport and Ontario International Airport, which are not included in the study area, as described above. Smaller general aviation airports are located in the communities surrounding the Salton Sea. Information regarding the types of air traffic experienced at each of the local airports and the average number of daily aircraft operations is summarized in Table 20-3.

Next Steps, first paragraph; page 20-21:

During the project-level analysis, a traffic study would be conducted to identify methods to minimize impacts during all phases. [In addition, a Pavement Study and Traffic Management Plan would also be appropriate. These studies should be conducted with the local traffic management agencies.](#) The following measures could be used to reduce impacts on roadways:

Chapter 21

Geothermal Power, first paragraph; page 21-6:

Imperial County has one of the larger geothermal resources in the world. There are ~~seven~~ [nine](#) known geothermal resource areas (KGRAs) in Imperial County: the Salton Sea, South Brawley, East Brawley, [North Brawley, Westmoreland](#), Heber, East Mesa, Dunes, and Glamis, as shown in Figure 21-2. A KGRA is an area in which the geology, nearby discoveries, competitive interests, or other indicators would, in the opinion of the Secretary of the Interior, engender a belief in those who are experienced in the subject matter that the prospects for extraction of geothermal steam or associated geothermal resources are good enough to warrant expenditures of money for that purpose (30 U.S.C. 1001). The Salton Sea KGRA includes areas under the Salton Sea and lands upgradient of the Salton Sea from about Bombay Beach to Calipatria. The other KGRAs in Imperial County are located to the southeast of the Salton Sea and are not likely to be affected by the alternatives; therefore, they are not discussed further.



**FIGURE 18-10
VIEW TO THE NORTH FROM OBSERVATION
TOWER AT UNIT ONE OF THE SONNY BONO
SALTON SEA NATIONAL WILDLIFE REFUGE**

Table 21-4, final two rows; page 21-9:

Unit 6	185 215.0	Construction not started
Total	511.4 541.4	—

Sources: CE Obsidian Energy LLC, 2002; CalEnergy, 2005.

Chapter 23

Drop 2 Reservoir Project, Lower Colorado River Water Storage Project, subsection *Project Description*, first and second paragraphs; page 23-5:

The Drop 2 Reservoir Project would be located on about ~~621~~5 acres formerly used for the Brock Ranch Experimental Research Station in Imperial County, California (Reclamation, 2005a). The proposed reservoir project is one of a variety of potential actions that may be taken to maximize beneficial use of Colorado River water in the United States. Specific objectives of the project include providing additional operational flexibility in the Lower Colorado River system for the Imperial Irrigation District, Coachella Valley Water District, and other Colorado system users, and providing regulatory storage capacity needed to reduce currently non-storable flows of the Colorado River below Parker Dam.

The proposed reservoir site is north of the All-American Canal and Interstate Highway 8, west of the Coachella Canal, about 30 miles southeast of the City of El Centro, California, and 25 miles west of the City of Yuma, Arizona. The 8,000-acre-foot reservoir would receive water from a connection to the [All-American Canal at the Coachella Canal turnout to the east](#), via a ~~5-to-7~~ 6.6-mile-long inlet canal (depending on alignment selected). Water released from the reservoir would be returned to the All-American Canal, via an outlet channel about ~~32,500~~ feet long.

Drop 2 Reservoir Project, Lower Colorado River Water Storage Project, subsection *Project Environmental Analysis Status and Anticipated Environmental Impacts*, new final paragraph; page 23-5:

[A Draft Environmental Assessment was released by Reclamation for the project in November 2006 \(Reclamation, 2006\).](#)

Chapter 25

Table 25-1, third row; page 25-2:

Colorado River Basin Regional Water Quality Control Board (CRBRWQCB)	Waste Discharge Requirements, Porter-Cologne Water Quality Control Act	Waste Discharge Requirements are required for activities that may discharge waste in a diffuse manner (such as from soil erosion or waste discharges to land), including the discharge of waste from construction operations, and dredge and fill activities.	Activities undertaken by a federal agency are not subject to Waste Discharge Requirements.
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Chapter 28

Prior to forty-ninth reference listing; page 28-3:

[CEC \(California Energy Commission\). 2003. Preliminary Staff Assessment, Salton Sea Geothermal Unit #6 Power Project, Application for Certification \(02-AFC-2\) Imperial County, April 2003.](#)

Fourth through eleventh reference listings; page 28-5:

County of Imperial. 1993a. Planning/~~Building~~ [and Development Services](#) Department. Imperial County General Plan, 1993, as amended. CD Version.

County of Imperial. 1993b. [Planning and Development Services Department](#). Seismic and Public Safety Element of the [County of Imperial](#) General Plan.

County of Imperial. 1994. Planning/~~Building~~ [and Development Services](#) Department. Bombay Beach/Hot Mineral Spa Community Area Plan, 1994, as amended through 1999.

County of Imperial. 1997a. [Planning and Development Services Department](#). Noise Element of the County of Imperial General Plan.

County of Imperial. 1997b. [Planning and Development Services Department](#). Visual Element of the County of Imperial General Plan.

County of Imperial. 1999. [Planning and Development Services Department](#). Bombay Beach/Hot Mineral Spa Community Area Plan.

County of Imperial. 2000. Planning/~~Building~~ [and Development Services](#) Department. West Shores/Salton City Urban Area Plan.

County of Imperial. 2003. [Planning and Development Services Department](#). ~~General Plan~~—Circulation and Scenic Highways Element [of the County of Imperial General Plan](#).

Bottom two reference listings; page 28-5:

CRBRWQCB (Colorado River Basin Regional Water Quality Control Board). 2002~~5~~^a. Water Quality Control Plan, Colorado River Basin-Region 7, includes Amendments Adopted by the Regional Board through ~~November~~ [October 2002](#)⁵. <http://www.waterboards.ca.gov/coloradoriver/documents/RBTPlan.pdf>

CRBRWQCB (Colorado River Basin Regional Water Quality Control Board). 2002~~b~~. Pathogen Total Maximum Daily Load for the New River and Implementation Plan. Prepared by Regional Board Staff, Watershed Protection Branch, California Environmental Protection Agency, Regional Water Quality Control Board, Colorado River Basin Region.

Third reference listing; page 28-6:

CRBRWQCB (Colorado River Basin Regional Water Quality Control Board). 2005~~b~~. Draft Salton Sea Nutrient TMDL, Numeric Target.

New final IID (Imperial Irrigation District) reference listing near bottom of page 28-10:

[IID \(Imperial Irrigation District\). 2007. IID Monthly Crop Acreage Report. January 11, 2007.](#)

Appendix D

Table of Contents, third line; page D-iv:

Scenario C D-637

Table D-5; page D-71:

Revised Table on following page.

Marine Sea in Alternatives 5 and 6, subsection *Nutrients*, third paragraph; page D-84:

Ammonia concentrations in the hypolimnion start to increase at the onset of stratification once the dissolved oxygen is depleted. Since this occurs earlier in the Marine Sea under Alternatives 5 and 6 than the Salton Sea under Recent Conditions, ammonia accumulates to higher levels than in the Recent Conditions simulation, as shown in Figures D2-58 and D2-59. Peak concentrations at the bottom of the water column approach 30 mg/L in the Marine Sea under Alternatives 5 and 6, about four times the 7 mg/L predicted in Salton Sea under the Recent Conditions simulation. The delayed timing of the entire water column mixing event (Julian Day 325) coupled with the level to which ammonia has accumulated in the hypolimnetic waters, contribute to [anoxia in the entire water column](#) ~~the inability~~ of the Marine Sea [prior](#) to recovery from the depressed dissolved oxygen condition [later in the year](#). As shown in Figure D2-59, there is not enough oxygen in the Marine Sea under Alternatives 5 and 6 to completely convert the ammonia to nitrate after the mixing event.

Table D-6; page D-97:

Revised Table on following page.

Table D-5
Water Quality Reporting Metrics for Alternatives Simulations

Parameter	Metric ^a	Target Value	Recent Conditions (similar to Existing Conditions)	No Action Alternative-Variability Conditions			Marine Sea Habitat @ 35,000 mg/L			Shallow Water	
				Phase I (at 2020)	Phase III (at 2040)	Phase IV (at 2078)	Alts. 5 and 6	Alt. 7	Alt. 8	Saline Habitat Complex cells in Alts. 1, 2, 5, 6, 7, and 8 and Concentric Lakes in Alt. 4	Concentric Rings in Alt. 3
Bathymetry	Maximum depth (meters)		15.5	12.5	12.5 62.5	12.5 5.75	14.5	14.75	13.75	2	3
	Average depth (meters)		9.8	7.5	7.5 3.6	7.5 3.3	9.8	10.6	6.4	2	3
	Water surface area (square kilometers)		940.94	838.54	838.54 572.8	838.54 550.87	199.55	363.2	254.51	259.32 Not modeled	59.32 Not modeled
	Volume (cubic kilometers)		9.190	6.284	6.284 2.072	6.284 1.791	1.962	3.854	1.639	5.4 Not modeled 83	7 Not modeled 774
Salinity assumed for Water Quality Model	Total dissolved solids (mg/L)	35,000	44,000	71,000	197,000	196,000	35,000	35,000	35,000	34,000	35,000
Temperature	Water column annual minimum temperature (°C)		12.4	11.9	10.8	10.7	12.3	12.2	11.3	9.2	9.6
	Water column annual maximum temperature (°C)		32.3	32.6	32.7	33.3	33.3	32.2	32.4	32.6	33.6
	Water column annual mean temperature (°C)		21.9	22.2	22.2 22.0	22.2 22.0	20.4	21.7	20.8	21.5	21.0

**Table D-6
Water Quality Reporting Metrics for Alternatives Simulations with 50 Percent Phosphorus Load Reduction**

Parameter	Metric ^a	Target Value	Recent Conditions (similar to Existing Conditions)	No Action Alternative-Variability Conditions			Marine Sea Habitat @ 35,000 mg/L			Shallow Water	
				Phase I (at 2020)	Phase III (at 2040)	Phase IV (at 2078)	Alts. 5 and 6	Alt. 7	Alt. 8	Saline Habitat Complex cells in Alts. 1, 2, 5, 6, 7, and 8 and Concentric Lakes in Alt. 4	Concentric Rings in Alt. 3
Bathymetry	Maximum depth (meters)		15.5	12.25	12.25 <u>6.25</u>	12.25 <u>5.75</u>	14.5	14.75	13.75	2	3
	Average depth (meters)		9.8	7.5	7.5 <u>3.6</u>	7.5 <u>3.3</u>	9.8	10.6	6.4	2	3
	Water surface area (square kilometers)		940.94	838.54	838.54 <u>572.78</u>	838.54 <u>550.87</u>	199.55	363.2	254.51	259.32 <u>not modeled</u>	259.32 <u>not modeled</u>
	Volume (cubic kilometers)		9.190	6.284	6.284 <u>2.072</u>	6.284 <u>1.791</u>	1.962	3.854	1.639	5.183 <u>not modeled</u>	7.774 <u>not modeled</u>

Appendix E, Attachment E2

Methodology, subsection Exhaust Emissions, second paragraph; insert footnote; page E2-4:

For construction equipment and marine vessels, emissions were calculated by multiplying the quantities (cy/yr) presented in Table E2-1 by derived emission factors (lb/cy), for an emission result of lb/yr.¹ To simplify calculations, an average derived emission factor for large and small dredges was used to calculate emissions. The section below describes how the derived emission factors were obtained. For diesel-fueled trucks, emissions were calculated by dividing the quantities (cy/yr) in Table E2-1 by the assumed truck capacity of 20 cy, multiplying by the number of miles traveled to transport or place materials (assumptions to follow) to get vehicle miles traveled (VMT/yr), and then multiplying the vehicle miles traveled (VMT) by the EMFAC2002 emission factor (lb/VMT), to obtain an emission result in lb/yr. Trucks were assumed to travel 10 miles one-way to transport rock or gravel on paved roads and 5 miles one-way on unpaved roads to place the rock or gravel. The VMT used to calculate exhaust emissions for water trucks was based on a surface area coverage rate of 2.9 acres/hour/truck (SJVAPCD, 2003), a 2-hour watering interval, and the total acres disturbed in constructing habitat complex and roads.

¹The construction equipment emissions were calculated by multiplying the quantities (cy/yr) by the derived emission factor (lb/cy) by the weighted fraction of material handling capacity. For example, NO_x emissions from large equipment equaled: quantity (cy/yr) × 0.004 (lb/cy) × (125 / (125 + 80 + 45)).

Tables E2-8 through E2-13:

Tables E2-8 through E2-13 were inadvertently omitted from the Draft PEIR. These tables are provided below.

**Table E2-8
Peak Construction Year Fugitive Dust (PM₁₀) Emission Calculations**

Emission Source	No Action - CEQA	No Action - Variability	1	2	3	4	5	6	7	8
			Saline Habitat Complex I	Saline Habitat Complex II	Concentric Rings	Concentric Lakes (Imperial Group)	North Sea	North Sea Combined	Combined North & South Lakes (SSA)	South Sea Combined
Peak Construction Year, Phase I (Existing to 2020), Dry Land Area Disturbed (ac/yr)										
Canals/Basins	1,000	1,000	0	0	0	0	0	0	0	0
Saline Habitat Complex	0	0	2,500	5,000	0	2,500	2,500	2,500	2,500	2,500
Air Quality Water Efficient Vegetation	2,000	2,000	4,000	4,000	4,000	0	4,000	4,000	0	4,000
Roadway Construction	100	100	100	100	100	100	100	100	100	100
Total Travel on Unpaved Roads (VMT/yr)										
Unpaved Roads (Material Placement)	9,333	9,333	131,333	253,750	528,633	104,583	679,050	3,725,117	4,509,983	4,098,483
Worst Year Uncontrolled Fugitive Dust (PM₁₀) Emissions (tons/yr)										
Saline Habitat Complex (Canals for No Action)	13	13	33	66	0	33	33	33	33	33
Air Quality Water Efficient Vegetation	4	4	8	8	8	0	8	8	0	8
Roadway Construction	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32
Unpaved Roads (Material Placement)	13	13	181	351	730	145	938	5,148	6,232	5,663
Total (tons/yr)	31	31	224	426	740	179	981	5,190	6,266	5,706
Worst Year Controlled Fugitive Dust (PM₁₀) Emissions (tons/yr)										
Saline Habitat Complex (Canals for No Action)	3	3	9	17	0	9	9	9	9	9
Air Quality Water Efficient Vegetation	4	4	8	8	8	0	8	8	0	8
Roadway Construction	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
Unpaved Roads (Material Placement)	6	6	82	158	329	65	422	2,316	2,804	2,549
Total (tons/yr) with Control	14	14	99	183	337	74	439	2,333	2,813	2,565

**Table E2-9
Fugitive Dust (PM₁₀) Emission Factors and Control Efficiencies**

<u>Emission Factors</u>			<u>Fugitive Dust Controls</u>	
<u>Grading Surface^a</u> <u>(lb/acre/day)</u>	<u>Travel on Unpaved Roads^b</u> <u>(lb/VMT)</u>	<u>Agricultural Tilling^c</u> <u>(ton/yr/acre)</u>	<u>Construction^d</u> <u>(%)</u>	<u>Unpaved Roads^e</u> <u>(%)</u>
26.4	2.8	0.002	74%	55%

Unpaved Road EF (lb/VMT)^b 2.8

Silt Content (%)^f 8.5

Average Vehicle weight (tons)^g 23.25

^a Emission factors calculated from SCAQMD CEQA Handbook 1993, (CEQA Table A9-9).

^b Emission equation from AP-42 section 13-2 for industrial sites (http://www.epa.gov/ttn/chieff/ap42/ch13/final/c13s0202.pdf)

^c EF based on preparing the land to plant seed grass (type unspecified) with the drop profile of alfalfa (Jan. 2003, ARB 7.4, Table 2a)

^d Emission reduction based on a 2-hr watering interval for exposed areas due to construction (WRAP Fugitive Dust Handbook, Nov. 2004)

^e Emission reduction based upon watering twice a day for an industrial unpaved Road (WRAP, Nov. 2004)

^f Average silt content from AP-42 Section 13.2.2 Table 13.2.2-1 for construction roads

^g Average vehicle weight is based on typical construction equipment

**Table E2-10
Early Start Habitat Fugitive Dust (PM₁₀) Emission Calculations**

<u>Emission Source</u>	
	<u>Dry Land Disturbed (acres/yr)^a</u>
<u>Saline Habitat Complex</u>	2,000
<u>Roadway Construction</u>	100
<u>Unpaved Roads (Material Transport)</u>	131,333
	<u>Uncontrolled PM₁₀ Emissions (ton/yr)</u>
<u>Saline Habitat Complex</u>	26
<u>Roadway Construction</u>	1
<u>Unpaved Roads (Material Transport)</u>	181
<u>Total (tons / yr)</u>	<u>209</u>
<u>Alternative</u>	1
	<u>Controlled PM₁₀ Emissions (ton/yr)</u>
<u>Saline Habitat Complex</u>	7
<u>Roadway Construction</u>	0.34
<u>Unpaved Roads (Material Transport)</u>	82
<u>Total (tons / yr) with Control</u>	<u>89</u>

^a Values based on Alternative 1.

Table E2-11
Fugitive Dust (PM₁₀) Calculation Assumptions

<u>Variable</u>	<u>Assumption</u>
<u>Canals/Basins</u>	<u>Canals would only be constructed for the no action alternative in the peak construction year.</u>
<u>Saline Habitat Complex</u>	<u>There would be no acres of Saline Habitat Complex under construction in the peak year for the No Action Alternative or Alternative 3. For Alternative 2, there would be 5,000 acres of Saline Habitat Complex under construction in the peak year.</u>
<u>Air Quality Water Efficient Vegetation</u>	<u>There would be no acres of WEV for alternative 4 or alternative 7. For the no action alternative, there would be 2,000 acres of WEV under construction in the peak year. It was assumed that no control for fugitive dust, such as watering, would be applied.</u>
<u>Roadway Construction</u>	<u>100 acres under construction in the peak year for all alternatives.</u>
<u>Unpaved Roads (Material Placement)</u>	<u>Vehicle miles traveled based on haul truck capacity of 20 cubic yards and a 5 mile one-way trip on unpaved roads to place materials.</u>
<u>Early Start Habitat</u>	<u>Early start would be completed prior to other construction and activities and levels were assumed to be similar for all alternatives. Emissions were calculated for Alternative 1 and assumed to represent all alternatives with Early Start Program implemented (2,3,5,6 and 8).</u>

Table E2-12
Peak Construction Year Quantities (cubic yards) for Exhaust Emission Calculations

<u>Values for Peak Construction Year</u>	<u>No Action - CEQA</u>	<u>No Action - Variability</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
			<u>Saline Habitat Complex I</u>	<u>Saline Habitat Complex II</u>	<u>Concentric Rings</u>	<u>Concentric Lakes (Imperial Group)</u>	<u>North Sea</u>	<u>North Sea Combined</u>	<u>Combined North & South Lakes (SSA)</u>	<u>South Sea Combined</u>
Rock cy/yr transported by truck	<u>0</u>	<u>0</u>	<u>152,000</u>	<u>311,500</u>	<u>6,476,000</u>	<u>375,000</u>	<u>8,235,000</u>	<u>15,323,000</u>	<u>10,947,500</u>	<u>16,467,000</u>
Rock cy/yr placed by barge	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>5,828,400</u>	<u>337,500</u>	<u>7,254,000</u>	<u>9,402,600</u>	<u>6,139,600</u>	<u>9,998,000</u>
Rock cy/yr placed by truck	<u>0</u>	<u>0</u>	<u>152,000</u>	<u>311,500</u>	<u>647,600</u>	<u>37,500</u>	<u>981,000</u>	<u>5,920,400</u>	<u>4,807,900</u>	<u>6,469,000</u>
Gravel cy/yr transported by truck	<u>18,667</u>	<u>18,667</u>	<u>110,667</u>	<u>196,000</u>	<u>1,881,667</u>	<u>171,667</u>	<u>1,375,500</u>	<u>2,617,833</u>	<u>4,685,667</u>	<u>3,027,167</u>
Gravel cy/yr placed by barge	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1,472,000</u>	<u>0</u>	<u>998,400</u>	<u>1,088,000</u>	<u>473,600</u>	<u>1,299,200</u>
Gravel cy/yr placed by truck	<u>18,667</u>	<u>18,667</u>	<u>110,667</u>	<u>196,000</u>	<u>409,667</u>	<u>171,667</u>	<u>377,100</u>	<u>1,529,833</u>	<u>4,212,067</u>	<u>1,727,967</u>
Sediment cy/yr dredged	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>3,450,000</u>	<u>6,193,125</u>	<u>1,950,000</u>	<u>4,180,000</u>	<u>0</u>	<u>4,920,000</u>
Soil/clay cy/yr graded	<u>2,525,000</u>	<u>2,525,000</u>	<u>3,594,000</u>	<u>6,593,000</u>	<u>0</u>	<u>5,000,000</u>	<u>3,755,000</u>	<u>2,545,500</u>	<u>1,530,600</u>	<u>1,500,000</u>
Soil cy/yr disturbed for AQ WEV	<u>807,000</u>	<u>807,000</u>	<u>807,000</u>	<u>807,000</u>	<u>807,000</u>	<u>0</u>	<u>807,000</u>	<u>807,000</u>	<u>0</u>	<u>807,000</u>

Table E2-13
Land Based Equipment Exhaust Emission Calculations

<u>Equipment Type</u>	<u>Emissions (ton/yr)</u>		<u>Emissions (lb/day)</u>	
	<u>NO_x</u>	<u>Diesel PM₁₀</u>	<u>NO_x</u>	<u>Diesel PM₁₀</u>
<u>Alternative 1: Saline Habitat Complex I</u>				
<u>Large Size Construction Equipment</u>	<u>3.7</u>	<u>0.049</u>	<u>27.9</u>	<u>0.4</u>
<u>Medium Size Construction Equipment</u>	<u>1.9</u>	<u>0.025</u>	<u>14.0</u>	<u>0.2</u>
<u>Small Size Construction Equipment</u>	<u>1.5</u>	<u>0.020</u>	<u>11.1</u>	<u>0.1</u>
<u>Tugboat/barge</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Dredge</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Haul Truck - Rock</u>	<u>2.2</u>	<u>0.05</u>	<u>16.8</u>	<u>0.38</u>
<u>Haul Truck - Gravel</u>	<u>1.6</u>	<u>0.04</u>	<u>12.2</u>	<u>0.35</u>
<u>Water Truck</u>	<u>0.6</u>	<u>0.012</u>	<u>4.2</u>	<u>0.09</u>
<u>Total</u>	<u>11</u>	<u>0.19</u>	<u>86</u>	<u>1.5</u>
<u>Miscellaneous (add 10%)</u>	<u>1</u>	<u>0.02</u>	<u>9</u>	<u>0.2</u>
<u>Grand Total</u>	<u>13</u>	<u>0.21</u>	<u>95</u>	<u>1.7</u>
<u>Alternative 2: Saline Habitat Complex II</u>				
<u>Large Size Construction Equipment</u>	<u>6.8</u>	<u>0.09</u>	<u>51.2</u>	<u>0.7</u>
<u>Medium Size Construction Equipment</u>	<u>3.4</u>	<u>0.05</u>	<u>25.7</u>	<u>0.3</u>
<u>Small Size Construction Equipment</u>	<u>2.0</u>	<u>0.03</u>	<u>15.2</u>	<u>0.2</u>
<u>Tugboat/barge</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Dredge</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Haul Truck - Rock</u>	<u>4.5</u>	<u>0.10</u>	<u>34.3</u>	<u>0.78</u>
<u>Haul Truck - Gravel</u>	<u>2.8</u>	<u>0.06</u>	<u>21.5</u>	<u>0.49</u>
<u>Water Truck</u>	<u>1.1</u>	<u>0.025</u>	<u>8.2</u>	<u>0.19</u>
<u>Total</u>	<u>21</u>	<u>0.35</u>	<u>156</u>	<u>2.7</u>
<u>Miscellaneous (add 10%)</u>	<u>2</u>	<u>0.04</u>	<u>16</u>	<u>0.3</u>
<u>Grand Total</u>	<u>23</u>	<u>0.39</u>	<u>172</u>	<u>2.9</u>
<u>Alternative 3: Concentric Rings</u>				
<u>Large Size Construction Equipment</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Medium Size Construction Equipment</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Small Size Construction Equipment</u>	<u>0.81</u>	<u>0.011</u>	<u>6.2</u>	<u>0.08</u>
<u>Tugboat/barge</u>	<u>706</u>	<u>41</u>	<u>5,345</u>	<u>307</u>
<u>Dredge</u>	<u>40</u>	<u>2.28</u>	<u>300</u>	<u>17</u>
<u>Haul Truck - Rock</u>	<u>66</u>	<u>1</u>	<u>361</u>	<u>8</u>
<u>Haul Truck - Gravel</u>	<u>20</u>	<u>0</u>	<u>112</u>	<u>3</u>
<u>Water Truck</u>	<u>0.021</u>	<u>0.000</u>	<u>0.2</u>	<u>0.00</u>
<u>Total</u>	<u>832</u>	<u>45</u>	<u>6,125</u>	<u>335</u>
<u>Miscellaneous (add 10%)</u>	<u>83.2</u>	<u>4.48</u>	<u>613</u>	<u>33.5</u>
<u>Grand Total</u>	<u>915</u>	<u>49</u>	<u>6,738</u>	<u>369</u>

Table E2-13
Land Based Equipment Exhaust Emission Calculations

Equipment Type	Emissions (ton/yr)		Emissions (lb/day)	
	NO _x	Diesel PM ₁₀	NO _x	Diesel PM ₁₀
Alternative 4: Concentric Lakes (Imperial Group)				
Large Size Construction Equipment	<u>5</u>	<u>0</u>	<u>39</u>	<u>1</u>
Medium Size Construction Equipment	<u>3</u>	<u>0</u>	<u>20</u>	<u>0</u>
Small Size Construction Equipment	<u>0.9</u>	<u>0.01</u>	<u>6.9</u>	<u>0.1</u>
Tugboat/barge	<u>33</u>	<u>2</u>	<u>247</u>	<u>14</u>
Dredge	<u>71</u>	<u>4</u>	<u>539</u>	<u>31</u>
Haul Truck - Rock	<u>3.8</u>	<u>0.1</u>	<u>20.7</u>	<u>0.5</u>
Haul Truck - Gravel	<u>2</u>	<u>0</u>	<u>0</u>	<u>4</u>
Water Truck	<u>0.553</u>	<u>0.000</u>	<u>4.2</u>	<u>0.00</u>
Total	<u>119</u>	<u>6</u>	<u>877</u>	<u>50</u>
Miscellaneous (add 10%)	<u>12</u>	<u>1</u>	<u>88</u>	<u>5</u>
Grand Total	<u>131</u>	<u>7</u>	<u>964</u>	<u>55</u>
Alternative 5: North Sea				
Large Size Construction Equipment	<u>3.8</u>	<u>0.05</u>	<u>29.1</u>	<u>0.4</u>
Medium Size Construction Equipment	<u>1.9</u>	<u>0.03</u>	<u>14.6</u>	<u>0.2</u>
Small Size Construction Equipment	<u>1.5</u>	<u>0.02</u>	<u>11.3</u>	<u>0.2</u>
Tugboat/barge	<u>798</u>	<u>46</u>	<u>6043</u>	<u>347</u>
Dredge	<u>22</u>	<u>1</u>	<u>170</u>	<u>10</u>
Haul Truck - Rock	<u>84.6</u>	<u>1.9</u>	<u>468</u>	<u>10.6</u>
Haul Truck - Gravel	<u>15.2</u>	<u>0.3</u>	<u>87</u>	<u>2.0</u>
Water Truck	<u>0.6</u>	<u>0.012</u>	<u>4.2</u>	<u>0.09</u>
Total	<u>928</u>	<u>49</u>	<u>6,827</u>	<u>370</u>
Miscellaneous (add 10%)	<u>93</u>	<u>5</u>	<u>683</u>	<u>37</u>
Grand Total	<u>1,020</u>	<u>54</u>	<u>7,509</u>	<u>407</u>
Alternative 6: North Sea Combined				
Large Size Construction Equipment	<u>2.6</u>	<u>0.03</u>	<u>19.8</u>	<u>0.3</u>
Medium Size Construction Equipment	<u>1.3</u>	<u>0.02</u>	<u>9.9</u>	<u>0.1</u>
Small Size Construction Equipment	<u>1.3</u>	<u>0.02</u>	<u>9.6</u>	<u>0.1</u>
Tugboat/barge	<u>1,014</u>	<u>58</u>	<u>7,681</u>	<u>441</u>
Dredge	<u>48</u>	<u>3</u>	<u>364</u>	<u>21</u>
Haul Truck - Rock	<u>177</u>	<u>4.0</u>	<u>975</u>	<u>22.0</u>
Haul Truck - Gravel	<u>32.8</u>	<u>0.7</u>	<u>183</u>	<u>4</u>
Water Truck	<u>0.6</u>	<u>0.012</u>	<u>4.2</u>	<u>0.09</u>
Total	<u>1,278</u>	<u>66</u>	<u>9,246</u>	<u>489</u>
Miscellaneous (add 10%)	<u>128</u>	<u>7</u>	<u>925</u>	<u>49</u>
Grand Total	<u>1,405</u>	<u>72</u>	<u>10,171</u>	<u>538</u>

Table E2-13
Land Based Equipment Exhaust Emission Calculations

<u>Equipment Type</u>	<u>Emissions (ton/yr)</u>		<u>Emissions (lb/day)</u>	
	<u>NO_x</u>	<u>Diesel PM₁₀</u>	<u>NO_x</u>	<u>Diesel PM₁₀</u>
<u>Alternative 7: Combined North and South Lakes (SSA)</u>				
<u>Large Size Construction Equipment</u>	<u>1.57</u>	<u>0</u>	<u>12</u>	<u>0</u>
<u>Medium Size Construction Equipment</u>	<u>0.79</u>	<u>0</u>	<u>6</u>	<u>0</u>
<u>Small Size Construction Equipment</u>	<u>0.28</u>	<u>0.00</u>	<u>2.10</u>	<u>0.03</u>
<u>Tugboat/barge</u>	<u>639</u>	<u>37</u>	<u>4,842</u>	<u>278</u>
<u>Dredge</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Haul Truck - Rock</u>	<u>129</u>	<u>3</u>	<u>711</u>	<u>16</u>
<u>Haul Truck - Gravel</u>	<u>66</u>	<u>1</u>	<u>362</u>	<u>8</u>
<u>Water Truck</u>	<u>0.6</u>	<u>0.012</u>	<u>4.2</u>	<u>0.09</u>
<u>Total</u>	<u>838</u>	<u>41</u>	<u>5,939</u>	<u>303</u>
<u>Miscellaneous (add 10%)</u>	<u>83.76</u>	<u>4.12</u>	<u>594</u>	<u>30.29</u>
<u>Grand Total</u>	<u>921</u>	<u>45</u>	<u>6,533</u>	<u>333</u>
<u>Alternative 8: South Sea Combined</u>				
<u>Large Size Construction Equipment</u>	<u>1.5</u>	<u>0.02</u>	<u>11.6</u>	<u>0.2</u>
<u>Medium Size Construction Equipment</u>	<u>0.8</u>	<u>0.01</u>	<u>5.9</u>	<u>0.1</u>
<u>Small Size Construction Equipment</u>	<u>1.1</u>	<u>0.01</u>	<u>8.2</u>	<u>0.1</u>
<u>Tugboat/barge</u>	<u>1092</u>	<u>63</u>	<u>8,272</u>	<u>475</u>
<u>Dredge</u>	<u>57</u>	<u>3</u>	<u>428</u>	<u>25</u>
<u>Haul Truck - Rock</u>	<u>191</u>	<u>4.3</u>	<u>1049</u>	<u>24</u>
<u>Haul Truck - Gravel</u>	<u>37.7</u>	<u>0.9</u>	<u>209</u>	<u>5</u>
<u>Water Truck</u>	<u>0.6</u>	<u>0.012</u>	<u>4.2</u>	<u>0.09</u>
<u>Total</u>	<u>1,381</u>	<u>71</u>	<u>9,988</u>	<u>529</u>
<u>Miscellaneous (add 10%)</u>	<u>138</u>	<u>7</u>	<u>999</u>	<u>53</u>
<u>Grand Total</u>	<u>1,519</u>	<u>78</u>	<u>10,987</u>	<u>582</u>
<u>No Action - CEQA</u>				
<u>Large Size Construction Equipment</u>	<u>3</u>	<u>0.0345</u>	<u>20</u>	<u>0.26</u>
<u>Medium Size Construction Equipment</u>	<u>1</u>	<u>0.0173</u>	<u>10</u>	<u>0.13</u>
<u>Small Size Construction Equipment</u>	<u>1.3</u>	<u>0.0169</u>	<u>9.6</u>	<u>0.1</u>
<u>Tugboat/barge</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Dredge</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Haul Truck - Rock</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Haul Truck - Gravel</u>	<u>0.27</u>	<u>0.0061</u>	<u>2.3</u>	<u>0.053</u>
<u>Water Truck</u>	<u>0.234</u>	<u>0.0053</u>	<u>1.8</u>	<u>0.04</u>
<u>Total</u>	<u>6</u>	<u>0.08</u>	<u>43</u>	<u>0.61</u>
<u>Miscellaneous (add 10%)</u>	<u>1</u>	<u>0.01</u>	<u>4</u>	<u>0.06</u>
<u>Grand Total</u>	<u>6.2</u>	<u>0.09</u>	<u>47.5</u>	<u>0.67</u>

Table E2-13
Land Based Equipment Exhaust Emission Calculations

<u>Equipment Type</u>	<u>Emissions (ton/yr)</u>		<u>Emissions (lb/day)</u>	
	<u>NO_x</u>	<u>Diesel PM₁₀</u>	<u>NO_x</u>	<u>Diesel PM₁₀</u>
<u>No Action - Variability</u>				
<u>Large Size Construction Equipment</u>	<u>3</u>	<u>0.034</u>	<u>20</u>	<u>0.26</u>
<u>Medium Size Construction Equipment</u>	<u>1</u>	<u>0.017</u>	<u>10</u>	<u>0.13</u>
<u>Small Size Construction Equipment</u>	<u>1.3</u>	<u>0.017</u>	<u>9.6</u>	<u>0.1</u>
<u>Tugboat/barge</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Dredge</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Haul Truck - Rock</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Haul Truck - Gravel</u>	<u>0.27</u>	<u>0.006</u>	<u>2.3</u>	<u>0.053</u>
<u>Water Truck</u>	<u>0.234</u>	<u>0.0053</u>	<u>1.8</u>	<u>0.04</u>
<u>Total</u>	<u>6</u>	<u>0.08</u>	<u>43</u>	<u>0.61</u>
<u>Miscellaneous (add 10%)</u>	<u>1</u>	<u>0.01</u>	<u>4</u>	<u>0.06</u>
<u>Grand Total</u>	<u>6.2</u>	<u>0.09</u>	<u>47.5</u>	<u>0.67</u>

Appendix E, Attachment E3

Determined Areas of Exposed Playa, second paragraph; page E3-8:

Based on GIS mapping data, the total area of the Salton Sea was measured and is shown in Table E3-4. A breakdown of the acreages was performed based on the hypothetical division of the Salton Sea into northern and southern portions. The meteorological data for the Niland data were used to estimate emissions for the area of the Salton Sea south of the UTM northing coordinate of 3690572 meters. The data from the Niland station indicate wind speeds exceeded ~~35~~ 30 mph at times during 2002 and the predominant wind direction was from the west. As stated in the previous subsection, no emissions were predicted for the northern portions of the Salton Sea represented by the Indio meteorological station.

Table E3-5, Summary of North, South, and Total Exposed Playa Areas by Alternative (Acres); page E3-13:

Based on GIS mapping data, the total area of the Salton Sea was measured and is shown

Alternatives	Phase I (Existing-2020) North Sea South Sea Total Sea	Phase II (2020-2030) North Sea South Sea Total Sea	Phase III (2030-2040) North Sea South Sea Total Sea	Phase IV (2040-2078) North Sea South Sea Total Sea	Comments
Alternative 1 – Saline Habitat Complex I	12,000 18,000 83,000 30,000	—	—	33,200 49,800 83,000	Assumes 40 percent of the total exposed area is in the north portion and 60 percent in the south portion of the Salton Sea.

Appendix E, Attachment E9

Table E9-1, fifth row; page E9-1

Gypsum	CaSO ₄ ·2H ₂ O	Calcium sulfate dihydrate
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Appendix F

Lakes and Rings, second paragraph; page F-12:

The Lake habitat type would have varying salinity (ranging from 20,000 to ~~80,000~~60,000 mg/L) and depth depending on the location of the lake. The Ring habitat type would have salinities ranging from 20,000 to 40,000 mg/L.

Appendix G

Fish Consumption Rates, second paragraph; page G-15:

For the Existing Conditions, adult recreational anglers could consume from 13 to more than 30 meals per month of fish from different habitats within the Salton Sea without exceeding the maximum consumption rates based on selenium exposures. Children who consume more than about 4 meals per month may be exposed to health risks above target levels. For the No Action Alternative, maximum consumption rates range from about 9 to more than 100 meals per month for an adult and from 2 to more than 30 meals per month for a child. These large ranges in safe consumption rates are due to the high variability among the individual habitat types in the whole-body fish tissue EPCs, which are, in turn, proportional to the sediment EPCs that were determined based on projected selenium loadings and apportionment from the respective sources to a given habitat. For example, under the No Action Alternative – Variability Conditions, both the sediment and whole-body fish EPCs for the Alamo and Whitewater river estuaries vary by more than one order of magnitude (Table G-9), which accounts for the differences in the maximum consumption rates (109 versus 9, respectively) for these two habitats. Maximum fish consumption rates for the alternatives typically were greater than 15 meals per month for an adult, with the exception of the slightly lower rates associated with the Marine Sea habitats of Alternatives 5, 6, and 67 (10 ~~and to~~ 13 meals per month, ~~respectively~~).

Table G-9; pages G-16 and G-17:

Table G-9
Maximum Safe Fish Consumption Rates Based on Selenium Exposure Point Concentrations (EPC) For Salton Sea Restoration Alternatives and Habitats

Alternative/Habitat	Fillet Tissue Concentration – Selenium (mg/kg ww)	Maximum Fish Consumption Rate – Adult (g/week)	Maximum Fish Consumption Rate – Child (g/week)	Maximum Meals per Month – Adult	Maximum Meals per Month – Child
Existing Conditions					
Salton Sea – Open Water	2.11	1,161	249	22.2	6.3
Salton Sea – Shoreline and Shallow Water	1.99	1,231	264	23.6	6.7
Estuary – Alamo River	3.4	721	154	13.8	3.9
Estuary – New River	2.91	842	180	16.1	4.6
Estuary – Whitewater River	1.25	1,960	420	37.5	10.6
Freshwater Marsh	1.38	1,775	380	34.0	9.6
No Action Alternative – CEQA Conditions					
Estuary – Alamo River	0.36	6,806	1,458	130.3	36.8
Estuary – New River	0.72	3,403	729	65.1	18.4
Estuary – Whitewater River	3.07	798	171	15.3	4.3
No Action Alternative – Variability Conditions					
Estuary – Alamo River	0.43	5,698	1,221	109.1	30.8
Estuary – New River	1.02	2,402	515	46.0	13.0
Estuary – Whitewater River	5.25	467	100	8.9	2.5
Alternative 1 – Saline Habitat Complex I					
Saline Habitat Complex-South	1.11	2,207	473	42.3	11.9
Saline Habitat Complex-West	1.34	1,828	392	35.0	9.9
Alternative 2 – Saline Habitat Complex II					
Saline Habitat Complex-North	3.03	809	173	15.5	4.4
Saline Habitat Complex-South	1.19	2,059	441	39.4	11.1
Saline Habitat Complex-West	1.93	1,269	272	24.3	6.9
Alternative 3 – Concentric Rings					
First Ring	2.14	1,145	245	35.0 21.9	6.2
Second Ring	1.98	1,238	265	37.9 23.7	6.7

**Table G-9
Maximum Safe Fish Consumption Rates Based on Selenium Exposure Point Concentrations (EPC) For Salton Sea
Restoration Alternatives and Habitats**

Alternative/Habitat	Fillet Tissue Concentration – Selenium (mg/kg ww)	Maximum Fish Consumption Rate – Adult (g/week)	Maximum Fish Consumption Rate – Child (g/week)	Maximum Meals per Month – Adult	Maximum Meals per Month – Child
Alternative 4 – Concentric Lakes					
First Lake	1.99	1,231	264	37.7 <u>23.6</u>	6.7
Second Lake	1.66	1,476	316	45.2 <u>28.3</u>	8.0
Third Lake	2.57	953	204	29.2 <u>18.2</u>	5.2
Fourth Lake	3.07	798	171	24.4 <u>15.3</u>	4.3
Alternative 5 – North Sea					
Marine Sea	4.69	522	112	10.0	2.8
Saline Habitat Complex	1.23	1,992	427	38.1	10.8
Alternative 6 – North Sea Combined					
Marine Sea	3.70	662	142	12.7	3.6
Saline Habitat Complex	1.13	2,168	465	41.5	11.7
Alternative 7 – Combined North and South Lakes*					
Marine Sea	3.85	636.3	137	19.5 <u>12.2</u>	3.4
Saline Habitat Complex – East	0.70	3,500	750	107.1 <u>67.0</u>	18.9
Saline Habitat Complex – North	2.40	1,021	219	31.3 <u>19.5</u>	5.5
IID Freshwater Reservoir	0.69	3,550	761	108.7 <u>68.0</u>	19.2
Alternative 8 – South Sea Combined					
Marine Sea	1.68	1,458	312	27.9	7.9
Saline Habitat Complex	2.18	1,124	241	21.5	6.1

Notes:

* The habitat designations are as described in Appendix F.

Rates are based on an oral RfD of 0.005 mg/kg-day and body weights of 70 kg and 15 kg for adults and children, respectively.

Maximum meals per month based on meal sizes of 227 grams (8 ounces) for an adult and 172 grams (6 ounces) for a child.

mg/kg ww = milligrams per kilogram wet weight; g/week = grams per week

Waterfowl Consumption Rates, third paragraph; page G-19:

For the Existing Conditions, adults could consume from 23 to more than 60 meals per month of duck muscle from different habitats within the Salton Sea without exceeding the maximum consumption rates based on selenium exposures. Children who consume more than about 10 meals per month may be exposed to health risks above target levels. For the No Action Alternative, maximum consumption rates range from about 14 to more than 100 meals per month for an adult and from 6 to more than 40 meals per month for a child. Similar to safe consumption rates estimated for fish, these large ranges in safe consumption rates for ducks are due to the high variability among the individual habitat types in the duck diet EPCs, which are, in turn, proportional to the sediment EPCs. Maximum duck meal consumption rates for the alternatives typically were greater than 20 meals per month for an adult, with the exception of the slightly lower rates associated with the Marine Sea habitats of Alternatives 5, 6, and ~~6~~7 (16 ~~and~~ to 19 meals per month; ~~respectively~~). Maximum safe consumption rates for children ranged from about 6 to more than 30 meals per month for various alternative and habitat combinations

Table G-12; pages G-20 and G-21:

Table G-12
Maximum Safe Duck Consumption Rates Based on Selenium Exposure Point Concentrations (EPC) For Salton Sea Restoration Alternatives and Habitats

Alternative/Habitat	Duck Tissue Concentration – Selenium (mg/kg ww)	Maximum Duck Consumption Rate – Adult (g/week)	Maximum Duck Consumption Rate – Child (g/week)	Maximum Meals per Month – Adult	Maximum Meals per Month – Child
Existing Conditions					
Salton Sea – Shoreline and Shallow Water	2.77	884	190	23.3	10.0
Estuary – Alamo River	2.79	878	188	23.1	9.9
Estuary – New River	1.03	2,379	510	62.6	26.8
Estuary – Whitewater River	2.22	1,104	236	29.1	12.5
Freshwater Marsh	1.54	1,591	341	41.9	18.0
No Action Alternative – CEQA Conditions					
Salton Sea – Shoreline and Shallow Water	1.96	1,250	268	32.9	14.1
Estuary – Alamo River	0.57	4,298	921	113.2	48.5
Estuary – New River	0.90	2,722	583	71.7	30.7
Estuary – Whitewater River	2.83	886	186	22.8	9.8
No Action Alternative – Variability Conditions					
Salton Sea – Shoreline and Shallow Water	2.35	1,043	223	27.5	11.8
Estuary – Alamo River	0.63	3,889	833	102.4	43.9
Estuary – New River	1.17	2,094	449	55.1	23.6
Estuary – Whitewater River	4.51	543	116	14.3	6.1
Alternative 1 – Saline Habitat Complex I					
Saline Habitat Complex – South	1.25	1,960	420	51.6	22.1
Saline Habitat Complex – West	1.44	1,701	365	44.8	19.2
Alternative 2 – Saline Habitat Complex II					
Saline Habitat Complex – North	2.80	875	188	23.0	9.9
Saline Habitat Complex – South	1.32	1,856	398	48.9	20.9
Saline Habitat Complex – West	1.93	1,269	272	33.4	14.3
Alternative 3 – Concentric Rings					
First Ring	2.09	1,173	251	350.9	13.2
Second Ring	1.97	1,244	267	3842.8	14.0

Table G-12
Maximum Safe Duck Consumption Rates Based on Selenium Exposure Point Concentrations (EPC) For Salton Sea Restoration Alternatives and Habitats

Alternative/Habitat	Duck Tissue Concentration – Selenium (mg/kg ww)	Maximum Duck Consumption Rate – Adult (g/week)	Maximum Duck Consumption Rate – Child (g/week)	Maximum Meals per Month – Adult	Maximum Meals per Month – Child
Alternative 4 – Concentric Lakes					
First Lake	1.98	1,238	265	37.9 <u>2.6</u>	14.0
Second Lake	1.70	1,441	309	44.1 <u>38.0</u>	16.3
Third Lake	2.43	1,008	216	30.9 <u>26.6</u>	11.4
Fourth Lake	2.83	866	186	26.5 <u>2.8</u>	9.8
Alternative 5 – North Sea					
Marine Sea	4.08	600	129	15.8	6.8
Saline Habitat Complex	1.35	1,815	389	47.8	20.5
Alternative 6 – North Sea Combined					
Marine Sea	3.32	738	158	19.4	8.3
Saline Habitat Complex	1.26	1,944	417	51.2	21.9
Alternative 7 – Combined North and South Lakes^b					
Marine Sea	3.44	712	153	21 <u>18.8</u>	8.0
Saline Habitat Complex – East	0.89	2,753	590	84.3 <u>72.5</u>	31.1
Saline Habitat Complex – North	2.30	1,065	228	32.6 <u>28.1</u>	12.0
IID Freshwater Reservoir	0.87	2,816	603	86 <u>74.2</u>	31.8
Alternative 8 – South Sea Combined					
Marine Sea	1.72	1,424	305	37.5	16.1
Saline Habitat Complex	2.13	1,150	246	30.3	13.0

Notes:

^a All exposure point concentrations are for selenium.

^b The habitat designations are as described in Appendix F.

Rates are based on an oral RfD of+ 0.005 mg/kg-day and body weights of 70 kg and 15 kg for adults and children, respectively.

Maximum meals per month based on meal sizes of 180 grams (6 ounces) for an adult and 82.5 grams (2.9 ounces) for a child.

mg/kg ww = milligrams per kilogram wet weight; g/week = grams per week

Table G-13, last row; page G-23:

Adult consumption of fish muscle tissue – Project Alternatives #1 – 8 (see Table G-9)	522 to 3,550	10 to 40 68	This evaluation
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Appendix H

Following Preparation of the Ecosystem Restoration Study; page H-4:

MOST COST-EFFECTIVE, TECHNICALLY FEASIBLE ALTERNATIVE

Fish and Game Code Section 2081.7 states that the evaluation of alternatives in the Salton Sea Ecosystem Restoration Study shall include “at least one most cost-effective, technically feasible, alternative.” This section describes the most cost-effective, technically feasible, alternative and the criteria for selecting this alternative. This information has been included in the ecosystem restoration study pursuant to Fish and Game Code Section 2081.7. For the purpose of this analysis, most the term “most cost-effective” was defined as least cost because quantifying monetary benefits of restoration would be difficult at the current programmatic level of analysis. All of the alternatives are technically feasible.

The State determined based on the evaluation of the eight alternatives that two of the alternatives meet the most cost-effective, technically feasible alternative criteria, Alternative 2 (Saline Habitat Complex II) and Alternative 5 (North Sea). These alternatives were identified from among the other alternatives, all of which meet the program’s legislative mandate of providing the maximum feasible attainment of the following objectives: (1) 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; (2) elimination of air quality impacts from the restoration projects; and (3) protection of water quality.”

As part of the process to determine the Preferred Alternative, the Salton Sea Advisory Committee’s Habitat Working Group determined that the Saline Habitat Complex was the component that provided the most ecosystem benefits. The Saline Habitat Complex provided diversity of fish and wildlife similar to existing conditions. However, a Marine Sea could provide greater diversity of fish and wildlife similar to historical conditions. The Salton Sea Advisory Committee’s Air Quality Working Group determined that meeting the legislation’s air quality objectives was a high priority.

Based on this information, Alternative 2 was identified as the most cost-effective, technically feasible alternative because it include the largest amount of Saline Habitat Complex. The Saline Habitat Complex would provide levels similar to the diversity of fish and wildlife that currently exist at the Salton Sea. Alternative 2 would achieve this level to a greater extent than Alternative 1. Additionally, Alternative 2 would be the most cost-effective alternative that best meets all of the legislative objectives. Although the construction and operations and maintenance costs of Alternative 4 as analyzed in the Draft PEIR would be less than those of Alternative 2, additional air quality measures would need to be added to Alternative 4 to fully meet the legislative objectives. This would increase the costs of Alternative 4, and therefore, Alternative 4 would likely be

more costly than Alternative 2. Alternatives 3, 5, 6, 7, and 8 meet the legislative objectives to varying degrees, but are not as cost-effective.

Although Alternative 2 would provide diversity of fish and wildlife at levels similar to those that currently exist at the Salton Sea, Alternative 2 may not fully meet the legislative objective “historic levels and diversity of fish and wildlife” because it does not contain a marine waterbody as has historically existed at the Salton Sea. The most cost-effective, technically feasible alternative that best meets this objective is Alternative 5. Alternative 5 includes a Marine Sea that would provide habitat for a diverse fishery that would support fish-eating birds. Alternative 5 is the most cost-effective of the alternatives that include a Marine Sea. Due to water quality impacts identified in the Draft PEIR (including the potential for hydrogen sulfide generation), the Marine Sea depth in Alternative 5 may need to be reduced to less than 13 meters.

While the most cost-effective, technically feasible alternatives were identified during development of the Preferred Alternative, the most cost-effective, technically feasible alternatives were not selected as the Preferred Alternative. The selection criteria for the Preferred Alternative not only included the legislative objectives, but also included additional criteria based on input from the Salton Sea Advisory Committee and public. These criteria included providing Saline Habitat Complex and Marine Sea habitat along the northern shoreline, a Marine Sea area near existing communities and recreational areas, a Marine Sea along the southern shoreline for recreation, and areas for geothermal generation development.

Appendix H-1

Habitat Components of the Salton Sea Ecosystem Restoration, second paragraph; page H1-1:

This appendix provides information on the historical context and need for restoration, and information on fish and wildlife species found at the Salton Sea. This appendix also identifies possible habitat components that could comprise a restored Salton Sea ecosystem, including the physical and biological requirements needed to support fish and wildlife dependent on the Salton Sea. These components were developed in consideration of ~~the realities of~~ projected water supply availability and the feasibility of the infrastructure needed to maintain habitat values over the long term. Development of the habitat components represents collaboration between biology and engineering, in which multiple conceptual designs were reviewed, modified, and refined. Input also was provided by representatives of the Salton Sea Advisory Committee and scientists with expertise related to the Salton Sea.

Figure H1-11, Conceptual Layout of Type 1, 2, and 3 Saline Habitat Complex Cells; page H1-43:

Revised figure is on the following page.

Appendix H-2

Table of Contents, List of Figures, Item H2-9; page H2-v:

H2-9 Estimated Historic Salt ~~Le~~ogads to the Salton Sea H2-29

Inflows from Mexico, subsection Alamo River, first paragraph; page H2-10:

Flows in the Alamo River at the United States-Mexico border are primarily the result of drainage [water](#) from irrigated agriculture~~at~~ in the Mexicali Valley. Pursuant to an agreement between the United States and Mexico, a weir was constructed in 1997 on the Alamo River in Mexico, about 100 feet upstream of the United States-Mexico border with the intent of preventing dry weather flows from Mexico from flowing into the United States. Although the weir is currently in place, lack of operation and maintenance of drainage channels upstream has caused the water to continue to flow into the United States (CRBRWQCB, 2001). Alamo River flows at the United States-Mexico border have been estimated by IID (2002 and 2003a), but details regarding the methods and sources are not included in those documents. The United States [Section of the International Boundary and Water Commission \(USIBWC\)](#) reports that flows from 1949 to 1992 were estimated based on historical daily measurements of gage height at the Cipolletti weir and rating curves developed from monthly current meter measurements. From 1992 to the present, continuous gage height recordings and daily discharge measurements are available from IID (USIBWC, 2002). The data provided by IID have been adopted for use in this analysis. Average flow in the Alamo River at the United States-Mexico border is 1,646 acre-feet/year with a minimum and maximum of 324 and 2,274 acre-feet/year, respectively.

Range of Future Evaporation, new second paragraph; page H2-83:

[High salinity in the Brine Sink will decrease the rate of evaporation. An evaporation-salinity relationship was incorporated into the hydrologic modeling and is discussed in detail in Appendix H-2, Attachment 1.](#)

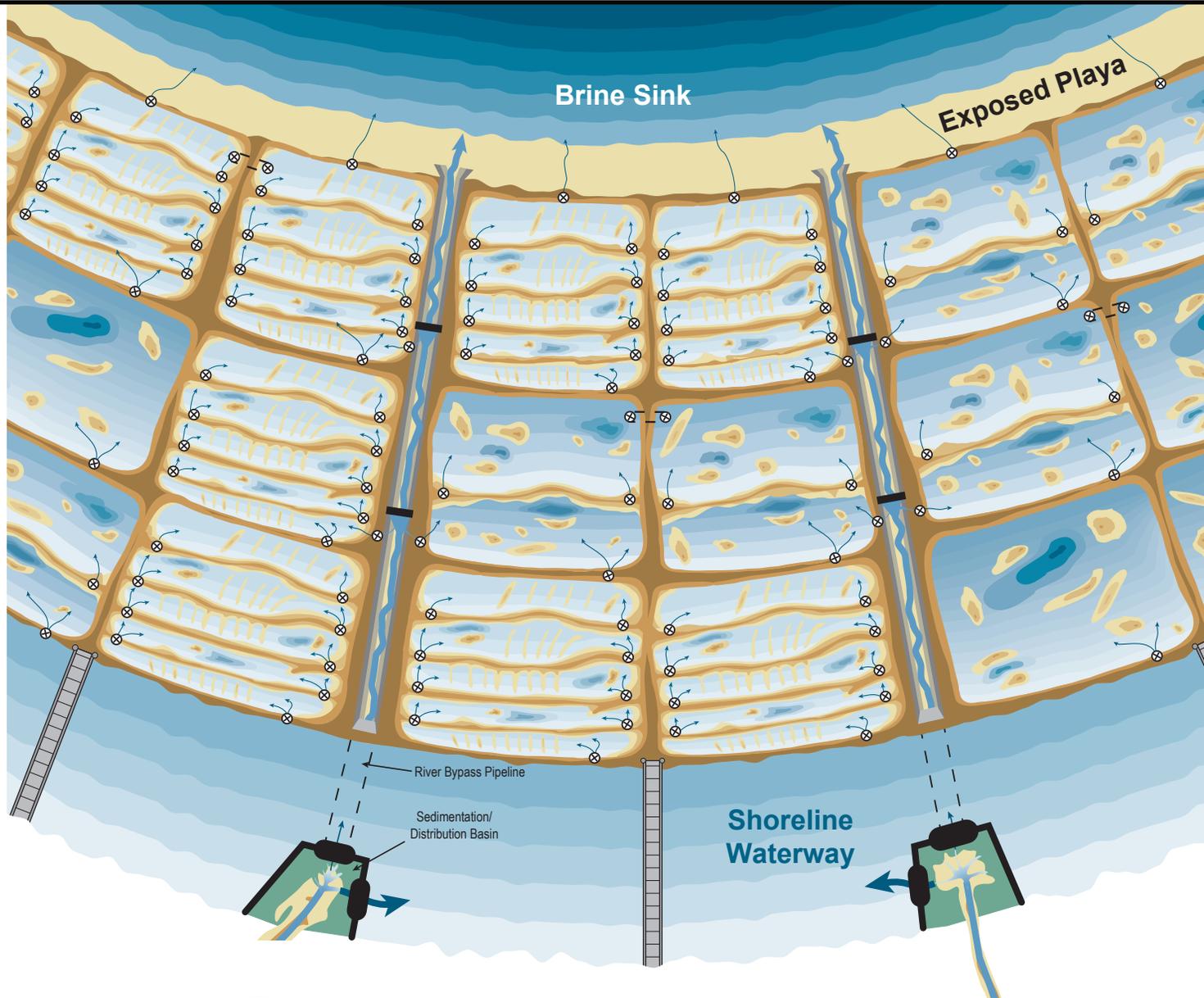
References, fifth listing; page H2-112:

United States [Section of the International Boundary and Water Commission](#). 2002.
Western Water Bulletin 2002.

Appendix H-2, Attachment 1

Results of the Model Situations, subsection Alternative 4 – Concentric Lakes, first paragraph; page H2-1-42:

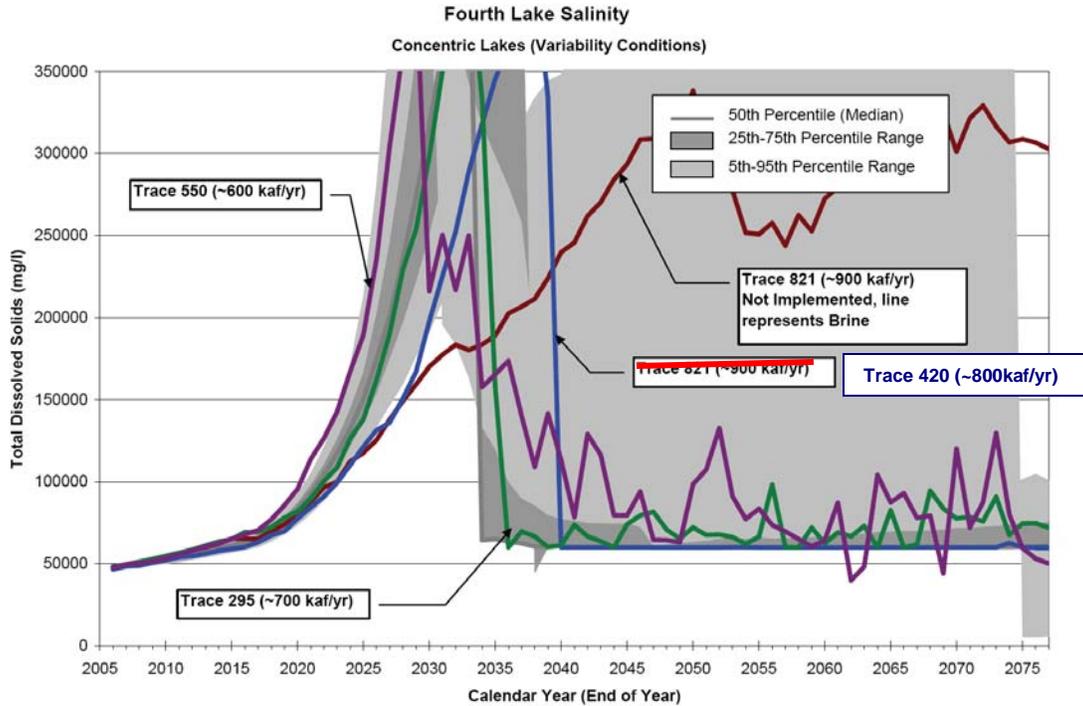
In Alternative 4, the first Berm was assumed to be completed as early as 2016, but the water surface elevation was required to decline to -235 feet msl before full operations. The First Lake could stabilize at the an elevation of -230 feet msl by 2016, the Second Lake could stabilize at -240 feet msl by 2019, the Third Lake could stabilize at -255 feet msl by 2026, and the Fourth Lake could stabilize at -260~~5~~ feet msl by 2040, as shown in Figure H2-1-17. Under many hydrologic scenarios, however, the Fourth Lake would not be constructed due to the high elevation of the Brine Sink and the possibility of inundation. The salinity targets could be achieved within one year of achieving the elevation targets, as shown in Figure H2-1-18.



**FIGURE H1-11
CONCEPTUAL LAYOUT OF TYPE 1, 2, AND 3
SALINE HABITAT COMPLEX CELLS**

Appendix H-2, Attachment 2

SALSA Model Results - Fourth Lake Salinity for Alternative 4 – Concentric Lakes, page 1:



Appendix H-4

Table of Contents; page H4-iii:

Prior Studies.....	H4-3
Workshops.....	H4-3
Prior Conceptual Designs	H4-4
Geotube®	H4-5
Construction and Performance Challenges	H4-5
Liquefaction of Foundation Soils	H4-6
Cost of Ownership.....	H4-6
Foundation Investigations.....	H4-6
California Department of Water Resources, Division Of Safety of Dams Peer Review of Bureau of Reclamation Appraisal Level Design	H4-8

Executive Summary, third paragraph; page H4-1:

The Sea Bed deposits consist predominantly of low strength clay. This unfavorable foundation condition, coupled with the high level of input ground motions, requires typical upstream and downstream slope inclinations of 10 to 1 and 15 to 1, respectively, for barriers. This conceptual cross-section is considered appropriate due to the weak foundation layers and the very limited geotechnical data at the Salton Sea. If a preferred restoration alternative involving a barrier is selected, additional investigations will be

needed along any proposed barrier alignment. [The investigations should also focus on assessing the liquefaction potential of the foundation soils and its extent.](#) It is anticipated that future investigations and analyses may be able to economize on the necessary fill volumes. The design slope inclinations assume the greatest differential between water surface elevations possible.

Executive Summary, sixth paragraph; page H4-1:

To achieve these performance characteristics, a rockfill having a maximum particle size in the 4-5 foot diameter range is required for barriers in excess of 25 feet in height. Larger size rocks could be placed on the upstream slope to resist wave action. It is anticipated that some restoration alternatives may require a quantity of rock in the range of ~~65~~ up to ~~75~~ [100](#) million cubic yards.

Executive Summary, eighth paragraph; page H4-2:

In addition, the Salton Sea Authority, in coordination with the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) is currently developing a reconnaissance level investigation of Coolidge Mountain, ~~which is near~~ [located closer](#) to the Salton Sea. The results will likely not be completed in time to be incorporated into this document; however, if found suitable, this location could provide a relatively economical source of rockfill to construct in-sea barriers because of its proximity to the Salton Sea.

Liquefaction of Foundation Soils, entire subsection; page H4-6:

Liquefaction of Foundation Soils

~~The liquefaction potential of the foundation for the Perimeter Dikes is a concern. This is a concern under any alternative involving construction of structures on the Sea Bed. Liquefaction mitigation measures are available such as replacement of soil and dynamic compaction.~~

Foundation Investigations, paragraph before Table H4-1; page H4-7:

The subsurface investigation initiated in September 2003 [was](#) used to supplement the above information. The September 2003 investigation consisted of 11 boring and 17 Cone Penetration Tests, with locations as shown in Table H4-1.

Foundation Investigations, list item 1; page H4-7:

1. The first layer, Sea Bed deposits, is comprised of recently deposited very soft to loose highly plastic clays to silty fine sands. The thickness of this layer ranged from 0 to 21 feet, with the greatest thickness occurring in the southern and mid-Sea areas. (It is noted that throughout ~~this~~ the PEIR and this appendix, the term “Sea Bed” is used to describe the existing bottom elevation of the Salton Sea, while the term Sea Bed deposits is used to described the first 21 feet of soils below the existing bottom elevation).

California Department of Water Resources, Division of Safety of Dams, entire section;
page H4-8:

~~California Department of Water Resources, Division of Safety of Dams Peer Review of Bureau of Reclamation Appraisal Level Design~~

~~Under Public Law 108-361, the Secretary of the Interior was required to complete a feasibility study on a preferred alternative for Salton Sea restoration. In October 2005, the DWR Division of Safety of Dams (DSOD) performed a peer review of Reclamation's 2005 Salton Sea Restoration Project Feasibility Study, Phase 1 (DWR, 2005). The review was focused on the need to treat the foundation for dams and barriers constructed within the Salton Sea. The conclusions gained from this peer review included:~~

- ~~• Reclamation's appraisal level design exceeds DSOD's design standards and is judged to attain a high level of performance under all severe loading conditions.~~
- ~~• In the case of jurisdictional impoundments for the restoration alternatives, the risk of life and property downstream of a dam is determined to be minimal.~~
- ~~• Considering the limited amount of subsurface data compared to the size of the Salton Sea, Reclamation assessment that liquefiable materials are present everywhere within the Salton Sea's footprint is judged to be conservative.~~

~~DSOD's design criteria to meet minimum factors of safety and to have sufficient freeboard can be met by utilizing slopes that are appropriately inclined, treating the foundation, or a combination of both.~~

Table H4-8, table note; page H4-22:

- * See Figure H54-2 for locations of 'A' & 'B'.

Selected Ground Motions, third paragraph; page H4-79:

This suite of motions includes five consistent pairs of fault normal and fault parallel components (i.e., each pair are orthogonal components of the same motion that have been rotated to their fault normal and fault parallel directions). The two pairs of synthetic ground motions developed by [Somerville non-DWR personnel](#) (2003) ~~were~~ are also intended to represent orthogonal components of the same motion, although they have the appearance of being more independent than many natural recordings.

Selected Ground Motions, fourth through sixth bulleted items; page H4-80:

- R1300 / R1390: Modified synthetic records selected from a suite ~~developed by Paul Somerville~~ using fault rupture modeling (hybrid Green's function method).
- R1500 / R1590: Modified synthetic records selected from a suite ~~developed by Paul Somerville~~ using fault rupture modeling (hybrid Green's function method).
- S1021m: Modified synthetic record selected from a suite ~~developed by Walt Silva as reported by Wong (2004)~~ using fault rupture modeling (stochastic finite-fault ground motion model).

Selected Ground Motions, final paragraph; page H4-80:

As shown in Table H4-12, the selected ground motions prior to modification cover a range in directivity conditions. Most of the motions appear to represent a significant length of fault rupture toward the site from 42 km to 335 km, with the two sets of synthetic records ~~developed by Somerville~~ [\(R1300/R1390 and R1500/R1590\)](#) modeling the greatest distance (240 km and 335 km). Each of these motions represents a different fault rupture scenario and each must, in some sense, be considered independently. It should be noted that the R1300/R1390 motion has a non-physical character and should not be used for any future study.

Spectral Matching of Ground Motions, second paragraph; page H4-80:

Although simple, uniform scaling can lead to records that significantly exceed the response spectrum or are unacceptably deficient over extensive ranges in frequency. This problem seems to worsen for records with pronounced directivity effects or for target spectra representing large magnitude earthquakes at near field locations. To address this concern, non-stationary spectral matching was used to adjust the earthquake records developed for the eastern shore using the computer program RSPMATCH (Abrahamson, 1998). This program modifies the acceleration history in the time domain by adding wavelets at appropriate times and of suitable magnitudes and frequencies. This method is a significant improvement over frequency domain approaches as it tends to preserve the character of the original motion when properly applied.

Table H4-12; page H4-81:

Table H4-12
Summary of Selected Ground Motions Prior to Modification

<i>Description of Original Unscaled Records from Strike-Slip Events or Simulations</i>												
Name	Earthquake Name	Mw	Rupture Distance (km)	Epicentral Distance (km)	Rupture Length (km)	Length Ratio X ¹	Site Type	Orientation to Fault	Source of Record ²	PGA (g)	PGV (m/s)	Dur. D ₅₋₉₅ (sec)
PS10FN	2002 Denali	7.9	3	88	> 340	0.25	Holocene gravel	Normal	USGS	0.29	1.15	26.3
PS10FP								Parallel		0.32	1.51	25.3
LUC51FN	1992 Landers	7.3	2	42	85	0.5	6m Dec. Granite	Normal	GOSMOS	0.74	1.11	13.2
LUC321FP								Parallel		0.72	1.10	13.8
ELC53FN	1940 El Centro	6.9	8.3	--	> 40	0.15	> 300m alluvium	Normal	PEER	0.21	0.23	24.1
ELC143FP								Parallel		0.29	0.38	23.9
R1590FN	Synthetic	8.2	5	240	470	0.5	soft rock	Normal	Somerville	0.56	2.18	50.1
R1500FP								Parallel		0.35	1.05	39.6
R1390FN	Synthetic	8.2	5	335	470	0.7	soft rock	Normal	Somerville	0.96	2.13	78.1
R1300FP								Parallel		0.77	0.93	65.4
S1021M	Synthetic	8	7.5	--	576	--	soil	Normal ?	Silva	0.47	0.93	73.0
SIM8	Synthetic	8	--	--	--	--	soft rock ?	Parallel ?	Seed/Driss	0.42	0.39	37.6

Notes:

¹ Length ratio is the fault length that ruptures towards the site divided by the total rupture length.

X=1.0 indicates full forward directivity, X=0.0 indicates full backward directivity.

X for 1940 El Centro taken from Somerville et al (1997). Otherwise, values estimated from reported distances.

² Source of record before rotation or other modification.

Ground Motions for Preliminary and Final Barrier Design, third bulleted item; page H4-82:

- Additional efforts may identify records that are more appropriate for the Salton Sea site. Specific concerns related to this site can be addressed, such as basin effects and the potential for fling movements. Refinements to the spectral matching may be desirable. [The R1300/R1390 pair of ground motions should be removed from future consideration.](#)

Displacement and Yield Acceleration, new final paragraph; page H4-83:

[These initial estimates of yield acceleration versus displacement are considered approximate. These estimates do not include the effects of site specific response, the depth of failure surface, and the change in acceleration history with depth. Future studies should include site response analysis.](#)

Rock Quarry Investigation, fourth paragraph; page H-4-114:

A third task order, Quarry Field Exploration, dated April 21, 2005 was issued to carry out a field investigation of both sites. The permitting process has been initiated with the Bureau of Indian Affairs to conduct field work at Coolidge Mountain on the Tribal Lands of Torres Martinez Desert Cahuilla Indians. However, the permitting process has been stalled to date because of environmental issues. More recently, the Salton Sea Authority, in coordination with the USBR, is currently developing a reconnaissance level investigation of the Coolidge Mountain. The results will likely not be completed in time to be incorporated into this document. But, if found suitable, this location ~~w~~could provide a relatively economical source of rockfill to construct in-Sea embankments because of its proximity to the sea.

Summary and Conclusion, second bulleted item; page H4-120:

- [California](#) Division of Safety of Dams Guidelines;

References, fifth listing; page H4-123:

Nicolon, Ten Cate. 2005. Miratech. Personal communication with ~~Thang D. Nguyen~~ [John Vrymoed](#), DWR. February.

Appendix H-6

Pipelines, first paragraph; page H6-24:

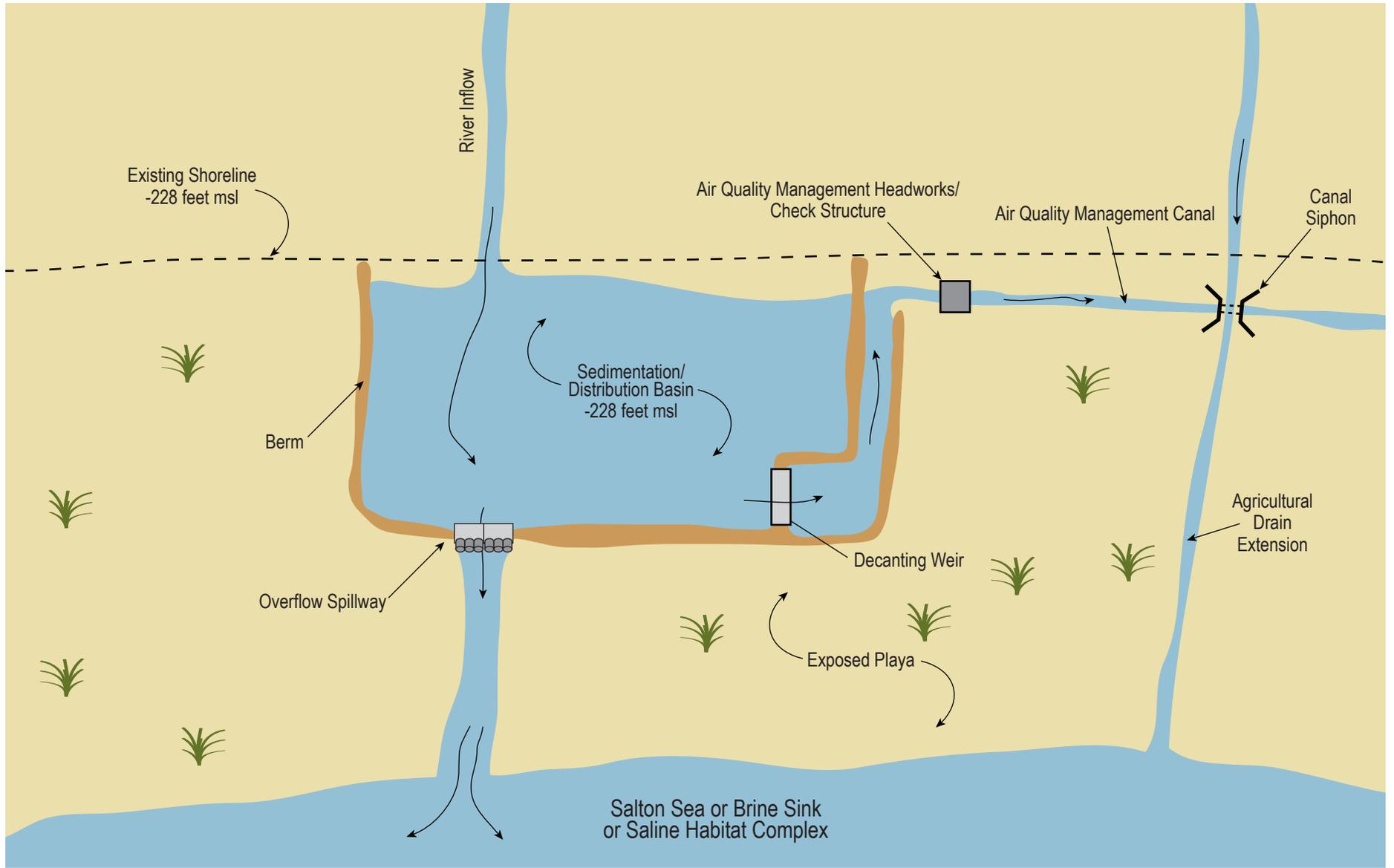
River Bypass pipelines would be used when the extensions of the rivers must cross under ~~a Shoreline Waterway~~, a Concentric Ring, Concentric Lake, or other canals, or when fresher inflows need to be conveyed to lower areas in the Sea Bed without being mixed with other water bodies.

Figure H6-11, Sedimentation/Distribution Basin for No Action Alternative and Alternative 1; page H6-43:

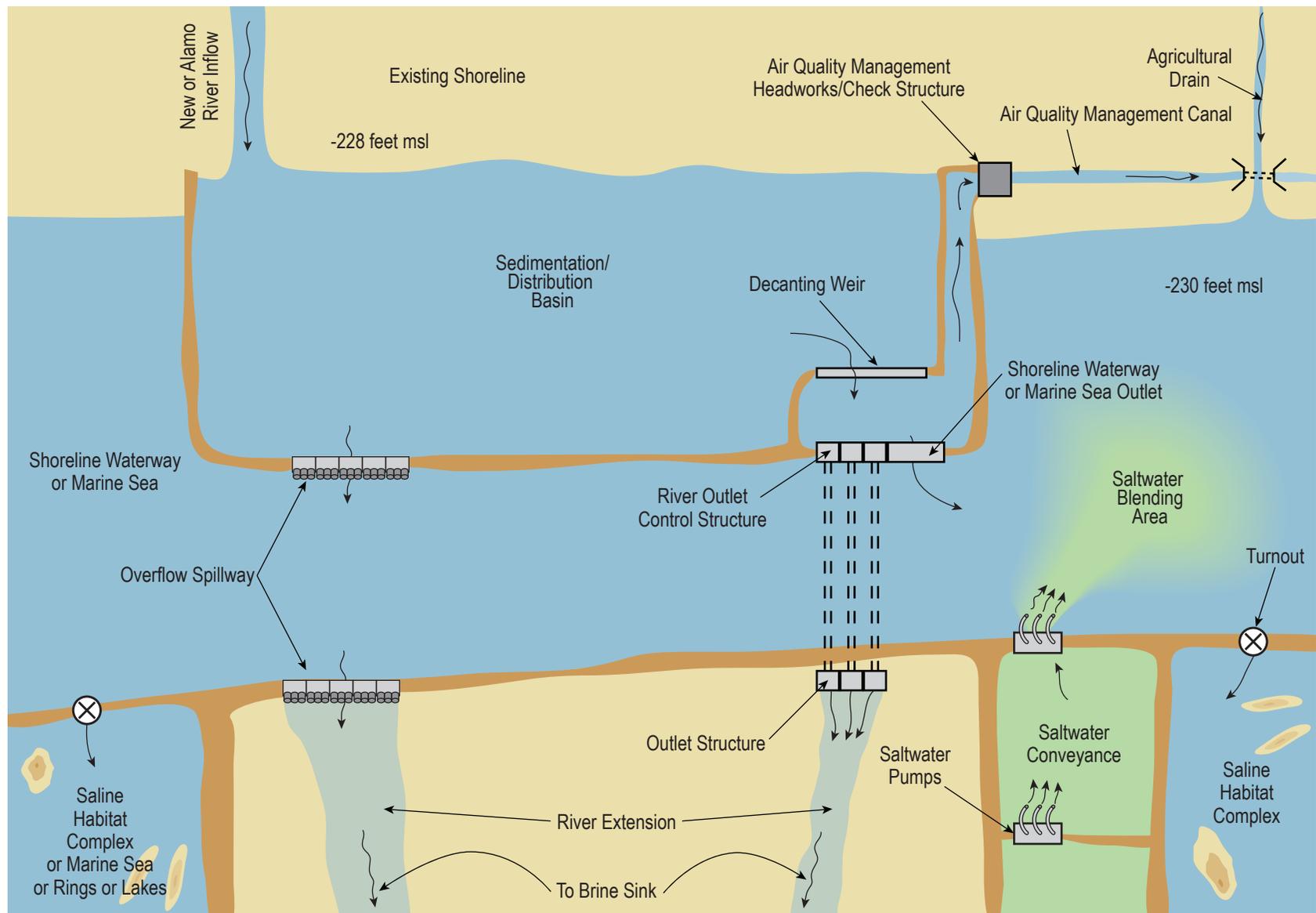
Revised figure is on the following page.

Figure H6-12, Sedimentation/Distribution Basin for Alternatives 2, 3, 4, 5, and 8; page H6-45:

Revised figure is on the following pages.



**FIGURE H6-11
 SEDIMENTATION/DISTRIBUTION
 BASIN FOR NO ACTION ALTERNATIVE
 AND ALTERNATIVE 1**



**FIGURE H6-12
SEDIMENTATION/DISTRIBUTION BASIN FOR
ALTERNATIVES 2, 3, 4, 5, AND 8**

Geotube® Berms, first paragraph; page H6-58:

Alternative 4, as defined by the Imperial Group, includes the use of Geotube® Berms, as described in Appendix I. The Geotube® Berm would be a sediment filled, 60-foot circumference high strength geotextile fabric tube, placed on the Sea Bed to form a water retaining levee embankment. A [high-strength geotextile \(or geogrid\)](#) material would be placed on the Sea Bed under the Geotube® Berm to provide adequate foundation for the Geotube®. The Geotube® would be filled with dredged sediments at the Barrier site in wet conditions. After filling, the entire Geotube® would be covered with an earthfill material from the Sea Bed and protected with rock slope protection.

Table H6-5, Estimated Energy Requirements for Alternatives; page H6-69:

	No Action Alternative - CEQA Conditions	No Action Alternative - Variability Conditions	(1) Saline Habitat I Alternative	(2) Saline Habitat Complex II Alternative	(3) Concentric Rings Alternative	(4) Concentric Lakes Alternative	(5) North Sea Alternative	(6) North Sea Combined Alternative	(7) Combined North and South Lakes	(8) South Sea Combined Alternative
Average transmission line capacity needs (Megawatts)	1.1	1.1	1.8	2.1	3.1	0.9 0.09	2.9	3.4	5.0	3.4

Special Construction Methods, second paragraph; page H6-70:

Many facilities would be constructed by using traditional construction methods and equipment. Most of the canals, pumping plants, pipelines, concrete structures, Air Quality Management facilities and habitat areas would not require special construction methods or equipment. However, construction of the Barriers and the larger canals would likely benefit from use of special construction methods and equipment. Production estimates used in developing construction schedules in the PEIR were based on 30,000,000 tons of embankment material in a Barrier with the unit weight about 1.68 tons/cubic yard (e.g., typical for Eagle Mountain Mine waste rock). To complete the Barriers as soon as possible, it was assumed that Barrier construction would occur 24 hours/day for 7 days/week for 47 years. However, final permit conditions may not allow this level of construction activity due to community disruption, Air Quality Management permitting, or high winds that would significantly limit the ability of barges to conduct operations. For purposes of this analysis, an aggressive schedule was assumed to estimate worst case impacts to air quality and equipment needs.

Appendix H-7

Table H7-1, table head; pages H7-4 and H7-5:

Table H7-1
Comparison of Infrastructure Features in Alternatives

Component	Alternatives									
	No Action Alternative - CEQA Conditions	No Action Alternative - Variability Conditions	Alternative 1 Saline Habitat I Complex Complex	Alternative 2 Saline Habitat Complex II	Alternative 3 Concentric Rings	Alternative 4 Concentric Lakes	Alternative 5 North Sea	Alternative 6 North Sea Combined	Alternative 7 Combined North and South Lakes	Alternative 8 South Sea Combined

Table H7-2, Note; page H7-7:

Add the following note:

Due to rounding of elevation values to the nearest foot, different acreage values are shown for the same elevation values.

Table H7-6; page H7-62:

**Table H7-6
Location of Open Water in Lakes under Alternative 4**

Phase (Year) to be Implemented	Sea Bed Elevation	Open Water (acres)				
		North Shoreline	West Shoreline	East Shoreline	South Shoreline	Total
Phase I (constructed by 2016)	-230 to -234 <u>-236</u> feet msl	-	-	-	7,000	7,000
Phase I (constructed by 2016)	-240 to -246 feet msl	21,000				21,000
Phase II (constructed by 2028)	-255 to -261 feet msl	20,000				20,000
Phase III (constructed by 2028)	-240 to -250 <u>-265 to -271</u> feet msl	40,000				40,000
Total						88,000

Construction and Operations under Phases I through IV, second paragraph; page H7-63:

Add the following note:

Construction and Operations under Phases I through IV

During Phase I, the First and Second lakes would be constructed as the water recedes. The Second Lake would remain submerged in the Brine Sink until Phase II. Operations and maintenance and monitoring activities would be initiated following construction of the initial components. During Phase II, the ~~Second and~~ Third and Fourth lakes would be constructed as the water recedes. The Fourth Lake would remain submerged in the Brine Sink until Phase III. Operations and maintenance and monitoring activities would be initiated following construction of the initial components. During Phase III, the ~~Fourth Lake and~~ Brine Interconnecting Canal between would be constructed. Operations and maintenance, and monitoring activities would be initiated following construction of the initial components. During Phase IV, operations and maintenance would continue for all facilities.

CHAPTER 3

Description of the Preferred Alternative

CHAPTER 3

DESCRIPTION OF THE PREFERRED ALTERNATIVE

In accordance with the legislation, the Secretary for Resources must recommend a Preferred Alternative to the California Legislature. The Preferred Alternative was developed based upon recommendations by the Salton Sea Advisory Committee and public input on alternatives considered in the Draft Programmatic Environmental Impact Report (Draft PEIR). This chapter describes that process and the Preferred Alternative.

METHODOLOGY TO RECOMMEND THE PREFERRED ALTERNATIVE

The Draft PEIR included an evaluation of a range of alternatives that addressed the restoration objectives. The results were compared to Existing Conditions and projected conditions for the No Action Alternative in the Draft PEIR.

Fish and Game Code Section 2081.7 requires the Resources Agency to consult with the Salton Sea Advisory Committee throughout all stages of the alternative selection process, including development of the Preferred Alternative recommendation. During the review period of the Draft PEIR and following receipt of comments from the public review, the Salton Sea Advisory Committee and the associated Working Groups conducted several meetings to discuss the benefits and impacts of the range of alternatives and define criteria for the selection of the Preferred Alternative. This process and the results are described below in the section “Salton Sea Advisory Committee Recommendations.”

Summary of Alternatives Considered in Draft PEIR

The Draft PEIR considered the No Action Alternative and eight alternatives to meet the restoration objectives established for the Salton Sea Ecosystem Restoration program.

No Action Alternative

The No Action Alternative is intended to reflect Existing Conditions plus changes that are reasonably expected to occur through 2078 if none of the alternatives are implemented. Foreseeable future projects at the Salton Sea include implementation of mitigation measures for the Quantification Settlement Agreement (QSA) and Imperial Irrigation District (IID) Water Conservation and Transfer Project. The mitigation measures related to the Salton Sea include Air Quality Management actions for exposed playa, protection of desert pupfish (including extension and connection of agricultural drains that provide desert pupfish habitat), modification of recreational facilities, and delivery of mitigation water to the Salton Sea until 2017. These facilities would be determined under a process established to implement the mitigation measures for the IID Water Conservation and Transfer Project. However, the facilities could be modified with implementation of the Salton Sea Ecosystem Restoration Program. The costs of the facilities would be funded as part of the mitigation measures for the IID Water Conservation and Transfer Project. Participants in the Water Conservation and Transfer Project would fund up to \$133 million of the mitigation measures, including measures not associated with the Salton Sea. Costs for mitigation measures in excess of the \$133 million dollars would be funded by the State of California. The Draft PEIR takes a conservative approach to define the actions and facilities projected to be needed with a capital cost of \$801 million with annual operations and maintenance costs of \$49 million.

Future actions could change the projected conditions. For example, changes in the QSA may modify the required actions and facilities or related State obligations. However, such future actions, if any, would be too speculative under the California Environmental Quality Act (CEQA). Such changes, therefore, were not included in the No Action Alternative.

Range of Alternatives Considered in the Draft PEIR

The initial range of alternatives was broad and included options to convey water to the Salton Sea from different water bodies, convey salts from the Salton Sea to offsite disposal areas, and options to provide a range of habitats and water quality improvements within the Sea Bed. The broad range of alternatives was screened based upon the ability to meet legislative objectives for the restoration program, regulatory requirements, and technical feasibility for large-scale programs. Several options were eliminated from further analyses due to inability to meet regulatory requirements. The results of the broad screening efforts were further evaluated relative to the CEQA Guidelines for development of a reasonable range of alternatives. Based upon the screening analyses, alternatives that would convey water from the Colorado River, Gulf of California, and the Pacific Ocean were eliminated from further evaluation due to regulatory limitations; jurisdictional boundaries; and anticipated complexities associated with the acquisition, control, and access to the site for construction and operations and maintenance. The screening analysis resulted in the identification of eight alternatives.

The eight alternatives considered in the Draft PEIR were composed of several components in different arrangements. The components included Saline Habitat Complex (a series of 1,000-acre shallow ponds formed by earthen berms with salinities ranging from 20,000 to 200,000 mg/L to support a variety of fish and wildlife); Marine Sea in a portion of the Sea Bed (a large water body in a portion of the Sea Bed formed by rock barriers with marine salinity between 30,000 to 40,000 mg/L); Brine Sink (located at the lowest elevation in the Sea Bed to store excess salts, overflows from other areas, and flood flows); various conveyance facilities; water treatment for one alternative; and Air Quality Management (to reduce particulate emissions from playa that is currently under the Salton Sea the PEIR assumed the use of several methods, including salt-tolerant vegetation, brine crust, and other cover material).

The final alternatives in the Draft PEIR are listed in the following order to represent an increasing amount of complexity and number of components:

- Alternative 1 – Saline Habitat Complex I (38,000 acres of Saline Habitat Complex with minimum recirculation facilities and Air Quality Management);
- Alternative 2 – Saline Habitat Complex II (75,000 acres of Saline Habitat Complex with brine recirculation and Air Quality Management);
- Alternative 3 – Concentric Rings (61,000 acres of Marine Sea in two concentric rings, Air Quality Management, and no Saline Habitat Complex cells);
- Alternative 4 – Concentric Lakes (88,000 acres of habitat similar to Saline Habitat Complex in four concentric water bodies as defined by the Imperial Group, with dedicated inflows for Air Quality Management but no long-term facilities);
- Alternative 5 – North Sea (62,000 acres of Marine Sea in the northern Sea Bed, 45,500 acres of Saline Habitat Complex in the southern Sea Bed, and Air Quality Management);
- Alternative 6 – North Sea Combined (74,000 acres of Marine Sea in the northern, western, and southern Sea Bed; 29,000 acres of Saline Habitat Complex cells in the southern Sea Bed; and Air Quality Management);
- Alternative 7 – Combined North and South Lakes (104,000 acres of Marine Sea in the northern, western, and southern Sea Bed; 12,000 acres of Saline Habitat Complex cells in the eastern Sea Bed; water treatment of inflows and water withdrawn from the eastern portion of the northern Marine Sea; and use of Brine Stabilization for Air Quality Management at lower elevations); and

- Alternative 8 – South Sea Combined (83,000 acres of Marine Sea primarily in the southern Sea Bed with a smaller Marine Sea in the western and northern Sea Bed, 18,000 acres of Saline Habitat Complex in the southern Sea Bed, and Air Quality Management).

Results of the Impact Assessment

The alternatives were evaluated in accordance with CEQA. All of the alternatives, including the No Action Alternative, included construction activities within the Sea Bed. The primary differences between the alternatives are related to the ability to:

- Support a range of biological resources (primarily related to a range of habitats that could be provided by the habitat mosaics of the Saline Habitat Complex and the Marine Seas);
- Improve water quality (primarily related to salinity, selenium, dissolved oxygen, and hydrogen sulfide);
- Minimize air quality impacts (related to emissions from construction and operations and maintenance vehicles, and particulates from exposure of currently inundated playa); and
- Minimize impacts that could occur due to Sea Bed disturbances (air quality, unexploded ordinances, release of chemicals, and disturbances of cultural and paleontological resources).

Salton Sea Advisory Committee Recommendations

The Salton Sea Advisory Committee was involved in the screening and development of the alternatives and reviewed the results of the impact assessment presented in the Draft PEIR. During the preparation of the Draft PEIR, the Salton Sea Advisory Committee formed several working groups, including Habitat and Air Quality working groups, to evaluate specific issues. The Salton Sea Advisory Committee also established a Preferred Alternative Process Working Group to identify a process to compare the attributes of the Draft PEIR alternatives and define recommendations for the Preferred Alternative. The Preferred Alternative Process Working Group identified and prioritized critical attributes, identified attributes that would require further consideration during project-level analyses, and scored alternatives with respect to the prioritized attributes. These efforts were completed by the Preferred Alternative Process Working Group in conjunction with the Habitat and Air Quality working groups and a Water Quality Science Panel (Science Panel). The working groups consisted of members of the Salton Sea Advisory Committee members, or their representatives, as well as other interested individuals. The Science Panel included representatives of State and federal government agencies and several university professors who provided technical review of information considered in the Draft PEIR. Results of the evaluations considered by the Salton Sea Advisory Committee are described below.

Identification and Evaluation of Attributes Used for Comparison of Alternatives

The Preferred Alternative Process Working Group considered the statutory objectives for the Salton Sea Ecosystem Restoration Program. These objectives require the Preferred Alternative to 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; and
- Protection of water quality.

The Salton Sea Advisory Committee determined that the Preferred Alternative must at least comply with these objectives. In addition, the Preferred Alternative Process Working Group considered other attributes

identified by the public during preparation of the Draft PEIR. The legislation did not mandate that the Preferred Alternative maximize opportunities for these other attributes. However, the Preferred Alternative Process Working Group determined that the alternatives could be compared relative to the following attributes:

- Ability to provide recreation and local economic opportunities;
- Compatibility with existing and planned land uses along the shoreline of the Sea Bed;
- Changes to microclimate along the shoreline of the Sea Bed;
- Adaptability of the alternatives to changes in climate, inflows, and habitat characteristics;
- Ability to reduce Environmental Justice (fair treatment and meaningful involvement of all people) and reduce the impact of hazardous conditions; and
- Potential for visual degradation, noise disturbance, and traffic congestion during construction and operations.

Following the identification of the overall attributes, the Salton Sea Advisory Committee requested that the Habitat and Air Quality working groups consider these and further develop attributes that could be used to evaluate the alternatives based on descriptions and impact assessment results presented in the Draft PEIR. No additional analyses would be completed during this process.

Habitat Working Group Recommendations

The Habitat Working Group considered the overall attributes and the results of the habitat related impact analyses presented in the Draft PEIR. Using this information, the Habitat Working Group defined a series of habitat based attributes and compared the ability of each alternative to meet the attribute objectives. The habitat based attributes included:

- Potential for restoration of historic bird and fish diversity and abundance in 2078;
- Potential for habitat management flexibility;
- Availability of habitat over the 75-year study period;
- Potential for effects of selenium on birds and fish;
- Potential for fish kills resulting from hydrogen sulfide generation within water bodies;
- Total volume of imported rock and gravel that could affect air quality, transportation congestion, and aesthetic characteristics;
- Potential for habitat disturbance due to potential recreational opportunities;
- Extent of habitat disturbance within the currently inundated Sea Bed during construction and operations;
- Extent of disturbance to riparian habitat adjacent to the Salton Sea and special status species that use the Salton Sea during construction;
- Potential for hazardous conditions associated with the Brine Sink after reaching a salinity of 200,000 mg/L; and
- Potential for habitat disturbance due to adjacent land uses.

The group also considered other attributes that were not included in the final analysis. Some of these attributes did not provide any differentiation between alternatives. For example, each alternative would be designed to protect and support special status species, including the desert pupfish. Therefore, the attribute “Ability to support desert pupfish” was not used as a stand alone attribute in the final analysis by the Habitat Working Group, but was included in the first attribute listed above. Some attributes were not considered because adequate information was not available in the programmatic analysis, such as “Potential for wildlife disease risk.” Moving forward, additional evaluations could be conducted during project-level analyses for these types of attributes.

The Habitat Working Group used a method that combined grading and weighting to identify alternatives that provided the highest benefits for habitat. The alternatives considered to provide the highest benefits for habitat were Alternatives 1, 2, and 4 due to the presence of Saline Habitat Complex or similar habitat with a mosaic of shallow saline water bodies. Alternative 3 provided the highest level of connectivity for pupfish habitats located around the shoreline and a more shallow Marine Sea habitat than other alternatives. Alternative 5 was the highest rated alternative with a deep Marine Sea while also providing Saline Habitat Complex. However, the potential for hydrogen sulfide release in the deep Marine Sea may continue to result in fish kills as has occurred in the past at the Salton Sea. The scoring identified three distinct groupings of alternatives, which were Saline Habitat Complex (Alternatives 1, 2, and 4), shallow concentric water bodies (Alternatives 3 and 4), and deep Marine Sea with Saline Habitat Complex (Alternative 5).

The Habitat Working Group determined that the Saline Habitat Complex would provide extensive potential for historic bird diversity and abundance with the least uncertainty and risk, though fish diversity would be low. The Habitat Working Group also determined that an alternative with a Marine Sea could increase overall diversity of fish and bird species, though there is more risk due to water quality issues associated with hydrogen sulfide build up in the lower water depths. However, a deep Marine Sea with depths of less than 12 meters (39 feet) would minimize the long-term temperature stratification, in which warm surface water overlies cooler bottom water, that can lead to development and release of large amounts of hydrogen sulfide. Therefore, the Habitat Working Group determined that the best alternative might be a hybrid that combines the components from several alternatives and that habitat management flexibility would be crucial to manage for future uncertainty of biological and physical characteristics of the habitats.

Air Quality Working Group Recommendations

The Air Quality Working Group primarily compared the alternatives to the ability to comply with regulatory requirements. The air quality based attributes included:

- Ability to demonstrate conformity with applicable State Implementation Plans in accordance with the federal Clean Air Act; and
- Ability to meet particulate and nitrogen compound regulatory requirements (local significance thresholds) as developed by air quality management districts.

The Air Quality Working Group determined that most of the alternatives could not meet these requirements and would require further analyses to develop specific mitigation measures during project-level analyses. The Air Quality Working Group identified several mitigation measures such as extending the construction period to reduce annual emissions and particulates, development and use of low-emission equipment that currently is not available or under design, and identification of construction materials and methods that would reduce life-cycle air quality impacts. The Air Quality Working Group also identified the need for additional air quality monitoring around the Salton Sea; research on playa emissivity (ability of soil particles to become airborne); research on the ability of salt/brine crusts to limit playa emissivity

throughout the year, including periods with high humidity when brine crusts frequently break apart; and pilot testing of various dust control methods as the playa becomes exposed.

The Air Quality Working Group used a method that combined ranking and weighting to identify alternatives that provided the best ability to meet air quality regulatory requirements. The alternatives best meeting regulatory requirements were Alternatives 1, 2, 3, 4, and 5. These alternatives require the least amounts of imported rock and gravel, Sea Bed disturbance, and operations and maintenance activities; and therefore, would result in the least amounts of emissions.

Water Quality Science Panel Recommendations

The Salton Sea Advisory Committee also requested that the Science Panel review attributes related to water quality parameters. The Science Panel subsequently met to review attributes, determine their priority, and determine appropriate scoring for evaluating the attributes. The Science Panel considered four water quality parameters to be the most important for consideration in restoration of the Salton Sea ecosystem – selenium, hydrogen sulfide, water temperature, and dissolved oxygen.

The habitat risk from selenium (an essential element chemically related to sulfur) was considered by the Science Panel to be the most important water quality parameter affecting restoration efforts at the Salton Sea. The source of selenium in the Salton Sea is Colorado River water that has been used for irrigation on surrounding agricultural lands. In the shallow water habitats, selenium exposure routes for birds include exposure through the food web and mixing into the water column by winds. The concern for shallow water habitats is that selenium could increase over time, which would increase the potential for adverse effects to birds and may require periodic cleaning of habitat cells. The expected effects from selenium in birds would be some level of decreased hatchability of eggs in some breeding species of birds. Transitory species would not be affected because selenium is rapidly depleted in birds once they are removed from a selenium source. Effects were considered to be limited and could be mitigated. The Science Panel suggested actions to decrease potential adverse effects from selenium including avoidance of placing habitat in areas with high selenium concentrations in soils, increase habitat for those species most at risk for effects from selenium, and reduce selenium in water by diverting inflows with high selenium loads to the Brine Sink or geothermal re-injection.

Hydrogen sulfide was considered by the Science Panel to be a manageable issue, but was still weighted high in importance. Hydrogen sulfide is produced in the lower depths of the Salton Sea due to decomposition of organic matter that uses up oxygen in the water. Hydrogen sulfide produces adverse effects to fish, either directly or through effects on the food web. Therefore, both attributes were included in scoring of the alternatives. Deep sea configurations would be subject to prolonged temperature stratification which could result in periodic releases of hydrogen sulfide. The Science Panel advised that shallower sea configurations 10 to 12 meters (33 to 39 feet) deep would decrease the duration of stratification and lead to more frequent mixing of surface and bottom water, which would limit the development of hydrogen sulfide. Hydrogen sulfide levels could also be controlled to some degree with phosphorus reduction in the inflows to the Salton Sea, such as projected under proposed Total Maximum Daily Load (TMDL) limits developed in accordance with the Clean Water Act. However, existing sediments on the Sea Bed would continue to contribute phosphorus for some period of time. Due to limited data available, it was not possible for the Science Panel to determine the period of time that would be needed for phosphorus contributions from the sediments to be reduced, with subsequent reductions in hydrogen sulfide.

Water temperature was considered moderate in importance, but only for certain fish species, such as tilapia, in shallow water habitats. Deeper lakes would usually stay warm enough in winter to support tilapia due to the large mass of water that would retain heat. However, as observed at the Salton Sea in early 2007, even a large lake can occasionally experience fish kills during unusually cold weather. Temperature effects in shallow water habitats were considered important due to the limited diversity of

fish that would be present. If only tilapia are present, cold weather could decimate the population, and birds dependent on that population (such as pelicans in winter) would be adversely affected.

Issues for dissolved oxygen include diurnal (daily) fluctuations in shallow water habitats due primarily to photosynthesis and respiration of algae, and seasonal levels due to temperature stratification in deep water habitats. Dissolved oxygen was not a high priority for the Science Panel since control of other water quality parameters (primarily hydrogen sulfide and nutrients) would resolve the dissolved oxygen issue.

Greater concern for effects from selenium and hydrogen sulfide than for the other water quality parameters resulted in the Science Panel determining that alternatives comprised of shallow water habitat posed the least adverse water quality impacts. Mitigation strategies of maintaining depths of less than 12 meters (39 feet) and nutrient control for inflows were identified to significantly improve the water quality in the Marine Sea.

Overall Preferred Alternative Process Working Group Recommendations

The Preferred Alternative Process Working Group reviewed the recommendations of the other working groups and Science Panel and also considered other attributes not related to biological resources, air quality, and water quality. Overall, this working group determined that most of the potential impacts identified in the Draft PEIR could be reduced through mitigation measures developed during project-level analyses. However, it was recognized that many of the impacts may not be reduced to levels of less than significant in a CEQA analysis.

The Preferred Alternative Process Working Group also determined that due to the programmatic nature of the Draft PEIR, some details would need to be further defined and evaluated as a range of options during the project-level analyses. For example, recreation and local economic opportunities could be incorporated into any alternatives; however, the nature of the opportunities could be different. It was also determined that Early Start Habitat (2,000 acres of a pilot-type Saline Habitat Complex to be located near the southern shoreline) and Saline Habitat Complex-type of habitat should be included in the Preferred Alternative. However, the purpose of this working group was to define the process for determining a preferred alternative and provide some guidance to the Salton Sea Advisory Committee. Therefore, no specific recommendations for a Preferred Alternative were prepared by the Preferred Alternative Process Working Group.

Salton Sea Advisory Committee Recommendations on February 27, 2007

The results of the working group evaluations were considered by the Salton Sea Advisory Committee on February 27, 2007. Based upon this information and discussion that occurred at the meeting, the Advisory Committee recommended that the Preferred Alternative include:

- Saline Habitat Complex and Marine Sea habitat (as in Alternative 5);
- Early Start Habitat (as in all alternatives);
- Methods to protect air quality with conservative methods such as irrigated salt-tolerant vegetation (as in Alternatives 1, 2, 3, 5, 6, and 8); and
- Methods to protect water quality to improve habitat and reduce odors, including limiting the depth of the water bodies to less than 12 meters (39 feet) (as in Alternative 3).

The Advisory Committee compared these attributes to the alternatives and determined that Alternative 5 provided these attributes to a larger extent than other alternatives. However, Alternative 5 could not be recommended without incorporation of the following components that were evaluated as part of other PEIR alternatives:

- Expanded areas of the Marine Sea adjacent to existing communities as well as the State Recreation Area (as in Alternative 3); and
- Expanded Saline Habitat Complex areas (as in Alternative 2).

Salton Sea Advisory Committee Recommendations on March 27, 2007

On March 27, 2007, the Preferred Alternative proposal was presented to the Salton Sea Advisory Committee. This proposal included a Marine Sea formed by a barrier with water depths of less than 12 meters (39 feet). The Marine Sea shoreline was located at -230 feet msl, while the barrier was located at the -270-foot and -260-foot contours to provide water adjacent to existing communities and recreational areas. The Saline Habitat Complex was expanded along the southern Sea Bed from -230 feet to -266 feet msl contours.

Members of the Advisory Committee provided comments related to the need to provide a portion of the Saline Habitat Complex in the northern Sea Bed near the confluence of the Whitewater River, moving the Marine Sea Barrier to a deeper location to provide a larger Marine Sea, providing a Marine Sea area near the southern shoreline for increased recreational opportunities, and providing access for geothermal generation development. Some of the Advisory Committee members also discussed the use of water treatment for the inflows to improve water quality in a deeper Marine Sea.

Recommendations related to incorporation of the Saline Habitat Complex near the Whitewater River confluence, expanding the Marine Sea near the southern shoreline, and providing access for geothermal generation development were incorporated into the Preferred Alternative. However, moving the Marine Sea Barrier to a deeper location was not included in the Preferred Alternative due to a potential of water quality problems that could result in adverse impacts. All of the alternatives in the Draft PEIR and the Preferred Alternative assumed that water quality in the inflows would be improved through implementation of Total Maximum Daily Loads as would be implemented by the Colorado River Basin Regional Water Quality Control Board in the near future. However, water quality problems could continue to occur due to high concentrations of nutrients and selenium in the sediments. Water treatment to reduce these constituents in the Sea Bed sediments has not been demonstrated at the scale of the Salton Sea. As described above, maintaining water depths of less than 12 meters would improve mixing of the water column and reduce the potential for water quality problems in the Marine Sea. For these reasons, the recommendations of some Salton Sea Advisory Committee members to provide a Marine Sea deeper than 12 meters with or without water treatment was not included in the Preferred Alternative.

Consideration of Comments on the Draft PEIR

Nearly 34,000 comment letters on the Draft PEIR were submitted by agencies, Torres Martinez Tribe, interest groups, and individuals. Many of the letters were developed by interest groups and submitted by individuals. Most of the comments were related to biological resources, climate and air quality, recreation, and use of the Salton Sea as an agricultural repository and a recreation area. Many comments encouraged development of a Preferred Alternative that would be adaptable to changes in inflows, climate, land uses, and habitat needs.

With respect to biological resources, most of the comments requested the inclusion of a small Marine Sea in the northern Sea Bed, at least 25,000 to 50,000 acres of Saline Habitat Complex in the southern Sea Bed, Early Start Habitat, and methods to reduce water quality problems in all water bodies.

Most of the comments concerning air quality encouraged the use of a variety of methods to reduce air quality problems, implementation of research activities to develop methods that would reduce particulates from the playa, and use of water to protect agricultural microclimates and prevent salt dust on lands adjacent to the southern shoreline.

Many comments included reminders that Executive Orders over 80 years ago established the Salton Sea as an agricultural repository for drainage, and that the alternatives could not modify this use.

There were also many comments that identified the need to maintain water near shoreline communities and the State Recreation Area, to incorporate the proposed land use plans for the Torres Martinez Reservation, and to include recreational opportunities into the alternatives. There was discussion of establishing the shoreline water elevation at -228 feet msl to reduce the need for Air Quality Management methods by landowners of the exposed playa.

Most Cost-Effective, Technically Feasible Alternative

Fish and Game Code Section 2081.7 states that the evaluation of alternatives in the Salton Sea Ecosystem Restoration Study shall include “at least one most cost-effective, technically feasible, alternative.” This section describes the most cost-effective, technically feasible alternative and the criteria for selecting this alternative. This information has been included in the ecosystem restoration study pursuant to Fish and Game Code Section 2081.7. For the purpose of this analysis, the term “most cost-effective” was defined as least cost because quantifying monetary benefits of restoration would be difficult at the current programmatic level of analysis. All of the alternatives are technically feasible.

The State determined, based on the evaluation of the eight alternatives, that two of the alternatives meet the most cost-effective, technically feasible alternative criteria, Alternative 2 (Saline Habitat Complex II) and Alternative 5 (North Sea). These alternatives were identified from among the other alternatives, all of which meet the program’s legislative mandate of providing the maximum feasible attainment of the following objectives: (1) 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; (2) elimination of air quality impacts from the restoration projects; and (3) protection of water quality.”

As part of the process to determine the Preferred Alternative, the Salton Sea Advisory Committee’s Habitat Working Group determined that the Saline Habitat Complex was the component that provided the most ecosystem benefits. The Saline Habitat Complex provided diversity of fish and wildlife similar to existing conditions. However, a Marine Sea could provide greater diversity of fish and wildlife similar to historical conditions. The Salton Sea Advisory Committee’s Air Quality Working Group determined that meeting the legislation’s air quality objectives was a high priority.

Based on this information, Alternative 2 was identified as the most cost-effective, technically feasible alternative because it include the largest amount of Saline Habitat Complex. The Saline Habitat Complex would provide similar diversity of fish and wildlife that currently exists at the Salton Sea. Alternative 2 would achieve this to a greater extent than Alternative 1. Additionally, Alternative 2 would be the most cost-effective alternative that best meets all of the legislative objectives. Although the construction and operations and maintenance costs of Alternative 4 as analyzed in the Draft PEIR would be less than those of Alternative 2, additional air quality measures would need to be added to Alternative 4 to fully meet the legislative objectives. This would increase the costs of Alternative 4, and therefore, Alternative 4 would likely be more costly than Alternative 2. Alternatives 3, 5, 6, 7, and 8 meet the legislative objectives to varying degrees, but are not as cost-effective.

Although Alternative 2 would provide diversity of fish and wildlife similar to those that currently exist at the Salton Sea, Alternative 2 may not fully meet the legislative objective “historic levels and diversity of fish and wildlife” because it does not contain a marine waterbody as has historically existed at the Salton Sea. The most cost-effective, technically feasible alternative that best meets this objective is Alternative 5. Alternative 5 includes a Marine Sea that would provide habitat for a diverse fishery that would support fish-eating birds. Alternative 5 is the most cost-effective of the alternatives that include a Marine Sea. Due to water quality impacts identified in the Draft PEIR (including the potential for hydrogen sulfide generation), the Marine Sea depth in Alternative 5 may need to be reduced to less than 13 meters.

While the most cost-effective, technically feasible alternatives were identified during development of the Preferred Alternative, the most cost-effective, technically feasible alternatives were not selected as the Preferred Alternative. The selection criteria for the Preferred Alternative not only included the legislative objectives, but also included additional criteria based on input from the Salton Sea Advisory Committee and public. These criteria included providing Saline Habitat Complex and Marine Sea habitat along the northern shoreline, a Marine Sea area near existing communities and recreational areas, a Marine Sea along the southern shoreline for recreation, and areas for geothermal generation development.

PREFERRED ALTERNATIVE

Information in the Draft PEIR and comments received from the public review of the alternatives described in the Draft PEIR were evaluated to develop a Preferred Alternative.

As described above, many of the recommendations described by the Salton Sea Advisory Committee members, other agencies, interest groups, stakeholders, and the public were incorporated into the Preferred Alternative. Several of the comments were not incorporated due to reasons as described above and in Chapters 4 through 9.

The Preferred Alternative is most similar to Alternative 5 with components described in the other alternatives. A description of the components, estimated costs, and implementation methods are described below.

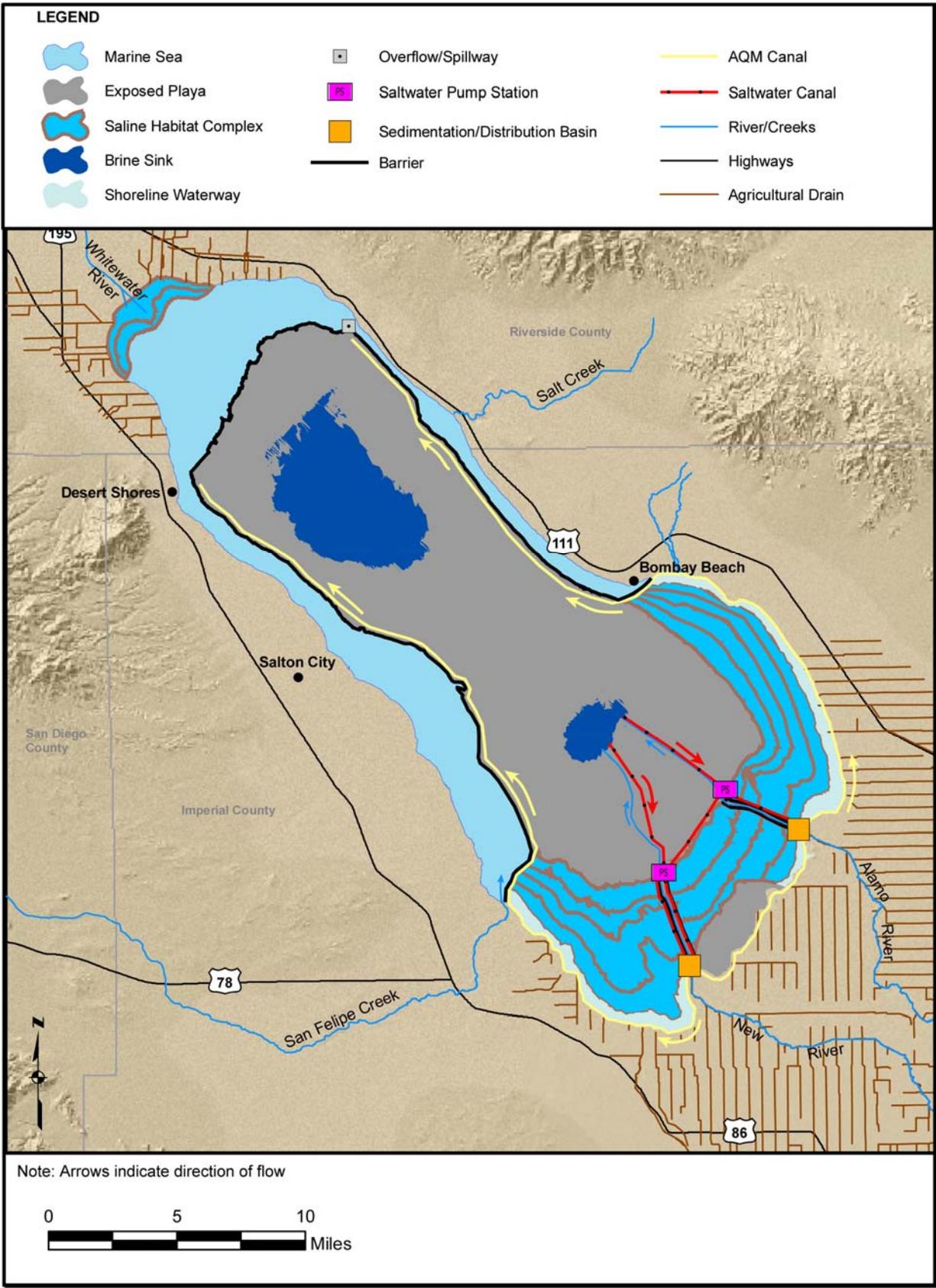
Components of the Preferred Alternative

The Preferred Alternative, as shown in Figure 3-1, includes Saline Habitat Complex in the northern and southern Sea Bed, a Marine Sea that extends from San Felipe Creek to Bombay Beach (formed by barriers located at elevations from -260 to -270 feet msl), Air Quality Management facilities to reduce particulate emissions from the exposed playa, Brine Sink for discharge of salts, conveyance facilities, and Sedimentation/Distribution facilities. The Preferred Alternative also would include Early Start Habitat and an exclusion area for geothermal development. These components are summarized in Table 3-1 and described below.

Inflow Assumptions in the Preferred Alternative

The Preferred Alternative was based upon the same assumptions used for all alternatives in the Draft PEIR, including inflows. Inflows into the Salton Sea are influenced by multiple factors, including drainage flows from Imperial and Coachella valleys, flows from Mexico, and precipitation. Historically, inflows have exceeded 1.2 million acre-feet/year. A portion of these inflows are projected to be reduced after 2017 due to the IID Water Conservation and Transfer program. IID is providing additional inflows as a mitigation measure to maintain the salinity at less than 60,000 mg/L until 2017 which is when the salinity was projected to exceed this concentration without the transfer.

As described in the Draft PEIR, inflows may also decline because of water recycling in Mexico, changes in agricultural practices to meet projected Total Maximum Daily Loads, and changes to municipal wastewater disposal practices to meet discharge regulations. These types of changes have occurred in other areas of California. In addition, global climate change models are predicting an increase in evaporation rates which could further reduce inflows and increase evaporation from the Salton Sea, Saline Habitat Complex, or Brine Sink. Therefore, the Draft PEIR included risk-based analyses of inflows considering the various water sources. The results of the analyses identified the average annual inflow for the period 2018 through 2078 (the period after IID ceases to divert mitigation water) as 717,000 acre-feet. This value was used to compare the operations of the Draft PEIR alternatives and is used to define operations parameters for the Preferred Alternative.



**FIGURE 3-1
PREFERRED ALTERNATIVE**

**Table 3-1
Comparison of Infrastructure Features in the Preferred Alternative**

	End of Phase I (2020)	End of Phase II (2030)	End of Phase III (2040)	End of Phase IV (2078)
Saline Habitat Complex (acres)	7,000	32,000	52,000	62,000
Saline Habitat Complex (wetted acres - including Shoreline Waterways)	7,000	39,000	46,000	46,000
Saline Habitat Complex Berms (miles)	20	117	158	158
Marine Sea (total acres)	Under construction	45,000	45,000	45,000
Marine Sea (salinity)	Not applicable	30,000 to 40,000	30,000 to 40,000	30,000 to 40,000
Marine Sea Barrier (miles)	Under construction	52	52	52
Two Sedimentation/Distribution Basins (acres)	400	400	400	400
Exposed Playa (acres - including Geothermal Area)	20,000	32,000	106,000	106,000
Air Quality Management area with water efficient vegetation (acres)	Monitoring and testing	17,000	54,000	54,000
Air Quality Management area with stabilization methods (acres)	Monitoring and testing	6,000	21,000	21,000
Air Quality Management Conveyance	36 miles of canals and 3 pumping plants	75 miles of canals and 5 pumping plants	75 miles of canals and 5 pumping plants	75 miles of canals and 5 pumping plants
Brine Sink Salinity (mg/L)	77,000	more than 200,000	more than 200,000	more than 200,000
Brine Sink Elevation (feet msl)	-240.6	-267.4	-275.6	-275.6
Brine Sink Area (acres)	200,000	109,000	17,000	17,000
Volume of imported rock and gravel (cubic yards)	182,861,000	187,703,000	190,234,000	190,234,000
Volume of Sea Bed soils excavated or dredged (cubic yards)	23,245,000	91,765,000	105,843,000	105,843,000
Trucks to import rock and gravel per day during peak construction period	3,000	100	50	0
Employees per day during operations and maintenance	20	150	300	300
Energy demand during operations and maintenance (Gigawatt-hour/year)	4	13	26	26

Water quality of the inflows is assumed to be improved as compared to Existing Conditions due to complete implementation of existing and proposed TMDL requirements established by the Colorado River Basin Regional Water Quality Control Board.

If the average annual flow value (717,000 acre-feet) was used for the “design flow,” the Marine Sea would not receive adequate inflows in about half of the years in the 2018 through 2078 period. Therefore, the “design flow” criteria were based upon adequate inflows in at least 80 percent of the years in the 2018 through 2078 period. This average annual “design flow” is 650,000 acre-feet for the 2018 through 2078 period. When inflows exceed 650,000 acre-feet/year, flows not used in the Saline Habitat Complex, Air Quality Management of exposed playa with irrigated vegetation, and Marine Sea could be used to establish salt crust or additional temporary habitat on other portions of the exposed playa.

Location and Sizing of the Components

The location and sizing of several components were based upon specific criteria and in consideration of available inflows. For example, the location and size of the Marine Sea was based upon criteria to provide water along shorelines in existing communities and minimize water quality risk.

Saline Habitat Complex was located along the southern shoreline due to the proximity of the area with wildlife refuges, agricultural fields, and areas historically supporting large numbers of birds. However, the specific size of the Saline Habitat Complex was based upon the long-term availability of inflows.

The sizes of the Brine Sink and the exposed playa were based upon inflows and the balancing of water demands. The first and second priorities for use of inflows (based on two of the primary objectives of the Salton Sea Ecosystem Restoration Legislation), would be for habitat associated with the Saline Habitat Complex and Air Quality Management, respectively. The last priority would be for the Marine Sea. Therefore, if inflows decline to levels less than the “design flow,” only the inflows to the Marine Sea would be reduced.

A design surface water elevation of -230 feet mean sea level (msl) was assumed for all components along the shoreline. This elevation was selected to allow construction of canals at the elevations of -228 and -230 feet msl to avoid the need to modify existing shoreline land uses and facilities. The elevation of the Marine Sea in the northern Sea Bed was located at -230 feet msl to reduce pumping requirements for the flows from the New and Alamo rivers. During project-level analyses, the actual elevations would be defined based upon final topographic and bathymetric survey results and detailed hydrologic analyses. It may be feasible to extend the Saline Habitat Complex along the northern shoreline to elevations -228 feet msl if the inflows for the first row of the northern Saline Habitat Complex only depended upon flows from the Whitewater River.

Saline Habitat Complex

The Saline Habitat Complex is intended to provide a diversity of habitats to support food web organisms (e.g., invertebrates and fish), that will provide an avian forage base similar to that which developed at the Salton Sea. Berms, islands, peninsulas, and snags would contribute to use by a variety of shorebirds and wading birds. Excavated areas up to 15 feet in depth would be incorporated to increase habitat diversity and provide shelter for fish and invertebrates.

Salinity within the Saline Habitat Complex could range from near 20,000 mg/L to 200,000 mg/L. Maintaining most of the Saline Habitat Complex with saline water (greater than 20,000 mg/L) would reduce vegetation growth, selenium ecorisk, and vector populations. The water supply would be from the New, Alamo, and Whitewater rivers plus water recycled from the Brine Sink or upgradient Saline Habitat Complex cells to achieve a minimum salinity of 20,000 mg/L.

The first rows of the southern Saline Habitat Complex that will extend from the shoreline (at -230 feet msl) to the first Berm (at -236 feet msl) would not be divided into ponds. This area would serve as a

mixing zone for the inflows and saline water and would be maintained at a salinity of 20,000 to 30,000 mg/L. Berms would be used in the remaining rows of the Saline Habitat Complex to provide multiple 1,000-acre cells.

Berms would be constructed of suitable earthfill materials excavated from the Sea Bed with 3:1 side slopes. A 20-foot wide gravel road on top of each Berm would allow access for maintenance. Rock slope protection would be placed on the water side of the Berm. Water depths would be less than 6 feet (2 meters). Berms could not be constructed until the Brine Sink (residual Salton Sea) recedes to an elevation below the Berm location.

The design of the individual cells within the Saline Habitat Complex would be flexible and could be modified to respond to environmental changes or the results of performance monitoring. The characteristics that would vary among cells likely would include salinity, overall water depth of the cell, presence or absence of islands and deep pools, number and arrangement of roosting and nesting structures, amount of shoreline, presence or absence of hard substrates, and bottom slope. The ratio of water to land, salinity, and arrangement of the cells would be developed in project-level analyses.

Immediately following construction, saline water from the Brine Sink would be conveyed through temporary pumping facilities into the first row of Saline Habitat Complex cells. The saline water would be mixed with the drain flows to provide salinity of at least 20,000 mg/L. After this initial mixing, salinity in each cell would be managed by controlling inflows and outflows, and evapo-concentrating the water in each cell to create cells with salinities ranging from 20,000 to 200,000 mg/L. During operations of the Saline Habitat Complex, water quality monitoring would need to be conducted to determine if constituents of concern accumulated to concentrations that would cause adverse impacts to fish and wildlife that used these areas.

Early Start Habitat

The Preferred Alternative would include up to 2,000 acres of shallow saline habitat for use by birds after the Salton Sea salinity becomes too high to sustain some species of fish. This habitat would be created prior to construction of full-scale habitat components, and is referred to as Early Start Habitat. Early Start Habitat was assumed to be located at elevations between -228 and -232 feet msl and could either be a permanent or temporary feature to be eliminated or assimilated as other components are constructed.

For the purposes of the Preferred Alternative, it was assumed that the Early Start Habitat area would be located along the southern shoreline because the flat slope of the Sea Bed would provide a large area for shallow water cells. The area is currently used by many birds. Most agricultural drains in this area are pumped into the Salton Sea and could provide a stable source of inflows into the Early Start Habitat. Saline water from the Salton Sea would be pumped into the cells to be mixed with freshwater from the drains to provide salinity between 20,000 and 60,000 mg/L.

The area would be divided into cells with Berms excavated from on-site materials. Average water depths within each cell would be less than four feet, although deep holes located away from the Berms may extend to 15-foot depths. Specific design and testing criteria would be developed in a project-level analysis.

Marine Sea

A Marine Sea would be formed through the construction of a Barrier. The Marine Sea would eventually stabilize at a surface water elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L. Salinity in the Marine Sea would be managed through regulation of inflows and discharges. Air Quality Management Canals, Sedimentation/Distribution Basins, and Early Start Habitat would be constructed between the -228 and -230 foot msl contours and would avoid conflicts with existing land uses along the shoreline.

Inflows to the Marine Sea would include direct flows from the Whitewater River, Coachella Valley drains, Salt Creek, San Felipe Creek, and local drainages. Flows from the New and Alamo rivers would be blended in a large Air Quality Management Canal and diverted into the Saline Habitat Complex and the southeastern and southwestern portions of Marine Sea. The portion of the Air Quality Management Canal located between the Sedimentation/Distribution Basins and Marine Sea would be located along the shoreline of the Saline Habitat Complex and would be siphoned under major drainages and agricultural drains to ensure that existing drainages are not impacted and that connectivity is provided for desert pupfish between the drains and the Shoreline Waterway. Air Quality Management Canals would continue on the interior side of the Barrier where the Marine Sea is located. Flows from the Marine Sea would be spilled to the Brine Sink to maintain salinity and elevation control.

The water depth would be less than 12 meters (39 feet) to reduce the potential for hydrogen sulfide generation and potential fish kills, due to long-term temperature stratification. The Preferred Alternative assumes implementation of the proposed TMDLs for nutrients and selenium, and therefore, additional water treatment for inflows would not be required. However, there is insufficient information to determine the role that nutrients contained in sediments will have in continued production of hydrogen sulfide in the Marine Sea. Therefore, the Preferred Alternative is based upon a conservative approach that maintains water depth to less than 12 meters (39 feet). During project-level analyses, additional data should be collected and the maximum water depth should be re-evaluated prior to final design.

The Barrier would be constructed of rock with a seepage barrier on the upstream face. The Barrier would be up to 47 feet above the existing Sea Bed and up to a half-mile wide at the base. The final slope of the Barrier would be 10:1 on the Marine Sea side and 15:1 on the down gradient side. The structure would require compliance with DWR, Division of Safety of Dams regulations. For the purposes of the PEIR, it was assumed that the Barrier would be constructed using barges. Therefore, the Barrier would need to be constructed before the Brine Sink (residual Salton Sea) recedes. Rock used to form the Barrier could be delivered to the barges by a railroad trestle or at a harbor that could be used for Marine Sea access after construction. However, use of barges would result in extensive vehicle emissions, as described in the Draft PEIR. It may be more advantageous to construct a trestle that would be extended with construction of the barrier and could accommodate alternative fuel trucks to deliver rock to the barrier construction site. This could lead to lower air quality emissions and allow construction even if the Brine Sink water recedes. During project-level analyses, specific construction methods need to be evaluated to provide a cost-effective construction approach and to reduce construction impacts.

Sedimentation/Distribution Basins

Inflows from the New and Alamo rivers would be captured in two 200-acre Sedimentation/Distribution Basins to divert desilted river water into one of several Air Quality Management Canals or bypass flows into the Brine Sink through extension of the New and Alamo river channels. The unlined Sedimentation/Distribution Basins would be excavated along the shoreline and would be located from -228 to -230 feet msl. Water depths would be about 6 feet. Sediment collected in the basins would be periodically dredged and flushed into the Brine Sink through river extensions.

Air Quality Management

Prior to design of Air Quality Management facilities, monitoring and testing activities would be conducted to identify the potential for and rate of dust emissions, determine chemical characteristics of the playa, analyze response of salt crusts and sediments to humidity and wind. If potential for significant dust emissions occur, several actions could be implemented to reduce air quality problems. It is anticipated a combination of actions would be used because the playa characteristics may vary throughout the Sea Bed. For the purposes of the PEIR and the Preferred Alternative, the following assumptions were used to define Air Quality Management components:

- 30 percent of the total exposed playa would be non-emissive and require no actions;
- 20 percent of the exposed playa would use management options that do not require freshwater supplies, such as brine stabilization, sand fences, or chemical stabilizers; and
- 50 percent of the exposed playa would use water efficient vegetation that is irrigated with a portion of the inflows to the Salton Sea.

The conservative approach for control of dust emissions would use Air Quality Management Canals to convey water from the Sedimentation/Distribution Basins to a series of 2-square mile units on the exposed playa. Each 2-square mile unit would include water filtration and chemical treatment units to prevent clogging and scale in the irrigation system, pumps, and buried distribution and drip irrigation pipes. The drip irrigators would be buried to reduce potential for selenium toxicity to wildlife from ponded water. Facilities would be included in each unit to pump brine from the Brine Sink to the treatment unit to increase the salinity of the water to 10,000 mg/L, if needed. Drains would be constructed under the irrigated area and drainage water would be conveyed to the Brine Sink. Construction of the irrigation system would require excavations up to 8 feet deep for trenches throughout the exposed playa. Salt bush, or similar vegetation, would be planted every 5 feet apart in rows that would be separated by 10 feet.

Brine Sink

The Brine Sink would provide the repository necessary to store excess salts, water discharged from the Saline Habitat Complex, Marine Sea, and Air Quality Management areas, and excess inflows. Flood flows from the New and Alamo rivers would be flow directly into the Brine Sink through extensions of the river channels. High flows from San Felipe and Salt creeks and Whitewater River (via a submerged pipeline) would flow into the Marine Sea and overflow through a spillway into the Brine Sink. The elevation would fluctuate seasonally based upon the patterns of these tributary flows.

During project-level analyses, partitioning of the Brine Sink could be considered to provide another area with salinities of less than 200,000 mg/L that could support invertebrates and provide additional habitat on the Sea Bed.

Desert Pupfish Connectivity

Desert pupfish connectivity would be provided in four separate areas. The shoreline waterways (first rows of the southern Saline Habitat Complex) would provide connectivity for the Imperial Valley drains between Bombay Beach and to Alamo River and between New River and an area located to the south of San Felipe Creek.

The first row of the northern Saline Habitat Complex would provide connectivity for a portion of the drains in Riverside County. The Marine Sea would provide connectivity for the remaining drains in Riverside County and San Felipe and Salt creeks.

Area for Geothermal Development

Imperial County has one of the larger known geothermal resource areas in the world, including lands near the southern shoreline of the Salton Sea. Several geothermal generation facilities have been constructed on the upland side of the shoreline. Field investigations have indicated that additional generation facilities could be successfully constructed in currently inundated areas of the Sea Bed after the water recedes.

One of the areas that may include significant geothermal resources is located between the New and Alamo rivers along the southern shoreline. A portion of this area is located within the Sonny Bono Salton Sea National Wildlife Refuge, and most of the area is used extensively by many species of birds. Placement of Saline Habitat Complex and geothermal development in this area could require very specific

mitigation measures to avoid conflicts with geothermal facilities, including power transmission lines and other facilities.

Geothermal development will be extremely important in California and other southwestern states as part of a mosaic of energy sources to meet increasing energy demands. Therefore, the Preferred Alternative includes an area between the New and Alamo rivers without Saline Habitat Complex to reduce potential conflicts between geothermal development and habitat criteria. The geothermal development area would avoid the Sonny Bono Salton Sea National Wildlife Refuge lands and areas with pupfish connectivity in the drains. The Preferred Alternative includes Air Quality Management actions for the geothermal development area; however, specific Air Quality Management methods may be different for the industrial land uses.

Land Ownership Assumptions

The Preferred Alternative assumes that easements or deeds would be obtained for the entire Sea Bed below elevation -228 feet msl to allow construction and operations and maintenance activities. Costs of acquisition of easements and deeds are not included in the PEIR cost estimates.

If other land uses extend into the Sea Bed, the Preferred Alternative would need to be modified in project-level analyses. For example, if exposed lands are converted to cultivated agriculture to an elevation of -235 feet msl, either the components would need to be constructed at lower elevations or displacement dikes would be required to protect the agricultural land.

Implementing Entities Assumptions

The Preferred Alternative has been defined and evaluated as if one entity or group of entities implemented the program in a uniform manner. However, it would be possible for several entities to implement facilities under separate programs with some level of coordination. For example, facilities located in the northern and southern area of the Sea Bed could be implemented by separate entities with coordinated operations for conveyance of inflows. As another example, separate entities could implement components with different functions, such as conveyance, Air Quality Management, Marine Seas, and/or Saline Habitat Complex.

Construction Materials Assumptions

Design criteria for the Barrier would require extensive geotechnical investigations. Most of the existing geotechnical foundation information was collected near the mid-sea location and may not be applicable to final Barrier locations. Once geotechnical data are collected, the Barrier design concept would be refined. Changes in cross sections or materials could significantly change rockfill quantities, excavation quantities, and costs. Similarly, foundation treatment, if required, could change costs and construction methods.

For purposes of the PEIR, development of new rock sources or transportation facilities are not considered part of the Preferred Alternative. The Preferred Alternative assumption is that the Barrier design would use rock or boulders between 1 to 5 feet in diameter for the majority of the structure for stability. This rock size was not found to be available in large quantities at existing quarries during the preparation of this PEIR. However, the Preferred Alternative assumption is that this rock would be provided from a permitted quarry and transported to within 10 miles of the shoreline by methods other than trucks.

The Preferred Alternative includes gravel roads on top of all Barriers and Berms and approximately every mile in both north-south and east-west directions across the exposed playa. Therefore, an extensive amount of gravel would be required for the Preferred Alternative.

Implementation Schedule

Implementation of the Preferred Alternative would be accomplished in four periods:

- Period I: Five Year Plan/Pre-construction - 2008 to 2013;
- Period II: Major Construction - 2014 to 2025;
- Period III: Construction Completion - 2026 to 2035; and
- Period IV: Operations and Maintenance - 2036 to 2078.

Activities that would occur in each of these periods are summarized below.

Period I: Five Year Plan/Pre-construction - 2008 to 2014

It is anticipated that the California Legislature would select the Preferred Alternative, provide authorization for the next periods, and appropriate funds by late 2007. Following these actions, it is anticipated that the implementing entity(ies) would initiate a Five Year Plan including project-level analyses. Many issues could not be fully evaluated in the programmatic analysis due to lack of data or the need to select specific locations for facilities. Therefore, the Five Year Plan would focus on implementation of the Early Start Habitat, collection of additional biological and physical data, site-specific analyses of facilities, and design of facilities.

Demonstration Project and Early Start Habitat

The U.S. Department of the Interior, Geological Survey (USGS), is currently conducting a Salton Sea Shallow Water Habitat Pilot Project. This project includes several shallow ponds containing small islands within an approximately 100 acre area. The ponds do not incorporate deep holes or snags.

DFG is currently developing a Demonstration Project near the southeastern shoreline of the Salton Sea. This demonstration project would include ponds with deep holes, islands, and snags. Information from the Demonstration Project could be used to develop the final design criteria for the Saline Habitat Complex. Prior to construction of the Demonstration Project, environmental documentation and design documents would be prepared and permits would be acquired.

There is concern that water quality in the Salton Sea will degrade prior to and during construction of the Preferred Alternative and that fish and birds that forage on fish could be lost. Therefore, an Early Start Habitat of up to 2,000 acres of Saline Habitat Complex emphasizing cell configurations that will support fish would be constructed. This would provide both habitat during construction and allow further full-scale pilot evaluation of this habitat prior to final design.

Prior to construction of the Early Start Habitat, an evaluation of potential sites would be conducted. If necessary, several sites may be identified for site-specific field investigations. Geotechnical analyses, topographic and bathymetric surveys, and sediment and water quality analyses would also be completed. Removal of sediment with high concentrations of contaminants may be considered to protect water quality and habitat values. These evaluations could require 12 to 18 months to define seasonal variations.

Following these analyses, preliminary design would be initiated for the Berms and conveyance facilities to divert inflows into the Early Start Habitat ponds, manage salinity in the ponds, and divert water from the ponds without adverse impacts to fish in the Early Start Habitat ponds or desert pupfish. Concurrently, an environmental document would be prepared. This process could require about 6 months.

Final design would be completed and permits would be obtained from federal, state, and local agencies. The final design could include several types of Berms, such as the use of Geotube[®] Berms or other facilities which could change construction schedule assumptions. The final design and permitting processes could require up to 12 months. After permits are approved, construction could occur in less

than 6 months. Based upon this estimated timeline, the Early Start Habitat would be fully implemented by 2011.

Biological Investigations in the First Five Years

In addition to the field investigations and monitoring associated with the Early Start Habitat, existing biological monitoring in the Salton Sea would be expanded. Additional monitoring of breeding and roosting sites, invertebrates, and fish and bird populations may be conducted. Pilot studies would be conducted to investigate temperature and salinity tolerances for various fish species and methods to reduce impacts on fish and birds during construction of the Preferred Alternative.

Inflows, Water Quality, and Sediment Quality Investigations in the First Five Years

The PEIR analysis was based upon available inflow data collected through 2004. However, inflows have changed significantly since 2004 and will continue to change. For example, up to 200,000 acre-feet of flows in the New River from Mexico may be eliminated. Changes in farming practices due to new regulatory requirements may either reduce flows or change flow patterns into the Salton Sea. Therefore, additional data should be evaluated using hydrologic and hydraulic models to improve the reliability of inflow projections.

An extensive sediment and water quality monitoring program for nutrients, selenium, ammonia, hydrogen sulfide, and hazardous constituents would be conducted to define characteristics and seasonal and annual variations at locations of the Saline Habitat Complex, Marine Sea, and exposed playa. Water quality analyses in the Salton Sea also should include evaluation of the potential for release of hydrogen sulfide and ammonia based upon water and sediment chemistry. These data would be used to further develop analytical models to project characteristics during construction and operations and maintenance. These efforts would be coordinated with other monitoring programs established by regulatory agencies. Based upon these data and associated modeling, locations of habitat facilities may be modified from those identified for the Preferred Alternative.

Air Quality Investigations in the First Five Years

The air quality actions would be integrated with the efforts by other agencies in the Imperial and Coachella valleys. Additional air quality monitoring stations (up to 20 stations) would be installed to improve the understanding of wind patterns and background constituent concentrations along the entire Salton Sea shoreline and surrounding valley area. Monitoring stations also could be established close to the ground to define the effect of the Salton Sea on the microclimate on adjacent lands.

As the Salton Sea recedes, the exposed playa would be tested for chemical constituents and emissivity. It is feasible that exposed playa characteristics would vary with geography and elevation. Investigations would be conducted to determine the amount of salt and dust accumulated on nearby crops and the potential impacts on the crops.

Geotechnical Investigations and Surveys in the First Five Years

Geotechnical investigations and topographic and bathymetric surveys would be conducted over the entire Sea Bed with specific focus at the identified locations of Barriers, Berms, canals, and Air Quality Management facilities. Based upon the results of these investigations, structural design criteria and construction material requirements would be defined, including needs for excavated soils in the Sea Bed and imported rock and gravel. As part of this effort, detailed analyses of rock and gravel quarries would be conducted to identify sources of rock of appropriate sizes and chemical composition to withstand high salinity conditions. Pilot studies for Barrier and Berm designs could be completed in portions of the Salton Sea or in the Early Start Habitat area. If adequate construction materials are not available, the final designs would need to be modified.

Several previous studies, as described in the PEIR, identified the potential for unexploded ordinances and hazardous materials in the Sea Bed. Site-specific investigations would be completed.

Construction Methods and Materials Investigations Within the First Five Years

The PEIR analysis is based upon conventional construction methods and construction materials. However, due to concerns about global warming, new equipment and technologies are being developed. Therefore, an evaluation of available and potentially innovative construction techniques that minimize vehicle and industrial emissions and greenhouse gases would be conducted. Alternative construction methods for the Barrier could range from considerations of extended railroad sidings, harbors, or use of trestles to provide flexibility during construction and potentially reduce emissions from the use of barges. In addition, pilot studies would be performed to identify materials and methods that could withstand the high salinity conditions and minimize operations and maintenance activities. Many of these pilot studies would be conducted as part of the Early Start Habitat efforts described above.

Coordination with Torres Martinez Tribe

The Torres Martinez Reservation is located along the northern shoreline and extends into the Salton Sea. The Torres Martinez Tribe is currently preparing a new General Plan and associated documents. During this period, significant coordination efforts would be conducted to integrate the new plans with the Preferred Alternative. Site access agreements also would be negotiated to allow construction and operations and maintenance of the Preferred Alternative on tribal lands.

Access and Utility Agreements

Access agreements, either land deeds or easements, would be required for currently inundated land under the Salton Sea between the -228 foot and -230 foot msl contours for access facilities, Sedimentation/Distribution Basins, and corridors for roads and electrical distribution facilities. Specific locations for geothermal generation facility exclusion areas would be evaluated. Utility agreements would be negotiated with IID for electrical service, communications services, and potable water service for operations and maintenance buildings.

Project-Level Environmental Documentation and Final Design

Information collected during the investigations described above would be compiled into a preliminary design report that would consider a range of locations, sizes, and construction methods for facilities in the Preferred Alternative. Environmental documentation would be completed concurrently with preparation of the preliminary design report. The environmental documentation would further evaluate benefits and impacts of specific facilities during construction and operations and maintenance, as well as identify mitigation measures to reduce the effects of impacts. The Draft PEIR included “Next Steps” that should be considered during project-level analyses to reduce risks and potential adverse impacts. The Next Steps are summarized in Table 3-2.

Following the adoption of the environmental documentation, final design would be completed and plans and specifications would be prepared for bidding.

Bidding Period

It is anticipated that due to the unique nature of the design, construction methods, and site conditions, the bidding period and bid-checking period could require up to 12 months prior to initiation of construction. It is anticipated that multiple bid packages would be prepared. Therefore, portions of the construction could occur prior to other portions.

**Table 3-2
Next Steps to be Considered during Project-Level Analyses**

Resources	Items that should be considered during project-level analyses
Surface Water Resources	Best Management Practices to reduce erosion and polluted runoff during construction and operations and maintenance in accordance with the Stormwater National Pollutant Discharge Elimination System permit.
	Inflow investigations of volumes and flow patterns to determine specific locations of facilities and measures to protect against flood events or increases in future inflows.
	Seiche analyses to define surface water elevation of the Brine Sink and Marine Sea that would avoid inundation of lands above the design surface water elevation.
Surface Water Quality	Water, sludge, and sediment analyses of constituents that could adversely affect benefits of the Brine Sink. If adverse impacts occur, the materials should be hauled to a certified disposal site.
	Water quality and sediment assessments to determine specific locations for facilities and understand nutrient and chlorophyll a dynamics, external/internal source contributions, timing and extent of the Salton Sea response to load reductions, effectiveness of water quality improvements in the watershed, effectiveness of Sedimentation /Distribution Basins to remove constituents, and real-time temperatures. Sediment quality monitoring to understand sediment resuspension, sediment release, nutrient sequestration, and sediment oxygen demand.
	Pilot studies of shallow water cells on recently exposed Sea Bed to determine the rate of nutrient fluxes to the water column and other biological parameters that may be different on the Sea Bed materials as compared to pilot studies being conducted on lands adjacent to the Sea Bed.
	Multi-dimensional hydrodynamic and water quality model, with coupled sediment pool, for the Salton Sea that could be used, in tandem with monitoring efforts, to provide more detailed analysis of specific facility locations and methods to reduce internal nutrient loads.
	Habitat design criteria to maximize full mixing in the water column, such as orientation of islands parallel to the prevailing winds or orientation of the open water to take advantage of wind fields; and determine depth of Saline Habitat Complex pools to balance temperatures and water quality.
	Construction methods to limit the potential to re-suspend bottom sediments.
Groundwater Resources	Groundwater changes under the Coachella Valley Water District Water Management Plan evaluated to determine if surface water elevations adjacent to the Indio Subbasin of the Coachella Valley Basin should be designed to reduce further saltwater intrusion.
	Best Management Practices to protect groundwater during construction and operations and maintenance activities in accordance with a Stormwater Pollution Prevention Plan.
Biological Resources	Biological field investigations to determine specific locations of fish and wildlife resources; and develop specific biological impact avoidance criteria, including construction techniques, schedules, and facility locations. Potential mitigation measures could include methods to avoid disturbance of: breeding or roosting special status birds by scheduling the construction or maintenance activities near those habitats outside the breeding season and times of large roosting aggregations, or creation of similar habitats; desert pupfish during construction by conducting pre-construction surveys, capture and relocation of desert pupfish in the work area, scheduling work to avoid breeding season, and isolating the work area so that desert pupfish cannot enter; or consider a genetic exchange plan.
	Adaptive management program and monitoring program.
	Pilot projects to understand colonization of Saline Habitat Complex by invertebrates, fish, and birds; efficacy of the installation of snags, islands and other resting/loafing areas in managed habitats; need and methods for incorporating areas of freshwater within Saline Habitat Complex to accommodate the requirements of breeding birds and their young; and ratio of wet to dry areas.
	Maintenance plan for the Sedimentation/Distribution Basins that minimizes dredging in wetlands.
	Desert pupfish connectivity methods to link San Felipe and Salt creeks and the agricultural drains, including piping river channels to the Brine Sink.

Table 3-2
Next Steps to be Considered during Project-Level Analyses

Resources	Items that should be considered during project-level analyses
	<p>Methods for gravity and pumped diversions to avoid or minimize impacts to desert pupfish;</p> <p>Characterize the distribution of selenium in the sediments and co-located biota, and water to refine predictions of selenium risk and develop criteria to minimize selenium uptake in the food web.</p> <p>Recreational criteria to protect special status resources.</p>
<p>Geology, Soils, Faults, Seismicity, and Mineral Resources</p>	<p>Geotechnical investigations to determine specific geologic and soil characteristics; and develop design criteria consistent with the California Building Code to minimize the risk of damage and prevent injury or death during construction and operations and maintenance. Facilities or excavation activities located to avoid unstable soils, volcanic activity, or mineral resources.</p> <p>Range of materials and facility locations to minimize the need for mineral resources. For example, use of synthetic sheet piling may reduce the need for rock in shallower sections of the Barrier, although this could increase the need for petroleum products.</p>
<p>Climate and Air Quality Resources</p>	<p>Best available control measures and most stringent measures as required by the Imperial County Air Pollution Control District and South Coast Air Quality Management District .</p> <p>Methods other than haul trucks to deliver materials, such as trains or conveyors, watering soils during construction, pave or apply chemical stabilizers to roads on construction sites.</p> <p>Fugitive dust investigations for construction activities to estimate emissions, exposure assessment, and potential impacts on adjacent agricultural and community land uses.</p> <p>Emissions investigations for Exposed Playa areas to determine the amount and composition of the fugitive dust emitted from playa and the conditions that result in stable versus emissive conditions.</p> <p>Compliance with general conformity with the applicable State Implementation Plans through mitigation or other accepted practices.</p> <p>Odorless emissions investigations linked to the surface water and sediment quality investigations reduce odorous air emissions associated with off-gasing and fish die-offs.</p> <p>Microclimatic conditions investigations to determine effects of the facilities on agricultural lands adjacent to the Salton Sea.</p>
<p>Land Use</p>	<p>Facility locations and construction methods to reduce the impacts to existing land uses, including the conversion of agricultural lands, including Farmlands of Statewide Importance.</p> <p>Facility locations to minimize exposure of currently inundated Torres Martinez Tribal lands.</p>
<p>Population and Housing</p>	<p>Coordination with local construction organizations to maximize opportunities for local workers and minimize potential housing impacts due to out-of-area construction workers.</p>
<p>Recreation</p>	<p>Coordination with local communities to incorporate appropriate recreational opportunities.</p>
<p>Hazards, Hazardous Waste, and Public Health</p>	<p>Hazards investigations to locate undocumented, residual hazardous wastes.</p> <p>Best Management Practices guidelines for on-site storage and use of fuels and other potentially harmful materials and training of construction personnel.</p> <p>Public access prohibited on the construction sites if hazards exist.</p> <p>Staging and construction areas with hazardous materials located away from public areas.</p> <p>Coordinate with U.S. Navy that recommended additional investigations at the Salton Sea Naval Test Base to survey and remove or detonate in place any detected ordnance if land use changes occurred, such as construction of major facilities or development. Additional investigations should be conducted throughout the Sea Bed that could be disturbed during construction.</p> <p>Sediment investigations and monitoring programs to reduce the risk of exposure to constituents that could be released during soil disturbance. Worker training programs and breathing apparatus would be provided for all workers during construction.</p> <p>Sediment investigations to determine risks to workers and public due to unstable soils and geothermal conditions.</p> <p>Monitoring programs could be considered in coordination with public outreach programs to minimize potential risks associated with consumption of fish and wildlife tissue with high selenium.</p>

**Table 3-2
Next Steps to be Considered during Project-Level Analyses**

Resources	Items that should be considered during project-level analyses
	Coordinate with Coachella Valley Mosquito and Vector Control District BioControl Facility (Indio, California) to identify and reduce hazards due to mosquitos and vectors.
Cultural Resources	Investigations in accordance with Section 106 of the National Historic Preservation Act and implementing regulations under 36 CFR 800, as amended, including a pedestrian cultural resources survey of exposed lands as the Salton Sea recedes by a qualified archaeologist.
	Testing and Evaluation Plan to evaluate identified archaeological sites, and if feasible, avoid disturbance, or develop a Data Recovery Plan.
	Construction Monitoring and Treatment Plan to ensure that new sub-surface discoveries are adequately recorded, evaluated, and, if significant, mitigated. If human remains encountered, consultation with the most likely Native American descendant, the Office of Historic Preservation, and the counties of Imperial or Riverside coroners. Discovered sites should be properly recorded with the appropriate California Historic Resource Information System office.
	Construction specifications, to the extent feasible, should require all Sea Bed disturbances to be monitored by a qualified archaeologist and a Native American representative.
	Construction worker training to recognize and report any discoveries of cultural resources and prohibited activities, such as the unauthorized collection of artifacts.
Paleontological Resources	Paleontological Resources Monitoring and Recovery Plan for all disturbances, including methods to: confirm the paleontological sensitivity (high, moderate, or low) of the areas to be impacted through review of project-level geological and geotechnical data; determine the qualifications of the paleontologist; assess and recover discovered fossil resources; and establish a monitoring program during and after construction.
Noise Resources	Noise investigation to identify Existing Conditions and potential changes due to construction and operations and maintenance activities at sensitive receptors due to noise and vibrations.
	Construction methods and materials to reduce noise and vibration impacts, including use of hydraulically or electrically powered impact tools or exhaust mufflers; manufacturer's standard noise control devices; locate stationary equipment and components as far as possible from noise sensitive receptors; minimize idling of construction equipment; use acoustic barriers, phase construction times; and notify nearby property users during construction periods.
Aesthetic Resources	Design criteria to minimize visual impacts, including methods to camouflage large facilities with vegetation or use of textures and color to blend into the environment.
	Non-glare lighting with on-demand switching, where possible.
Public Services and Utilities	Traffic plans and emergency response plans for construction to reduce the risks, such as worker training programs, required private security and fire protection at construction sites, or fee schedules for construction permits to include funds for emergency services.
	Solid waste facilities fee schedules to promote recycling and minimize solid wastes. It may be necessary to mandate hauling of solid wastes to landfill sites located outside of the study area. Hazardous waste site would need to be hauled to certified landfills.
	Solar generation plans for facilities to minimize electrical generation requirements and need for construction of electrical transmission and distribution lines in habitat areas.
Traffic and Transportation Resources	Traffic study to minimize construction impacts on roadways, including: extend railroad sidings and/or conveyors to the shoreline or trestles to construction sites; carpooling for workers; stagger start-stop times of shifts and haul times; use flagpersons; maintain emergency access at all times; and establish appropriate parking areas at construction and facility sites.
Power Production and Energy Resources	Energy savings measures and alternative energy sources, such as electric equipment and vehicles, and solar power.
	Transmission and distribution lines and related facilities that cannot be replaced by solar power should be located to avoid/reduce significant environmental impacts.
	Coordinate with geothermal industry to establish locations of power generation and transmission facilities in coordination with the habitat and air quality management facilities.

Period II: Major Construction - 2014 to 2025

Construction phasing of the Preferred Alternative would be determined by water elevations in the Salton Sea. Under concepts evaluated in the PEIR, construction of the Berms for Saline Habitat Complex could not occur until the water recedes in the area where the Berm would be constructed. Construction of the Barrier may be more appropriately completed while the water in the Brine sink (residual Salton Sea) is deep enough to support barges.

Initial construction activities would most likely include Sedimentation/Distribution Basins, Air Quality Management Canals along the shoreline, harbors or other construction staging areas, trestles or other delivery systems for constructing the Barriers. The Air Quality Management Canals also would convey water to the Marine Sea from the New and Alamo rivers. The construction period for the Barrier would be limited by design criteria, availability of construction materials each year, and the ability to transport construction materials to the Salton Sea without causing major traffic impacts in the area.

The construction period for the Barrier in the Preferred Alternative is projected to extend from 2014 until early 2022. Based upon the inflow projections, the Marine Sea salinity would be over 80,000 mg/L and the surface water elevation would be -248 feet msl at the time the Barrier would be closed. Marine Sea salinity would be less than 40,000 mg/L and the surface water elevation would be at -230 feet msl within 15 months of the completion of the Barrier.

As the water recedes, Saline Habitat Complex Berms would be constructed. Based upon the Preferred Alternative layout and the associated inflow projections, Berms located at -236 feet msl could be constructed after 2018 after the surface water elevation recedes to -238 feet msl. This area would be the Shoreline Waterway and would be used to distribute water to other portions of the Saline Habitat Complex and provide connectivity for the desert pupfish. The next Berms would be located at -242 and -248 feet msl and could be constructed in 2022 and 2024, respectively. Salinity goals in the Saline Habitat Complex could be achieved within months following completion of the Berms.

If the geothermal facilities are not constructed in this period, the exposed playa in the geothermal area would be monitored and pilot studies would be conducted to determine the most cost-effective method to control particulate emissions. Air Quality Management facilities would be constructed in this Major Construction Period, if needed.

Operations and maintenance activities would begin towards the end of this period and include periodic inspections for facility conditions and safety; repairing or replenishing Berms for seepage, erosion, and settlement; repairing roads with rock addition; repairing water conveyance facilities in the Saline Habitat Complex, and Air Quality Management Canals and facilities; dredging of Saline Habitat Complex holes to maintain depths; vegetation and vector control; and repairing and replacing of conveyance pumps.

Period III: Construction Completion - 2026 to 2035

After 2025, inflows are projected to recede rapidly due to changes in irrigation practices and elimination of inflows from Mexico. Saline Habitat Complex Berms would continue to be constructed. The Berms at -254, -260, and -266 feet msl would be constructed in 2026, 2028, and 2033, respectively, as shown in Table 1. The exposed playa would be monitored and pilot studies would be conducted to determine the most cost-effective method to control particulate emissions. Air Quality Management Canals on the Sea Bed would be constructed as the water recedes below -260 feet msl. It is anticipated that the playa would be fully exposed by 2035. However, construction may continue after 2035 as results from the emission monitoring programs and pilot studies are completed. The PEIR assumes that the Air Quality Management facilities are completely constructed by 2035.

Operations and maintenance activities would continue as described for the Major Construction Period. In addition, operations and maintenance activities would begin for the Air Quality Management and Marine Sea facilities. These activities would include periodic inspections for facility conditions and safety; repairing or replenishing Barriers as well as Berms for seepage, erosion, and settlement; continued repairing of roads with rock addition; repairing water conveyance facilities in the Saline Habitat Complex, Air Quality Management Canals and facilities, and Marine Sea outlets; continued dredging of Saline Habitat Complex holes; continued vegetation and vector control; repairing and replacing of conveyance pumps and Air Quality Management pumps, filters, and treatment facilities; and replacement of chemicals used in Air Quality Management facilities. It is anticipated that the Air Quality Management drip irrigation system will require daily maintenance to reduce fouling and plugging. Security patrols also would occur on a daily basis.

Period IV: Operations and Maintenance - 2036 to 2078

Operations and maintenance activities would continue as described above throughout this period and beyond. It is anticipated that the inflow conditions assumed for the Preferred Alternative would continue after 2078. Although the IID Water Conservation and Transfer Program is only authorized until 2078 (assuming renewal in 2048), most of the inflow reductions projected for the Salton Sea are not related to the water transfer and would not change by 2078. If the water transfer is not renewed in 2078, the additional inflows may be used to expand the Saline Habitat Complex following additional evaluations or convert a portion of the Brine Sink to useable habitat.

Estimated Construction Cost

Based upon assumptions described in the Draft PEIR, cost estimates for construction and operations and maintenance at build-out were developed for the Preferred Alternative, as shown in Table 3-3.

**Table 3-3
Estimated Capital and Operations and Maintenance Costs For Preferred Alternative
(In Million Dollars, 2006 Dollars)**

Items	Capital Cost	Annual Operations and Maintenance Cost at Build-out
Barriers	\$3,991	\$27
Saline Habitat Complex (including Early Start Habitat)	\$758	\$10
Water Conveyance	\$168	\$6
Air Quality Management	\$891	\$99
Subtotal	\$5,808	\$142
Additional Miscellaneous Items at 5% of Subtotal Above	\$290	—
Total Construction Cost	\$6,098	—
Contingencies at 30% of Total Construction Cost	\$1,830	—
Subtotal	\$7,928	—
Engineering, Administration, and Legal at 12% of Subtotal Above	\$951	—
Total Capital Costs	\$8,879	\$142

Note: Costs do not include cost of Demonstration Project (\$6.6 million), investigations in addition to pre-design efforts and administration prior to construction (\$19.3 million), permits, land or easement acquisition (estimated at \$10 million for Early Start Habitat), and interest on borrowing funds.

The estimated cash flow estimate is presented in Table 3-4 based upon the assumptions described above.

Table 3-4
Estimated Cash Flow for the Preferred Alternative
(In Million Dollars, 2006 Dollars)

	2008- 2013	2014- 2020	2020- 2030	2030- 2040	2040- 2078
Costs for pre-design, design, environmental documentation, permitting, and bidding for construction through 2025	\$395.8				
Costs for other investigations, Demonstration Project, Early Start Habitat, \$10 million for Early Start Habitat easement/land, and administration until construction	\$113.1				
Construction; construction management; administration during construction; and pre-design, design, environmental documentation, permitting, and bidding for construction from 2025 through 2035	0	\$5,930.3	\$1,324.0	\$1,153.1	0
Total Capital Costs	\$508.90	\$5,930.3	\$1,324.0	\$1,153.1	0
Annual Operation and Maintenance Cost	\$0.7	\$0.7	\$70.9	\$141.9	\$141.9

Note: Costs do not include permits, land or easement acquisition (except Early Start Habitat), or interest on borrowing funds.