Crisis at the Salton Sea: Problems, Solutions and Opportunities
University of California Riverside
Salton Sea Task Force

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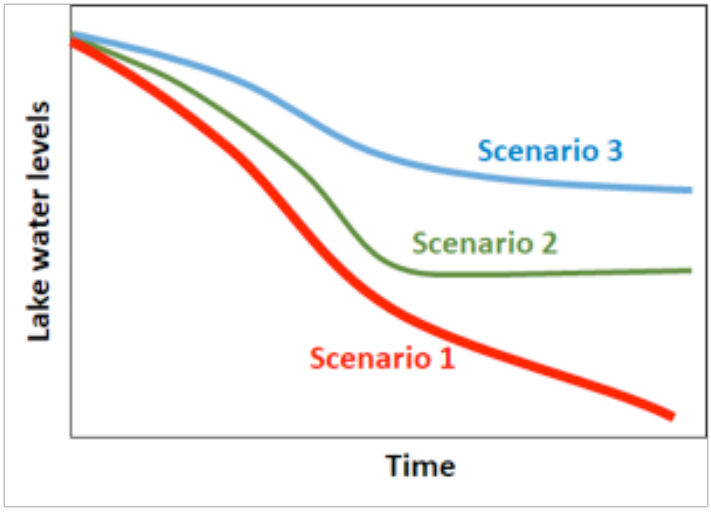
To advise the State and federal government on solving the environmental problems facing the Salton Sea and surrounding landscape, a convergent, scientific and engineering approach coordinated with policy experts needs to be investigated as funding for mitigation and restoration plans go forward.

University of California Riverside's EDGE Institute is conducting a study of the outstanding research questions facing this critical region and how the Salton Sea's changing environment might impact people living in the Imperial and Coachella Valley communities. The study will provide recommendations to managers at State and federal natural resource agencies, who will be **creating research agendas** to complement the current management plan, and California legislators, who will be developing public policy. **We recommend earmarking 5% of mitigation and restoration funds for research** to be carried our concurrently to ensure engineering solutions are accomplishing air, water, and ecosystem requirements.

Our study team (UCR's Salton Sea Task Force) is considering three different scenarios for Salton Sea's future.



· Scenario 1: The lake water levels will continue to decline as the current trend in lake water levels indicates. We will still have water in the lake but less than today and less than in Scenario 2. The reasons for the decline are changes in subsurface

water flows, lower Colorado River inflows owing to lower snowpack and population growth, and higher evaporation rates in future.

· Scenario 2: The lake water levels will decline but eventually reach a steady state condition with water levels at -255 ft. This scenario assumes that Colorado River inflows will remain at their current rate or slightly lower in future, although future Colorado River inflow projections suggest otherwise.

· Scenario 3: The lake water levels will recover to a certain level by implementing mitigation scenarios (e.g. water purchases), wetland impoundments, or imported water from the Gulf of California.

Federal and California state air quality regulations, endangered species laws, and protections of migratory waterfowl will necessitate action within the next 5 years.

Further research is needed to develop a deeper understanding of how the Salton Sea system functions now in 2020 and for the next 10 years. More sustainable approaches for mitigating toxic dust risk are needed, as well as ensure birds continue to have a home in the area.

Further research is needed to address these outstanding gaps in knowledge

· What is the extent of health problems in the region related to the Salton Sea? How does the Sea's unstable ecology affect human health?

· Where does the region's dust come from? Does the Salton Sea's playa or waters contribute to the dust in one region relative to another? Which communities are most heavily impacted?

· How do the Salton Sea's shoreline crusts form? How stable are they and what is their potential toxicity? How do they affect air quality in the region?

· What is needed to produce a current hydrological model that accurately reflects the Salton Sea's status?

· How is the current Salton Sea ecosystem functioning today? What is its future?

· How will the ecosystem in the proposed mitigated marshlands relate to natural marshlands and adjacent nearshore communities?

· How has the metal (e.g. selenium) and nutrient cycling in Salton Sea's briny water habitats changed over the past 20 years? How might these biogeochemical cycles change with evolving lake levels?

· What is the potential for geothermal energy and mineral extraction (e.g. lithium) in this area? Are there other resources in this area that might improve the region's economy

Our report, in draft form, will be released in September 2020, after review.

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Acknowledgements
Executive Summary
Introduction: Fogel, Hackwood, and Schwabe
Health Challenges: Professor Lo
Air Quality and Dust: Professors Bahreini, Porter, and Aronson
Hydrology and Water resources: Professor Ajami

Aquatic and Terrestrial Ecosystems: Dr. Nye, Professors Fogel, Aronson and Jenerette
Biogeochemisty: Professor Lyons and Ms. Hung
Minerals and Energy: Professor McKibben and Dr. Raju

Conclusions and Recommendations
Further Reading