

Long-term Ecological Effects of the Delta Conveyance Project in the San Joaquin Delta

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Introduction

California’s Delta region supplies water to two-thirds of the state but faces threats from aging levees, salinity intrusion, and seismic vulnerability. The Delta Conveyance Project (DCP) proposes a 45-mile underground tunnel to divert Sacramento River water south. While intended to improve water reliability, the DCP raises environmental and equity concerns for Delta ecosystems and communities.

- Research Question: What are the long-term effects of the Delta Conveyance Project on ecological systems in the Sacramento–San Joaquin Delta?

Methodology

This study used a qualitative approach to evaluate the long-term environmental risks and planning alternatives to the DCP.

Qualitative Design

- Stakeholder Interviews- Department of Water Resources, Save the Delta Alliance, Business Owner
- Document Analysis- DCP Final EIR, DCP Environmental Justice Community Survey, global conveyance projects
- Site Analysis- selected five locations along proposed DCP Eastern Route to grade them against criteria: ecological burden, geological stability, accessibility, seismic activity.

Site Analysis Evaluation

Characteristics	Hood Intake	Pleasant Point	King Island	Windmill Cove	Clifton-Court Forebay
Ecological Burden	2- Intake installment would collect water and restrict natural flow	1- land has already been transformed	3- riparian and wetland area, delicate and integral to environmental health	2- marina area that could experience some impacts such as decreased water quality	1- already established as a SWP asset, minor risk
Geological Stability	2- could be subject to erosion	1- farmland was flat and generally seems to be more stable	2- Delta soil is unstable	2- similar to King Island	3- known for having an unstable base, subsidence issues
Accessibility	3- small town with small roads, infrastructure needed	3- small roads and restricted access to private property for staging	2- remote but roads were wider, but difficult staging	3- small roads mostly for agriculturally purposes	1- already established as an SWP asset, no accessibility issues
Seismic Activity	2- a midland fault zone is nearby but not a high risk	1- the midland fault is still nearby but less risk	3- could be susceptible to liquefaction	3- similar to King Island	3- response issues after earthquakes, in a liquefaction zone



Key Findings

- Document analysis, interviews, and site visits identified long-term ecological risks not adequately addressed in the DCP Final EIR. These include:
- Hypoxia, as seen in the Gulf of Mexico, linked to altered sediment and nutrient flows
 - Water salinization, threatening both farmland and aquatic species
 - Sediment contamination, particularly near intake sites like Hood
 - Stakeholders also expressed concern about unclear community benefits and limited alternative analysis in the DCP process.

Policy Recommendations

- No single alternative analyzed was sufficient enough on its own to be a direct alternative to the DCP, suggesting that a layered approach integrated into the DCP would be the most efficient and equitable.
- Nutrient Reduction Programs- Adopt upstream controls to prevent hypoxia in the Delta; align with EPA and Gulf Hypoxia Task Force models.
 - Urban Water Recycling- Expand regional reuse systems to reduce Delta water dependency.
 - Levee Repair and Reinforcement- Invest in levee upgrades to protect Delta communities; integrate into California’s Climate Adaptation Strategy.

Alternatives Evaluation

	Effectiveness	Cost	Environmental Sustainability	Administrative Feasibility	Equitably
Nutrient Reduction Programs	4- Proven to reduce hypoxia in large watersheds	4- Implement through farm-level Best Management Practices	5- High potential to improve long-term water quality	3- Requires high amounts of participation and coordination	3- Benefits are seen across the Delta, direct benefits to communities are low
Water Recycling	3- Reduces statewide demand on Delta exports	3- High initial investment, but longterm savings	4- Reduces reliance on freshwater sources	4- High, with existing models in Orange County	4- Can benefit urban areas equitably if implemented in DAC areas as well
Levee Repairs	4- Directly protects lives, farmland, and infrastructure	2- High capital investment, long-term implementation	3- Maintains existing conditions	2- Limited coordination and funding	5- Strong local benefit to Delta residents

Conclusions

- The DCP improves water supply but overlooks local environmental and equity impacts.
- Levee repairs and nutrient reduction offer more targeted, community-based benefits.
- A layered strategy that combines infrastructure, ecological protection, and demand reduction is essential.
- Planning must prioritize both resilience and justice for Delta communities.