



INFORMATION ITEM

Delta Levees Investment Strategy Risk Reduction Analysis

Summary

Delta Stewardship Council (Council) staff will discuss the risk reduction to state interests achieved with the completion of the Bethel Island Municipal Improvement District Project. Council staff conducted the analysis using data from the Department of Water Resources (DWR) 2024 Delta Levees Investment Strategy (DLIS) report presented at the April 2025 Council meeting.

Background

Delta and Suisun Marsh Levees

The Sacramento-San Joaquin Delta (Delta) is home to more than 500,000 people and is comprised of approximately 1,300 square miles of low-lying, flood-prone lands bound by 1,100 miles of levees.

The Suisun Marsh, located immediately downstream from the Delta and north of Grizzly Bay, includes about 230 miles of levees that reduce flood risk and help manage flows for wetlands. About 80 miles of these levees protect Delta water quality and terrestrial and aquatic habitat of statewide importance.

Levees in the Delta and Suisun Marsh reduce flood risk to people, property, water supply, the Delta ecosystem, and infrastructure of statewide importance. However, levee failure can cause catastrophic flooding, can potentially cause injury or loss of life, disrupt water supplies, and possibly damage property, infrastructure, and environmental resources of importance to the entire State.

Delta Reform Act Requirements and Authority

Pursuant to the Sacramento-San Joaquin Delta Reform Act of 2009 (Wat. Code, § 85000 et seq.; Delta Reform Act), the Council has developed an enforceable, comprehensive, long-term management plan for the Delta. (Wat. Code, § 85300.) The Delta Plan contains regulatory policies, codified in California Code of

Regulations, title 23, section 5001 et seq. The Delta Reform Act requires that the Delta Plan attempt to reduce risks to people, property, and State interests in the Delta by promoting effective emergency preparedness, appropriate land uses, and strategic levee investments (Wat. Code, § 85305, subd. (a).), as well as recommend priorities for State investment in levee operation, maintenance, and improvements in the Delta, including both project levees, which are a part of the State Plan of Flood Control, and nonproject levees, which are not a part of the State Plan of Flood Control. (Wat. Code, § 85306.)

Regulatory Background

Using a risk analysis methodology, DLIS established a three-tiered priority list of islands and tracts – **Very-High Priority**, **High Priority**, and **Other Priority** – for discretionary State investments in levee improvements for Delta islands and tracts. The priorities generally address the relationship between the flood risk of each island or tract, and the State interests present on that island or tract.

Delta Plan Risk Reduction regulatory policy **RR P1** (Cal. Code Regs., tit. 23, § 5012.), directs DWR to make State investments first on the Very-High Priority islands or tracts, then to fund levee improvements on High Priority islands or tracts; after those projects have been fully funded, projects at Other Priority islands or tracts may be funded.

DLIS specifies that levee operations and maintenance are a priority for all Delta islands and tracts.

Reporting Requirements

The DLIS regulation requires DWR to annually submit to the Council a written report documenting its funding decisions that includes:

- 1) A description of all discretionary State funding for levees awarded by DWR, during the reporting year, including both of the following:
 - a. Levee improvement.
 - b. Levee operation and maintenance.

- 2) A list of each levee improvement project proposal submitted to DWR for funding, regardless of whether DWR awarded funding to the project.
- 3) A list of the improvement projects awarded funding, the funding level awarded, the local cost share, and the applicable priority of the island or tract.
- 4) A description, for each awarded project, of changes, when completed, to levee geometry, the specific locations of those changes, and expected changes in the level of flood protection provided or standard achieved.
- 5) A summary of DWR's rationale for levee improvement project proposals submitted but not awarded funding during the reporting year.
- 6) A summary of all previous DWR-funded levee improvement project activities completed during the reporting year and location of those activities.

DWR staff presented a report covering the 2024 funding year to the Council at the April 24, 2025, Council Meeting.

Summary of Analysis

Report

DWR's report documented 21 projects currently in construction and one completed levee improvement project during the reporting period. Once the construction projects are complete, and reported to the Council, Council staff will update the DLIS Decision Support Tool (DST) with the levee improvements and analyze the expected reduction in risk. Levee construction projects may take several years to complete – the Council can expect to see the completed projects documented in future DLIS reports.

In addition to the prior year's funding decisions, the report also included an account of newly funded projects as well as project proposals received but not awarded.

Projects that were awarded funding included:

- 4 – Very High Priority islands, and
- 1- High Priority island

DWR provided a justification for the deviation from DLIS priorities, with the approval of a levee improvement project on a High Priority island - Bouldin Island, by accounting for how the project will provide opportunities for ecosystem restoration, flood control, water supply and water quality benefits, and conveyance while enhancing levee system integrity. This project includes waterside levee habitat enhancement and protects SR 12 and access to emergency supply locations. DLIS does not account for critical waterside habitat needs in its prioritization, but the habitat enhancement component of this project is consistent with the Council's mission to advance the coequal goals.

Twelve other projects were reported to have requested funding and were denied. These included:

- 7-Very High Priority islands or tracts
- 2-High Priority islands or tracts
- 3-Other Priority islands or tracts

RR P1 requires that DWR's report includes a rationale for levee improvement project proposals submitted but not awarded funding during the reporting year. However, the report included rationales only for funding denials for Very High Priority islands and tracts. Examples for the rationale given were:

- Partnerships/Matching Funds
- General Elements and Quality of Proposal
- Ecosystem Enhancement

Overall, the report provided an abundance of information on DWR's activities in the Delta and the myriad programs that it uses to maintain and uplift Delta Levees and provide ecosystem services. However, there remain opportunities for improvement.

Summary of Results

Bethel Island

Using the project information provided in DWR's report, Council staff analyzed the completed project built on Bethel Island. As noted previously, projects that were authorized but not completed were excluded from this analysis and will be included in future year analyses once the projects are completed.

Council staff updated the levee fragility curves, which are the engineering estimates of the probability that a levee will fail at a given water surface elevation, for the completed improvement project. Council staff used the DST to compute the estimated change in flood risk to all of the following, as shown in Table 1:

- Property
- People
- Water supply
- Landside habitat
- Delta as Place (Prime farmland and State highways)

Table 1: DLIS Decision Support Tool Metrics Summary Table

Bethel Island DST Metrics	Pre-Project	Post-Project	Net Change (\$ and %)
Expected Annual Damage (\$/yr.)	\$6,058,743	\$6,034,216	-\$24,527 (-0.4%)
Expected Annual Fatalities	0.233	0.232	0 (-0.4%)
Probability of Levee Failure	4.36%	4.35%	-0.20%
Expected Annual Flooded Leveed Habitat (acres/yr.)	15.1	15.0	-0.1 (-0.2%)
Expected Annual Damage, Delta as Place (\$/yr.)	\$168,125	\$167,469	-\$656 (-0.4%)

Bethel Island's levees are crucial for protecting the island's residents, agriculture, water quality, and natural habitats from flood risks. This project reduced risk to State interests by improving approximately two and a half miles of Bethel Island's levees to Bulletin 192-82 standards and improving approximately two miles of existing levee toe drains. This project also provided habitat enhancements through the creation of 3,400 feet of Shaded Riverine Aquatic habitat and 4,600 feet of Lowland habitats with native plant species. Bethel Island continues to need

investment to bring this island's flood protection to the standard, which is 200-year protection for islands and tracts critical to water supply, adopted by the Council.

A detailed accounting of this analysis is provided in the Report ***DLIS Risk Reduction Analysis – Reporting Year 2024*** (Attachment 1). Over time, DWR's annual reports will allow the Council and the public to see how investments in Delta levees reduce risk to State interests.

Overall Conclusions

Excluding expenditures through the Delta Levees Maintenance Subventions Program (Subventions), the State spent approximately \$93.6 million on the discretionary levee investment projects considered in this report. However, both the investments and the risk reductions achieved represent a small portion of the ongoing levee improvement needs.

Subventions funding remains critical for maintaining the improvements that have been made in Delta. Yet, this program's funding future is uncertain. It remains important for the Council to continue to advocate for strategic funding of Delta levee operations, maintenance, and improvements in a manner that reduces risk and protects State interests.

Today's Meeting

At today's meeting, Council staff will present the analysis of estimated flood risk reductions achieved based on DWR's discretionary levee improvement investments over the 2023-2024 reporting year. In addition, Council staff will discuss the contents of the report and their alignment with the reporting requirements.

Fiscal Information

Not applicable.

List of Attachments

Attachment 1: DLIS Risk Reduction Analysis – Reporting Year 2023-2024

Attachment 2: Levee Guidance

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