

The Department of Water Resources (DWR) set 10 engineering objectives for the development of a Delta Conveyance Project (Project) that would avoid or minimize the effects of the project on Delta communities and the environment. In 2021, Delta Conveyance Design and Construction Authority (DCA) engineers completed preliminary conceptual designs incorporating these engineering objectives for DWR to use in an environmental evaluation of project alternatives, as required by the California Environmental Quality Act (CEQA). After DWR considered the comprehensive analysis of the overall effects of the alternatives included in the Final EIR, the Bethany Reservoir Alternative, now referred to as the Bethany Reservoir Alignment, was selected by DWR to move forward as the Delta Conveyance Project.

Delta Conveyance Project Overview

The Delta Conveyance Project consists of conveyance facilities with a combined total of 6,000 cubic feet per second design flow capacity that would be constructed on an eastern alignment roughly parallel to Interstate 5 in the north and extending to a site south of the Byron Highway, ultimately discharging into the existing Bethany Reservoir. The single main tunnel is approximately 45 miles long and it would be about 100-130 feet from the surface to the crown, or top, of the tunnel.

10 Engineering Objectives

DWR charged DCA with meeting the following engineering objectives:

- 1 Avoid increasing demand for emergency services in the Delta.
- 2 Manage flood risks to the project facilities and existing land use.
- 3 Manage seismic risks to people and property.
- 4 Minimize activities that produce noise, dust, greenhouse gas emissions, traffic, and land use disturbances.
- 5 Minimize construction effects to existing infrastructure or other community resources.
- 6 Minimize construction traffic and associated effects.
- 7 Minimize disturbance to existing land uses, including agricultural land, residences, and wildlife habitat.
- 8 Minimize disturbance to sensitive wildlife and protected habitat areas.
- 9 Minimize effects on Delta water-based recreation and navigation.
- 10 Minimize noise during construction and operations.

Conceptual design of the Bethany Reservoir Alignment meets these objectives in the following ways.



Avoiding Impacts to Existing Emergency Services

DCA conceptual plans for the project include emergency response facilities at the intakes, tunnel launch shaft sites, and the Bethany Complex. This would help reduce emergency response traffic on area roadways and avoids taxing local resources if emergency services are needed at project sites.



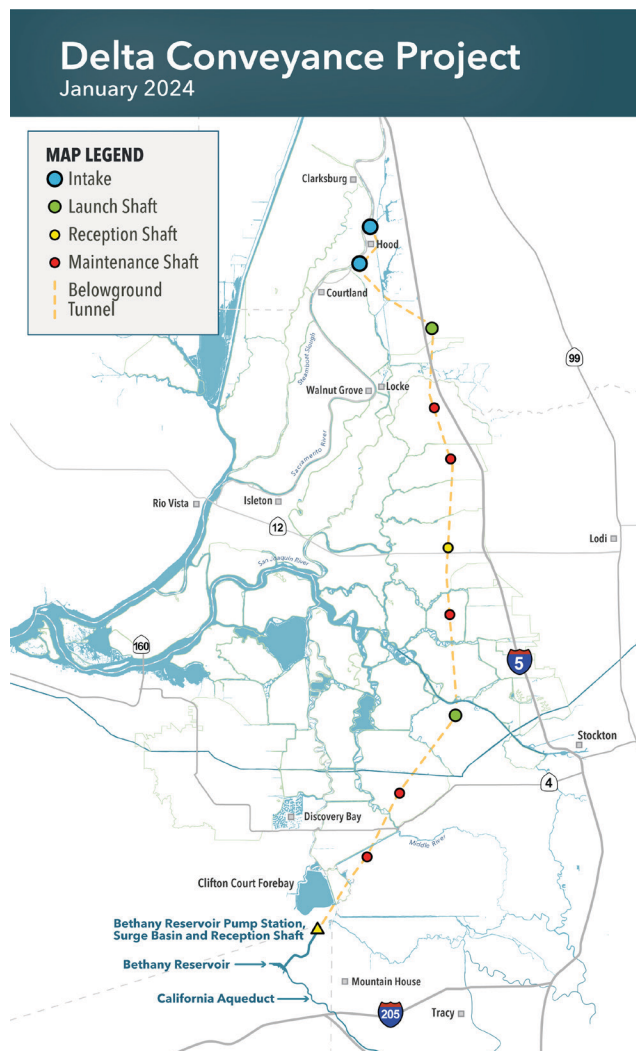
Managing Flood Risks

DCA's engineering team has implemented a number of measures to manage flood risk. All project facilities, including the pumping plant and tunnel shafts, would be designed to withstand the 200-year flood elevation, including sea level rise and climate change projected for the year 2100. The project would also avoid the use of levee roads for heavy construction traffic and would maintain setback from existing levees for fill placement. To reduce flood risks at each of the dual launch sites during construction, levees that protect those sites will be improved to current levee geometry standards. The intakes would be designed and positioned to meet flood agency criteria (USACE and CVFPB) during extreme flood events and to provide continuous flood protection of the project area during both construction and operations periods.



Managing Seismic Risks

With many active fault systems, the U.S. Geological Survey has predicted that there is a 72 percent chance of at least one earthquake somewhere in the Bay Area region of a magnitude 6.7 or greater by 2043. Seismic reliability of the Delta Conveyance Project tunnel and all project facilities would be essential for continuing water deliveries following earthquakes. The seismic design criteria adopted for the 45-mile Delta Conveyance Project tunnel is based on what is designated as the Maximum Design Earthquake (MDE), an extreme seismic event estimated to happen once every 2,475 years on average. Using this and other criteria, Delta Conveyance Project facilities would be designed and constructed to withstand the estimated ground shaking and resulting ground loads and deformations caused by such an extreme seismic event.





The Delta Conveyance Project tunnel would connect to the Bethany Reservoir, eliminating the need for an intermediate forebay



Reducing Traffic Impacts

Construction traffic along the Project's easterly alignment would reduce effects in the Central Delta due to the project's proximity to I-5, I-205, and I-580, and the Port of Stockton. Construction traffic on State Route (SR) 160 would be limited to residences and local businesses while construction traffic in Solano and Yolo County would be limited to I-80 and SR-12. Where construction traffic on local roads would be required, new dedicated haul roads or widened roads would be constructed to minimize the effects on local traffic. Park-and-ride facilities located near I-5 and Hood-Franklin Road and I-5 and Charter Way would provide shuttles to shuttle workers to construction sites and therefore reduce worker traffic to the intake construction sites and Lower Roberts Island tunnel shaft site, respectively. The project would not include tunnel launch facilities near SR 4 or the Byron Highway, which would reduce construction traffic in the area. The new pumping plant and connection to Bethany Reservoir would be located south of Byron Highway and improved access routes to I-205 and I-580 would be constructed, which would allow better access to the work sites, help distribute construction traffic flow away from already congested roadways, and avoid construction traffic in front of Mountain House School.



Minimize Disturbance to Land Uses

The project configuration would allow a direct connection into the existing Bethany Reservoir. This eliminates the need to construct an entirely new forebay next to Clifton Court Forebay, preserving over 1,000 acres of farmland and nearby wetlands.

Additionally, the Project includes fewer launch shafts, which are the largest project feature, than the alternative alignments evaluated in the environmental review process. The project

would have only two double-launch shafts for the entire alignment, compared to the other alignment alternatives evaluated, which included two double-launch shafts and two single-launch shafts.



Avoiding Delta Waterways

DCA's engineering team developed the project to minimize utilizing Delta waterways during construction. Barges would only be used in the last months of construction of each intake to place rip rap for erosion and scour control. Otherwise, the project would not utilize barging, and there are no new barge landings planned. Waterways would remain open during construction, as would the Bethany Reservoir State Recreation Area.

Noise Reduction Efforts

- DCA has conceptually designed the project to reduce impact pile driving, a major source of noise, by utilizing mostly vibratory pile driving and drilled piers.
- The intakes would feature underwater self-cleaning cylindrical screens rather than vertical flat-plate screens that have components above the surface of the water that could create noise during cleaning.
- The project would locate all fans and ductwork inside buildings rather than on the exterior to minimize operational noise extending beyond project sites.
- Portions of the concrete batch plants would be enclosed to reduce noise and dust generation.
- Temporary sound barriers and shrouds would be used during construction to minimize noise impacts to nearby properties.



Minimizing Disturbance to Wildlife

The Project has been designed to minimize disturbance to wildlife and sensitive habitats. For example, the DCA engineering team aligned the tunnel and sited facilities such as the maintenance shafts away from sensitive areas. The project design includes burying new power and communications lines where practicable to minimize disturbance to aviary species, such as the Greater Sandhill Crane. New belowground facilities, including powerlines, which cross sensitive habitats would be installed using trenchless technologies to minimize surface impacts. Further, the construction schedule staggers construction of project facilities to minimize noise and other impacts to sensitive species and wildlife, and noise reduction efforts described above would also reduce impacts to wildlife.

Community Benefits Program

Out of recognition that the water supply benefits of the Delta Conveyance Project extend across much of the state, but the impacts of construction and operation are concentrated locally in the Delta, the Delta Conveyance Project includes a commitment to a comprehensive Community Benefits Program. The overall available funding for the Delta Conveyance Project's Community Benefits Program is \$200 Million. The goal of the program is to develop ways to identify, fund, and implement local projects that can provide tangible, lasting, and valuable economic and social benefits to the residents, businesses, and organizations affected by the Delta Conveyance Project.

The resulting conceptual design for the Delta Conveyance Project has been downsized, refined, rerouted, and generally optimized to minimize disturbance to the Delta. The design also delivers on DWR's project objectives to modernize State Water Project facilities in the Delta and improve water supply reliability for the future.

Engineering a Reliable Water Supply for California

The DCA's mission is to plan, permit, design, and build a modernized state-of-the-art, sustainable, resilient, environmentally responsive, and cost-effective Delta Conveyance Project that resolves the long-standing need to assure affordable State Water Project reliability serving future generations of Californians in a way that respects the uniqueness of the Delta as a place and its communities.