

Reroute Delta drainage with a network of pipes and treat for salt removal before discharge

Category: (To be developed)

Resources Area: Water Quality, WQ-S-2

Related Options: WQ-O-1, WQ-S-1

Resources Issue: Salt within the Estuary negatively affects agriculture, industrial, and municipal uses of Delta water, and may negatively affect Delta (freshwater dependant) species. In addition, agricultural waste discharges from Delta Islands contain dissolved organic carbon that contributes to the creation of unwanted byproducts during the process of drinking water treatment when Delta source waters are diverted to municipal water supply users. The implementation of more stringent regulations on these byproducts requires advanced treatment processes at significant costs to local water agencies. Some recent studies identify Delta island drainage discharges as a source for more than 50% of the dissolved organic carbon measured at the project pumps. The more than 1500 discharge locations within the Delta make it difficult to control dissolved organic carbon at its source. There are related issues that may be partially addressed or impacted to some degree by this option. One issue is the problem of disposal of waste brine from the salt removal treatment process at a remote location. Other related issues include the re-introduction of some constituents of the collected island drainage into the estuary at the discharge point which may negatively affect aquatic species.

Discussion: The construction of a pipe network throughout the Delta for the purpose of collecting drainage for treatment prior to discharge could result in less saline and better water quality in the estuary. The carbon that would be removed in the treatment process is expected to be refractory organic material that does not contribute measurably to the biological productivity of the estuary, but does affect the suitability of drinking water supplies. In addition, the quality of export water could be improved. A possible sub-alternative to this action option is the construction of a pipe network that would reroute select island drains that affect particular locations or the use of existing drainage facilities on the islands (canals, etc.) to route the discharge to a common point. Waste brine from the treatment process would be discharged at a remote location. This project may require the construction of energy transmission systems at some sites in the Delta to provide power to the pumps to convey the water through the network system. Comprehensive source control programs, which for Delta source waters could include elements such as this option, are often more cost effective and more efficient from a total resource consumption viewpoint.

Objectives addressed: Water Quality General and Specific 2.

The discharge of waste brine would require review by environmental experts. Plant and wildlife experts would need to analyze the site for the treatment facility for effects on wildlife, birds, and other biological resources.

Assumptions:

- Assume the system will collect subsurface drainage but not rainfall.

- Adequate right-of-way could be acquired.
- A socially and environmentally acceptable site for the treatment facility could be located.
- The monitoring of discharge would be required by the Regional Water Quality Control Board (RWQCB).

Key Feasibility Factors:

- Confirm an environmentally and socially acceptable route for the pipe network system could be identified.
- Confirm an environmentally and socially acceptable disposal site for the waste brine could be located.
- Confirm reduced flows in some waterways would not be detrimental to aquatic resources.

Implementation Effects:

- The Water Quality TAC (WQTAC) estimated medium benefits for water uses (matrix WQ-S-2) such as agriculture, municipal, industrial, and recreation uses in the WQTAC report. Only low benefits were noted by the WQTAC for fisheries and environmental uses since they did not have the specific expertise in these areas.

Most Likely Benefits:

- The quality of the water in the estuary would be improved through a reduction in salinity.

Other Possible Benefits:

- Organic carbon in the estuary, which contributes to unwanted by-products in drinking water, could be reduced as well.
- Improved water quality within the interior Delta could result in improved aquatic resources as well.

Most Likely Negative Impacts:

- High levels of contaminants can be expected in the waste brine.

Other Possible Negative Impacts:

- High costs can be expected for brine disposal. Very high costs could occur if it was necessary to move the brine to a faraway location for disposal.

Possible Regulatory and Institutional Constraints:

- CEQA
- NEPA
- DFG Sec 1600 Permit
- Waste Discharge Permit

Other:

References and Published Materials: Use Combined TAC Reference List.