

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

Category: (To be developed)

Resources Area: Water Quality, WQ-O-1
Related Options: WQ-S-2, WQ-S-1

Resources Issue: 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. Of particular importance is the formulation of trihalomethanes (suspected carcinogens) upon disinfection of the municipal water by chlorination. 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. Related issues that may be partially addressed or impacted to some degree by this option include a reduction of organic carbon loading to the estuary which could potentially lead to reduced biological productivity.

Discussion: The construction of a pipe network throughout the Delta for the purpose of collecting drainage for treatment prior to discharge could result in lower levels of organics and better water quality in the estuary. In addition, the quality of export water could be improved. Possible sub-alternatives 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 or the inclusion of salt removal in the treatment process in addition to organics reduction. 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.

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 organic residue that would remain after the treatment process would not

contain any harmful constituents such as pesticides.

Key Feasibility Factors:

- Confirm an environmentally and socially acceptable route for the pipe network system could be identified.
- Confirm reduced flows in certain waterways would not be detrimental to aquatic resources.

Implementation Effects:

- The Water Quality TAC (WQTAC) estimated low benefits for municipal water uses (matrix WQ-O-1) but no benefits for agriculture, industrial, fisheries, recreation, and environmental uses in the WQTAC report. The process would have to include removal of salts to match the benefits for action option WQ-S-2 for which the WQTAC identified medium benefits for many of the uses.

Most Likely Benefits:

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

Other Possible Benefits:

- Improved water quality within the interior Delta could result in improved aquatic resources as well.
- If the treatment process includes salt removal, the quality of the water in the estuary would be improved through a reduction in salinity.
- Unlike a process that removes salt, a process that removes only organics would result in a residual material that could be sold as a soil amendment as opposed to paying for brine disposal.

Most Likely Negative Impacts:

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Other Possible Negative Impacts:

- If the process is modified to include salt removal, then there is the associated problem with brine disposal that does not exist with a process that only removes organics. Very high costs could occur if it was necessary to move the brine to a faraway location for disposal.
- Though much of the organic carbon discharged from Delta islands is refractory and is not involved in biological productivity of the estuary, some portion of this organic load may enhance productivity in Delta

waters. To the extent such effects are beneficial to the biota, a reduction in organic carbon input could be disadvantageous to the ecosystem.

Possible Regulatory and Institutional Constraints:

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

Other:

References and Published Materials: Use Combined TAC Reference List.