

MEMORANDUM OF UNDERSTANDING BETWEEN
DEPARTMENTS OF WATER RESOURCES AND FISH AND GAME
REGARDING OBJECTIVES AND SCOPE OF DELTA WATER PROJECT
FISH AND WILDLIFE PROTECTION STUDY

Principal Objective of State Water Resources Development System

One of the principal objectives of the State Water Resources Development System is to conserve water in areas of surplus in the north and to transport water to areas of deficiency to the south and west.

Importance of Delta Water Project in Achieving Objectives

The Delta is important in achieving this objective since it receives all of the surplus flows of Central Valley rivers and is the last location where water not needed upstream or in the Delta can be conveniently controlled or diverted to beneficial use.

Definition of Delta Water Project Area

The California State Legislature in 1959 in connection with the California Water Resources Development System and because of the unique character of water supply problems of the Delta adopted several general policy sections regarding the Delta.

Section 12220 of the Water Code describes the area of the Delta to which these general policies apply. All features, facilities and developments which are part of the California Water Resources Development System which lie within this described area will be considered in the Delta Fish and Wildlife Protection Study. The study will not include any barrier plans downstream from the Chipps Island barrier project.

Multi-Purpose Features of Delta Water Project

The economy of the Delta is dependent to a major degree upon water and because of the unique character of water supply problems in this region, full recognition of this has been given by the legislature in establishing policies to recognize the interrelated effects of the Delta Water Project upon all phases of the Delta economy. Consequently, any water program affecting the Delta must consider:

- (1) Water supply of high quality for the Delta area and for transport.
- (2) Salinity control.
- (3) Water salvage.
- (4) Flood and seepage control
- (5) Vehicular transportation.
- (6) Recreation.
- (7) Navigation.
- (8) Fish and wildlife.

Staging of Delta Water Project

The several variations of the three alternative plans for the Delta Water Project can all be constructed in stages. This is not true, however, of the Chipps Island Barrier Project.

All of the Delta Water Projects provide for salinity control and for control and transportation of water to the south and west. These several plans vary considerably, however, in the degree that they accomplish other objectives relating to the economy of the Delta.

The construction of a minimum project for salinity control and for control of water and its transport south and west must, however, be of a nature which makes possible future development and consideration for the protection of all other purposes related to the Delta's economy.

Objectives of the Delta Fish and Wildlife Protection Study

The primary objectives of the Delta Fish and Wildlife Protection Study will be:

- (1) To make the necessary studies to determine how the design, construction and operation of the Delta Water Project will affect the fish and wildlife resources and their utilization.
- (2) To recommend any changes in project plans, facilities or operations which are required to protect the fish and wildlife resources.
- (3) To recommend means for compensation of any losses to fish and wildlife which would result from construction and operation in the Delta of any State water facilities. First priority would be compensation in the same kind of fish and wildlife as near to the area of loss as possible.
- (4) To recommend measures which may be taken to enhance the fish and wildlife resources in the Delta area in connection with the development, construction, and operation of the Delta Water project.

Assumptions

- (1) Up to five years will be provided to complete Fish and Wildlife Protection studies with progress reports submitted at appropriate times and previous to project decisions.
- (2) Results of the studies as reflected in progress reports will be considered before decisions on final project designs.
- (3) The required facilities to allow transport of water across the Delta to the West and South may be the only facilities constructed in the initial development.
- (4) Additional facilities to accomplish purposes other than water transport can be anticipated in future developments.

Study Scope

- (1) Studies will be designed to protect fish and wildlife in relation to

design, construction, and operation of features of the Delta Water Project, to be constructed at any future time.

- (2) The investigations needed to accomplish the preservation of the fish and wildlife resources for better understanding may be divided into two types:
 - (a) Investigation of the changes in the environment of the Delta that will result from the construction and operation of the Delta Water Project, and
 - (b) Investigation of methods to protect fish and wildlife from direct damage by project features.
- (3) The importance of changes in the environment must be stressed. The animals we are trying to protect are to a great degree dependent upon physical conditions meeting their requirements for food, for shelter, and for reproduction. Changes in those physical conditions will result in changes in fish and wildlife populations.
- (4) The scope of investigations on this changing environment will include the following:
 - (a) Investigation of existing physical conditions in the Delta.
 - (b) Investigation of existing fish and wildlife of the Delta and their dependency upon those existing conditions.
 - (c) Evaluation of future physical conditions in the Delta under all plans being considered.
 - (d) Investigation of the environmental requirements of fish and wildlife species and other animals or plants needed by these species. Only environmental factors that may be changed by the Delta Water Project will be considered.
 - (e) Analysis of the above and determination of how the physical changes will affect the fish and wildlife species, and what can be done to prevent or compensate for losses and provide enhancement.
- (5) Early definitions of what physical conditions are (a) important to the animals, and (b) apt to change with the Delta Water Project will be necessary to limit the investigation to relevant problems. Such environmental factors as water quality, current velocities, water temperature, turbidity, sediment transport and deposition, tidal action, and land use patterns will probably be investigated and these investigations may require engineering assistance.
- (6) The scope of investigation of methods to protect fish and wildlife species from direct damage by project features cannot be clearly defined until more is known about the effects of the environmental

changes. It will be important however, to outline the major problems of this nature early in the study so that work can be started to solve them. These will include the following and may include others:

- (1) Development or adaptation of fish passage facilities to move fish upstream through the control structures and locks during their spawning migrations.
- (2) Development or adaptation of fish screens or structures to prevent loss of downstream migrants and fish eggs in pumps and diversions.
- (7) The study will be concerned with the effects that changes in fish and wildlife populations have upon maximum recreational development dependent upon fish and wildlife in the Delta area.

Methods

- (1) All engineering assistance and design work needed in connection with the Fish and Wildlife Protection studies will be provided by the Department of Water Resources.
- (2) The studies will be coordinated with all other interested Federal, State and local agencies. Assistance from all other agencies to provide information, funds and actually carry out studies on selected segments of fish and wildlife studies needed will be encouraged.
- (3) Specific segments of the needed fish and wildlife studies may be contracted out as part of the Delta Fish and Wildlife Protection Study.
- (4) The collection and analysis of physical and biological information will be related to the accomplishment of the objectives of this study.

Basic Facilities Included

All facilities which are appurtenant to the water projects being considered and located in the defined Delta area will be considered in the Fish and Wildlife Protection Study. Among the facilities to be included are:

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| (1) Control structures. | (8) Aqueducts. |
| (2) Closures. | (9) Waste drains. |
| (3) Floodway structures. | (10) Pumping plants. |
| (4) Navigation locks. | (11) Headworks. |
| (5) Canals. | (12) Fish screens. |
| (6) Levees. | (13) Fish ways |
| (7) Siphons. | (14) Miscellaneous features. |

Specific Features

The several reports on the Delta regarding the various Delta Water Projects include certain features, parts of which are located within the defined Delta

area and parts are outside it. Each of these will be specifically referred to, to clarify what will be included in the Delta Fish and Wildlife Protection Study.

(1) North Bay Aqueduct.

Several points of diversion are still under consideration for the North Bay Aqueduct. The points of diversion and diversion works for the North Bay Aqueduct will be included in the study. The remainder of the North Bay Aqueduct System will not be considered.

(2) Montezuma Aqueduct, Pumping Plant and the Pittsburg Pumping Plant.

These features will be considered only to the extent of any influence they may have on conditions in the lower Delta area for fish and wildlife.

(3) Delta Pumping Plant.

The Delta Pumping Plant located in the Delta area will be included in the study. The California Aqueduct and the South Bay Aqueduct will not be included.

(4) Montezuma Slough Area.

The Montezuma Slough area, even though it is located outside the defined Delta area, will be included in the study in relation to the Chipps Island Barrier Project since this project includes master levees, closures, and barge locks in Montezuma Slough as an integral part of the project.

(5) Sacramento Deep Water Channel.

Although the Sacramento Deep Water Channel is not a part of the California Water Resources Development System, it is possible that the Water Projects Plans being considered may so redistribute flows around the deep water channel that a fish facility may be required. Consequently, the deep water channel will be considered in the study in relation to effects of the State Projects upon it and the need for fish protection devices.

(6) San Joaquin Valley Waste Conduit.

The San Joaquin Valley Waste Conduit will originate outside and south of the Delta area. It will pass through a considerable area of the Delta and may discharge into the San Joaquin River within the Delta or in the Sacramento River just outside the defined Delta area. It may well have detrimental effects on the fish and wildlife resources and will be included in the study in relation to the effects of the drain water upon fish and wildlife resources at the point of discharge.

(7) Tracy Pumping Plant.

Although the Tracy Pumping Plant is not a part of the California Water Resources Development System, it is possible this facility may at least for an interim period, handle additional flows for the Delta Water Project and create fish and wildlife problems. This will be considered in the study.

(8) Contra Costa Canal.

The point of diversion and diversion works of the Contra Costa Canal in the Delta area will be considered in the study. The remainder of the Contra Costa Canal will not be considered.

(9) Minor Delta Tributaries.

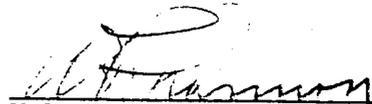
There are several small tributaries which presently flow into the Delta area. These include Bear Creek, Kellogg Creek and Mountain House Creek. Certain Delta plans envision sealing off or isolating some sections of the Delta area. This would require either pumping or diverting flows from these streams at least during flood stages. The study will consider all of these tributaries.

(10) Other Features.

It is possible that project plans may be further revised because of various reasons with the result that features not now under consideration will be added for planning purposes. Such additional features will be added to the Fish and Wildlife Protection Study if it is possible that these features may affect the fish and wildlife environment or fish and wildlife populations directly.



William E. Warne, Director
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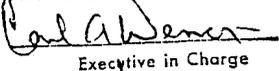


Walter T. Shannon, Director
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Dated _____

APPROVED FOR SIGNATURE



Executive in Charge

Date 8/29/61