
CHAPTER IV M

Mendota Wildlife Management Area Alternative Plans



*U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
MID-PACIFIC REGION*

CHAPTER IV M

MENDOTA WILDLIFE MANAGEMENT AREA

The Mendota Wildlife Management Area (Refuge) was purchased by the State Wildlife Conservation Board within the period from 1954 through 1966. It was established to provide waterfowl habitat, to reduce crop degradation, and to provide public hunting. The Refuge comprises 12,105 acres and is managed by DFG. The Refuge is located along Fresno Slough, three miles southwest of the City of Mendota, as shown in Figure IV M-1. An ecological reserve of almost 900 acres lies adjacent to the Refuge and provides protection for endangered plant species.

The management plan for the Refuge was developed to encourage natural food crops such as swamp timothy, alkali bulrush, smartweed, and millet.

A. WATER RESOURCES

The Refuge has a contract for 25,463 acre-feet per year from Reclamation. However, the Refuge only receives an average of 18,500 acre-feet per year. There are several reasons for the difference in water available and the water delivered. First, the Mendota Pool is dewatered every four to five years for maintenance during the winter. During this period, the Refuge does not receive any water. Second, the refuge canals are periodically dewatered to control cattails. Third, ditch and levee maintenance and construction on the Refuge requires periodic dewatering (USBR, 1986a).

1. Surface Waters

The contract with Reclamation includes 8,143 acre-feet of Section 2 water, 12,000 acre-feet of Section 6 water, 4,000 acre-feet of mitigation water, and 1,320 acre-feet of firm water rights. In addition, the Refuge holds 3,120 acre-feet of supplemental water rights which are not always available.

The Section 2 water is provided free of charge from the Mendota Pool, and the Section 6 water is purchased by the State of California. No more than 5,800 acre-feet of the Section 2 water can be delivered after June 30 due to capacity problems in the conveyance facilities. The Section 6 water is available from September 1 through November 30. The 4,000 acre-foot contract with Reclamation for Los Banos Creek mitigation water is supplied March 15 through May 31.

The need to provide a more dependable water supply to the Refuge was demonstrated in 1977 when the available water was 76 percent below normal and large amounts of land were left fallow (USBR, 1986a).

2. Water Conveyance Facilities

Reclamation maintains the portion of Fresno Slough that runs through the Refuge as a facility to convey water to the Refuge. Gates and pumps divert water from the Fresno Slough onto the Refuge. Fresno Slough receives water from the Mendota Pool. The Mendota Pool is operated by the Central California Irrigation Company (CCID) and is drawn down generally every 4 to 5 years for maintenance on the Mendota Dam. Maintenance work on the Mendota Dam usually occurs between mid-November and December. Water cannot be diverted to the Refuge when the Mendota Pool is dewatered. Fresno Slough has sufficient conveyance capacity to serve the ultimate development demand of the Refuge.

The loss of the water supply in November constrains management of habitat. Before the water supply is cut off, the ponds must be flooded deeper than desirable to ensure adequate water coverage remains through the waterfowl season. If the water is too deep, food availability is reduced because the waterfowl generally feed on seeds at the bottom of the pool. If the water is too shallow, some waterfowl will avoid ponds (USBR, 1986a).

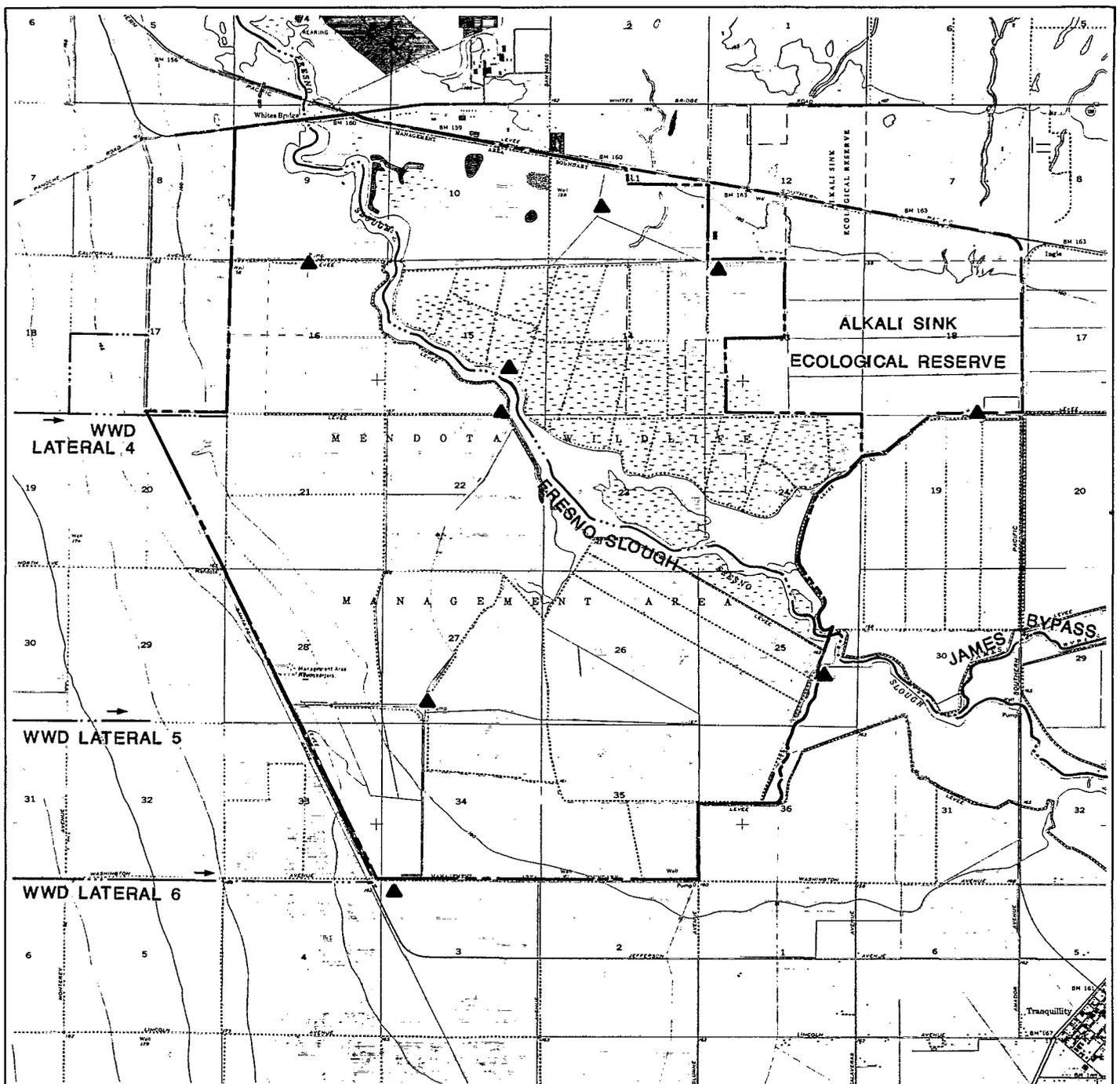
The internal conveyance system consists of nine lift pumps and open ditches. The pumps have capacities ranging from 20 to 100 horsepower. Drainage problems have occurred on 2,680 acres located on the west side of the Refuge. Improved drainage of this area would increase food production significantly and allow the conversion of 400 acres of upland to marsh.

3. Groundwater

The groundwater level is approximately 100 to 250 feet deep with considerable seasonal fluctuations. Reclamation has monitored well operations and groundwater levels within the Tranquility Irrigation District for many years. The District is adjacent to the southeast corner of the Refuge. Geohydrologic conditions in the two areas are probably similar although production zone groundwater levels may be deeper in the Refuge. Reclamation estimates that the safe yield for the Refuge is 5,500 acre-feet. Three groundwater wells at the Refuge were abandoned during the early 1950's due to high boron concentrations.

B. FORMULATION AND EVALUATION OF ALTERNATIVE PLANS

The DFG estimates that 29,650 acre-feet of water would be required for full development and optimum management of the entire Refuge. For the purposes of assessing the impacts of water delivery alternatives, four levels of water supply have been identified, as



LEGEND

- — — — — REFUGE BOUNDARY
- — — — — WATER COURSE
- — — — — DIRECTION OF FLOW
- ▲ PUMP

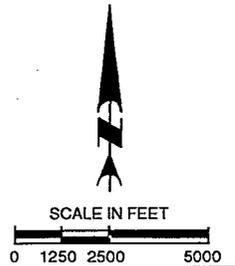


FIGURE IV M-1

**MENDOTA WILDLIFE MANAGEMENT AREA
EXISTING WATER SUPPLY FACILITIES**



presented in Table IV M-1. Each of the water supply levels provides a different volume of water and are summarized as follows:

Level 1 - Existing firm water supply

Level 2 - Current average annual water deliveries

Level 3 - Water supply needed for full use of existing development

Level 4 - Water delivery needed for optimum management

1. Delivery Alternative for Level 1 (No Action Alternative) (18,500 acre-feet)

The existing facilities can take delivery of Level 1 water supplies.

2. Delivery Alternative for Level 2 (18,500 acre-feet)

No alternatives were required for Level 2 which is currently delivered to the Refuge.

3. Delivery Alternative for Level 3 (25,463 acre-feet)

The Refuge has water contracts for 25,463 acre-feet of water. However, the Refuge can only take delivery of 18,500 acre-feet of water due to restrictions with existing facilities. The alternative developed for Level 3 would provide the entire water contract amount to the Refuge.

Alternative 3A - Change Operation of Mendota Pool. The most feasible method of increasing water deliveries to the Refuge is to change the current practice by CCID of lowering the water level in the Mendota Pool every mid-November. If CCID would delay the lowering of the Mendota Pool until early December, a dependable water supply could be provided in the critical months.

The impacts of this delay on the CCID maintenance schedule have not been fully identified at this time. It may be necessary to improve the Mendota Dam or CCID canals to minimize the required maintenance work. Further analysis is required to determine the feasibility of changing maintenance schedules or the need for facilities improvements.

4. Delivery Alternatives for Level 4 (29,650 acre-feet)

The alternatives developed for Level 4 would provide additional water for currently undeveloped portions of the Refuge. Alternative 4A would provide additional surface water. Alternative 4B would provide a conjunctive use program.

TABLE IV M-1
DEPENDABLE WATER SUPPLY NEEDS
ALTERNATIVE SUPPLY LEVELS FOR THE MENDOTA WMA

Month	<u>Supply Level 1</u> ac-ft	<u>Supply Level 2</u> ac-ft	<u>Supply Level 3</u> ac-ft	<u>Supply Level 4</u> ac-ft
January	850	850	1,000	1,250
February	850	850	1,000	1,250
March	750	750	950	1,150
April	750	750	950	1,150
May	1,350	1,350	2,250	2,800
June	1,400	1,400	1,750	2,150
July	1,400	1,400	1,750	2,150
August	1,600	1,600	2,050	2,500
September	3,250	3,250	4,200	5,150
October	3,100	3,100	4,000	5,000
November	2,250	2,250	2,900	3,600
December	950	950	1,200	1,500
Total	18,500^(a)	18,500	24,000	29,650

Notes:

(a) Total Existing Firm water supply of 25,463 af is unavailable due to conveyance problems.

Supply Level 1: Existing firm water supply
 Supply Level 2: Current average annual water deliveries
 Supply Level 3: Full use of existing development
 Supply Level 4: Optimum management

Sources: USBR, 1986a; USFWS, 1986d and 1986e

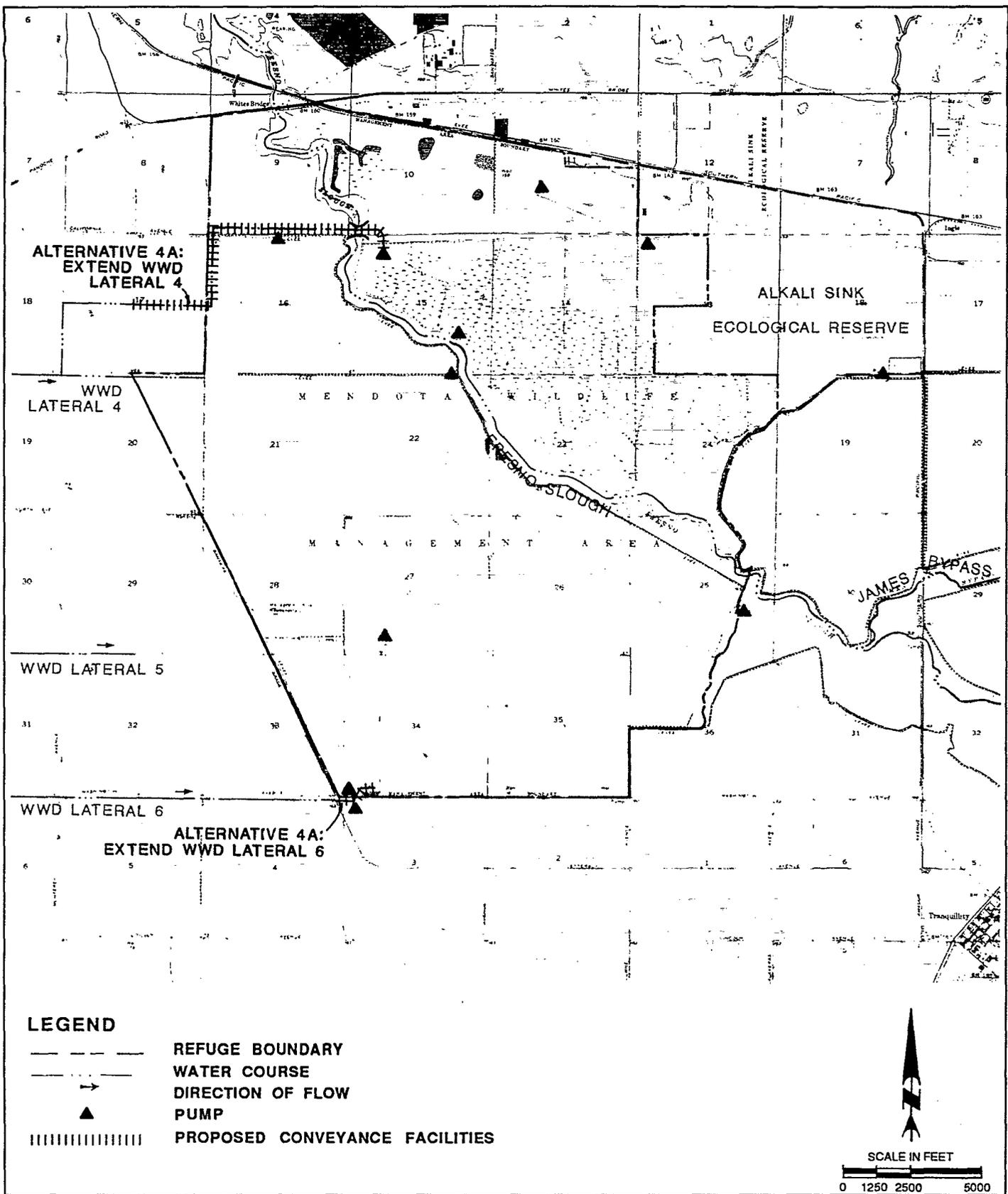


FIGURE IV M-2

MENDOTA WILDLIFE MANAGEMENT AREA
ALTERNATIVE WATER SUPPLY FACILITIES



Alternative 4A - Extend Westland Water District Laterals 4 and 6 to Refuge. Westland Water District (WWD) would extend Laterals 4 and 6, as shown in Figure IV M-2. Lateral 4 would be extended approximately two miles and a pump station would be constructed to divert water on the Refuge. This lateral would serve both the western and undeveloped eastern sides of the Refuge. The existing capacity of Lateral 4 is 8 cfs. Lateral 6 would be extended into the southwestern portion of the Refuge and a pump station would be constructed to divert water onto the Refuge. The capacity of Lateral 6 is 15 cfs. In addition, a new ditch system would need to be constructed on the eastern sections of the Refuge. This alternative would require implementation of Alternative 3A.

Alternative 4B - Implement Conjunctive Use Plan. Five wells would be constructed on the Refuge to deliver the maximum month water demand. The exact locations of the wells would be determined in a future study. The wells would be developed as part of a conjunctive use program. During dry years, water demands would be supplied by wells, as discussed in Chapter III. During wet years, the wells would probably not be needed if CVP water is provided. Surface water would be used in the dry years to dilute the boron concentrations in the groundwater. This alternative would require implementation of Alternative 3A and 4A.

5. Summary of Alternatives

The beneficial and adverse effects of each alternative were compared with respect to the criteria listed in Chapter III.

No alternatives were considered for Levels 1 and 2 because existing facilities could deliver available firm water supplies.

Alternative 3A would be the only alternative considered for Level 3. This alternative would not include facility construction, but would modify operations of the Mendota Pool. This alternative would allow complete delivery of the CVP water contracts.

Alternative 4A would require a long-term agreement with WWD and construction of improvements to the WWD facilities. Alternative 4A also would require implementation of Alternative 3A.

Alternative 4B would provide wells for a conjunctive use program. Alternative 4A would need to be implemented as part of this alternative.

C. COSTS AND ECONOMIC ANALYSIS

Costs for the alternative plans to provide adequate water supplies under Water Supply Levels 3 and 4 are presented in Table IV M-2. The construction costs include factors to cover engineering, contingencies, and overhead costs. Annual operation and maintenance (O&M) costs include only the local cost of delivering water. The annual O&M costs do not include costs to

TABLE IV M-2
SUMMARY OF ESTIMATED COSTS OF ALTERNATIVES
MENDOTA WMA

Items	Alternatives		
	3A	4A	4B
Additional Water (ac-ft)	5,500	11,150	11,150
Construction Costs			
Wells	\$ --	\$ --	\$424,500 (c)
Pipelines/Canals	--	36,000 (a)	--
Pump Stations	--	55,000 (b)	--
Subtotal	\$ --	\$ 91,000	\$424,500
Other Costs	--	--	91,000 (d)
Total	\$ --	\$ 91,000	\$515,500
Annualized Construction Cost (8.87%, 30 yrs)	\$ --	\$ 8,760	\$ 49,600
Additional Annual Cost			
Operation & Maintenance (e)	\$ --	\$ 1,000	\$ 14,400
Power	--	95,890 (g)	103,700 (j,k)
Local Conveyance Cost	4,130 (f)	11,150 (h)	--
Subtotal	\$4,130	\$108,040	\$118,100
Other Costs	--	4,130 (i)	56,090 (d,k)
Total	\$4,130	\$112,170	\$174,190
Total Annual Costs	\$4,130	\$120,930	\$223,790
Cost/Additional Acre-Foot	\$ 0.80	\$ 10.80	\$ 20.10

TABLE IV M-2

SUMMARY OF ESTIMATED COSTS OF ALTERNATIVES

MENDOTA WMA
(Continued)

Notes: Alternative 3A - Change Operation of Mendota Pool.
Alternative 4A - Extend Westland Water District Laterals 4 and 6 to
Refuge.
Alternative 4B - Implement a Conjunctive Use Plan.

- (a) 2,500 feet of unlined canal, 4 cfs; 10,000 feet of unlined canal, 6 cfs; 1,500 feet of unlined canal, 15 cfs; 600 feet of 24-inch diameter pressure pipeline; and one crossing.
- (b) 6 cfs pump, 10-foot lift.
- (c) 5 wells, 950-feet deep, 150-foot lift.
- (d) Alternative 4B would require implementation of Alternative 4A.
- (e) Basis for O&M costs are discussed in Appendix F.
- (f) Unit Conveyance Cost = \$0.75/af.
- (g) Unit Pumping Cost = \$8.60/af.
- (h) Unit Conveyance Cost = \$1/af.
- (i) Alternative 4A would require implementation of Alternative 3A.
- (j) Unit Pumping Cost = \$18.60/af.
- (k) Values are multiplied by 0.5 because facilities will be used only 5 out of 10 years.
- (l) Costs to provide Water Supply Level 1 are not included.

purchase CVP water. During the advanced planning phase, these costs will be refined further.

Construction of the facilities under Alternatives 4A and 4B will result in additional money being spent in Fresno County during construction. The construction could be completed within one summer season by construction workers who reside in the area.

Currently, the annual public use to the Refuge is about 14,800 visits per year. If water is provided throughout the year, there would be an increase in the number of wildlife-use days and recreational benefits.

D. WILDLIFE RESOURCES

The average annual bird use on the Refuge is about 2,600,000 use-days. Wildlife and fishery resources associated with the Refuge are presented in Table IV M-3. The only listed threatened and endangered species associated with the Refuge are the San Joaquin kit fox, Vulpes macrotis mutica; the Valley elderberry longhorn beetle, Desmocerus californicus dimorphys; and the palmate-bracted bird's beak, Cordylanthus palmatus. Numerous candidate species may occur in this area and are also presented in Table IV M-4.

The additional water would be used to improve habitat in the Refuge. The improved habitat would increase the number of public use days, as presented in Table IV M-5.

Implementation of any of the alternative plans probably would not adversely affect the listed and candidate threatened and endangered wildlife species. Detailed field investigations would be necessary during the advanced planning phase of the project. Implementation of any of the plans would result in overall beneficial environmental effects. Additional regional environmental analyses will be completed as part of the Water Contracting EIS's.

E. SOCIAL ANALYSIS

The social consequences of any of the alternatives would be positive due to the potential increase in wildlife use and subsequently public use.

F. POWER ANALYSIS

The Pacific Gas & Electric Company (PG&E) serves the Refuge under the PA-1 rate schedule for agricultural users. A facility must be an authorized function of the CVP to receive project-use power. The authority to delivery CVP project-use power to the Refuge is currently being examined and will be detailed in the Refuge Water Supply Planning Report. A more detailed discussion of project-use power and wheeling agreements is provided in the Power Analysis section of Chapter II.

TABLE IV M-3
FISH AND WILDLIFE RESOURCES
MENDOTA WMA

Ducks

Pintail(a)
 Gadwall(a)
 Canvasback
 Cinnamon Teal(a)

Mallard(a)
 Shoveler(a)
 Ruddy Duck(a)

Green-winged Teal(a)
 Ring-necked Duck
 Wigeon

Geese and Swans

Snow Goose
 Ross' Goose

White-fronted Goose
 Canada Goose

Tundra Swan

Coots

American Coot

Shore and Wading Birds

Pied-billed Grebe(a)
 White-faced Ibis
 Lesser Sandhill Crane
 Common Snipe
 Long-billed Curlew
 Great Blue Heron
 Ruddy Duck(a)

Common Egret
 Snowy Egret
 American Bittern(a)
 Killdeer
 American Avocet(a)
 Black Necked Stilt(a)

Dowitchers
 Great Yellowlegs
 Sandpiper
 Black-crowned Night Heron(a)
 Avocets(a)
 Western Grebe(a)

TABLE IV M-3

FISH AND WILDLIFE RESOURCES

MENDOTA WMA
(Continued)

Upland Game

Ring-necked Pheasant
Cottontail Rabbit

Black-tailed Jackrabbits
Dove

Raptorial Birds

Northern Harrier^(a)
Black-tailed Kite
Barn Owl^(a)

Red-tailed Hawk
Cooper's Hawk
Great Horned Owl^(a)

American Kestrel^(a)
Turkey Vulture
Burrowing Owl^(a)

Fish

Brown Bullhead
Threadfin Shad

Channel Catfish
Carp

Striped Bass
Largemouth Bass

Furbearers

Coyote
Muskrat
Raccoon

Opossum
Striped Skunk
Beaver

Mink
Badger
Spotted Skunk

Notes:

(a) Birds nesting on refuge

Source: Environmental Assessment Report, Mendota Wildlife Area, and checklist of the birds of the Mendota Wildlife Area

TABLE IV M-4

FEDERALLY LISTED, PROPOSED, & CANDIDATE THREATENED & ENDANGERED SPECIES

MENDOTA WMA

Listed Species

Mammals

San Joaquin kit fox, Vulpes macrotis mutica (E)

Invertebrates

Valley elderberry longhorn beetle, Desmocerus californicus dimorphus (T)

Plants

Palmate-bracted bird's-beak, Cordylanthus palmatus (E)

Proposed Species

None

Candidate Species

Birds

Tricolored blackbird, Agelaius tricolor (2)

White-faced ibis, Plegadis chihi (2)

• Reptiles

Giant garter snake, Thamnophis couchi gigas (2)

Invertebrates

Hopping's blister beetle, Lytta hoppingi (2)

Molestan blister beetle, Lytta molesta (2)

Moestan blister beetle, Lytta moesta (2)

Morrison's blister beetle, Lytta morrisoni (2)

Ciervo aegialian scarab beetle, Aegialia concinna (2)

San Joaquin dune beetle, Coleus gracilis (2)

Wooly hydroporus diving beetle, Hydroporus hirsutus (2)

Plants

Valley spearscale, Atriplex patula subsp. spicata (2)

Hispid bird's-beak, Cordylanthus mollis subsp. hispidus (2)

Hoover's wooly-star, Eriastrum hooveri (2)

Congdon's wooly-threads, Lembertia congdonii (2R)

Source: USFWS, June 4, 1987

(E)—Endangered

(T)—Threatened

(CH)—Critical Habitat

(1)—Category 1: Taxa for which the Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.

(2)—Category 2: Taxa for which existing information indicated may warrant listing, but for which substantial biological information to support a proposed rule is lacking.

(2R)—Recommended addition to Category 2.

TABLE IV M-5
WILDLIFE RECREATIONAL BENEFITS AND RESOURCE IMPACTS
MENDOTA WMA

	No Action Alternative	Alternatives		
		3A	4A	4B
Habitat Acres				
Seasonal Marsh	2,072	5,000	4,026	4,026
Watergrass (millet)	--	2,000	3,374	3,374
Cereal Grains	--	400	--	--
Uplands	1,940	1,940	1,940	1,940
Administration	100	100	100	100
Fallow	5,328	--	--	--
Bird Use Days				
Ducks and Geese	2,300,000	10,600,000	10,600,000	10,600,000
Other Waterbirds	300,000	1,600,000	1,600,000	1,600,000
Total	2,600,000	12,200,000	12,200,000	12,200,000
Public Use Days				
Consumptive	12,200	14,000	15,800	15,800
Non-Consumptive	2,600	3,500	6,700	6,700
Total	14,800	17,500	22,500	22,500
Total Annual Cost	--	\$ 4,130	\$ 120,930	\$ 223,790
Incremental Cost/Additional 1,000 Bird Use Days	N/A	\$ 0.40	\$ 12.60	\$ 23.30
Incremental Cost/Additional Public Use Day	N/A	\$ 1.60	\$ 15.70	\$ 29.10

Notes: Alternative 3A - Change Operation of Mendota Pool.
Alternative 4A - Extend Westlands Water District Laterals 4 and 6 to Refuge.
Alternative 4B - Implement a Conjunctive Use Plan.

G. PERMITS

Construction activities would require several permits. Fresno County would issue permits for wells constructed under Alternative 4B and approvals for construction along roads and drainage facilities under Alternative 4A. WWD would need to approve all construction that would occur under Alternative 4A. Stream Alteration Permits would be required from the DFG for Alternative A. A Corps of Engineers permit would be required for Alternatives 4A and 4B for construction activities in wetlands or riparian corridors.