
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 (WMA) was purchased by the State Wildlife Conservation Board between 1954 and 1966. It was established to provide waterfowl habitat, to reduce crop degradation, and to provide public hunting. It now also provides other nonconsumptive recreational opportunities as well as habitat for all wetland and some upland species. Mendota WMA currently comprises 12,105 acres and is managed by DFG. An ecological reserve of almost 900 acres lies adjacent to the management area and provides protection for endangered plant species. The management area, is located along the Fresno Slough, three miles southwest of the City of Mendota in Fresno County as shown in Figure IV M-1.

A. WATER RESOURCES

The program of water management for Mendota WMA was established to encourage natural waterfowl food crops such as swamp timothy, alkali bulrush, smartweed, and millet.

Estimated annual water requirements and the existing dependable water supply for the Mendota WMA are 29,650 acre-feet and 24,600 acre-feet, respectively, as presented in Table IV M-2.

1. Surface Waters

Water delivery to Mendota WMA is from a variety of sources, as presented on Table IV M-1. The refuge contracts for a water supply of 24,600 acre-feet per year from Reclamation. However, an average of 18,245 acre-feet is actually delivered per year (DFG, memo dated 4/30/87). There are several reasons for the difference in water available and the water delivered. First, every 4 to 5 years, the Mendota Pool is drawn down for maintenance around mid-November and cuts off all water deliveries during the month of December and January. Second, cattails, which are undesirable for waterfowl management, are controlled by periodically drying out the infested canal or pond at a time when less water is needed. Third, ditch and levee maintenance and construction on the refuge requires the dewatering of certain areas for short periods of time.

Contracts for Mendota WMA water include 3,000 acre-feet of Los Banos Creek mitigation water supplied March 15 through May 31. This water is used for waterfowl management specifically in

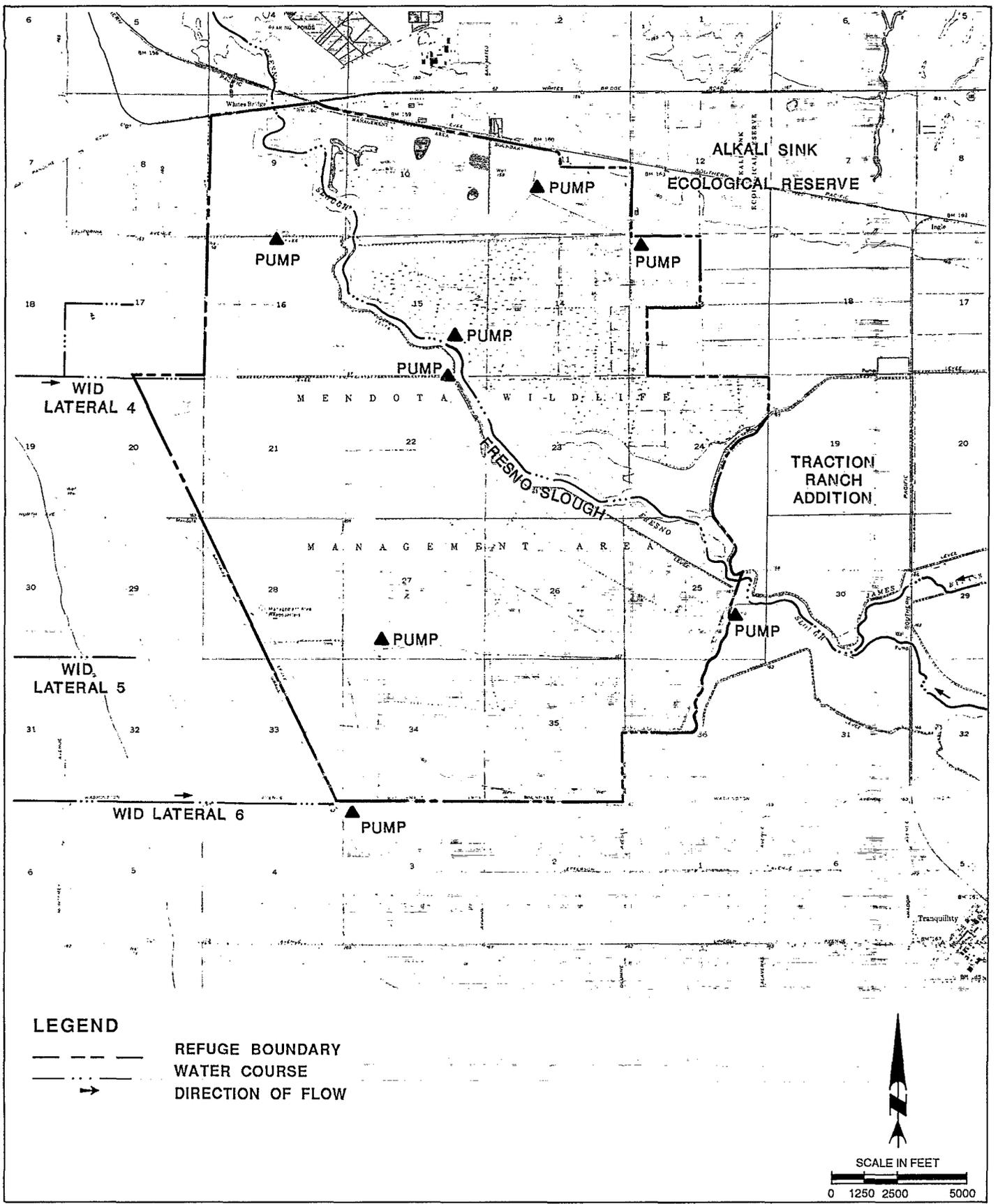


FIGURE IV M-1
MENDOTA WILDLIFE MANAGEMENT AREA
 EXISTING WATER SUPPLY FACILITIES



Merced County and on an interim basis in Fresno County. In addition, 1,143 acre-feet of water from riparian rights is a dependable supply provided to the Traction Ranch section as the result of a settlement of Fresno Slough water rights.

A contract provides up to 19,000 acre-feet of supplemental water under the provisions of Sections 2 and 6 of Public Law 83-674. The contract provides for 7,000 acre-feet of Section 2 water from the Mendota Pool to be furnished free of charge to the refuge. The State pays for the 12,000 acre-feet per year, or lesser quantity, of supplemental Section 6 water that is available from September 1 through November 30 after irrigation requirements have declined for the season. No more than 5,800 acre-feet of Section 2 water is delivered after June 30, when irrigation deliveries become heavy. The need to make this water supply dependable 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 utilizes and maintains the portion of Fresno Slough that runs through the Mendota WMA as a facility to convey water to the refuge. The gates and pumps that withdraw the Mendota WMA water are located on the Fresno Slough. The Mendota Pool is operated by the Central California Irrigation Company (CCID) and is drawn down every 4 to 5 years for maintenance on the Mendota Dam. Maintenance work on both the Delta Mendota Canal and the Mendota Dam usually occurs between mid-November to February and terminates the water supply to the refuge. This in turn constrains management of waterfowl habitat and use of the area for hunting. Fresno Slough has sufficient conveyance capacity to serve the ultimate development demand of Mendota WMA.

The internal conveyance system consists of nine lift pumps and open ditches to supply water through the refuge. These surface water lift pumps have capacities ranging from 20 to 100 horsepower.

Water levels within the refuge are affected not only by the maintenance of the Delta-Mendota Canal, but also by cattails, which are undesirable for waterfowl management as previously mentioned. The cattails are controlled by periodically drying out the infested canal or pond at a time when the water level is low. Also, maintenance to the ditches and levees within the refuge requires dewatering for short periods of time (USBR, 1986a).

The loss of water in November constrains management of waterfowl habitat and public use of the area. Before the water supply is cut off, the ponds must be flooded deeper than desirable to ensure adequate water coverage through the waterfowl season.

TABLE IV M-1
WATER DELIVERIES
MENDOTA WMA
(acre-feet)

Year	Los Banos Creek Mitigation	Riparian Rights	Section 2 Rights	Section 6 Rights	Total
1977	172	896	2,163	2,646	5,877
1978	3,424	1,143	5,261	8,179	18,007
1979	3,176	1,143	6,501	11,326	22,146
1980	3,207	1,143	4,230	10,448	19,028
1981	4,000	430	4,227	9,008	17,665
1982	4,302	552	5,411	10,398	20,663
1983	3,144	344	4,669	6,763	14,920
1984	4,000	274	6,871	10,319	21,464
1985	4,000	250	4,553	10,571	19,374
1986	4,000	266	1,543	7,909	13,718

Source: USBR, R. H. Edwards Chief, Technical Services Branch, 1986a

If they are not flooded deeper, evaporation causes inadequate water coverage. If the water is too deep, water reduces food availability for waterfowl, which generally feed on seeds at the bottom of the pool. Shallow water causes some species to avoid ponds and eliminates resting areas because the water is too shallow for the birds to swim in (USBR, 1986a). Delivering a supply of water to the refuge at the appropriate times would alleviate the principal water conveyance problem and allow for proper wetland management.

In addition to the conveyance and timing difficulties, drainage of 2,680 acres on the west side of the refuge has been a problem. 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 100-250 feet deep with considerable seasonal fluctuations. Reclamation has monitored the operation and effects on groundwater within the Tranquillity Irrigation District for many years. The District is adjacent to the southeast corner of the Mendota WMA. Geohydrologic conditions in the two areas are probably similar although production zone groundwater levels may be deeper in the WMA. It has been estimated that groundwater pumpage over 5,500 acre-feet per year could cause a localized overdraft condition (USBR, Memo to Regional Planning Officer, July 31, 1984).

Three groundwater wells at Mendota WMA were abandoned during the early 1950's due to undesirable boron concentrations. Boron reduces land capability and would lead to a reduction in habitat diversity and value to wildlife. Wells are not desirable for the refuge because of the poor water quality and the high cost of power.

B. FORMULATION AND EVALUATION OF ALTERNATIVE PLANS

To provide for full development of the refuge, the annual water requirement is 29,650 acre-feet per year. However, for the purposes of assessing the impacts of water delivery alternatives, four levels of water supply have been identified and are presented in Table IV M-2. Each of the water supply levels provide a different rate and volume of water, summarized as follows:

Level 1 - Existing firm water supply

Level 2 - Current average annual water deliveries

TABLE IV M-2
DEPENDABLE WATER SUPPLY NEEDS
ALTERNATIVE SUPPLY LEVELS FOR THE MENDOTA WMA

Month	Supply Level 1		Supply Level 2		Supply Level 3		Supply Level 4	
	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft	cfs
January	n/a	n/a	850	13.8	1,000	16.3	1,250	20.3
February	n/a	n/a	850	15.3	1,000	18.0	1,250	22.5
March	n/a	n/a	750	12.2	950	15.5	1,150	18.7
April	n/a	n/a	750	12.6	950	16.0	1,150	19.3
May	n/a	n/a	1,750	28.5	2,250	36.6	2,800	45.5
June	n/a	n/a	1,400	23.5	1,750	29.4	2,150	36.1
July	n/a	n/a	1,400	22.8	1,750	28.5	2,150	35.0
August	n/a	n/a	1,600	26.0	2,050	33.3	2,500	40.7
September	n/a	n/a	3,250	54.6	4,200	70.6	5,150	86.5
October	n/a	n/a	3,100	50.4	4,000	65.1	5,000	81.3
November	n/a	n/a	2,250	37.8	2,900	48.7	3,600	60.5
December	n/a	n/a	950	15.5	1,200	19.5	1,500	24.4
Total	24,600 (a)	n/a	18,900	313.0	24,000	397.4	29,650	490.9
Maximum	2,228	n/a	3,250	54.6	4,200	70.6	5,150	86.5

Notes:

(a) Total dependable water supply unavailable due to conveyance problems

n/a - Not Applicable

Alternative 1 Existing firm water supply

Alternative 2 Current average annual water deliveries

Alternative 3 Full use of existing development

Alternative 4 Optimum management

Source: USBR, 1986a

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

Level 4 - Water delivery needed for optimum management

Multi-objective project evaluation procedures, in accordance with concepts outlined by the Water Resources Council, is one of the tools used in evaluating and comparing alternatives. The Water Contracting EIS's will evaluate the national, regional, and site-specific environmental impacts of providing water to the refuges and other users under the different water supply levels. Based on the results of the Water Contracting EIS's, water supply levels will be identified for each refuge. Following completion of the Water Contracting EIS's, the plans to meet the identified water level will be compared under the National Economic Development Account, Environmental Quality Account, and Social Account.

The following delivery alternatives have been developed to convey four of the identified levels of water supply described above. A summary comparison of these alternatives is presented in Table IV M-3.

1. Delivery Alternative for Level 1 (No Action Alternative)

Since this level represents the existing dependable water supply, minimum construction and/or the use of the existing facilities is required to provide a dependable conveyance system for the refuge.

Alternative A - Change Operation of Mendota Pool. The most feasible way to serve the Mendota WMA during the critical months of November and December is to change the current practice of lowering the water level in the Mendota Pool in mid-November. By delaying the reduction of water in the Mendota Pool until early December, a firm water supply could be provided in the critical months. Rebuilding the Mendota Dam to minimize the maintenance work may be required. Further analysis is required to determine the extent of these improvements.

Alternative B - Extend WID Laterals 4 and 6 to Refuge. Extending the Westland Irrigation District's Lateral 4 and 6 would allow for the delivery of water to the western half of the WMA during November through January and the late winter months (DFG, 1987c) as shown in Figure IV M-2. The existing capacity in Lateral 4 is 8 cfs, and Lateral 6 has 15 cfs. At the present time, there is no alternative source of surface water available for the eastern half of the WMA, including the new 2,100 acres of

TABLE IV M-3
SUMMARY COMPARISON OF WATER DELIVERY ALTERNATIVES
MENDOTA WMA

	Supply Levels 1, 2, 3 & 4		
	Alternative A	Alternative B	Alternative C
Availability of Water Supply	Yes	Yes	Yes
Ability to Convey Water	Yes	Most of Year	Yes
Need New Water	No	No	No
Need New Conveyance Agreements	No	Yes	No
Type of Water Supply	Fresh Water	Fresh Water	Fresh Water Blended with Groundwater
Operational Flexibility	Some	Good	Good
Wildlife Habitat	Improve	Improve	Improve
Public Use	Same	Same	Same
Total Annual Costs (\$) ^(a)	-	44,220	154,650

Notes: Alternative A: Change Operation of Mendota Pool
Alternative B: Extension of WID Facilities
Alternative C: Conjunctive Use

(a) Total Annual Costs includes annualized construction cost, annual operation and maintenance cost, annual power and wheelage cost.

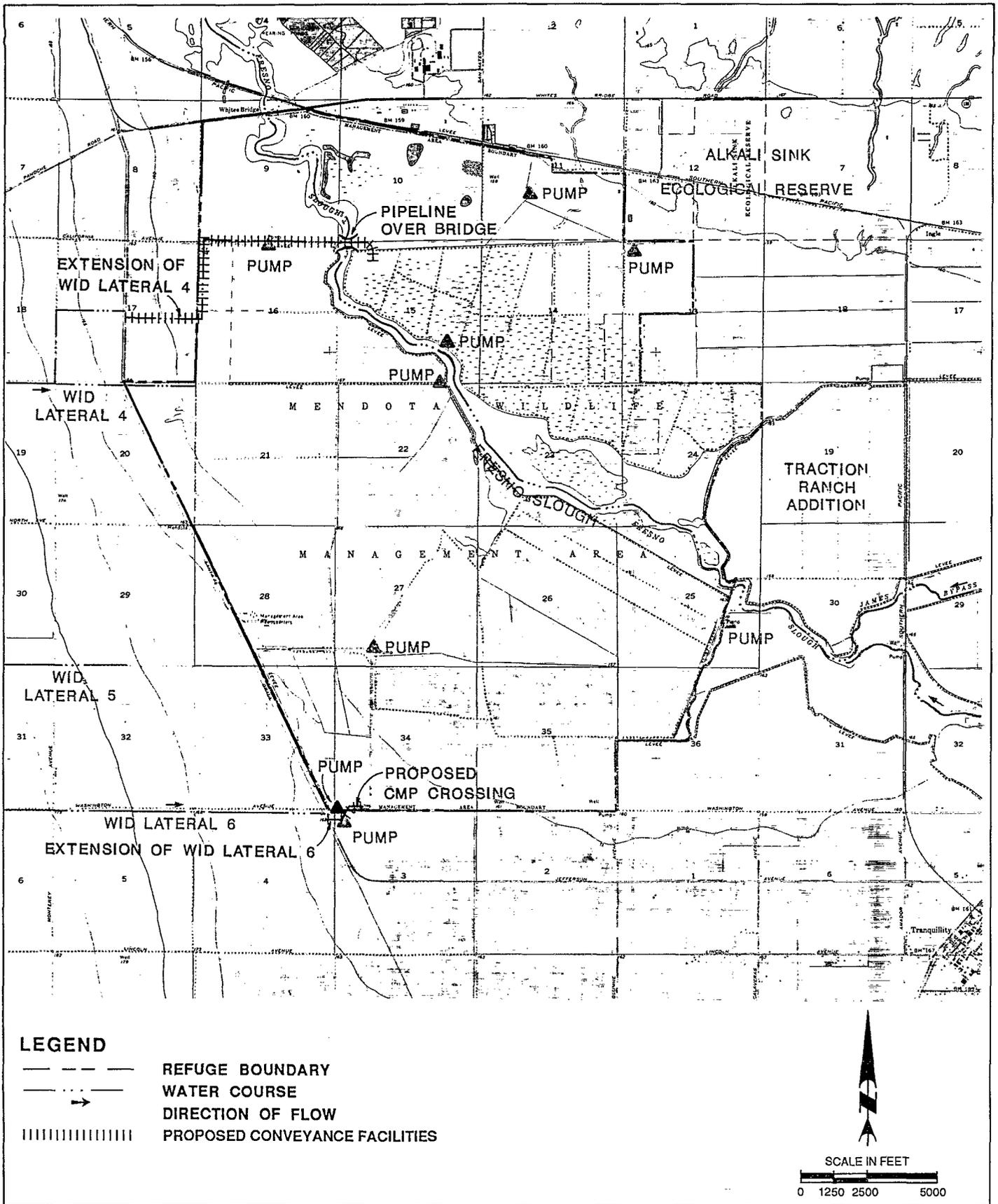


FIGURE IV M-2

MENDOTA WILDLIFE MANAGEMENT AREA

**PROPOSED WATER SUPPLY FACILITIES
ALTERNATIVE B**



Traction Ranch land. This alternative would require extending Lateral 4 approximately two miles and adding one or two new lift pumps. In addition, a new ditch system would need to be constructed to supply water to the eastern sections of the refuge.

Alternative C - Implement Conjunctive Use Plan. Groundwater could be used during an emergency in conjunction with surface water at times when the Mendota Pool is drawn down by CCID and Westlands Irrigation District cannot transport an adequate amount of water. The groundwater must be mixed with surface water to reduce the boron concentrations. Wells would need to be constructed around existing internal conveyance facilities, namely the Fresno Slough.

2. Delivery Alternative for Level 2

Since this level represents the current average annual water supplied, additional facilities would not necessarily be provided if the existing facilities can be utilized. Water Level 2 can be accommodated with the delivery alternatives for Level 1.

3. Delivery Alternative for Level 3

Water Level 3 can be accommodated with Alternative B.

4. Delivery Alternative for Level 4

Under this level, construction and/or the use of the existing conveyance facilities may be required to fully serve the already developed areas as well as areas, which have not yet been developed within the refuge. Water Level 4 can be accommodated with Alternative B.

5. Summary of Alternatives

The beneficial and adverse effects of each alternative to provide additional water to the refuge also were compared with respect to many criteria. A summary comparison of the alternatives to provide additional water to the refuge for Water Supply Levels 1, 2, 3 and 4 is presented in Table IV M-3.

Alternative A would require extensive rehabilitation of the Mendota Dam and Pool. The extent of these improvements is unknown at this time. Alternative B is the selected plan for implementation of Levels 1, 2, 3, and 4. Long-term agreements with the Westlands Irrigation District would be required. Capital and operational costs would be required to deliver water to the refuge. Alternative C would require new pumps and annual energy expenditures. Blending of the groundwater may be required due to the high boron concentrations.

C. COSTS AND ECONOMIC ANALYSIS

Costs for the alternative plans for providing adequate water supplies under Water Supply Levels 1,2,3, and 4 are presented in Table IV M-4 and the Cost Appendix. The construction costs include factors to cover engineering, contingencies, and refuge overhead costs. During the advanced planning phase, these costs will be refined further.

Construction of the improvements under the alternatives 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 Fresno, Merced, or Madera County.

Currently, the annual public use to Mendota WMA is about 34,380 use days per year. If water is provided throughout the year, there could be an increase in the number of wildlife use day and recreation benefits.

D. WILDLIFE RESOURCES

Wildlife and fishery resources associated with the refuge are presented in Table IV M-5. The only listed threatened and endangered species associated with Mendota WMA are the San Joaquin kit fox, Vulpes macrotis mutica, the Valley elderberry longhorn beetle, Desmocerus californicus dimorphus, and the palmate-bracted bird's beak, Cordulanthus palmatus. Numerous candidate species may occur in this area and are also presented in Table IV N-6.

Implementation of any of the alternatives plan for Levels 2,3 and 4 would not adversely effect the listed and candidate threatened and endangered species of birds. Detailed field investigations would be necessary during the advanced planning phase of the project. Implementation of the plans would result in overall beneficial environmental effects, as shown in Table IV M-7. The No Action Plan would result in the management of the refuge under current water supply and existing conditions. The results of the preliminary environmental analysis for the selected plans are presented in the Environmental Appendix. Additional environmental analyses will be completed as part of the Water Contracting EIS's.

E. SOCIAL ANALYSIS

The social consequences of constructing and operating the alternative plans would be positive due to the potential increase in wildlife use and subsequently public use. The local social environment is discussed in the separately bound Social Appendix.

TABLE IV M-4
SUMMARY OF ESTIMATED COSTS OF ALTERNATIVES
MENDOTA WMA

Items	Water Delivery Levels				
	1 and 2			3	4
	Alternatives				
	A	B	C	B	B
Total Capital Costs	0	\$47,000	\$424,500	\$47,000	\$47,000
Power Costs (\$/acre-foot)	0.00	0.00	18.90	0.00	0.00
Water Wheeling Costs (\$/acre-foot)	0.00	8.60	0.00	8.60	8.60
Annualized Construction Cost (8.875%, 30 years)	0	4,520	40,840	4,520	4,520
Annual Operation & Maintenance Costs	0	940	13,000	940	940
Annual Power Costs	0	0	103,950	0	0
Annual Water Wheelage Costs	0	18,920	0	31,400	39,100
Total Annual Costs	0	\$24,000	\$154,650	\$36,520	\$44,220

Alternative A - Change Operation of Mendota Pool

Alternative B - Supply Water from Westlands Irrigation District

Alternative C - Construct Wells for use in Conjunction with Surface Supplies

TABLE IV M-5
WILDLIFE RESOURCES
MENDOTA WMA

Ducks

Pintail ^(a)	Mallard ^(a)	Green-winged Teal ^(a)
Gadwall ^(a)	Shoveler ^(a)	Ring-necked Duck
Canvasback	Ruddy Duck ^(a)	Widgeon
Cinnamon Teal ^(a)		

Geese and Swans

Snow Goose	White-fronted Goose	Whistling Swan
Ross Goose	Canada Goose	

Coots

American Coot

Shore and Wading Birds

Pied-billed Grebe ^(a)	Common Egret	Dowitchers
White-faced Ibis	Snowy Egret	Great Yellowlegs
Lesser Sandhill Crane	American Bittern ^(a)	Sandpiper
Common Snipe	Killdeer	Black-crowned Night Heron ^(a)
Long-billed Curlew	American Avocet ^(a)	Avocets ^(a)
Great Blue Heron	Black Necked Stilt ^(a)	Western Grebe ^(a)
Ruddy Duck ^(a)		

TABLE IV M-5
WILDLIFE RESOURCES

MENDOTA WMA
(Continued)

Upland Game

Pheasant
Cotton Tail Rabbit

Black-tailed Jackrabbits
Dove

Raptorial Birds

Marsh Hawk^(a)
White-tail 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
Large Mouth 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-6

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-7
WILDLIFE RECERATIONAL BENEFITS AND RESOURCE IMPACTS
MENDOTA WMA

Item	Water Delivery Levels			
	Level 1	Level 2	Level 3	Level 4
Habitat Acres				
Open Water	0	0	0	0
Seasonal Marsh	2,072	5,000	5,000	4,026
Watergrass (millet)	0	2,000	2,000	3,374
Cereal Grains	0	400	400	0
Uplands	1,940	1,940	1,940	1,940
Administration	100	100	100	100
Fallow	5,328	0	0	0
Public Use Days				
Consumptive	20,303	31,723	41,557	51,391
Nonconsumptive	1,700	2,657	3,480	4,304
Annual Recreational Benefits	\$ 476,590	\$ 744,670	\$ 975,500	\$ 1,206,350

F. POWER ANALYSIS

PG&E serves the Mendota WMA 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 deliver CVP 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 IV B.

G. PERMITS

Construction activities would require several permits. Fresno County would issue approvals to ensure that the existing drainage facilities would not be adversely effected. If additional water is transferred through the California Aqueduct, approvals from the DWR would be required. If the Westlands Irrigation District facilities are utilized, their approval is required. If water rights are to be obtained or modified, the State Water Resources Control Board would be granting the permits. Stream Alteration Permits would be required from the DFG and a Corps of Engineers permit would be required for construction activities in wetlands or riparian corridors.