

Implementation of Wetland Water Supplies

In earlier testimony the Department of Fish and Game presented information on the diverse Public Trust values and benefits associated with wetlands in California. We emphasized the significant loss of historical wetland acreages and the tenuous nature of the water supplies which support the remaining managed wetlands in the Central Valley.

This testimony will focus on the water needs of Gray Lodge, Los Banos, and Mendota State Wildlife Management Areas. We will present details on the volume, timing, quality, and conveyance of water supplies needed to support these areas. We will discuss conjunctive use of ground water and dry year deficiencies which may be alternatives to full and firm supplies in all water years. To the extent we can we will array the tangible benefits which would be maintained with a reliable water supply. Our testimony concludes with a discussion of our efforts to fulfill the legislative mandate to increase wetland acreage in California.

Gray Lodge Wildlife Management Area

In 1931, the then State Division of Fish and Game purchased the 2,540 acre Gray Lodge Gun Club to establish the first Sacramento Valley wildlife refuge. The property was purchased with Governor's Conservation Fund monies. In the 1970s, the area was expanded to 8,400 acres under the authority of the cooperative State and Federal Pittman-Robertson Federal Aid to Wildlife Restoration Act. The wildlife area is located within an intensively developed agricultural farming area about 10 miles southwest of Gridley in Sutter and Butte counties.

Currently, about 1,000 acres at Gray Lodge are maintained as permanent pond habitat, 5,000 acres as native seasonal marsh, 300 acres are farmed as wheat and 1,700 acres are native upland habitat. The remaining 400 acres include roads, housing, and administrative buildings. If adequate and reliable water supplies were available, at least 500 acres of the upland area would be converted to managed seasonal marsh in the future.

Under full management, Gray Lodge requires 44,000 acre-feet of irrigation, flooding, and maintenance water annually. Current water supplies average 36,000 acre-feet. Of this total, 14,000 acre-feet agricultural drainage water is obtained from Reclamation District drains 2,054 and 833, 8,000 acre-feet is obtained from Biggs' West Gridley Irrigation District (BWGID) and 14,000 acre-feet is pumped from deep wells on the property.

The agricultural drainage water used at Gray Lodge is derived primarily from rice culture. Drainwater is pumped from the drains in the early summer when it is available. Utilization of this water presents some management constraints. Large-scale use of

early summer water promotes the growth of tules and cattails. While these plants are commonly associated with freshwater marshes, they do not contribute significantly to the food requirements of wetland wildlife and they can quickly close out open water areas used for rafting and resting by water birds. We are aware of no water quality problems or constraints which have resulted from the use of this drainwater.

Approximately 2,600 acres of Gray Lodge WMA are located within the BWGID. The BWGID is a member of the Sutter-Butte joint Water District which owns and operates the Sutter-Butte Canal that conveys water from the Thermalito Afterbay. BWGID obtains up to 160,950 acre-feet of water per year which is used primarily on rice fields. During some years, the BWGID does not receive adequate supplies and must attempt to purchase water from other districts. The BWGID has allocated 12,000 acre-feet of water per year to Gray Lodge. However, only 8,000 acre-feet is available during the District's irrigation season of April to November. The Gray Lodge turnouts are located at the end of the BWGID system and the District dewateres their canals for maintenance in November of each year. Substantial improvements are needed to facilitate conveyance of BWGID water to Gray Lodge later into the year. The Department of Fish and Game is working with the BWGID to make these improvements.

Gray Lodge WMA is located in the Butte Creek floodplain and uplands. The area is underlain by fine grained materials with sand lenses which may be part of or derived from the Tuscan Formation. The groundwater is located within 100 feet of the ground surface. Based upon existing data, the quality appears to be suitable for irrigation and waterfowl needs. The safe yield of the aquifer under Gray Lodge WMA based upon operational records has been estimated to be 12,000 acre-feet. The average annual withdrawal is 14,000 acre-feet.

The refuge has 22 deep wells of which 20 are used regularly from December through January. Based upon an average of the characteristics of the 22 wells, the average discharge rate appears to be 1750 gpm from depths of 80 feet. The average well is drilled to a depth of over 400 feet.

Most pumping occurs during October, November, December and early January, generally replacing the deficiencies in the surface supply system. However, the cost of this pumping is very high and accounts for most of the average annual use of 1,893,569 kw hours of electricity. An average 75% of Gray Lodge's operations budget must be allocated to power costs.

In 1983, the California Department of Fish and Game applied to the Western Area Power Administration for preference customer status. Attainment of this status would have reduced power costs to about one-tenth of what they are today. The request was denied. The maintenance of wetlands is not an authorized purpose of the Central Valley Project nor does the existing authorization require any mitigation for wetland habitat lost as a result of the project.

An additional problem associated with use of groundwater is the resultant low-flow rate. The rapid flooding of ponds and distribution of water is necessary for good marsh management and is not possible with groundwater supplies.

Water supply needs by month are described in the following table. These needs were developed following several years of study and experimentation and represent the most conservative use of water consistent with sound wetland management practices.

<u>Month</u>	<u>Acre-feet</u>	<u>Cubic feet per second</u>
January	1,320	21.5
February	1,320	23.8
March	1,320	21.5
April	1,320	22.2
May	3,080	50.1
June	4,400	73.9
July	3,080	50.1
August	3,520	57.2
September	8,800	147.9
October	8,360	136.0
November	5,720	96.1
December	1,760	28.6

There are no existing water quality problems at Gray Lodge and none are anticipated if a supplemental supply is obtained from Feather River water impounded at Lake Oroville. Long-term reliance on agricultural drainage water could result in contamination and is not preferable.

Existing conveyance facilities are not adequate to deliver a full and reliable supply of surface water to Gray Lodge. The Department of Fish and Game together with the U.S. Bureau of Reclamation and the local irrigation districts evaluated several alternative delivery alternatives. The preferred plan includes improvements to several components of the Biggs West Gridley system. Capital costs for these improvements are estimated to be \$55,000. DFG is working with BWGID to fund and construct these improvements.

Conjunctive Use in Dry Years

Gray Lodge WMA could accommodate substantial reductions in surface water supplies during dry or critically dry years. DFG, upon receipt of a reliable surface supply, would continue to maintain the the existing deep wells and the diversion facilities necessary to utilize agricultural drainage water.

If we assume that the groundwater table remains at its present level and that some overdraft above the safe yield of 12,000 acre-feet could be tolerated, we could obtain 14,000 acre-feet in a dry year from groundwater. Rice culture in the area of Gray Lodge would be expected to produce drainwater at a volume equal to

that during the 1976-77 drought. During the drought, DFG relied heavily on drainwater and pumped an estimated 16,200 acre-feet. Also during the drought DFG would be able to obtain 6,000 acre-feet from BWGID. If conditions similar to 1976-77 were to occur in the future and if the water supplies described above were available, the area would have a total of 36,200 acre-feet. This would support the maintenance of about 5,800 acres of wetland habitat at Gray Lodge. Under this scenario DFG would use only 6,000 acre-feet of the 12,000 acre-feet available by BWGID and none of the 32,000 acre-feet recommended supplemental surface supply in dry or critically dry years.

Benefits

The table below summarizes the estimated wetland habitat, bird use days and recreation use which occurs or would occur at Gray Lodge WMA if only the existing reliable supply were available (8,000 acre-feet from BWGID) if 36,000 acre-feet were available (ground water, BWGID and agricultural drainwater), and at a full, reliable surface supply of 44,000 acre-feet.

<u>Water Supply</u>	<u>8,000 acre-feet</u>	<u>36,000 acre-feet</u>	<u>44,000 acre-feet</u>
Wetland acres	2,600	6,000	6,500
Use days (ducks and geese)	13,100,000	57,100,000	70,800,000
Use days (other water birds)	300,000	1,200,000	1,000,000
Use days (hunters and anglers)	6,900	29,800	37,000
Use days (nonappropriative)	31,100	135,499	168,000

Recommendation

It is recommended that the State Water Resources Control Board dedicate 32,000 acre-feet of surface water supply from the Feather River at Thermalito Afterbay to the maintenance of wetland and wildlife habitat at Gray Lodge Wildlife Management Area as partial mitigation for losses of wetland habitat associated with water development in the Central Valley of California. This amount when combined with 12,000 acre-feet from BWGID will provide a full supply.

Los Banos Wildlife Management Area (WMA)

The 3,200 acre Los Banos WMA was purchased in 1929. Originally called the Los Banos State Game Refuge, the area was the first waterfowl refuge established in California. The area is located approximately four miles northeast of the City of Los Banos in the San Joaquin River floodplain.

Management of the Los Banos WMA is orientated toward the maintenance of native marsh habitat. As a general rule, 1,500 acres are managed for Swamp Timothy, Alkali Bulrush, and Smartweed. Millet or watergrass is grown on 500 acres. Dry-land cereal grains; (barley, wheat, and milo) are grown on 150 acres.

Managed upland habitat is 509 acres and permanent ponds are maintained on 484 acres. Administrative facilities, houses, shops and roads require 65 acres.

Under full management, Los Banos WMA requires 25,000 acre-feet of irrigation, flooding, and maintenance water annually. The 1986 supply totaled 15,195 acre-feet.

Present sources of dependable water supply to Los Banos WMA are 2,200 acre-feet from Grassland Water District distributed through the San Luis Canal, and 4,000 acre-feet from the San Pedro and West Delta Canals supplied through an exchange contract with the USBR. The San Pedro and West Delta Canals are San Luis Canal Company (SLCC) facilities. 6,500 acre-feet is supplied from the Boundary Drain.

The Grassland Water District (GWD) delivers the 2,200 acre-feet of dependable water in the winter. Approximately 1,400 acre-feet of water can be delivered between September 15 and November 1. The remaining 800 acre-feet can be delivered between November 1 and December 31.

Riparian water rights exist for 2,000 acre-feet of Mud Slough water; however, the quality is deteriorating due to agricultural return water. This water is not acceptable for wildlife.

The exchange contract provides for water rights lost from the San Joaquin River and is delivered free of charge between March and December. The water obtained from the SLCC by the exchange contract and the winter GWD water is high-quality CVP water. The San Luis Canal currently carries agricultural return water which is too saline to be utilized. The Porter-Blake Bypass allows the Arroyo Canal water to be diverted to Mud Slough so that the water in the Santa Fe and San Luis Canals, north of their intersection, would not be contaminated due to high concentration of selenium.

Boundary Drain water originates as agricultural return flows from neighboring lands. The availability of this water for refuge use depends on water use and conservation by neighboring water districts. The seasonal fluctuations of the current water supply have been accommodated for in the management of the refuge. Water from the Boundary Drain is of poorer quality than the CVP water supplies due to salts but has been low in selenium.

As discussed previously, the San Pedro and West Delta Canals are SLCC facilities. The West Delta system has not been used for over thirty years, but could be an alternate delivery point in the future.

Boundary Drain is a deep agricultural drain which enters the refuge from the southeast. This is the primary water source for the east-central portion of the refuge and can also supply water to the remainder of the refuge except the southern area. The water is lowlifted and piped across private land to the eastern area of the refuge. At one time, Boundary Drain/Mud Slough water

was lowlifted into the Ruth Lakes at the north end of Lower Ruth Lake; the water was then lifted from the lakes to supply water to the southeast area of the refuge. The SLCC has dredged the Boundary Drain/Mud Slough three feet deeper than the original depth and removed all structures in the ditch; water can not always be backed to the lowlift pumps.

Mud Slough is a natural drain that flows through the area joining Boundary Drain at the middle of the refuge. At times Mud Slough has heavy flows and could be used to create ponds through the western sections. Recent studies show a high selenium load in Mud Slough so at present this water will not be held on the refuge until the water quality improves. The Porter-Blake Bypass transfers the concentrated drain water from Arroyo Canal into Mud Slough so that the Santa Fe Canal and the San Luis Canal can be used north of the bypass.

The main source of water to the west side of Los Banos WMA has been the San Luis Canal. Several delivery points along the western boundary of the refuge have supplied water from the Canal to the lakes and marsh areas west of Mud Slough. This system provides an adequate means for water delivery to the west side provided the water is of acceptable quality.

The eastern area of the refuge is served through the SLCC's San Pedro Canal Systems and the Boundary Drain. The source of this entire system is the Arroyo Canal which receives usable drain water from the GWD. Currently the conveyance systems on the east side do not have adequate capacity. The West Delta Canal can transport approximately 10 cfs, while the San Pedro Canal can deliver 15 to 20 cfs. A 20 cfs pump lifts water from the Boundary Drain north for delivery to the southeast-central corner of the refuge. This system can only be used if acceptable quality drain water is flowing in the Boundary Drain.

Problems with conveying water to the refuge may occur each year from November 15 to January 15 when the Mendota Pool is drawn down for maintenance. This draw down prevents delivery of some of the water available to the refuge under the exchange contract.

Capacity of the east side conveyance systems, West Delta and San Pedro Canals and the Boundary Drain, is limited. Another problem is related to maintenance of the 50-year old canal and ditch system.

Groundwater levels are generally within 25 feet of the land surface and experience small seasonal fluctuations. Two water bearing zones are present under the surface and are separated by the Corcoran Clay, a 100-foot thick layer of clay at a 200-foot depth. Records from wells in the area show that pump yields for irrigation wells range from 675 to 2,100 gallons per minute. The dissolved solids concentration of groundwater from the well data indicate locally high concentrations of salts above the Corcoran Clay. Water below the clay layer is generally of better quality with total dissolved solids below 2,000 PPM.

Historically Los Banos WMA has used five groundwater pumps. High power costs, well cave-ins, and poor water quality due to high boron content have caused the groundwater system to be abandoned. The USBR estimates that a safe pumping capacity of 6,800 acre-feet could be delivered from a 60 horsepower pump installed in a 500-foot well.

In 1981, a neighboring land owner forced the removal of a small dam in the Boundary Drain in order to drop the groundwater table to facilitate the planting of row crops on his land. This reduction in water table produced a 33 percent increase in refuge water requirements due to increased seepage and lowered groundwater.

Water supply needs by month are described in the following table. These needs were developed following several years of study and experimentation. At present, these needs represent the most conservative use of water at Los Banos WMA. Resolution of water quality, water delivery and seepage problems may reduce needs in the future.

<u>Month</u>	<u>Acre Feet</u>	<u>Cubic Feet per Second</u>
January	500	8.1
February	500	9.0
March	1,500	24.4
April	1,500	25.2
May	3,000	48.8
June	4,000 —	67.2
July	3,000	48.8
August	2,500	40.7
September	2,500	42.0
October	3,000	48.8
November	2,000	33.6
December	1,000	16.3

Existing conveyance facilities are not adequate to carry a full surface supply to Los Banos WMA. An evaluation conducted by the U.S. Bureau of Reclamation recommended the use of the San Luis Drain to convey Delta-Mendota Canal water from an intertie located near Bass Avenue to the junction of the Arroyo Canal and the Mud Slough Bypass. A new siphon would allow the transfer of fresh water to the Arroyo and Santa Fe Canals. These conveyance facilities could serve the Los Banos WMA, San Luis NWR, Kesterson NWR and the Grasslands Resource Conservation District. Construction estimates are approximately one million dollars.

Conjunctive Use in Dry Years

Current, reliable water supplies for wetland management at Los Banos WMA total 6,200 acre-feet. We are working with the U.S. Bureau of Reclamation to develop a groundwater system that could be used during an emergency in conjunction with surface water. This would be particularly important at times when the Mendota

Pool is drawdown and the Central California 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 developed around existing conveyance facilities, mainly Boundary Drain and the San Luis Canal.

Benefits

The table below summarizes the estimated wetland habitat, bird use and recreation use which occurs or would occur at Los Banos WMA if only the existing reliable supply were available (6,200 acre-feet) if an intermediate supply of about 15,000 acre-feet and a full supply of 25,000 acre-feet were available for wetland management.

<u>Water Supply</u>	<u>6,200</u> <u>Acre feet</u>	<u>15,000</u> <u>Acre feet</u>	<u>25,000</u> <u>Acre feet</u>
Wetland Acres	1,690	2,634	2,759
Use days (ducks and geese)	10,900,000	22,700,000	50,600,000
Use days (other water birds)	800,000	1,600,000	3,600,000
Use days (hunters and anglers)	9,000	18,800	42,000
Use days (nonappropriative)	5,500	11,000	25,800

Recommendations

It is recommended that the State Water Resources Control Board designate that 18,800 acre-feet of surface water supply from a development source south of the Sacramento San Joaquin Delta be dedicated to the maintenance of wetland and wildlife habitat at the Los Banos WMA as partial mitigation for losses of wetland habitat associated with water development in the Central Valley of California. Together with the existing 6,200 acre-feet of reliable supply, this total of 25,000 acre-feet will allow for full management of Los Banos WMA.

Mendota Wildlife Management Area

The Mendota Wildlife Mangement Area (WMA) was purchased by the State Wildlife Conservation Board between 1954 and 1966. It was established to provide waterfowl habitat, to reduce crop depredation, and to provide public hunting. It now also provided other nonconsumptive recreational opportunities as well as habitat for all wetland and some upland species. Mendota WMA currently comprises 12,105 acres. 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.

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.

Water delivery to Mendota WMA is from a variety of sources. Mendota WMA contracts for a water supply of 28,584 acre-feet per year from the USBR. However, an average of 18,245 acre-feet is actually delivered per year. There are several reasons for the difference in water available and the water delivered. First, the Mendota Pool is drawn down for maintenance around mid-November and cuts off all water deliveries during the months of December and January. Secondly, cattails, Typha sp., which are undesirable for waterfowl management, are controlled by periodically drying out the canal or pond at a time when less water is needed. Thirdly, 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 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.

The same contract which provides for water to the Traction Ranch section, also provides up to an additional 19,000 acre-feet of undependable water under Sections 2 and 6 of Contract #PL 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.

The USBR 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 USBR annually restricts the water flow from the Delta-Mendota Canal to the Mendota Pool to allow for maintenance. The Mendota Pool is operated by the Central California Irrigation Company (CCID) and is drawn down for maintenance on the Mendota Dam. The maintenance work on both the Canal and the 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 capacity to serve the full development demand of Mendota WMA.

When the Mendota Pool is dewatered, and the normal delivery of water to the area cannot be made, Westland Water District transports 10 acre-feet of San Luis Canal water from the San Luis Canal in Lateral No. 6 and Lateral 4 of its distribution system. This water is

purchased by the State of California from the USBR for the Department of Fish and Game. The Westlands Water District has capacity rights in the laterals.

The internal conveyance system consists of nine lift pumps and open ditches to supply water to the refuge. These surface water lift pumps have capacity 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 the control of cattails, which are undesirable for waterfowl management as previously mentioned.

The loss of water in November constrains management of waterfowl habitat and the use of the area for public use. Before the water supply is cut off, the ponds must be flooded deeper than desirable to ensure adequate water coverage through the waterfowl season. If they are not flooded this deep, evaporation produces 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. Delivering a supply of water to the refuge at the appropriate times would alleviate the principal water conveyance problem.

The Department of Fish and Game has contacted the Central California Irrigation District and the U.S. Bureau of Reclamation in an effort to evaluate the feasibility of reconstructing Mendota Dam. Resolution of this problem would substantially improve water supply conditions at Mendota WMA, would reduce problems at Los Banos WMA, San Luis Refuge and Kesterson Refuge, and would help with supply and delivery problems at the Grasslands Resource Conservation District as well. It is likely that improvements to the Mendota Dam would conserve water that now leaks through the dam and provides no substantial public or private benefits. Rebuilding the dam could cost as much as two million dollars.

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 production significantly and allow the conversion of 400 acres of upland to marsh.

The ground water level is approximately 100-250 feet deep with considerable seasonal fluctuations. The USBR 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.

Three groundwater wells at Mendota WMA were abandoned during the early 1950's due to undesirable boron concentrations. High boron concentration reduces habitat diversity and value to wildlife. Not only are wells undesirable because of their poor water quality, but also the high cost of power.

Water supply needs by month are described in the table below. These needs were developed following several years of study and experimentation and represent the most conservative use of water consistent with the management needs at Mendota WMA.

<u>Month</u>	<u>Acre-Feet</u>	<u>Cubic Feet per Second</u>
January	1,250	20.3
February	1,250	22.5
March	1,150	18.7
April	1,150	19.3
May	2,800	45.5
June	2,150	36.1
July	2,150	35.0
August	2,500	40.7
September	5,150	86.5
October	5,000	81.3
November	3,600	60.5
December	1,500	24.4

There are no existing water quality problems at Mendota and continued use of Central Valley Project surface supplies would not create water quality problems.

Conjunctive Use in Dry Years

The appears to be no feasible use for ground water at Mendota. The existing firm supply of 5,100 acre-feet would support only a meager amount of habitat. Mendota is not located in proximity to other public or private wetland areas and the loss of this critical habitat during even a short drought could result in substantial impacts. The U.S. Bureau of Reclamation has made considerable effort to provide Mendota with "if and when available" water in the past, however, this tenuous water supply is considered by the Bureau to be part of its uncontracted supply available for marketing in the future. If Mendota were to suffer no greater deficiencies than those imposed on Class 1 agricultural contractors by the Bureau, adequate wetland habitat could be supported in drought years.

Benefits

The table below summarizes the estimated wetland habitat, use days and recreation use which occurs or would occur at Mendota WMA if 1) only the existing firm supply were available (5,100 acre-feet), 2) if the current average annual supply were delivered (18,300 acre-feet), and 3) at a full water supply of 29,650 acre-feet.

<u>Water Supply</u>	5,100 Acre-feet	8,300 Acre-feet	29,650 Acre-feet
Wetland acres	2,072	7,400 ^{1/}	7,400 ^{2/}
Use days (ducks and geese)	2,300,000	8,100,000	10,600,000
Use days (other water birds)	300,000	1,200,000	1,600,000
Use days (hunters and anglers)	8,900	31,700	51,400
Use days (nonappropriative)	700	2,700	4,300

1/ The additional water would be used to extend the water flooding period.

2/ The additional water would be used to supplement summer irrigation and to extend the water flooding period.

Recommendation

It is recommended that the State Water Resources Control Board allocate 24,550 acre-feet of Central Valley Project water for the maintenance of wetland and wildlife habitat at Mendota Wildlife Management Area as partial mitigation for losses of wetland habitat associated with development of water in the Central Valley of California. This amount, when combined with the existing 5,100 acre-feet of reliable supply, will provide a full supply of surface water for the management of Mendota WMA. It is further recommended that the State Water Resources Control Board encourage the U.S. Bureau of Reclamation and the Central California Irrigation District to work with the Department of Fish and Game, the U.S. Fish and Wildlife Service, and the Grasslands Resource Conservation District to reconstruct the existing dam at Mendota Dam in order to reduce or eliminate the need for annual maintenance which results in lost water supplies for public and private wetland areas.

Future Wetland Restoration

In 1979, Senate Concurrent Resolution No. 28 directed the Department of Fish and Game to prepare a plan which would identify means by which existing wetlands would be protected from conversion to other land uses and be managed in such a manner as to optimize their value as waterfowl habitat, former wetlands would be restored to wetland status and new wetlands created, and additional recreational benefits be provided on existing, restored, or newly-developed wetlands.

The resolution concludes with seven specific directions to the Department of Fish and Game covering items which are to be included in the plan. Those points are:

- "1. A program for maintaining existing wetlands habitat,
2. a program for optimizing wildlife value of existing wetlands habitat,

3. the identification of sufficient additional potential wetland habitat sites to increase the amount of wetlands in California by 50 percent and a program for the public and private acquisition of such lands,
4. potential sources of water to assure an adequate water supply for existing and newly-created wetlands,
5. an expanded recreation program for existing and newly-created wetlands,
6. potential sources of funding to implement its plan, and
7. such other measures as the Department of Fish and Game deems to be necessary and appropriate to implement the plan by the year 2000; . . ."

This represents a substantial challenge to the Department and we have been busy. The plan called for in SCR 28 was published in November 1983. In November 1984, the voters approved Proposition 19 which provides a one-time fund of \$30 million for purchase of interior and coastal wetlands. We also receive \$1 million per year from the Environmental License Plate Fund for threatened and endangered species habitat, much of which is wetlands. In 1987, we received \$1.5 million from paramutual funds for the Wildlife Restoration Fund. Each of these acquisition programs is administered by the Wildlife Conservation Board.

Efforts in the habitat maintenance and development area have received substantial support from the private sector. Ducks Unlimited, through their Matching Aid to Restore State Habitat (M.A.R.S.H.) programs have been providing about \$350,000 annually to develop breeding and wintering waterfowl habitat. The California Duck Stamp Program is providing about \$500,000 annually for wetland development and in 1987, the California Waterfowl Association funded projects for wetland restoration and enhancement totaling \$140,000.

The U.S. Fish and Wildlife Service has about \$3 million annually for easements on existing wetlands. In 1988 California will begin its own wetland easement program under Senator Presley's "State Water Bank" bill.

In total, 19,907 acres of wetlands have been secured either through purchase, gifts, or easements, however, only 7,000 acres represent new wetland habitat. The mandate in SCR 28 calls for 120,000 acres by the year 2000. We are far from reaching this goal.

In the area of assuring adequate water supplies for existing and newly-created wetland, we have made progress but are still far from our goal. The Refuge Water Supply Investigation, sponsored by the Bureau of Reclamation identifies the needs, demand schedules, and alternatives for delivery to the State WMA's and Federal refuges. The authorizing legislation for the Coordinated Operations Agreement sets aside about 250,000 acre-feet of CVP yield which may be allocated to wetlands.

This testimony and these hearings are the first real opportunity for us to pursue the SCR 28 directive on water before the State Water Resources Control Board. Our recommendations are oriented towards the need for secure and reliable water supplies for existing wetlands. Water supplies for future, newly created wetlands may actually be easier to obtain. The practice of our Department is to only purchase and develop wetlands on those parcels which have existing water supplies. A benefit of this effort may be the freeing up of water for other purposes. Because our policy is to purchase only from willing sellers, the most likely area for conversion from agriculture to wetlands is rice land. On the average, rice culture requires 8 acre-feet of water per year. A well-managed marsh can be supported with 4 acre-feet. Accounting for return flows, we conservatively estimate that each acre of marginal rice ground converted to managed wetlands would return 2 acre-feet to the State's water supply. This amounts to a significant total.

Finally, we are working with the U.S. Bureau of Reclamation on an evaluation of the use of wetlands as a source of off-stream storage capacity. Very simply, surplus winter flows would be stored on the marshes for spring release to the rivers or directly into man-made conveyance. This program represents an opportunity to support wetlands in partnership with water development and conservation.