

**TESTIMONY OF CHRISTOPHER H. NEUDECK
BEFORE THE U. S. HOUSE OF REPRESENTATIVES
COMMITTEE ON RESOURCES
SUBCOMMITTEE ON WATER AND POWER
OVERSIGHT HEARING ON WATER SUPPLY VULNERABILITIES
IN THE SACRAMENTO/SAN JOAQUIN RIVER SYSTEM**

October 20, 2005

I am Christopher H. Neudeck, a California Registered Civil Engineer. I have worked for over twenty-four (24) years as an Engineer for various Reclamation Districts in the Sacramento/San Joaquin Delta. My experience includes levee design, floodfighting, levee break repair, dewatering, levee rehabilitation and improvement and routine levee maintenance.

Sacramento/San Joaquin Delta

The Sacramento/San Joaquin Delta is the tidal area where the Sacramento and San Joaquin Rivers and their tributaries meet Suisun Bay as part of the San Francisco Bay Delta Estuary, the largest estuary on the West Coast of the United States. The Delta comprises more than 738,000 acres in five counties. The Delta's 700 miles of waterways surround more than 60 leveed tracts and islands where land elevations vary roughly from more than ten (10) feet above sea level to as much as twenty (20) feet below sea level. The lowest lands are in the agricultural portions of the western Delta where pockets of organic soil continue to subside primarily due to oxidation of peat. The Delta is an extremely fertile and productive agricultural area, its 700 miles of meandering, sheltered waterways provide for a recreational wonderland, its channels serve as the hub of the deliveries of water from north to south and store and provide for the capture of surplus natural flows, and it is the State's most important fishery habitat. The Water Education Foundation reports an estimated 25 percent of all warm water and anadromous sport fishing species and 80 percent of the state's commercial fishery species live in or migrate through the Delta. Contained within the Delta are the cities of Antioch, Brentwood, Isleton, Pittsburg and Tracy and numerous unincorporated towns and villages. Major cities partly within the Delta are Sacramento, Stockton, West Sacramento and Lathrop. Attached hereto is Table 7 from the 1993 Delta Atlas prepared by the California Department of Water Resources which provides Delta statistics

Since 1990, urban development has greatly expanded. Recreational uses have also expanded but at a lesser rate. The conversion of Delta agricultural lands to other uses includes major areas set aside for wildlife habitat. In 1992, the State established the Delta Protection Commission which essentially precluded urban development within the "Delta Primary Zone" shown on the attached map. This area which is primarily devoted to agriculture has the least ability to pay and contains some of the more challenging levee problems.

Recognition of Need for Delta Levee Action

Although the State and Federal interest and need for action to upgrade Delta levees has been clear for many years, significant State and Federal assistance has been basically limited to disaster assistance until 1984 when the State committed roughly Ten Million Dollars per year to the State Delta Levee Maintenance Subvention Program. One-half of the funds went to special projects of the California Department of Water Resources and the other one-half to a local cost-share program where after the local district expended \$1,000.00 per mile of levee the State would reimburse up to 75% of the cost. Due to limited availability of funding, the State failed to provide its full cost share and the typical reimbursement has been about 50% to 60%. Funding for this critically important program will end on June 30, 2006.

Although the federal interest in agriculture, commercial and recreational navigation, the Stockton and Sacramento Inland Ports, highways, railroads, electrical transmission lines, natural gas storage, utility pipelines, anadromous fish, migratory waterfowl, and fresh water supplies as related to the Delta is and has been clear, the non-disaster federal contribution to maintenance and rehabilitation of the non-project levees in the Delta has been directed primarily to studies. The U. S. Army Corps of Engineers Draft Feasibility Report and Draft Environmental Impact Statement - October 1982 reports that the Sacramento-San Joaquin Delta Investigation began in 1962. To date the studies have failed to produce any physical work.

There Is A Real Need To Secure Funds That Will Result in Immediate Placement of Dirt and Rock On Existing Levees To Reduce The Risk of Levee Failure

The most effective way to accomplish this result is to contribute funding to the already ongoing State Delta Levee Maintenance Subvention Program which is administered by the State Reclamation Board through the California Department of Water Resources and California Department of Fish and Game. The program allocates funding for reimbursement to local agencies based on categories. Category 3. includes expenditures to achieve the Short Term Hazard Mitigation Plan Standards and Category 4 includes expenditures to achieve the U.S. Army Corps of Engineers PL 84-99 Delta levee standards for agricultural levees or the comparable Bulletin 192-82 State Standards.

Attached hereto is a sketch depicting the PL84-99 Corps of Engineers Delta levee standards. Most notable is the variable landside levee slope or "backslope" which is dependent upon the depth of peat. Achieving the PL 84-99 Delta agricultural levee standards is feasible and would reasonably reduce the risk of levee failures.

Recommendation

It is recommended that federal funding be directed through the U. S. Department of Interior Bureau of Reclamation to supplement the State and local funding of the State Delta

Levee Subvention Program and to supplement the State Delta Levee Special Project Program.

A federal contribution of Ten Million Dollars per year should be made to each of the two Delta levee programs commencing as soon as possible to assure that the programs will continue past June 30, 2006.

The contribution to the State Delta Levee Subvention Program could be limited to achieving the Category 3 Short Term Hazard Mitigation Standards and Category 4 PL 84-99 Corps of Engineers Delta Levee Agricultural Standards with the proviso that federal funds will be used with state funds so as to result in the local cost share for such categories of no more than ten (10) percent. The match with state funds should be left to resolution between the state and federal agencies but should not delay or preclude the investment of the federal funds. If, for example, the state is unable to fund its share, then federal funds should be allowed to be expended with the local ten percent (10%) match to accomplish the desired work as soon as possible. The adjustment with the state in recognition of past state expenditures in the program without federal contribution can, if necessary, be accomplished in future years.

The contribution to the State Delta Levee Special Projects Program should also involve a match with state or local funds but the emphasis should be on immediate investment of such funds in accomplishing the needed work on the Delta levees.

In some cases even at ten percent (10%) the local reclamation districts may be unable to fund their share. The federal funds should be provided with some flexibility to reduce the local share even below the ten percent (10%) based on an ability-to-pay analysis similar to that already being used by the state.

Levee Break Response Plan

The Delta levee rehabilitation should be viewed as an ongoing process resulting in gradual but increasing stability. Although the risk of levee failure will be reduced, it will never be eliminated. Local agencies can help floodfight but do not have the financial ability to repair a levee break, dewater the flooded areas or otherwise undertake major restoration work. Once a levee break occurs, the assessable base of the local agency is of little value. The opportunity for possible reimbursement through currently structured disaster assistance or similar types of programs does not provide the cash necessary to accomplish the work. Given today's costs, only a state or federal agency has the financial capability to adequately respond to a Delta levee break. A plan for immediate response by a state or federal agency once a levee break occurs is essential to containment of the damages. The plan should provide for restoration of the public facilities to the point that the local agencies can financially and effectively resume operation and maintenance. Emergency response regardless of the type of emergency should not involve a debate on policy. Immediate "no holds barred" response to arrest the threat should be the goal.

There is no reasonable alternative to preservation of the Delta levee systems.

Although there are numerous levee systems protecting separate islands or tracts of land in the Delta, there is a critical interrelationship of such systems. For the so-called lowlands which are areas below five feet above sea level the flooding of a particular island or tract will result in seepage into adjoining lands, levees and embankments. The generation of wind waves across large open bodies of water also creates a serious threat to adjoining facilities. As demonstrated by the June 2004 flooding of Jones Tract, the seepage and wind waves from flooded areas can result in the failure of adjoining levees, railroad and highway embankments and major utilities with a real potential for a domino-type impact.

Due to the resulting depth of water flooding of Delta islands or tracts will not result in shallow marsh habitat but rather will result in the creation of a large lake or bay. The areas abutting such a lake or bay and particularly those which are developed will suffer from rising groundwater tables. Abutting levees and embankments will have to be raised and fortified.

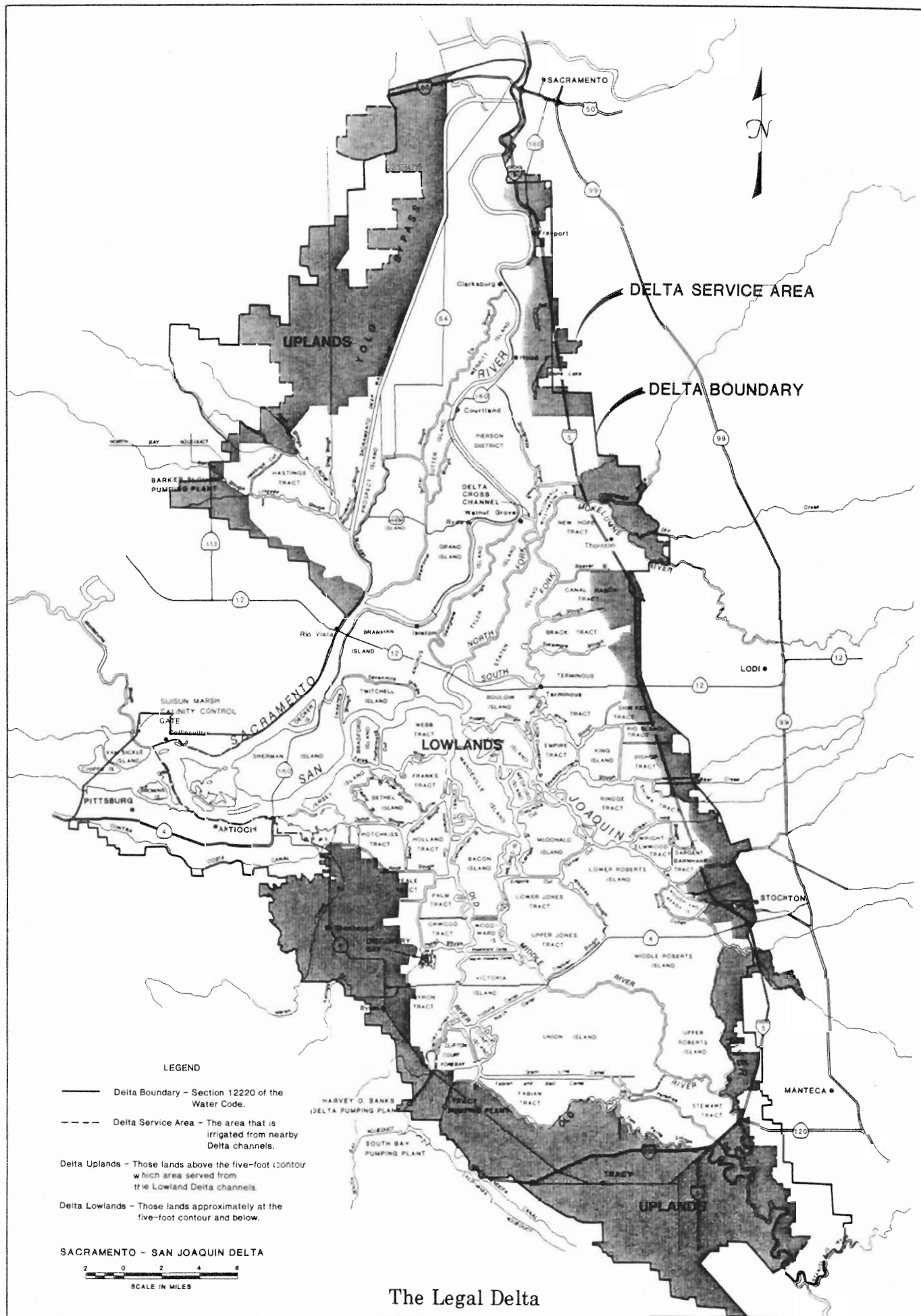
Another important consideration is the preservation of fresh water supplies. The Delta levee systems are critical to the efficient control of salinity intrusion from the Bay into the Delta which is the hub for water deliveries throughout the state. There is also a huge increase in evaporative loss when an agricultural area is left in a flooded condition. The commonly recognized "rule of thumb" is that 2 acre feet per acre more of fresh water will be lost from a flooded area than from the same area subjected to farming. Attached is a copy of the 1976-77 Estimated Crop Et Values for the Delta Service Area reported by the Department of Water Resources in Bulletin 168 - October 1978. A comparison of the various crop types to the item for "Riparian Veg. & Water Surface" displays the potential impact. If for example 460,000 acres of Delta lowlands were allowed to be permanently flooded, the additional fresh water loss would be about 920,000 acre feet per year. To replace such a loss particularly in a dry year would require the entire yield from a number of very large dams.

The alternative of an inland saltwater bay with the resulting salination of groundwater basins, adverse impacts to fish, waterfowl habitat and recreation and loss of Delta pool storage is also not a good choice.

Immediate action is in the best public interest.

Dated: October 18, 2005


CHRISTOPHER H. NEUDECK



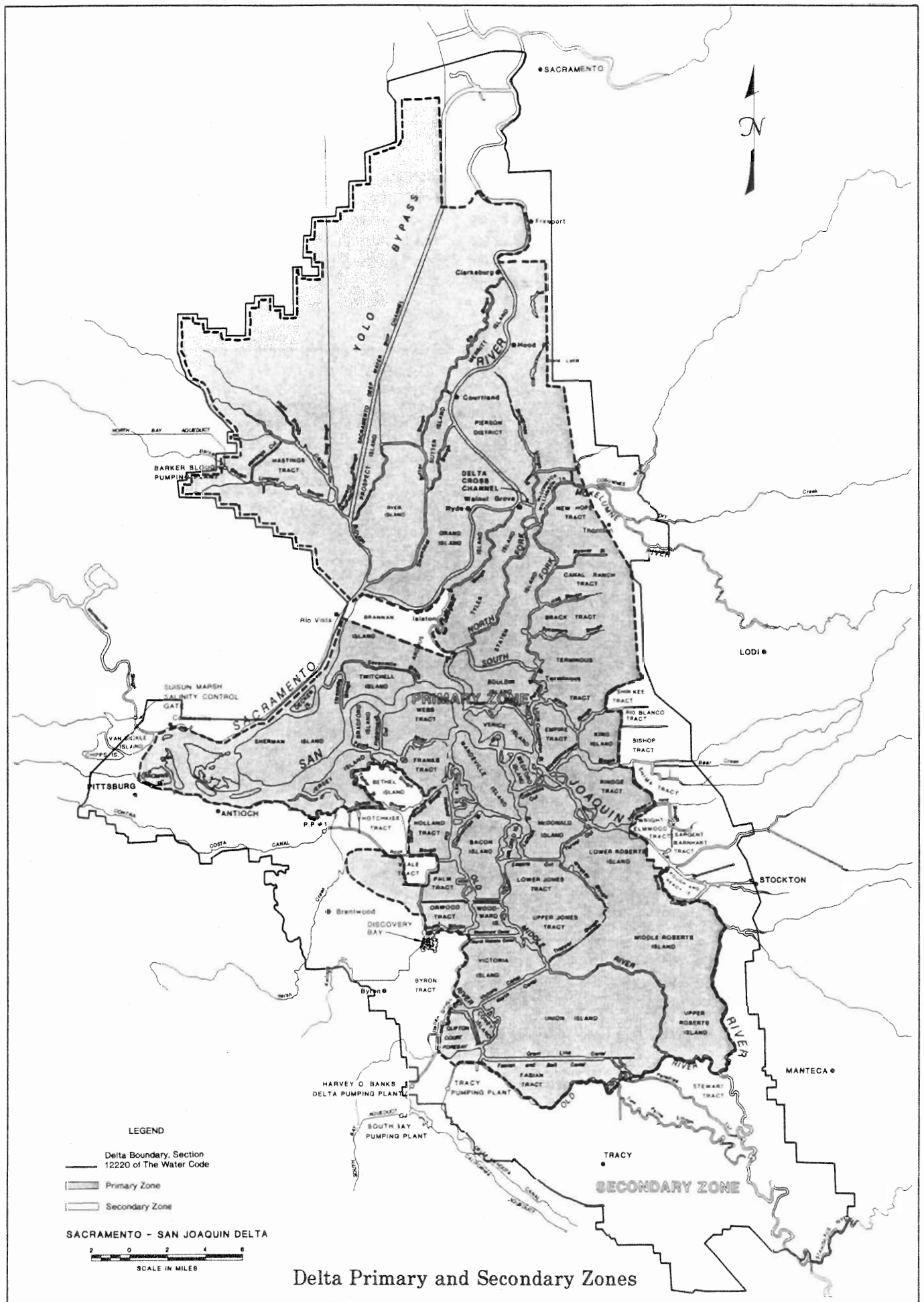


Table 7

Delta Statistics

DEMOGRAPHY

Population: 410,000 (1990)

Counties: Alameda, Contra Costa, Sacramento, San Joaquin, Solano, Yolo

Incorporated Cities Entirely Within the Delta: Antioch, Brentwood, Isleton, Pittsburg, Tracy

Major Cities Partly Within the Delta: Sacramento, Stockton, West Sacramento

Unincorporated Towns and Villages: 14

GEOGRAPHY

Area (acres, 1987):

Agriculture	520,000
Cities and Towns	35,000
Water Surface	50,000
Undeveloped	133,000

Total Acres **738,000**

Levees (miles, 1987):

Project	165
Direct Agreement	110
Non-project	825

Total Miles **1,100**

Rivers Flowing into the Delta: Sacramento, San Joaquin, Mokelumne, Cosumnes, Calaveras (These rivers plus their tributaries carry 47 percent of the State's total runoff.)

Diversions Via Aqueducts Through or Around the Delta:

San Francisco Public Utilities Commission
East Bay Municipal Utility District

Diversions Directly From the Delta:

Western Delta Industry
City of Vallejo
1,800+ Agricultural Users
Contra Costa Canal
State Water Project
Central Valley Project

ECONOMY

Recreation:	User days annually	12,000,000
	Registered Pleasure Boats	82,000
	Commercial Recreation Facilities	120
	Public Recreation Facilities	20
	Private Recreation Associations	20
	Berths	8,500
	Docks	120
	Launch Facilities	30

Agriculture (1990):

Average Annual Gross Value = Over \$500 million

Main crops: Corn, Grain and Hay, Sugarbeets,
Alfalfa, Pasture, Tomatoes,
Asparagus, Fruit, Safflower

Transportation: Interstate Highways: 5, 80, 205,
State Highways: 4, 12, 160
Railroads: Southern Pacific, Union Pacific,
Atchison, Topeka & Santa Fe,
Sacramento Northern
Deepwater Ship Channels to Sacramento and
Stockton transport 5 million tons of cargo
annually.

FISH AND WILDLIFE

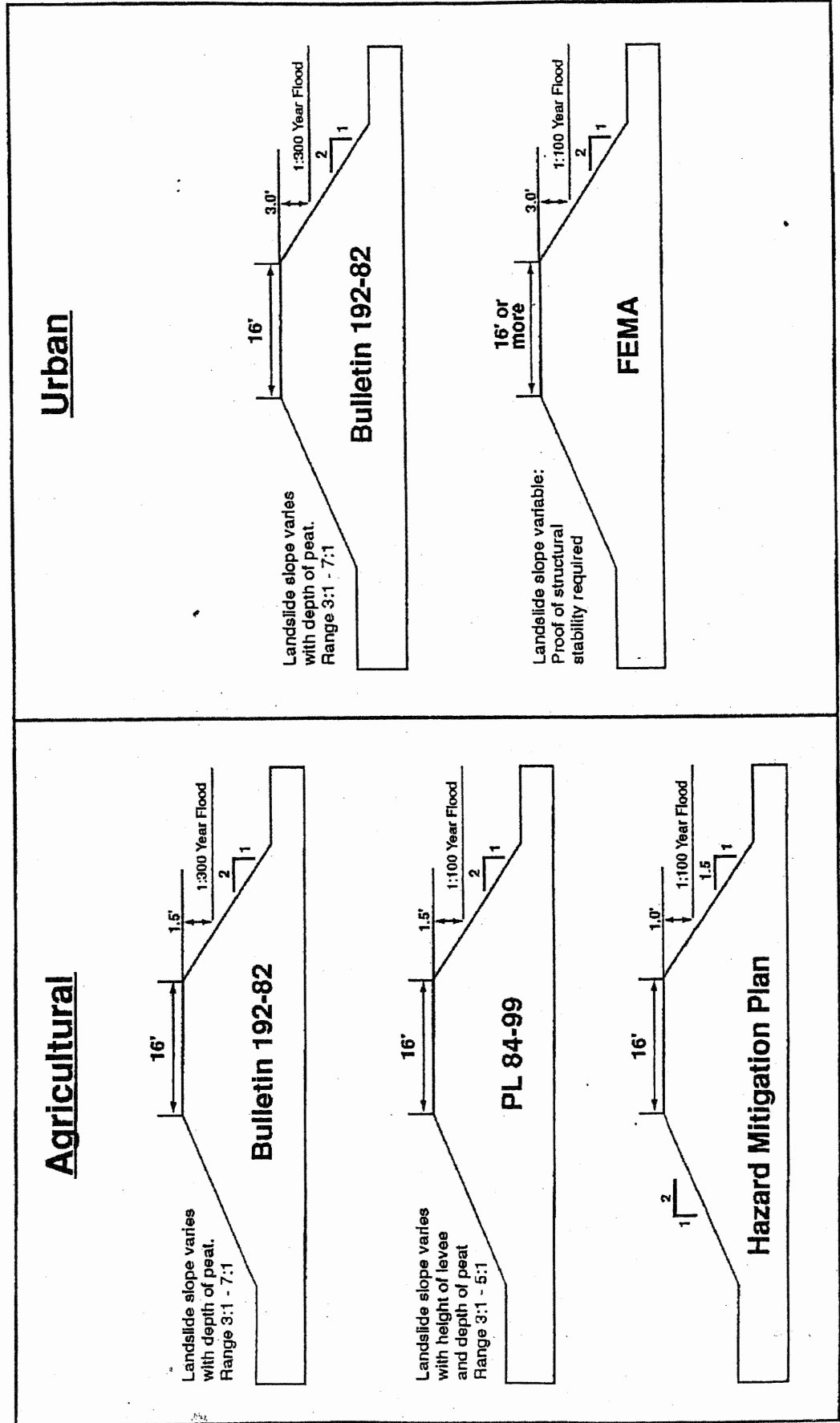
Birds	230 species
Mammals	45 species
Fish	52 species

Reptiles and Amphibians	25 species
Flowering plants	150 species

Major Anadromous Fish: Salmon, Striped Bass, Steelhead Trout, American Shad, Sturgeon

Figure 4

Levee Standards



[illegible]

1/ Applies also to nonirrigated grain.
2/ Applies also to nonirrigated orchards and vineyards.
Metric conversion: inches times 25.4 equals millimetres.