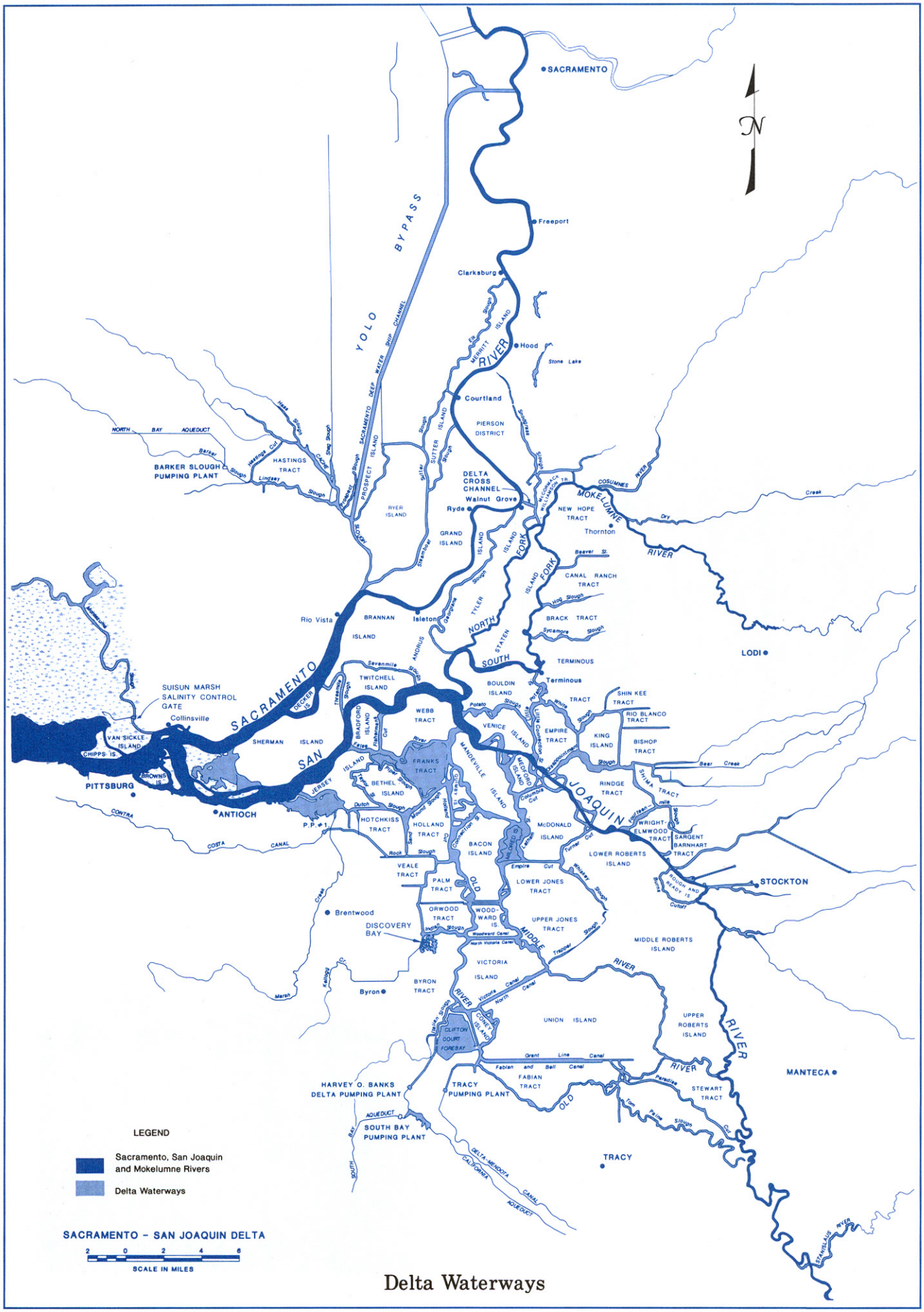
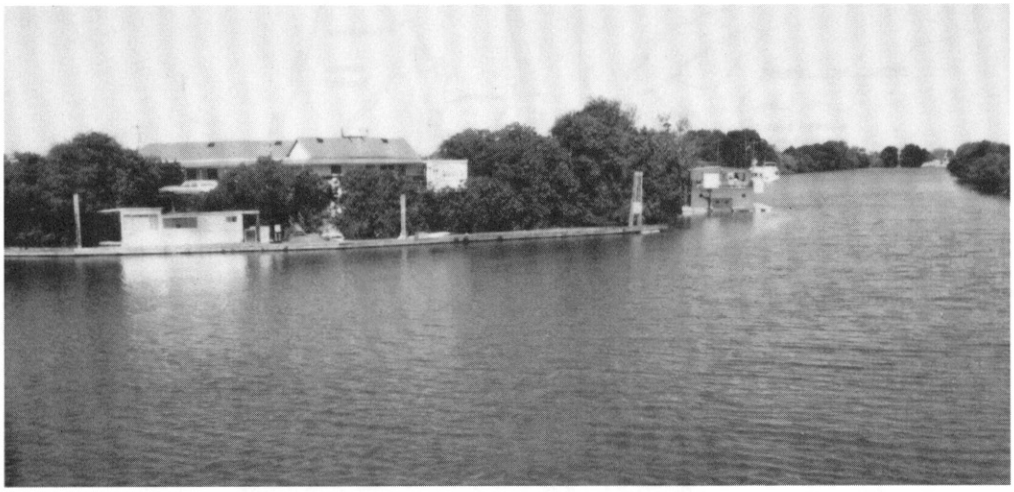


Delta Waterways

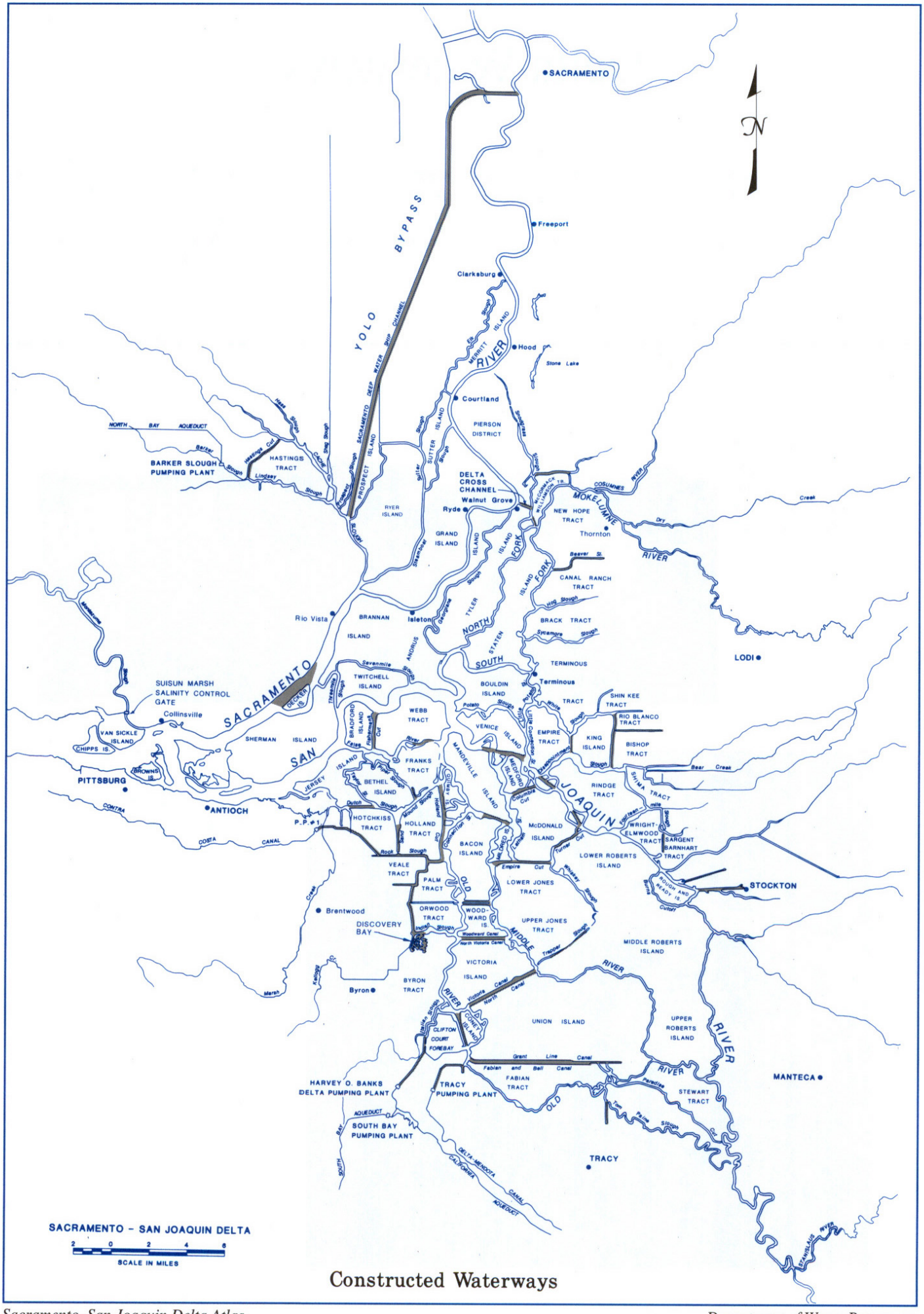
Delta Waterways

Delta waterways are the single most important geographical feature of the State's water resources system. Historically, over 40 percent of the State's runoff flowed to the Delta via the Sacramento, San Joaquin, and Mokelumne rivers. Many of the waterways follow natural courses while others have been constructed for specific purposes (see the following two sections). The map at left shows the location of the Sacramento, San Joaquin, and Mokelumne rivers within the mesh of Delta waterways.



Looking across the North Fork Mokelumne River from the northern tip of Staten Island toward Tyler Island.

Looking south on Old River east of Coney Island.



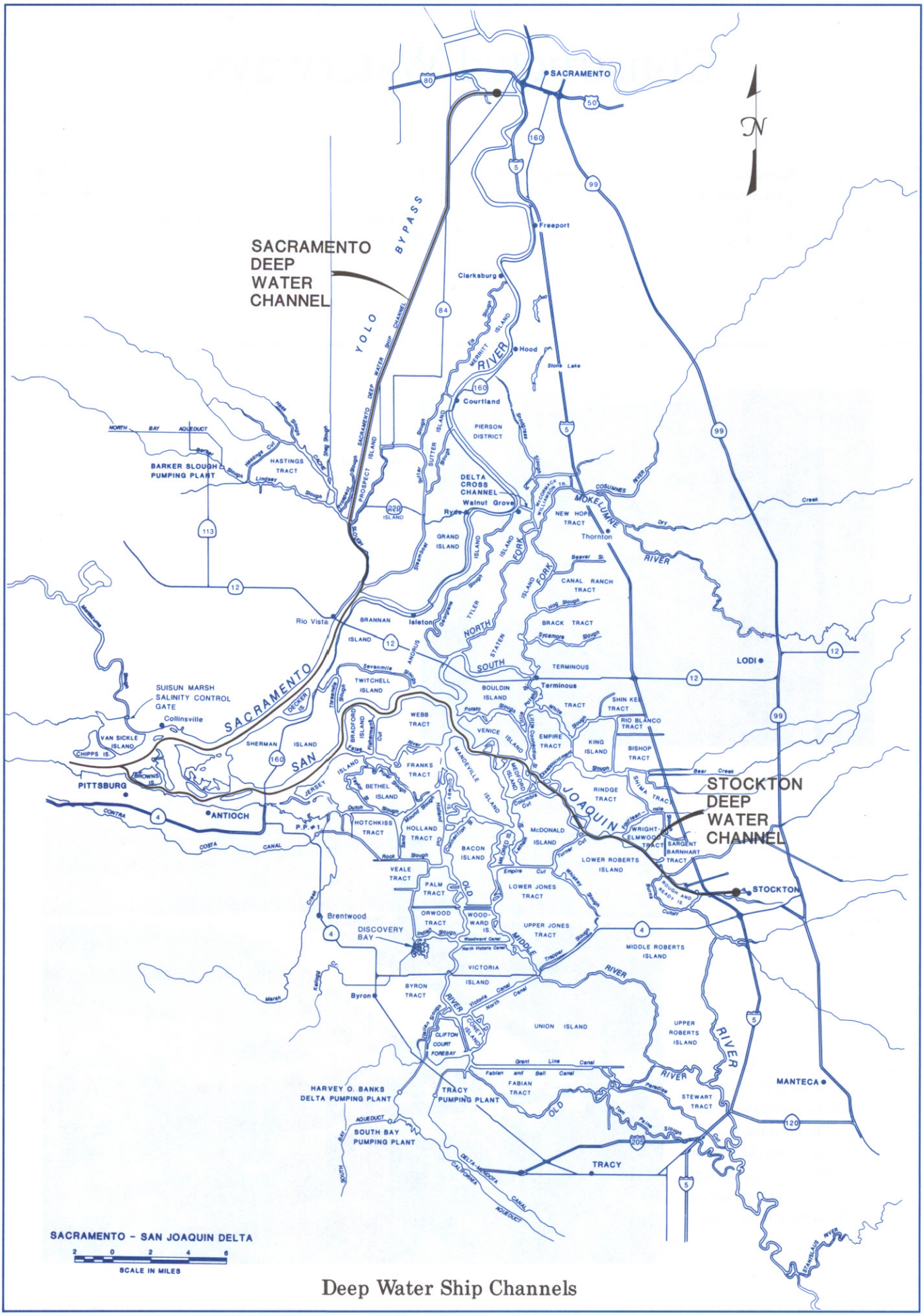
Constructed Waterways

Constructed Waterways

Not all of the Delta waterways follow natural channels. Some were constructed for navigation, while others were constructed to provide water circulation or to obtain material for levee construction. The Delta Cross Channel, a Central Valley Project facility, links the Sacramento River with the Mokelumne River system to improve water circulation within the northern and central Delta. The map at left illustrates the location of all waterways constructed in the Delta.

Looking west at Woodward and North Victoria canals and at a segment of Middle River in the foreground.

The Delta Cross Channel, constructed by the Bureau of Reclamation in 1951, connects the Sacramento River (foreground) with Snodgrass Slough and the Mokelumne River system.



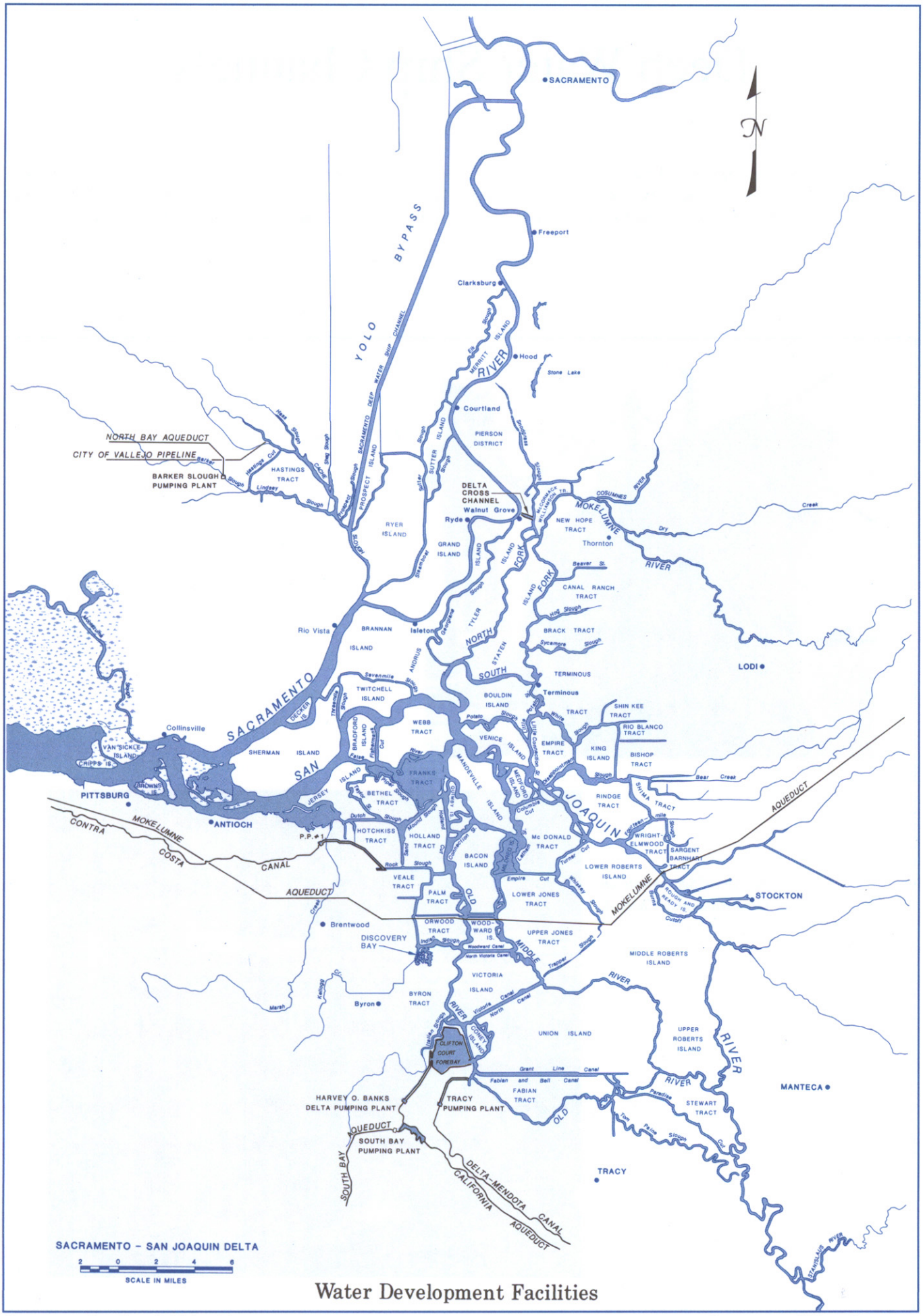
Deep Water Ship Channels

Deep Water Ship Channels

The Delta supports two major inland ports, one in Stockton and one in Sacramento. They are located about 80 nautical miles east of the Golden Gate Bridge. As shown on the map at left, they are served by the Stockton Deep Water Ship Channel, completed in 1933, and the Sacramento Deep Water Ship Channel, completed in 1963. These channels have recently been deepened to 35 feet.

A cargo ship at the Port of Stockton.

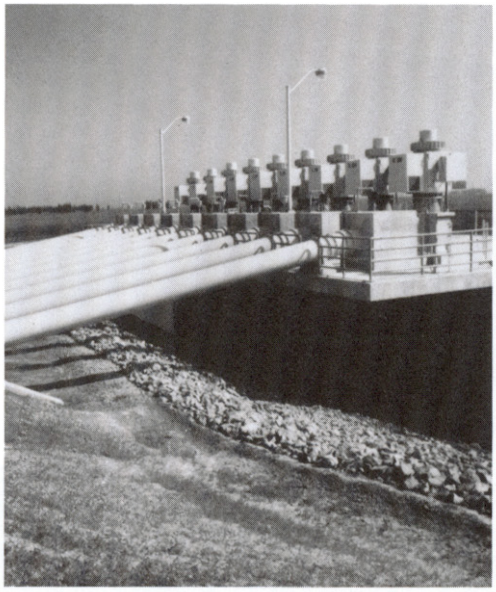
The Port of Sacramento on the Deep Water Ship Channel.



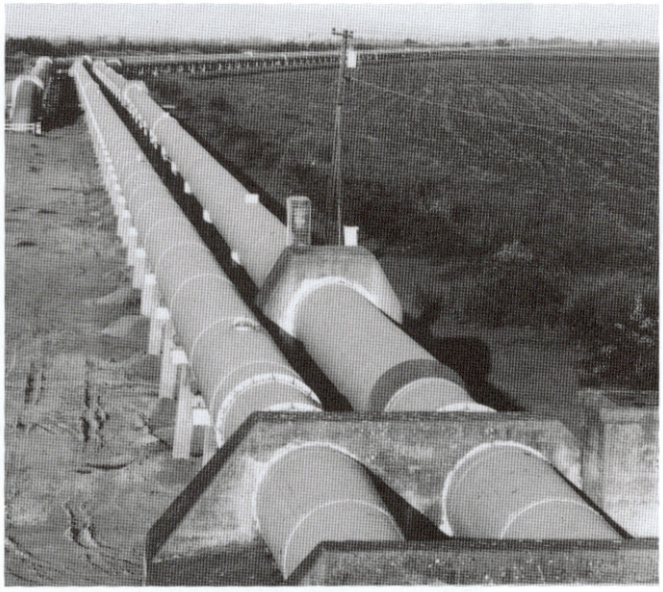
Water Development Facilities

Water Development Facilities

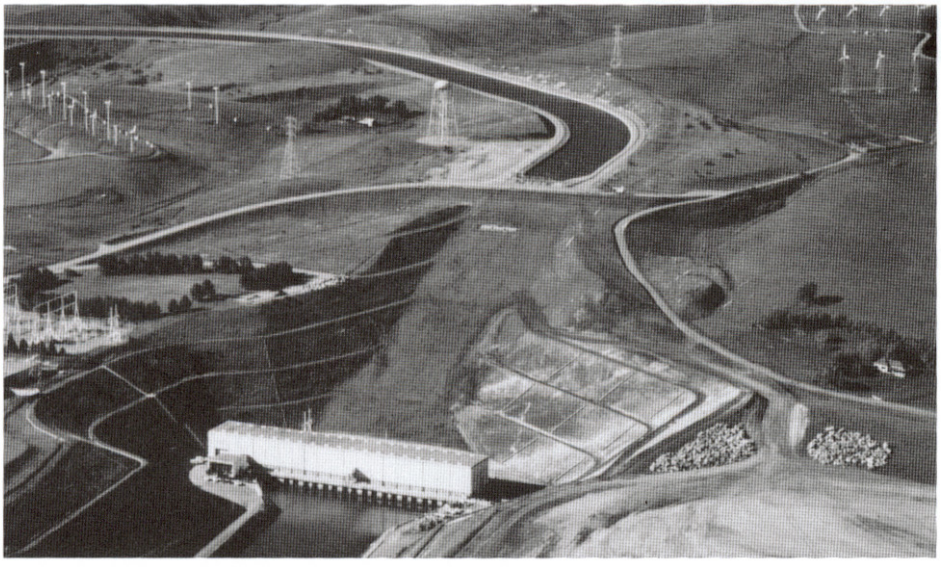
Many major water development facilities are dependent on Delta waterways and levees. As shown in the figure on the left, these include the California Aqueduct, the Harvey O. Banks Delta Pumping Plant, and the North and South Bay Aqueducts of the State Water Project. Major federal facilities are the Central Valley Project's Tracy Pumping Plant, Delta-Mendota Canal, and Contra Costa Canal. Also shown is the East Bay Municipal Utility District Aqueduct (pipeline) that crosses low-lying Delta islands and is protected by levees.



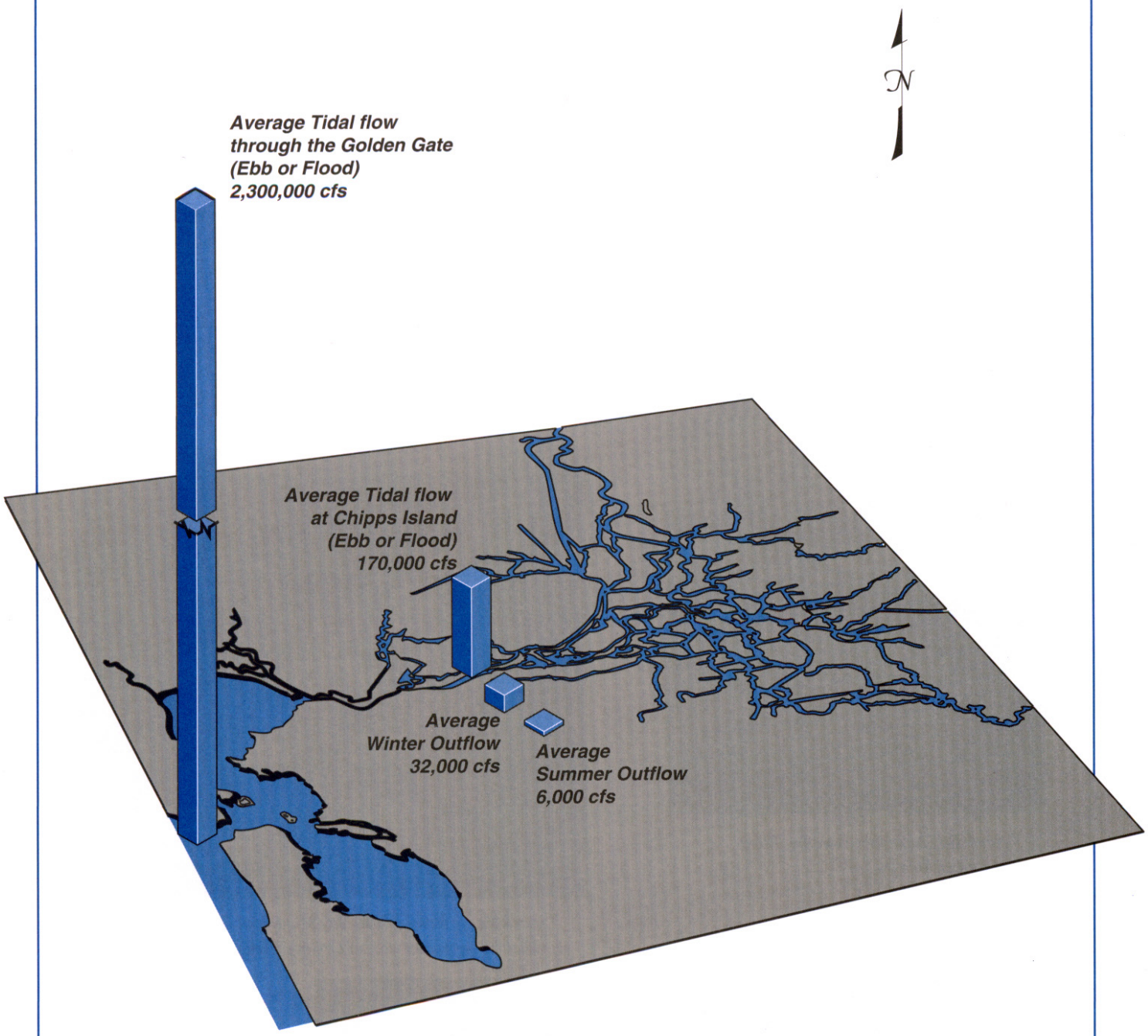
North Bay Aqueduct Pumping Plant at Barker Slough.



Looking west along East Bay Municipal Utility District Aqueduct west of Orwood Tract.



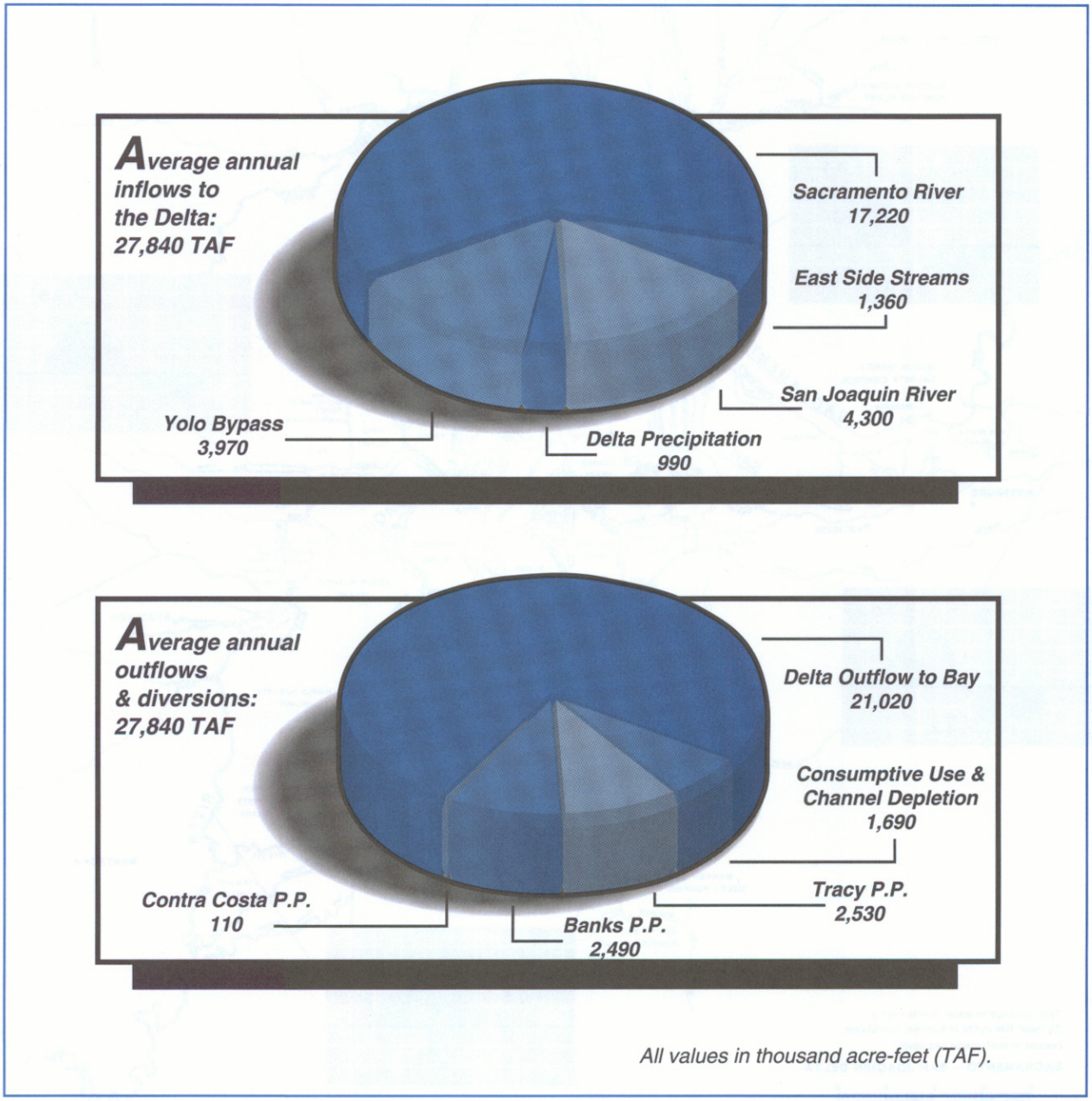
Aerial photo of Harvey O. Banks Delta Pumping Plant.



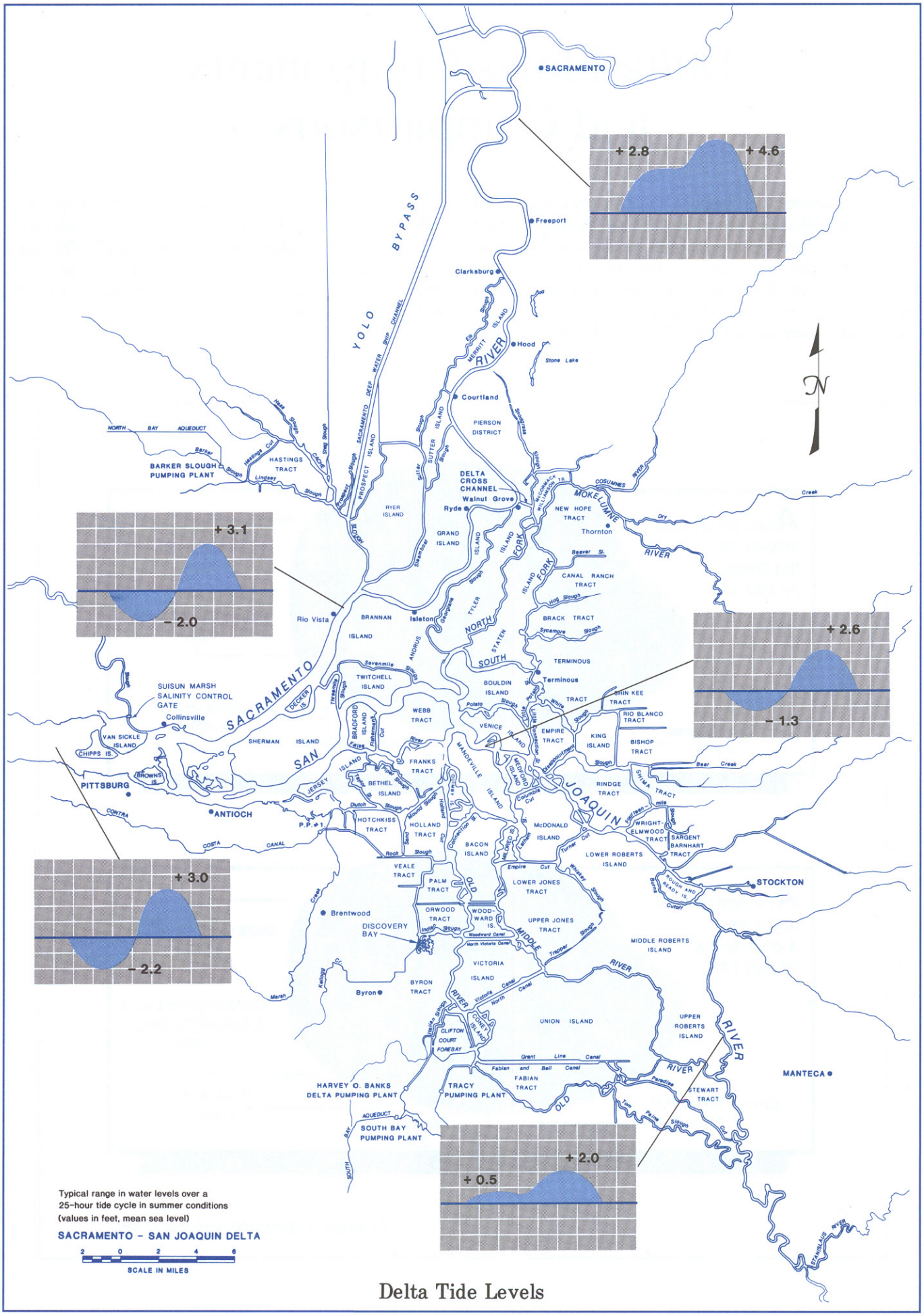
Comparison of Delta Outflow with Tidal Flows

Delta Flows Components and Comparisons

The major components of the Delta Water Supply are illustrated below along with the components which use this supply. These figures contain average annual values for the recent period of 1980 – 1991. The average annual inflow to the Delta is 27,840 thousand acre-feet (TAF) for this period with the Sacramento and San Joaquin rivers contributing over 75 percent. Average annual Delta water use also totals 27,840 TAF with outflow to San Francisco Bay being the major component. When Delta outflow is compared to the average tidal flow at the Golden Gate or Chipps Island, its magnitude diminishes greatly. The figure to the left illustrates this point. It compares average Delta outflows for winter and summer with average tidal flows at the Golden Gate and Chipps Island.



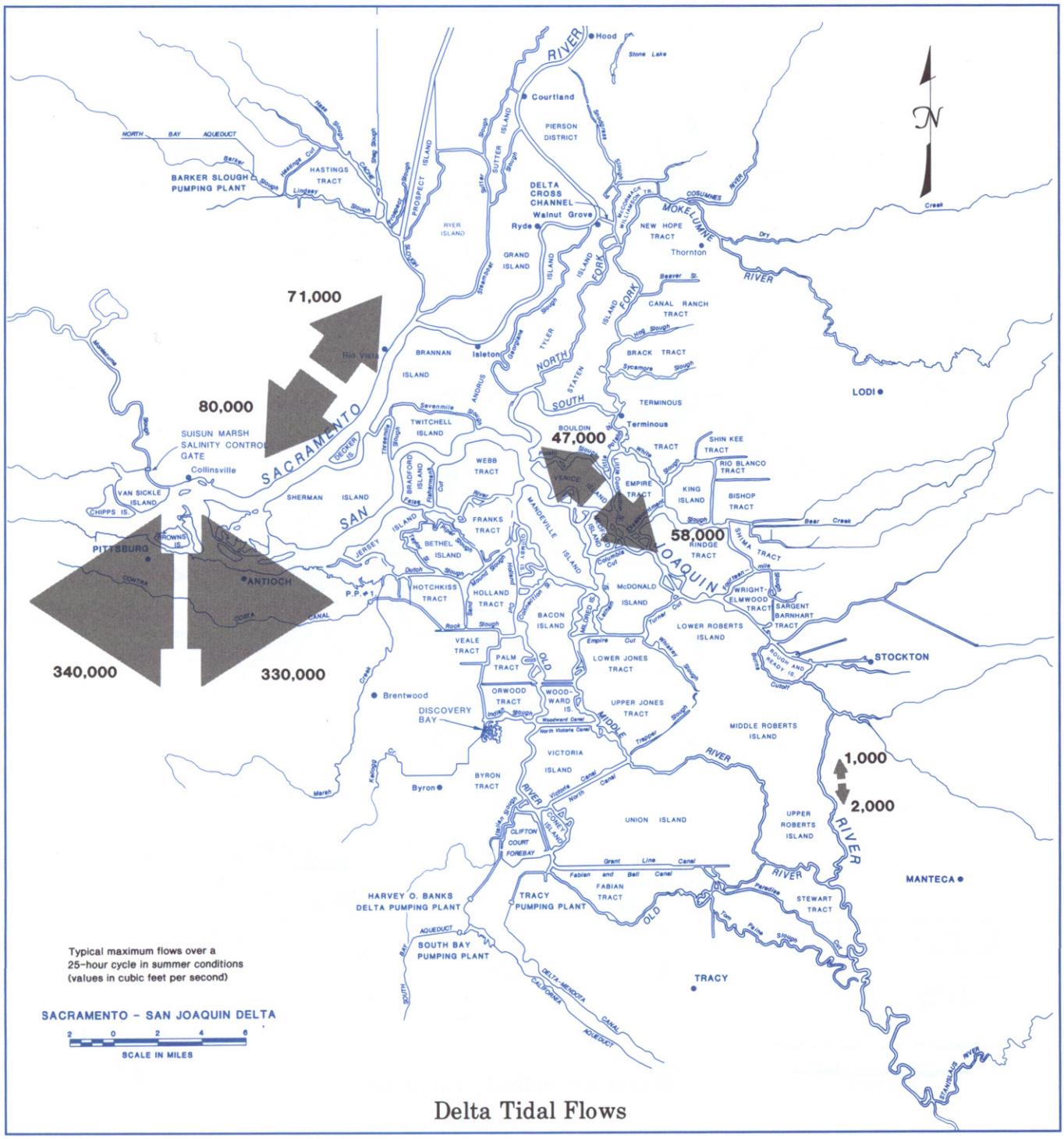
All values in thousand acre-feet (TAF).



Delta Tide Levels

Delta Tidal Flows and Levels

The Sacramento-San Joaquin Delta is at sea level. Water levels vary greatly during each tidal cycle, from less than a foot on the San Joaquin River near Interstate 5 to more than five feet near Pittsburg. During the tidal cycle, flows can also vary in direction and amount. For example and as shown on the map below, the flow near Pittsburg during a typical summer tidal cycle can vary from 330,000 cfs upstream to 340,000 cfs downstream. The "net" summer Delta outflow is a very small amount of the total water movement, generally 5,000 to 10,000 cfs.



Delta Tidal Flows