

California Water Supply Infrastructure

Natural: rivers, snowpack, aquifers

Aqueducts, canals, pipelines, pumping plants

Surface storage (dams, reservoirs)

Groundwater extraction and recharge

Urban: treatment, storm water capture, desalination

California Aqueduct (DWR)

Geographical Features

Coastal
Range

Sacramento River Valley

Delta

San Joaquin River
Valley

San
Francisco
area

Tulare Basin

Kern County

Los Angeles area

Colorado
River

. <http://www.california-map.org>

Imperial County

Water Accounting in California

Average Usage

Agriculture: 33 MAF

Urban: 9 MAF

Some sources of supply

State Water Project: 3 MAF

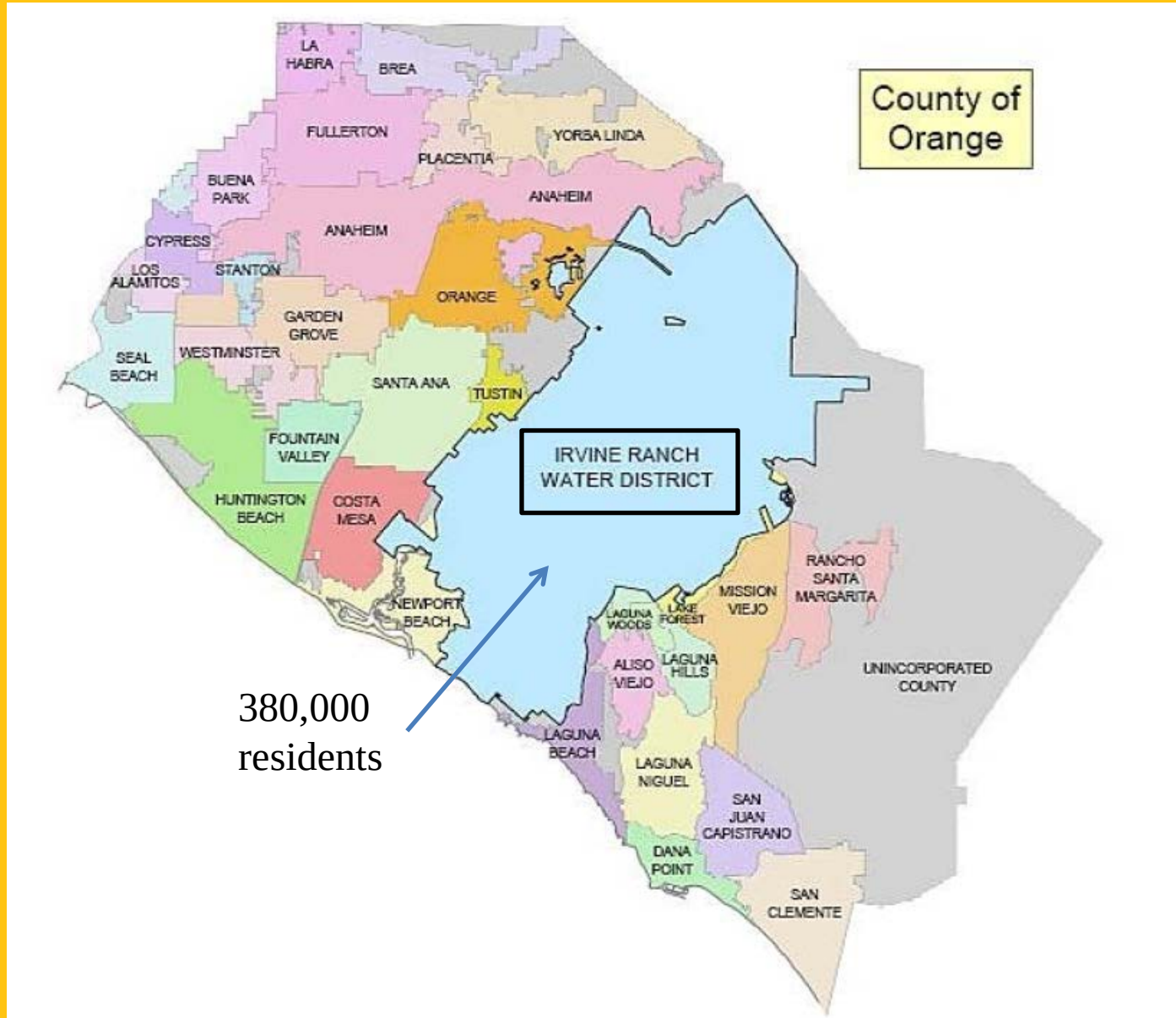
Federal Water Project: 8 MAF

Colorado River: 5 MAF

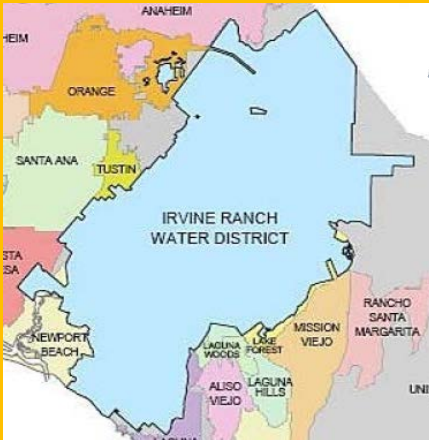
Ground water: 15 MAF

Other from local projects and reuse

Water Supply Example: Irvine Ranch Water District



Water Sources for IRWD



Local streams

Recycling (non-potable)

Imported by MWD

Local groundwater pumping (OCWD)

Remote groundwater banking

Desalination (future)

Role of Infrastructure in Water Transfers



Major California Water Projects

Federal, State and local

(California Water Plan: Update 2013)





Shasta Dam and lake (Anthony Dunn)



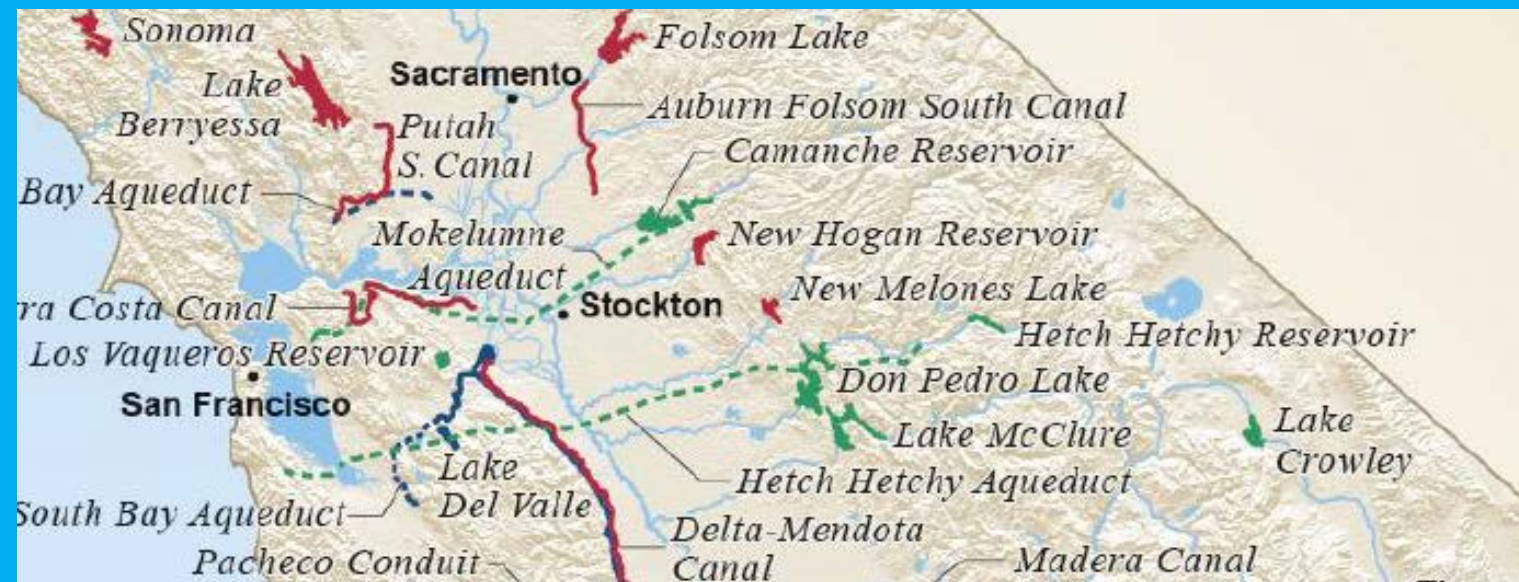
Red Bluff Diversion Dam (Red Bluff Daily News)



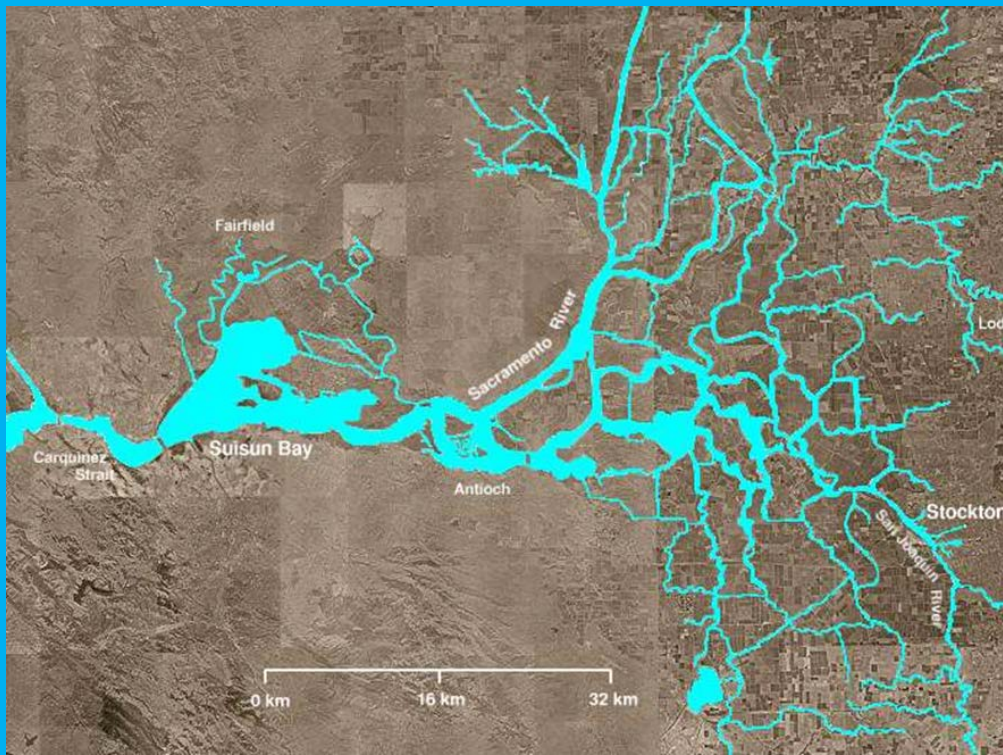
Oroville Dam and lake (California DWR)



Sacramento River (placesonline.com)



Delta scene (DWR)



Left:
Sacramento – San Joaquin Delta
(Wikipedia)

Lower left:
Harvey O. Banks Pumping Plant
(baydeltalive.com)

Lower right:
Federal and State Aqueducts
(Wikipedia)





Friant Dam and Millerton lake (USBR)



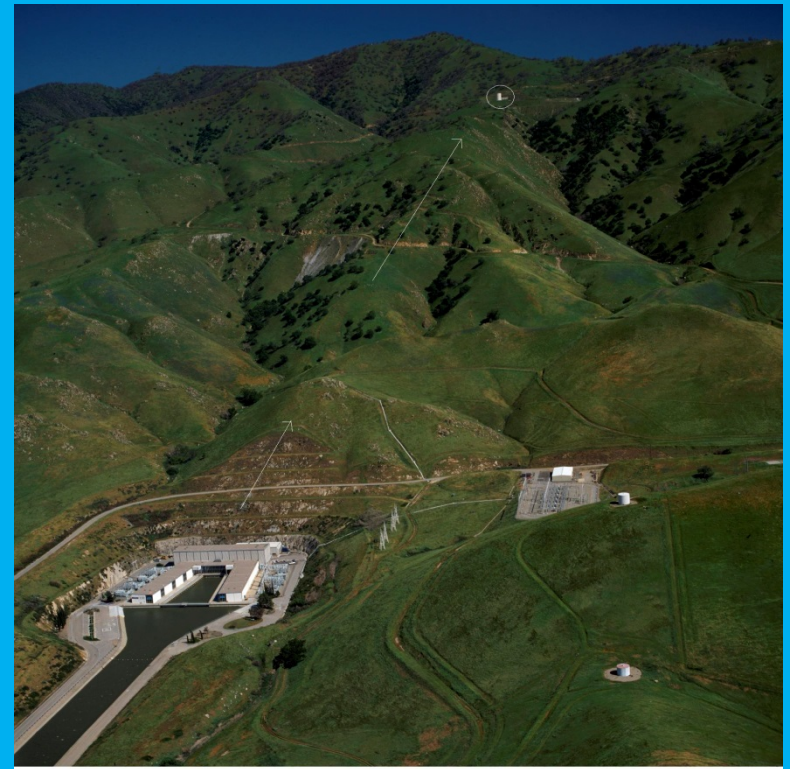
San Luis Reservoir (California DWR)



San Joaquin River (www.alamy.com)



Edmonston
Pumping Plant
(mavens-
photoblog.com)



Castaic Dam
And Lake
(California
DWR)



Los Angeles
Aqueduct

(mohavedual-
sport.com) above

(LADWP) right





Lake Havasu Pumping Plant for CRA (Charles O'Rear)

Colorado River Aqueduct (media.treehugger.com)



All American Canal Diversion Dam (USBR)



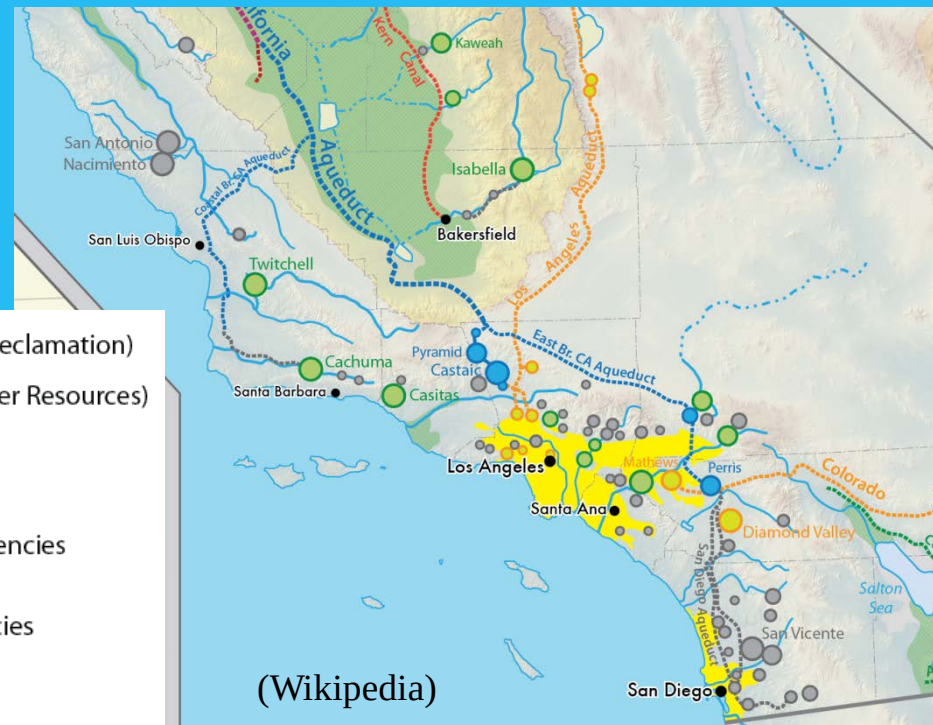
All American Canal (Brent Stirton)

California Reservoirs

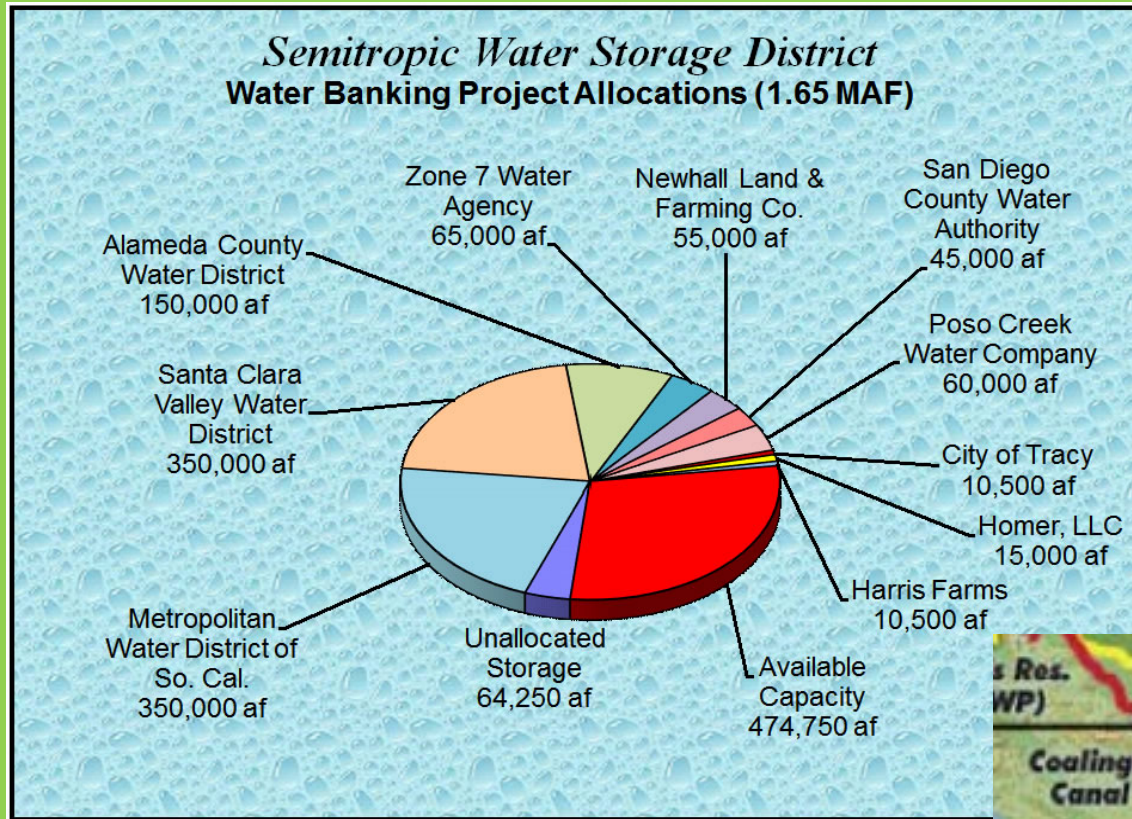
- More than 1000
- Total capacity: 40+ MAF
- Top 12: 20+ MAF

Pacific Ocean

- CVP (Central Valley Project, U.S. Bureau of Reclamation)
- SWP (State Water Project, Calif. Dept of Water Resources)
- Shared between CVP and SWP
- Other federally owned facilities
- San Francisco Bay Area municipal water agencies (SFPUD and EBMUD)
- Greater Los Angeles municipal water agencies (LADWP and Metropolitan)
- Privately owned/other



Ground Water Banks

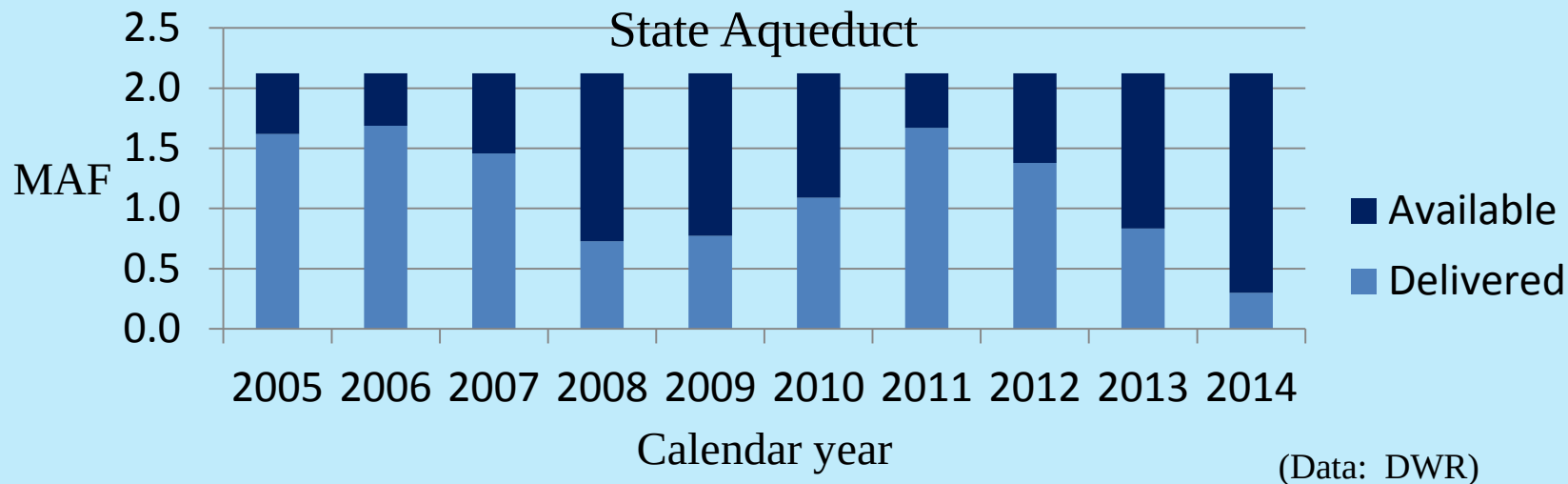
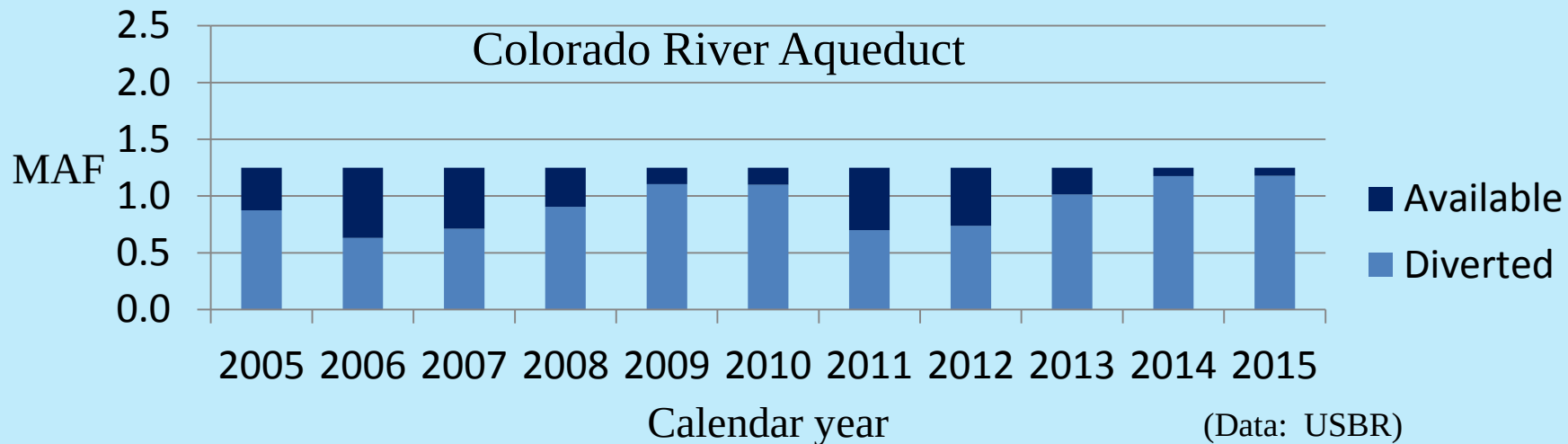


(www.semitropic.com)

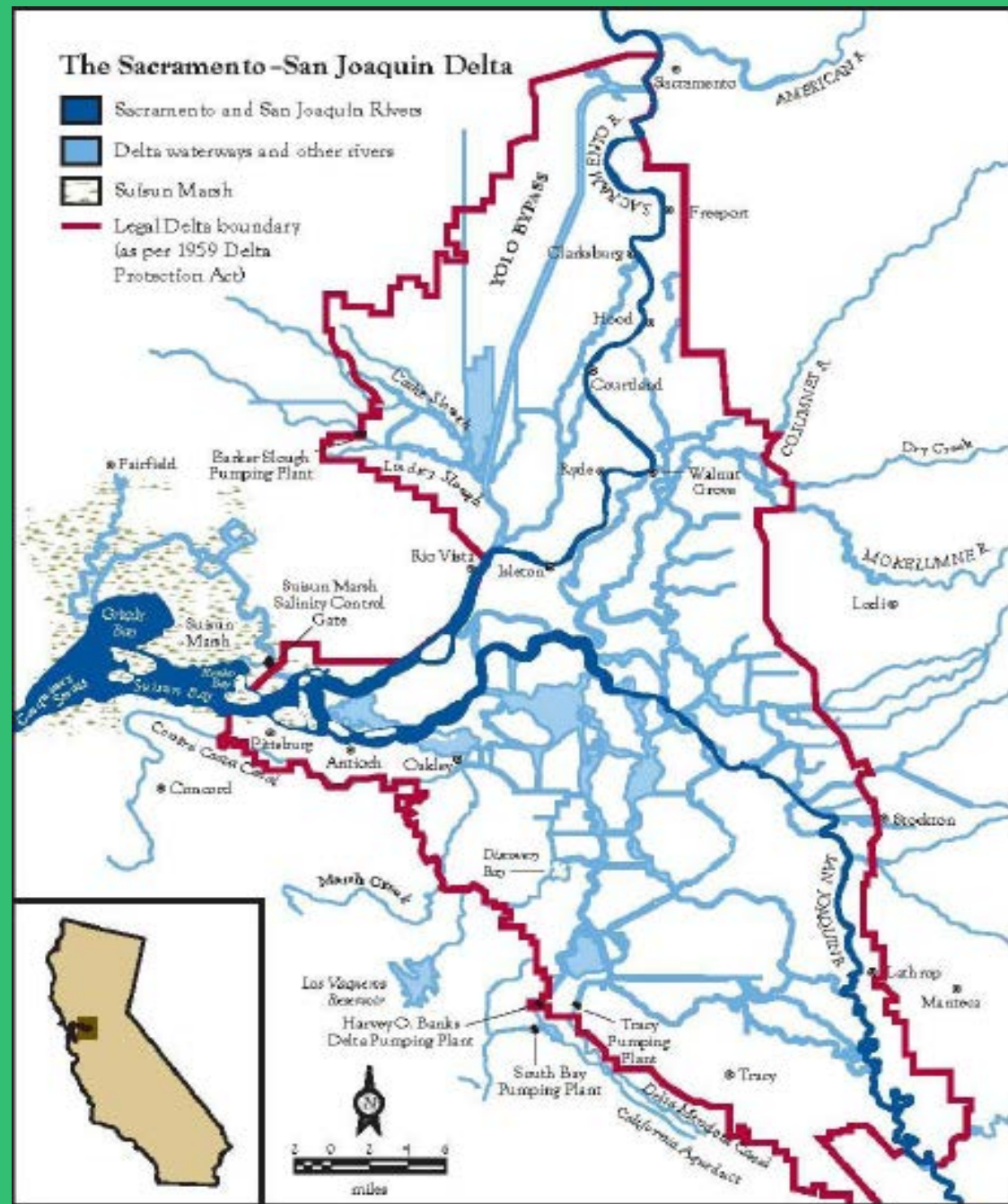




Annual Water Imports by Metropolitan Water District



Sacramento-San Joaquin Delta



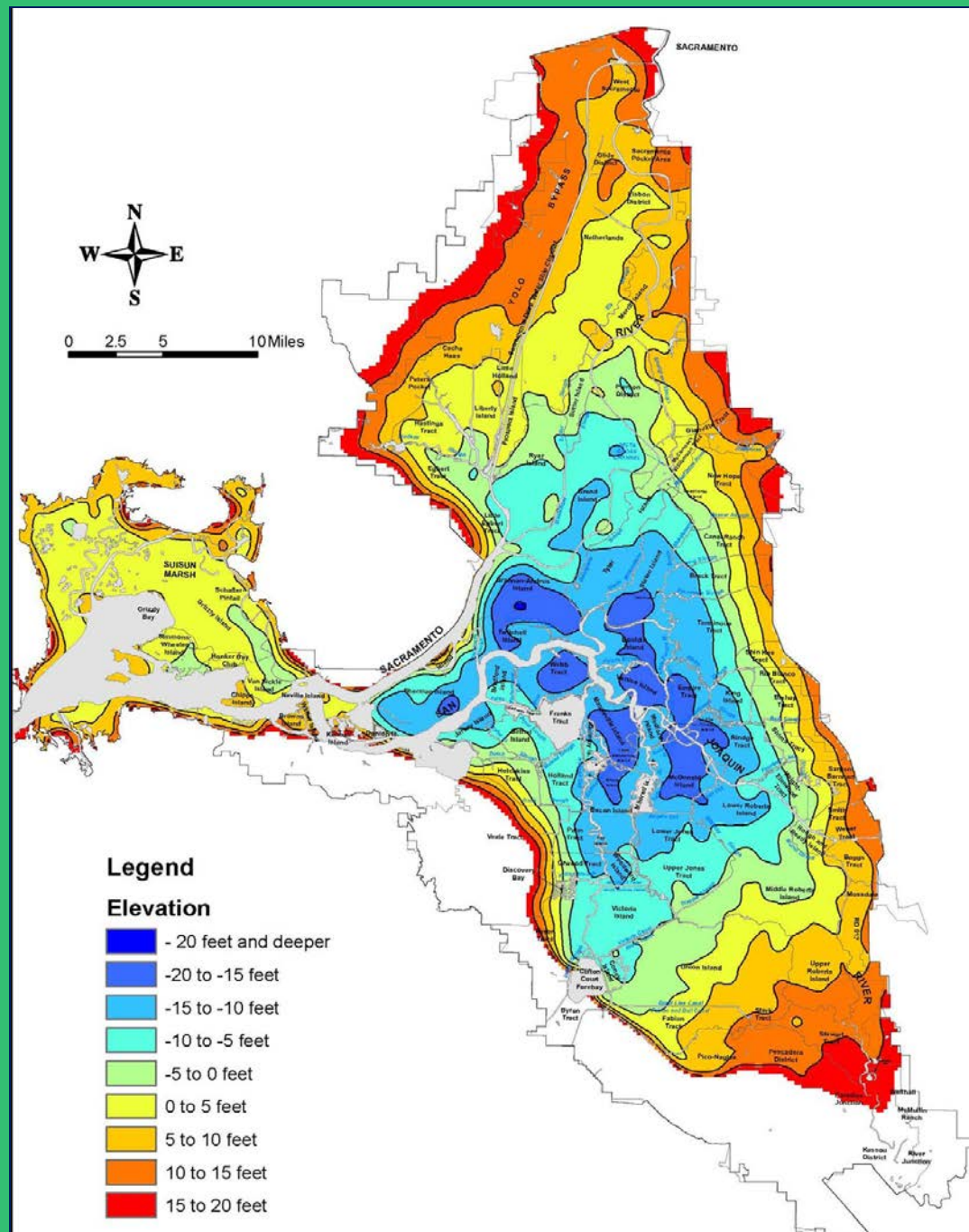
(<http://www.ppac.org/main/publication.asp?i=671>)



(California DWR)

Delta Elevation Map

(http://www.water.ca.gov/floodmgmt/dsmo/sab/drmsp/docs/Risk_Report_Section_5_Final.pdf)



Proposed Tunnel Underneath the Delta

(<http://www.baydeltaconservationplan.com>)

