

An aerial photograph of Lake Cachuma, a large reservoir in Santa Barbara County, California. The lake is surrounded by rugged, brownish-green hills and mountains. In the distance, a range of mountains is covered in snow under a clear blue sky with some light clouds. The text is overlaid on the upper portion of the image.

Santa Barbara County Board of Supervisors Hearing

March 11, 2008

PREVENTION OF QUAGGA MUSSELS AT LAKE CACHUMA

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General Manager
Cachuma Operation & Maintenance Board

Cachuma Operation & Maintenance Board (COMB)

Responsible for delivery of Cachuma Water to its 5 Member Units
Responsible for O&M of Cachuma Project water delivery facilities



Cachuma Project Member Units

- Goleta Water District
- City of Santa Barbara
- Montecito Water District
- Carpinteria Valley Water District
- SYR Water Conservation District, ID No. 1
- Provides water to more than 300,000 residents and irrigated agriculture on South Coast and Santa Ynez Valley
- Provides water for the protection of endangered Southern Steelhead

Cachuma Project

- Constructed by USBR in mid 1950s
- Primary purpose: Water supply reservoir
- Secondary benefits: Recreation and flood control
- Cachuma Project Master Contract is between USBR and County Water Agency
- Member Unit Contracts with the County transfer all rights, benefits and associated water costs to the Member Units

Bradbury Dam

- Zoned Earth-Fill Embankment
- 279 feet high
- Current storage capacity: 188,030 acre-feet
- Lake Cachuma covers 3,000 acres with 40 miles of shoreline
- Spillway
 - Concrete-lined ogee crest
 - Controlled by four 50x30 feet radial gates
 - 160,000 cfs capacity
- River Outlet Works
 - Two 30-inch fixed-cone valves and one 10-inch butterfly valve
 - Current capacity: 150 cfs

Bradbury Dam *(cont.)*

- Hilton Creek Water Supply Pipeline
 - Delivers water through the dam to Hilton Creek to maintain Steelhead habitat
 - Flow capacity: 10 cfs
- State Water Project Connection at River Outlet Works
 - Central Coast Water Authority
 - State Water delivered into Lake Cachuma for release into the Tecolote Tunnel for delivery to the Santa Barbara area
 - Flow capacity: approximately 22 cfs

Reservoirs, Tunnels and South Coast Conduit



Cachuma Project Facilities

- Bradbury Dam
- Primary outlet/intake structure
- Hilton Creek outlet works
- Intake tower and slide gates
- North Portal
- Tecolote Tunnel
- South Portal and Glen Annie Turnout
- South Coast Conduit - 25.3 miles from Goleta to Carpinteria
- Balancing reservoirs: Glen Annie, Lauro, Ortega & Carpinteria



Bradbury Dam Radial Gates



North Portal



Jet Flow Valves



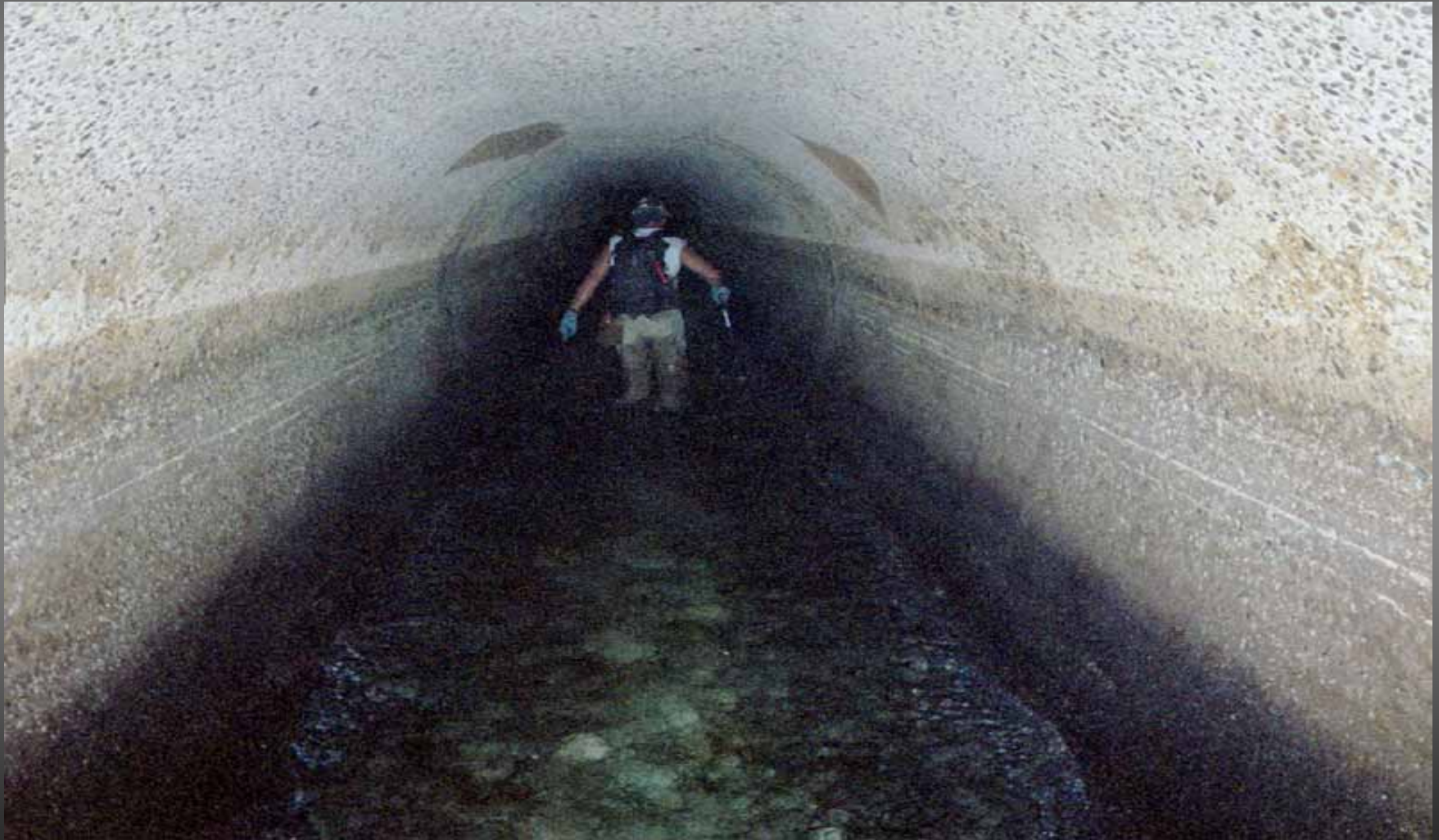
Intake Tower



Intake Tower Slide Gates



Tecolote Tunnel



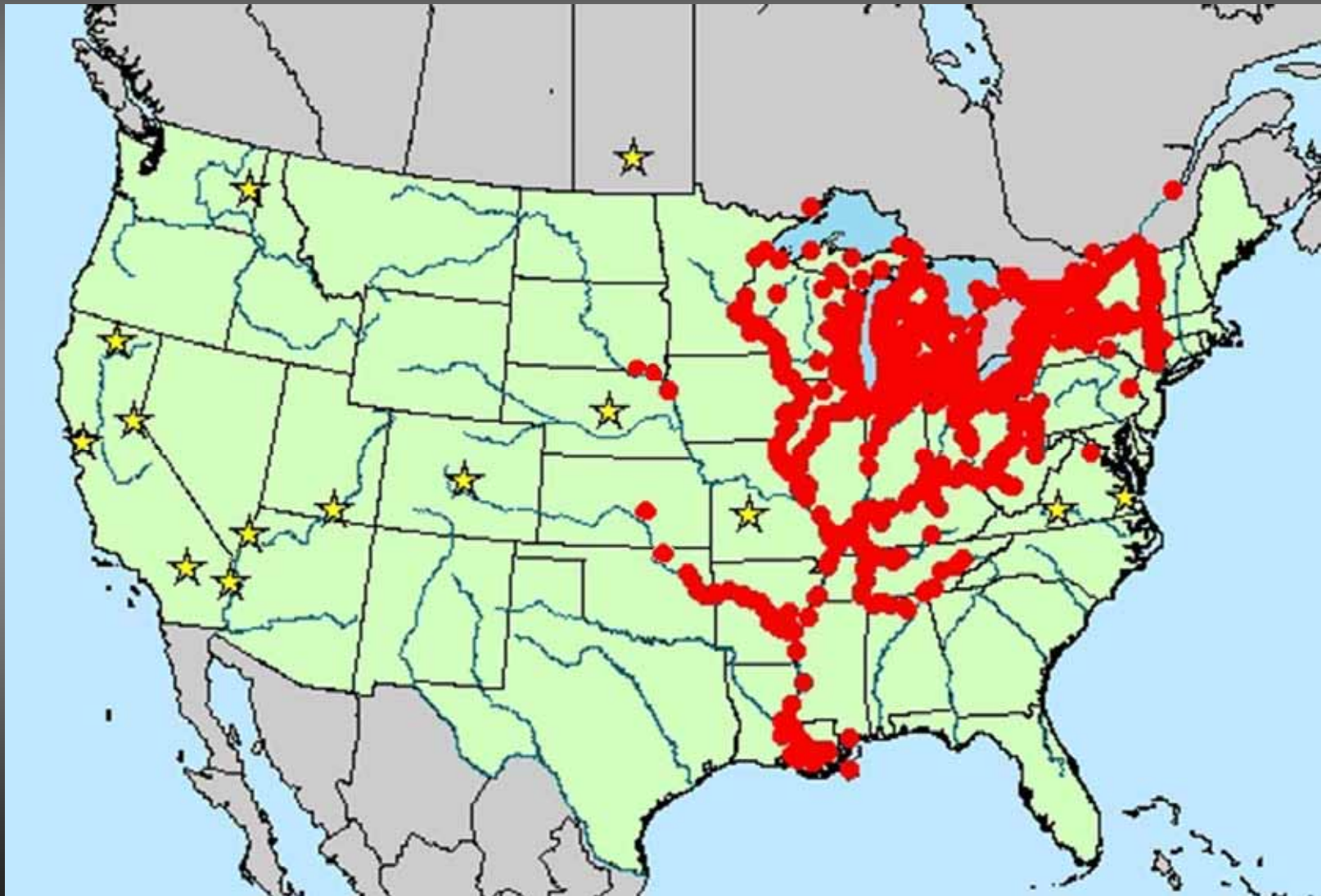
Glen Annie Turnout



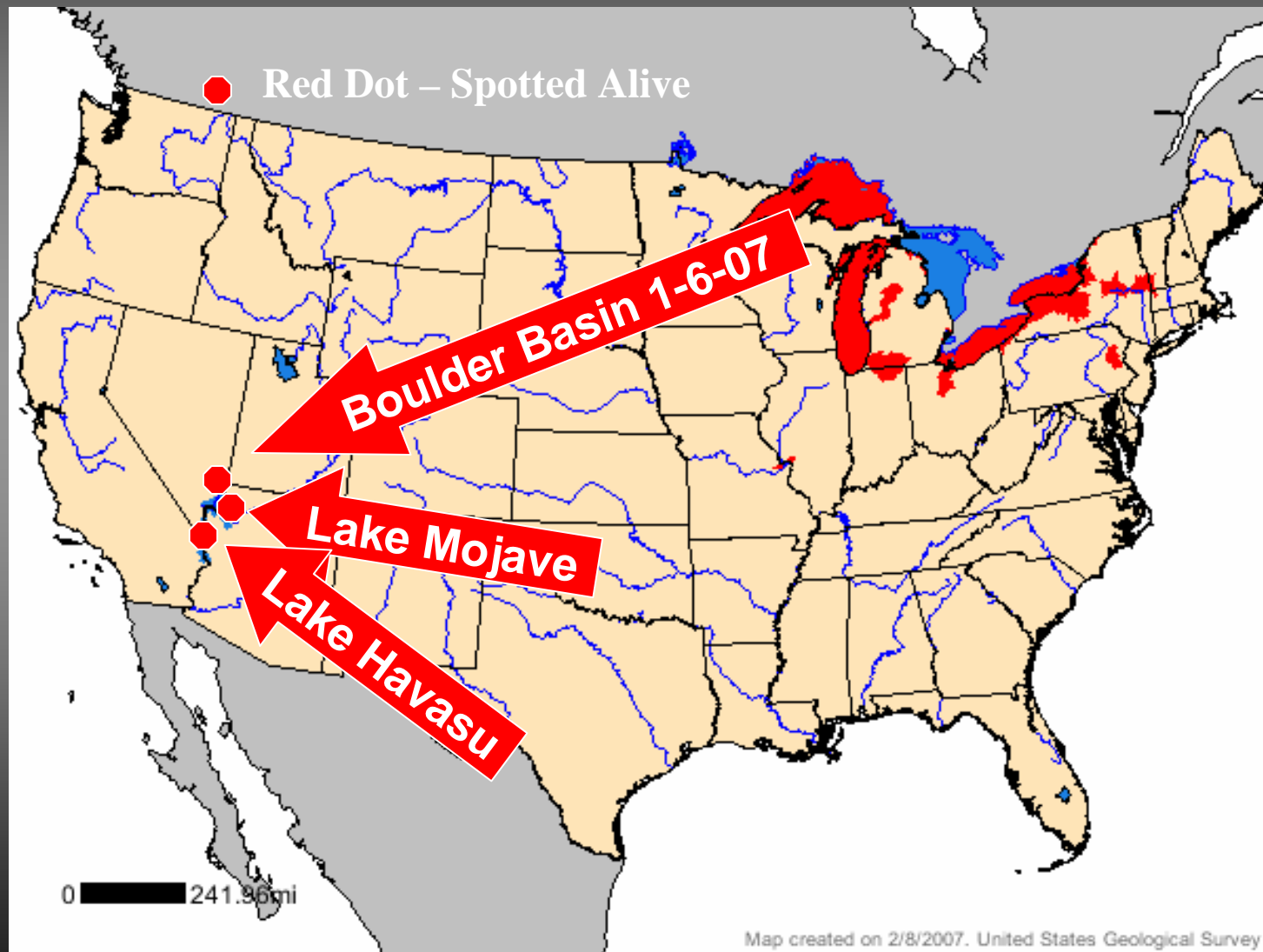
Glen Annie Control Station



Quagga Mussel Infestation - 2006



Quagga Mussel Infestation - 2007



The Exponential Spread of Quagga Mussels

This assumes that we start with only one pair and that pair and each pair of their offspring only reproduces for one year and there is only a 10% survival rate

- Yr. 1 100,000 100 Thousand
- Yr. 2 10,000,000,000 10 Billion
- Yr. 3 1,000,000,000,000,000 1 Quadrillion
- Yr. 4 100,000,000,000,000,000,000,000 100 Quintillion
- Yr. 5 10,000,000,000,000,000,000,000,000,000 10 Septillion

Quagga Mussels

- Discovered in Lake Mead January 2007 and spread rapidly
- Already in California:
 - ✓ Lake Havasu
 - ✓ Colorado River Aqueduct
 - ✓ Imperial Dam, Imperial Valley
 - ✓ Lake Skinner, Riverside County
 - ✓ Lake Matthews, Riverside County
 - ✓ San Vicente Reservoir, San Diego County
 - ✓ Dixon Lake, San Diego County
 - ✓ Lower Otay Reservoir, San Diego County
 - ✓ Lake Murray Reservoir, San Diego County
 - ✓ San Justo Reservoir, San Benito County



Huge Threat to Water Supply Facilities

- Quagga Mussels “hitch hike” on boats from infested water bodies to a new water body when the boat is launched
- They rapidly colonize on wet surfaces such as pipes and valves, clog water intake and outlet structures, hampering the flow of water
- **PREVENTION IS CRITICAL**



Huge Threat to Water Supply Facilities

- Pose critical threat to Bradbury Dam radial gates, intake and outlet structures to the mainstem Santa Ynez River and Hilton Creek, Tecolote Tunnel, north and south portals, the South Coast Conduit Corona del Mar and Cater Water Treatment Plants
- Could enter the State Water Pipeline through the Bradbury Dam outlet works, which could impact each State Water turnout on the Santa Ynez River
- Once present, Quagga Mussels cannot be eradicated
- **PREVENTION IS CRITICAL**



Threat to Aquatic Species

- Quaggas disrupt the natural food chain removing food and nutrients from the water column
- They deplete the food supply for other aquatic species, including endangered steelhead and bass
- **PREVENTION IS CRITICAL**



Preventative Measures Recommended

- Continue public education about threat of Quagga Mussels
- More thorough inspections of all private boats and equipment
- Obtain signed affidavits from boat owners that their boat is clean and dry, and that it has not been in infected waters
- Establish a decontamination protocol that boat owners must follow for boats and other recreational equipment
- Turn away all boats that have been in infected waters unless owner can demonstrate the boat has been in dry dock for a minimum of 10 days.

Preventative Measures Recommended

- Install decontamination stations, and require that all boats be decontaminated prior to entering the Lake
- Implement boat registration tracking system being developed by the Department of Fish and Game for all boats
- Continue regular inspections of Lake Cachuma, boating facilities and Cachuma Project facilities, including diving inspections and plankton tows, for presence of Quagga Mussels
- Provide dry-dock storage space within the Park
- Develop an exit inspection program

Temporary Restriction on Private Boats Requested

- COMB requests an immediate temporary closure of Lake Cachuma to private boats for a minimum of 6 months until all preventative measures are in place
- COMB does not advocate a ban on fishing. Rental boats are available for fishing
- COMB requests that the County protect the Cachuma Project water delivery system which provides 80% of the water supply to the South Coast

Financial Impacts

- Quagga and zebra mussels have caused an estimated \$100 million a year in damages in the eastern United States and Canada
- The Metropolitan Water District has already spent nearly \$10 million on mussel control measures
- Permanent annual cost to maintain water delivery system if Quaggas infest the Lake could be hundreds of thousands of dollars
- Temporary loss of revenue to County Parks is small by comparison
- County of Santa Barbara is responsible for assuring that recreation does not negatively affect Cachuma Project water supply or water quality



Protect Your Water Supply

- This is the County's primary water supply on the South Coast
- It is essential to do whatever is necessary to protect Lake Cachuma and the Cachuma Project facilities

Questions



*Thank you for
your attention*