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# BAY DELTA CONSERVATION PLAN

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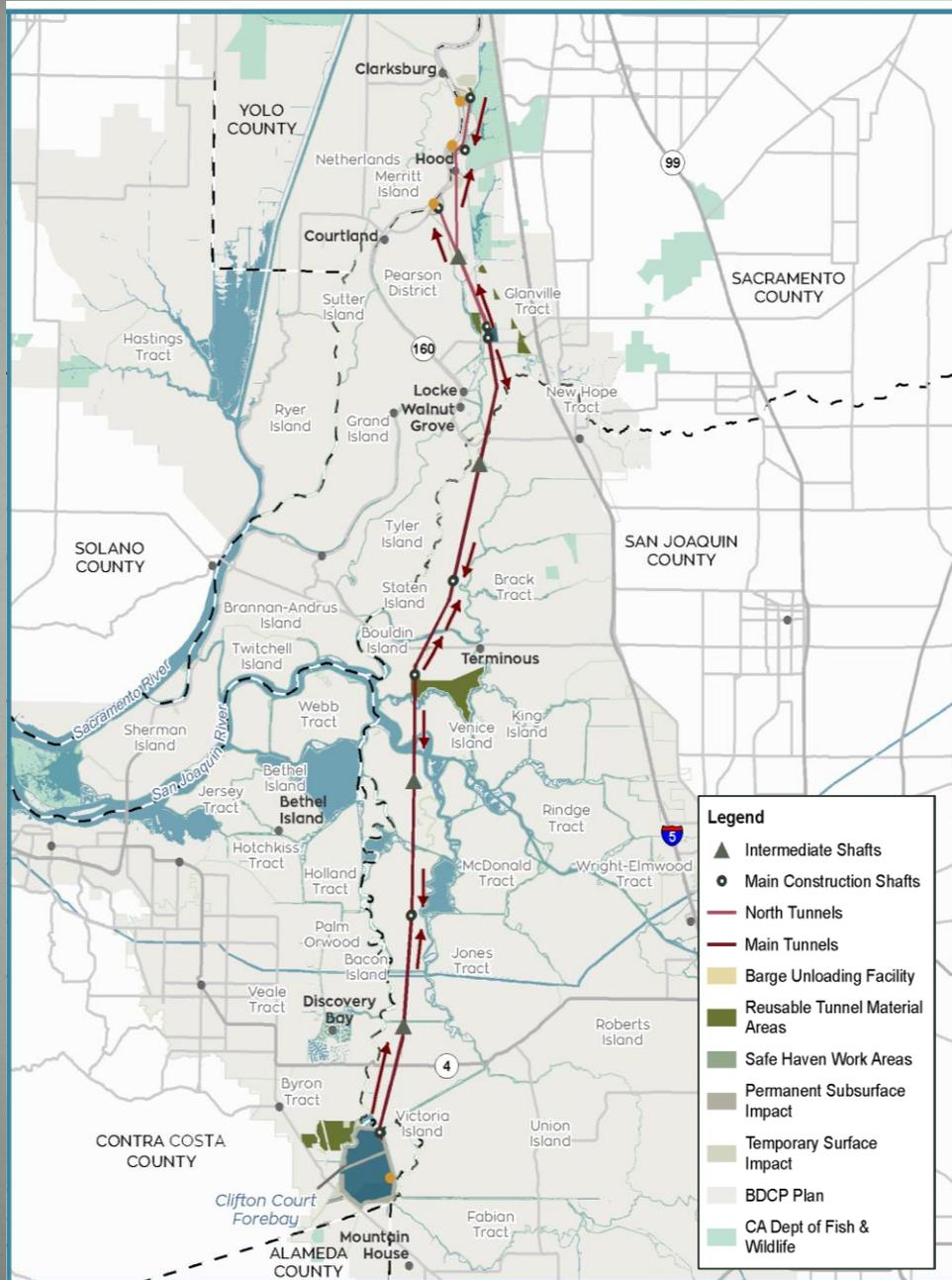


CALIFORNIA STATE UNIVERSITY - WATER RESOURCES AND  
POLICY INITIATIVES ANNUAL CONFERENCE

Chuck Gardner, *Hallmark Group*

April 9, 2015

# PROPOSED ALTERNATIVE ALIGNMENT



## New Water Facilities

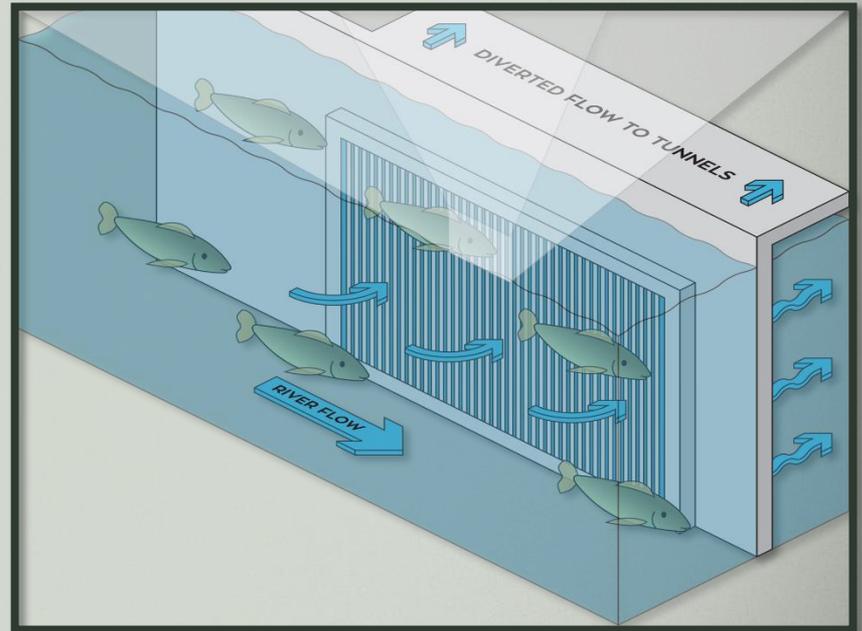
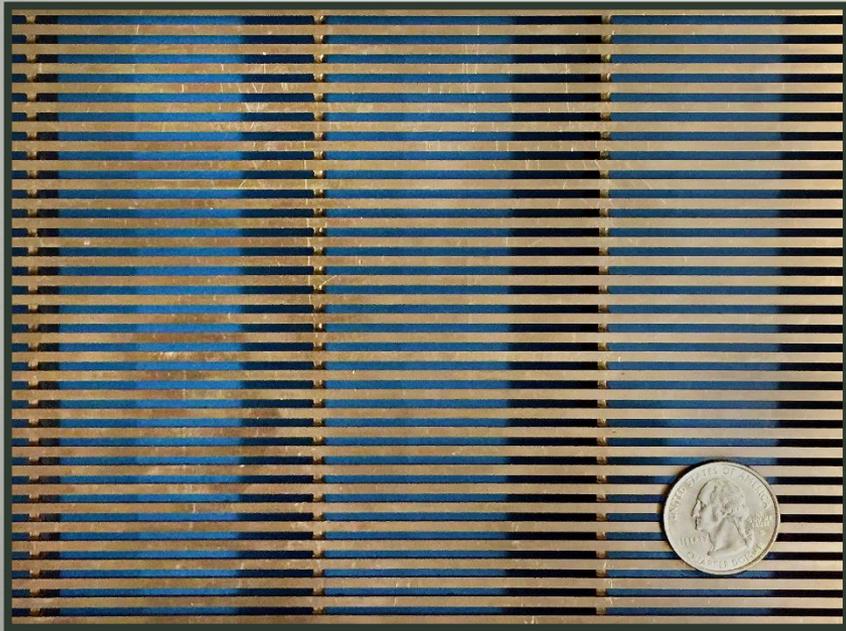
- Three north Delta intakes, each 3,000 cfs capacity, with state of the art fish screens
- 40 acre forebay
- Two 30-mile long gravity-fed main tunnels
- New Head of Old River operable gate
- Improvements and expansion of Clifton Court Forebay

# Intake Animation



# FISH SCREENS

Intake facilities designed with state-of-the-art fish screens held to performance standards to protect fish

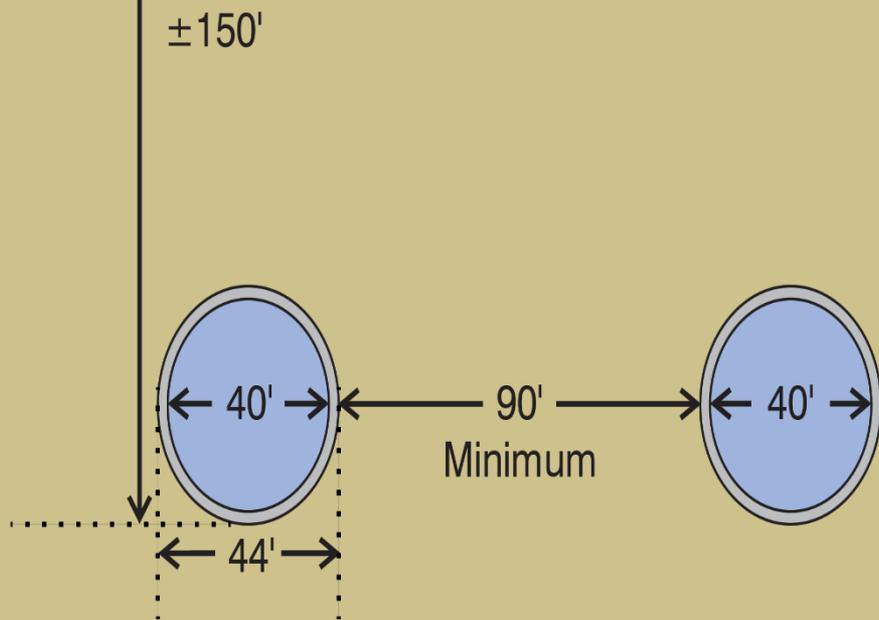


# DEEP SHAFT CONSTRUCTION

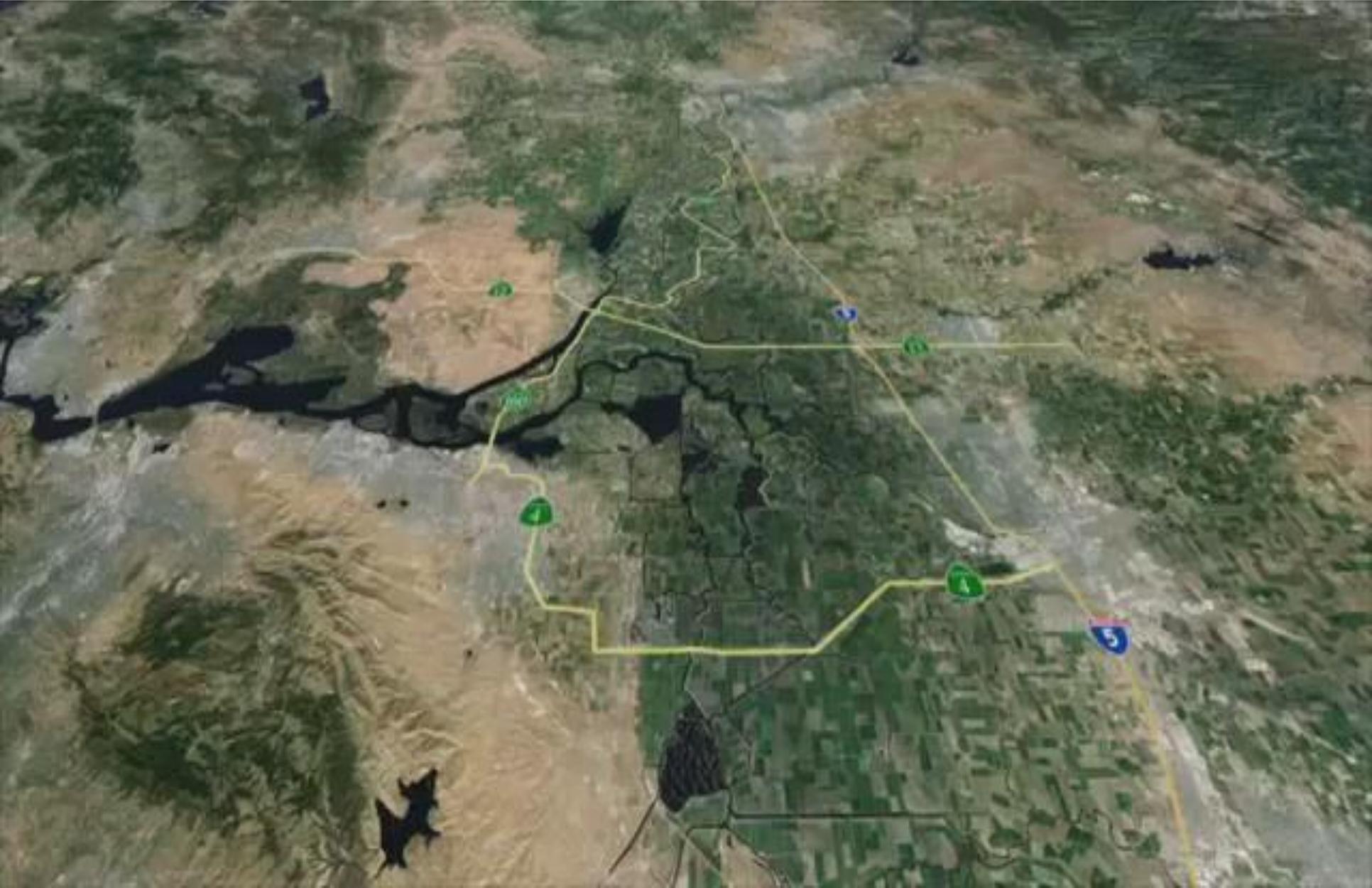


- Launch/Receiving Shafts
  - 110 ft. diameter
  - $\pm 180$  ft. depth
  - Permanent access
- Receiving Shafts
  - 85 ft. diameter
  - $\pm 180$  ft. depth
  - Permanent access
- Intermediate/vent Shafts
  - Contractor sized
  - TBM maintenance
  - Permanent access

# TUNNEL DEPTH



# TUNNELING ANIMATION



# TBM VIDEO



# CLIFTON COURT FOREBAY IMPROVEMENTS

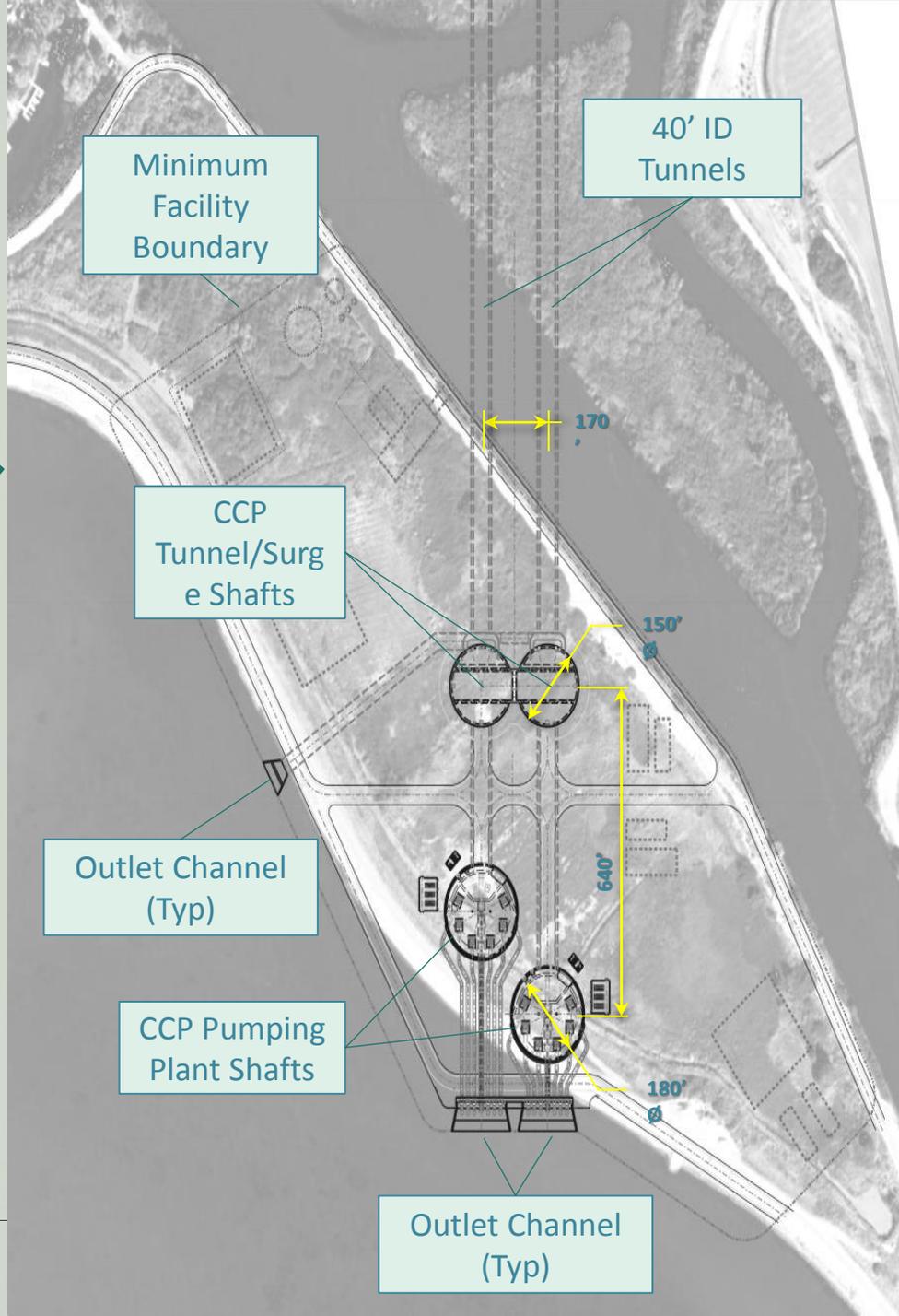
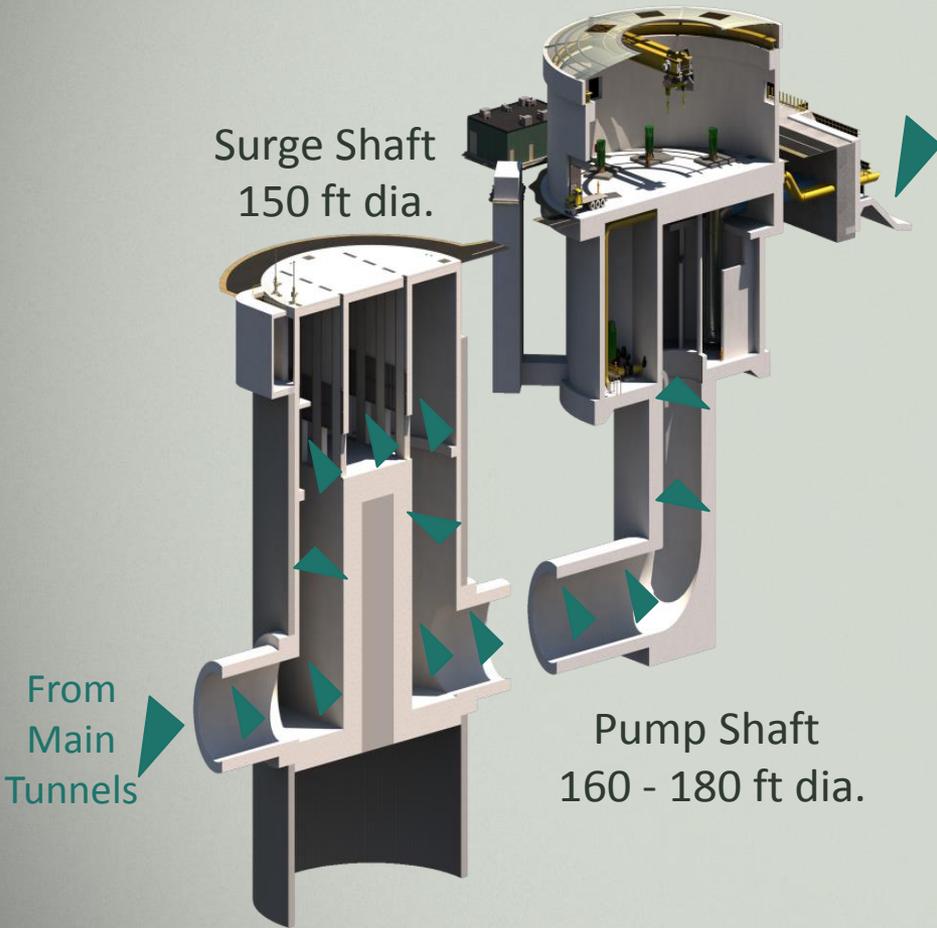
**Legend**

- ▲ Intermediate Shafts
- Main Construction Shafts
- North Tunnels
- Main Tunnels
- Barge Unloading Facility
- Reusable Tunnel Material Areas
- Safe Haven Work Areas
- Permanent Subsurface Impact
- Temporary Surface Impact
- BDCP Plan
- CA Dept of Fish & Wildlife



**PROPOSED ALTERNATIVE**  
(MODIFIED PIPELINE/TUNNEL OPTION  
CLIFTON COURT FOREBAY PUMPING PLANT  
OPTION)

# COMBINED PUMPING FACILITIES



# CLIFTON COURT ANIMATION



# CM1 BY THE NUMBERS

<b>Material</b>	<b>Total Needed</b>
<b>Asphalt (square feet)</b>	<b>6,496,144</b>
<b>Concrete (cubic yards including segments)</b>	<b>7,407,175</b>
<b>Tunnels Segments (2' thick x 5' wide x 14'8" long)</b>	<b>701,933</b>
<b>Rebar (lbs)</b>	<b>1,513,500,000</b>
<b>Borrow (cubic yards)</b>	<b>25,135,677</b>
<b>Excavation (cubic yards)</b>	<b>3,241,906</b>
<b>Dredging (cubic yards)</b>	<b>7,100,000</b>
<b>RTM (cubic yards)</b>	<b>25,000,000</b>

Questions?