

# UPDATE

# Clearwater Tunnel Project

*Addressing Critical Aging Infrastructure*

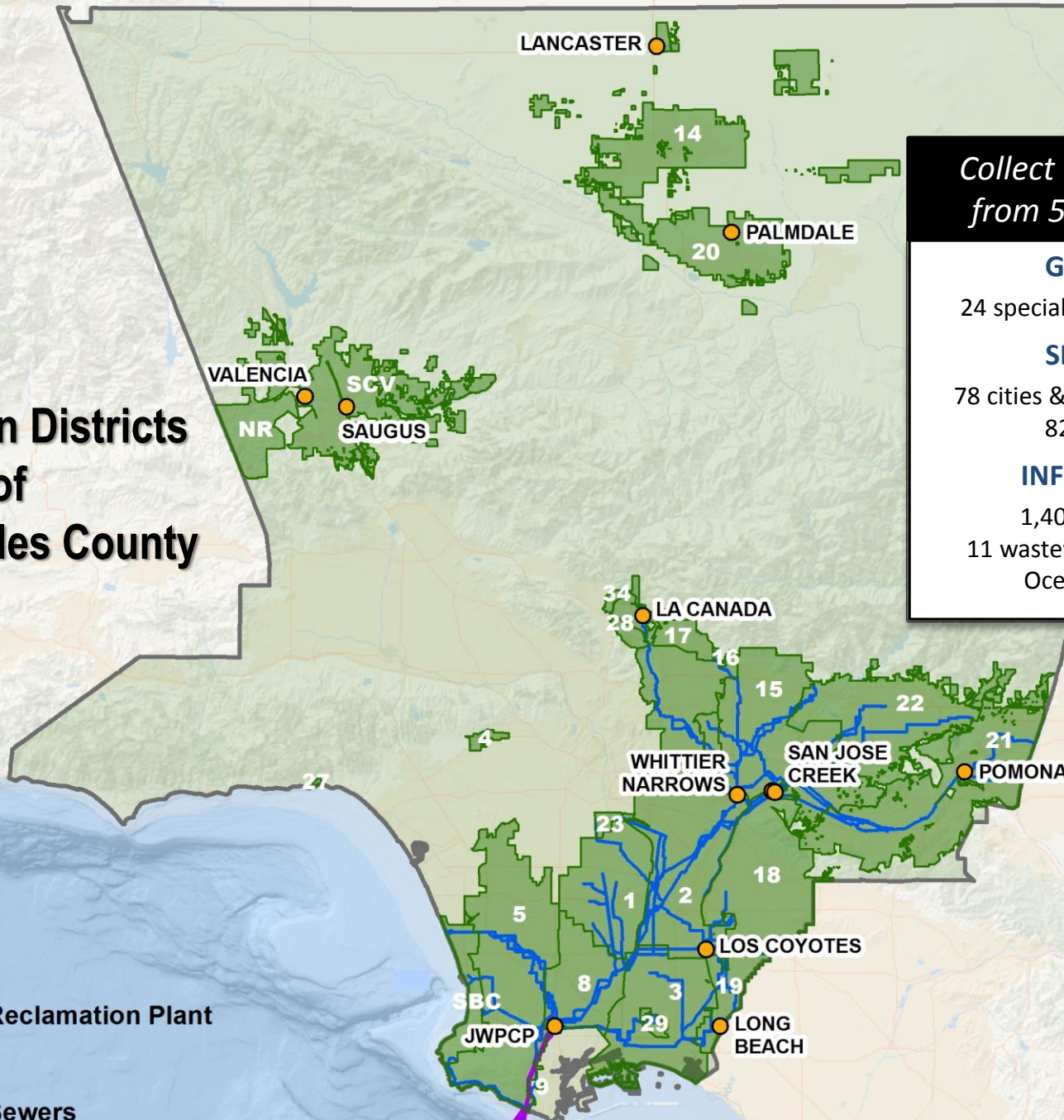
South Bay Cities COG Infrastructure Working Group

July 19, 2017



# Sanitation Districts of Los Angeles County

- Water Reclamation Plant
- Outfall
- Trunk Sewers



*Collect and treat sewage  
from 5.6 million people*

## GOVERNANCE

24 special districts with one staff

## SERVICE AREA

78 cities & unincorporated county  
824 square miles

## INFRASTRUCTURE

1,400 miles of sewers  
11 wastewater treatment plants  
Ocean outfall system

# Nation's Leader in Water Recycling

*Nation's largest supplier of recycled water over the last 50 years*



**3 2 , 0 0 0 , 0 0 0 , 0 0 0**  
**GALLONS RECYCLED IN 2016**

# New Water Recycling Projects

**San Jose Creek WRP**



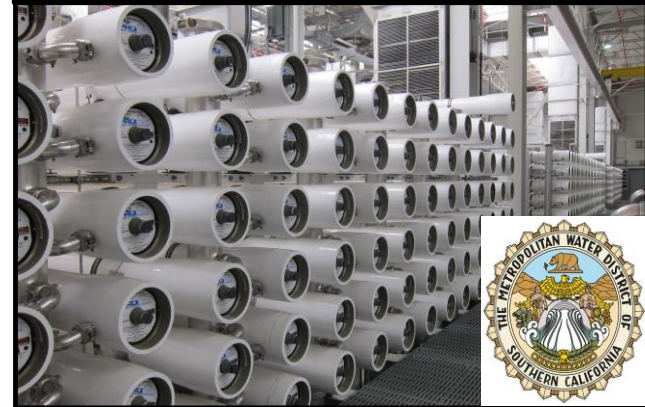
**Water Replenishment District**  
21,000 AFY (in construction)



**Joint Water Pollution  
Control Plant**



**Metropolitan Water District**  
168,000 AFY (proposed)



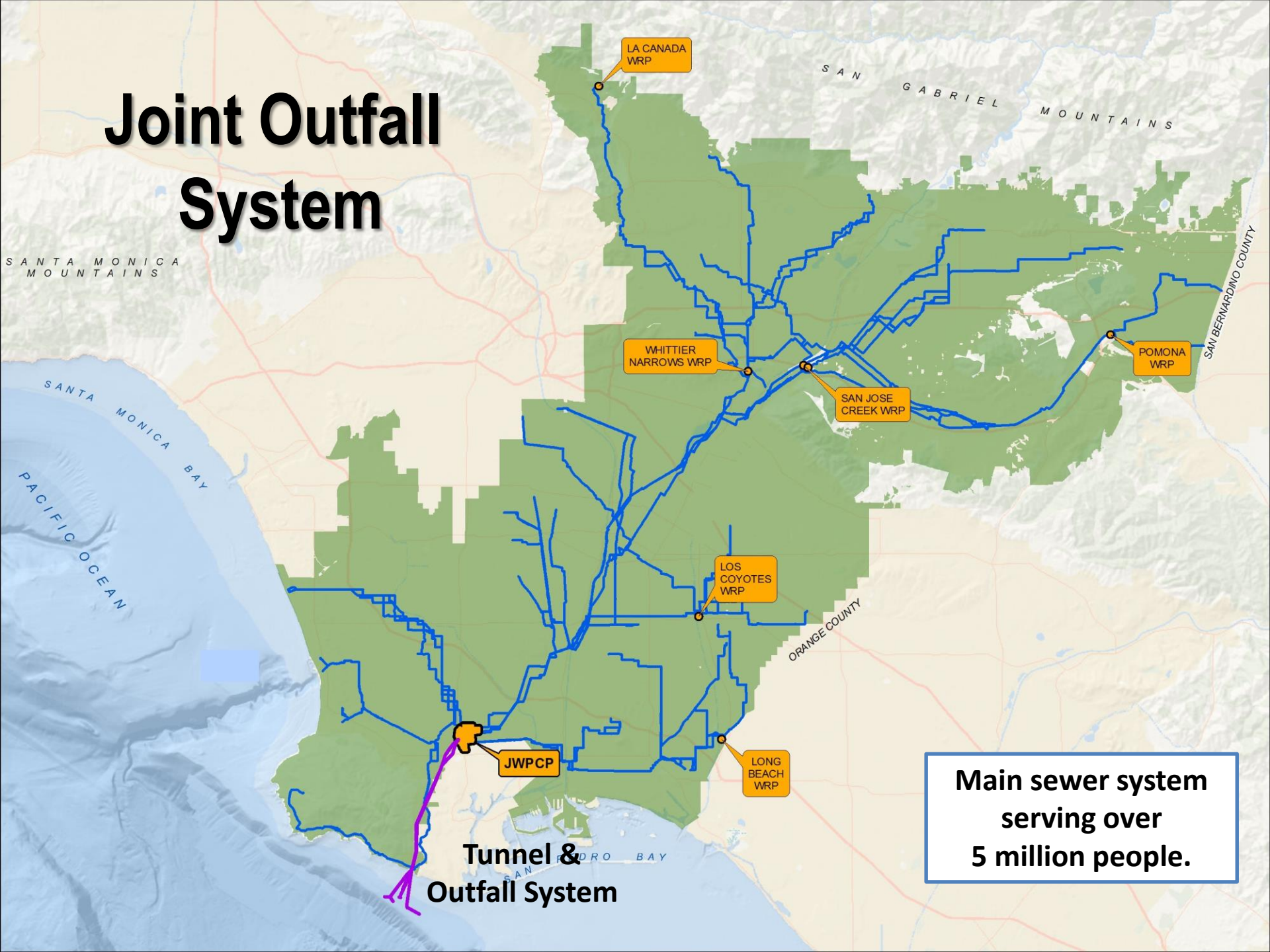
An underwater photograph of a kelp forest. Sunlight rays penetrate the clear blue water, illuminating the dense canopy of brown and green kelp leaves. The perspective is from below, looking up through the water.

# **CLEARWATER PROGRAM**

## **Infrastructure Plan & Environmental Review**

**Approved 2012**

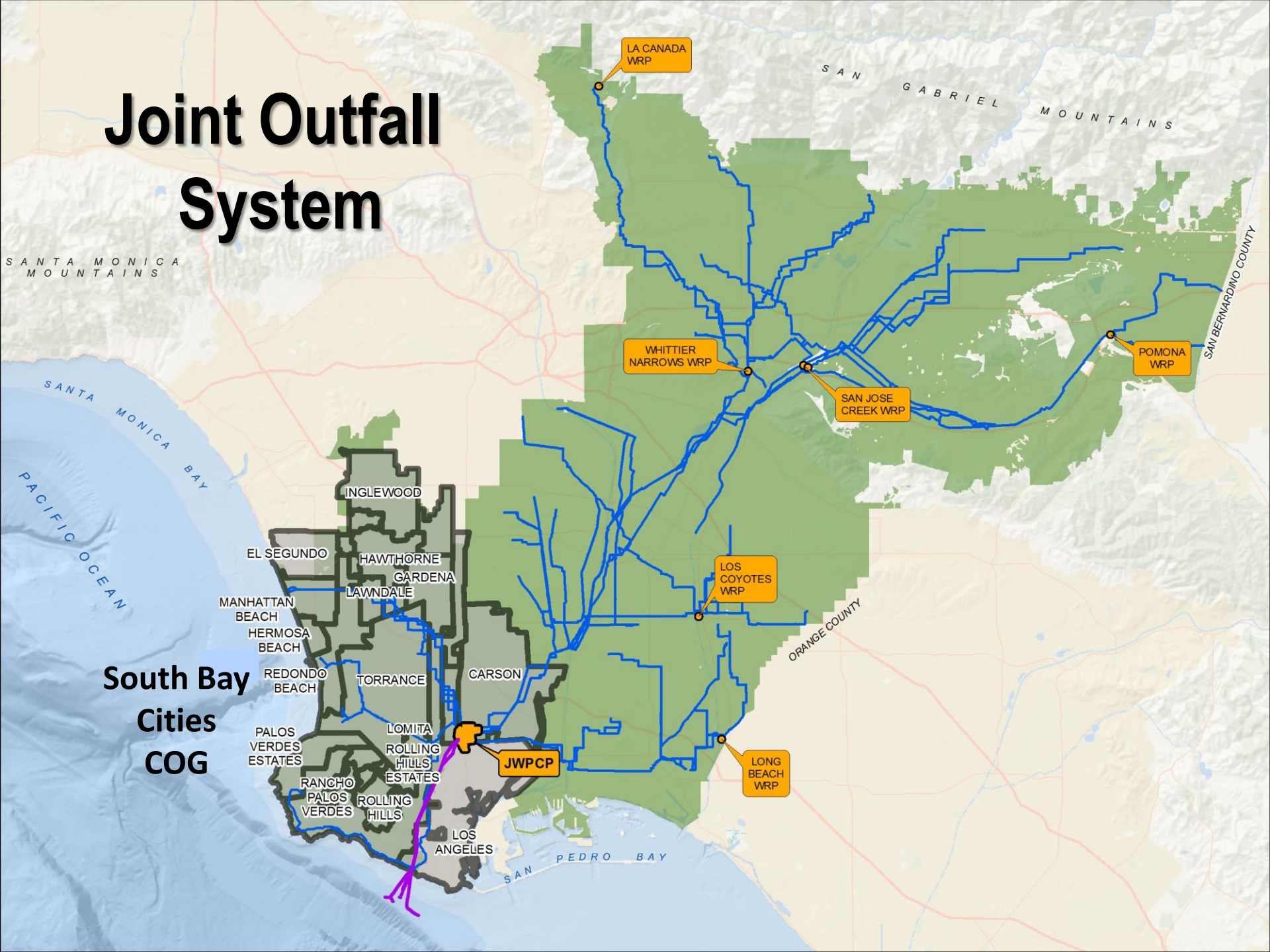
# Joint Outfall System



**Main sewer system  
serving over  
5 million people.**

**Tunnel &  
Outfall System**

# Joint Outfall System



**South Bay  
Cities  
COG**

**JWPCP**

**LA CANADA  
WRP**

**WHITTIER  
NARROWS  
WRP**

**SAN JOSE  
CREEK  
WRP**

**POMONA  
WRP**

**LOS COYOTES  
WRP**

**LONG BEACH  
WRP**

SAN GABRIEL MOUNTAINS

SANTA MONICA MOUNTAINS

SANTA MONICA BAY

PACIFIC OCEAN

ORANGE COUNTY

SAN BERNARDINO COUNTY

SAN PEDRO BAY

INGLEWOOD

EL SEGUNDO

MANHATTAN BEACH

HERMOSA BEACH

REDONDO BEACH

PALOS VERDES ESTATES

RANCHO PALOS VERDES

ROLLING HILLS

LOS ANGELES

INGLEWOOD

HAWTHORNE

GARDENA

LAWDALE

TORRANCE

LIMITA

ROLLING HILLS ESTATES

CARSON

LA CANADA WRP

WHITTIER NARROWS WRP

SAN JOSE CREEK WRP

POMONA WRP

LOS COYOTES WRP

LONG BEACH WRP

JWPCP

SAN GABRIEL MOUNTAINS

SANTA MONICA MOUNTAINS

SANTA MONICA BAY

PACIFIC OCEAN

ORANGE COUNTY

SAN BERNARDINO COUNTY

SAN PEDRO BAY

INGLEWOOD

EL SEGUNDO

MANHATTAN BEACH

HERMOSA BEACH

REDONDO BEACH

PALOS VERDES ESTATES

RANCHO PALOS VERDES

ROLLING HILLS

LOS ANGELES

# Existing Tunnels & Outfalls



8-ft Tunnel



12-ft Tunnel



# Consequences of Tunnel Failure



Dominguez Channel

Los Angeles Harbor

Joint Water Pollution Control Plant (Carson)

Machado Lake

Treated or Partially Treated Effluent

EXISTING TUNNELS

Wilmington Drain



# Consequences of Tunnel Failure



Dominguez Channel

UNTREATED WASTEWATER

Los Angeles Harbor

Upstream Sewage Diverted To Channel

Joint Water Pollution Control Plant (Carson)

Machado Lake

Wilmington Drain





# NEW TUNNEL

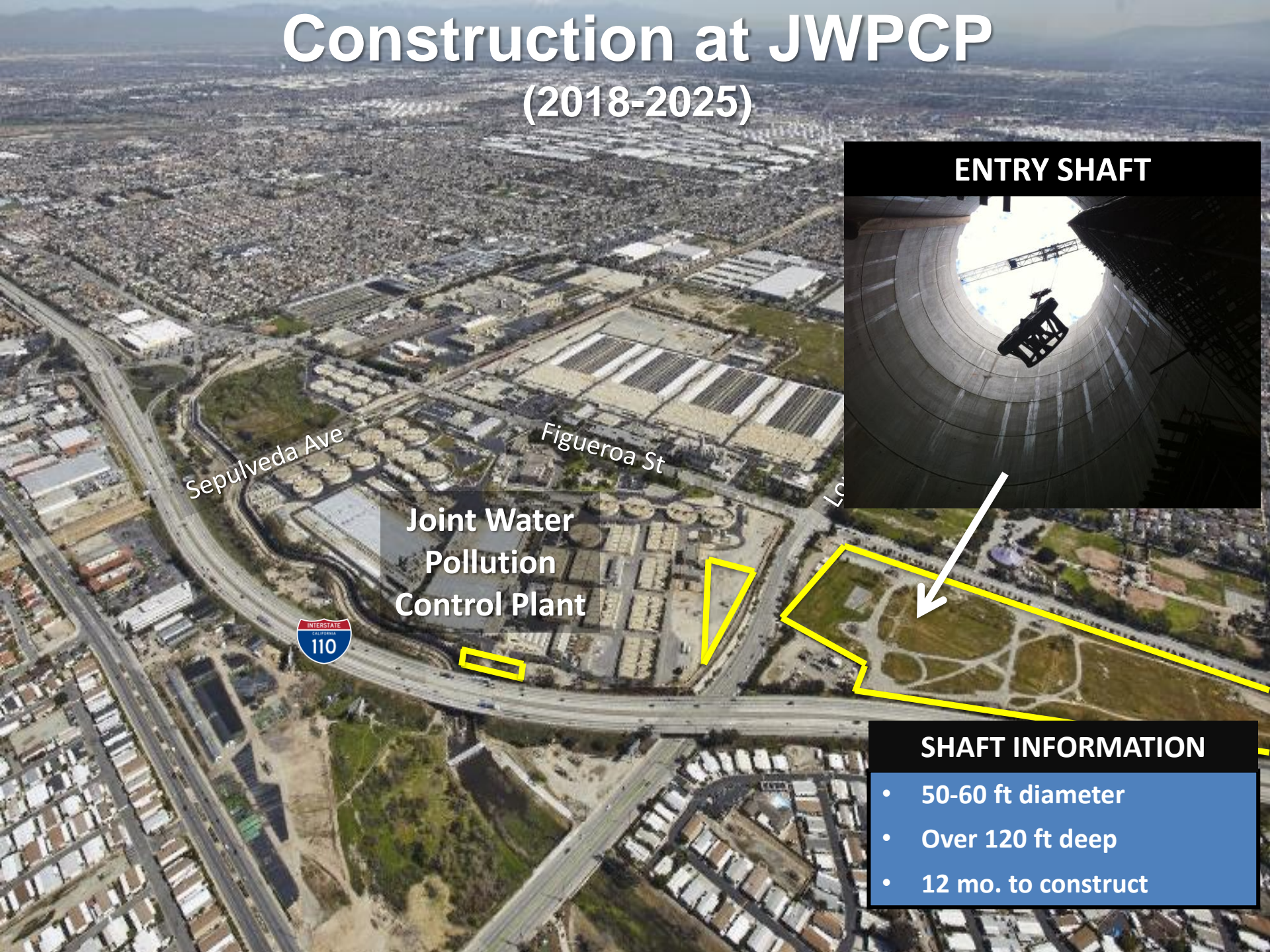
## Essential for System Reliability

### NEW TUNNEL

- \$700 million
- 18-foot diameter
- 7 miles long
- Depths of 30 to 450 feet below surface to top of tunnel
- Mostly under public roadways
- 7 years to construct (2018-2025)



# Construction at JWPCP (2018-2025)



Sepulveda Ave

Figueroa St

Joint Water  
Pollution  
Control Plant



**ENTRY SHAFT**



**SHAFT INFORMATION**

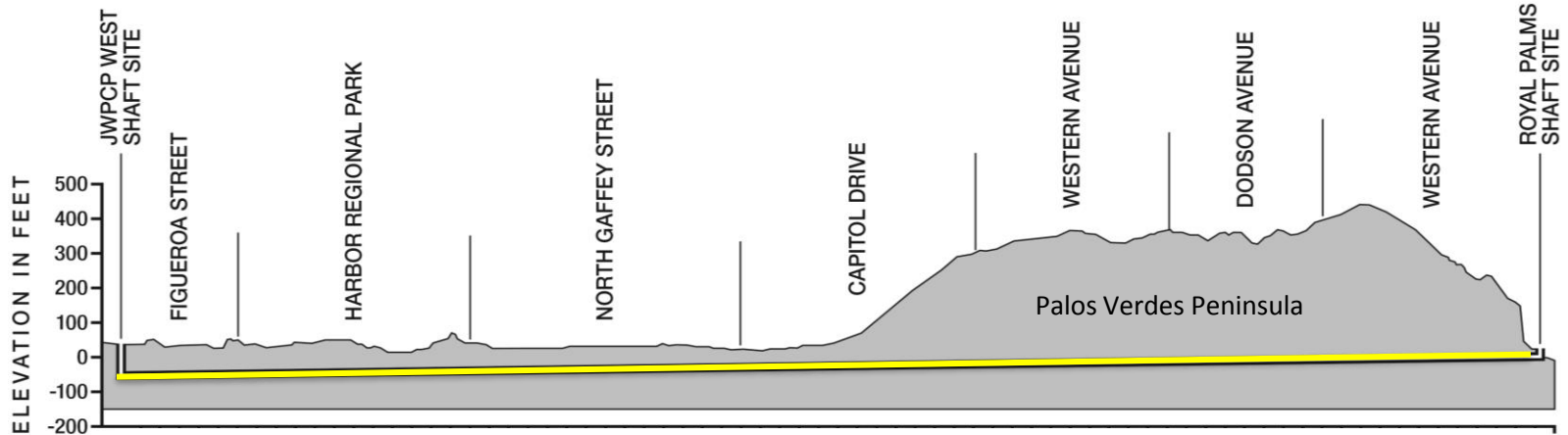
- 50-60 ft diameter
- Over 120 ft deep
- 12 mo. to construct



# Tunnel Construction

Carson

White Point

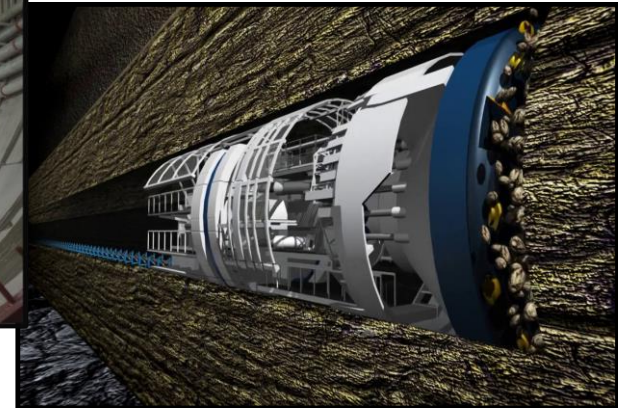


**ENTRY SHAFT**  
(JWPCP)



**TUNNEL BUILT AS YOU GO**  
(4 years to construct)

**TUNNEL BORING MACHINE**  
(Average 35 to 40 feet per day)



# Work at Royal Palms Beach

(2023-2025)

W Paseo  
Del Mar



Need about  
50 of 174  
parking spaces



Work Site

**PARKING STUDY**  
**June-August**



# Visual Simulation



VISUAL/SOUND  
BARRIER

CRANE

WORK	DURATION
<b>SHAFT CONSTRUCTION</b> SHAFT: 35 ft wide and 50 ft deep	6-9 months
<b>UNDERGROUND WORK</b> To connect new tunnel to outfalls	18 months

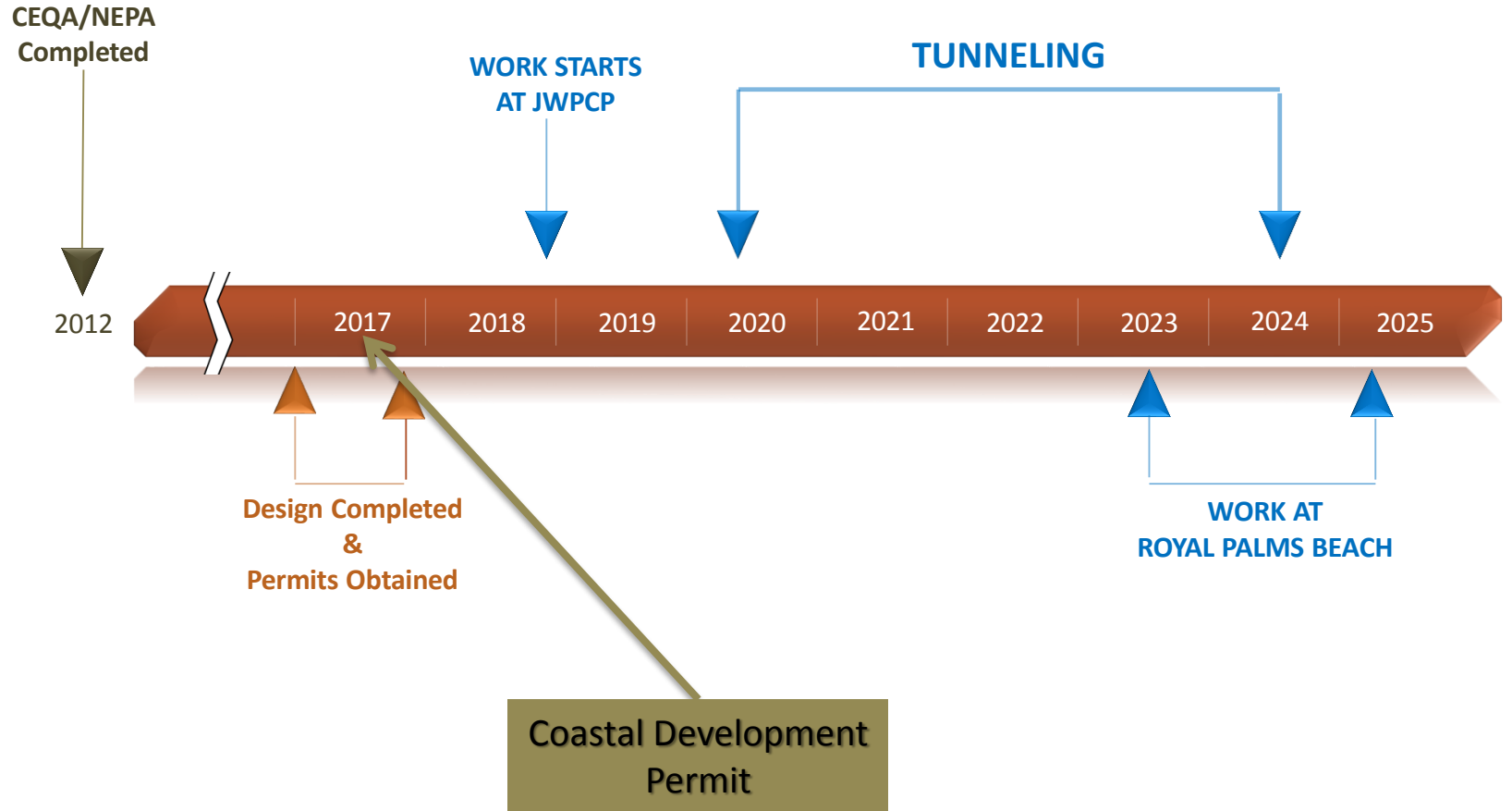
# After Completion







# Project Timeline





# Coastal Development Permit

## Proposed Schedule

ACTIVITY	TIMEFRAME
Local permit application to City of Los Angeles	Submitted
Public outreach by Sanitation Districts and City	June/July
Notice sent to residents near project	Late June/July
City Public Hearing ( <i>San Pedro Public Library</i> )	July 12 @ 2:15 PM
State permit application to California Coastal Commission	Sept
California Coastal Commission takes action	Oct or Dec

# Q&A

**PROTECTING  
OUR WATERWAYS**  
by addressing critical  
aging infrastructure



**GLENN ACOSTA**  
Senior Engineer  
Public Information Office  
(562) 908-4288, ext. 2304  
[gacosta@lacs.org](mailto:gacosta@lacs.org)

# Landslide Concerns

Existing  
Tunnels

NEW TUNNEL

Project Site  
½-mile away  
from landslide

Outfalls

Paseo del Mar

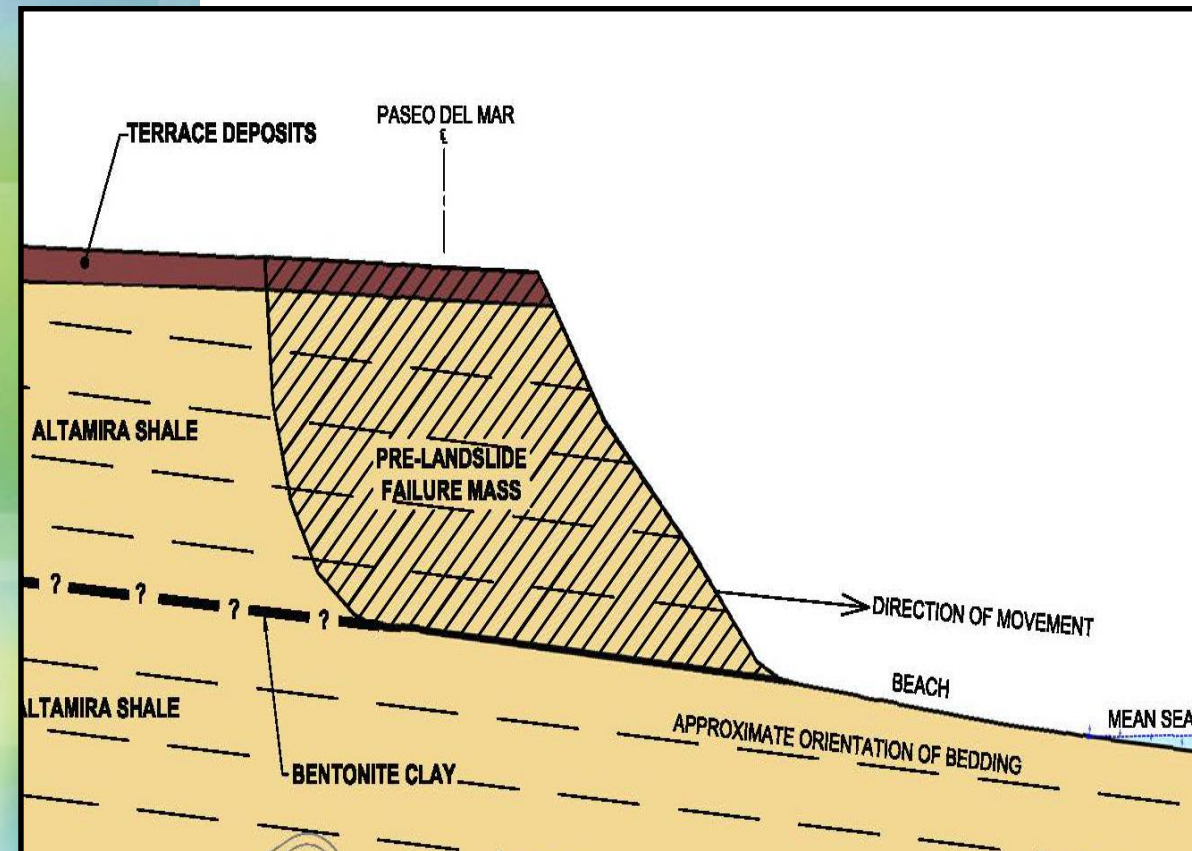
White Point  
Landslide

White Point





# Unfavorable Geology at Slide Area



## WHITE POINT LANDSLIDE (City of Los Angeles Findings)

**Unfavorable geology**  
(Downward bedding planes,  
towards ocean)

**Water-filled bedrock**

**Erosion**  
(to a lesser extent)



# Different Geology at Tunnel Site



## ROYAL PALMS BEACH (Sanitation Districts Findings)

### Highly Folded/Warped Geology

- Bedrock structure significantly different to White Point Landslide area
- No identified historical evidence of landslides along Royal Palms Beach
- We selected Royal Palms Beach in the 1920s because of no known landslides

### Tunneling

- Project team has not identified any cases of tunneling machines triggering landslides
- No known landslides caused by previous tunneling at RPB, which included blasting. (No blasting this time)

### Monitoring during Construction

- Instrumental monitoring to detect any movement or settlement of bluff area
- Can halt or slow tunnel boring machine to reduce vibration, if necessary

# Construction Footprint

**Construction Staging & Laydown Areas**

Existing Tunnels

Underground Structure

**NEW TUNNEL**

Access Road

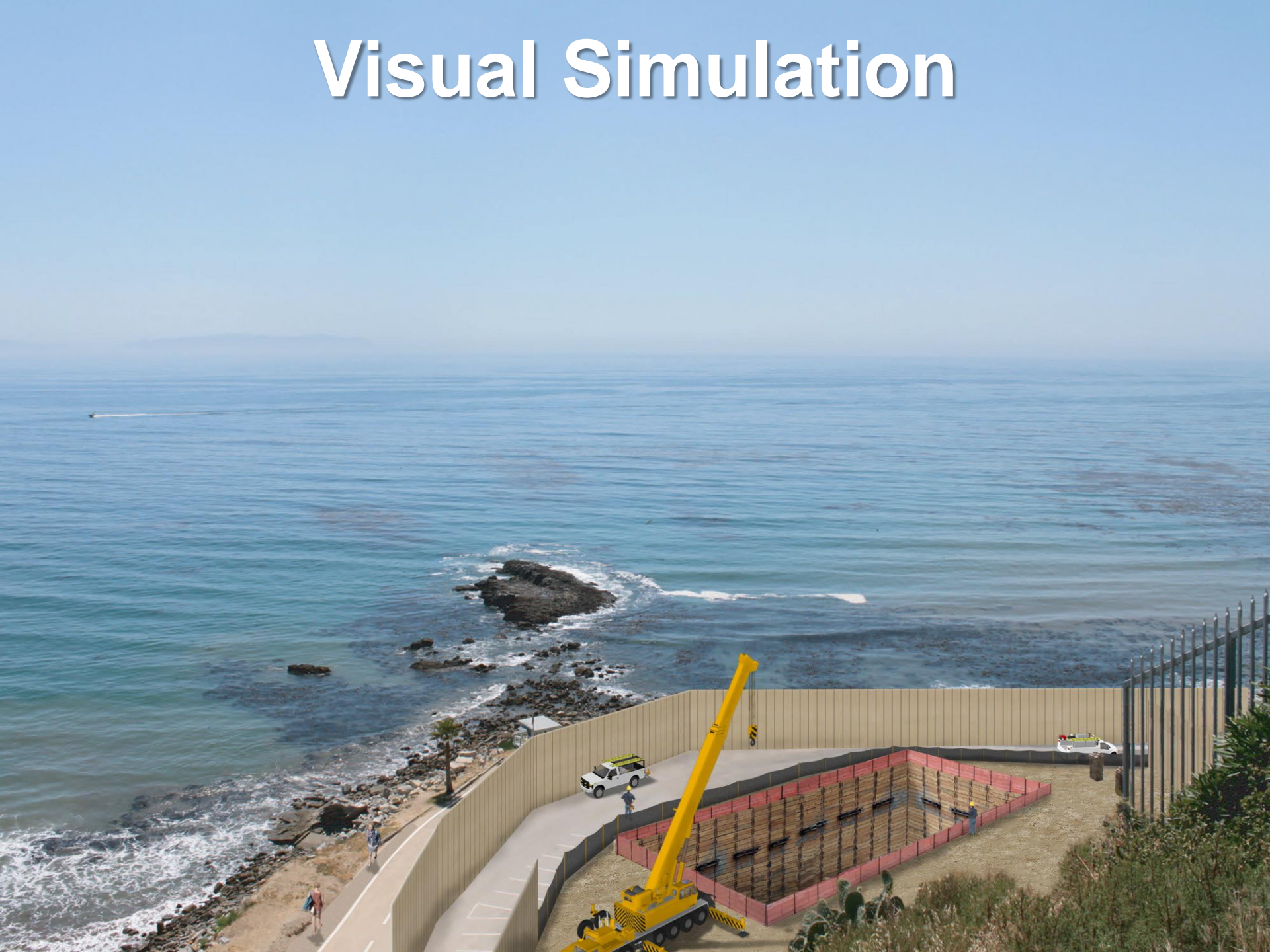
Existing Outfalls

Pacific Ocean

**WORK HOURS**  
Only Monday-Friday



# Visual Simulation





# Visual Simulation

