



Regional Recycled Water - Advanced Purification Center

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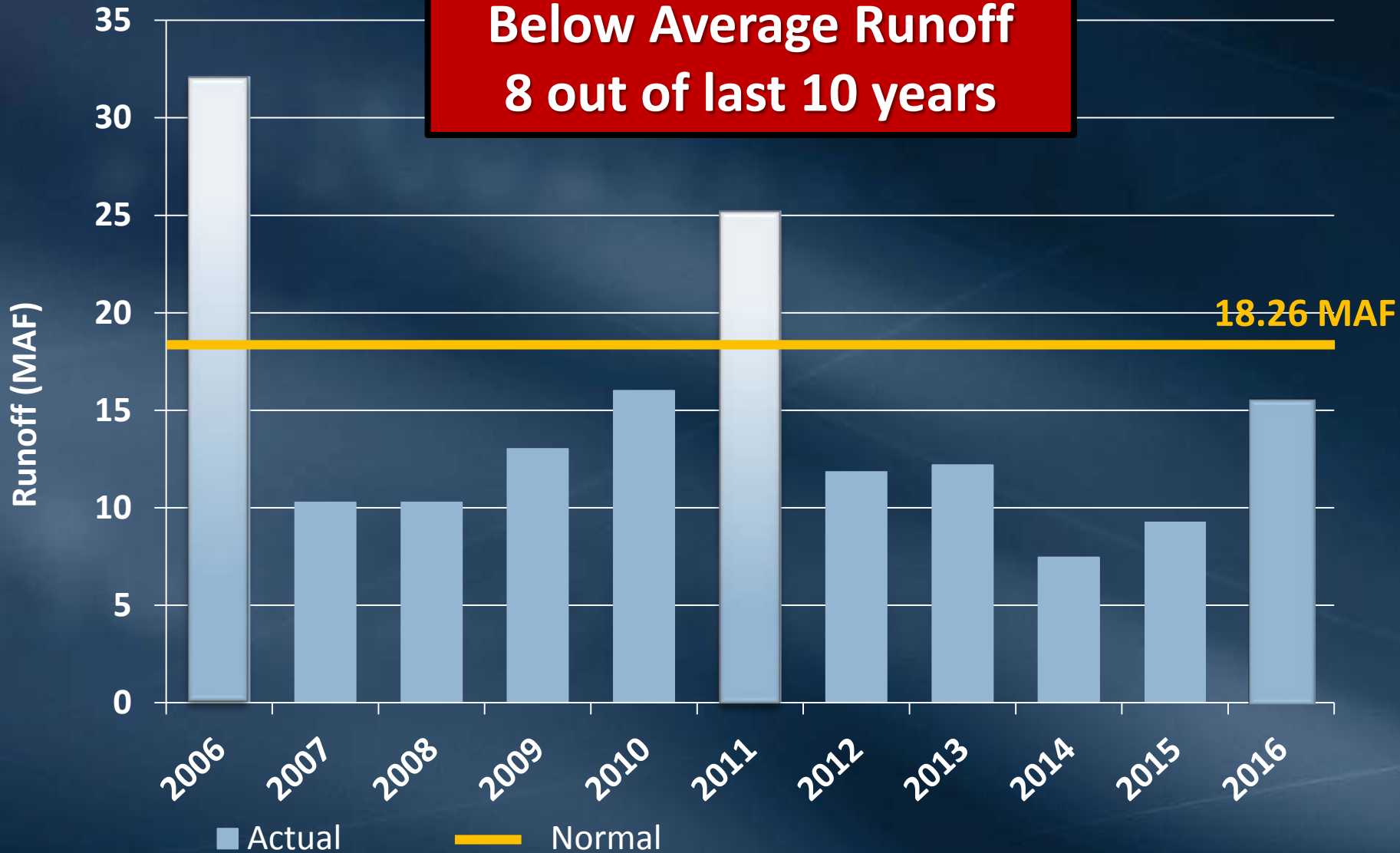
Stantec

WaterReuse LA Chapter Meeting

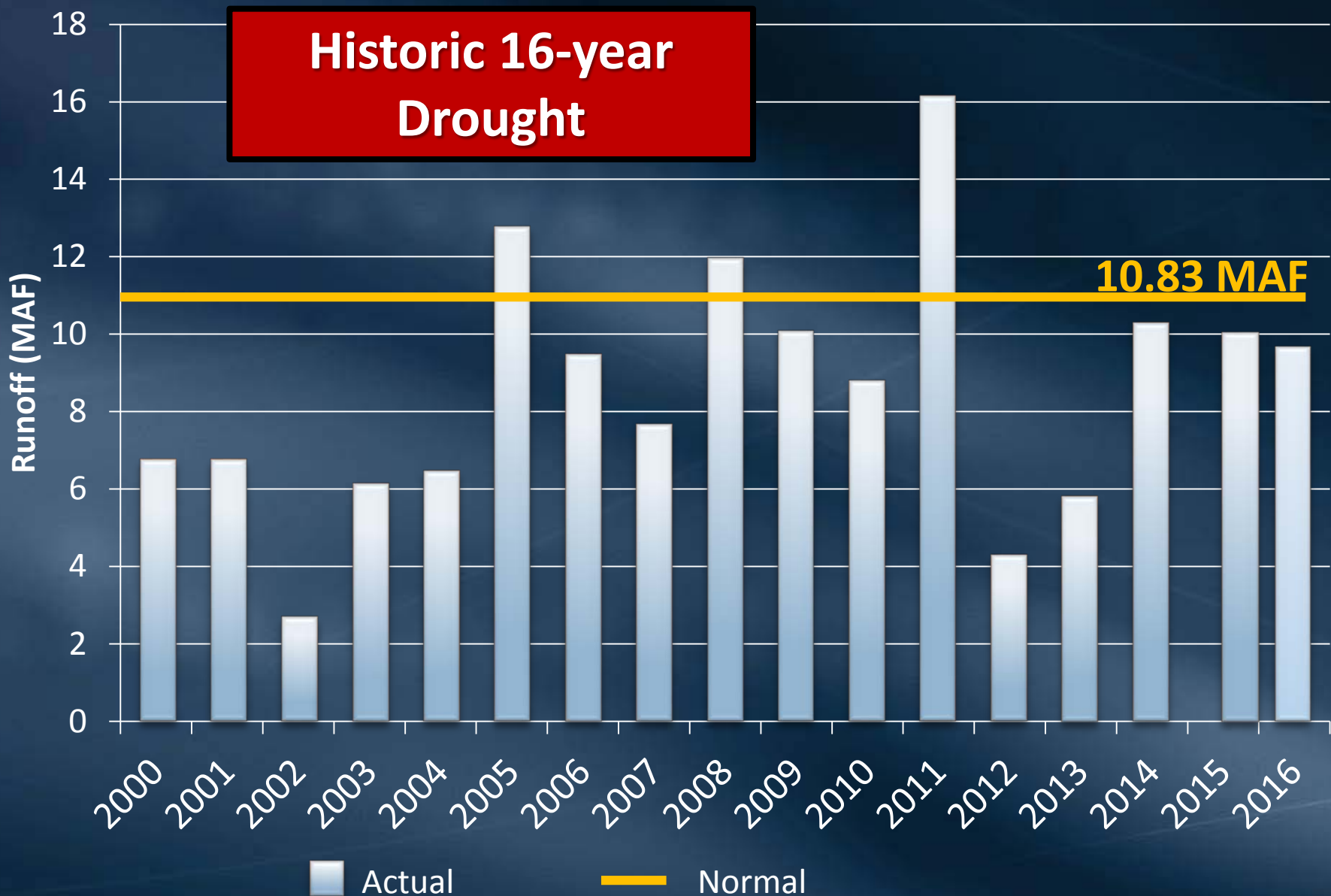
December 5, 2017

Northern California Runoff

**Below Average Runoff
8 out of last 10 years**



Upper Colorado River Basin Runoff



Water Supply Management

Stabilize Imported Supply

- **State Water Project Water**
- **Colorado River Water**

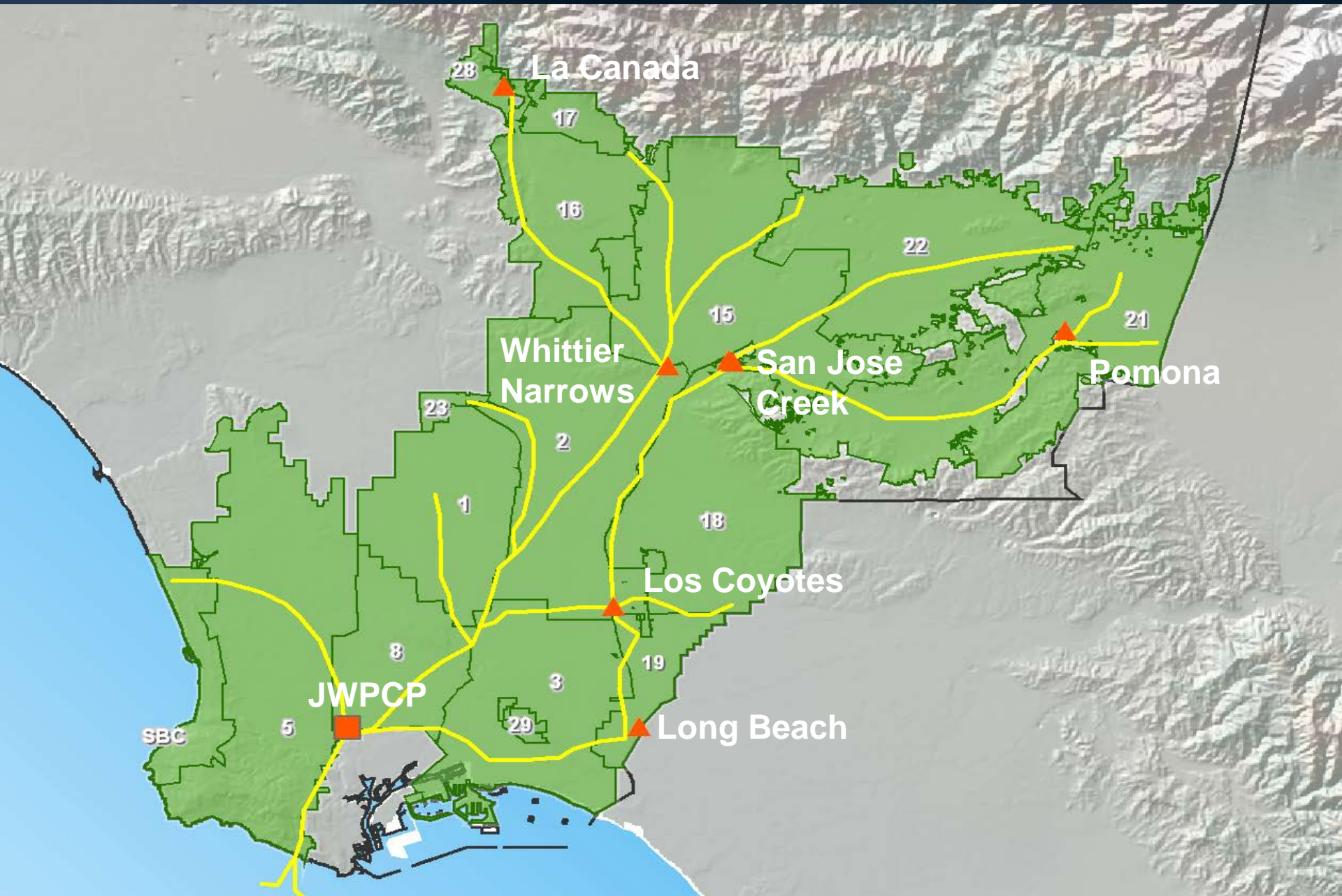
Develop Local Supply

- **Recycled Water**
- **Desalinated Waters**
- **Impaired Groundwater Recovery**

Conservation

- **Supply Allocation**
- **Financial Incentive**

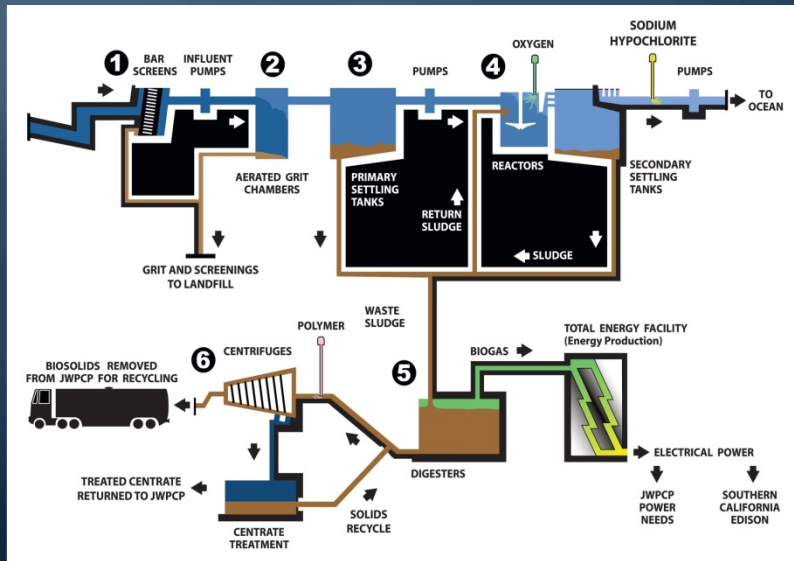
Joint Outfall System



JWPCP Wastewater Treatment



- Design flow rate 400 MGD; current flow rate 265 MGD
- Processes:
 - Primary clarification
 - High purity oxygen activated sludge
 - Anaerobic digestion and energy recovery (~20 MW)
 - Solid processing: dewatering, drying
- Plant produces non-nitrified effluent for ocean disposal

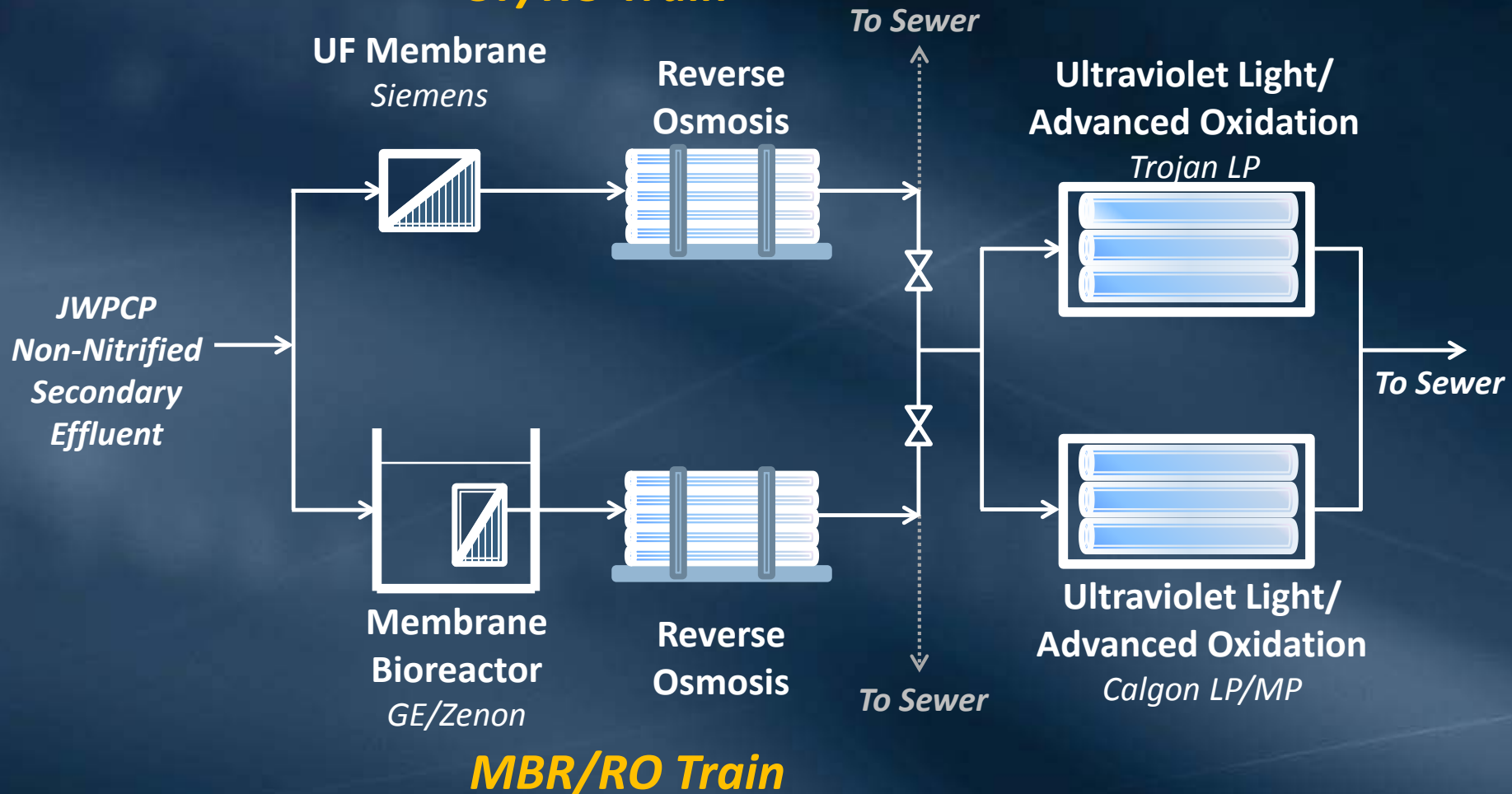


Approach to the Regional Recycled Water Program

- Perform a study cooperatively to estimate the demand for groundwater augmentation of JWPCP treated recycled water in groundwater basins
- Conduct pilot testing of two advanced water treatment (AWT) process trains to evaluate the feasibility of using JWPCP secondary effluent for groundwater augmentation
- **Conduct demonstration plant scale testing**
- Take phased approach to full scale facilities
- Allow provisions for off-ramps, if necessary

Pilot Treatment Schematic

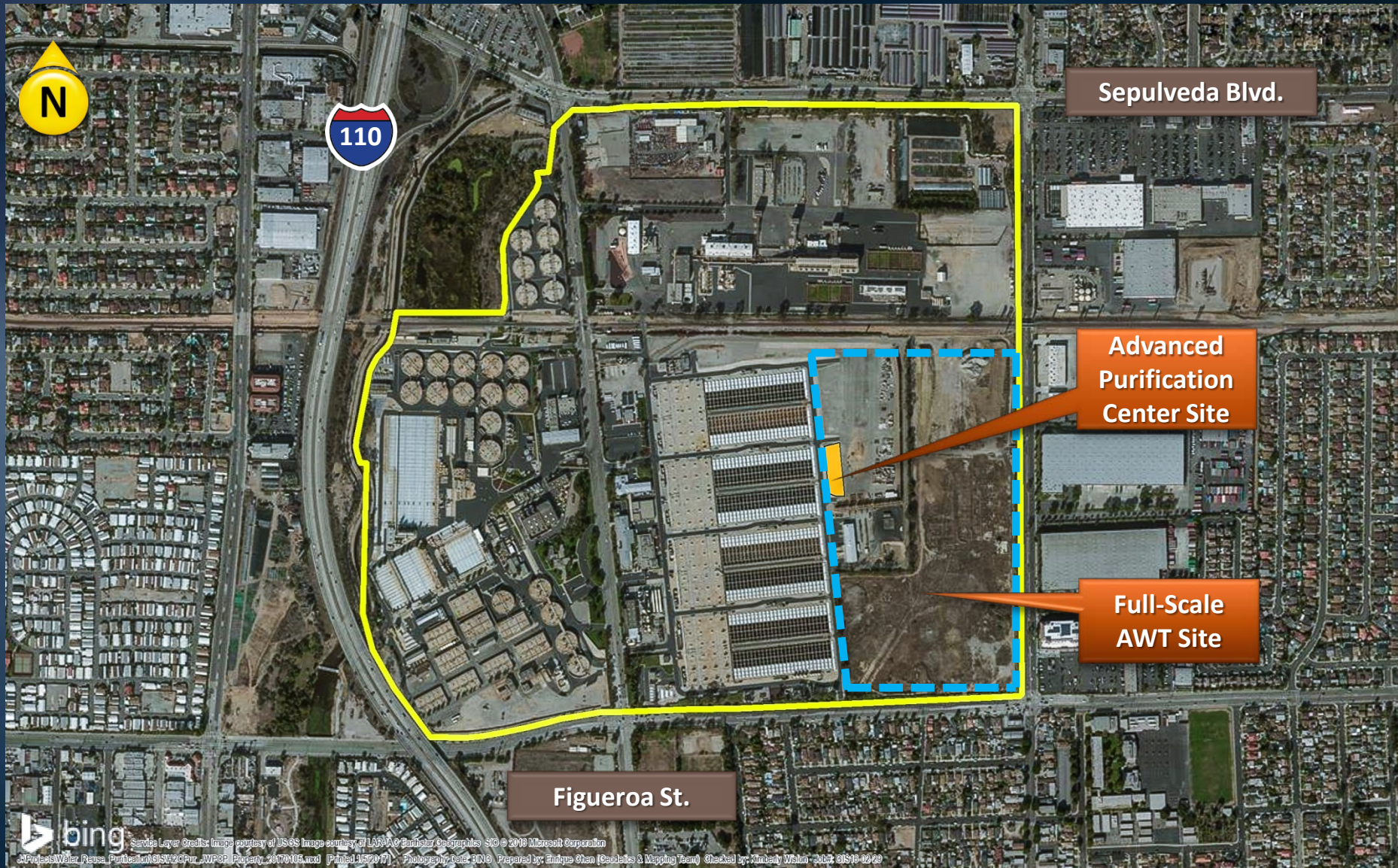
UF/RO Train



Pilot Study Results

- JWPCP non-nitrified secondary effluent can be treated to produce high quality recycled effluent
- UF/RO and MBR/RO permeate water quality met DDW criteria for groundwater recharge with respect to turbidity, TN, TOC, virus, and total *coliform*; however, boron and nitrate are potential concerns due to Basin Plan and SNMP objectives
- MBR/RO was more effective than UF/RO at removing TOC, NDMA, NDPA, NDMAFP, and biodegradable PPCPs
- AOP (UV/H₂O₂) achieved the treatment goals of 0.5-log reduction of 1,4-dioxane and effluent levels below the 10 ng/L NL for NDMA and NDPA, but not NDEA. It is likely that higher UV/H₂O₂ doses than tested would have achieved effluent NDEA levels below NL
- The UF membrane (PVDF) was irreversibly fouled by the end of the two-year test period and RO membranes were susceptible to fouling with non-nitrified JWPCP secondary effluent

Location of Proposed Facility In Carson



Regional Recycled Water Program

Next Steps

- Complete design, construction, start-up and operations of Advanced Purification Center
- Proceed with facilities planning, engineering, and additional groundwater modeling
- Finalize agreements with Sanitation Districts
- Develop institutional and financial arrangements needed for implementation
- Initiate public outreach effort focused on Advanced Purification Center



SANITATION DISTRICTS OF LOS ANGELES COUNTY



Advanced Purification Center

Advanced Purification Center Objectives

- Achieve conditional acceptance of MBR as an alternative treatment technology for a Groundwater Replenishment Reuse Project
- Determine optimum design and operating criteria for full-scale AWT facility and coordinate operations with Sanitation Districts
- Demonstrate ability of the MBR-RO-UV/AOP process train to meet basin plan objectives
- Develop data for Title 22 Engineering Report for regulatory approval
- Provide vehicle for public outreach and acceptance

Advanced Purification Center Design

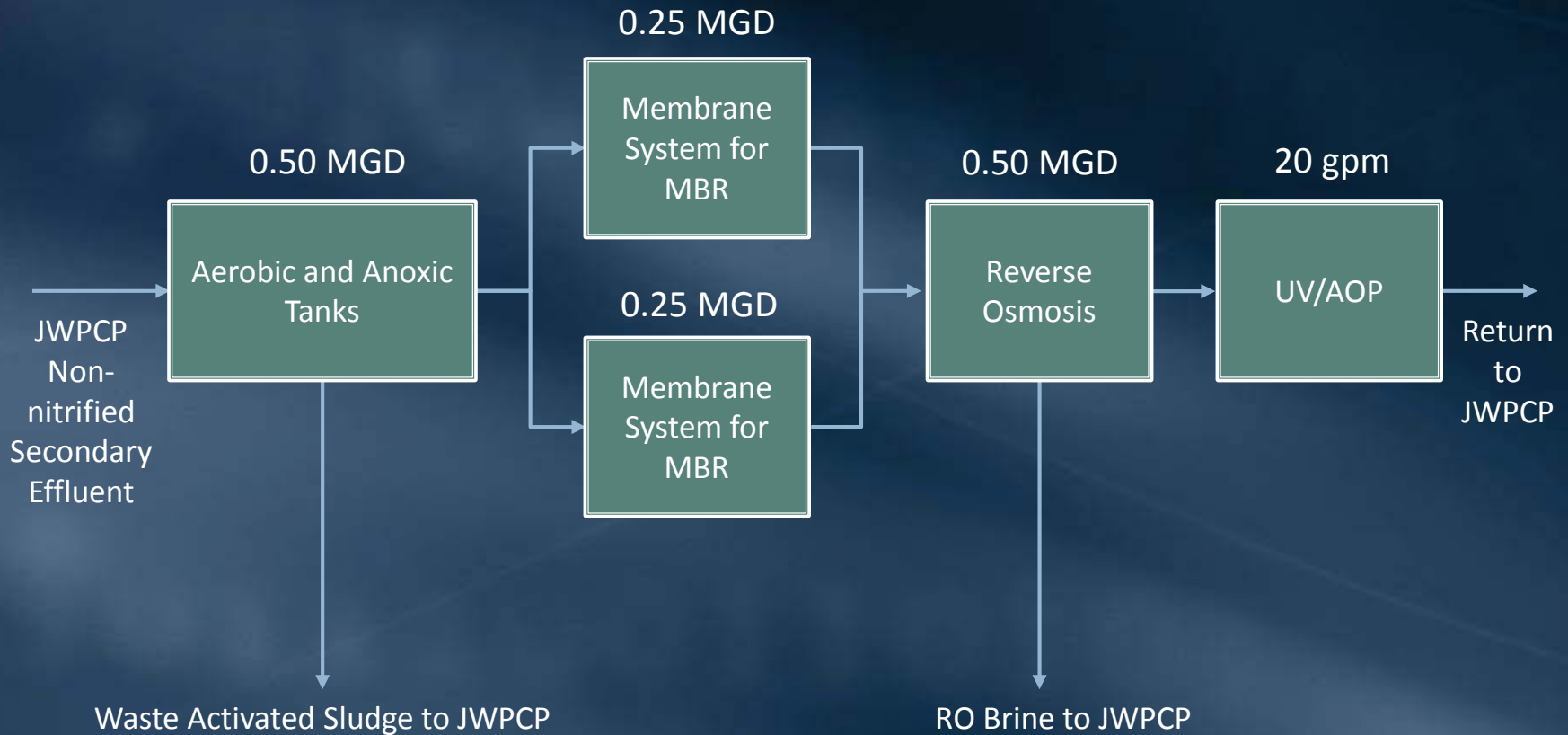


Design includes initial unit processes, and provisions for future unit processes

Process Train

- Process train will be MBR-RO-UV/AOP
 - Two 0.25 MGD MBR Systems
 - A single 2-stage 0.5 MGD RO System
 - A single 20 gpm UV/AOP system
- Provisions to add MF, UV and an additional RO system in future
- Provisions to test alternative process technologies at a pilot-scale

Process Schematic



3D Layout of Advanced Purification Center



Advanced Purification Center Schedule

- Final Design Complete – March 2017
- Advertised Construction Bid Package – March 2017
- MWD Board Action for Construction – June 2017
- Construction and Startup – 2017/2018
- Testing – 2018/2019



Backup Slides

Process Schematic for Potential Future AWT Demonstration Facility

