Groundwater Basin Remediation in the City of Los Angeles

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Groundwater Resources Association Conference
Concord, CA

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Manager of Groundwater Planning

Agenda

- Background
- Program Approach
- Remediation Projects
- Funding
- Next Steps

City of Los Angeles Overview

About 4 million residents

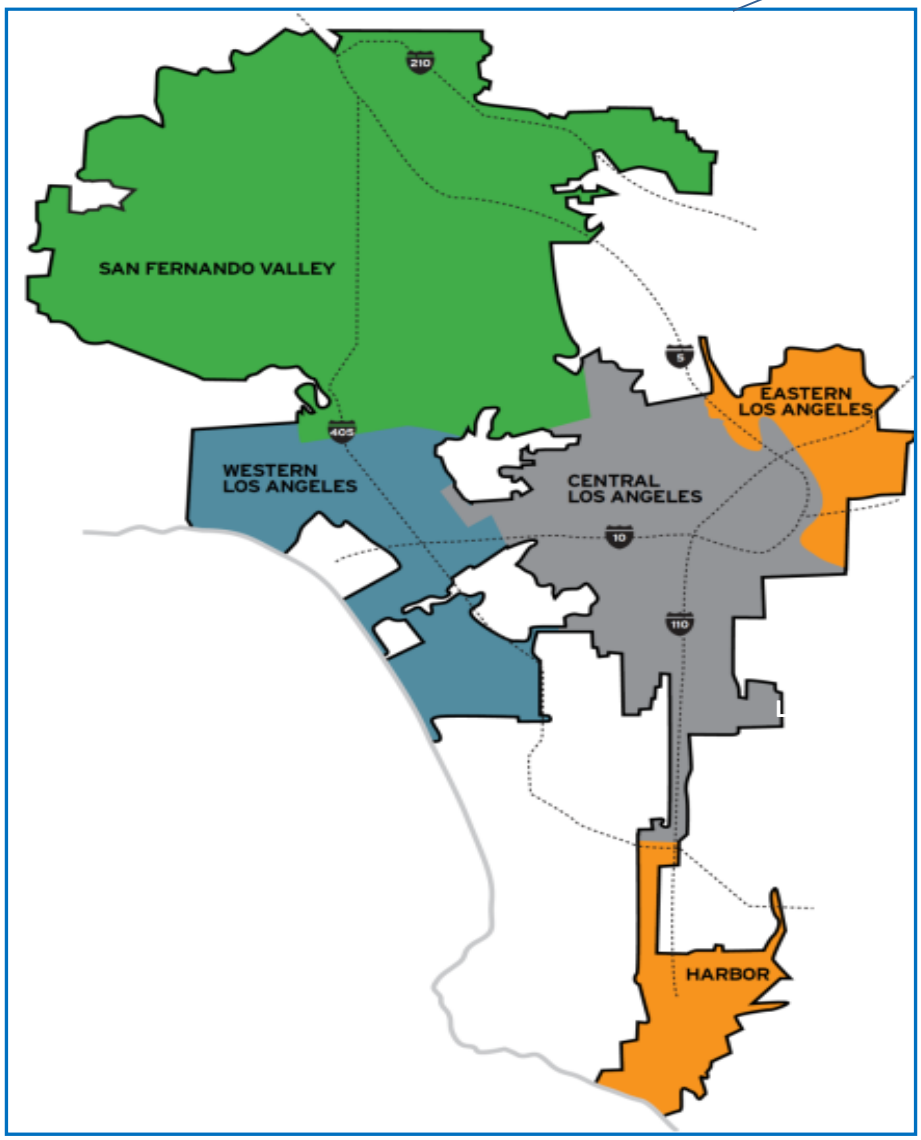
473 square-miles

LADWP: Largest municipal utility in U.S.

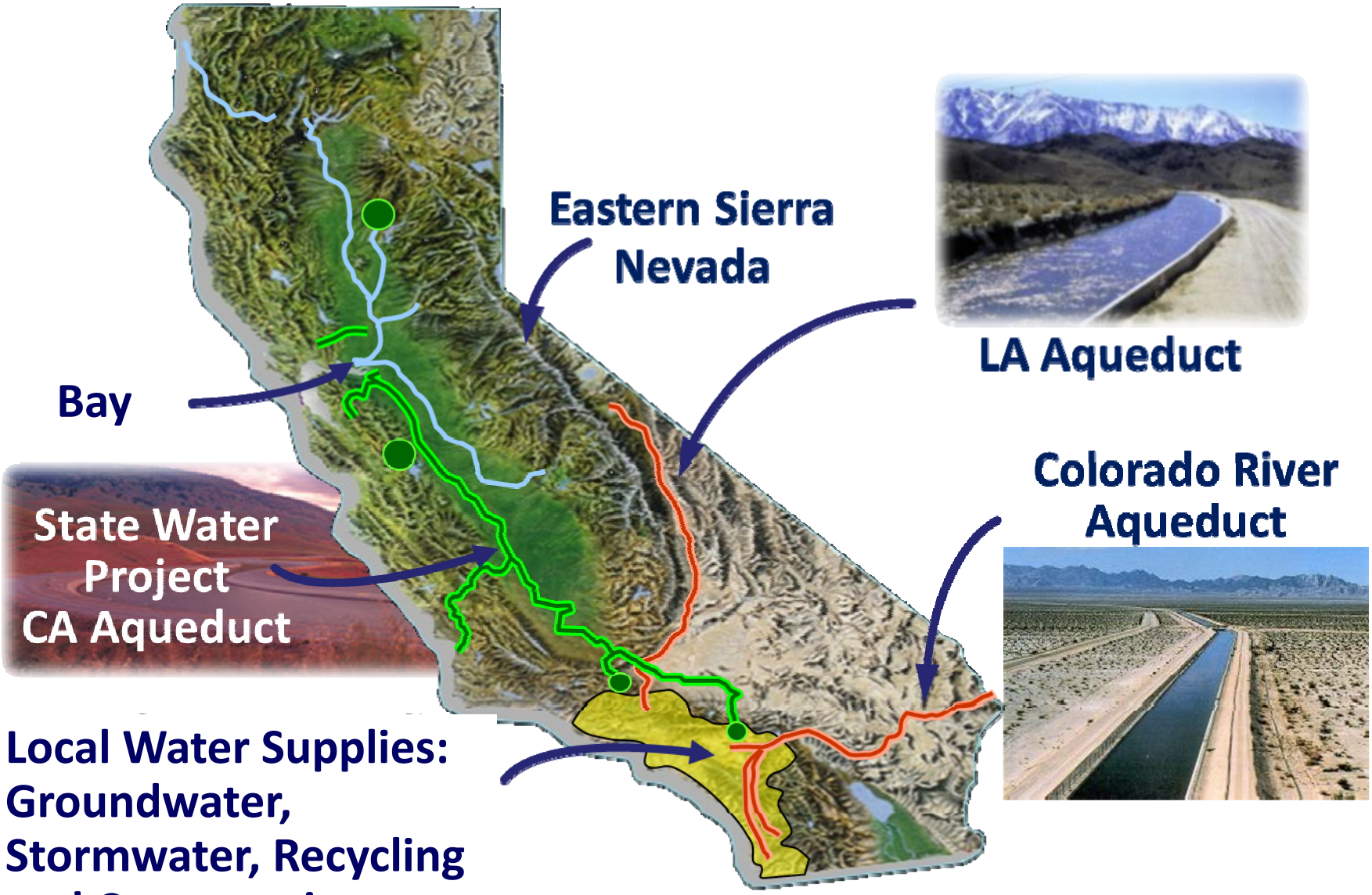
681,000 service connections

550,000 Acre-feet/year served

7,300+ miles of water pipes

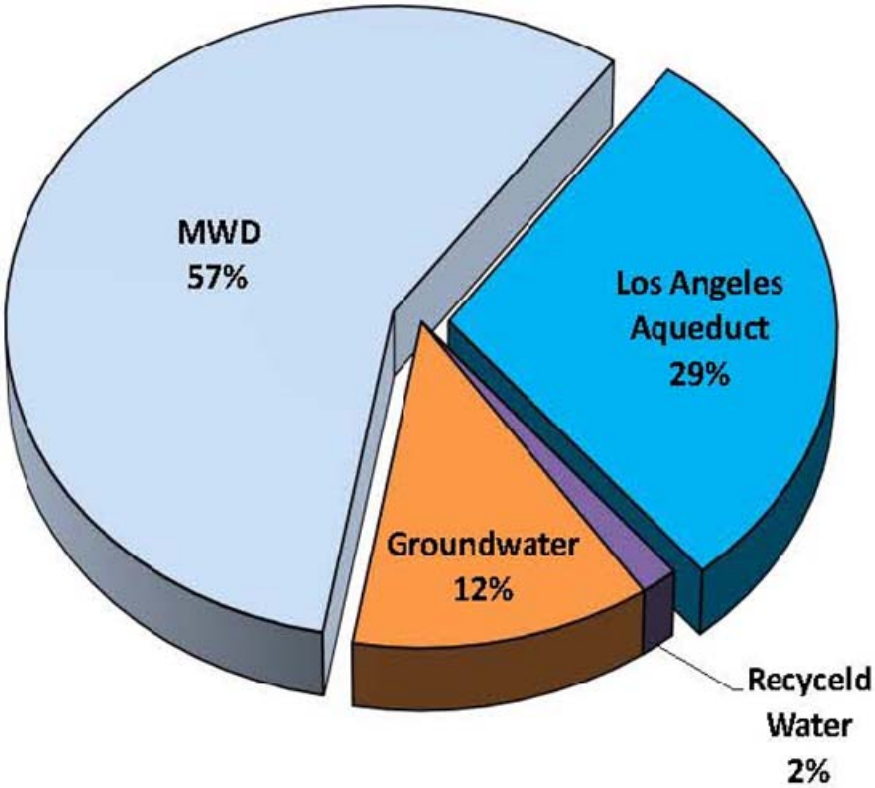


Water Sources and Reliability Challenges

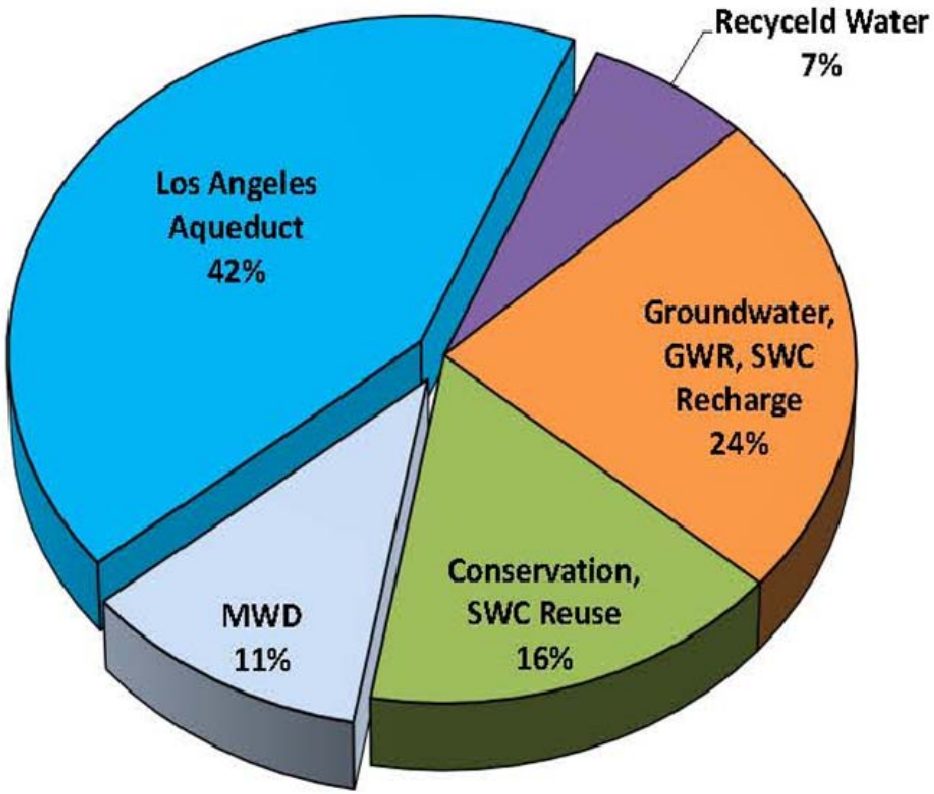


2015 Urban Water Management Plan

Fiscal Year 2011–15 Average
Total: 550,130 AFY



Fiscal Year 2039–40 Average
Total: 675,700 AFY



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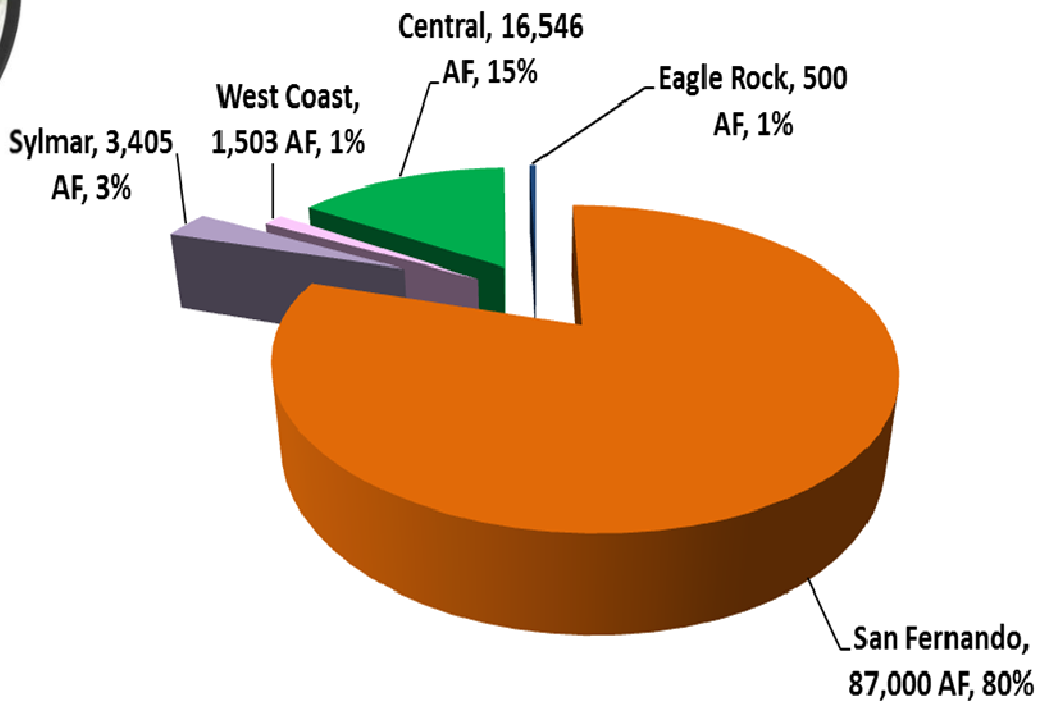
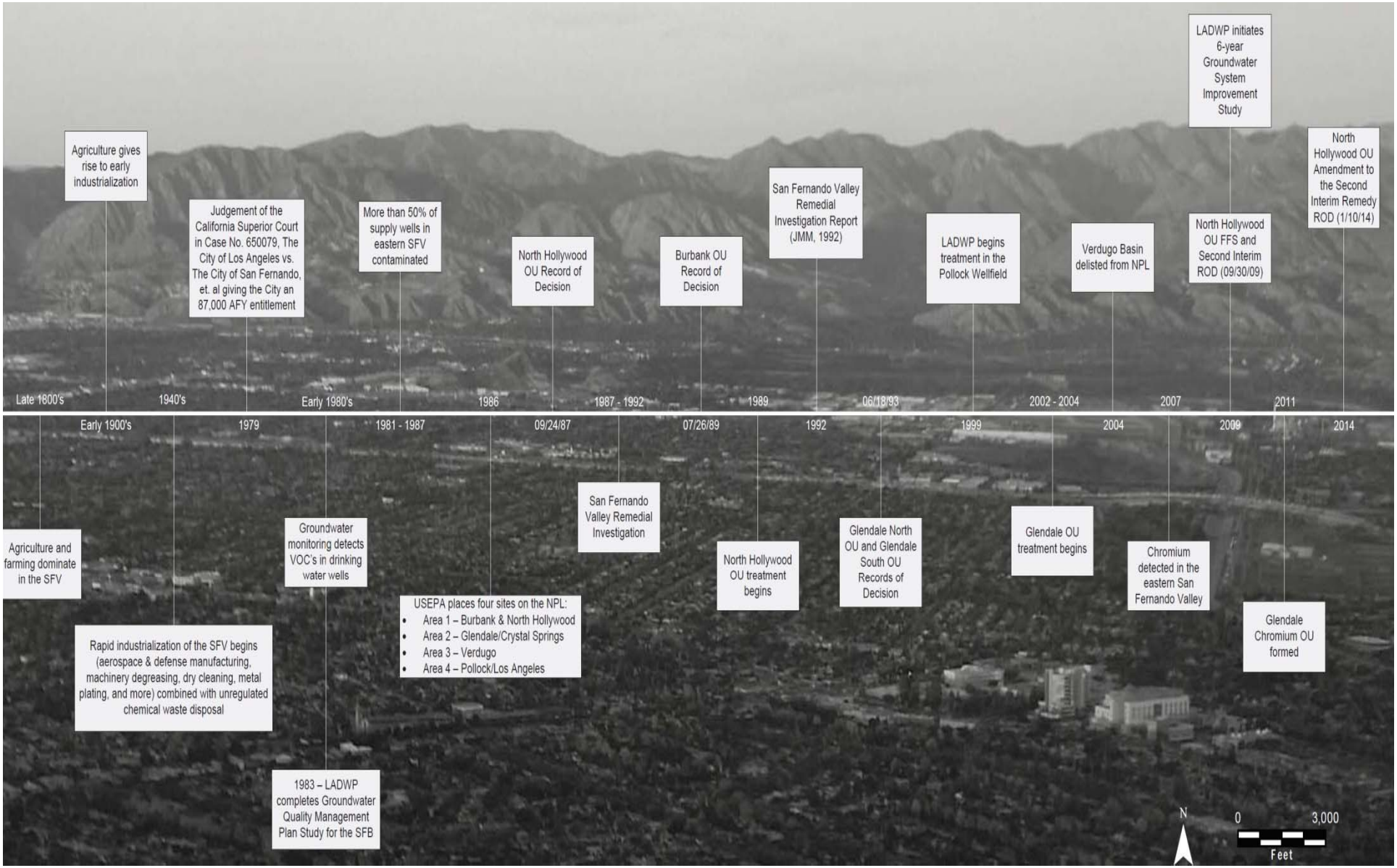
Allocated Water Rights



Background


Agriculture gives rise to early industrialization
Judgement of the California Superior Court in Case No. 650079, The City of Los Angeles vs. The City of San Fernando, et. al giving the City an 87,000 AFY entitlement
More than 50% of supply wells in eastern SFV contaminated
North Hollywood OU Record of Decision
Burbank OU Record of Decision
San Fernando Valley Remedial Investigation Report (JMM, 1992)
LADWP begins treatment in the Pollock Wellfield
Verdugo Basin delisted from NPL
North Hollywood OU FFS and Second Interim ROD (09/30/09)
LADWP initiates 6-year Groundwater System Improvement Study
North Hollywood OU Amendment to the Second Interim Remedy ROD (1/10/14)
Late 1800's
Early 1900's
1940's
1979
Early 1980's
1981 - 1987
1986
09/24/87
1987 - 1992
07/26/89
1989
1992
06/18/93
1999
2002 - 2004
2004
2007
2009
2011
2014
Agriculture and farming dominate in the SFV
Rapid industrialization of the SFV begins (aerospace & defense manufacturing, machinery degreasing, dry cleaning, metal plating, and more) combined with unregulated chemical waste disposal
Groundwater monitoring detects VOC's in drinking water wells
1983 – LADWP completes Groundwater Quality Management Plan Study for the SFB
USEPA places four sites on the NPL:
• Area 1 – Burbank & North Hollywood
• Area 2 – Glendale/Crystal Springs
• Area 3 – Verdugo
• Area 4 – Pollock/Los Angeles
San Fernando Valley Remedial Investigation
North Hollywood OU treatment begins
Glendale North OU and Glendale South OU Records of Decision
Glendale OU treatment begins
Chromium detected in the eastern San Fernando Valley
Glendale Chromium OU formed
N
0
3,000
Feet

Site Characterization

$33.5 M

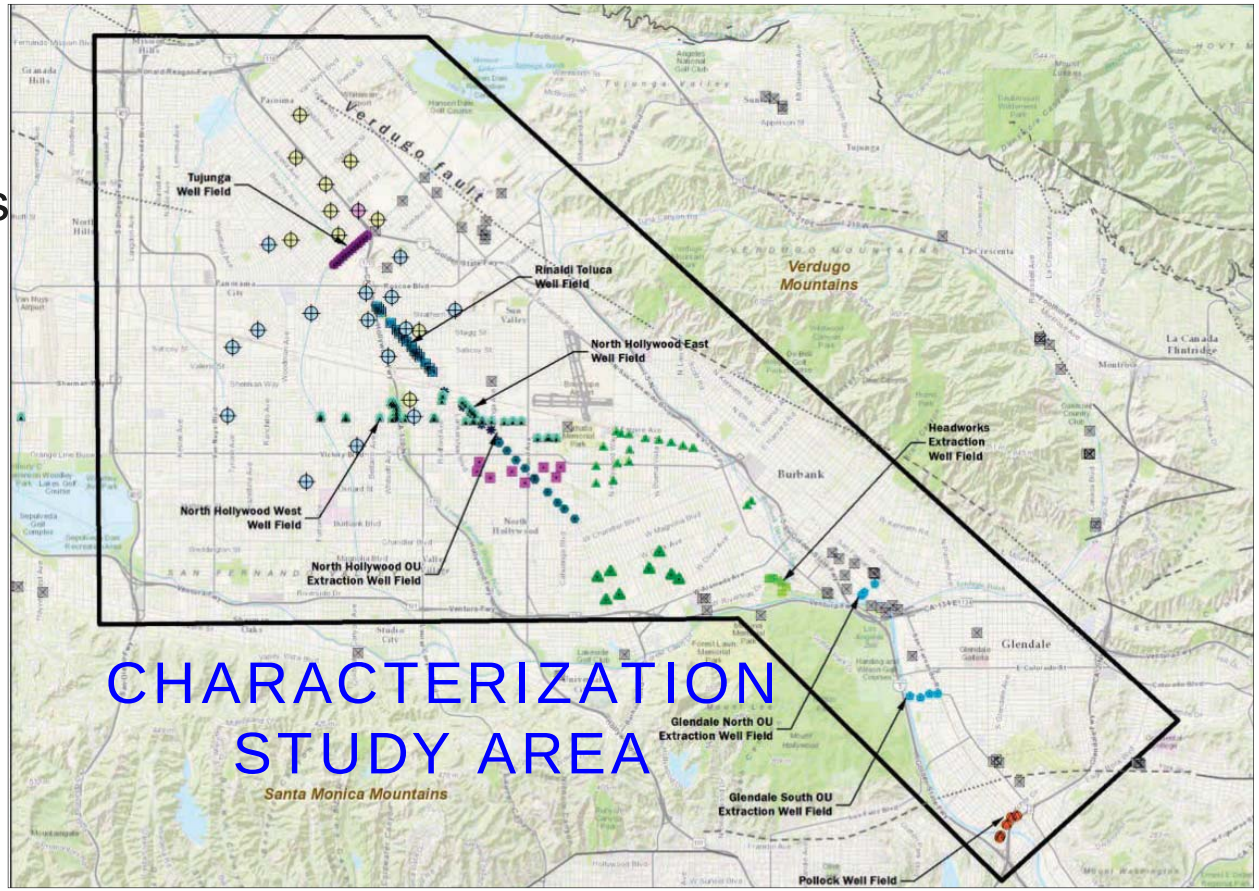
Characterized basin

- 6-year study (2015)
- Identified contaminants
- 70,000 data points

New Monitoring Wells

- 26 Monitoring Wells

Updated 1992 Remedial Investigation



Community Involvement

Site Characterization

High Priority Contaminants

Volatile Organic Compounds

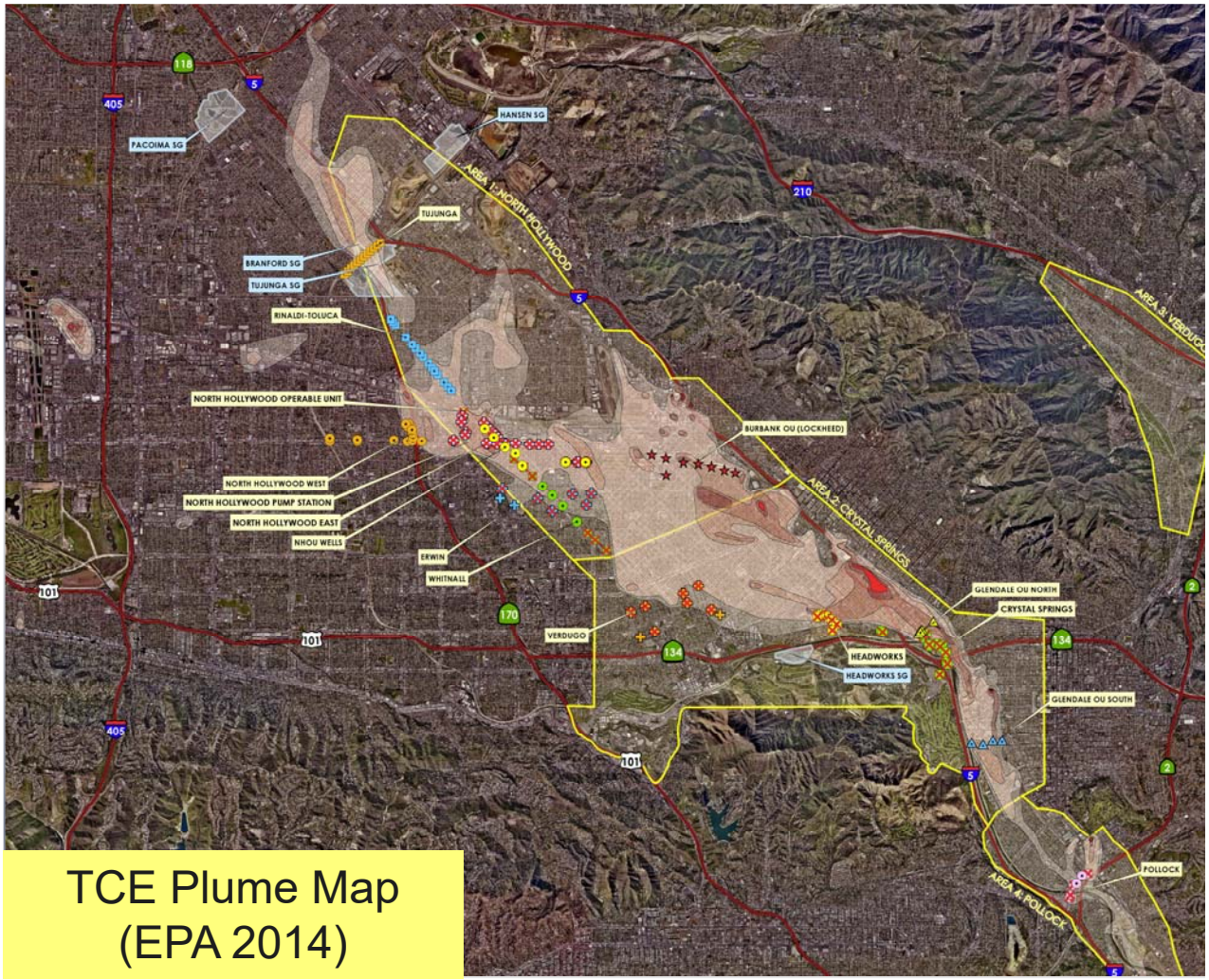
- TCE
- PCE
- 1,1 DCE
- cis-1,2DCE
- 1,2 DCA
- Freon 11
- CTET

Inorganic Compounds

- Chromium
- Perchlorate
- Nitrate

Other Chemicals

- NDMA
- 1,2,3 TCP
- 1,4-Dioxane



TCE Plume Map
(EPA 2014)

Agenda

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- Program Approach
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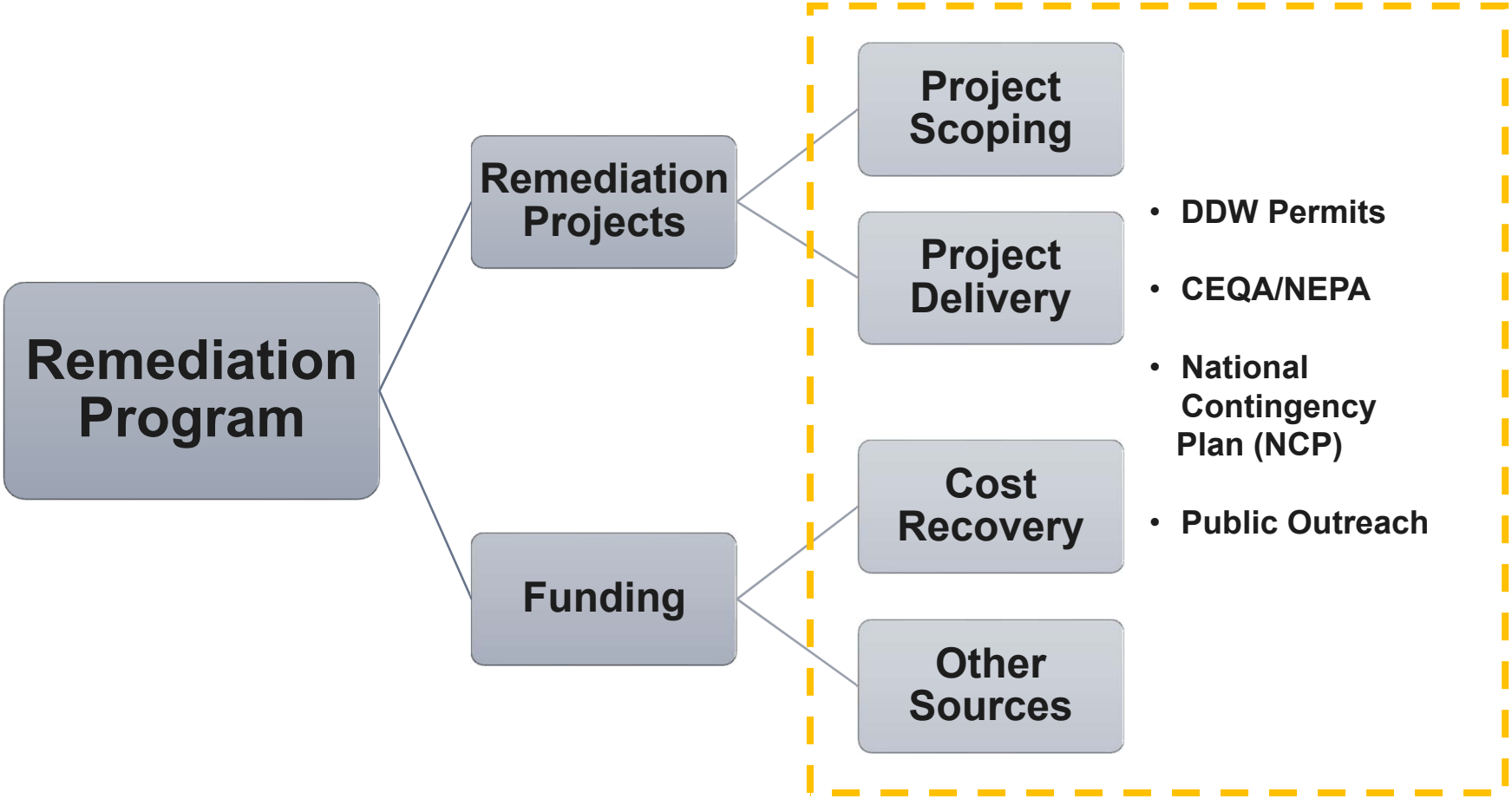
Program Approach



Overall Goal: Basin Remediation

General Approach for Remediation Projects

Initial screening

- Preliminary evaluation of COCs/COPCs by well field

Next level screening

- Statistical analyses of individual well data trends
- Individual and aggregate risk assessment

Determine design criteria

- Transport modeling
- Influent COC concentration & treatment goals
- Feasibility Study/ Proposed Plan

Design

- Preliminary Planning
- 30% Design
- 60%, 90% and 100% Design

Construction and Operation

Program Key Term Definitions

Preferred Wells

- Wells that do not show current contamination.

Secondary Wells

- Wells with contamination levels below MCLs/NLs.

Remediation Wells

- Contaminated wells that require treatment.

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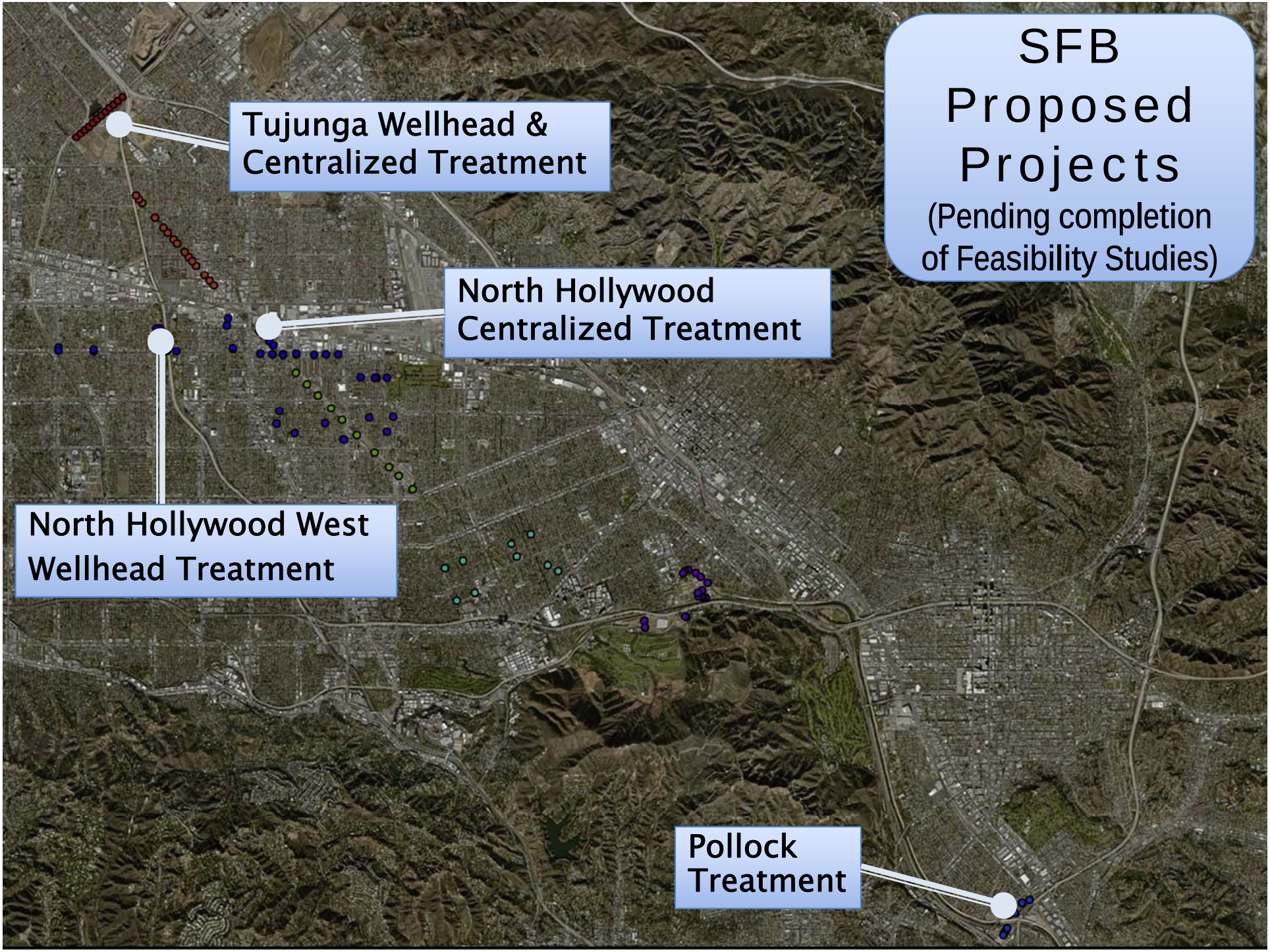
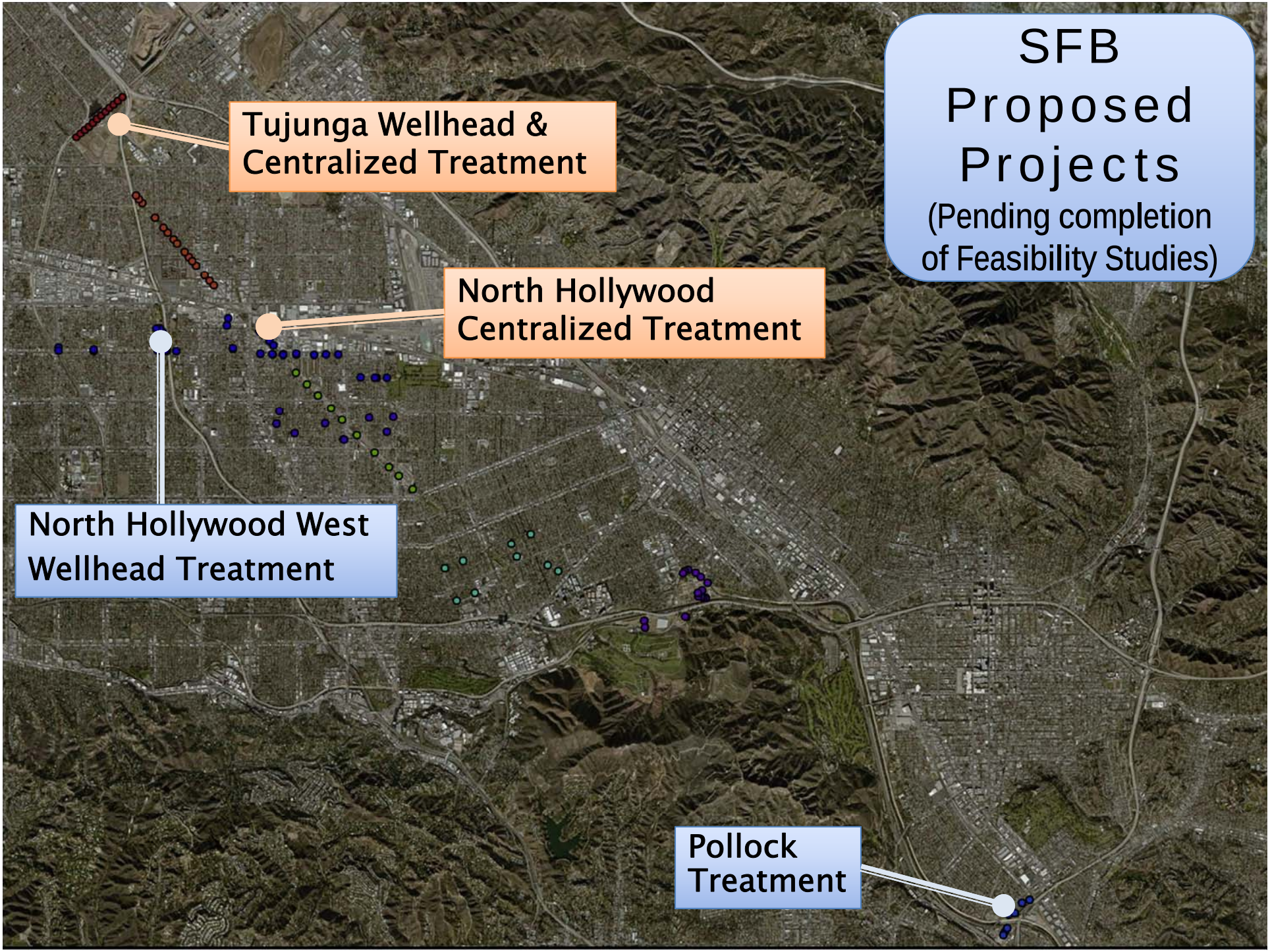

SFB
Proposed
Projects
(Pending completion
of Feasibility Studies)
Tujunga Wellhead &
Centralized Treatment
North Hollywood
Centralized Treatment
North Hollywood West
Wellhead Treatment
Pollock
Treatment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North Hollywood Central Treatment Facility*

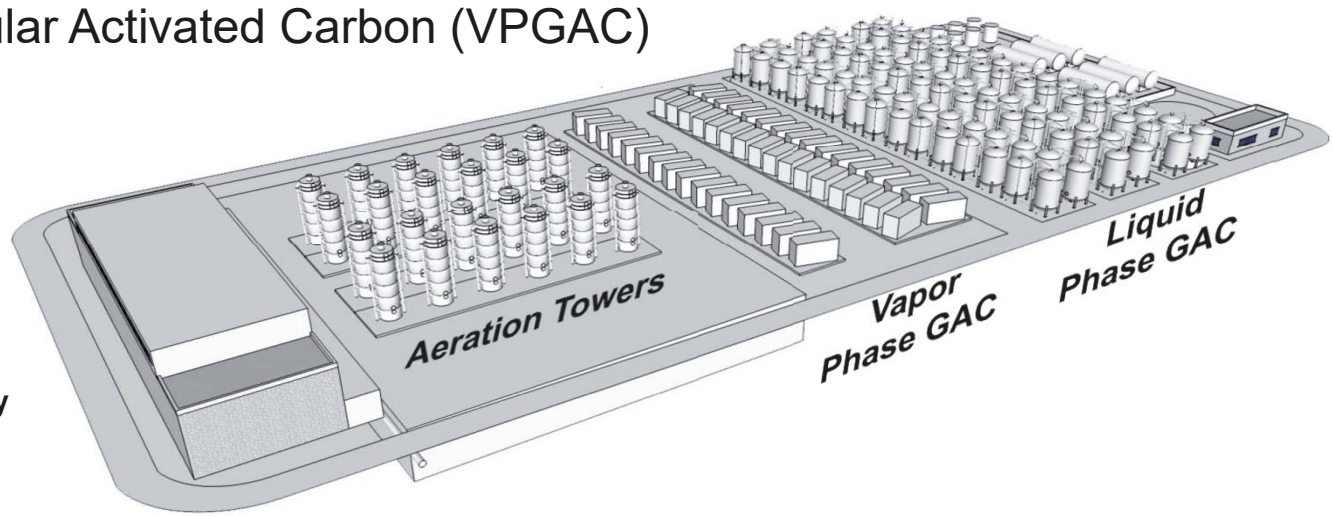
Type of Proposed Treatment: Aeration with LPGAC And VPGAC for Volatile Organic Compound (VOC) Treatment

Design/Build Timeframe: Late 2017 – June 2021

- Progressive Design-Build

Treatment Components

- Aeration Towers
- Liquid Phase Granular Activated Carbon (LPGAC)
- Vapor Phase Granular Activated Carbon (VPGAC)



*** Pending completion of Feasibility Study**

Tujunga Central & Wellhead Treatment Facilities*

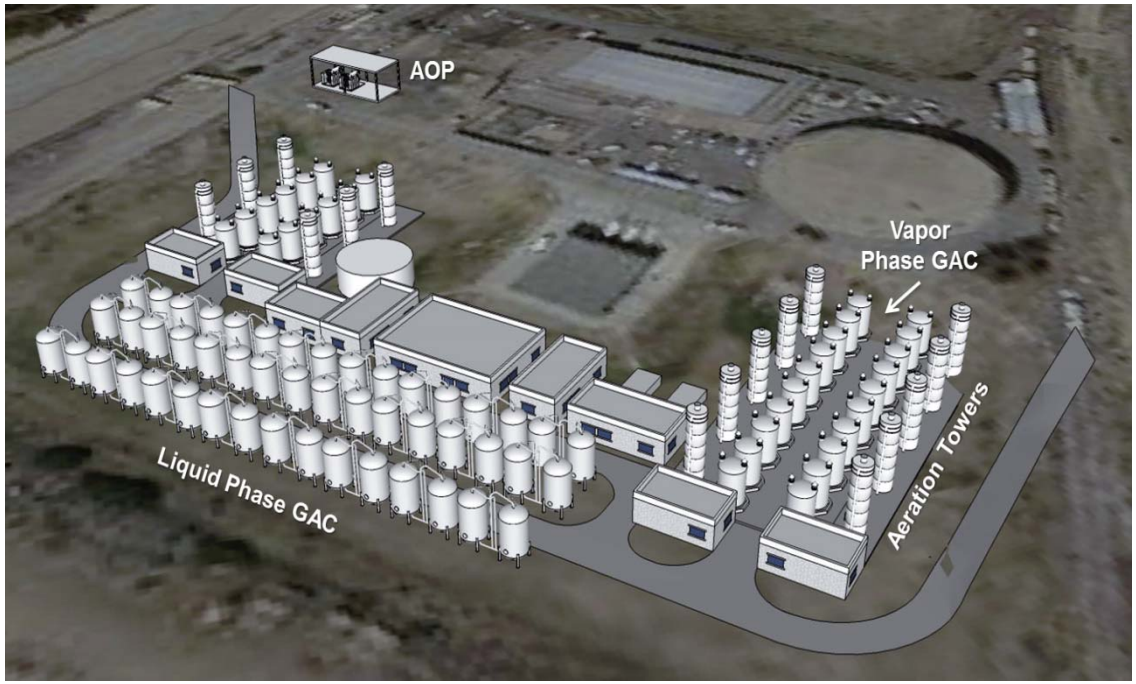
Type of Proposed Treatment: Aeration with LPGAC & VPGAC for VOC and AOP for 1,4-Dioxane

Design/Build Timeframe: Late 2017 – June 2021

- Progressive Design-Build

Treatment Components

- Aeration Towers
- LPGAC
- VPGAC
- AOP (UV/H_20_2)



*** Pending completion of Feasibility Study**

Preliminary Tujunga PCE Plume Modeling: Year 30 (Preferred Wells Pumped First)

Particle Tracking

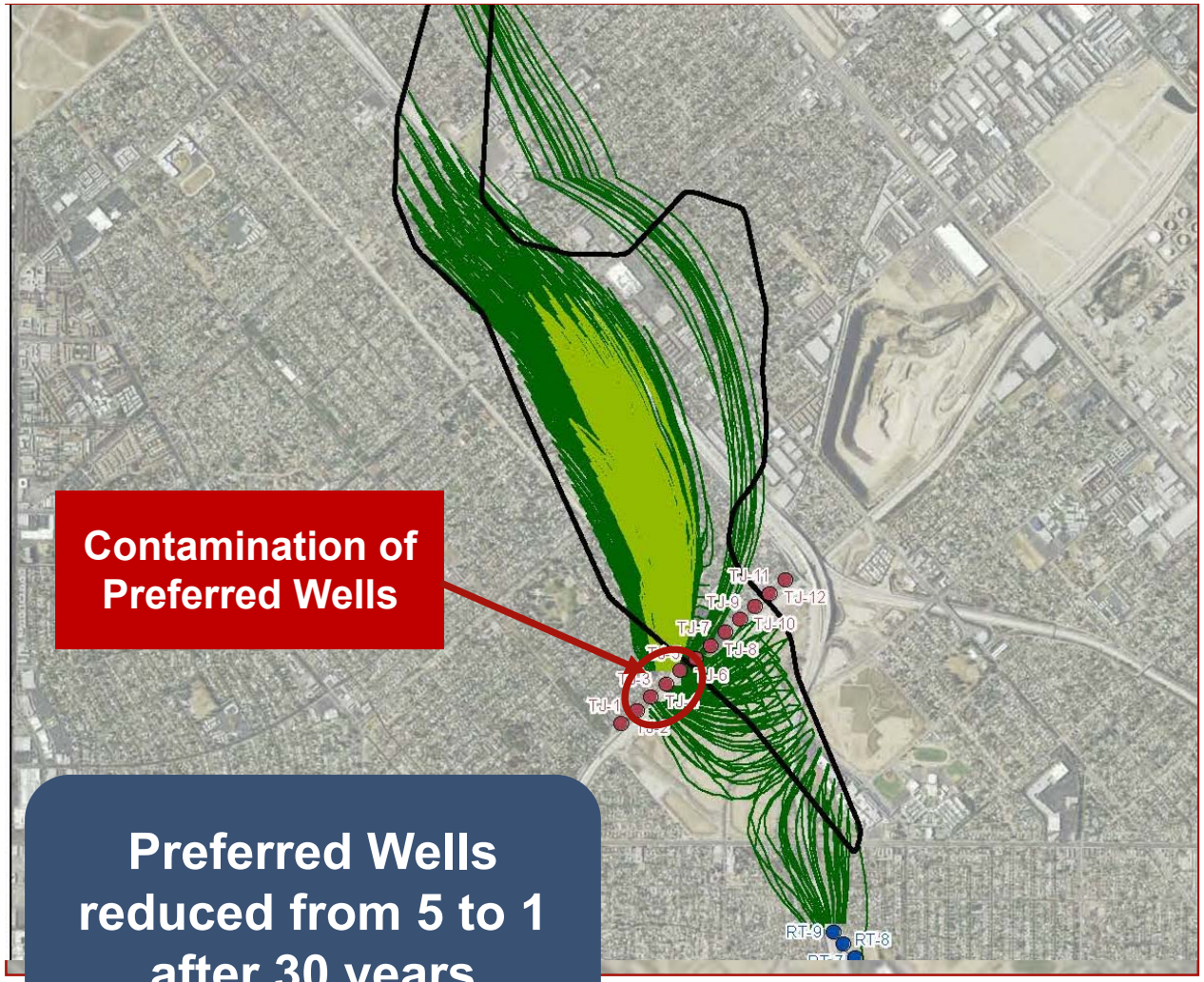
Legend

Particle Trace Starting Locations

- 5-50 µg/L
- 50-100 µg/L
- 100-500 µg/L

PCE Concentration Range

- 5 - 50µg/L
- 50 - 100µg/L
- 100 - 500µg/L
- PCE MCL Plume

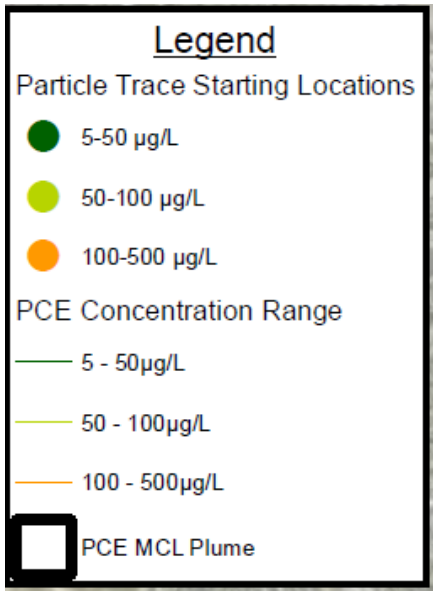


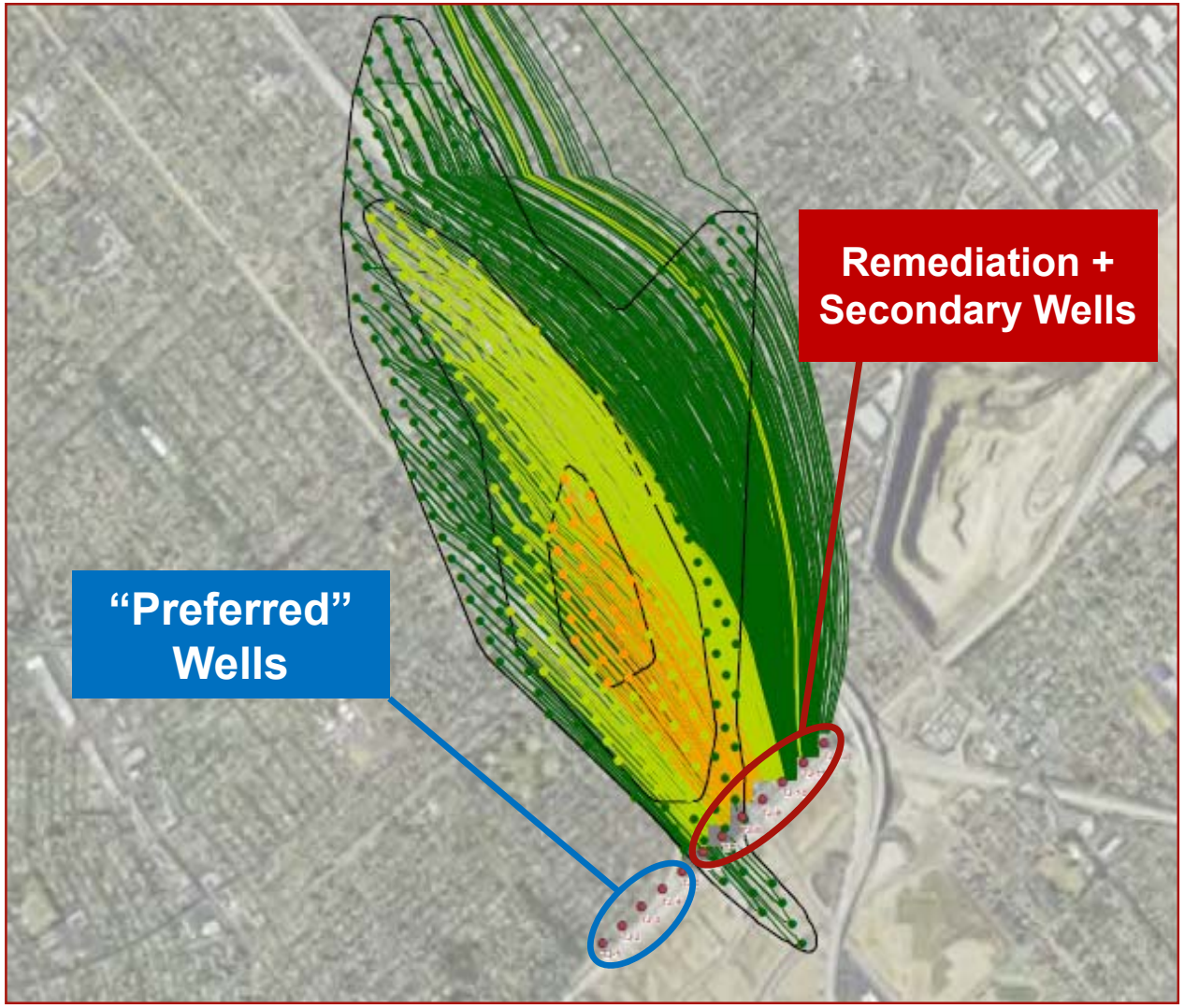
Contamination of Preferred Wells

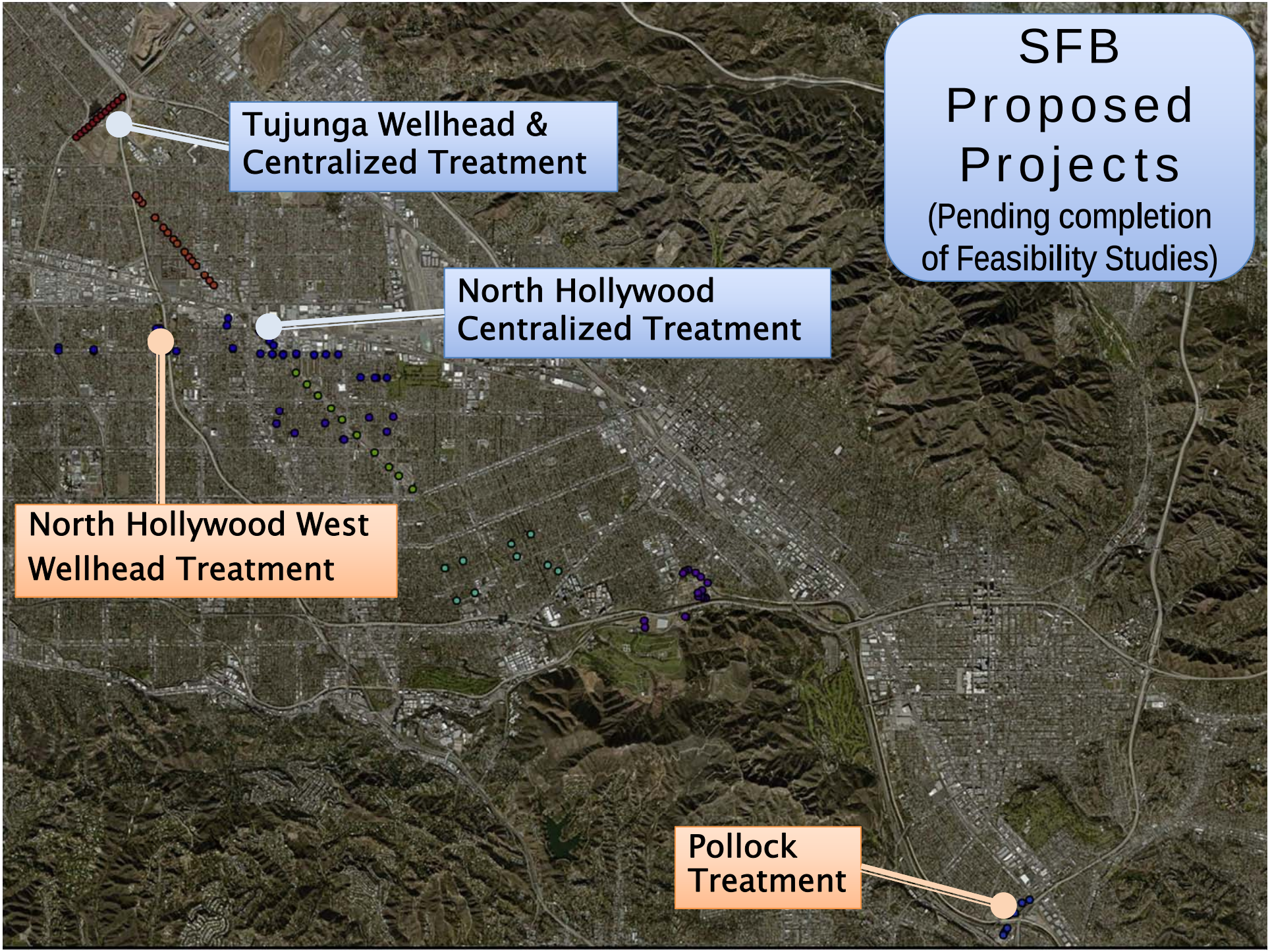
Preferred Wells reduced from 5 to 1 after 30 years

Preliminary Tujunga PCE Plume Modeling: Year 30 (Remediation Wells Pumped First)

Particle Tracking



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North Hollywood West Wellhead Treatment Facility*

Type of Proposed Treatment: 1,4-Dioxane Treatment using AOP

Construction: September 2017 – December 2019

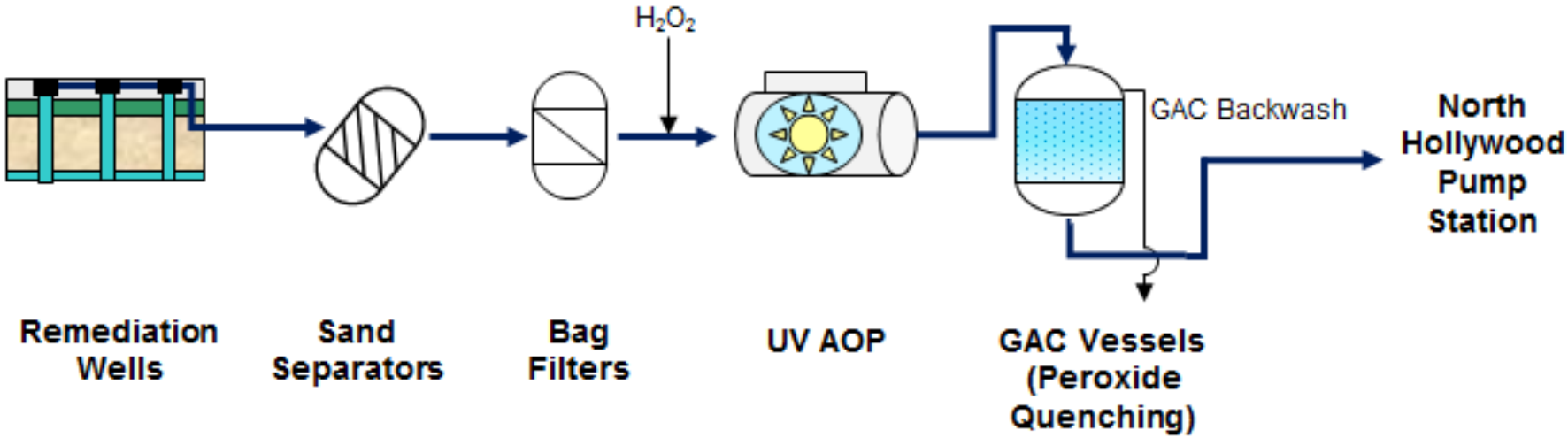
- LADWP's Power Construction & Maintenance group.

Treatment Components

- AOP (UV/H_20_2)
- LPGAC

* Pending completion of Feasibility Study

Proposed NHW Treatment*



* Pending completion of Feasibility Study

Pollock Wellhead Treatment Facility*

Type of Proposed Treatment:

1,4-Dioxane (and possible Chromium) Treatment using AOP

Construction: September 2018 – December 2020

- LADWP's Power Construction & Maintenance group.

Treatment Components

- AOP (UV/H_20_2)
- LPGAC
- Potential Chromium Treatment

* Pending completion of Feasibility Study

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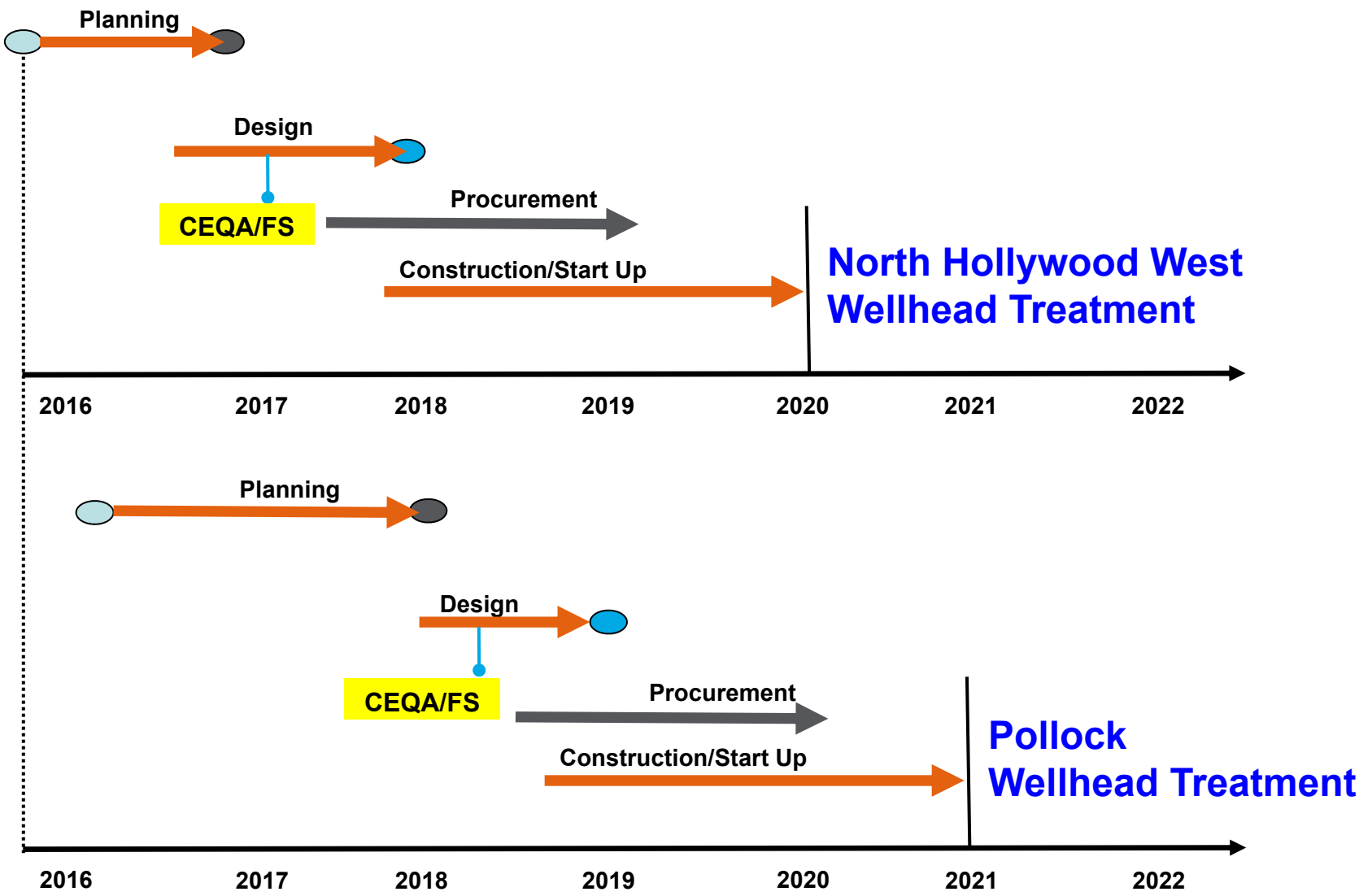
Funding Sources

Preliminary Capital Cost $635M (BEING REVISED)

- **Water Rates**
- **Responsible Parties**
- **Proposition 1**
  - *Round 1 final apps due Fall 2016*
  - *Grant program (50% local match)*
  - *Must be operational by June 2021*
- **Securitization**
- **Other State/Federal programs**

Program Schedule



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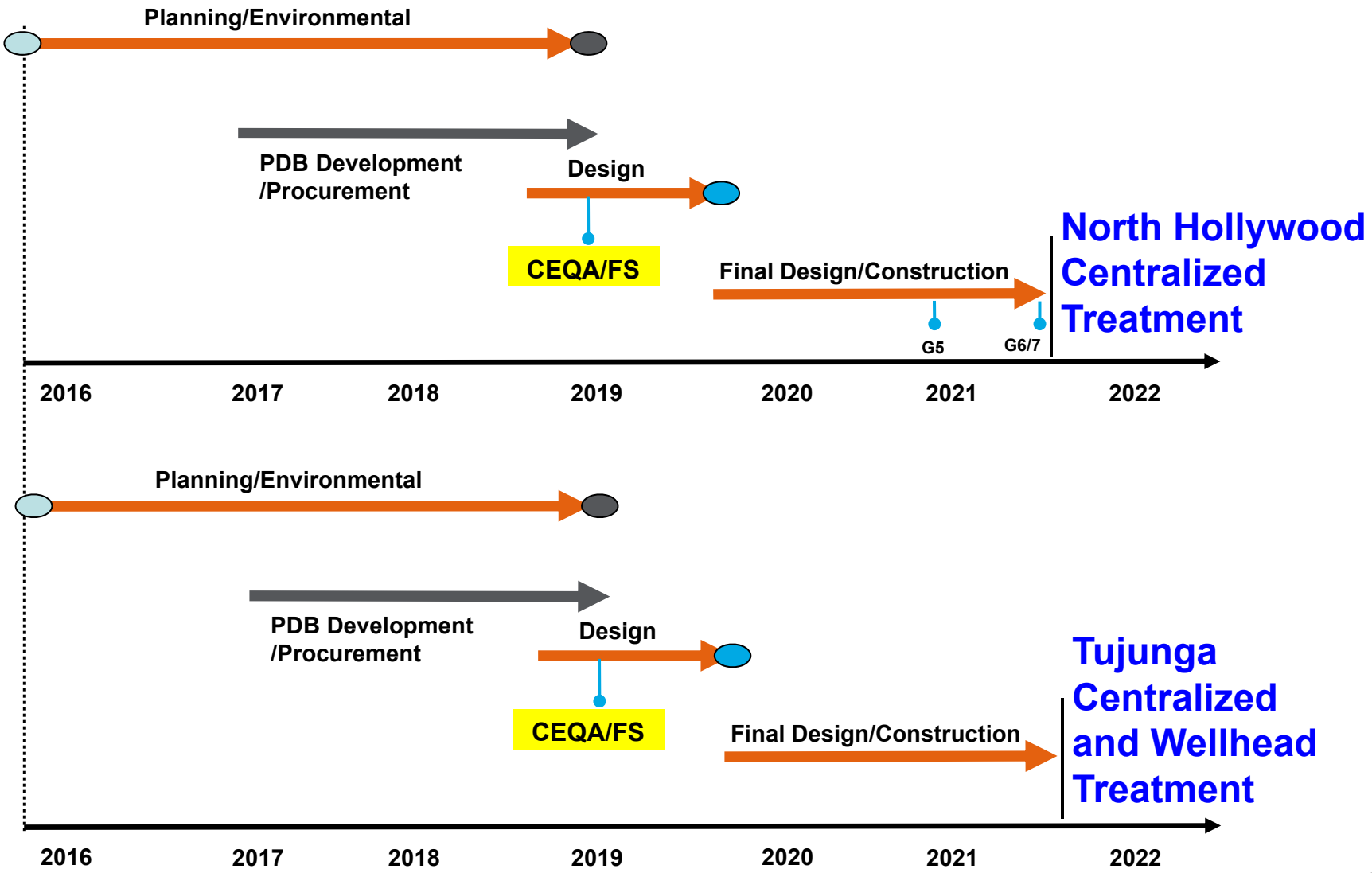

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Next Steps

- Complete Groundwater Modeling
- NCP & CEQA/NEPA
- Regulatory Permitting Process
- Complete Scope of Work Documents
- Begin Design

Questions

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