



# "A Challenge and Success Story" - San Fernando Basin Groundwater Remediation Program - Update

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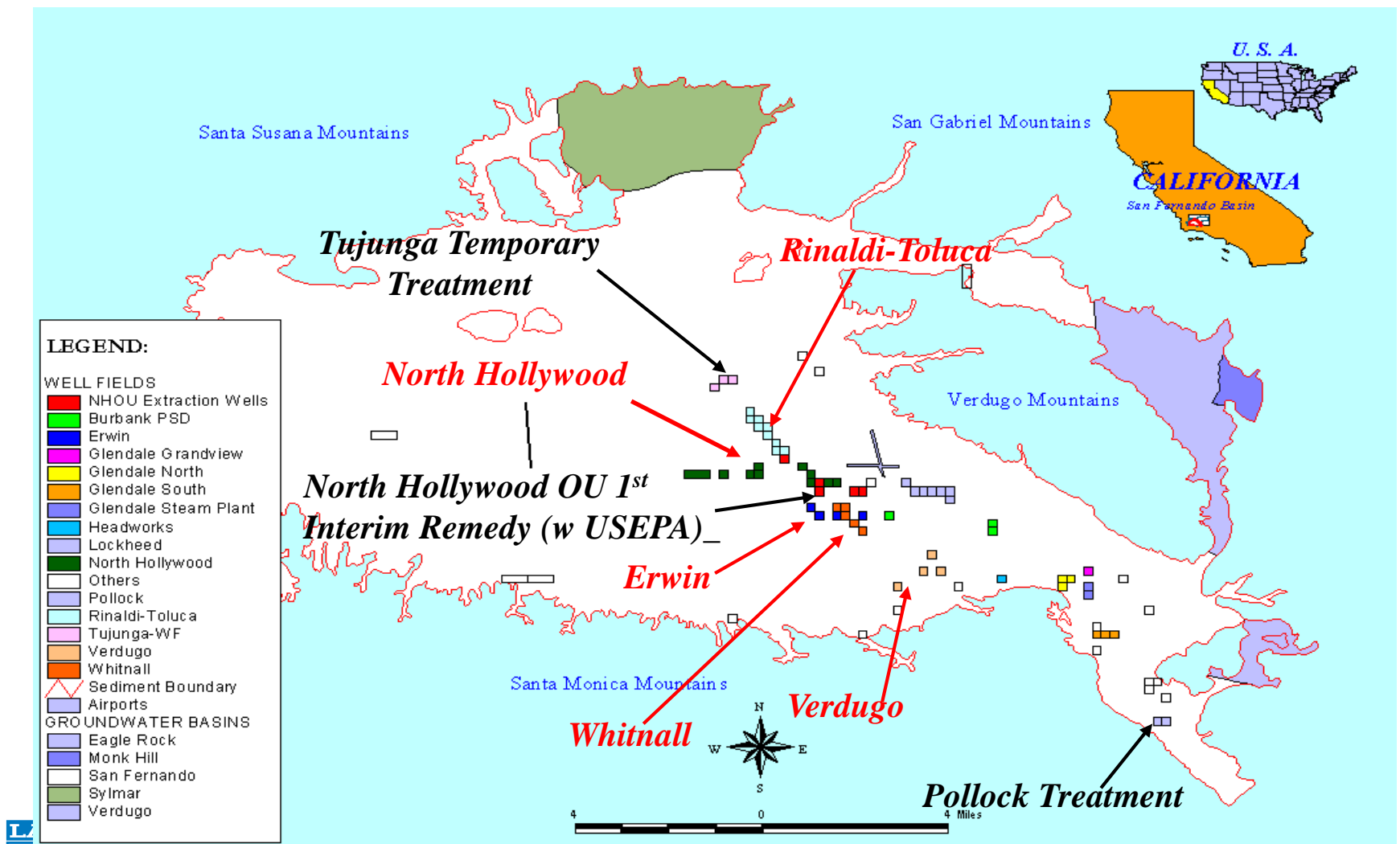
LARWQB Groundwater Workshop

October 11, 2018

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# Existing City of Los Angeles Well Fields and Treatment Facilities Within the San Fernando Basin



Map made by Ben Hawkins on 4/15/2014

# SAN FERNANDO GROUNDWATER BASIN PRODUCTION WELLS AND TRICHLOROETHYLENE (TCE) PLUME

## LADWP Wellfields

- |                        |  |
|------------------------|--|
| ■ Crystal Springs      | ■ Rinaldi-Toluca                               |
| ⊕ Erwin                | ■ Tujunga                                      |
| ■ Headworks            | ⊕ Verdugo                                      |
| ⊕ North Hollywood East | ● Whitnall                                     |
| ● North Hollywood West | ✖ Well designated as "Inactive" or "Destroyed" |
| ● Pollock              |  |

## Operable Unit (OU) Wellfields

- ★ Burbank OU
- ▲ Glendale OU North
- ▲ Glendale OU South
- NHOU Extraction Wells

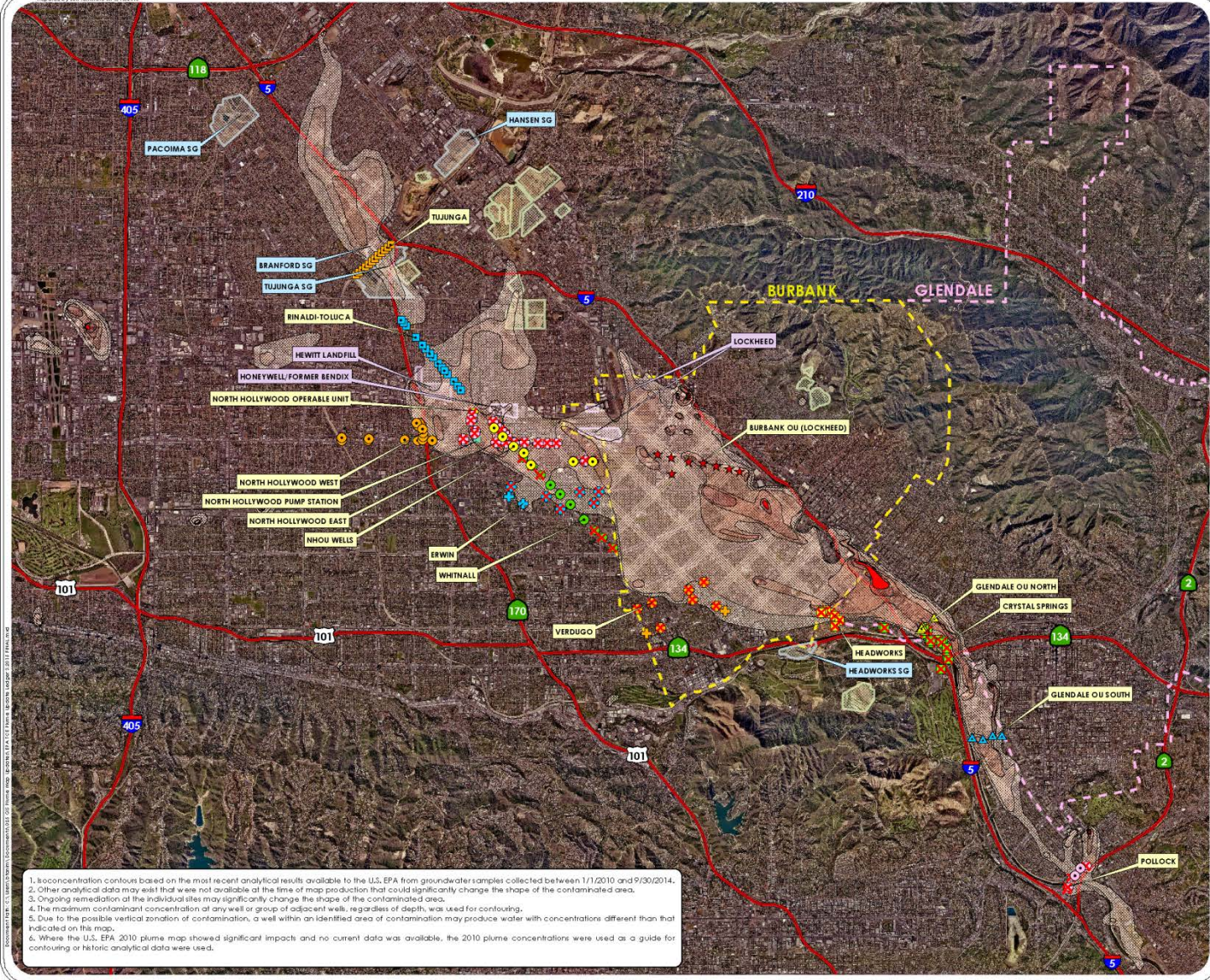
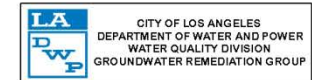
## Sites of Interest

- Landfills
- Spreading Grounds (SG)
- Burbank City Boundary
- Glendale City Boundary

## TCE Plume

Source: USEPA (2014)

- 0.5 - 5 µg/L (MCL)
- 5.01 - 50 µg/L
- 50.01 - 100 µg/L
- 100.01 - 500 µg/L
- 500.01 µg/L - 1,000 µg/L
- 1,000.01 µg/L - 10,000 µg/L
- >10,000 µg/L



1. A concentration contours based on the most recent analytical results available to the U.S. EPA from groundwater samples collected between 1/1/2010 and 9/30/2014.  
 2. Other analytical data may exist that were not available at the time of map production that could significantly change the shape of the contaminated area.  
 3. Ongoing remediation at the individual sites may significantly change the shape of the contaminated area.  
 4. The maximum contaminant concentration of any well or group of adjacent wells, regardless of depth, was used for contouring.  
 5. Due to the possible vertical zonation of contamination, a well within an identified area of contamination may produce water with concentrations different than that indicated on this map.  
 6. Where the U.S. EPA 2010 plume map showed significant impacts and no current data was available, the 2010 plume concentrations were used as a guide for contouring or historic analytical data were used.

# SAN FERNANDO GROUNDWATER BASIN PRODUCTION WELLS AND TETRACHLOROETHYLENE (PCE) PLUME

## LADWP Wellfields

- Crystal Springs
- Rinaldi-Toluca
- ⊕ Erwin
- Tujunga
- Headworks
- ⊕ Verdugo
- ⊕ North Hollywood East
- Whitnall
- North Hollywood West
- Pollock
- ✖ Well designated as "Inactive" or "Destroyed"

## Operable Unit (OU) Wellfields

- ★ Burbank OU
- ▲ Glendale OU North
- ▲ Glendale OU South
- NHOU Extraction Wells

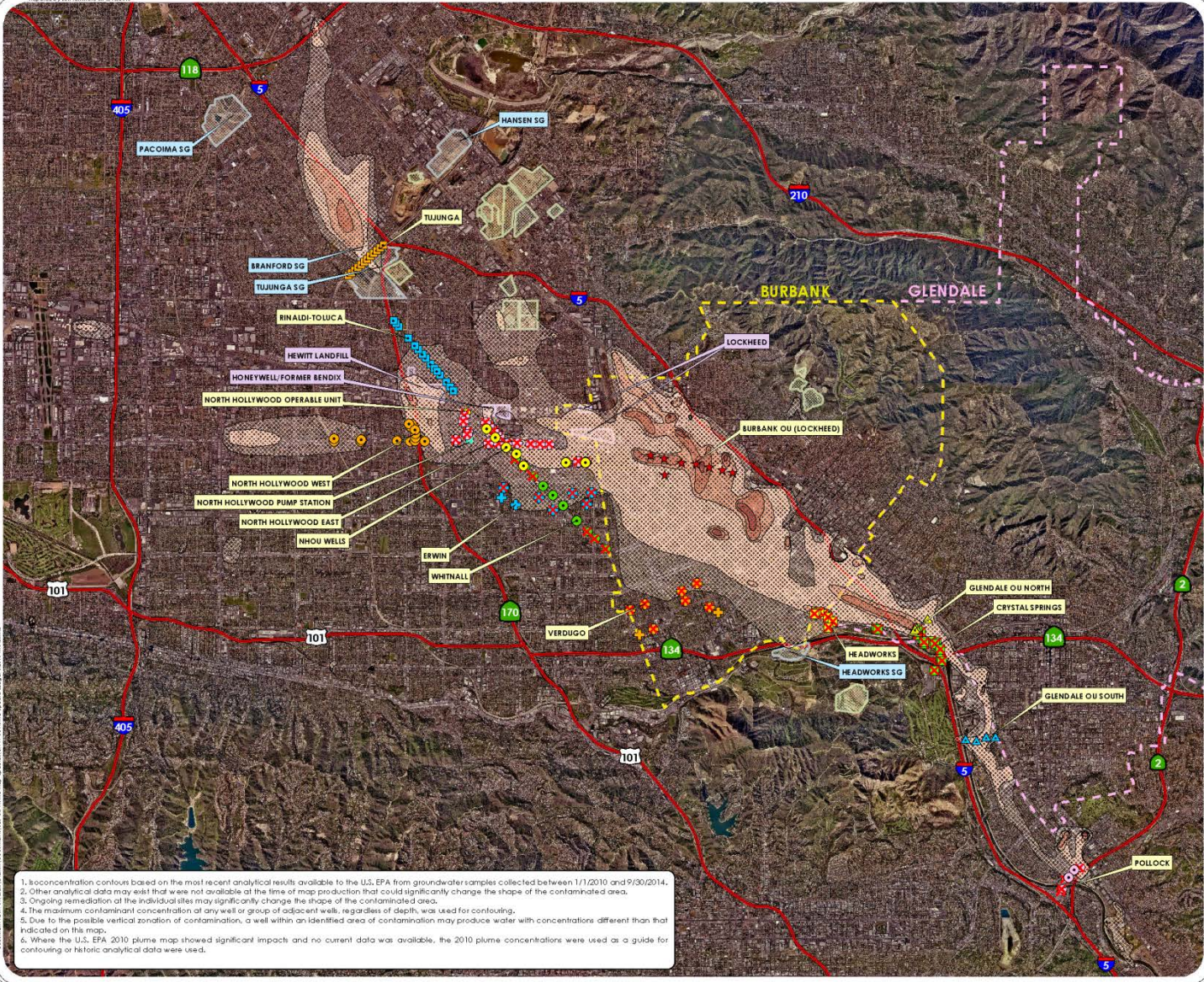
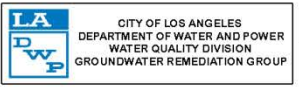
## Sites of Interest

- Landfills
- Spreading Grounds (SG)
- Burbank City Boundary
- Glendale City Boundary

## PCE Plume

Source: USEPA (2014)

- 0.5 - 5 µg/L (MCL)
- 5.01 - 50 µg/L
- 50.01 - 100 µg/L
- 100.01 - 500 µg/L
- 500.01 - 1,000 µg/L
- >1,000 µg/L



1. Isoconcentration contours based on the most recent analytical results available to the U.S. EPA from groundwater samples collected between 1/1/2010 and 9/30/2014.
2. Other analytical data may exist that were not available at the time of map production that could significantly change the shape of the contaminated area.
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5. Due to the possible vertical zonation of contamination, a well within an identified area of contamination may produce water with concentrations different than that indicated on this map.
6. Where the U.S. EPA 2010 plume map showed significant impacts and no current data was available, the 2010 plume concentrations were used as a guide for contouring or historic analytical data were used.

# SAN FERNANDO GROUNDWATER BASIN PRODUCTION WELLS AND 1,4-DIOXANE PLUME

## LADWP Wellfields

- |                        |  |
|------------------------|--|
| ■ Crystal Springs      | ■ Rinaldi-Toluca                               |
| ⊕ Erwin                | ■ Tujunga                                      |
| ■ Headworks            | ⊕ Verdugo                                      |
| ⊕ North Hollywood East | ● Whitnall                                     |
| ● North Hollywood West | ✗ Well designated as "Inactive" or "Destroyed" |
| ● Pollock              |  |

## Operable Unit (OU) Wellfields

- ★ Burbank OU
- ▲ Glendale OU North
- ▲ Glendale OU South
- NHOU Extraction Wells

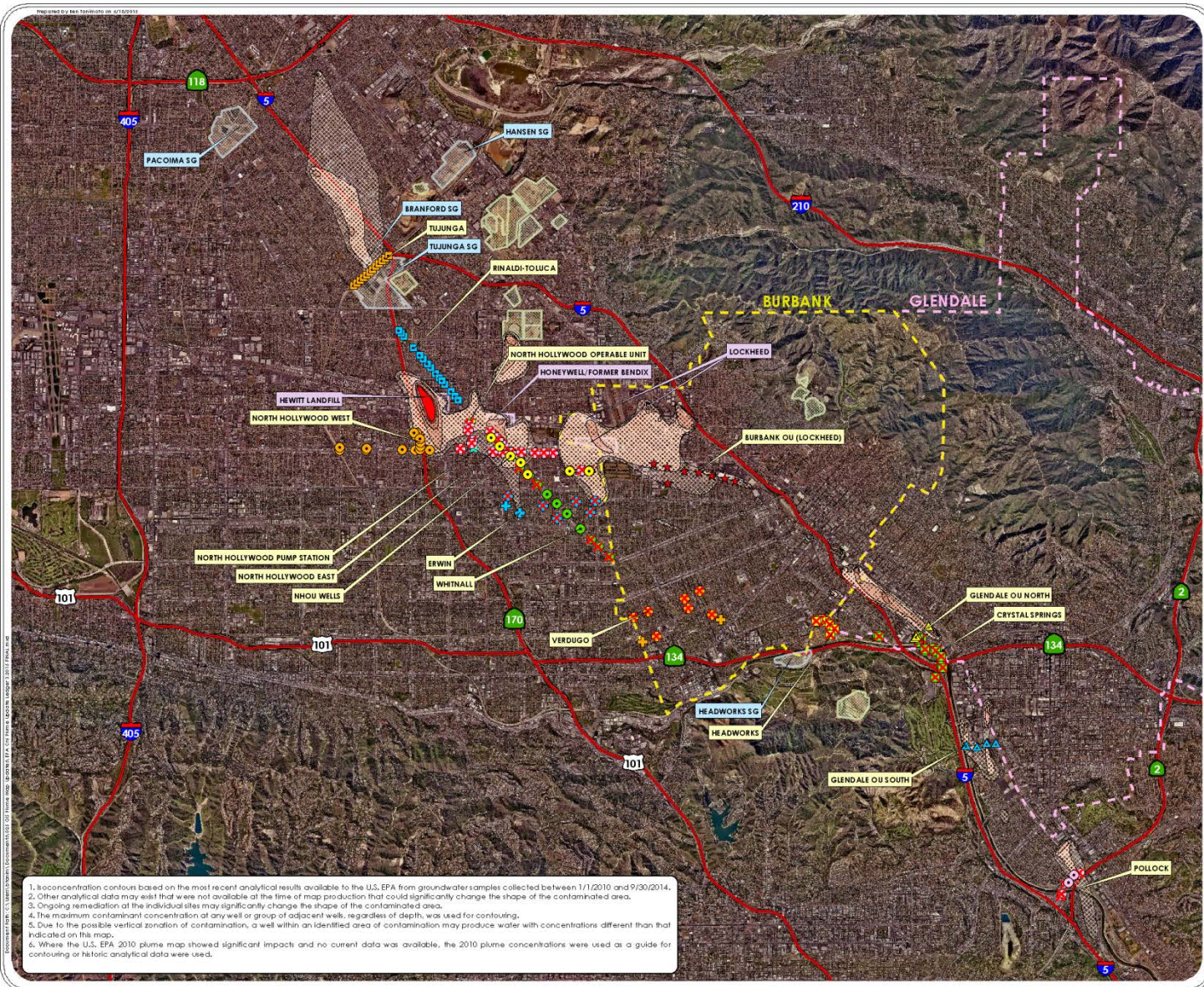
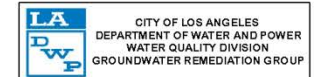
## Sites of Interest

- Landfills
- Spreading Grounds (SG)
- Burbank City Boundary
- Glendale City Boundary

## 1,4-Dioxane Plume

Source: USEPA (2014)

- 0.5 - 1 µg/L (NL)
- 1.01 - 3 µg/L
- 3.01 - 10 µg/L
- 10.01 - 50 µg/L
- 50.01 - 100 µg/L
- >100 µg/L



1. Concentration contours based on the most recent analytical results available to the U.S. EPA from groundwater samples collected between 1/1/2010 and 9/30/2014.  
 2. Other analytical data may exist that were not available at the time of map production that could significantly change the shape of the contaminated area.  
 3. Ongoing remediation at the individual sites may significantly change the shape of the contaminated area.  
 4. The maximum contaminant concentration of any well or group of adjacent wells, regardless of depth, was used for contouring.  
 5. Due to the possible vertical zonation of contamination, a well within an identified area of contamination may produce water with concentrations different than that indicated on this map.  
 6. Where the U.S. EPA 2010 plume map showed significant impacts and no current data was available, the 2010 plume concentrations were used as a guide for contouring or historic analytical data were used.

SOURCE: CITY OF LOS ANGELES DEPARTMENT OF WATER AND POWER WATER QUALITY DIVISION GROUNDWATER REMEDIATION GROUP 1/31/14

# SAN FERNANDO GROUNDWATER BASIN PRODUCTION WELLS AND HEXAVALENT CHROMIUM PLUME

## LADWP Wellfields

- |                        |  |
|------------------------|--|
| ■ Crystal Springs      | ■ Rinaldi-Toluca                               |
| ⊕ Erwin                | ■ Tujunga                                      |
| ■ Headworks            | ⊕ Verdugo                                      |
| ⊕ North Hollywood East | ● Whitnall                                     |
| ● North Hollywood West | ✖ Well designated as "Inactive" or "Destroyed" |
| ● Pollock              |  |

## Operable Unit (OU) Wellfields

- ★ Burbank OU
- ▲ Glendale OU North
- ▲ Glendale OU South
- NHOU Extraction Wells

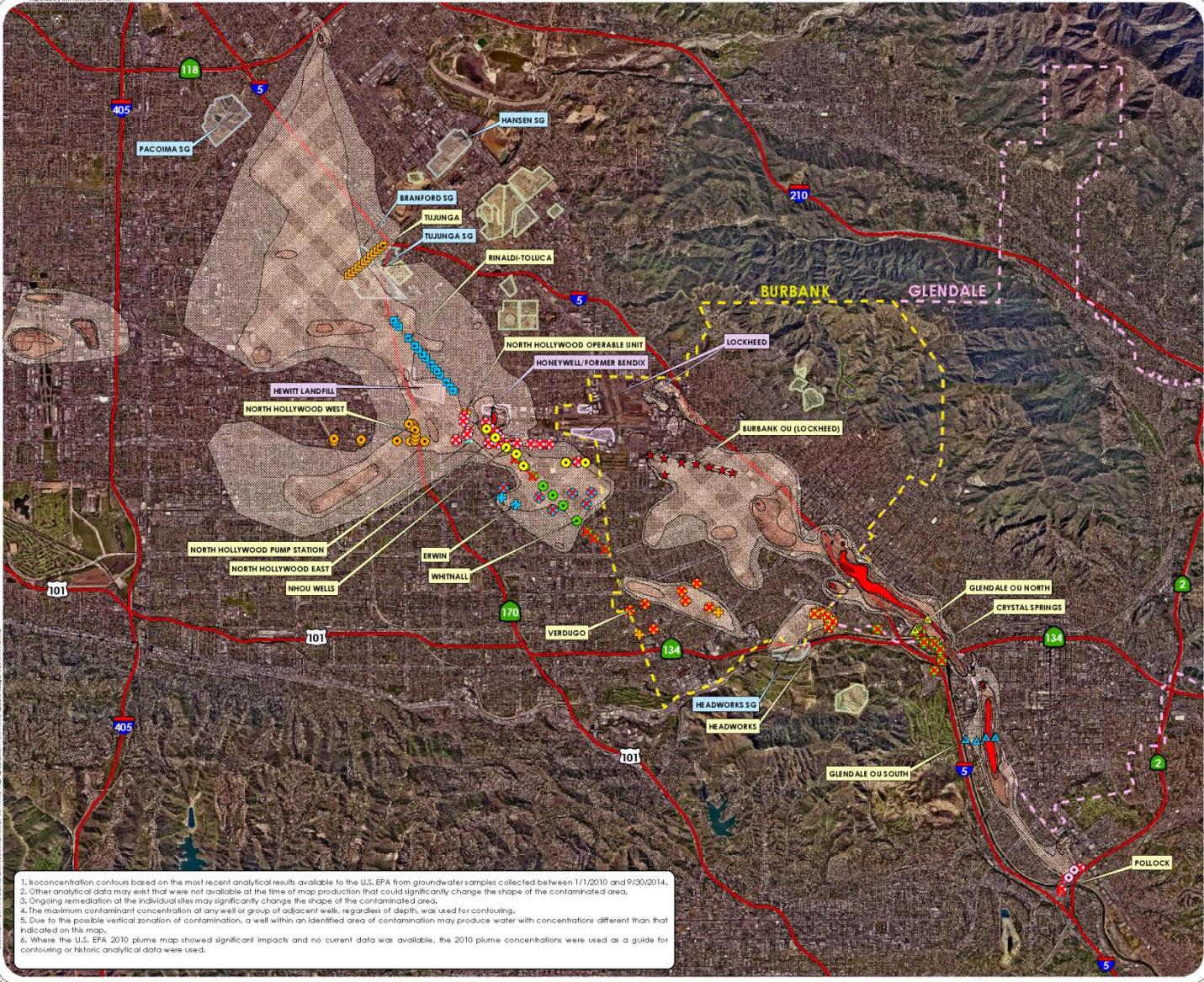
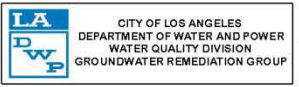
## Sites of Interest

- Landfills
- Spreading Grounds (SG)
- Burbank City Boundary
- Glendale City Boundary

## Hexavalent Chromium Plume

Source: USEPA (2014)

- 0.5 - 1 µg/L
- 1.01 - 5 µg/L
- 5.01 - 10 µg/L (MCL)
- 10.01 - 50 µg/L
- 50.01 - 100 µg/L
- 100.01 - 1,000 µg/L
- >1,000 µg/L




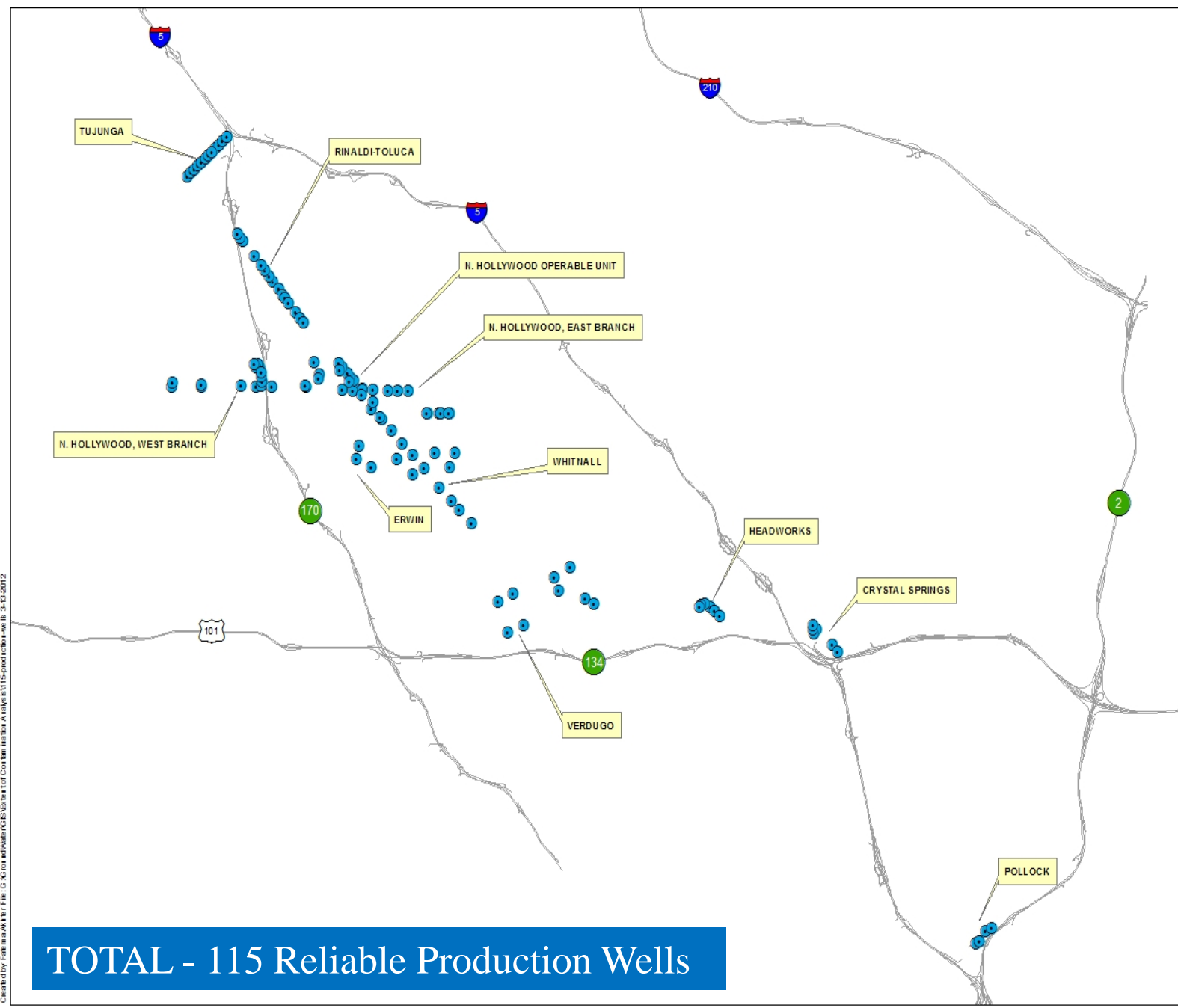
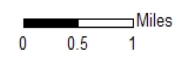
1. A concentration contour based on the most recent analytical results available to the U.S. EPA from groundwater samples collected between 1/1/2010 and 9/30/2014.  
 2. Other analytical data may exist that were not available at the time of map production that could significantly change the shape of the contaminated area.  
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 5. Due to the possible vertical zonation of contamination, a well within an identified area of contamination may produce water with concentrations different than that indicated on this map.  
 6. Where the U.S. EPA 2010 plume map showed significant impacts and no current data was available, the 2010 plume concentrations were used as a guide for contouring or historic analytical data were used.

San Fernando Basin  
Groundwater Contamination

115 Total Production Wells  
(LADWP)

Legend

 115 Production Wells

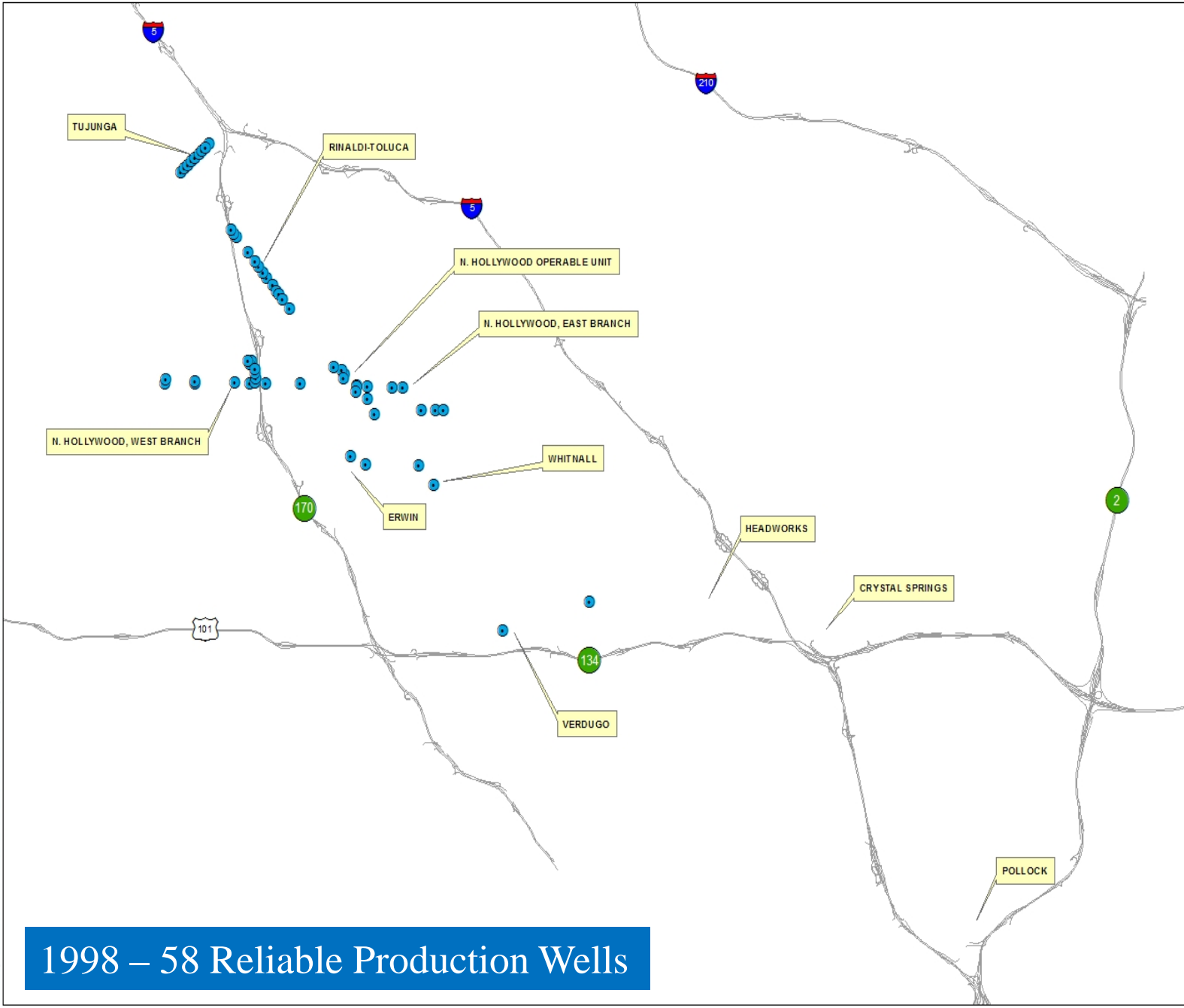


**TOTAL - 115 Reliable Production Wells**

Graphic by Fatima Alkhatib for File:G:\CityWide\GIS\Water\15-prod\15-prod.mxd, ver. 11/13/2012

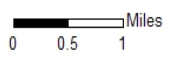
San Fernando Basin  
Groundwater Contamination

Effects of Groundwater  
Contamination on LADWP  
1998 Total No. of Reliable  
Production Wells



Legend

● 58 Reliable Production Wells



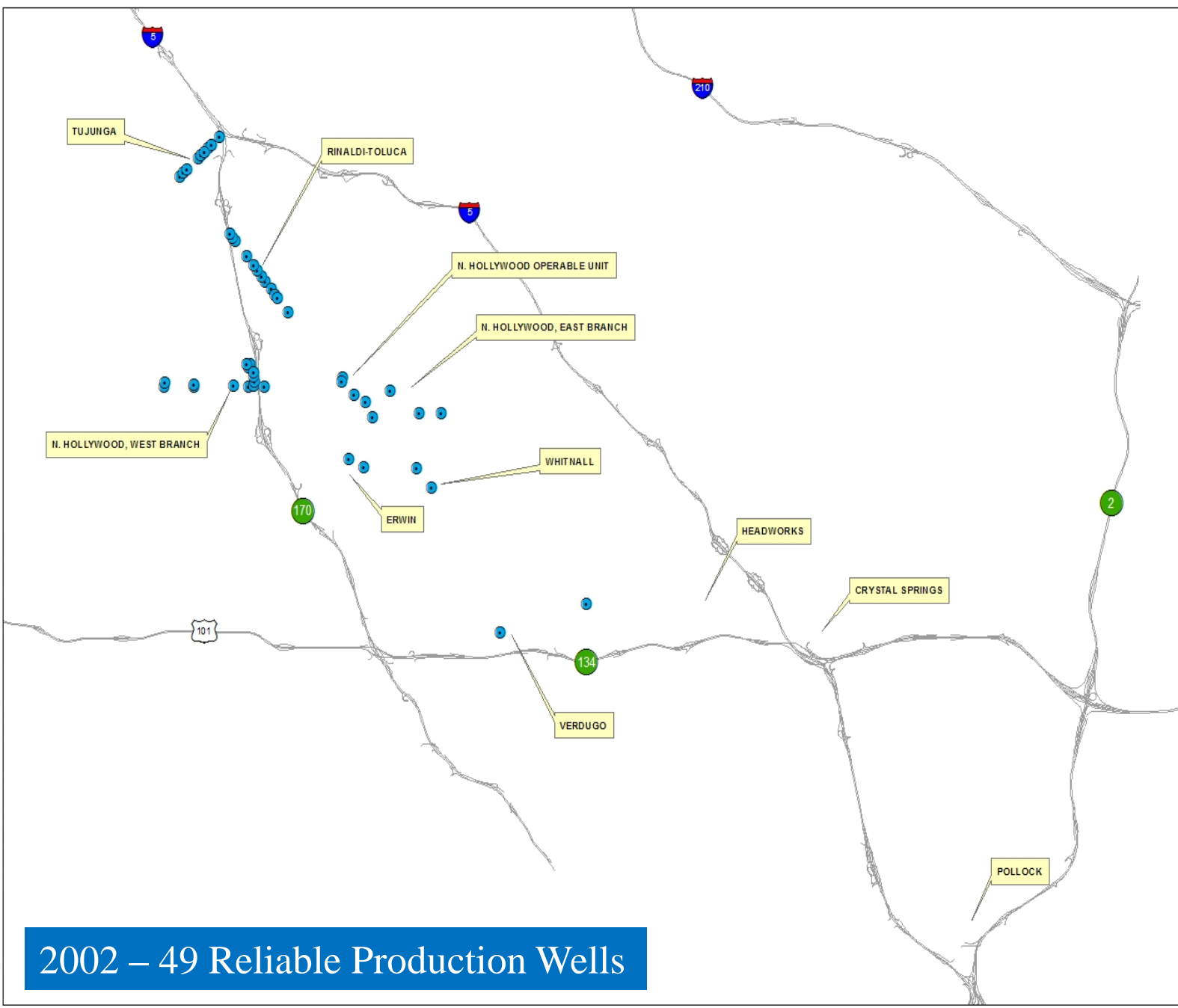
1998 – 58 Reliable Production Wells

Graphic by Fallma/AM for File: G:\Citywide\GIS\ES\ES\1 of Contam Harbor A.mysky\10866-1a.bbb-P.indd.ctb, Week: 3-13-2012



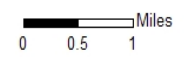
San Fernando Basin  
Groundwater Contamination

Effects of Groundwater  
Contamination on LADWP  
2002 Total No. of Reliable  
Production Wells



Legend

- 49 Reliable Production Wells



2002 – 49 Reliable Production Wells



Graphic by Fallma/AM for File: G:\C:\m\w\w\w\G\ES\water\1 of Contam\Basin A\m\p\2002\fr\lbbh-p\rd\ctb\wells\_3-13-2012



# LADWP Remediation Program

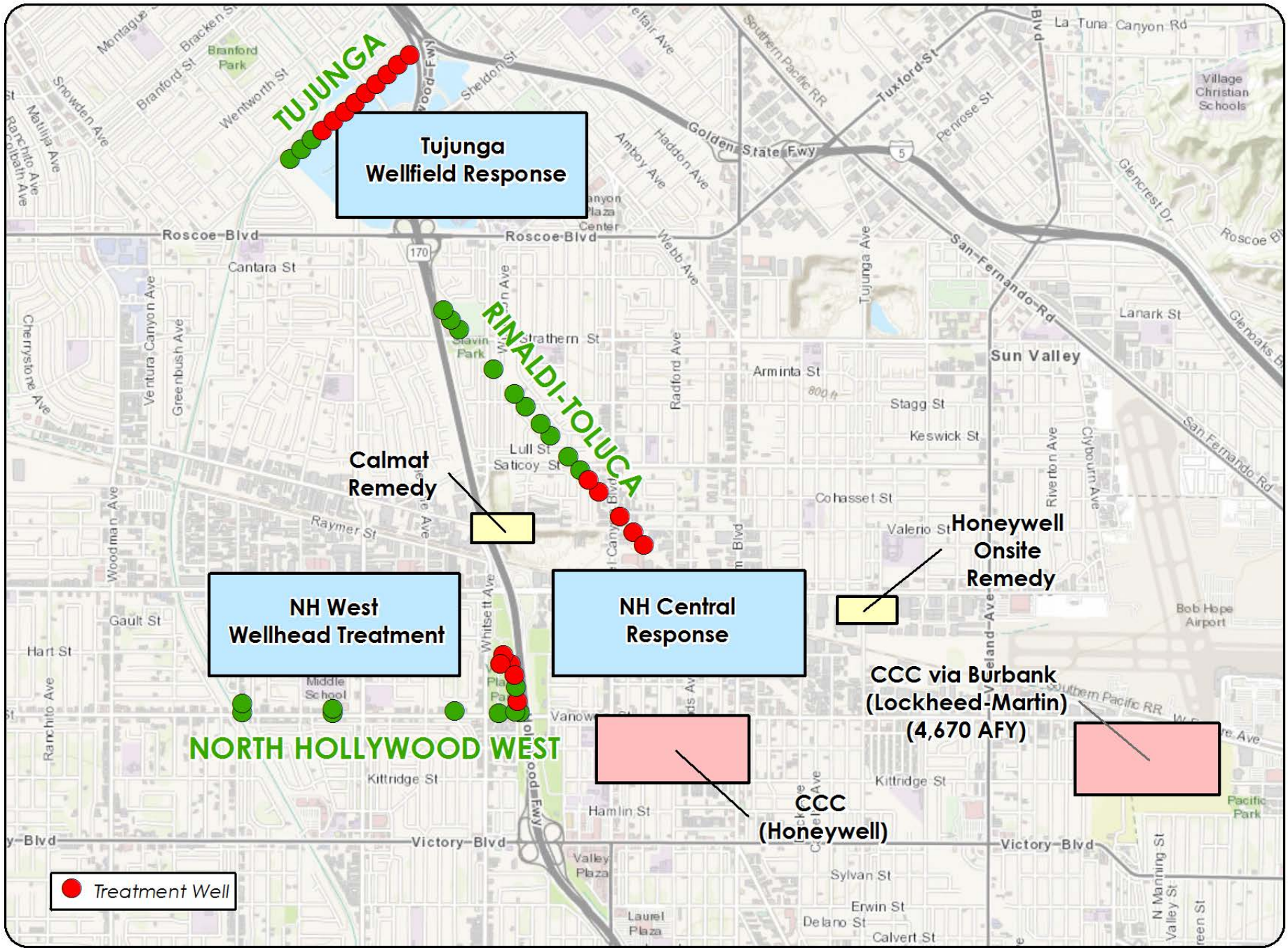
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*The overall purpose of the San Fernando Groundwater Basin Remediation Program is the protection of human health and the environment and to restore and protect the full use of the San Fernando Groundwater Basin as a source of water consistent with LADWP's long-term water rights and historic groundwater use.*

# Remedial Action Objectives

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- ✓ Protect human health and the environment by reducing the potential for exposure to chemicals of concern (COCs) in groundwater at concentrations exceeding clean up goals
- ✓ Limit the migration of COCs in groundwater in the applicable Operable Unit (OU) at concentrations that prevent the beneficial use of the San Fernando Basin (SFB)
- ✓ Remove COCs from groundwater in the applicable OU to maintain the beneficial uses of the SFB and restore the aquifer to the extent practicable
- ✓ Restore LADWP's capability to operate its existing well fields in each OU consistent with its historical and planned use in a flexible manner



# Prop 1 Funding Requests

| Potential Projects in Program           | Estimated Construction Completion Date | Estimated Cost | Prop 1 Request Amount                                  | Status of Award as of September 25, 2018                                   |
|---|--|----------------|--|--|
| North Hollywood West Wellhead Treatment | December 2019                          | \$92 M         | Implementation<br>\$46 M                               | <b>Awarded<br/>Implementation Grant<br/>\$46 M</b>                         |
| North Hollywood Central Response*       | June 2021                              | \$293 M        | Planning<br>\$2 M<br>Implementation (TBD)<br>≈ \$100 M | <b>Awarded Planning Grant<br/>\$2 M</b><br>Implementation Grant<br>Pending |
| Tujunga Central Response*               | June 2021                              | \$139 M        | Planning<br>\$5 M<br>Implementation (TBD)<br>≈ \$64 M  | <b>Awarded Planning Grant<br/>\$2 M</b><br>Implementation Grant<br>Pending |
| Pollock Response*                       | ≈ 2023                                 | \$49 M         | Planning<br>\$2 M<br>Implementation (TBD)<br>≈ \$22 M  | Pending Planning Grant<br>\$2 M<br>Implementation Grant<br>Pending         |
| <b>Total</b>                            |  | <b>\$573 M</b> | <b>\$241 M</b>   | <b>\$52 M</b>  |

\* Pending completion of public comment, review of public comment and selection of the Remedy and adoption of CEQA MND, as appropriate.

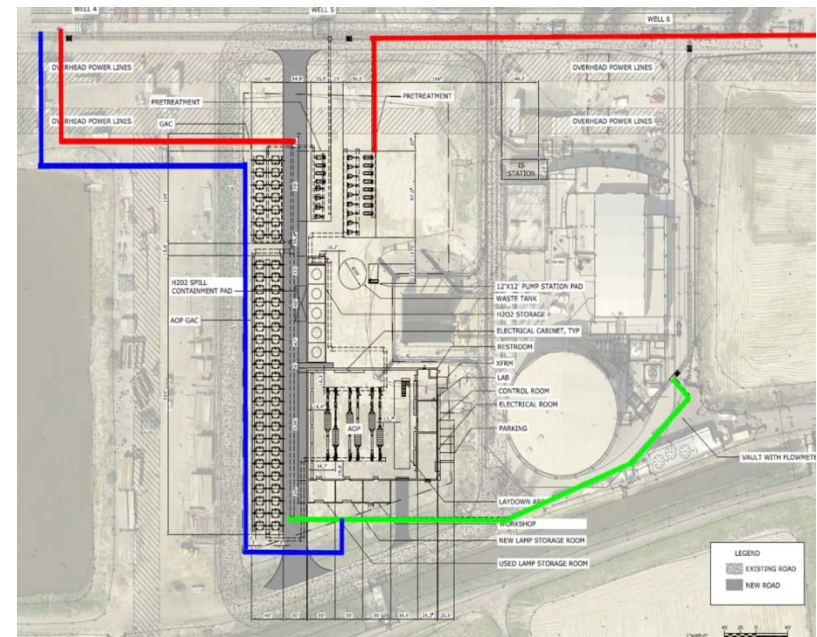
# North Hollywood West Wellhead Treatment Facility

- Type of Proposed Treatment:
  - 1,4-Dioxane Treatment using AOP w/LPGAC
- Construction: **STARTED – 30% Complete**
  - September 2017 – December 2019
  - LADWP Construction Forces
- Submitted Steps 1-4 of DDW's 97-005 Policy Permitting Process



# Tujunga Central Facility\*

- RI/FS & CEQA documents released on 7-12-2018
  - Comment period closed
- DDW 97-005 Policy Permitting Process
  - Steps 1 and 3 submitted
- Type of Proposed Treatment:
  - 1,4-Dioxane, TCE and PCE Treatment using AOP with LPGAC, LPGAC for CTET
- Design/Build Timeframe: 2018 – June 2021
  - Progressive Design-Build
- Treatment Components
  - Pretreatment
  - AOP (UV/H<sub>2</sub>O<sub>2</sub>)
  - LPGAC for quenching
  - LPGAC for CTET

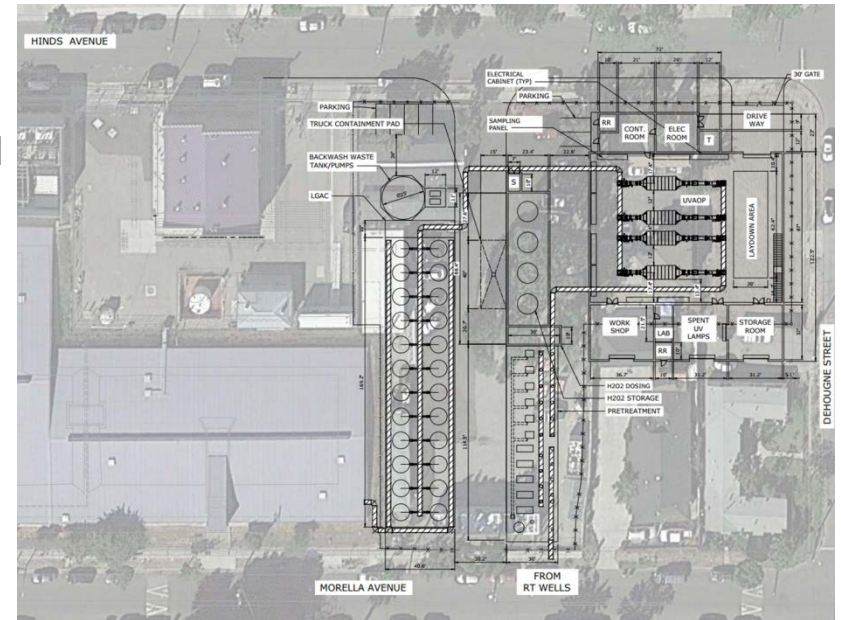


\* Pending completion of public comment, review of public comment and selection of the Remedy and adoption of CEQA MND, as appropriate.



# North Hollywood Central Facility\*

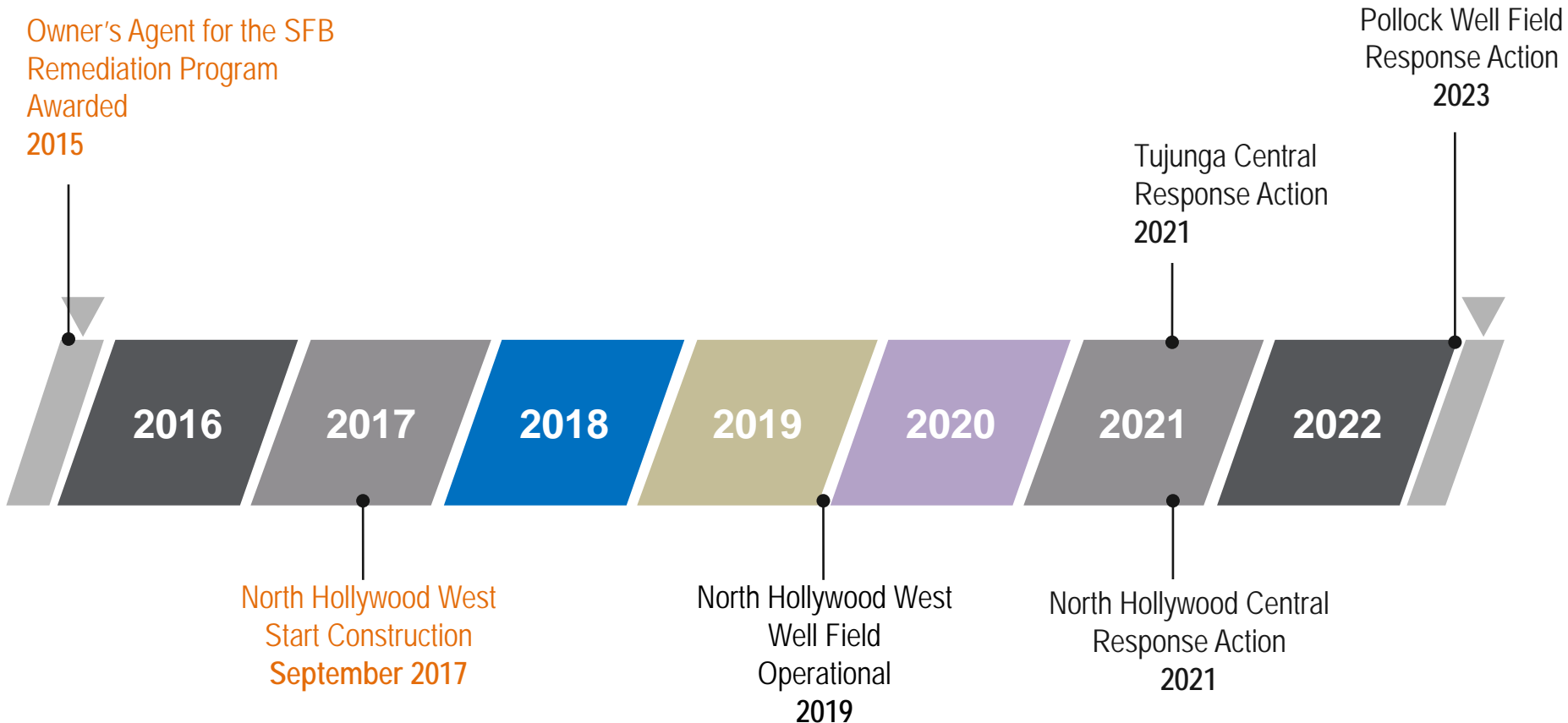
- RI/FS and CEQA documents released on 8-2-2018
  - Comment period closed
- DDW 97-005 Policy Permitting Process
  - Steps 1 and 3 submitted
- Type of Proposed Treatment:
  - 1,4-Dioxane, TCE and PCE Treatment using Advanced Oxidation Process (AOP) with LPGAC
- Design/Build Timeframe: 2018 – June 2021
  - Progressive Design-Build
- Treatment Components
  - Pretreatment
  - AOP (UV/H<sub>2</sub>O<sub>2</sub>)
  - Liquid Phase Granular Activated Carbon (LPGAC) for quenching



\* Pending completion of public comment, review of public comment and selection of the Remedy and adoption of CEQA MND, as appropriate.

# Current Remediation Efforts\*

Owner's Agent for the SFB  
Remediation Program  
Awarded  
2015



\*Pending completion of public comment, review of public comment and selection of the Remedy and adoption of CEQA MND, as appropriate for Tujunga, North Hollywood Central and Pollock Response Actions.

# For More Information

Website: [www.ladwp.com/remediation](http://www.ladwp.com/remediation)

LADWP > About Us > Water > Groundwater Remediation

## Water

- Past & Present
- Facts & Figures
- Sources of Supply
- Los Angeles Aqueduct
- Water Quality
- L.A.'s Drinking Water Quality Report
- Projects
- Sustainable Groundwater Management Act
- Groundwater Remediation**
- Contact Us
- Recycled Water
- Water Conservation
- Rates

### Groundwater Remediation

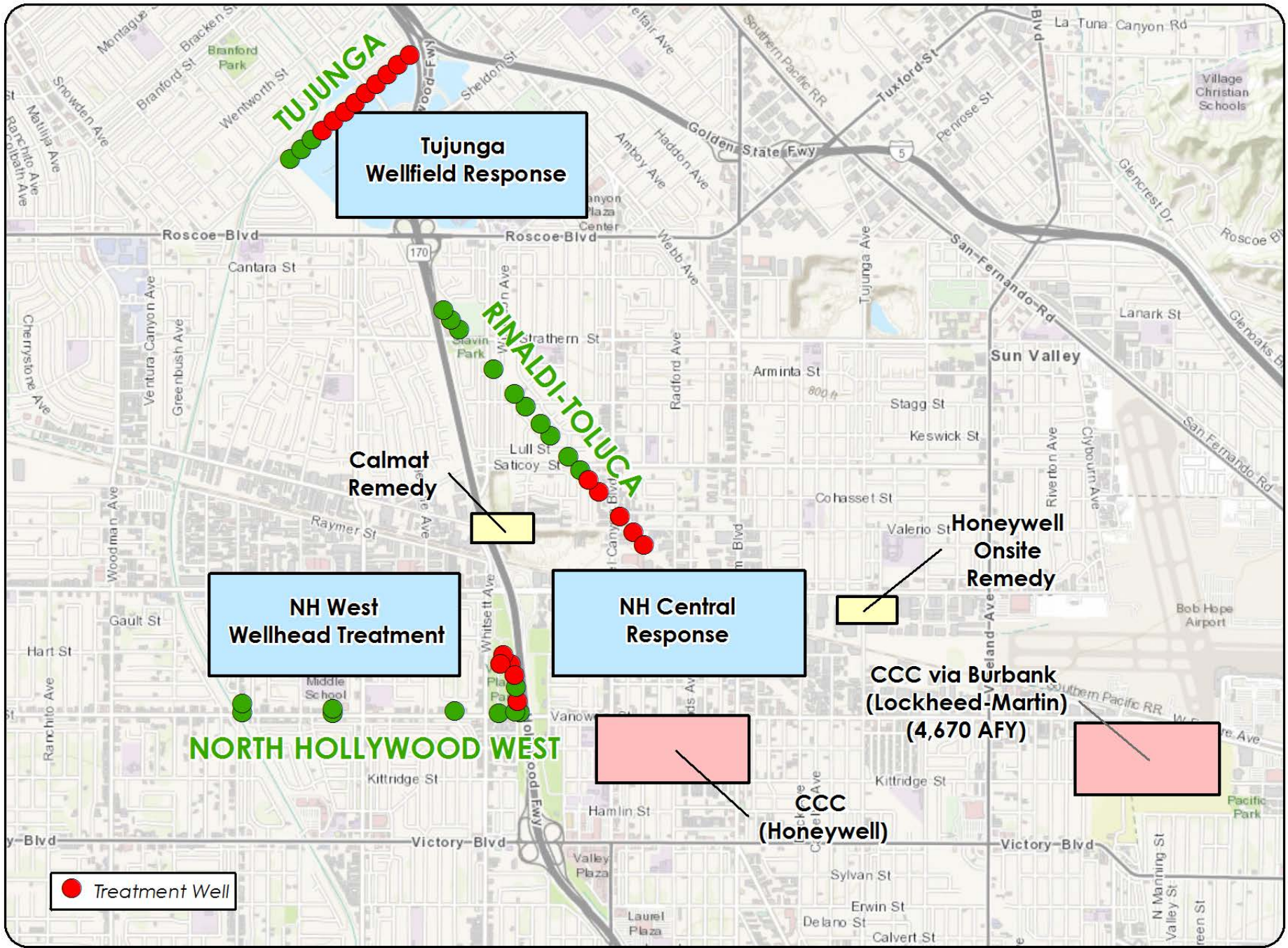
**Cleaning Up the San Fernando Groundwater Basin**  
Cleaning up the San Fernando (SF) Groundwater Basin is essential in recovering our ability to maximize the amount of water we put back in the ground. This is an important step in developing our local water supplies and reducing our reliance on imported water. In order to perform the necessary cleanup work, in early 2015, the LADWP completed the San Fernando Basin (SFB) Groundwater System Improvement Study (GSIS), which was a 6-year study characterizing the groundwater basin contamination in the SFB. Twenty-five new monitoring wells were drilled in support of the groundwater study. These new wells, along with a network of more than 70 existing wells, are being used to characterize the basin's groundwater quality and develop a complex of comprehensive groundwater remediation facilities for removing contamination from the city's major well fields in the SFB.

- San Fernando Groundwater Basin - Remediation Program Summary
- San Fernando Groundwater Basin Fact Sheet

For additional information regarding LADWP wells, please go to [GSIS Groundwater Monitoring Wells](#) →.

- + LADWP's San Fernando Groundwater Basin Response Actions
- + Cleanup and Remediation within the SF Groundwater Basin
- + Groundwater Activities
- + 2015 Remedial Investigation Update Overview
- + Links to Other LADWP Initiatives/Divisions

Site Feedback



# Questions

