

BP Pipeline/ARCO Site Update

Wrigley Association Monthly Meeting

Los Angeles Regional Water Quality Control Board

February 1, 2016

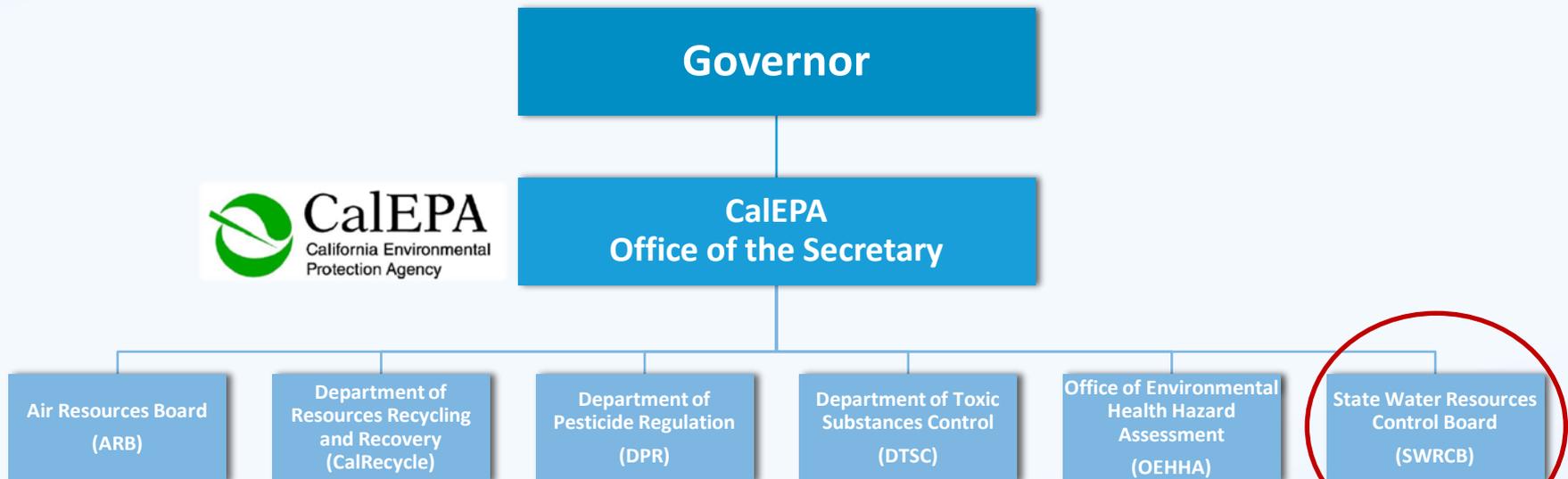
Rebecca Orr

Water Resource Control Engineer

Project Manager

Regional Water Quality Control Board

A state agency that is a part of the California Environmental Protection Agency (CalEPA):



Regional Water Quality Control Board

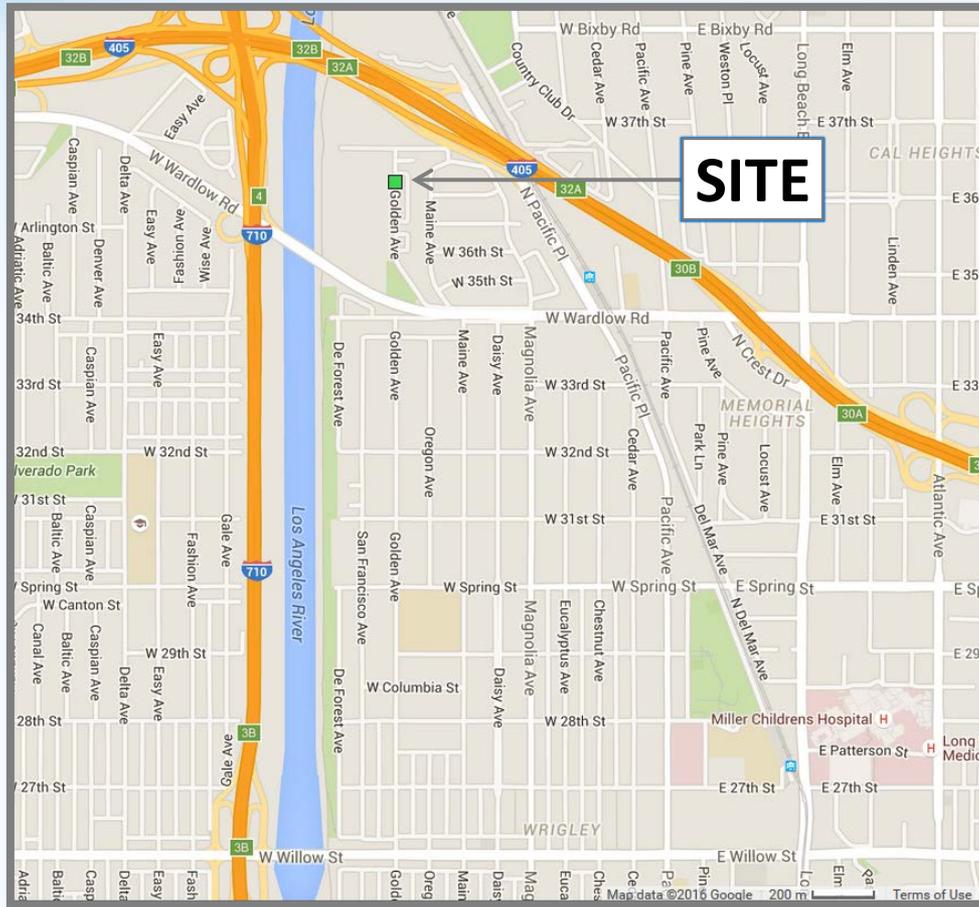
The goals of the Los Angeles Regional Water Quality Control Board's (Regional Board) site cleanup program are to protect and restore water resources, and to establish stringent goals to protect human health, water quality and the environment, today and into the future.

Presentation Topics

- ❖ Review of Site Background
- ❖ Update on Environmental Activities
- ❖ Current Status and Next Steps

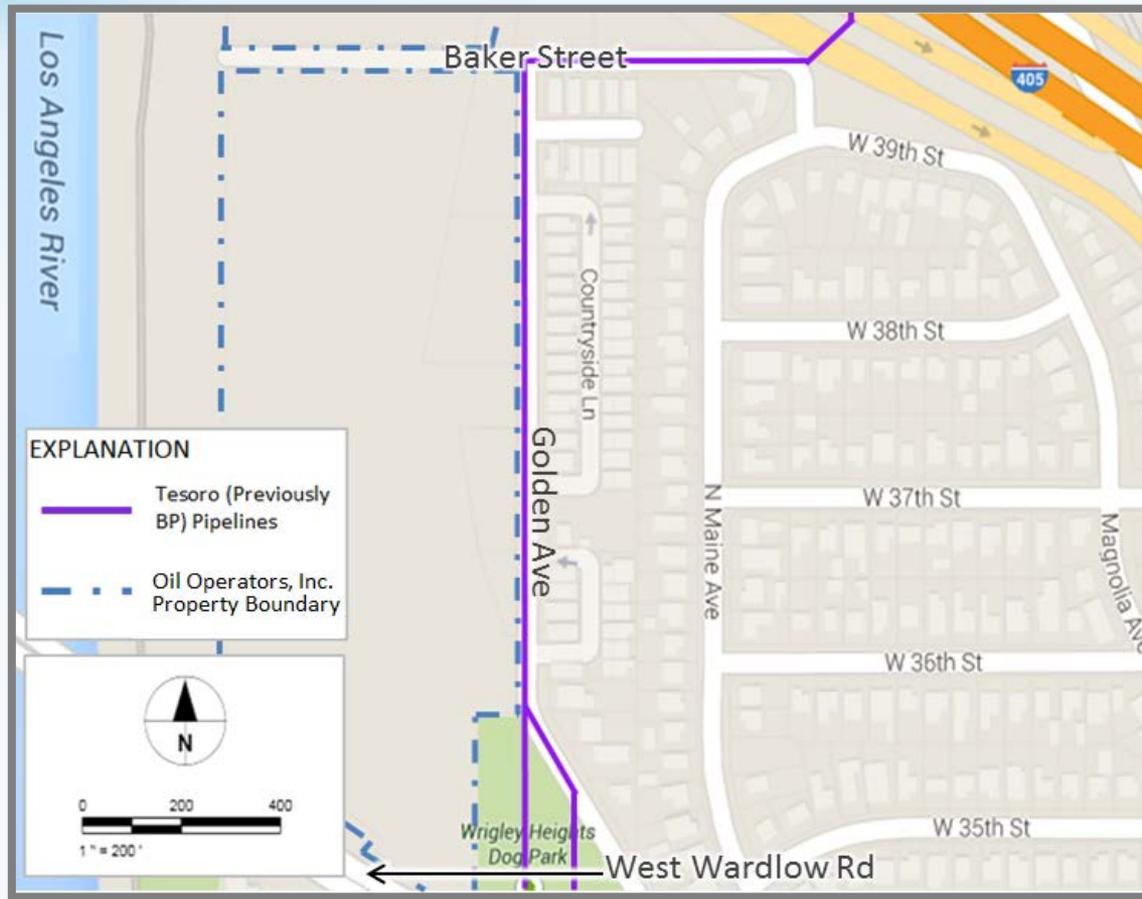
Review of Site Background

Site Location



The site is located at the pipelines along Golden Avenue between Baker Street and West Wardlow Road in Long Beach, California

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Source: AECOM

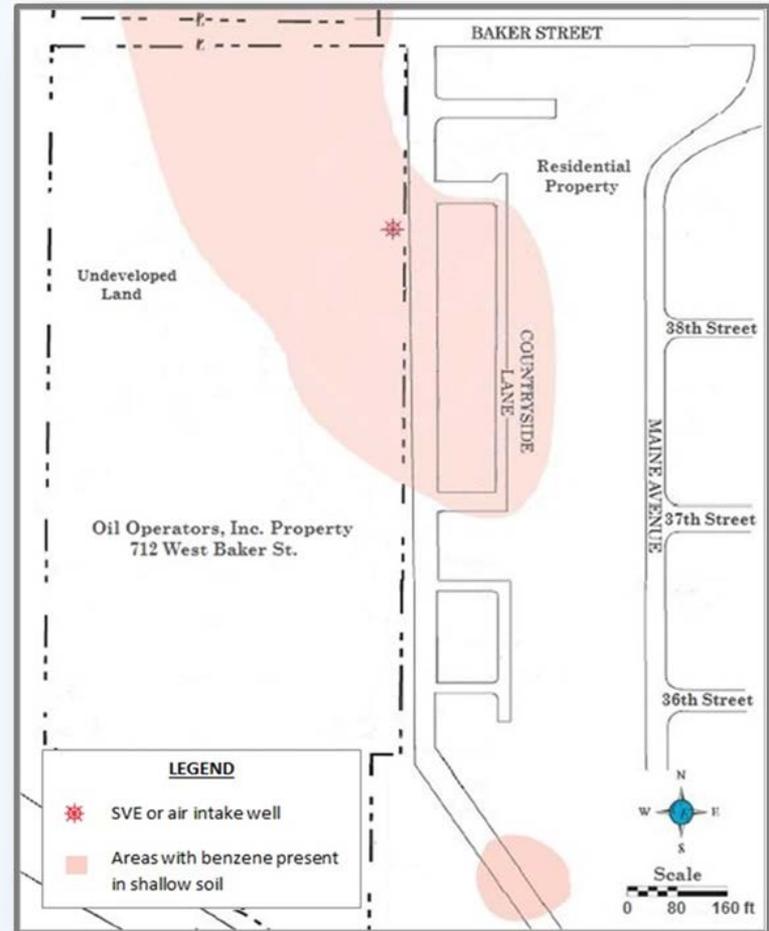
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Previous Investigation

2011 Soil Gas Survey:

Performed by Oil Operators, Inc. (OOI)

- Soil gas samples collected as far east as Maine Avenue
- Gasoline components detected in shallow soil vapors
- Survey findings presented no immediate threat to human health



Source: California Environmental

Previous Interim Remediation



September 2012 - September 2014:

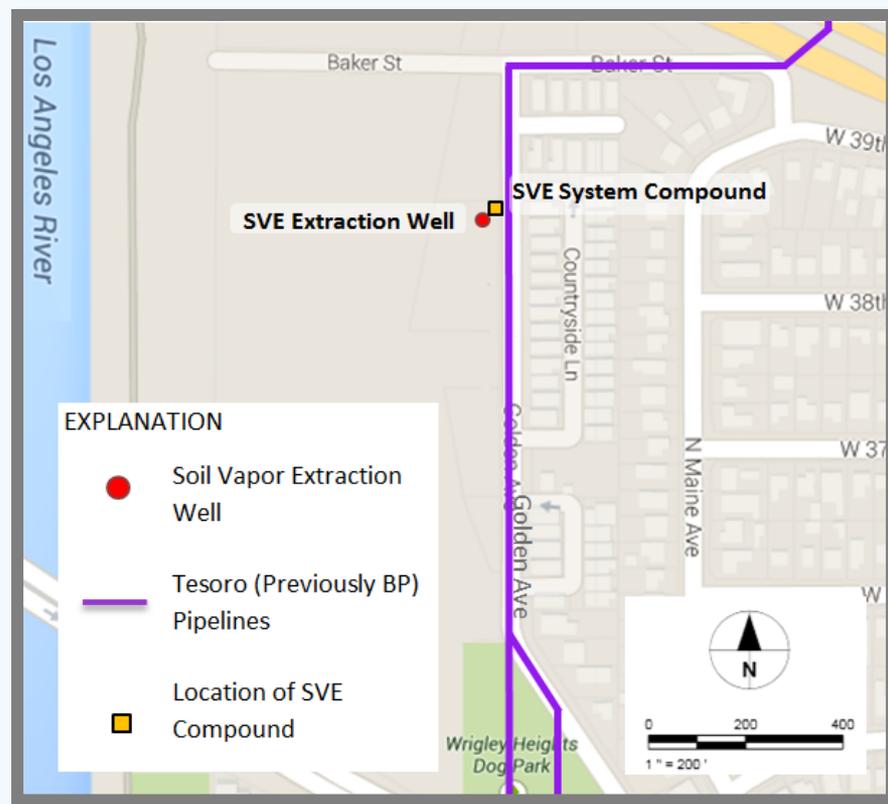
Oil Operators, Inc. operated a soil vapor extraction system to mitigate potential human health risks

Responsible Party

- Regional Board determination: Gasoline constituents present below the residential neighborhood originate from a gasoline release from a **BP Pipeline** beneath Golden Avenue.
- September 19, 2014: The Regional Board issued a Cleanup and Abatement Order to **West Coast Products LLC, ARCO, and Arco Terminal Services Corporation (collectively “BP”)**.
- June 1, 2013: **Tesoro Refining and Marketing Company LLC (Tesoro)** bought the pipelines and assumed responsibility for investigation and cleanup activities under the Order.

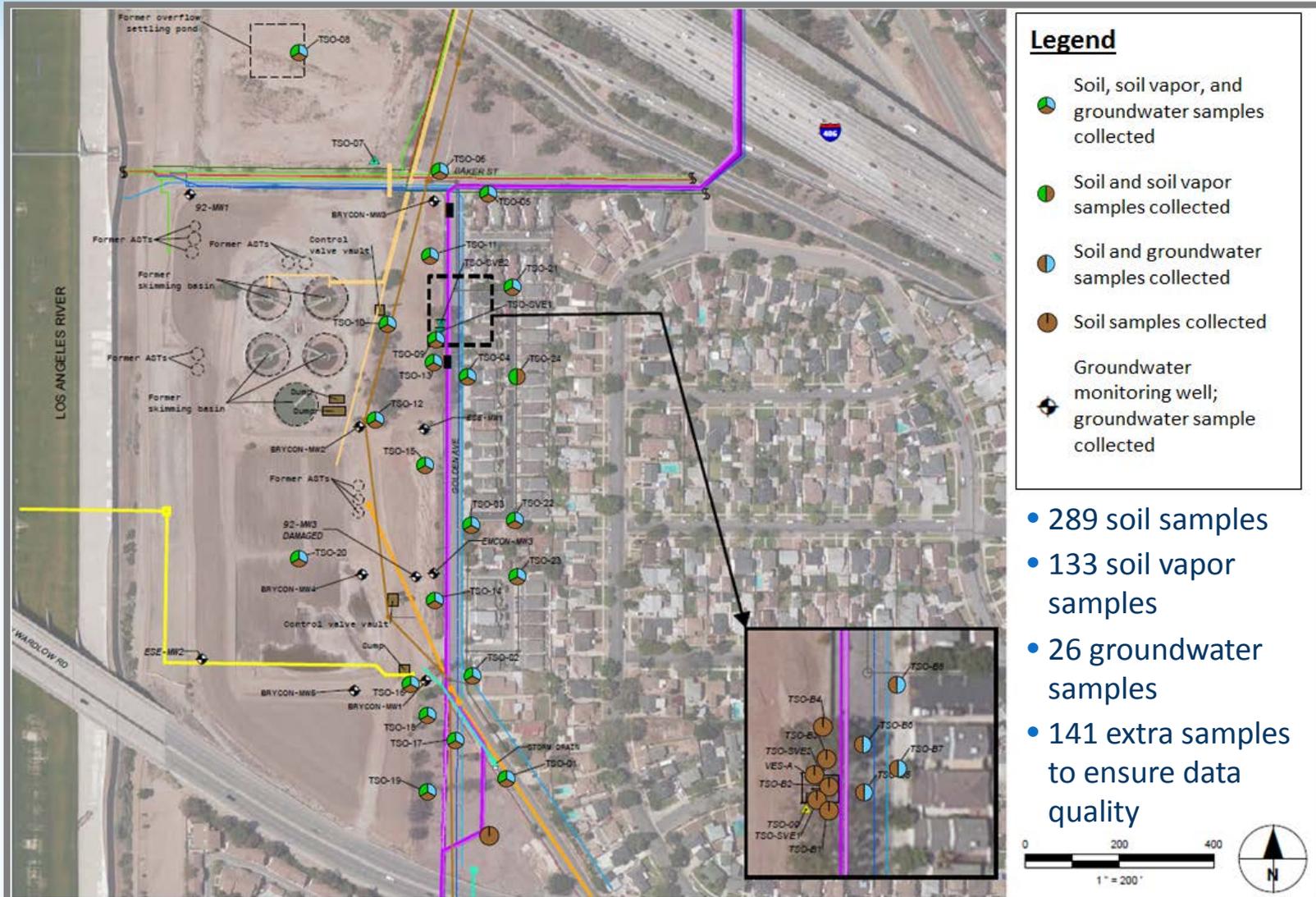
Soil Vapor Extraction

- April 2015: SVE system start-up
- Present:
 - Vapor extraction is ongoing
 - As of October 30, 2015, 16 pounds of benzene have been removed



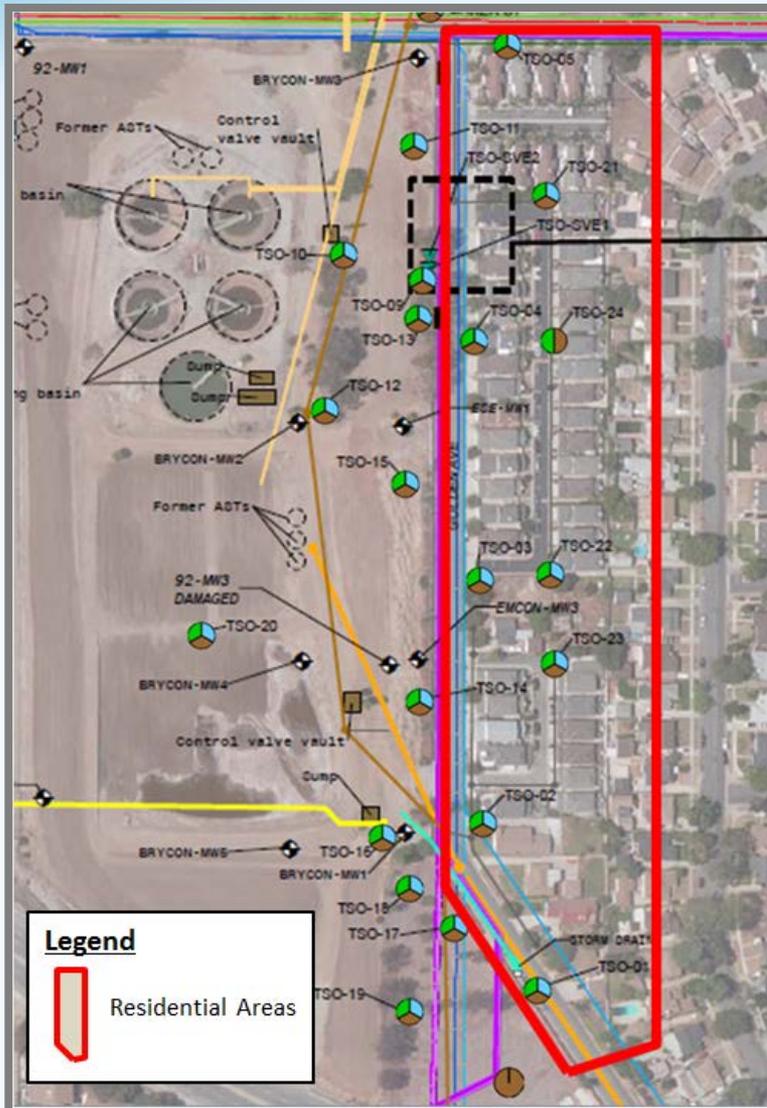
Update on Environmental Activities

Soil, Soil Vapor, and Groundwater Investigation



Source: AECOM, w/ LARWQCB revisions

Definitions



Source: AECOM, w/ LARWQCB revisions

“Residential Areas”: Includes data from TSO-01, TSO-02, TSO-03, TSO-04, TSO-05, TSO-21, TSO-22, TSO-23, TSO-24, and TSO-B7

“Parks”: Includes data from the Baker Street mini-park and the Wrigley Heights Dog Park: TSO-06, TSO-17, TSO-18, TSO-19, TSO-DP

Residential Screening Level:

- General screening tool
- The concentration below which there is no human health concern
- Detections at or above the residential screening level does not mean that there will be an adverse effect on human health. Rather, it means that the risk should be evaluated on a site-specific basis.

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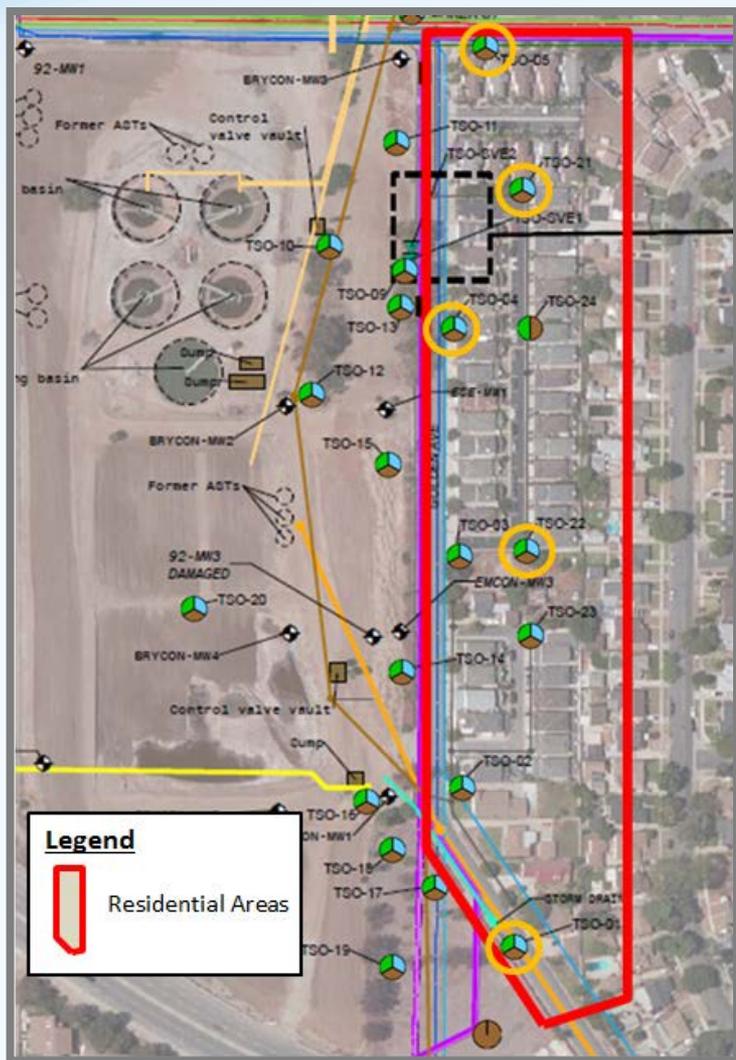
Investigation Findings: Shallow Soils

(0 to 10 feet below the surface)



There were no exceedances of residential screening levels for the top 10 feet of soil in either the residential areas or the parks.

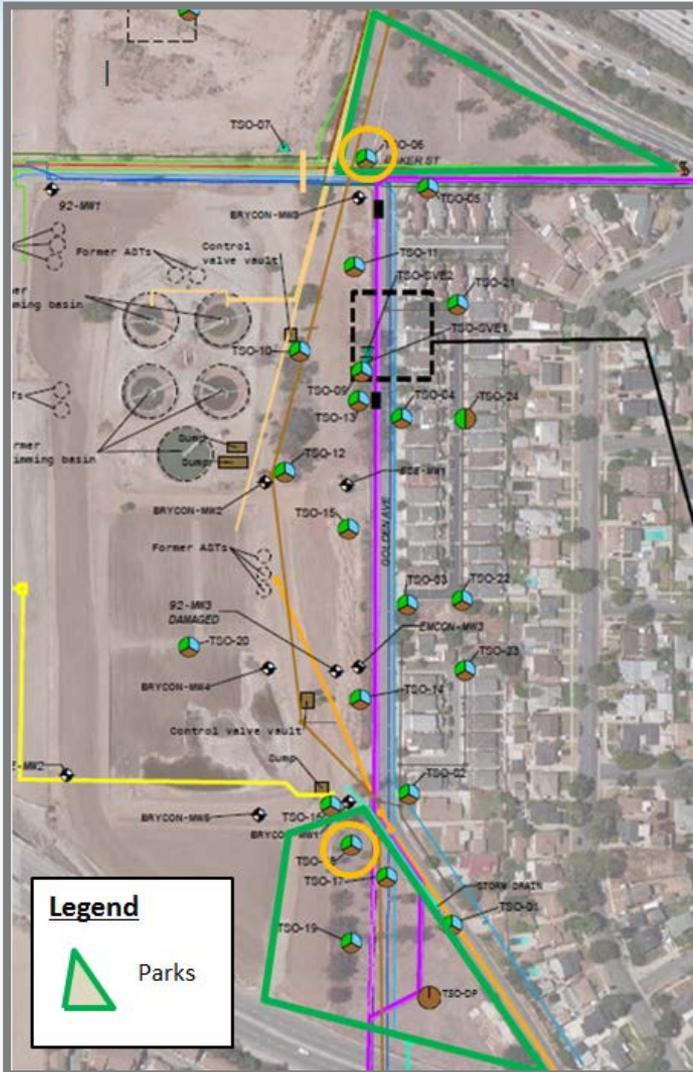
Investigation Findings: Shallow Soil Vapors (0 to 10 feet below the surface)



Locations selected for site-specific evaluation based on residential screening levels:

- TSO-01, TSO-04, TSO-05, TSO-21, and TSO-22 in the residential areas
- TSO-06 and TSO-18 in the parks

Investigation Findings: Shallow Soil Vapors (0 to 10 feet below the surface)



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What is a Human Health Risk Assessment?

What is Risk?

U.S. EPA: “The chance of harmful effects to human health or to ecological systems resulting from exposure to an environmental stressor.”

What is a Human Health Risk Assessment (HHRA)?

U.S. EPA: A scientific process “used to estimate the nature and probability of adverse health effects in humans who may be exposed to hazards in contaminated media, now or in the future.”

Various mathematical models may be used to calculate potential risks and hazards to human health; some are more conservative than others.

What is a Human Health Risk Assessment?

What is Acceptable Human Health Risk?

Using site-specific information, a HHRA generates two values that risk managers generally use for decision-making:

- **Hazard Index:** a hazard index value of 1.0 or less than 1.0 indicates that no adverse non-cancer human health effects are expected to occur.
- **Incremental Lifetime Cancer Risk:** a one in a million occurrence of cancer when exposed constantly to contamination for 30 years over a lifetime is widely considered to be statistically insignificant

Who Performs an HHRA? Who reviews it?

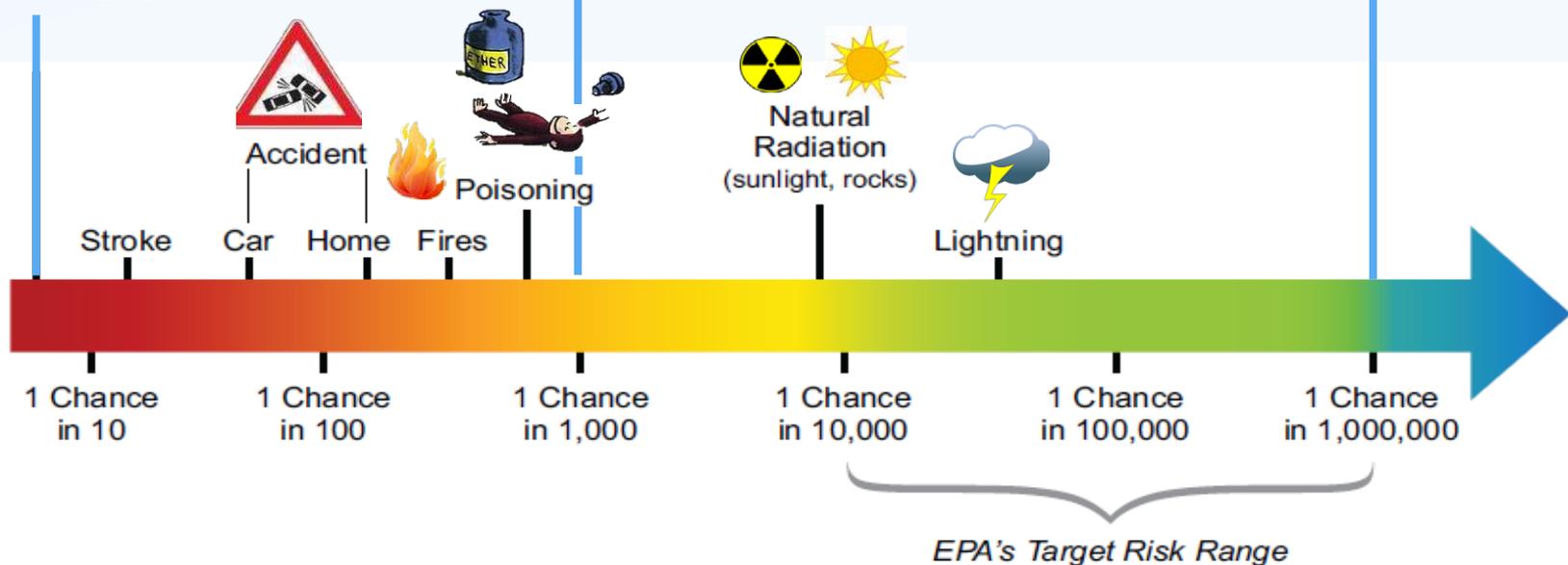
Risk models are usually performed by the responsible party, and then evaluated by toxicologists at the Office of Environmental Health Hazard Assessment (OEHHA), a sister agency to the Regional Board also under CalEPA

Examples of Lifetime Fatality and Incremental Lifetime Cancer Risks

Current Lifetime Risk in the U.S. of Developing Cancer is 43% for men and 34% for women

Incremental Lifetime Cancer Risk from breathing ambient air in Long Beach

Regional Board residential Incremental Lifetime Cancer Risk target



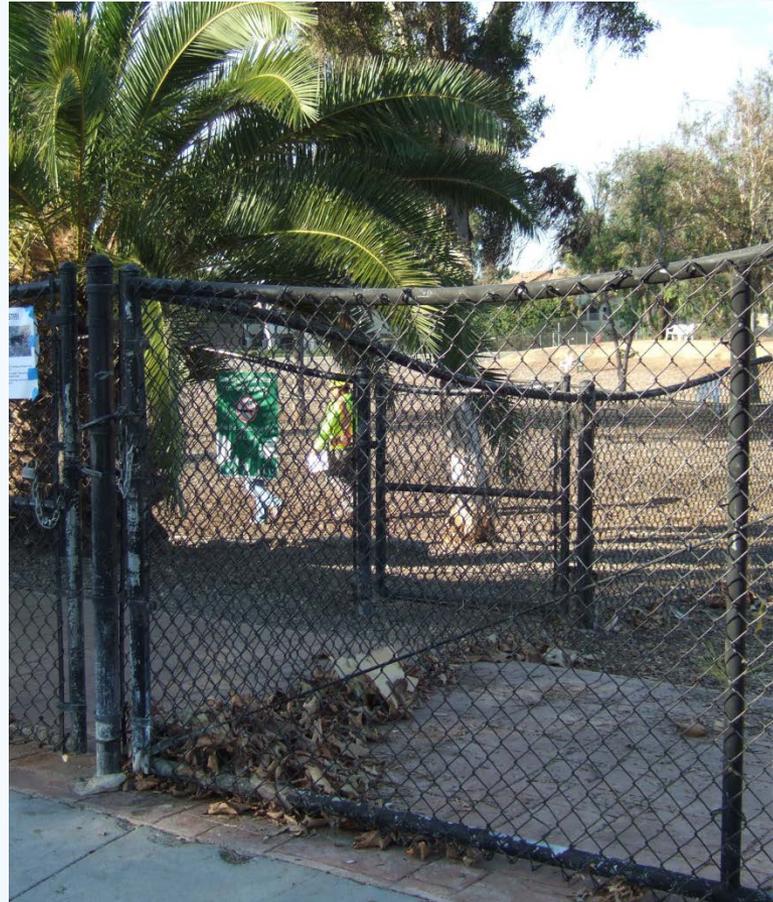
Sources:

- Adapted from USEPA 450/3-90-022, March 1991.
- CA Cancer J Clin 2015, 65:5-29. Cancer Statistics, 2015.
- South Coast Air Quality Management District (SCAQMD), 2015. Multiple Air Toxics Exposure Study in the South Coast Air Basin, MATES IV, Final Report. May.

Human Health Risk Assessment

Soils:

Contact with soils in the residential areas and parks does not pose any known human health concerns caused by the cleanup site.



Human Health Risk Assessment

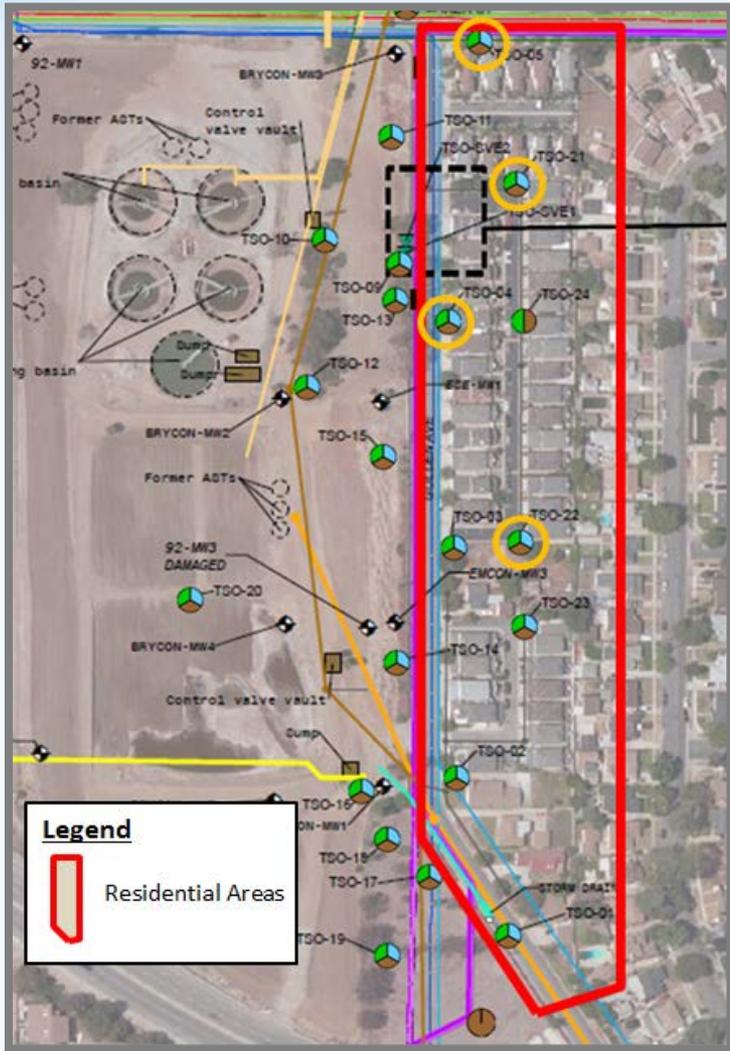
Soil Vapors:

Tesoro evaluated the soil vapor using two different risk models:

- Johnson & Ettinger (J&E): a conservative model widely used by regulatory agencies for decision-making
- BioVapor Model: a model that accounts for biodegradation, a naturally occurring process that reduces soil vapor contaminant concentrations

Additionally, an OEHHA toxicologist performed separate risk calculations using the J&E model, at the Regional Board's request.

Human Health Risk Assessment



Source: AECOM, w/ LARWQCB revisions

Soil Vapors:

Hazard Index:

- No exceedances in the residential areas or parks

Cancer Risk:

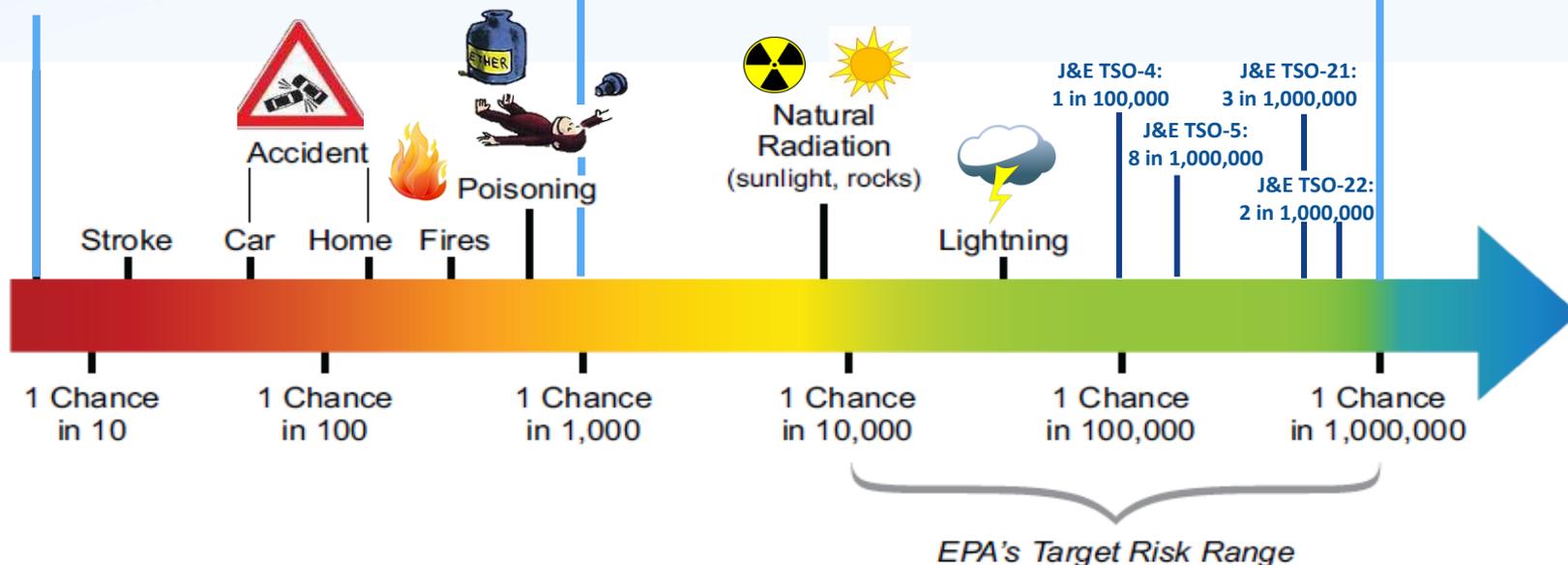
- J&E Model: TSO-04, TSO-05, TSO-21, and TSO-22 in the residential areas slightly exceeded the risk target
- BioVapor Model: No exceedances of the risk target

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Human Health Risk Assessment

Soil Vapors:

OEHHA's review memo:

- The results of the J&E Model can be viewed as a conservative upper bound of the risk
- The results of the BioVapor Model may be more realistic representation of actual site conditions

To safeguard the health of the residents, the Regional Board is using the results of OEHHA's and Tesoro's J&E modeling to make investigation and cleanup decisions.

* **Note:** Tesoro has informed the Regional Board that additional soil vapor samples were collected in the residential area on 1/12/16 to 1/14/16. However, the data has not yet been reported.

Next Steps

Upcoming Steps

- Direct expansion of the interim remedial actions to clean up soil and soil vapors in the spill/leak area
- Continue review of collected data to direct additional investigations at the site
- Require periodic soil vapor sampling in the residential areas to monitor any fluctuations or seasonal changes

Contacts:

Rebecca Orr, Project Manager

Los Angeles Regional Water Quality Control Board
(213) 576-6811 or rebecca.orr@waterboards.ca.gov

Susana Lagudis, Public Participation

Los Angeles Regional Water Quality Control Board
(213) 576-6694 or susana.lagudis@waterboards.ca.gov