

EPA TCE Source Investigation Findings

**Middlefield-Ellis-Whisman (MEW)
Superfund Study Area
Mountain View and Moffett Field, CA**

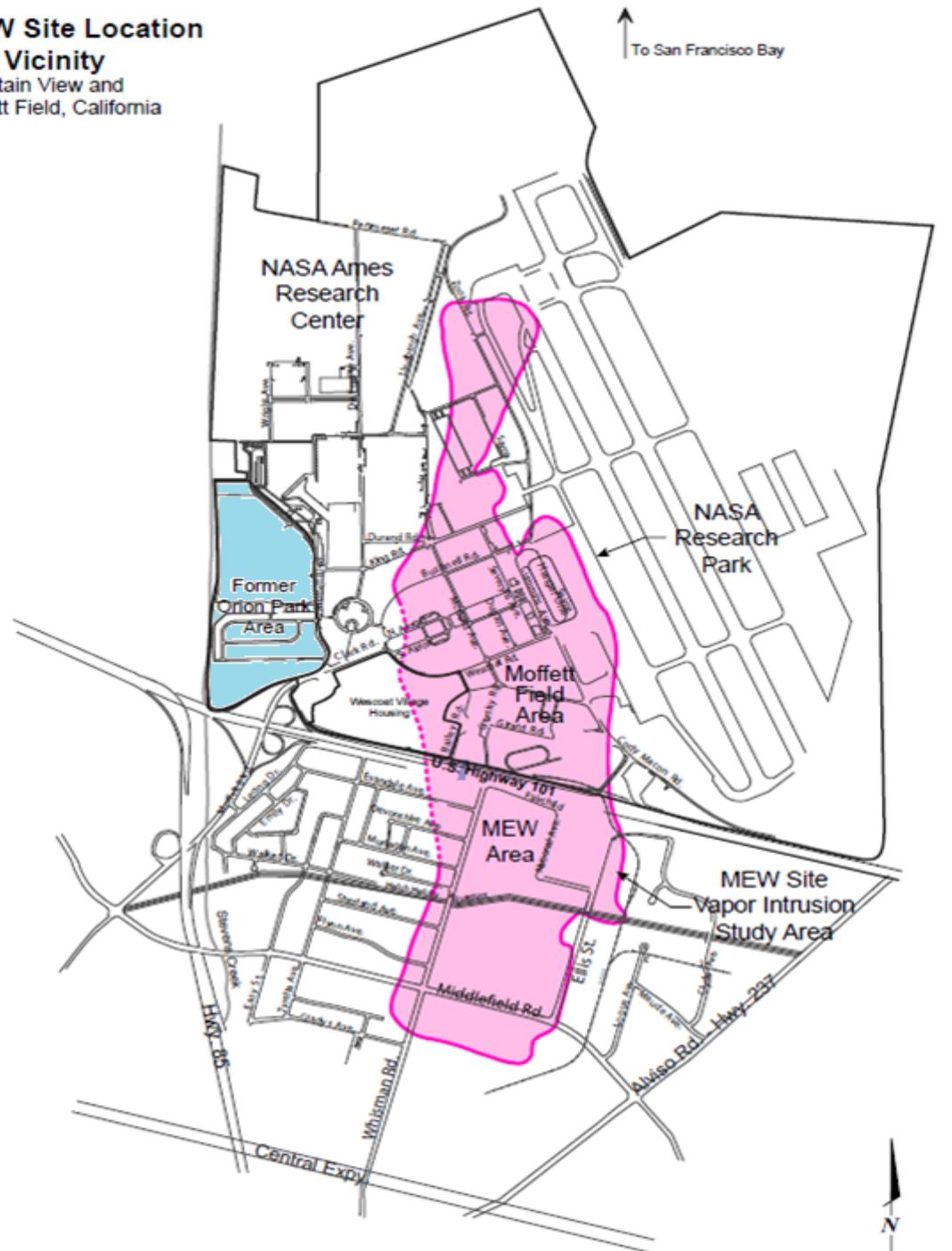
**Former NAS Moffett Field
Restoration Advisory Board Meeting
February 12, 2015**



Background/ Overview

MEW/Moffett Field Vapor Intrusion Study Area (as known in 2012)

MEW Site Location
and Vicinity
Mountain View and
Moffett Field, California



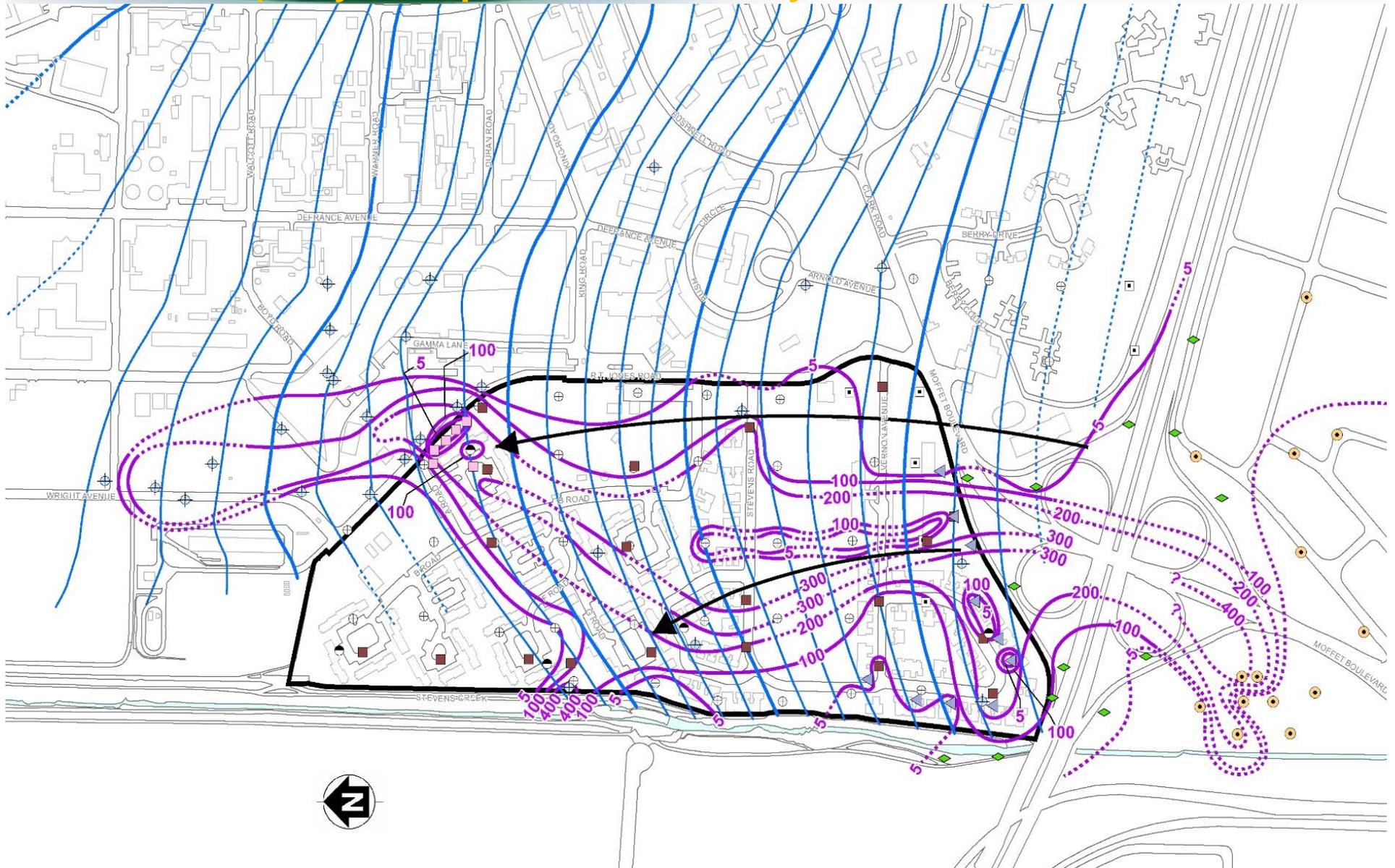
Previous Investigations in Vicinity of Former Orion Park Housing Area (1999-2014)

Modified slide from Army's , Nov 20, 2014 Moffett Field RAB presentation



Investigation Type	Year	Investigator	Investigation Findings
Soil and Groundwater Investigation	1999	NASA	TCE detected in groundwater beneath downgradient boundary
Groundwater Investigation	2000	Navy	TCE detected in groundwater beneath upgradient and downgradient boundaries
Site Characterization	2002	Navy	No on-site TCE sources identified
Off-Site Investigation	2003	Army	TCE detected in groundwater from upgradient monitoring points
Off-Site Investigation	2005	EPA	TCE detected in upgradient off-site monitoring points
Groundwater Investigation/Monitoring Well Installation	2005	Navy	TCE groundwater hot spot areas identified beneath OPHA, but no on-site sources identified
Septic Tank and Drain Field Investigation	2009	Army	Septic tank and drain field not a source
Supplemental Site Investigation	2012	Army	Groundwater hot spots identified beneath OPHA, but no on-site sources identified
Off-Site Investigations	2013-2014	EPA	Investigation ongoing....

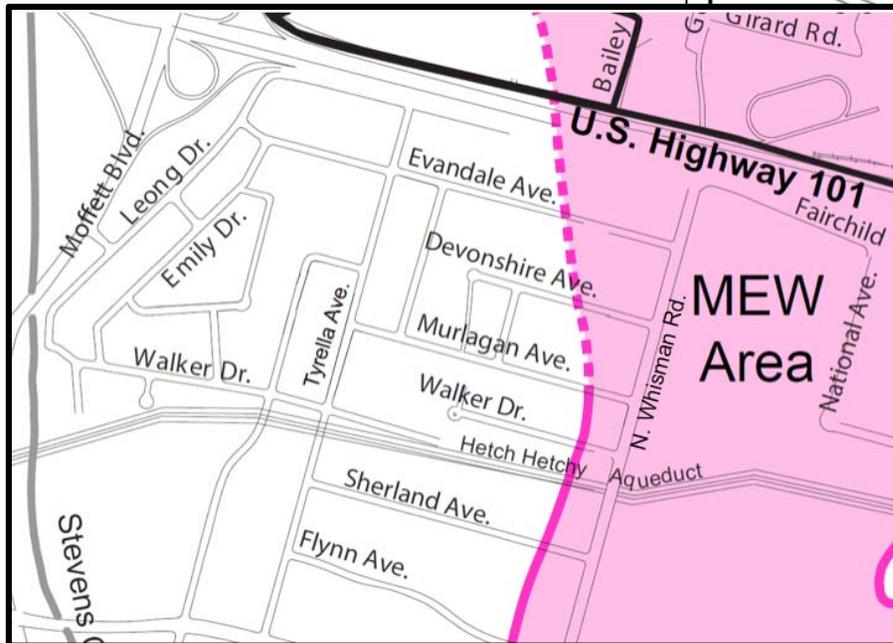
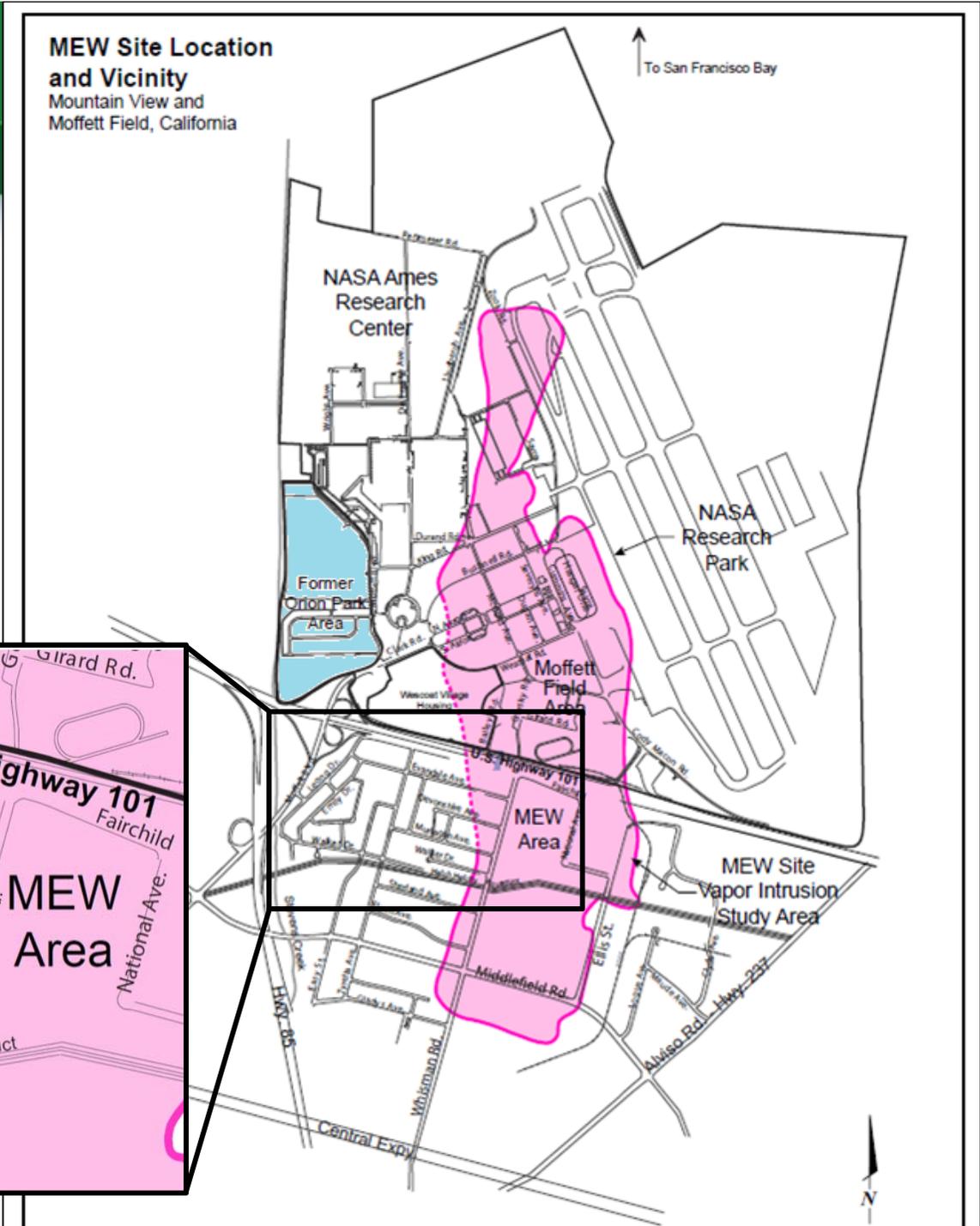
TCE Shallow Groundwater – A Zone (Navy RAB presentation – July 13, 2006)



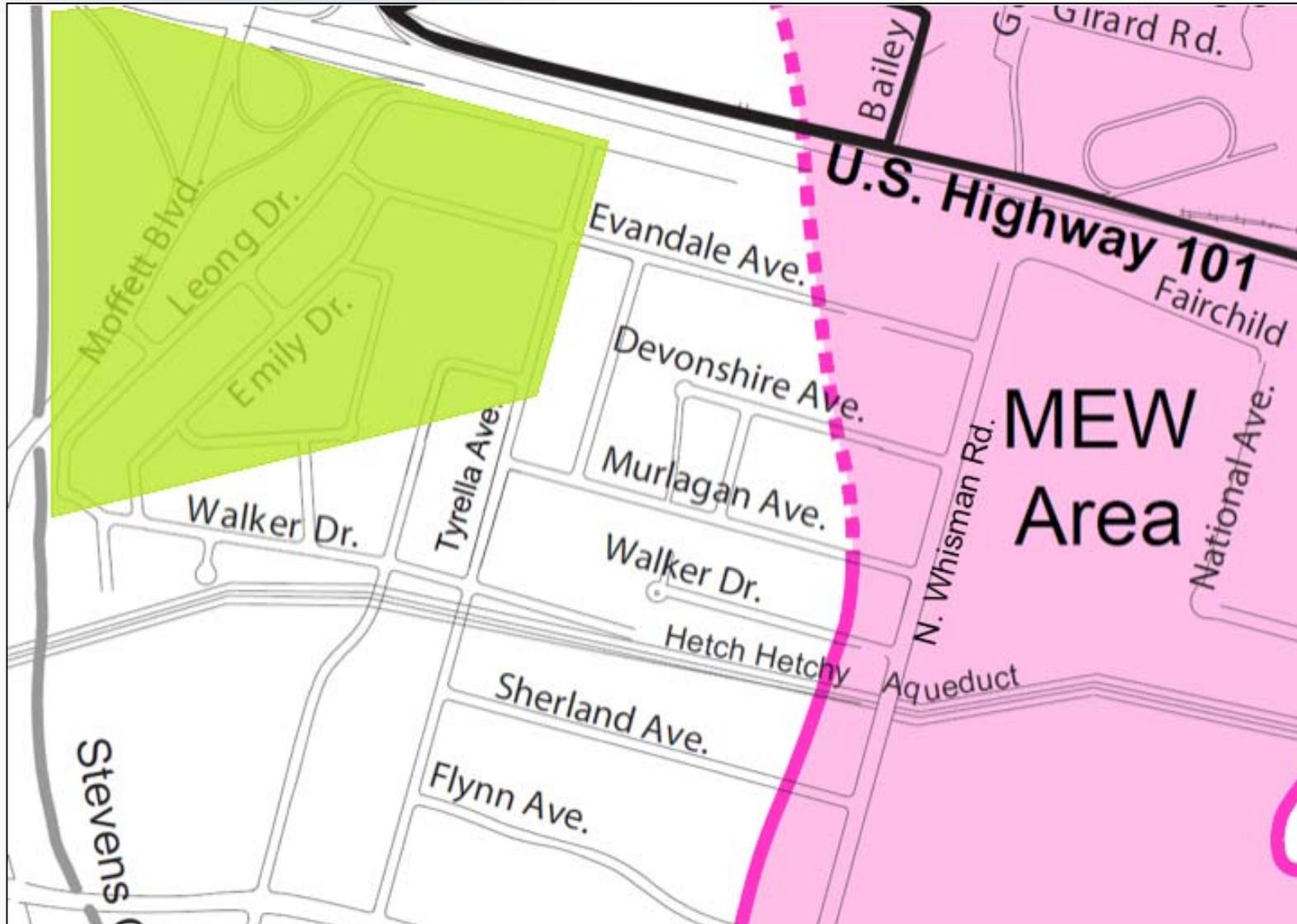
Overview

- MEW Site Vapor Intrusion Study area (as known in 2012)

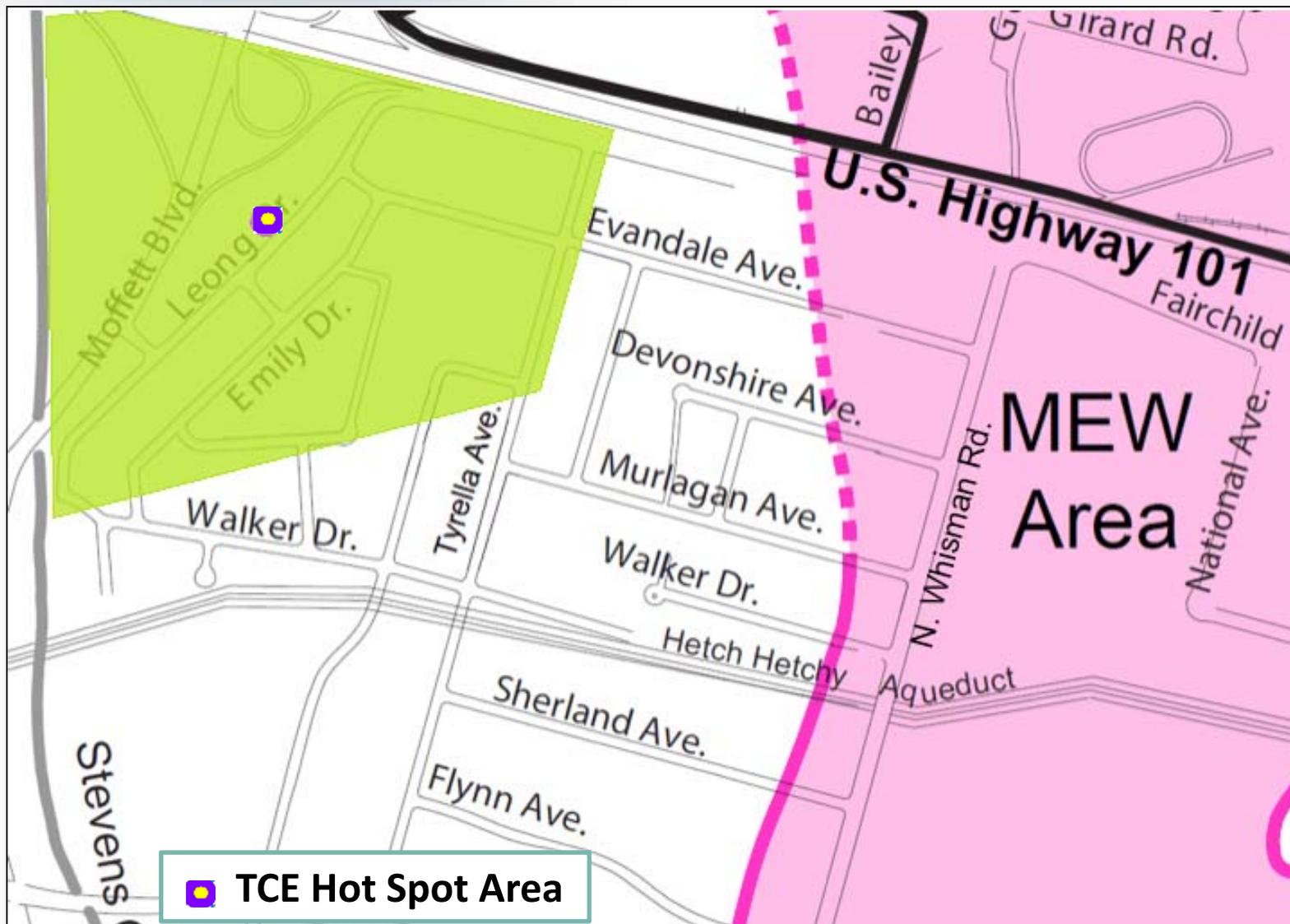
MEW Site Location and Vicinity Mountain View and Moffett Field, California

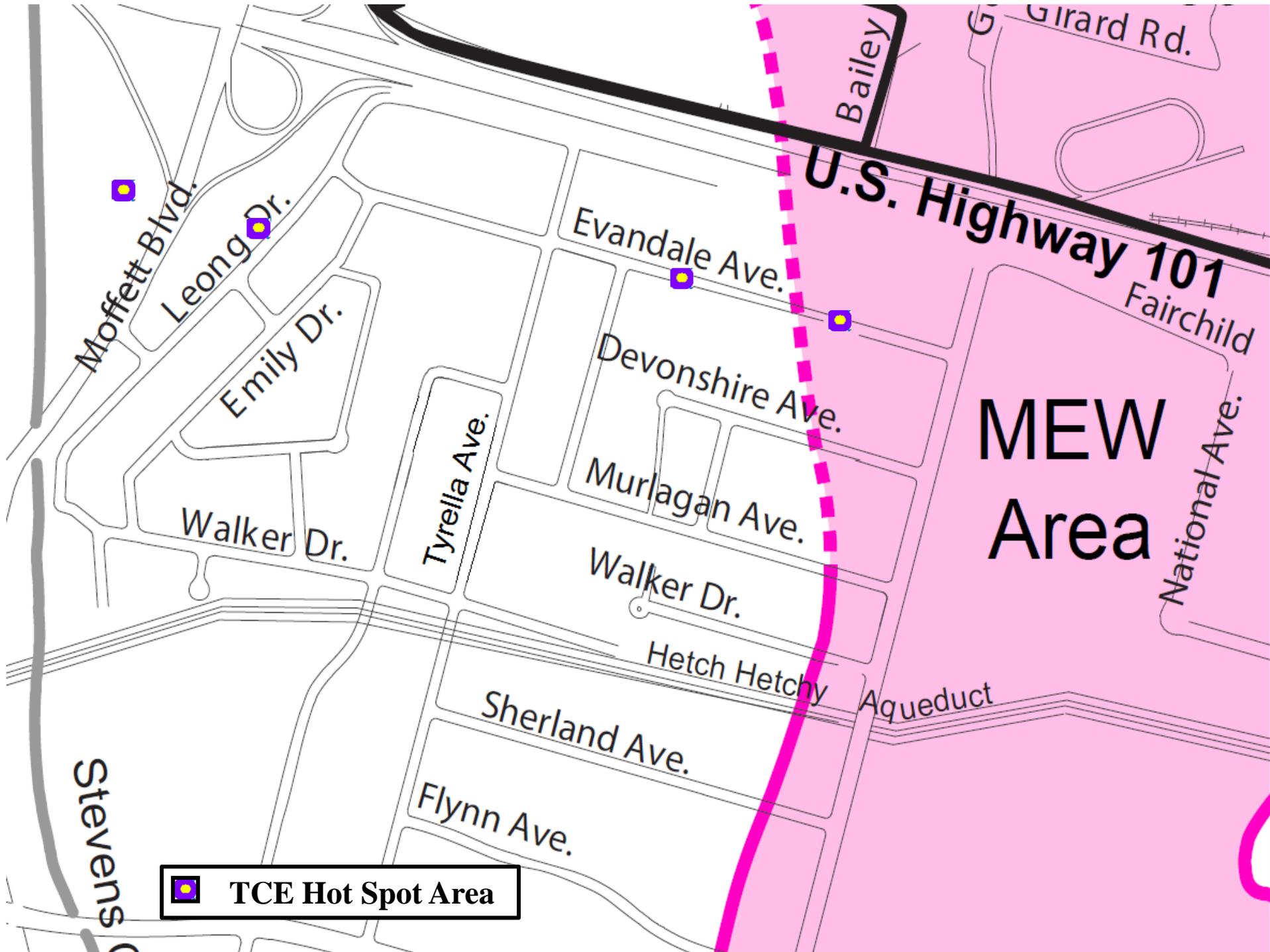


EPA 2005 Groundwater Investigation Area

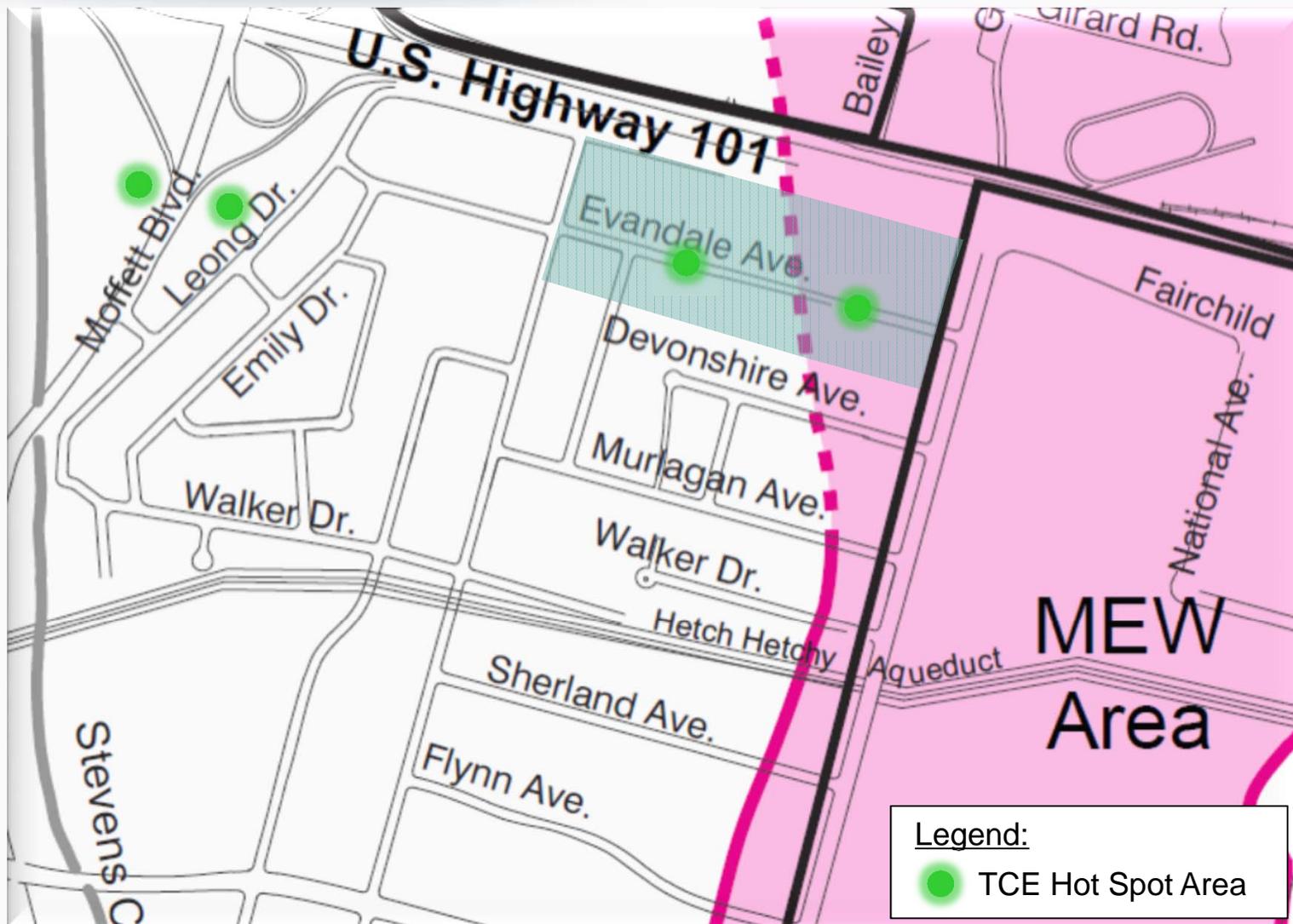


EPA Groundwater Investigation Area 2005 & 2011





2013 - TCE Hot Spot Areas and Residential Air Sampling Area

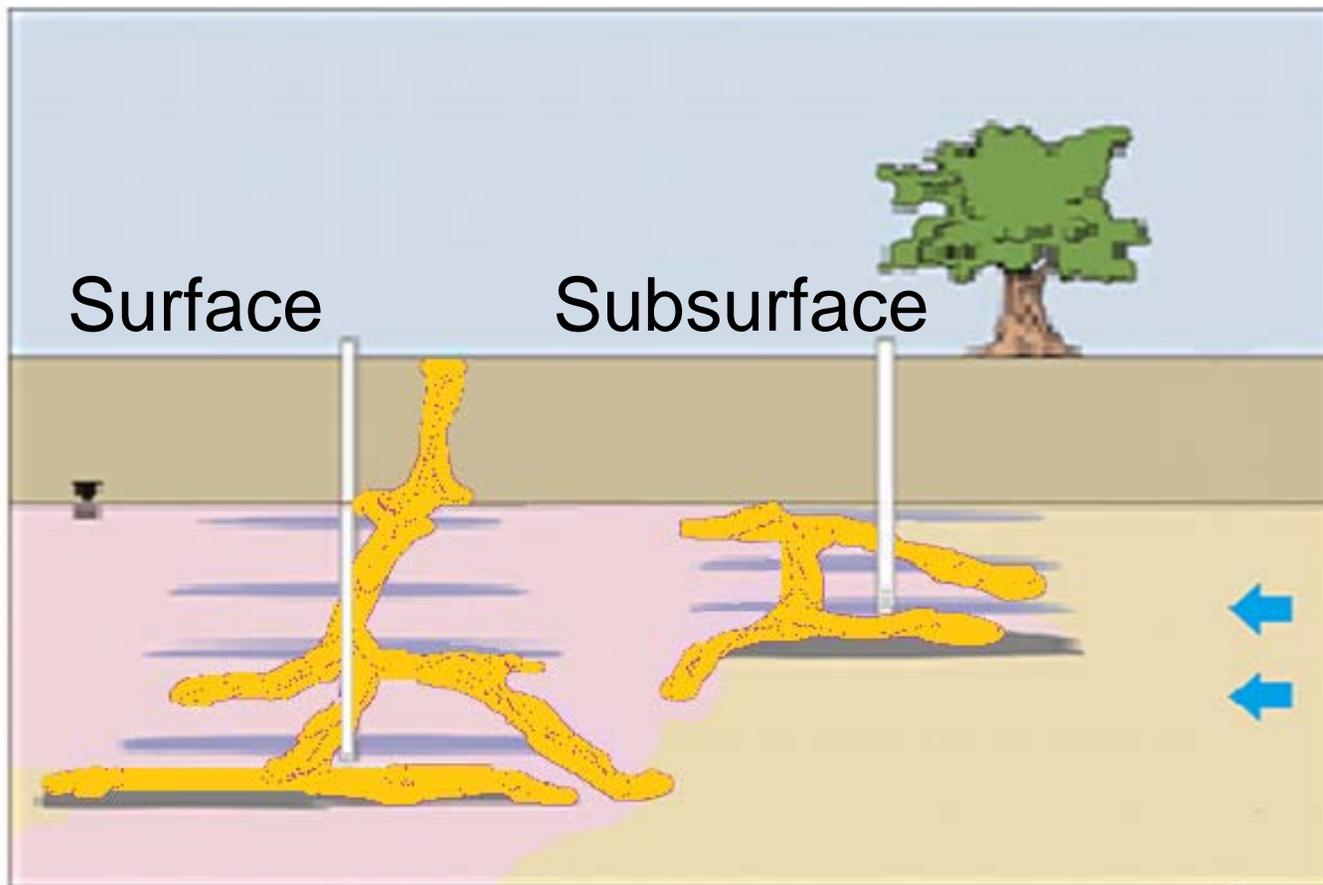


EPA Potential TCE Source Investigation

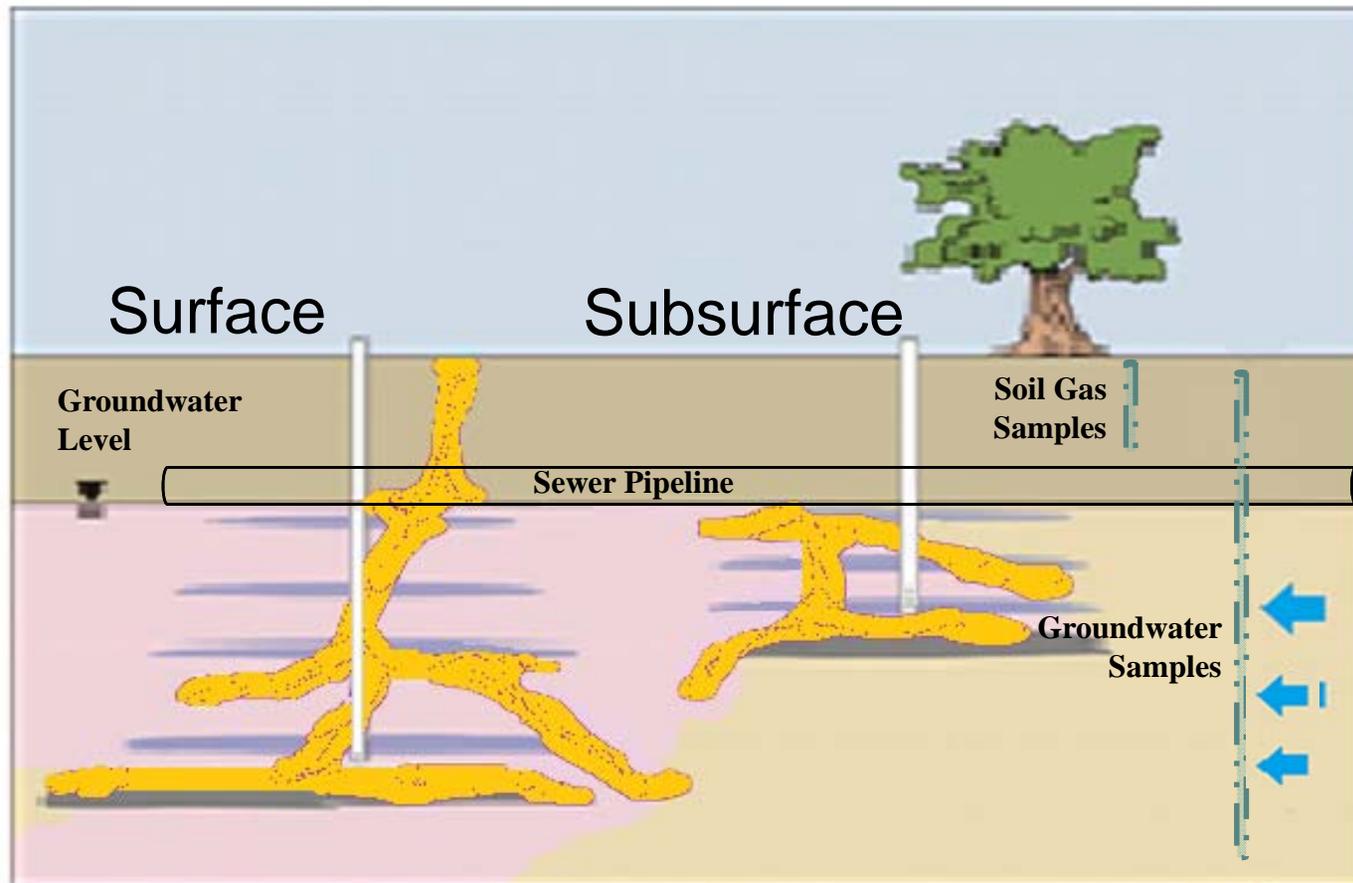


- In 2013-2014, EPA conducted potential source investigation of TCE Hot Spot Areas and conducted additional groundwater investigation to fill data gaps in residential area.
- Assessed potential migration pathways to TCE Hot Spot Areas – surface, subsurface, regional groundwater contamination

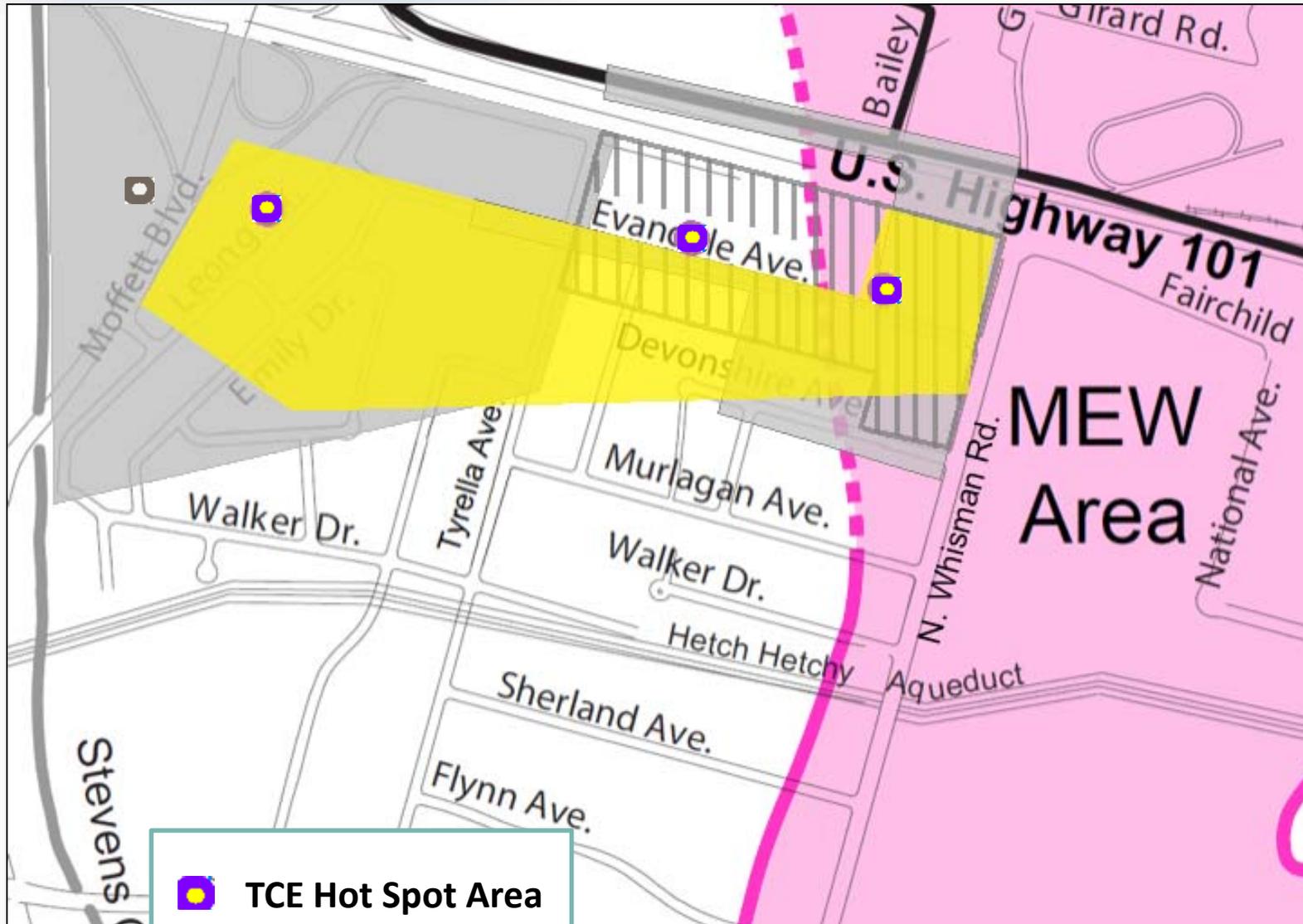
Potential Source Type

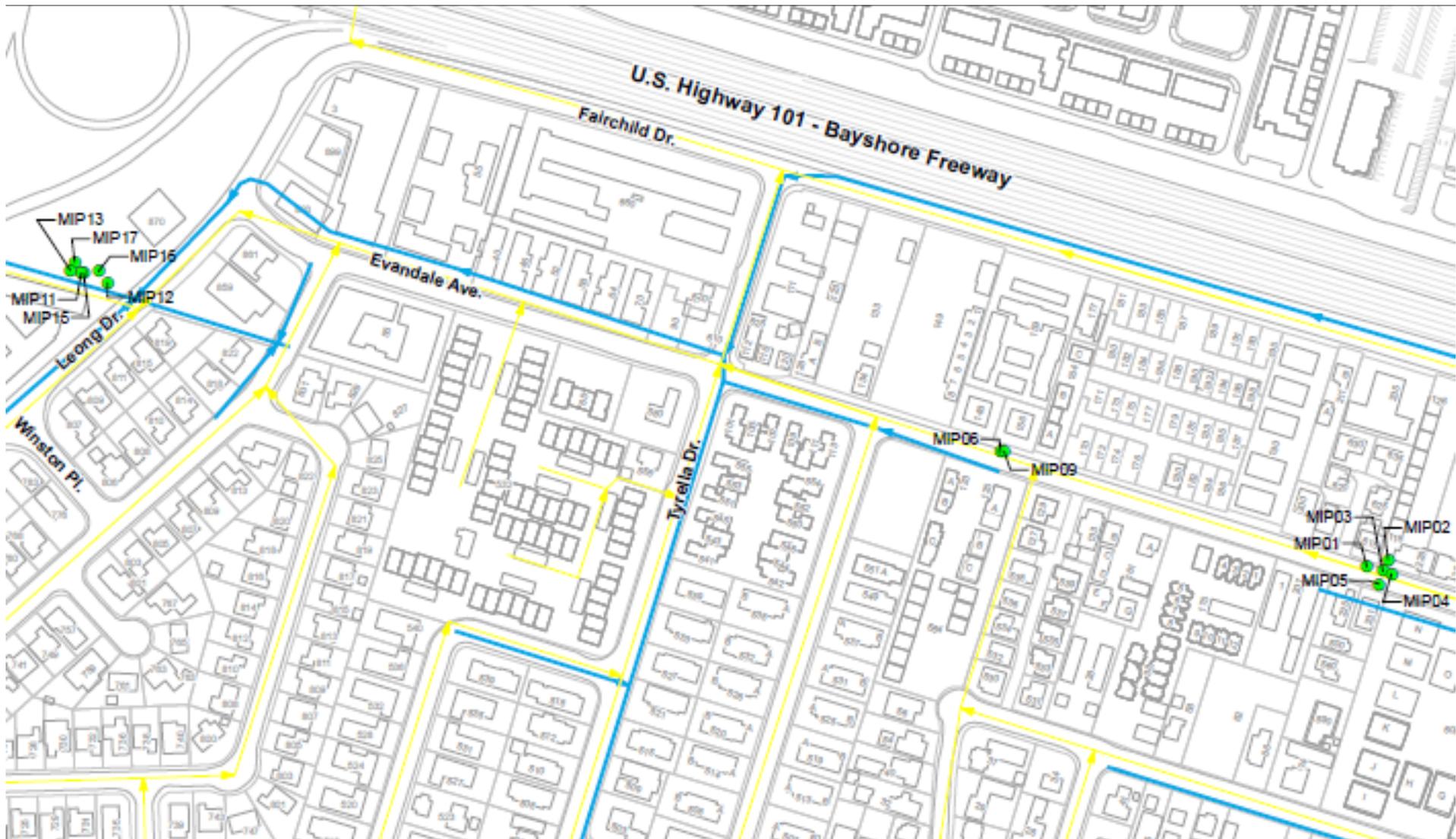


Sampling near Source Types



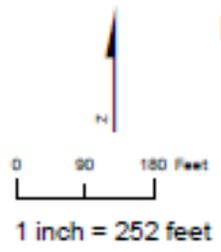
EPA Investigation – September 2013

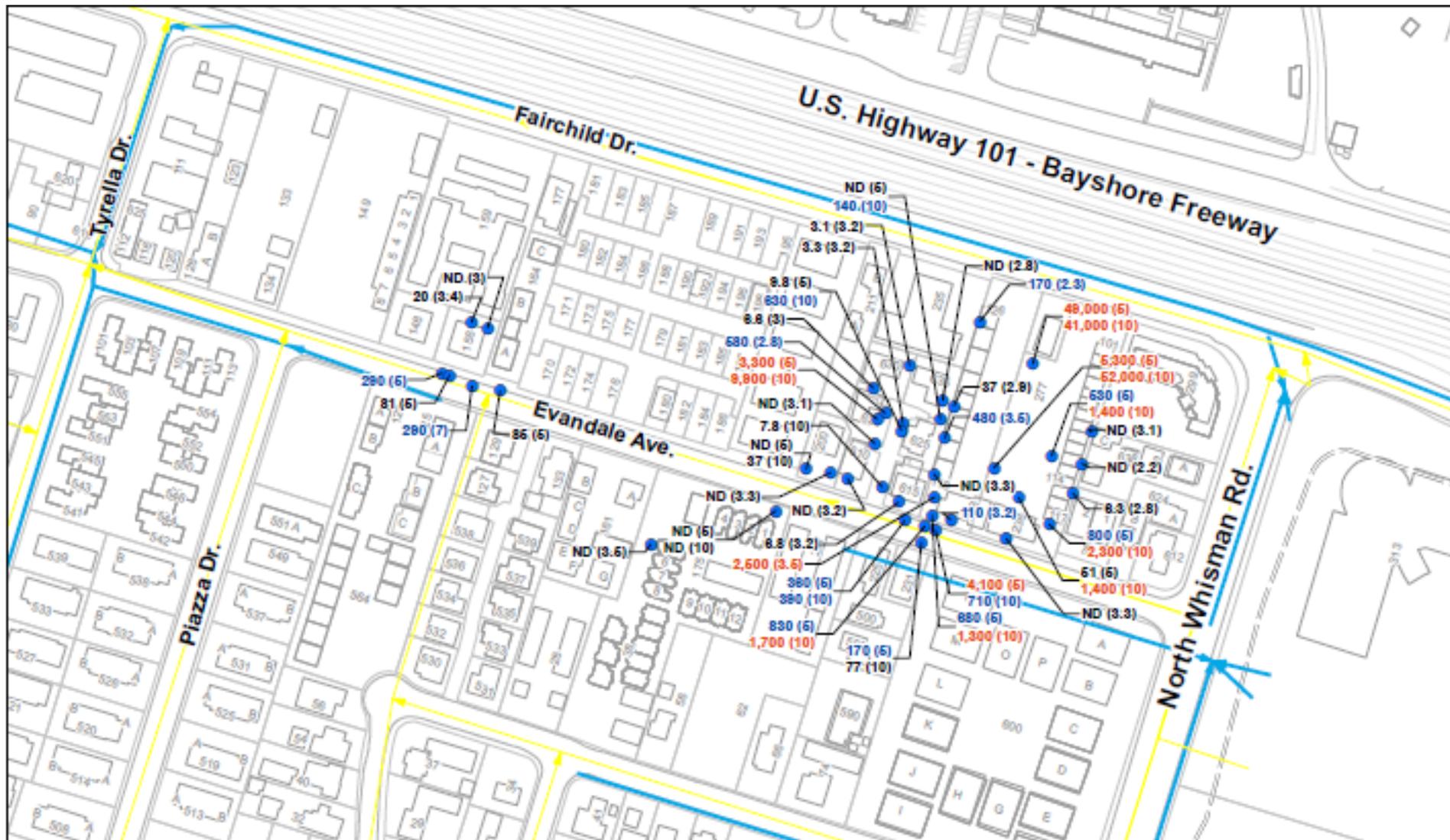




- Membrane Interface Probe (MIP) Sampling Location
- Sanitary sewer drainage route
- Stormwater drainage route

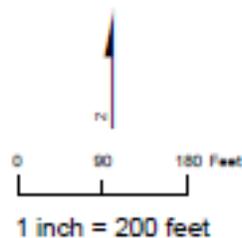
MEMBRANE INTERFACE PROBE (MIP) SAMPLING LOCATIONS
SEPTEMBER 2013
 In Vicinity of Highway 101 & Moffett Blvd Study Area and
 MEW Superfund Site, Mountain View, CA

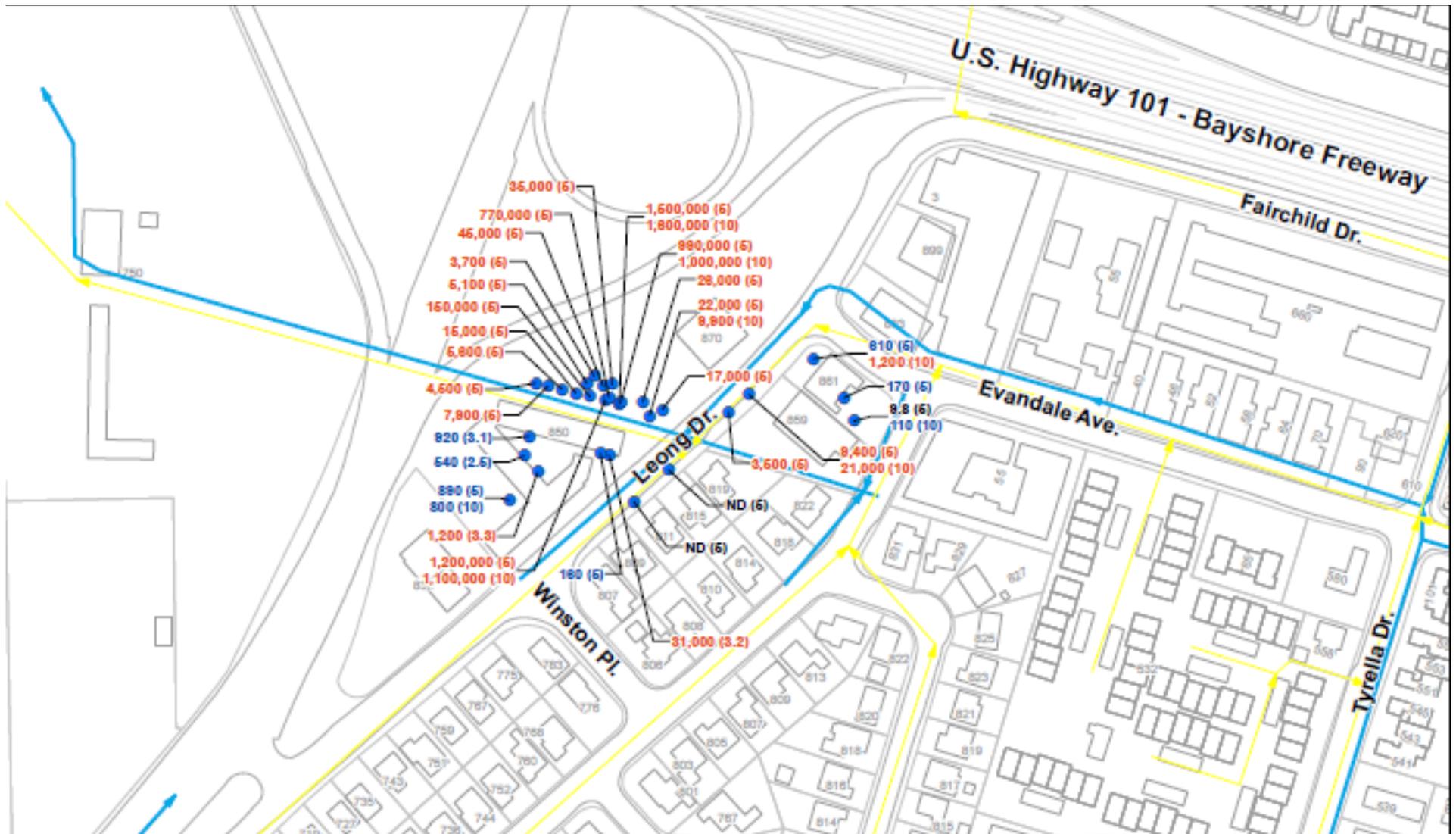




- Soil Gas Sample Location
 - Sanitary sewer drainage route
 - Stormwater drainage route
- 170 (5) The result shown is the TCE soil gas concentration in $\mu\text{g}/\text{m}^3$.
The sample depth in feet below ground surface is shown in parentheses.
- ND Not detected. TCE result is below the laboratory detection limit of $2.7 \mu\text{g}/\text{m}^3$.
- $\mu\text{g}/\text{m}^3$ micrograms per cubic meter
- Black TCE soil gas concentration less than ($<$) $100 \mu\text{g}/\text{m}^3$
 - Blue TCE soil gas concentration greater than ($>$) $100 \mu\text{g}/\text{m}^3$
 - Orange TCE soil gas concentration greater than ($>$) $1,000 \mu\text{g}/\text{m}^3$

TCE IN SOIL GAS SAMPLE RESULTS IN RESIDENTIAL AREA
SEPTEMBER 2013
South of Highway 101
MEW Superfund Site, Mountain View, CA





TCE IN SOIL GAS SAMPLE RESULTS IN LEONG DRIVE AREA
SEPTEMBER 2013
 In Vicinity of Highway 101 & Moffett Blvd Study Area and
 MEW Superfund Site, Mountain View, CA

- Soil Gas Sample Location
- Sanitary sewer drainage route
- Stormwater drainage route

170 (5) The result shown is the TCE soil gas concentration in $\mu\text{g}/\text{m}^3$.
 The sample depth in feet below ground surface is shown in parentheses.

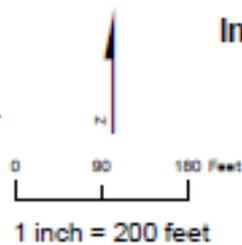
ND Not detected. TCE result is below the laboratory detection limit of $2.7 \mu\text{g}/\text{m}^3$.

$\mu\text{g}/\text{m}^3$ micrograms per cubic meter

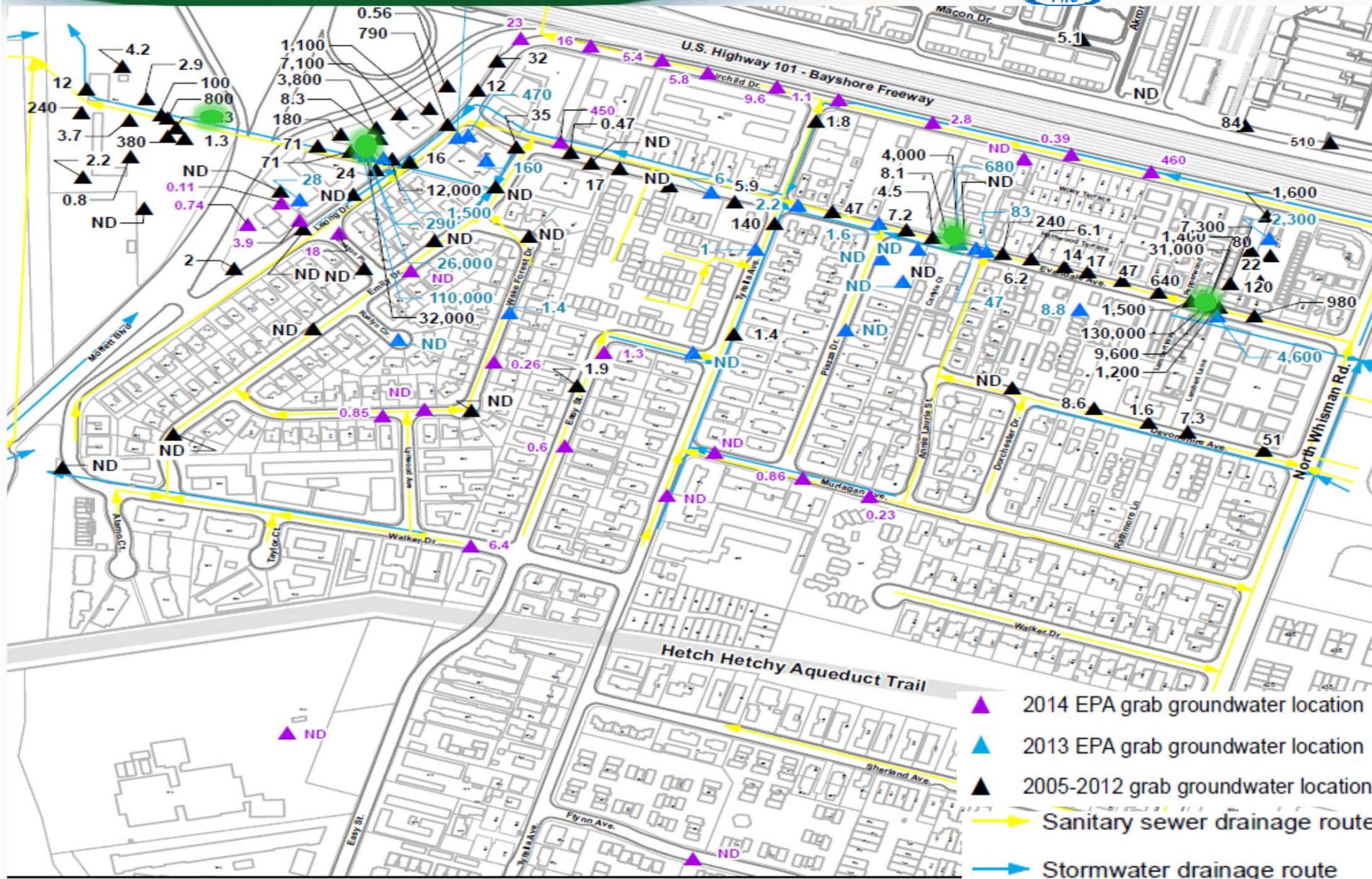
Black TCE soil gas concentration less than (<) $100 \mu\text{g}/\text{m}^3$

Blue TCE soil gas concentration greater than (>) $100 \mu\text{g}/\text{m}^3$

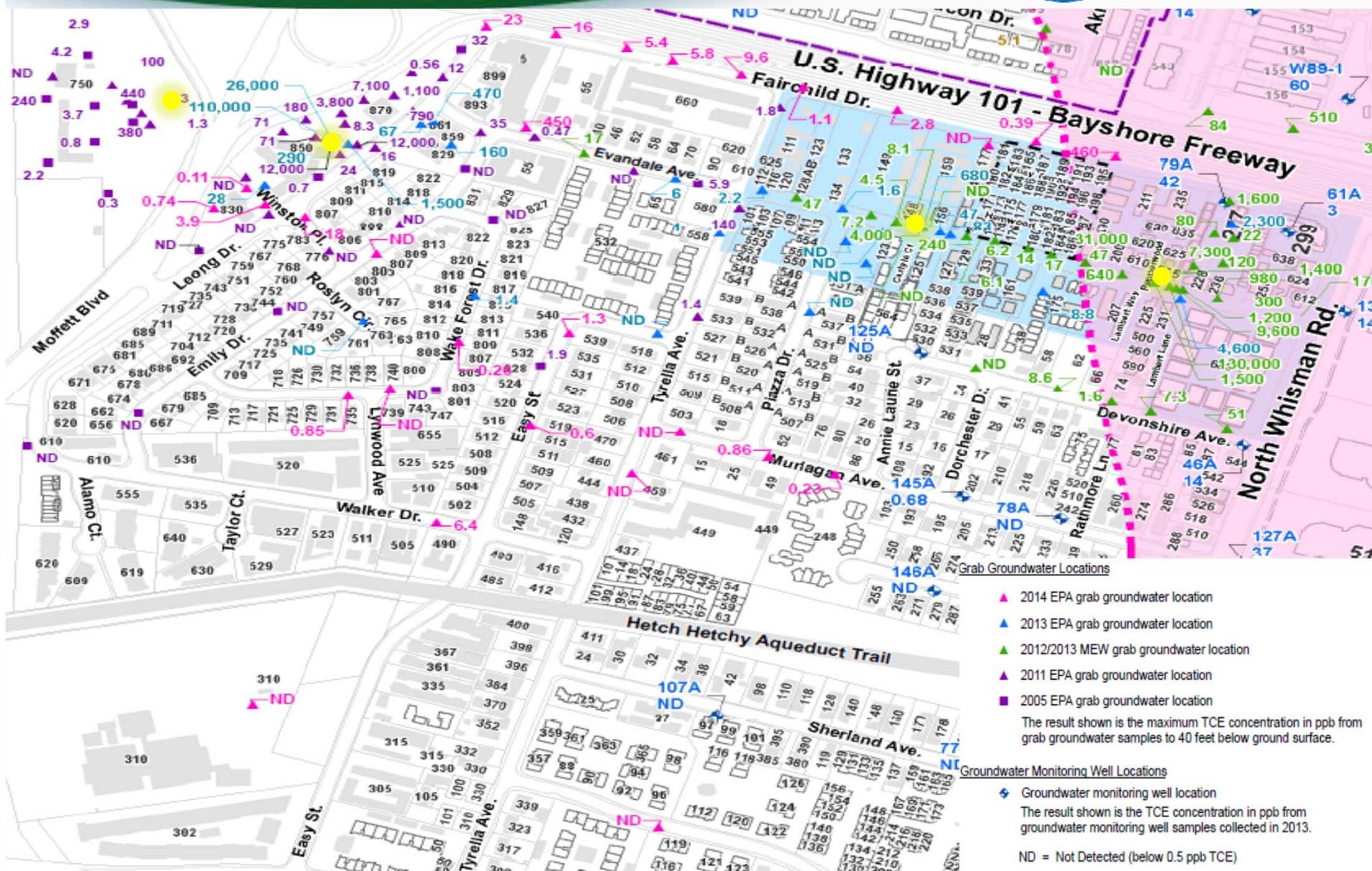
Orange TCE soil gas concentration greater than (>) $1,000 \mu\text{g}/\text{m}^3$



TCE Shallow Groundwater Results (2005-2014)



TCE Shallow Groundwater Results Residential Areas (2005 - 2014)



Information Reviewed – Area of Interest



- Historical operations and use, aerial photos, City, County, State agencies files/records search
- Utilities infrastructure – historical and current
- Previous Potentially Responsible (PRP) search information and updates

City of Mtn View Sewer Infrastructure Events & TCE Releases to Sewer



- 1953 – First treatment plant constructed.
- 1957 – Evandale Trunk constructed and noted as inadequate
- 1960 – City identified source of TCE to sewage plant.
- 1961 – City ordinance regulating disposal of harmful chemicals, including TCE, to sewer system
- 1961 – Sewer lines around MEW Study Area constructed
- 1961-66 – Temporary pump station lifting sewage from Fairchild Drive to Evandale Trunk
- 1961- 66 – Various releases of TCE to sewer

- 1966-Present – East Trunk (Fairchild Dr) replaces Evandale Trunk due to capacity issues. Evandale line carries sewage generated along Evandale only.

Historical TCE Operations



- Historical operations and TCE use
- Pre-1966 Sewer Flow and Migration Path to TCE source areas along Evandale Trunk (Hotspots 1 - 4 along Evandale, Leong Drive, Moffett Gateway properties)

Temporary Pump Station and Sewer Flow along Evandale Trunk (~1961-1966)



Current Sewer Flow Direction

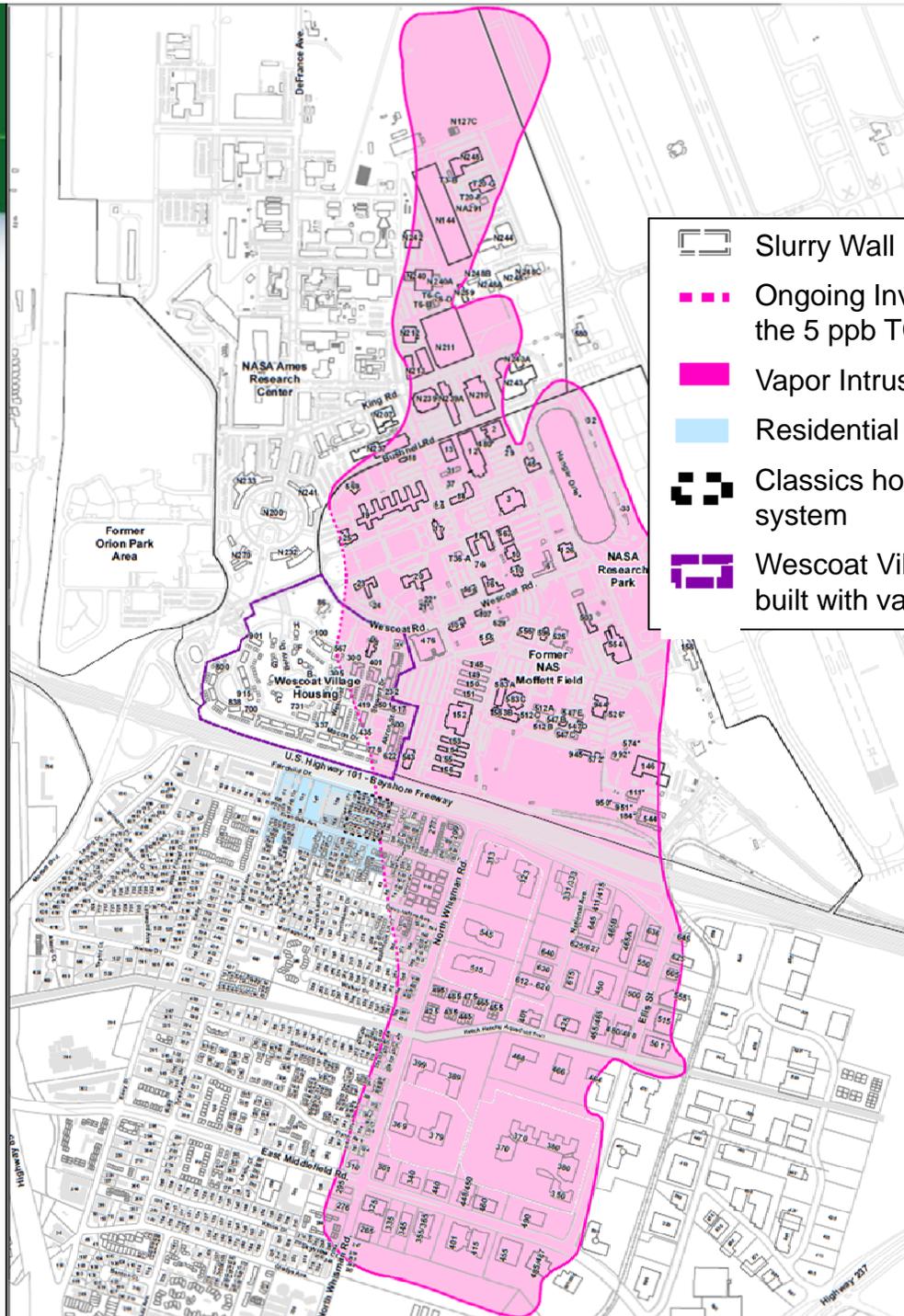


Ongoing Work and Next Steps



- Potential Vapor Intrusion Concerns – air sampling area, new development, implementation of MEW Site vapor intrusion remedy
- Source Area / Hot Spot – Characterization and Cleanup
- Determine Extent of Contamination from TCE Source Areas
- *Data Gaps Evaluation*

Expanded Investigation Area



-  Slurry Wall
-  Ongoing Investigation (2013-2014) to delineate the 5 ppb TCE plume boundary
-  Vapor Intrusion Study Area (>5 ppb TCE plume)
-  Residential Indoor Air Sampling Area
-  Classics homes built with vapor intrusion control system
-  Wescoat Village Residential Area (2006 homes built with vapor intrusion control system)

Ongoing and Upcoming Work



- EPA Investigation is Ongoing
- EPA Meetings with Work Parties, Stakeholders, Community

EPA will continue to update the community on the planned work and our findings.

EPA Contact Information



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**EPA Websites –
For More Information**

www.epa.gov/region9/mew

www.epa.gov/region9/moffettfield

www.epa.gov/oswer/vaporintrusion

Additional Slide



Current Storm Drainage Flow

