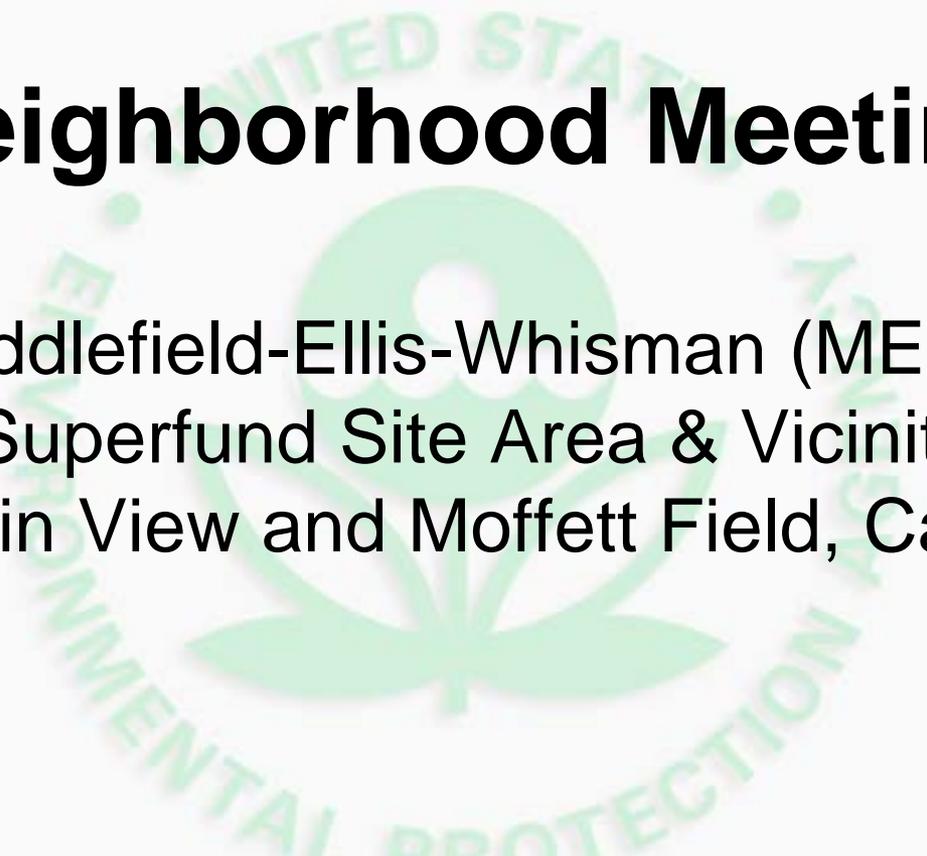




Neighborhood Meeting

Middlefield-Ellis-Whisman (MEW)
Superfund Site Area & Vicinity
Mountain View and Moffett Field, California

November 1, 2015



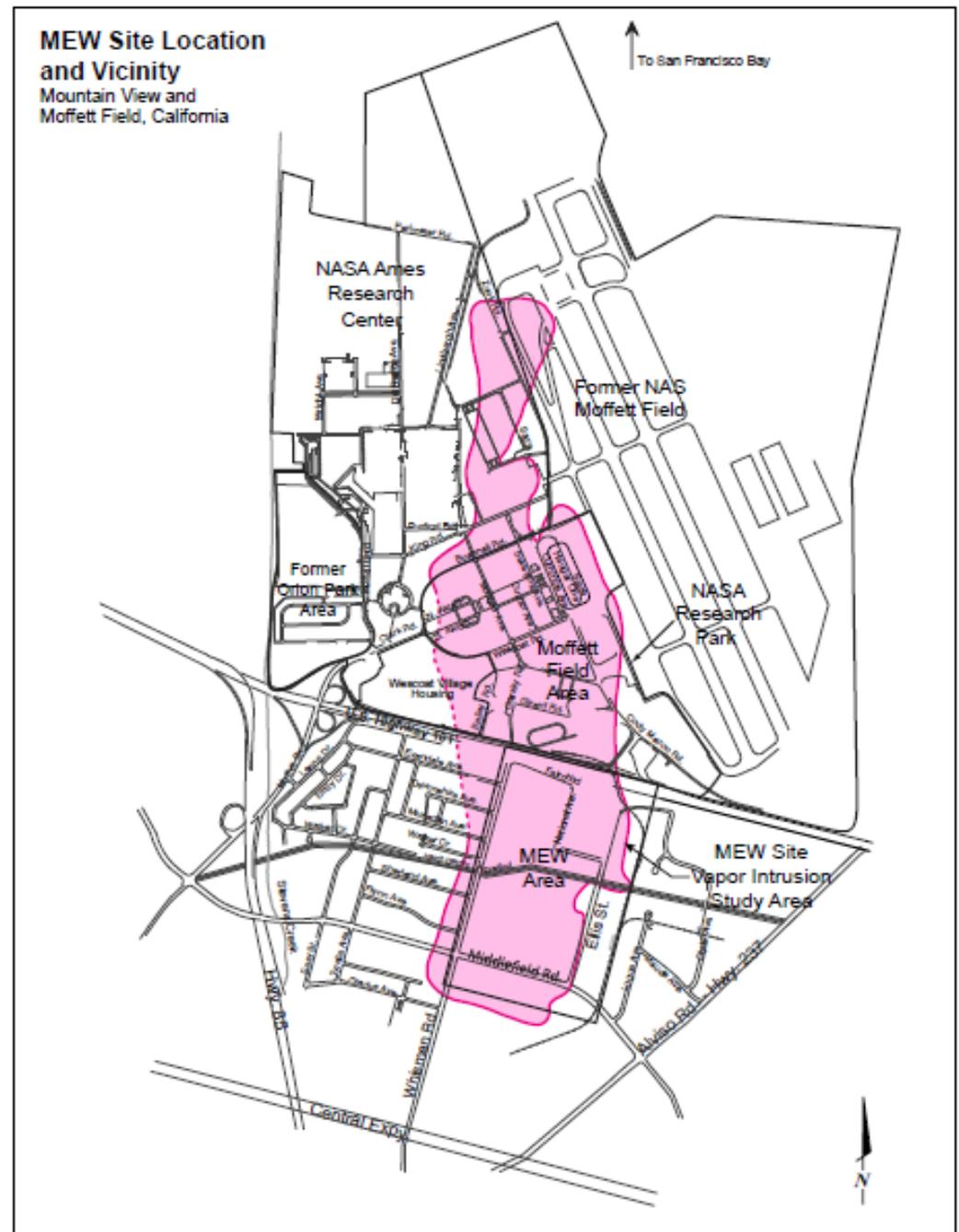
Meeting Outline



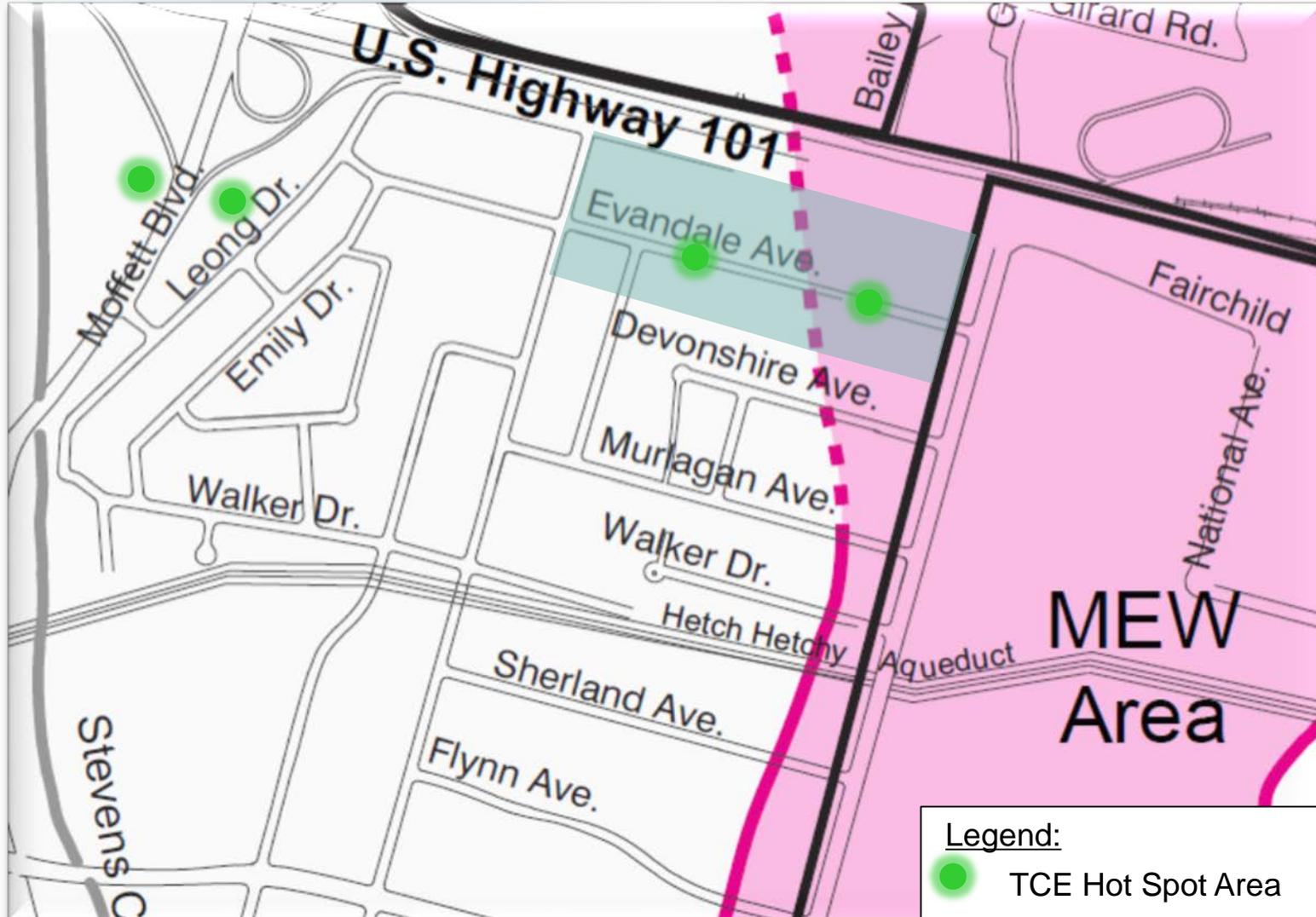
- Welcome/Introductions/Overview
- Residential Developments
 - 111-123 and 133-149 Fairchild Drive
Questions & Answers
 - 277 Fairchild Drive, 228/236 Evandale Avenue
Questions & Answers
- EPA Update – TCE Hot Spot Areas Source Investigation
Questions & Answers

Overview

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



2013 -2014 - TCE Hot Spot Areas and Residential Air Sampling Area

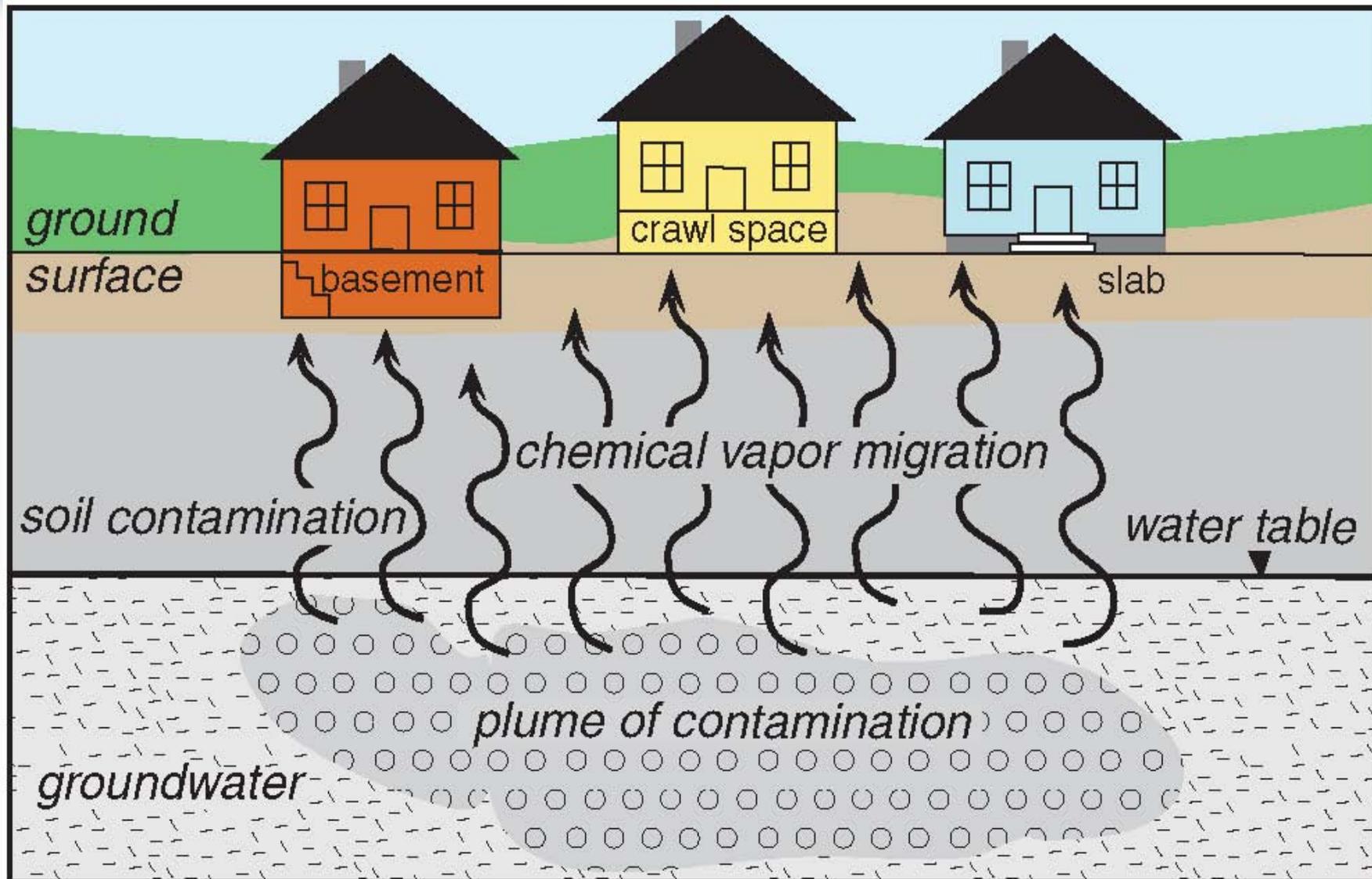


What is TCE and why is it a concern?



- TCE or trichloroethene is a solvent used that was widely used in past for degreasing and cleaning.
- TCE can readily evaporate into air and has potential to migrate from shallow contaminated groundwater upwards into overlying buildings through the **vapor intrusion pathway**.
- If TCE is in indoor air at high enough levels for a long enough duration, it may pose a potential health concern.

Vapor Intrusion Pathway



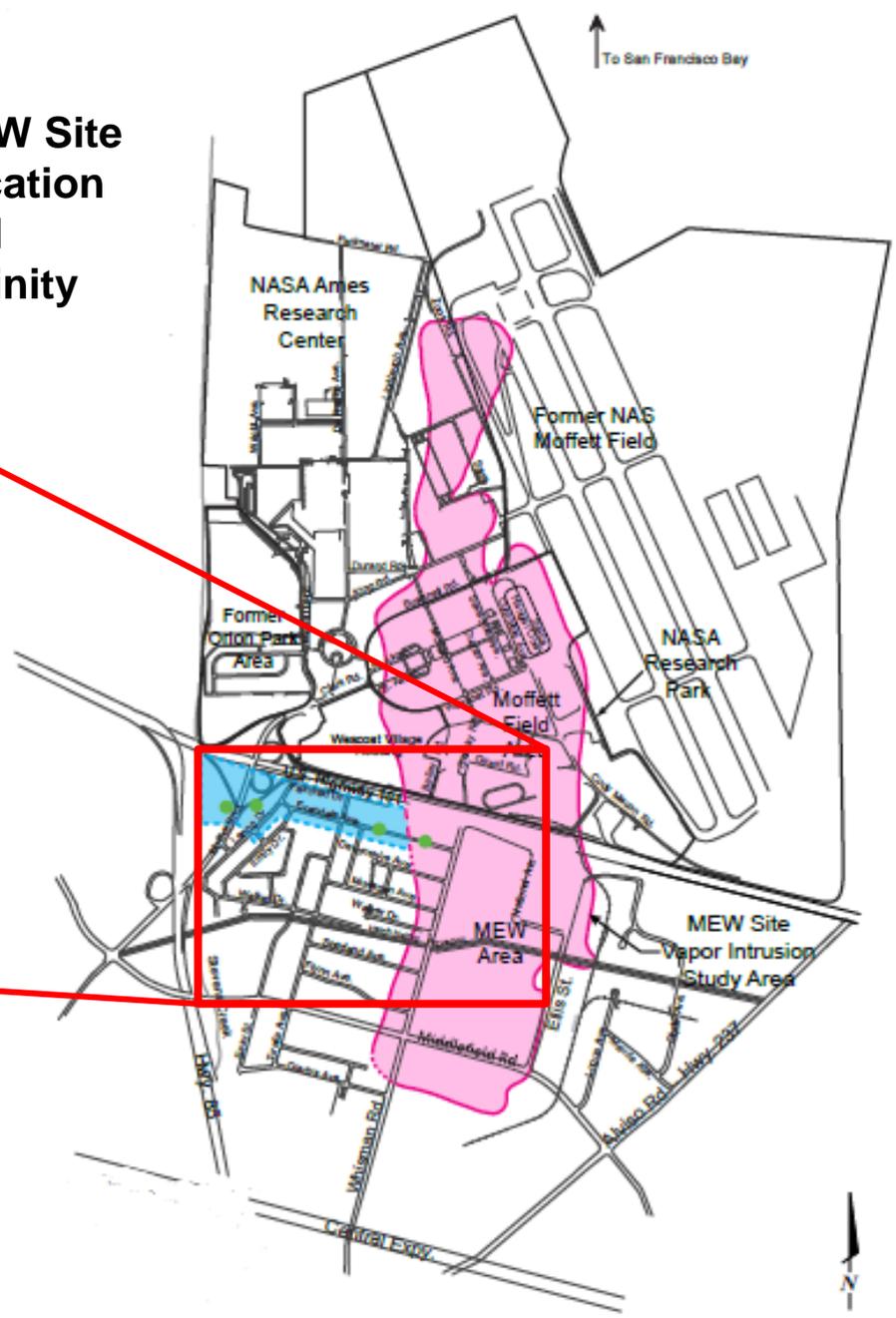
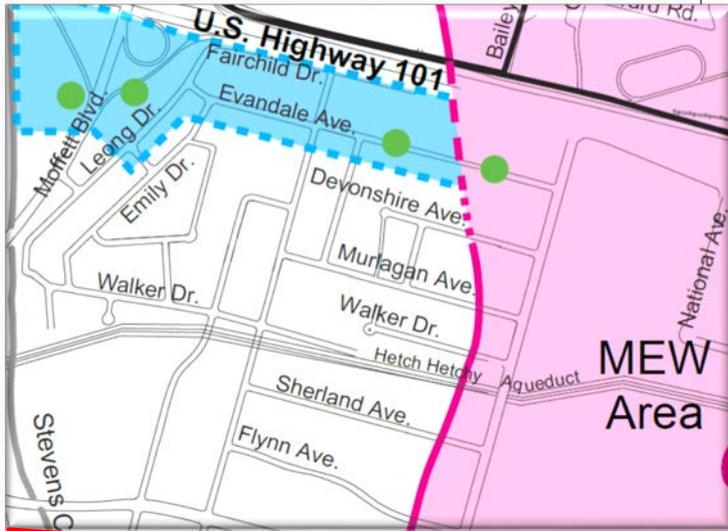
MEW Vapor Intrusion Study Area



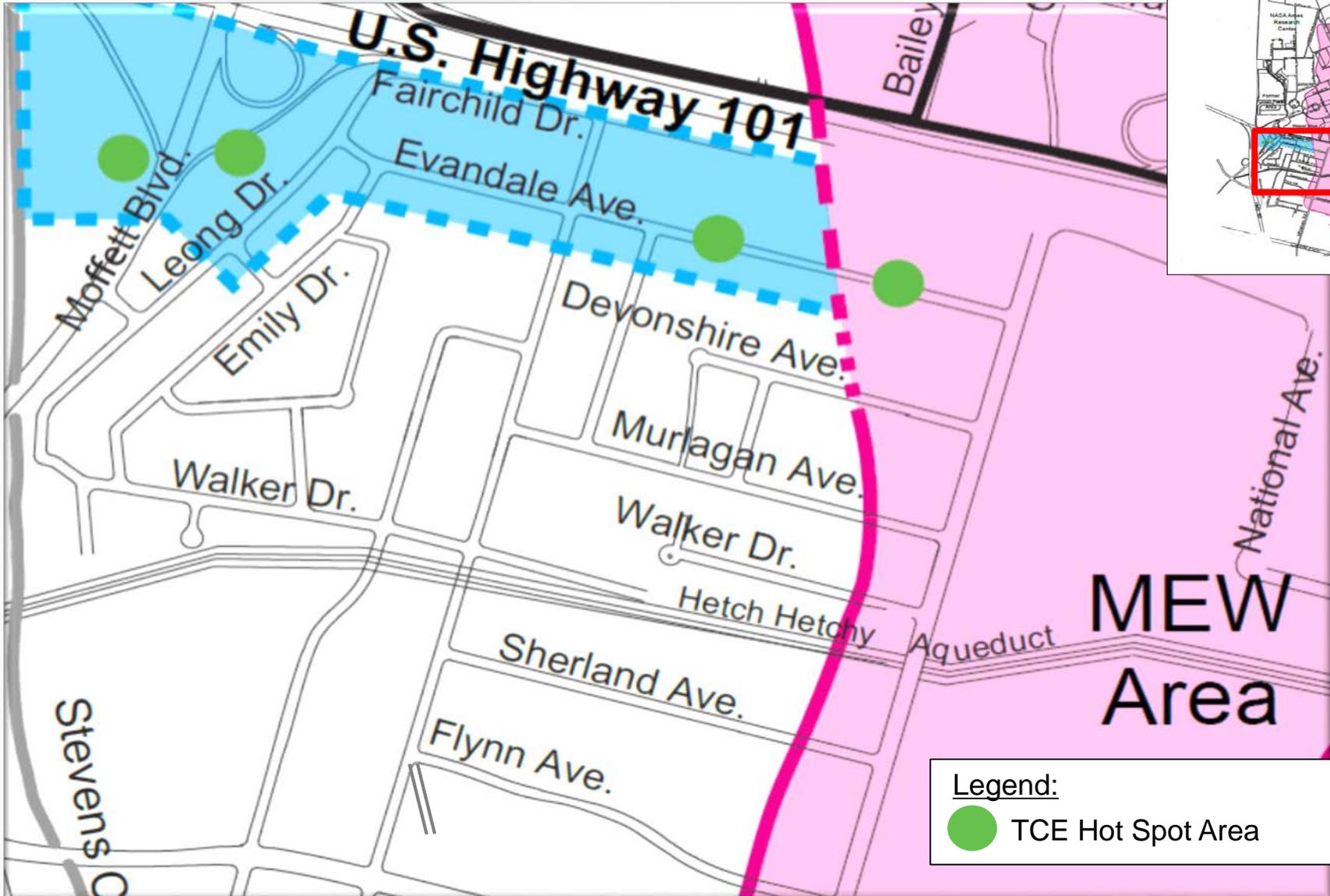
- Generally defined by the area where TCE concentrations in shallow groundwater are greater than 5 micrograms per liter ($\mu\text{g/L}$), or parts per billion (ppb).
- In 2010, EPA selected a vapor intrusion remedy for the MEW Site, which applies to all existing and future residential and commercial buildings, within the MEW Vapor Intrusion Study Area.
- EPA has set TCE indoor air cleanup levels that are protective of both short-term and long-term health concerns.

OU3 Vapor Intrusion Evaluation Area

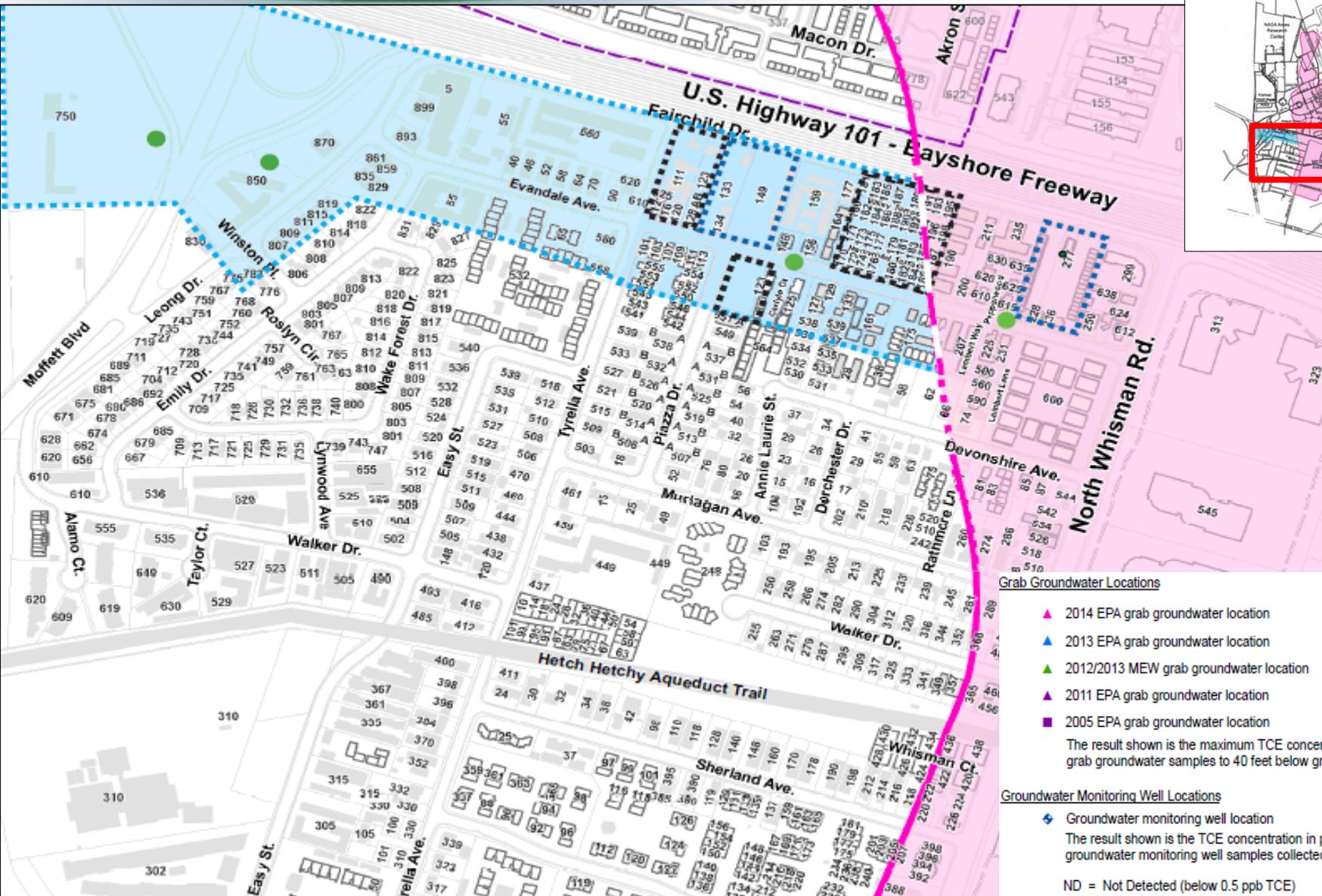
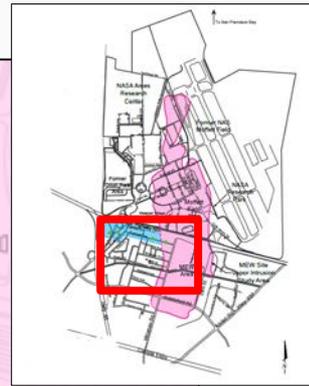
MEW Site Location and Vicinity



TCE Hot Spot Areas and OU3 Vapor Intrusion Evaluation Area



OU3 Vapor Intrusion Evaluation Area - 2015



Grab Groundwater Locations

- ▲ 2014 EPA grab groundwater location
- ▲ 2013 EPA grab groundwater location
- ▲ 2012/2013 MEW grab groundwater location
- ▲ 2011 EPA grab groundwater location
- ▲ 2005 EPA grab groundwater location

The result shown is the maximum TCE concentration in ppb from grab groundwater samples to 40 feet below ground surface.

Groundwater Monitoring Well Locations

- ◆ Groundwater monitoring well location
- The result shown is the TCE concentration in ppb from groundwater monitoring well samples collected in 2013.

ND = Not Detected (below 0.5 ppb TCE)

Dividend - Viewpoint



TOTAL FLOOR AREA*:	111,546	SF
TOTAL SITE AREA:	109,855	SF
FLOOR AREA RATIO:	1.02	

PARKING		
REQUIRED PARKING:		
2 SPACES PER UNIT	106	SPACES
3 / UNIT GUEST SPACES	16	SPACES
TOTAL	122	SPACES
PROVIDED PARKING:	127	SPACES
(INCLUDES 2 ACCESSIBLE SPACES)		

UNIT DESCRIPTION		
UNIT A	12	UNITS
LIVABLE SQ.FT.:	1,294	SF
UNIT INFO:	2 BED + 2 1/2 BA, 2-CAR	
UNIT B	12	UNITS
LIVABLE SQ.FT.:	1,673	SF
UNIT INFO:	3 BED + 2 1/2 BA, 2-CAR	
UNIT C	8	UNITS
LIVABLE SQ.FT.:	1,704	SF
UNIT INFO:	3 BED + 3 1/2 BA, 2-CAR	
UNIT C AT 5-PLEX	1	UNITS
LIVABLE SQ.FT.:	1,722	SF
UNIT INFO:	3 BED + 3 1/2 BA, 2-CAR	
UNIT AX	8	UNITS
LIVABLE SQ.FT.:	1,301	SF
UNIT INFO:	2 BED + 2 1/2 BA, 2-CAR	
UNIT BX	8	UNITS
LIVABLE SQ.FT.:	1,776	SF
UNIT INFO:	3 BED + 2 1/2 BA, 2-CAR	
UNIT CX AT 5-PLEX	4	UNITS
LIVABLE SQ.FT.:	1,945	SF
UNIT INFO:	3 BED + 3 1/2 BA, 2-CAR	
TOTAL:	53	UNITS

*TOTAL FLOOR AREA INCLUDES ALL ENCLOSED FLOOR AREA=LIVING SPACE + GARAGE + FINCLOSURE

INDOOR AIR STANDARD FOR TCE (MEW STUDY AREA)

Health-Based Criteria

- Protective of Cancer Effects
- Protective of Non-Cancer Effects
- Protective of both Short-Term and Long-Term Exposures

Margin of Safety

- Accounts for Sensitive Groups
- Data Gaps in the Science

Other Considerations

- Can be Reliably Measured using Current Laboratory Methods
- Typically Above “Background” TCE Levels Measured in Mountain View Air
- Two TCE Standards Account for Different Exposures that Occur in Homes vs. the Workplace

Residential Standard for TCE in Air = $1 \mu\text{g}/\text{m}^3$

Worker Standard for TCE in Air = $5 \mu\text{g}/\text{m}^3$

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

EPA Region 9 Interim TCE Accelerated and Urgent Response Action Levels



2014 EPA Region 9 Interim TCE Indoor Air Response Action Levels Residential and Commercial TCE Inhalation Exposure From Subsurface Vapor Intrusion

<i>Exposure Scenario</i>	<i>Accelerated Response Action Level (Hazard Quotient = 1)</i>	<i>Urgent Response Action Level (Hazard Quotient =3)***</i>
Residential *	2 µg/m³	6 µg/m³
Commercial/Industrial ** (8-hour workday)	8 µg/m³	24 µg/m³
Commercial/Industrial ** (10-hour workday – MEW Site)	7 µg/m³	21 µg/m³

*The Residential Hazard Quotient (HQ=1) accelerated response action level is equivalent to the inhalation reference concentration (RfC) since exposure is assumed to occur continuously.

** Commercial/Industrial accelerated response action levels are calculated as a time-weighted average from the RfC, based on the length of workday and rounding to one significant digit (e.g., 7 µg/m³ for a 10-hour workday.) Time-weighted adjustments can be made as needed for workplaces with longer workday schedules.

*** There is a need to identify those TCE exposures that exceed the RfC by a magnitude sufficient enough that a more urgent response is prudent; it is generally EPA Region 9 practice to immediately initiate response action to address TCE exposures at or above an HQ=3 level.

2013 - Initial Residential Indoor Air Sampling Results



- EPA sampled 30 residences in high priority residential sampling areas
- No TCE was detected in most residences sampled.
- TCE was detected in a few residences, but below EPA indoor air cleanup levels. Homes re-sampled to confirm TCE below indoor air cleanup levels.
- TCE was found in two residences exceeding EPA's TCE indoor air cleanup level.
- Vapor intrusion control systems installed to mitigate concentrations.

2013-2015 Residential Air Sampling Results Update



- Results from high priority area sampling showed vapor intrusion not a problem in most residences sampled.
- Based on groundwater and air sampling to date, areas outside the high priority areas that overlie lower TCE groundwater concentrations are considered as low vapor intrusion risk.
- Homes within the MEW Vapor Intrusion Study Area and OU3 Vapor Intrusion Evaluation Area are subject to the MEW Site 2010 ROD Amendment and may be sampled.

What if there is a vapor intrusion problem in home?



- If indoor air sampling results show TCE from vapor intrusion exceeding EPA's residential indoor air cleanup level of 1 microgram per cubic meter ($\mu\text{g}/\text{m}^3$), EPA recommends installation of a vapor intrusion control system.
- Includes sealing potential conduits and installing sub-slab or sub-membrane vapor intrusion control system.
- Sampling and mitigation system at no cost to homeowner or resident.

How do you have your residence sampled?



Residences within MEW Site Vapor Intrusion Study Area and OU3 Vapor Intrusion Evaluation Area –

Generally areas where shallow groundwater contamination exceeds 5 parts per billion (ppb) may be sampled at no charge to the resident/owner.

- Contact EPA and provide your residence address, phone number, and email, and an EPA representative will get in touch with you.
- Permission to sample must be obtained from property owner.
- Sampling ground floor units only of multi-unit buildings.
- Sampling arrangements will be coordinated with sampling of other homes. Next sampling to be conducting during the colder temperature months (November through March).

For More Information



Presentations, fact sheets, figures, technical plans and reports are posted on EPA's [MEW Superfund Area](#) website.

EPA Points of Contact:

Alana Lee

EPA Project Manager

MEW Superfund Area

Vapor Intrusion, TCE Source Investigation, Groundwater Cleanup

415.972.3141

Lee.Alana@epa.gov

Jackie Lane

Community Involvement Coordinator

415.972.3236

Lane.Jackie@epa.gov

See also, EPA Websites –

www.epa.gov/region9/mew

www.epa.gov/region9/moffettfield

www.epa.gov/oswer/vaporintrusion

Additional Information



The following slides are additional information.
Not used during November 1, 2015
presentation.

2011 TCE Health Assessment



- In September 2011, EPA finalized TCE Health Assessment (see *Toxicological Review of TCE* <http://www.epa.gov/iris/subst/0199.htm>)
- Assessment concluded TCE is human carcinogen. Can cause cancer in humans if exposed to high enough concentrations for a long enough period of time.
- TCE can also affect the central nervous system, kidneys and liver, male reproductive organs, and the developing fetus.

Potential Health Effects associated with TCE



- **Non-cancer**

- » Acute effects-neurological
- » Various organ systems
 - Liver
 - Kidney
- » Immunological
- » Reproductive
- » Developmental

- **Cancer**

- » Kidney
- » Liver
- » Lymphoma

- **Mode of Action**

- » Mutagenic
- » through metabolites

Potential Health Effects of TCE Depend on Many Factors



Potential health effects of TCE depend on many factors including:

- General health, age and lifestyle of the person
- How much a person is exposed to TCE (amount, duration)
- How often a person is exposed (frequency of exposure)