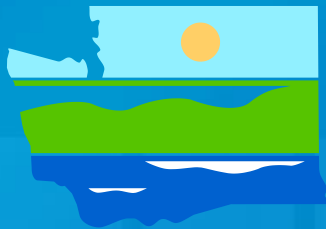


# Tacoma Smelter Plume Cleanup Orientation

March 10<sup>th</sup> & 16<sup>th</sup>, 2016

Point Defiance Elementary School



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

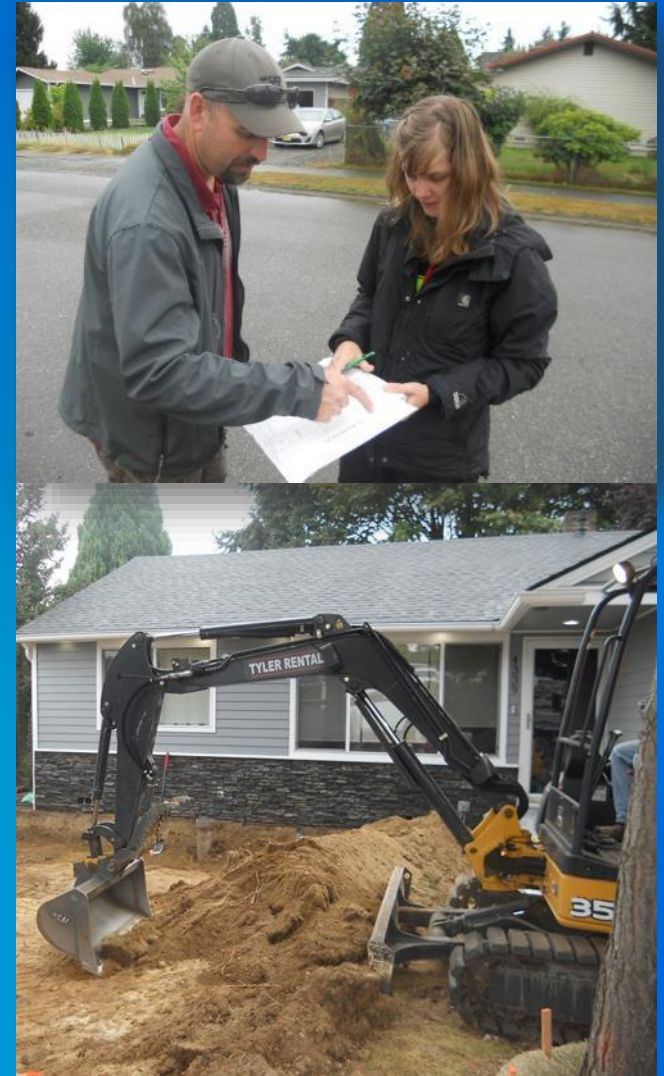
# Outline

- History
- Sampling Data
- Cleanup process
- Health information
- Appointments



# Purpose

- The goal of tonight is to prepare you for meeting with us in the coming months.
- This meeting is a Cleanup Orientation for soil removal and replacement that will occur in 2017/2018.



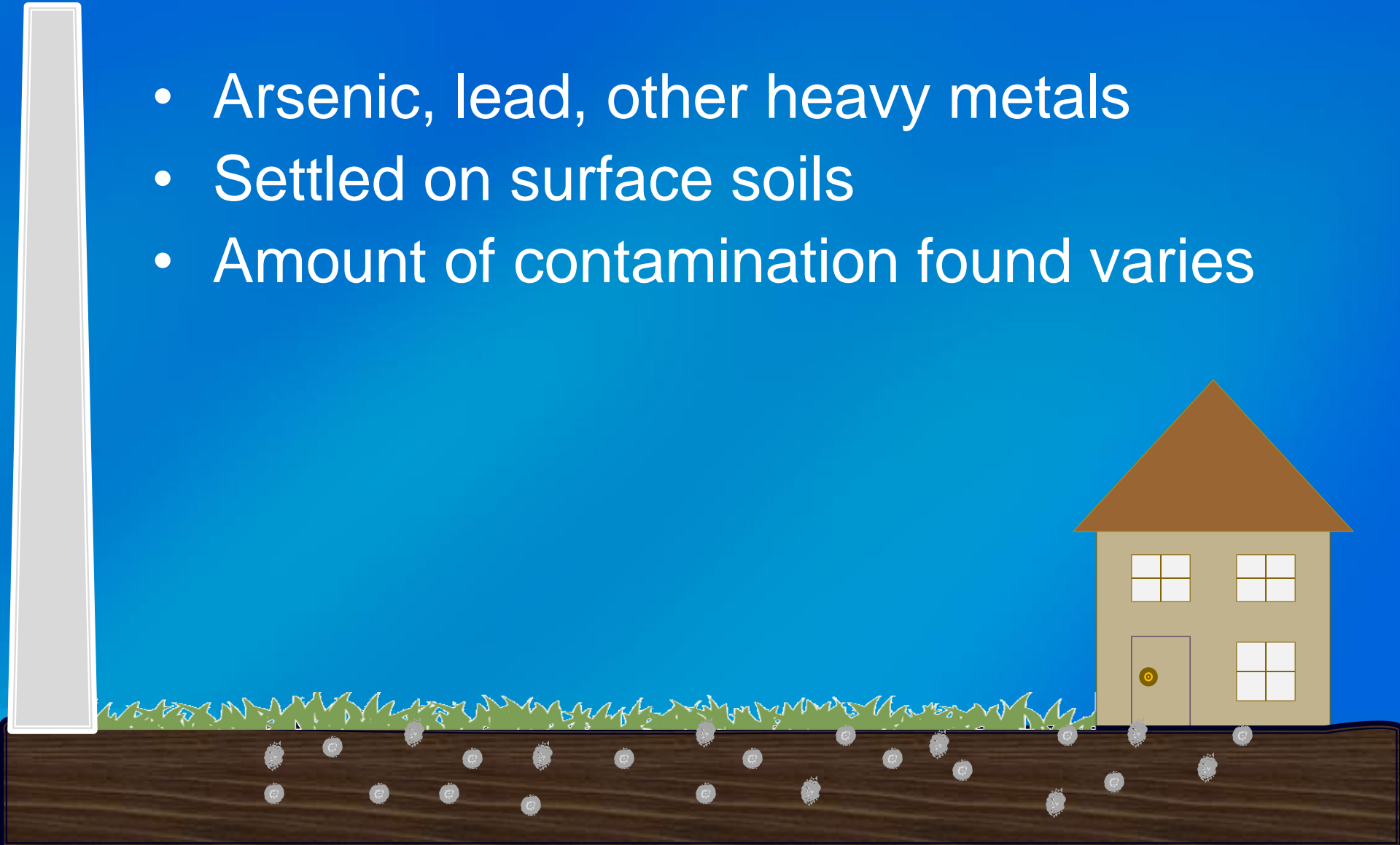
# Asarco Smelter History

- **1890-1986:** Smelted lead, copper, and high arsenic ores
- **1983:** Became a Superfund site
- **1993:** EPA yard cleanup began in Ruston and north Tacoma



# Tacoma Smelter Plume

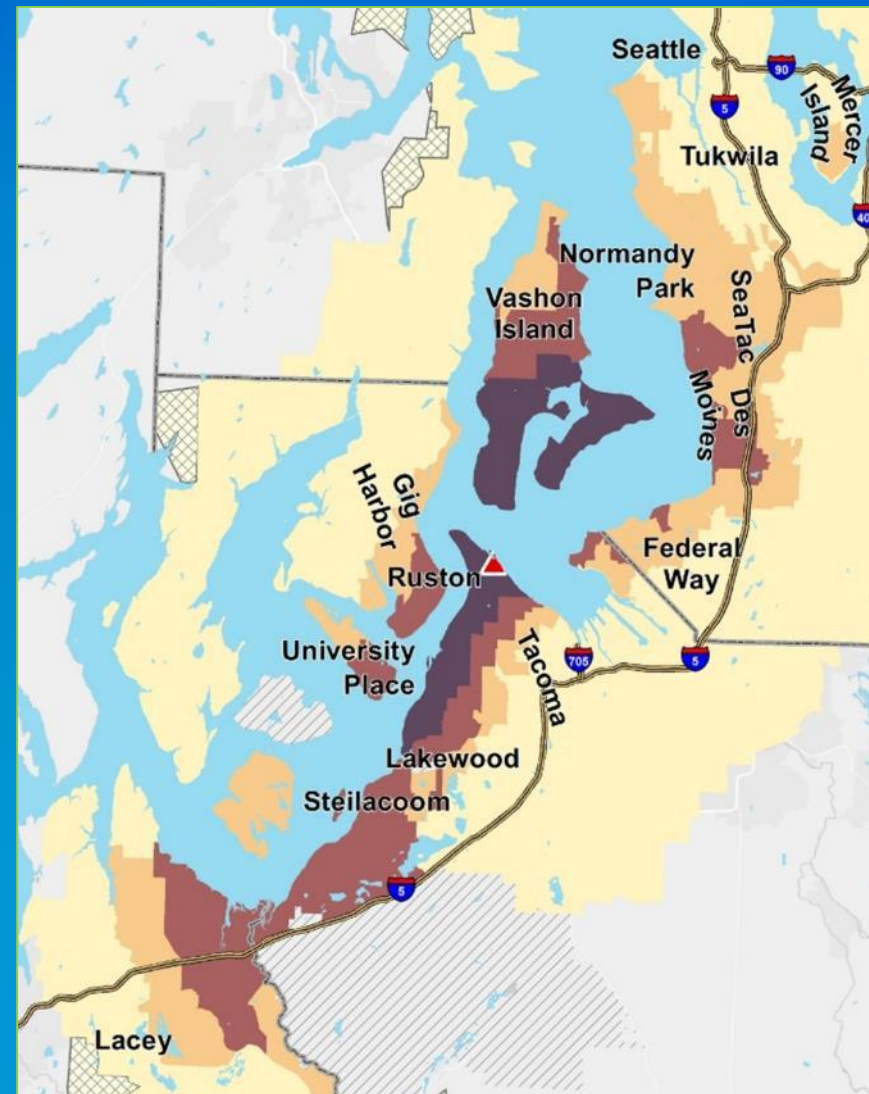
- Arsenic, lead, other heavy metals
- Settled on surface soils
- Amount of contamination found varies





# Tacoma Smelter Plume

- 1000 sq mile area
- Outreach and Education
- Soil Safety Program
- Yard Sampling and Cleanup Program



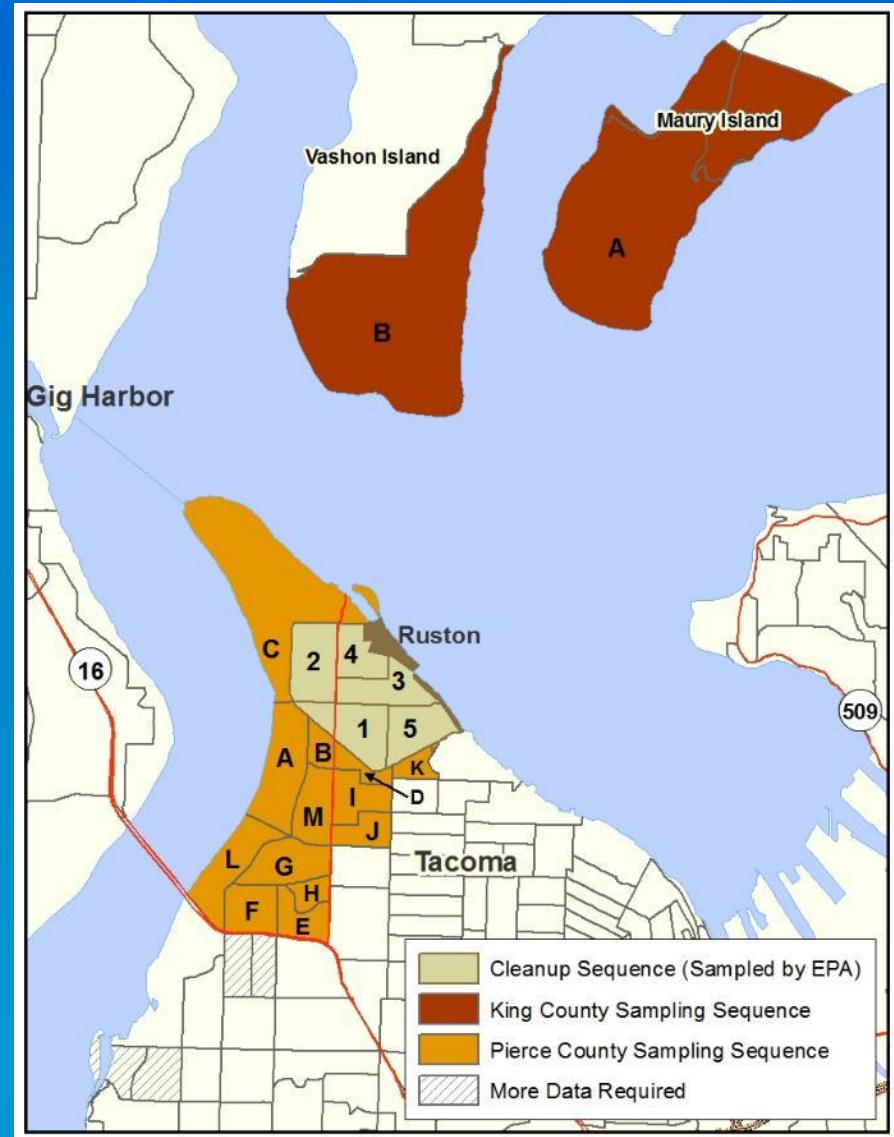
# Yard Program Overview

- Existing residential
- State-led
- Voluntary

## Action Levels

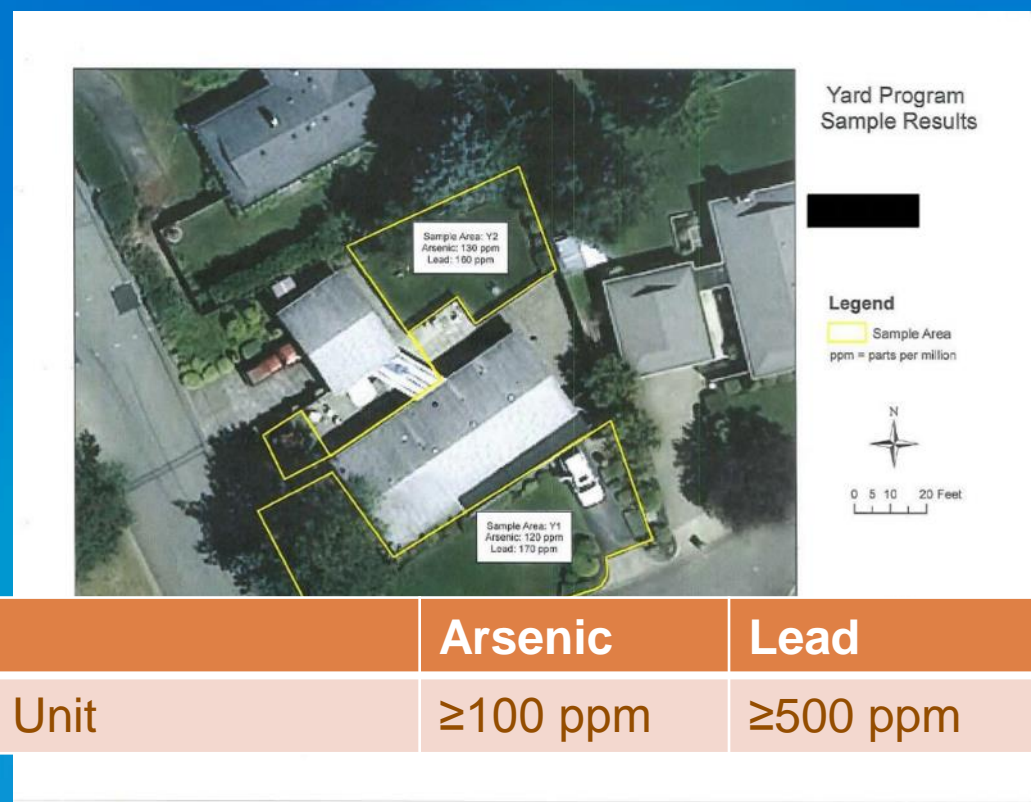
Average arsenic = 100 ppm

Average lead = 500 ppm



# Evaluation of TPCHD Results

- Sample results are from a composite sample taken from the top 6" of soil.

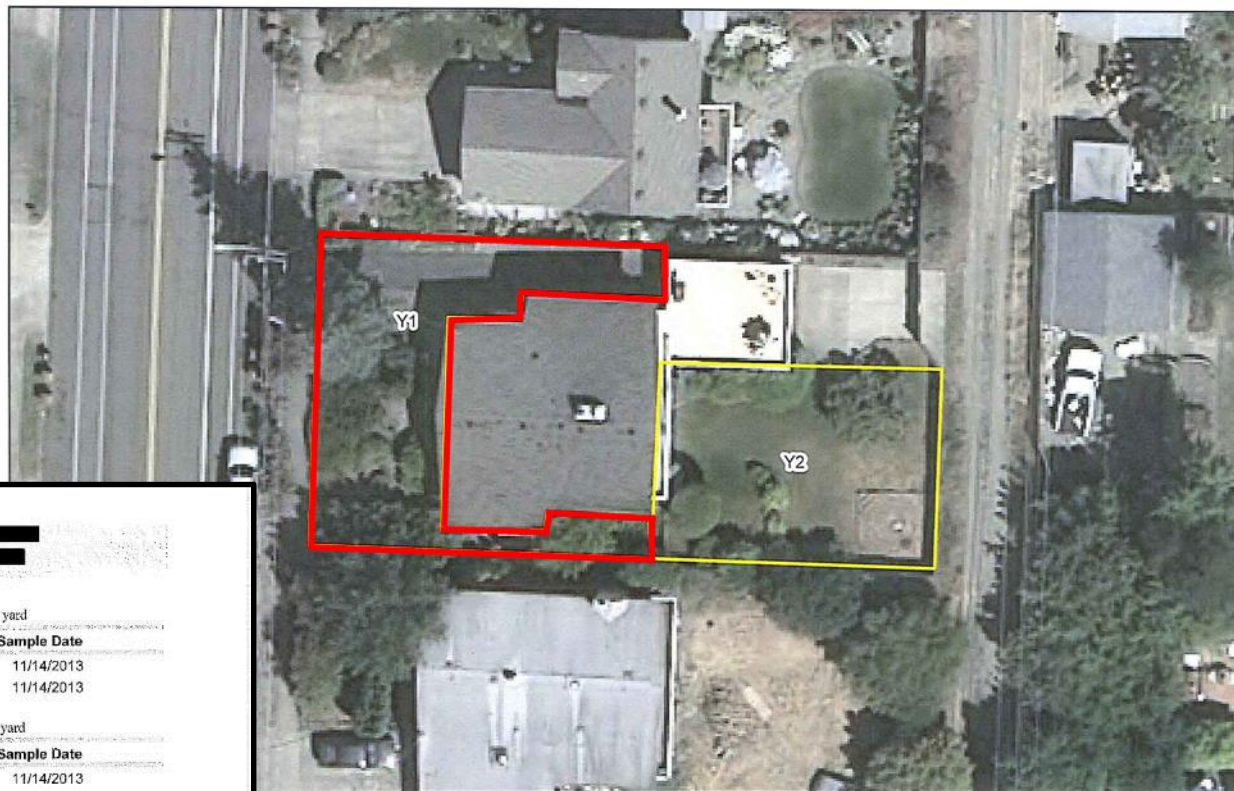


Only subunits  
≥100 ppm  
Arsenic or ≥500  
Lead qualify for  
cleanup



# For example...

## This property qualifies for cleanup



Sample Results			
Property ID: [REDACTED]	Property Owner: [REDACTED]		
Parcel: [REDACTED]	Site Address: [REDACTED]		
	City: Tacoma		
<b>Area Y1 Ground Cover: Bark Location: Front yard</b>			
SAMPLE ID	ANALYTE	RESULT*	Sample Date
[REDACTED]-Y1-1-4	Arsenic	150	11/14/2013
[REDACTED]-Y1-1-4	Lead	190	11/14/2013
<b>Area Y2 Ground Cover: Grass Location: Back yard</b>			
SAMPLE ID	ANALYTE	RESULT*	Sample Date
[REDACTED]-Y2-1-4	Arsenic	52	11/14/2013
[REDACTED]-Y2-1-4	Lead	43	11/14/2013



## Subunit Y1 is >100 ppm for Arsenic

# Evaluation of EPA Results

- Compare 0-6" and 6-12" results to criteria

	Arsenic	Lead
Parcel average	≥100 ppm	≥500 ppm
Subunit maximum	≥200 ppm	≥1,000 ppm

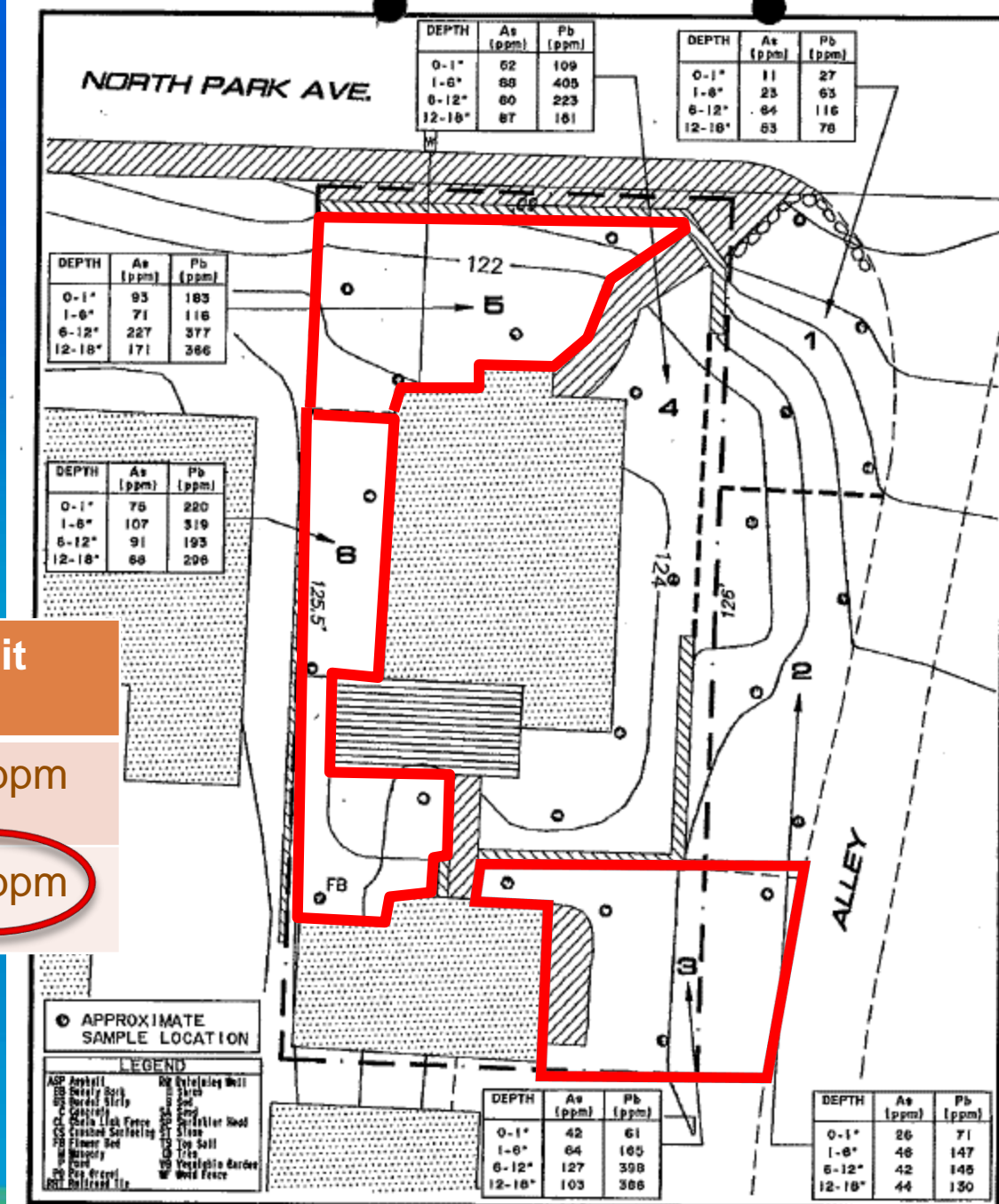
- Only subunits ≥100 ppm Arsenic or ≥500 qualify for cleanup

For example...

EPA Property qualifies for cleanup

Depth	Parcel average	Subunit max
0-6"	64 ppm	101 ppm
6-12"	100 ppm	227 ppm

Subunits 3, 5, 6 are >100 ppm



# 1<sup>st</sup> Planning Meeting

- Sampling results
- Measurements & Photos
- Cleanup options
- Restoration options
- Timeline





# Before the 1st meeting

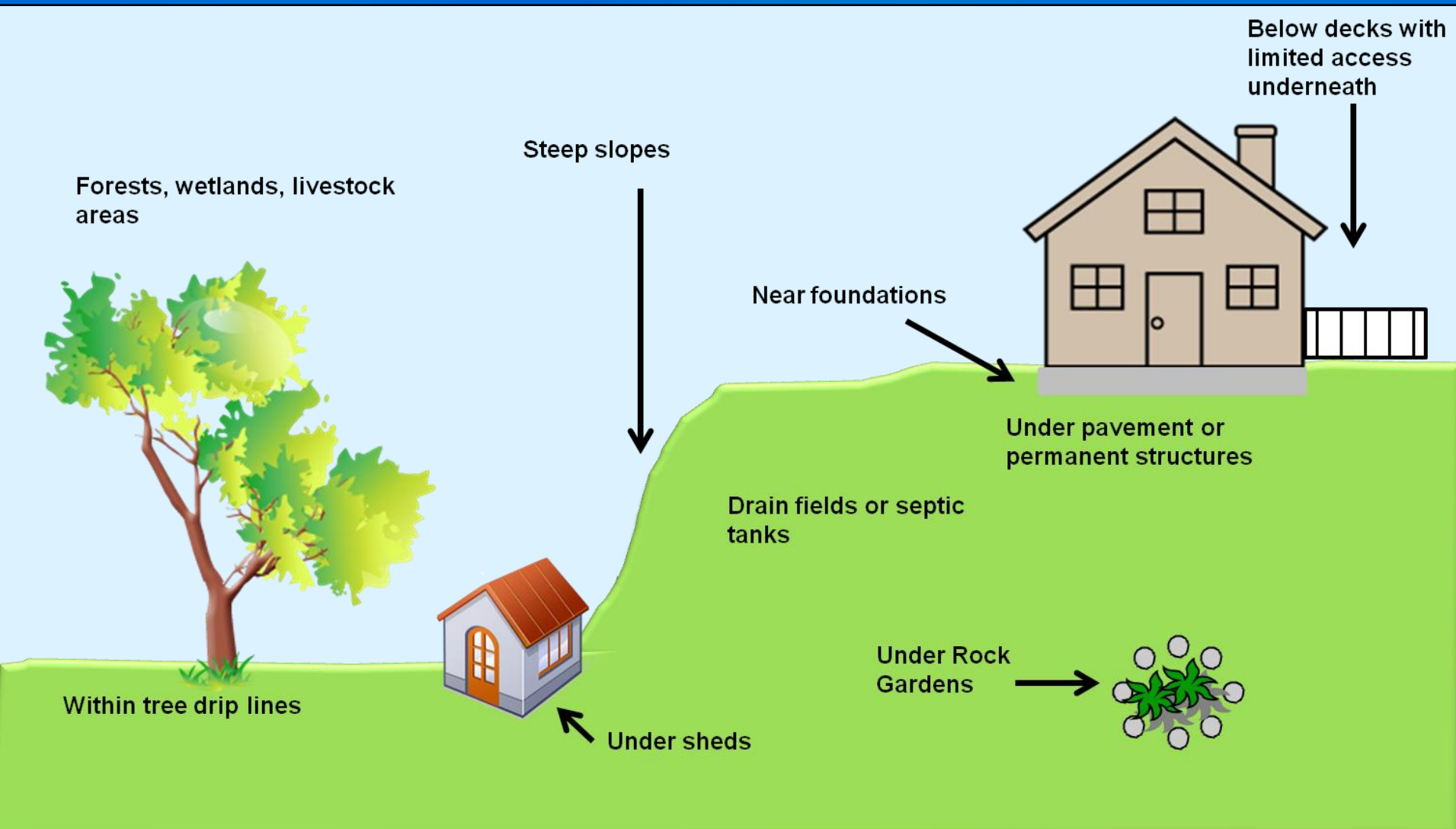
Consider:

- Plants
- Landscaping
- Utilities
- Pets

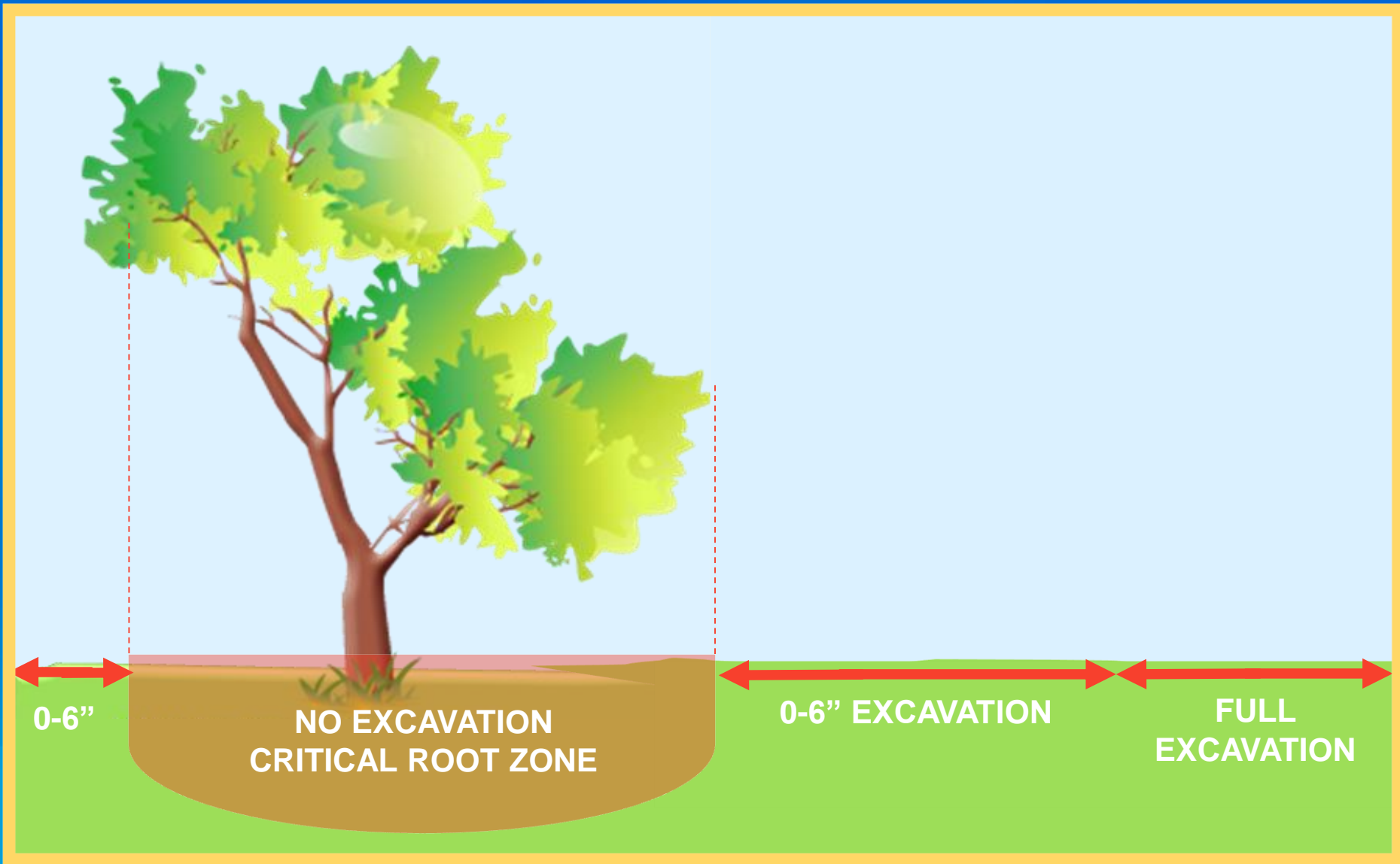




# Areas excluded from Cleanup



# Tree Critical Root Zones



# Draft Cleanup Plan/Agreement

Includes:

- Cleanup Information
- Restoration Information
- Owners Responsibilities

**WITHIN THE CLEANUP AREA ECOLOGY WILL:**

1. LOCATE BURIED UTILITIES AND DRAINPIPES.
2. EXCAVATE UP TO 12-18 INCHES IN CLEANUP AREA.
3. EXCAVATE UP TO 6 INCHES UNDER TREES, OR TO TOP OF TREE ROOTS, WHICHEVER IS SHALLOWER.
4. INSTALL TEMPORARY CONSTRUCTION FENCES.
5. REMOVE, RETAIN, OR REPLACE PLANTS AS INDICATED.
6. SETBACK CLEANUP AREA 3' FROM WALL.

**ECOLOGY WILL RESTORE YOUR YARD BY:**

1. PLACING AND COMPACTING UP TO 12-18 INCHES OF TOPSOIL IN EXCAVATED AREAS.
2. PLACING SOD IN GRASS AREAS.
3. REPLACING 16 PLANTS WITH NURSERY PLANTS IN FRONT YARD PLANTER.
4. WATERING, MOWING, FERTILIZING, AND RAKING LEAVES FOR 60 DAYS AFTER INSTALLATION.
5. RESTORING CLEANUP AREAS TO PRE-EXCAVATION ELEVATIONS.

**OWNER RESPONSIBILITIES:**

1. BEFORE CLEANUP: REMOVE ITEMS FROM YARD.
2. DURING CLEANUP: MAINTAIN ACCESS ONTO DRIVEWAY, ALLEY, AND STREET.
3. AFTER: NOTIFY ECOLOGY IF YOU NOTICE PUDDLES THAT LAST MORE THAN 48 HOURS, SOIL SETTLING, OR OTHER ISSUES. MAINTAIN YARD AS STATED IN ACCESS AGREEMENT AND LANDSCAPE BROCHURE. PROPERTY OWNER IS RESPONSIBLE FOR PICKING UP PET WASTE; FAILURE RESULTS IN VOID WARRANTY ON GRASS.

**PROPERTY OWNER NAME:** \_\_\_\_\_

**CLEANUP PLAN FOR ACCESS AGREEMENT**

PROPERTY EPA ID: XX00  
OWNER: OWNER  
123 4TH ST, TACOMA, WA

**Attachment B**

# 2<sup>nd</sup> Planning Meeting

- Review the draft plan
- Review the agreement
- Sign the plan & agreement

We approve of the recommended Yard Program Cleanup and Restoration Plan as attached, and agree to follow the plan under the conditions in this agreement.

\_\_\_\_\_  
Rebecca S. Lawson, PE, LHG  
Regional Section Manager  
Toxics Cleanup Program  
Southwest Regional Office  
Washington Department of Ecology

Date

\_\_\_\_\_  
[PROPERTY OWNER NAME]

Date

**(13) Cleanup enforcement**

Ecology's general policy is to not enforce cleanup against residential home owners. Ecology will not require further action unless contamination poses an immediate and serious threat to human or environmental health.

**(14) Other information about the agreement:**

This agreement is the entire agreement between the parties. Changes to this agreement are only valid if they are put in writing and signed by the Ecology and the property owner. This agreement shall be interpreted in accordance with the laws of the State of Washington. This agreement shall be effective as of the date signed.

We approve of the recommended Yard Program Cleanup and Restoration Plan as attached, and agree to follow the plan under the conditions in this agreement.

\_\_\_\_\_  
Rebecca S. Lawson, PE, LHG  
Regional Section Manager  
Toxics Cleanup Program  
Southwest Regional Office  
Washington Department of Ecology

Date

\_\_\_\_\_  
[PROPERTY OWNER NAME]

Date

Page 5 of 7

Owner Initials: \_\_\_\_\_

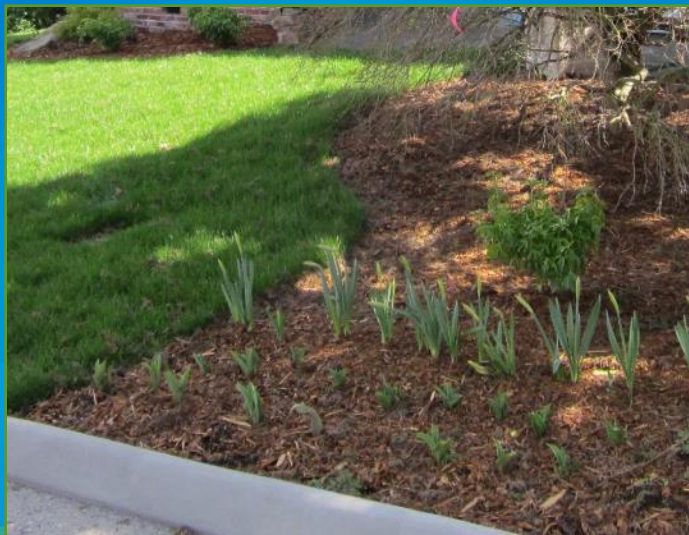


# Soil Replacement Process





# Landscape Restoration



# Timeline

\* This is an estimated timeline and subject to change.



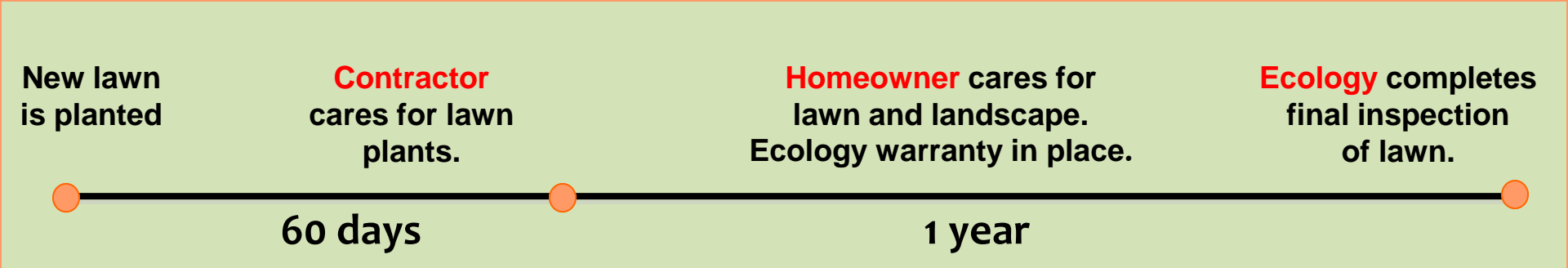
# Lawn Care

First 60 days:

- Contractor cares for lawn and plants

After 60 days:

- Homeowner cares for new lawn



# Homeowner lawn care

After 60 days:

- Water new plants or grass
- Weed regularly
- Replenish mulch
- Add fertilizer
- Pick up pet waste

Call Ecology immediately if you notice a problem with your plants or lawn.

## Lawn and Plant Care After Soil Cleanup



Tacoma Smelter Plume

March 2014

You should now be caring for your new lawn and landscape. Ecology has a one year warranty for the work done on your property but **only if you follow all of these lawn care recommendations**. If you have any questions, please call Ecology at (360) 407-7688.

### 1. Water your lawn and plants

Water your new lawn and plants regularly from May to October. In the summer, lawns need one inch of water per week. Plants may need less but watch for signs of wilting.



- During the first year, water twice a week; during the second year and beyond, water one time per week.
- Water more if you see a blue or gray tint, brown spots, or if footprints stay for more than 30 seconds.
- Water in early morning to reduce evaporation. Water when "dew" usually appears naturally.
- Lay soaker hoses or drip lines on new plants and shrubs. You'll use less water and plants will be healthier, with fewer weeds or diseases. Cover them with mulch for more water savings and less work.

### 2. Fertilize your lawn

As part of cleanup, Ecology's contractors will apply fertilizers to your lawn immediately after cleanup. However, you should apply additional fertilizer the next spring and fall.



- Use organic and slow release fertilizers; they feed your lawn for a longer period of time.
- Use fertilizers high in nitrogen but no more than 18%.
- Fertilize in spring (April or May) and again in fall (October or November) to build strong roots.
- Apply fertilizer evenly to prevent your lawn from developing 'bands' of different colors.
- For more information about fertilizers, we recommend visiting your garden supply store.

### 3. Keep dogs off new lawn and pick up pet waste

Dogs can cause damage to lawns with their paws and waste. Dog paws may compact soil. Dog waste can be highly acidic, leaving dead spots if left too long.



- Pick up pet waste daily to make sure you do not create any dead spots.
- Keep pets off the grass as much as possible to reduce wear on the new lawn.

### 4. Leave lawn at least 2-3 inches high

This will help protect your lawn from drought and reduce chances of weed invasion. A longer length will also help to establish a healthy root system.

- Taller grass means deeper roots. You may need to adjust your lawn mower's clipper height to ensure the cut grass is not too short.
- Mow high and leave lawn clippings on lawn to recycle nutrients. Shorter clippings decompose quickly.



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1

Please reuse and recycle





# Arsenic in Soil Database

Find Property



## Project Information

### Arsenic and lead in the soil

The mining company Asarco once operated two copper smelters in Washington State; in Everett and Tacoma. Emissions of arsenic and lead contaminated soils for miles around the former stacks.

[Information about arsenic and lead](#)

The [Tacoma Smelter Plume](#) covers 1,000 square miles of King, Pierce, and Thurston counties. The [Everett Smelter](#) contaminated northeast Everett. Ecology and [EPA](#) have been cleaning up yards and play areas in both plumes since 1993.

[Healthy Actions to reduce contact with soil](#)

### Search here for soil sampling results and cleanup records!

Right now, the database only has records for 2,000 properties in Ruston and north Tacoma.

**Contact**  
[Nida Taylor](#)  
360-407-6248

1. Enter your address or parcel number and click "search."
2. You will see a map of the area.
3. The property you searched for should be in the center of the screen. Click on the dot, check the address and see what records are available.

### I can't find my property/I live outside of north Tacoma

Within the next year, we plan to add records for the Everett smelter cleanup and more areas of the Tacoma Smelter Plume.

### Search for a Property

(do not include the city or state)

- OR -



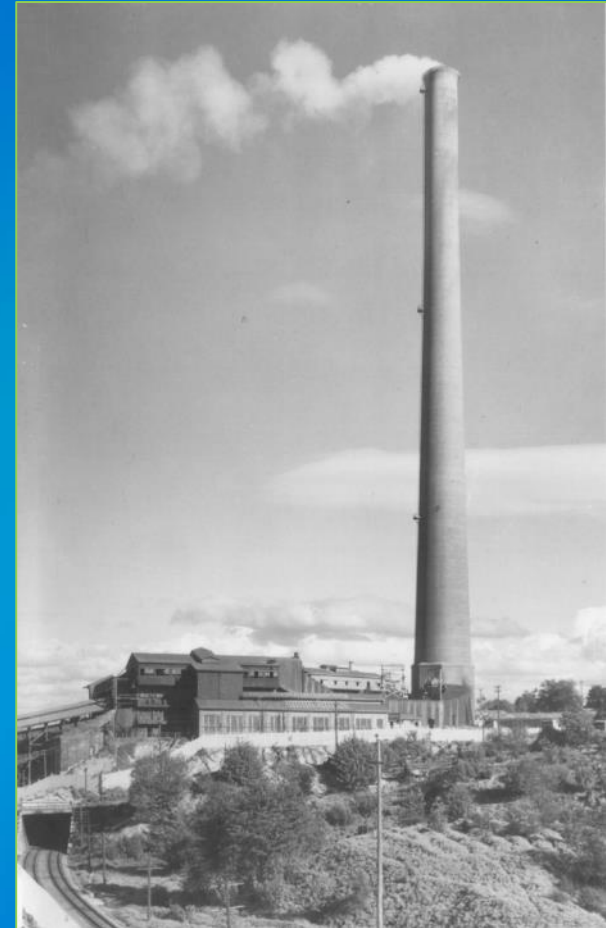
# Health Effects

- Prolonged exposure to arsenic & lead
- Children are most at risk
- Are all portions of your yard getting cleaned up?
- How about your neighbor's property?
- Right-of-ways in your neighborhood?



# Health Effects

- Long-term effects
- Cancer of the bladder, lung, skin, kidney, liver, and prostate
- Heart disease and diabetes
- Developmental Delays  
(especially in children)



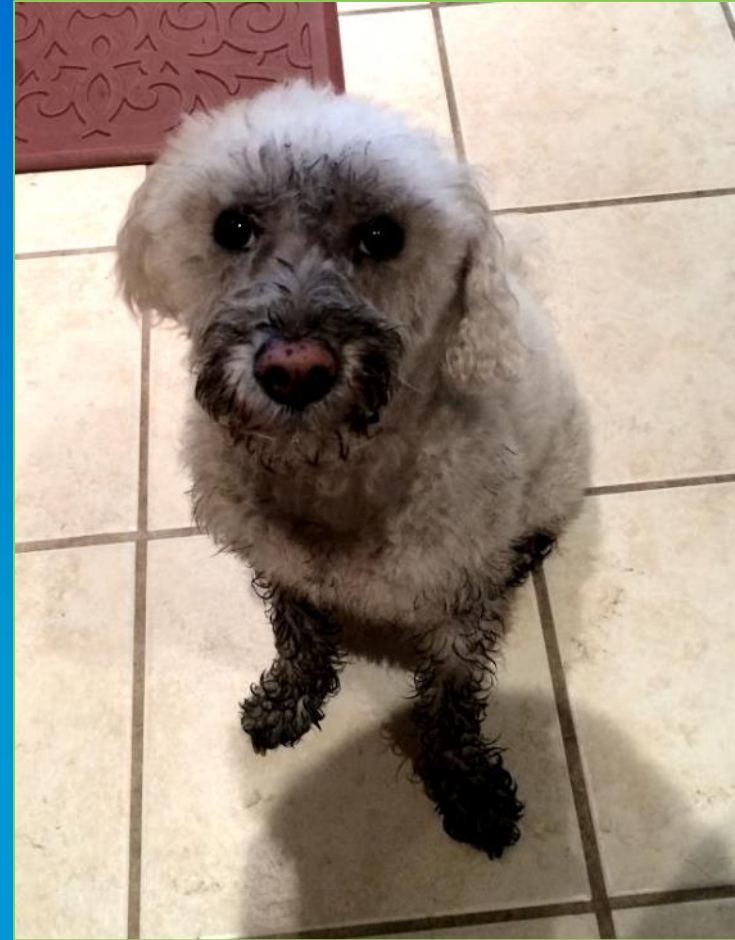
# Healthy Actions

- Remove your shoes.
- Wash hands with plenty of soap and water.
- Maintain your grounds.



# Healthy Actions

- Keep pets clean.
- Mop, dust and vacuum.
- Eat a healthy diet.



# Gardening in contaminated soil

## Safety Tips:

- Wear gloves and wash hands.
- Wear a dust mask during dry weather.
- Take off shoes at the door.
- Don't wear dirty work clothes into the house.
- Wash dirty or muddy clothes separately.
- Cover bare patches of soil in the yard.





# Growing Fruits and Vegetables

- Garden in raised beds or ceramic pots.
- Wash and peel your produce
- Mix compost or manure into your bed.
- Ask your soil supplier about soil quality.



# Planning Visit Coordinators



**Aaron Waggoner**  
GeoEngineers

[Awaggoner@geoengineers.com](mailto:Awaggoner@geoengineers.com)  
(253) 722-2449



**John Deeds**  
GeoEngineers

[jdeeds@geoengineers.com](mailto:jdeeds@geoengineers.com)  
(253) 383-4940

# Soil Sampling and Health Questions

## Contact

Jeremy Bush

Email: [jbush@tpchd.org](mailto:jbush@tpchd.org)

Phone: (253) 255-8135

Website: [DirtAlert.info](http://DirtAlert.info)



# Questions?



## Contact

Crescent Calimpong, Outreach Coordinator

Email: [Crescent.Calimpong@ecy.wa.gov](mailto:Crescent.Calimpong@ecy.wa.gov)

Phone: (360) 407-6790

Amy Hargrove, Remediation Manager

Email: [Amy.Hargrove@ecy.wa.gov](mailto:Amy.Hargrove@ecy.wa.gov)

Phone: (360) 407-6762

Website: [ecy.wa.gov/toxics/tacoma-smelter.html](http://ecy.wa.gov/toxics/tacoma-smelter.html)



# Questions?

*Please stick around to schedule an appointment*