Frederickson Industrial Park Cleanup Plans

February 5, 2014

Frederickson Elementary School

Guy Barrett, Site Manager

DEPARTMENT OF ECOLOGY
State of Washington

Why Are We Here?

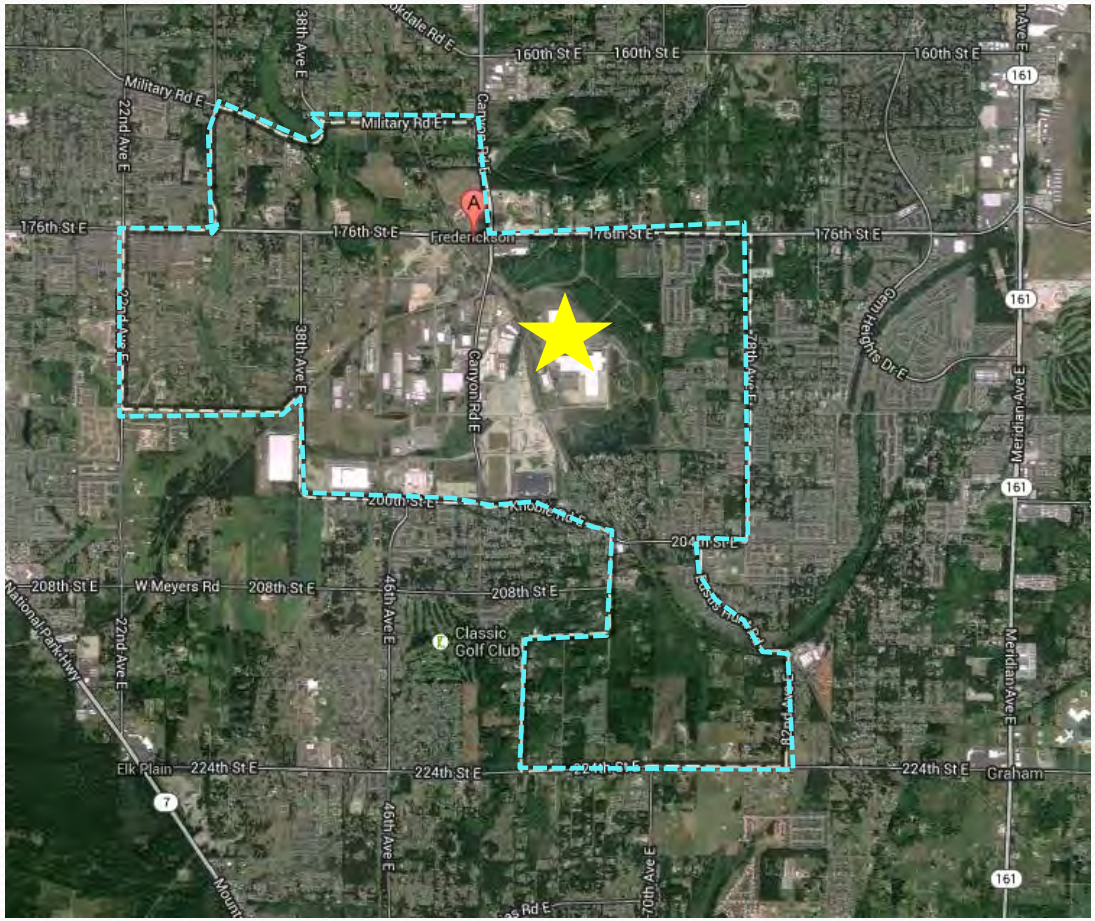
- To provide you with an update on site cleanup to date.
- To provide you with the opportunity to comment on new cleanup plans.
- To hear your comments and concerns, and answer your questions.

Meeting Agenda

- Staff Introductions
- Department of Ecology Presentation
- Question and Answer Session
- Open House

Presentation Overview

- Model Toxics Control Act (MTCA)
- Site background
- Site contamination and investigations
- Cleanup plan
- Next steps



Frederickson, Wash.

DEPARTMENT OF ECOLOGY State of Washington

Model Toxics Control Act
CLEANING UP CONTAMINATION!

1 SITE DISCOVERY AND INVESTIGATION

Sites may be discovered in a number of ways. These include reports from the owners, an employee or sometimes, a concerned citizen.

Ecology will do an initial investigation and determine whether or not a site needs further investigation. Then, Ecology will send out a notice to owners, operators and other potentially liable persons, inviting them to work with the department to clean up the site.

2 SITE HAZARD ASSESSMENT AND RANKING

Ecology confirms that hazardous materials are present on site. Ecology then decides what the relative risk is to human health and the environment and gives the site a ranking. Sites can be ranked from 1 (highest level of risk) to 5 (lowest level of risk).

3 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY

Potentially liable persons (PLPs) work with Ecology to investigate the site. Often, Ecology will enter into a legal agreement with PLPs for the terms of the cleanup.

The investigation defines the full nature and extent of the pollution on the site. This information is used during the feasibility study, which evaluates possible cleanup options.

4 INTERIM ACTIONS

Actions can be taken at any time during the cleanup process to reduce the risk to human health and the environment. With Ecology approval, parts of the site can be cleaned up at any time.

5 SELECTION OF CLEANUP ACTION

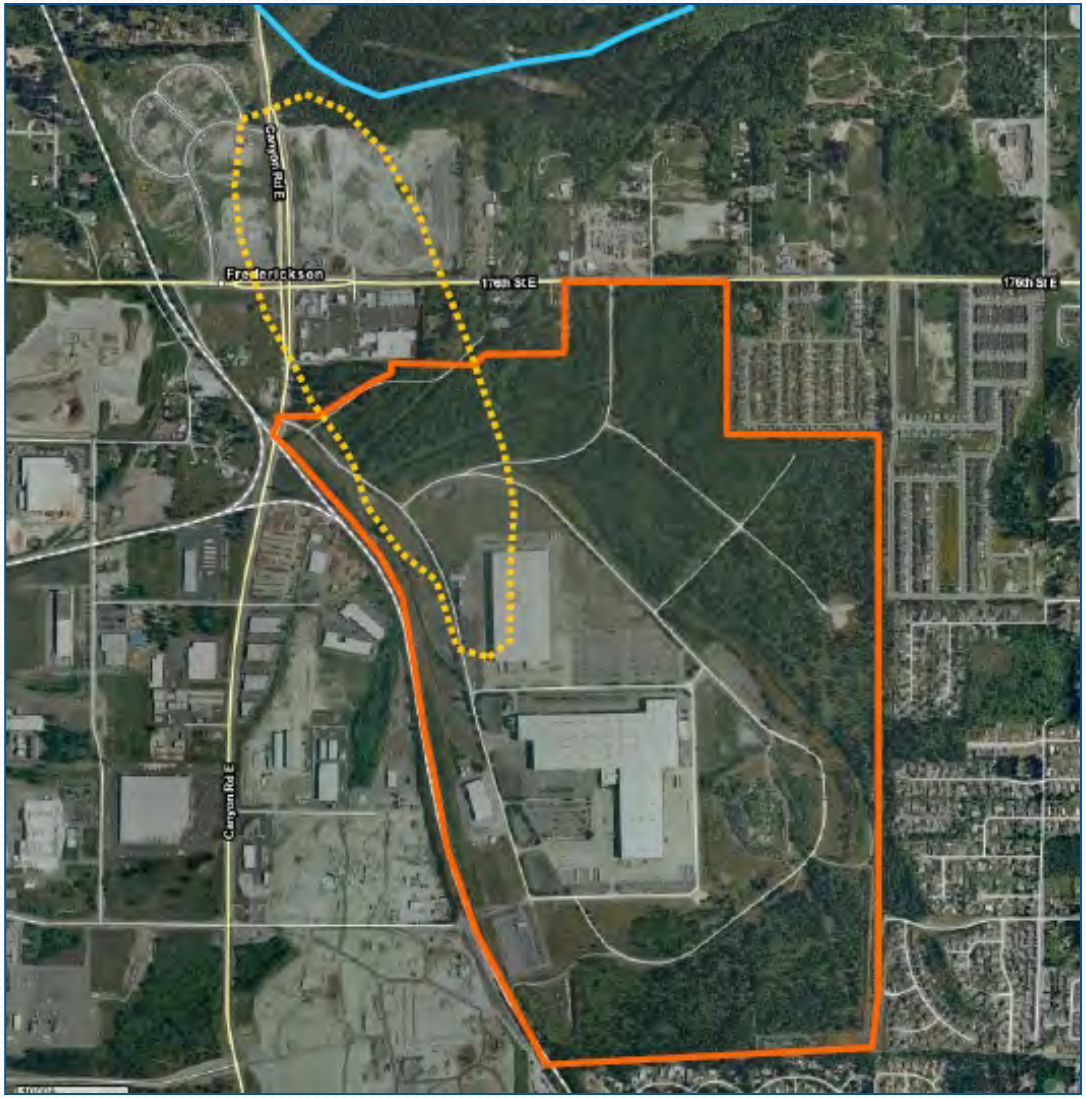
Using information from the feasibility study, Ecology decides on a cleanup methods and writes a cleanup action plan.

6 SITE CLEANUP

Ecology determines when the cleanup standards have been met. Cleanup actions can include; digging up soil or sediments, capping contamination, treating groundwater or a whole range of other technologies. Sites must be monitored to make sure the cleanup worked.

TOXICS CLEANUP PROGRAM

Frederickson Industrial Park Cleanup Site



Frederickson Industrial Park Property

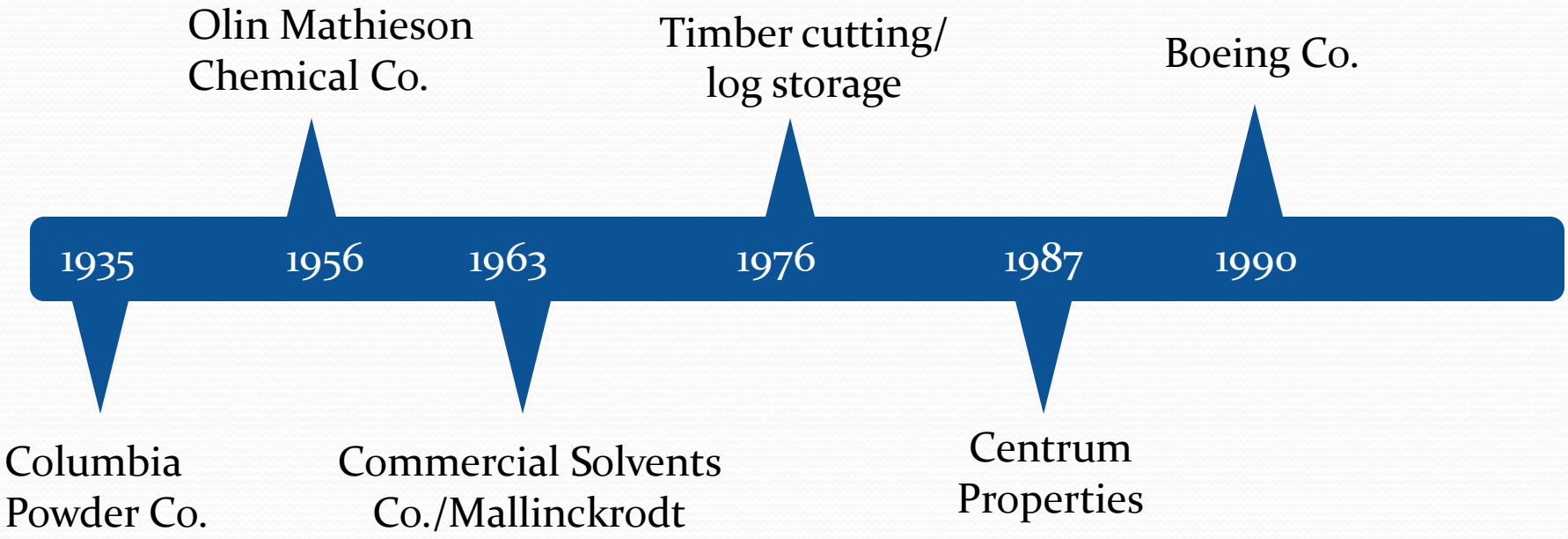
Plume of carbon tetrachloride (CTC)-contaminated groundwater

Clover Creek

Site History

- **1935 -1976**: Explosives produced on site.
- **1976-1986**: Site used for timber-related operations.
- **1987-1990**: Site developed into industrial park.
    - Carbon tetrachloride (CTC) discovered on site.
    - Residual debris and waste removed.
- **1995**: Olin and Mallinckrodt named Potentially Liable Persons (PLP).
- **1994- 2007:** Ongoing monitoring and investigations
    - remedial investigation and feasibility study.
- **2008-2011**: Additional RI Scope of Work, confirming CTC only contaminant of concern.

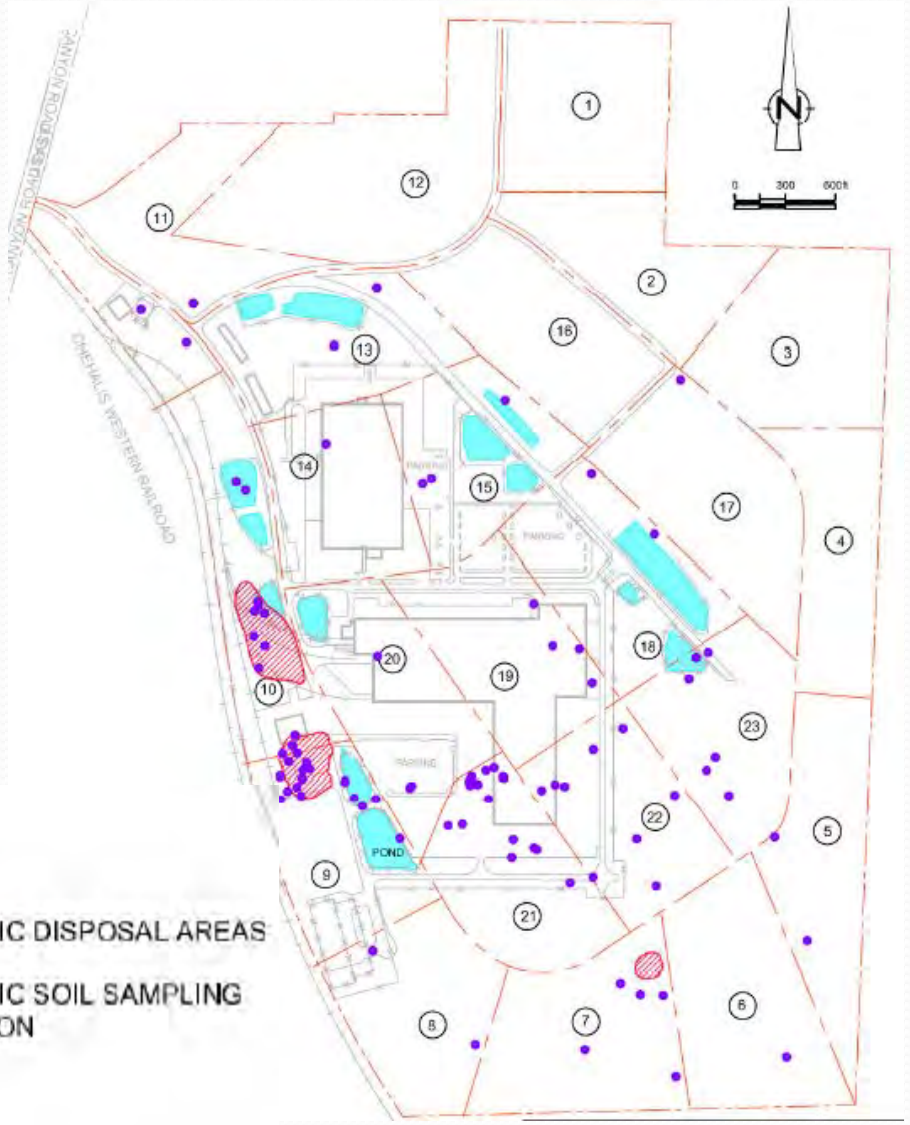
Site Ownership



Historic Disposal Areas

Disposal pits used to burn and dispose of:

- Waste paper
- Residual powder
- Barrels
- Scrap metal
- Laundry waste
- Rags
- Wood products



Cleanup by the Numbers

Between 1989 and 1991, while the site was being developed into an industrial park, previous property owners removed:

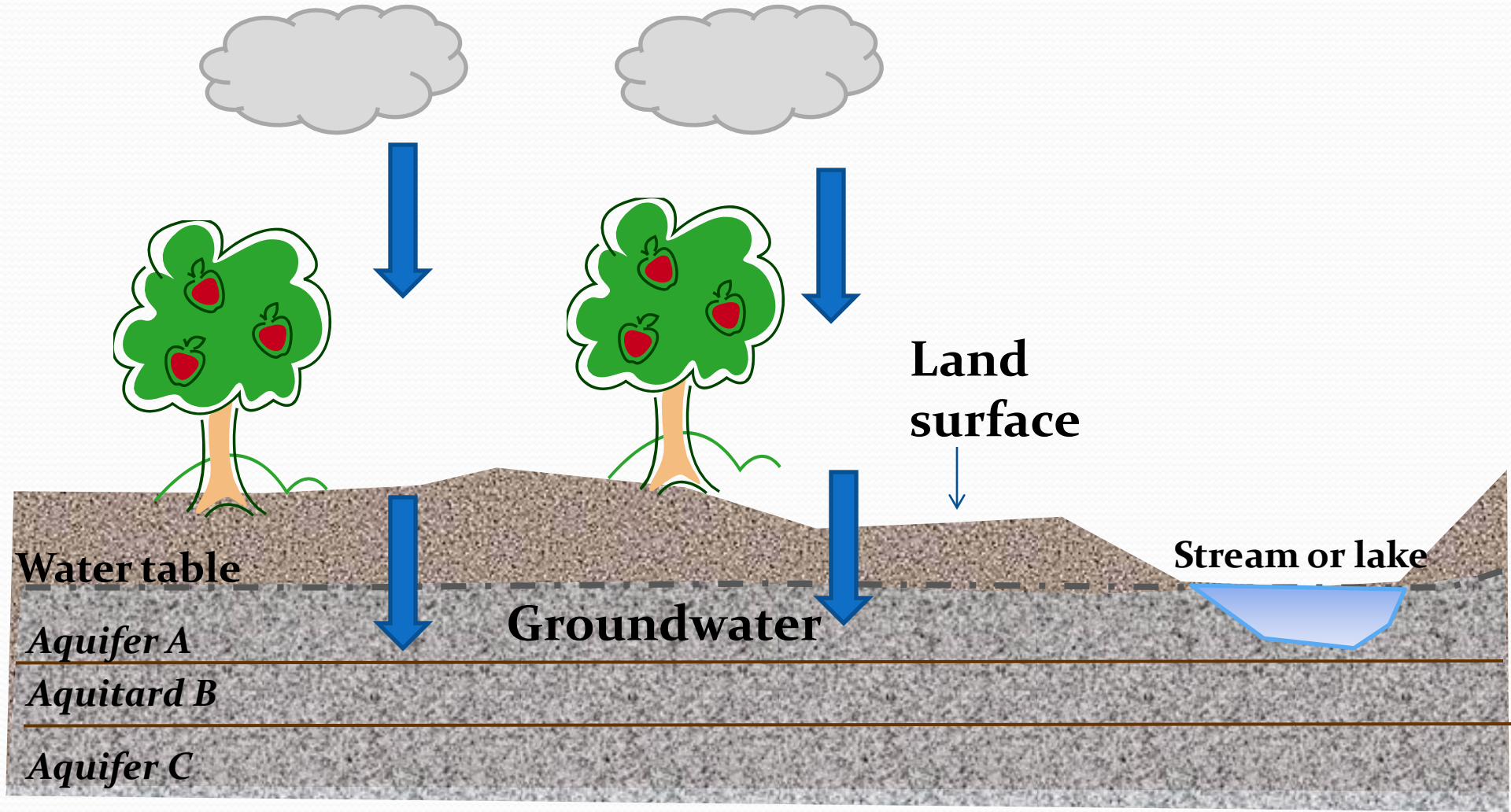
- **1,100** barrels
- **57,000** pounds of metal waste/debris
- **5,000** cubic yards of concrete rubble
- **3,000** cubic yards of soil from the barrel dump
- **7,120** cubic yards of soil with petroleum contamination
- **225,000** pounds of petroleum products, wood preservatives, paints, and miscellaneous related debris
- **four** bunker fuel storage tanks
- **five** underground diesel, gasoline and oil storage tanks.

What is Carbon Tetrachloride (CTC)?

- In the past, commonly used in:
  - Refrigeration fluid
  - Aerosol can propellants
  - Pesticide
  - Cleaning solvents
  - Fire extinguishers
  - Spot removers

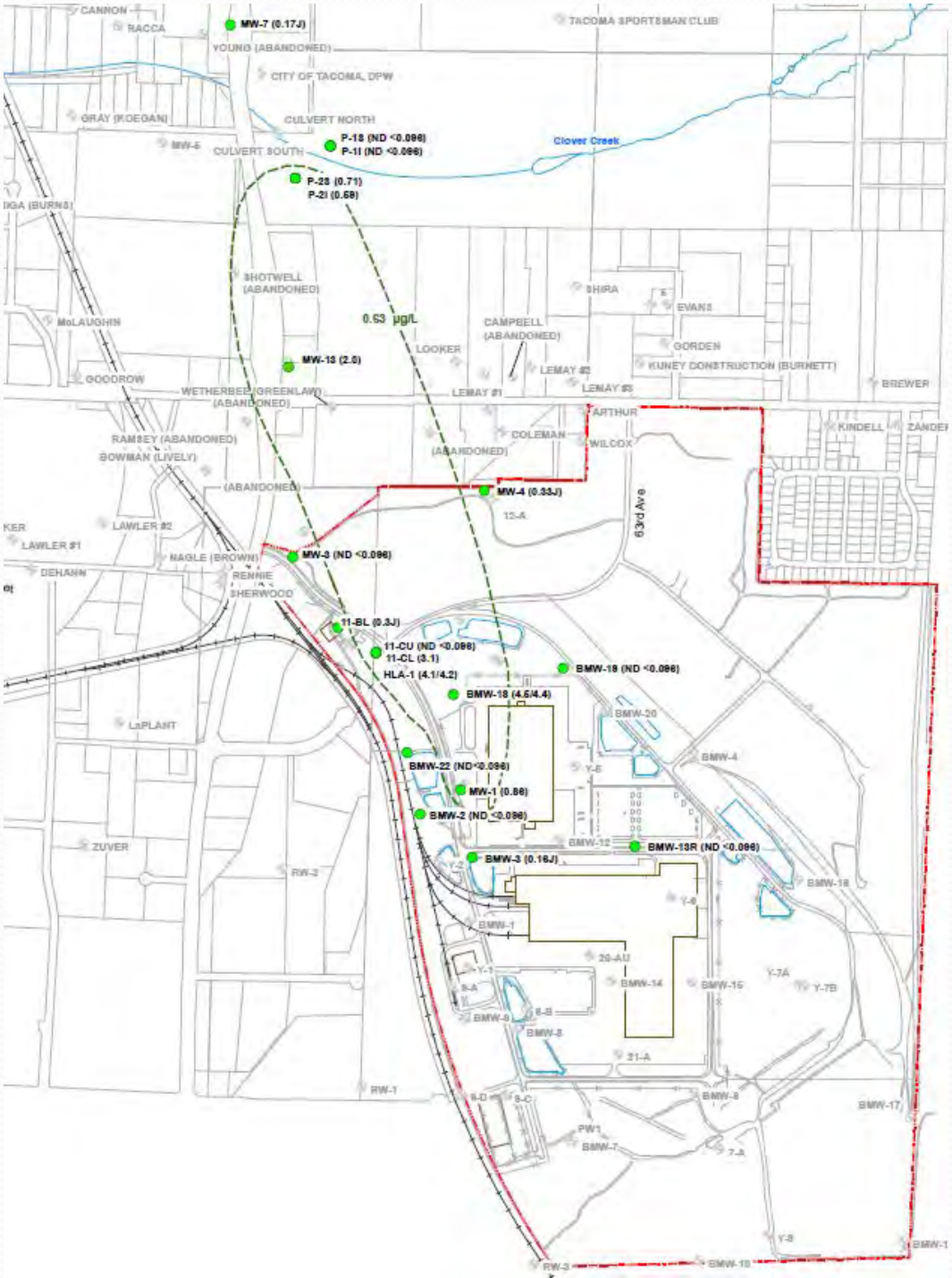
- Now only used in some industrial applications.
- High levels of exposure can cause harm to human health.
- Used for fire control or cleaning solvent during explosives production.

Groundwater Overview



Groundwater Plume

Aquifer A



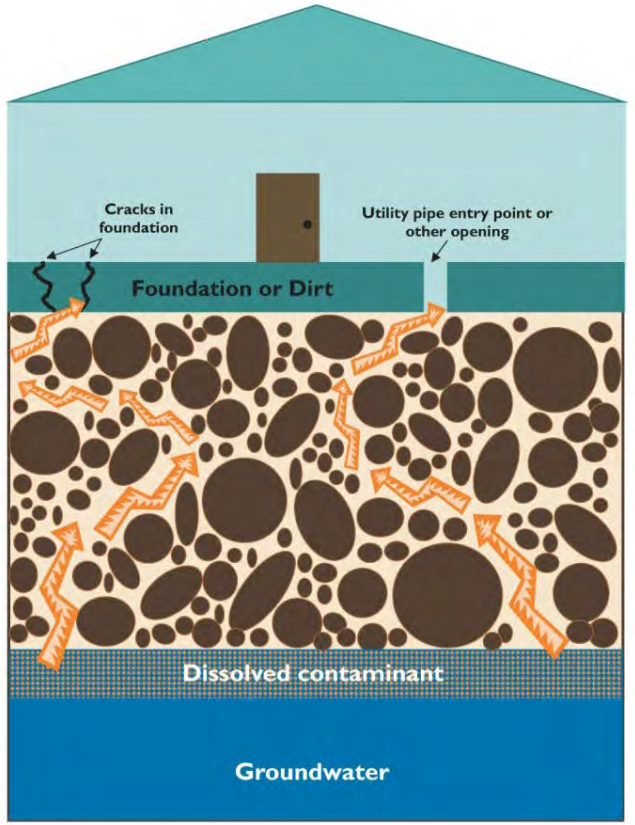
CTC Investigation Results

- CTC in groundwater only chemical of concern.
    - Ecology approved groundwater cleanup level: 0.63 µg/L
- CTC not detected in soil.
    - Earlier soil and debris removal may have removed CTC from soil.
    - No potential exposures associated with CTC in soil.
- CTC not detected in surface water and sediment at Clover Creek.
- No potential exposure pathways to the contaminated groundwater.

Eliminating Risks to Human Health

Vapor Intrusion

- CTC **not present** at levels high enough to be a risk to human health through vapor intrusion.
- Used highest soil gas detections and groundwater concentrations.
- Tested soil gas in five areas where CTC was handled.



Eliminating Risks to Human Health

Well-water Supplies:

- **2000:** contaminated plume reaching well-water supplies for nearby homes and businesses.
- **By 2007**: all drinking water users who might have been affected were moved to public drinking system:
    - Installed a 2,100 foot municipal water main extension along 176th street.
    - Thirteen properties moved to public water.

Proposed Cleanup by Natural Attenuation

Alternatives considered:

1	• Monitored Natural Attenuation
2	• Pump and Treat
3	• Permeable Reactive Barrier

Cleanup by Natural Attenuation

- Natural attenuation selected because:
  - CTC is steadily decreasing.
  - Very little risk of exposure to the contaminated groundwater.
  - Other options showed to have a bigger environmental footprint and are more expensive.
  - No construction needed in public right-of-ways.

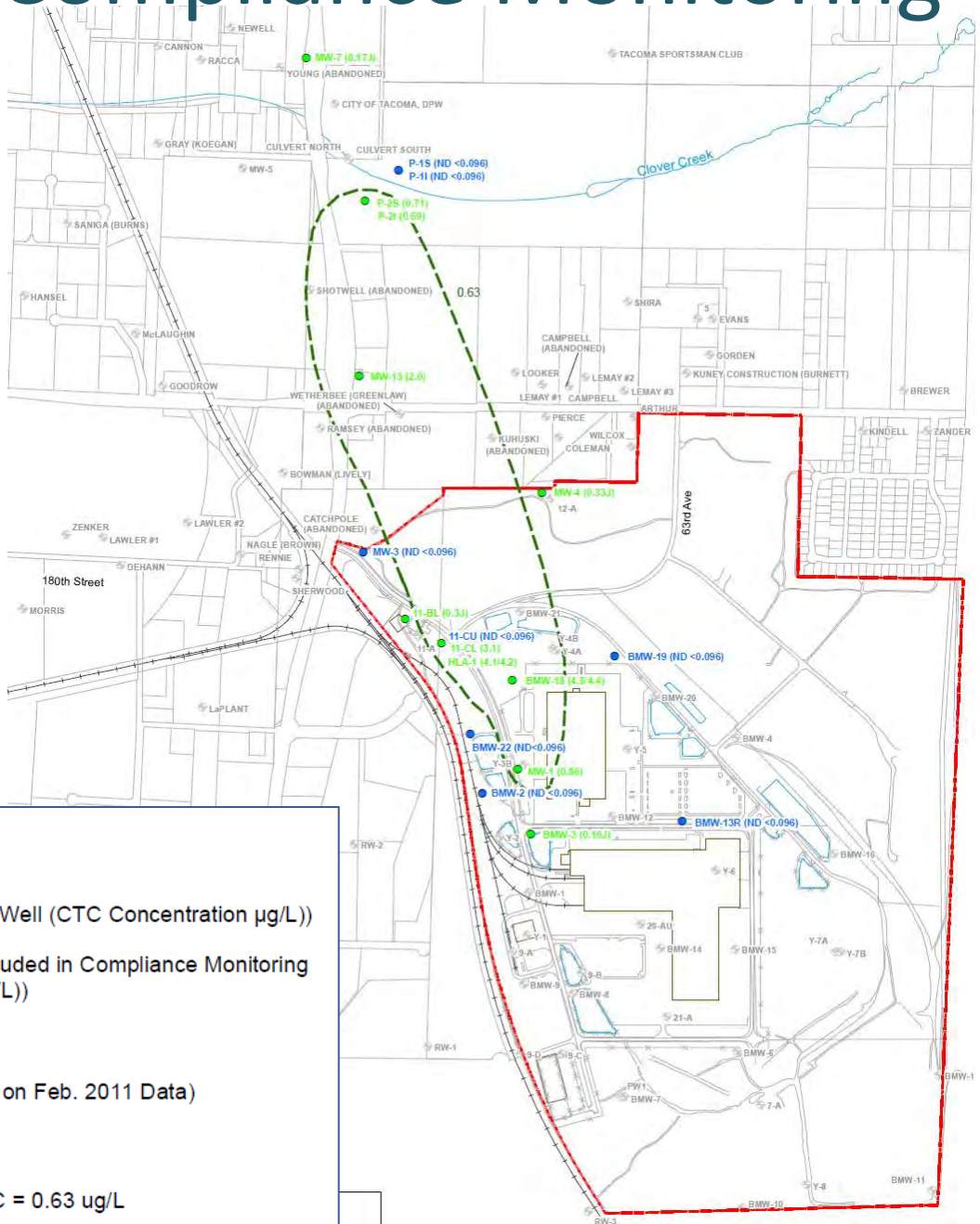
- Depending on location in the plume, estimated that attenuation will reach cleanup levels between 3 and 28 years.

Proposed Monitoring Schedule

Will monitor to confirm natural attenuation is working and achieves cleanup standards site-wide.

- Scheduled to begin in 2014.
- Twice a year for first two years, then once a year.
- Sampling frequency evaluated each year.
- Eleven monitoring wells.

Proposed Compliance Monitoring Wells



What Happens Next?

- Regular groundwater monitoring.
    - Ensure CTC levels keep decreasing.
- Record environmental covenant for property.
    - Prohibits use of contaminated groundwater on property.
- New groundwater wells prohibited unless approved.
- Ecology to mail educational information to properties near groundwater plume.

Public Comment Period

- Public comment period on cleanup plans:

  January 23 – February 24, 2014

- Ecology will:
  - Review and consider comments.
  - Respond to comments in a responsiveness summary.
  - Send responsiveness summary to those who commented and post it on our website.
  - Make changes to the plans if needed based on public comments.

We Want Your Comments!

Ecology is accepting comments on:

- An **Agreed Order**
- A **Remedial Investigation/Feasibility Study (RI/FS)**
- A **Draft Cleanup Action Plan (CAP)**
- A **Compliance Monitoring Work Plan**
- A **Public Participation Plan**

Where to Find Cleanup Plans

- Located at the front table tonight.

- Online: https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=3557

- Document Repositories:
  - Ecology's Southwest Regional Office
    300 Desmond Drive SE
    Lacey, WA 98503

  - South Hill Library
    15420 Meridian Ave East
    Puyallup, WA 98375

How to Comment by February 24

Tonight:

- Fill out a comment card provided at the front table.

By mail or email:

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For questions about public involvement, contact Natalie Graves at 360-407-0067 or Natalie.Graves@ecy.wa.gov.

Questions?