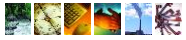
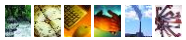
Remedial Investigation/Feasibility Study Path Forward

Solid Wood Incorporated Site
(Agreed Order #DE-08-TCPSR-5415)



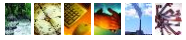
Purpose of Meeting

- Discuss the results and preliminary conclusions of the Remedial Investigation (including Interim Actions) at the Solid Wood Incorporated Site (West Bay Park)
- Discuss the path forward for the RI/FS Report

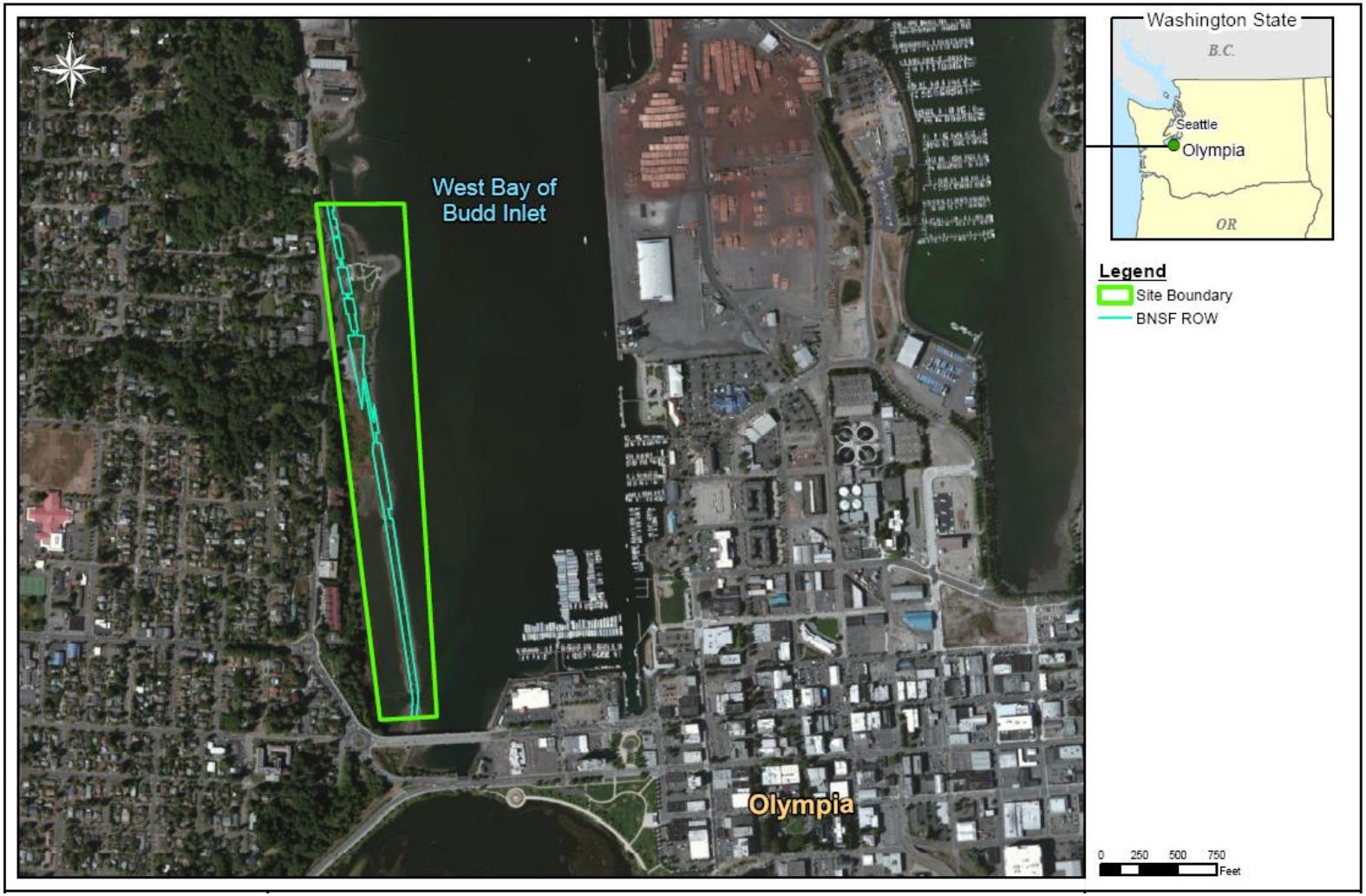


Organization of Presentation

- Brief Site Background/Overview
  - Where are we in the process?
- Per Ecology's Request:
  - Discuss the path forward for Sediment
  - Discuss the path forward for the Upland Areas

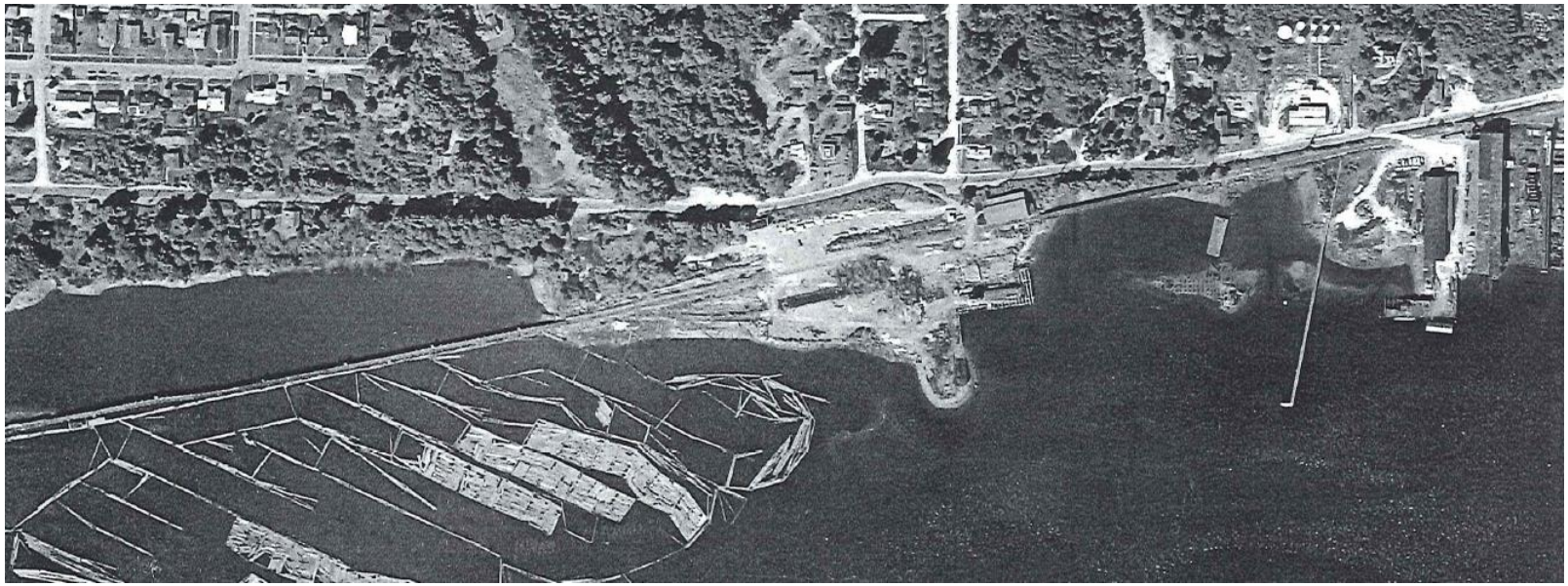


Solid Wood Incorporated Site



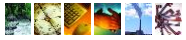
Site Background

- The City purchased the property in two parts:
  - The main upland area from the Port, and
  - The railroad ROW from BNSF.
- Historically used for various lumber operations.



Initial Site Assessments

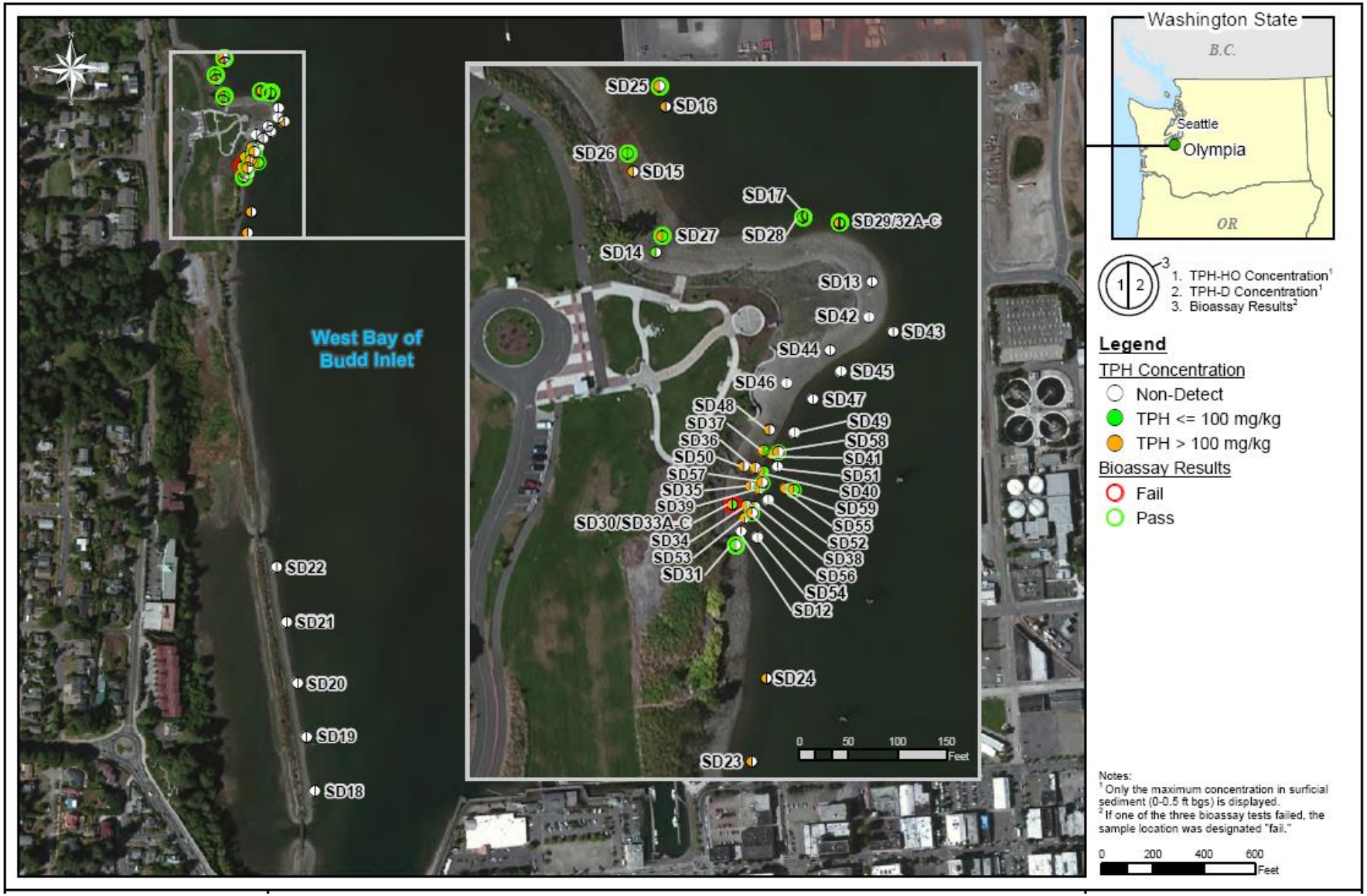
- Initial Phase I and Phase II Environmental Site Assessments found contamination of soil, groundwater, and sediment at levels that exceeded MTCA Method A cleanup levels for:
  - Total Petroleum Hydrocarbons (TPH)
  - Carcinogenic polycyclic aromatic hydrocarbons (cPAHs)
  - Metals



Solid Wood Site Investigation Areas

Sediments RI/FS

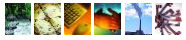
- Ecology was concerned that the 437 pilings at the site
  - Were presumed to be treated with creosote
  - Could be a source of contamination to sediment
- City of Olympia removed pilings in 2009
- Ecology required that sediment samples be analyzed for:
  - Polycyclic aromatic hydrocarbons (PAHs)
  - Diesel and Heavy/Lube Oil Hydrocarbons (TPH-D and TPH-HO)
  - Pentachlorophenol (PCP)
  - Other SMS-related constituents
- Extent of contamination has been delineated by sediment chemistry and bioassays via multiple sampling efforts.
  - Only COCs in sediment are TPH-D and TPH-HO


West Bay of Budd Inlet
SD25
SD16
SD26
SD15
SD17
SD29/32A-C
SD28
SD27
SD14
SD13
SD42
SD43
SD44
SD45
SD46
SD47
SD48
SD37
SD36
SD50
SD57
SD35
SD39
SD30/SD33A-C
SD34
SD53
SD31
SD49
SD58
SD41
SD51
SD40
SD59
SD55
SD52
SD38
SD56
SD54
SD12
SD24
SD23
SD22
SD21
SD20
SD19
SD18
0 50 100 150 Feet
Washington State
B.C.
Seattle
Olympia
OR
1. TPH-HO Concentration[1]
2. TPH-D Concentration[1]
3. Bioassay Results[2]
Legend
TPH Concentration
Non-Detect
TPH <= 100 mg/kg
TPH > 100 mg/kg
Bioassay Results
Fail
Pass
Notes:
[1] Only the maximum concentration in surficial sediment (0-0.5 ft bgs) is displayed.
[2] If one of the three bioassay tests failed, the sample location was designated "fail."
0 200 400 600 Feet

Analytical Results for Sediment Samples

- The analytical results for all sediment samples were below all SMS criteria
  - The data indicate that the pilings were not treated with creosote
    - Of the first 100 pilings pulled, all still had the bark intact and none were treated
    - The remaining pilings were cut off below the mud line and none appeared to have been treated
    - Analytical data from sediment samples support this
      - For example, PAHs (LPAHs/HPAHs) and PCP were not detected in sediment at concentrations exceeding SMS criteria
- Ecology required that TPH-D and TPH-HO be compared to a 100 mg/kg screening level
  - The majority of sediment samples exceeded the screening level for TPH-HO but TPH-D concentrations were less than 100 mg/kg
    - Range of TPH-HO concentrations was ND to 1,500 mg/kg (detected in 43 of 71 samples).
    - Range of TPH-D concentrations was ND to 94 mg/kg (detected in 14 of 71 samples).

Biological Testing was performed based on discussions with Ecology.



Bioassay Results for Sediment Samples

- Thirteen bioassay tests were performed on sediment samples that were obtained from 11 spatially distinct stations at the site
  - Two of the bioassays were performed at co-located stations
    - SD-29 and SD-32
    - SD-30 and SD-33
- Only one station failed a bioassay test (SD-30 and SD-33 are co-located) – actually passed 2 of the 3 bioassay tests
  - The acute larval test (*Mytilus galloprovencialis* [mussel larvae]) failed CSL criteria
  - The acute, 10-day amphipod solid phase survival test (*Eohaustorius estuarius* [a shrimp-like crustacean)] passed CSL criteria
  - The chronic, 20-day polychaete solid phase survival and growth test (*Neanthes arenaceodentata* [polychaete worms]) passed CSL criteria

Bioassay Results for Sediment Samples

Legend

Bioassay Results
- Fail
- Pass

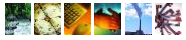
Bioassay Thiessen
- Fail
- Pass

Notes:
If one of the three bioassay tests failed, the sample location was designated "fail."

0 25 50 75 100 Feet

Other Sediment Criteria

- None of the stations exceeded other criteria
  - Human Health Comparison Values:
    - MTCA Method A Soil Cleanup Level for TPH-D = 2,000 mg/kg and TPH-HO = 2,000 mg/kg
    - Applies to BAZ and Deeper Sediment samples
  - TPH-D and TPH-HO in West Bay sediment do not meet criteria in:
    - Other toxic, radioactive, biological, or deleterious substances criteria in WAC 173-204-562 or WAC 173-204-563, as applicable
    - Nonanthropogenically affected criteria of WAC 173-204-562 or WAC 173-204-563, as applicable

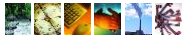


Sediments RI/FS – Path Forward

PIONEER recommends no further action for sediments.

- Biological populations are considered protected at the site.
  - Based on results of bioassay tests
- Human receptors are considered protected at the site.
  - Based on comparison of TPH-D and TPH-HO to MTCA Method A Screening Values

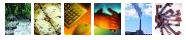
- Results of the Sediment Investigation will be documented in the RI Report.



Upland Investigation Areas

Upland Investigation Areas: Interim Action Areas A, B, C, D, and E

- Interim Action Area A
  - Impacted Media: Soil & Shallow Groundwater
  - COCs: TPH-Heavy Oil (TPH-HO) and PAHs
  - Impacts to Sediment? No. Localized extent of contamination.
  - IA: Limited soil excavation in conjunction with cap/cover
  - Four quarters of groundwater monitoring were performed in three wells downgradient of Area A
    - Petroleum contamination did not move downgradient. It is expected to naturally attenuate following ORC application.
- Interim Action Area B
  - Impacted Media: Soil
  - COCs: TPH-HO
  - Impacts to Sediment? No. Localized extent of contamination.
  - IA: Limited soil excavation in conjunction with cap/cover
- Interim Action Area C
  - Impacted Media: Soil
  - COCs: PAHs
  - Impacts to Sediment? No. Localized extent of contamination.
  - IA: Limited soil excavation in conjunction with cap/cover

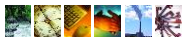


Upland Investigation Areas: Interim Action Areas A, B, C, D, and E (cont.)

- Interim Action Area D
  - Impacted Media: Soil
  - COCs: Metals and Dioxins/Furans
  - Impacts to Sediment? No. Confirmed by sampling.
    - Groundwater (via seeps) and surface water samples were collected and it was determined that the source of the elevated concentrations of copper and nickel in groundwater and seeps was from surface water in Budd Inlet (i.e., background) and not from an upland source.
    - Sediment samples were collected and there were no exceedances of SMS criteria for metals and there were not exceedances of applicable screening levels for dioxins/furans.
  - IA: Soil excavation
- Area E
  - Impacted Media: Soil
  - COCs: Metals (Copper and Nickel)
  - Impacts to Sediment? No. Confirmed by sampling.
    - Groundwater (via seeps) and surface water samples were collected and it was determined that the source of the elevated concentrations of copper and nickel in groundwater and seeps was from surface water in Budd Inlet (i.e., background) and not from an upland source.
  - IA: All metal debris were removed from Area E.

Upland Investigation Areas: Wooden Flume & Catch Basins

- Wooden Flume
  - The attempt to plug the wooden flume in order to eliminate Seep 1 was unsuccessful. However, the only exceedance was copper, which met surface water criteria.
- Catch Basins
  - Catch basins in the upland area were removed and no contamination was found in soil below the basins.

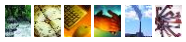


Upland Investigation Areas: Oil Stain Area , SB-04 Area & Seeps 1 through 3

- Oil Stain Area
  - Soil contamination has been delineated in all directions
    - Note: Sample SB-59 (northern most sample) was 3,200 mg/kg TPH-HO and sample SB-59dupe was 420 mg/kg TPH-HO
  - Groundwater was not detected at concentrations greater than SLs and/or RLs.
- SB-04 Area Groundwater
  - Four quarters of groundwater monitoring were performed in three wells downgradient of SB-04.
  - Groundwater was not detected at concentrations greater than SLs and/or RLs.
- Seeps 1 through 3
  - Groundwater was not detected at concentrations greater than SLs and/or RLs.

Upland Investigation Areas: Southern Rail Spurs

- Rail Spur near former Solid Wood Facility
  - Soils in the vicinity of the rail spur were not impacted by cPAHs.
  - No further action is recommended for soil in this area
- Southern Rail Spur
  - cPAHs were detected above SLs
  - The soil exceedances will be addressed via cap/cover

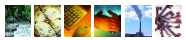


Rail Spur Areas

RI Summary

No further characterization is recommended for soil, groundwater, or sediment.

- All soils greater than MTCA Method A were removed or capped.
- All groundwater greater than surface water criteria were representative of background.
- All sediment concentrations are considered protective of human health and the environment.



Next Steps

- Determine RI/FS schedule
  - Data gap conclusions (i.e., oil stain, surface soils near rail spur, metals in groundwater/seeps, and sediments) need to be approved by Ecology.
- Anticipated FS Path forward/Conclusions
  - NFA for groundwater (background)
  - Excavation and removal of oil stain
  - Cap/cover for southern rail spur
  - Environmental Covenant?