

Port Angeles Harbor Cleanup Sites Update



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May 9, 2017

Harbor-wide Cleanup Overview



Port Angeles Cleanup Sites – Shell & Pettit



1 Port Angeles Sediment Investigation

2 Rayonier Mill Study Area

3 Rayonier Mill Off-Property Soil Dioxin Study

4 K Ply Site

5 Marine Trades Area Site

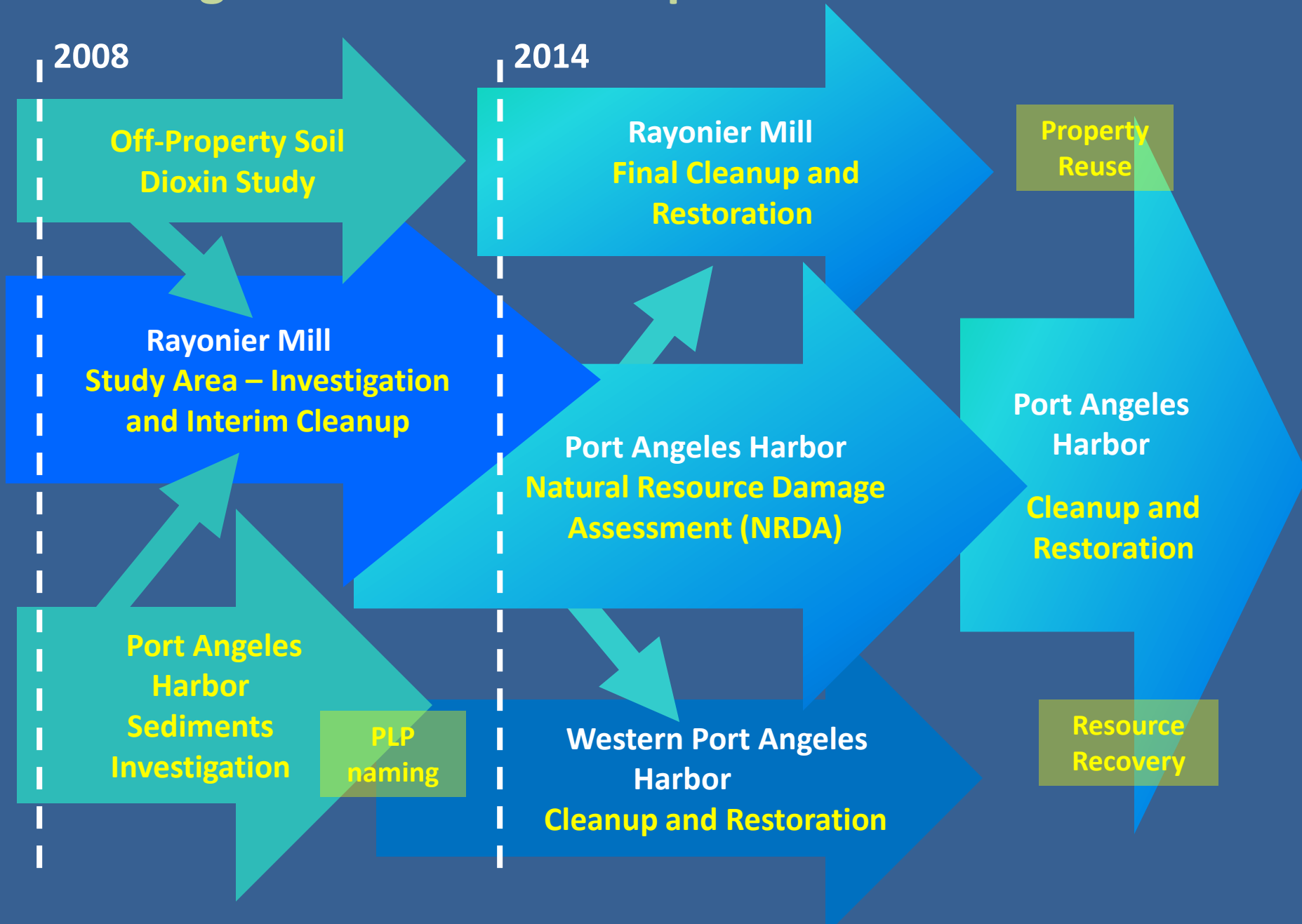
6 Unocal Bulk Plant #0601 Site

7 Western Port Angeles Harbor Site

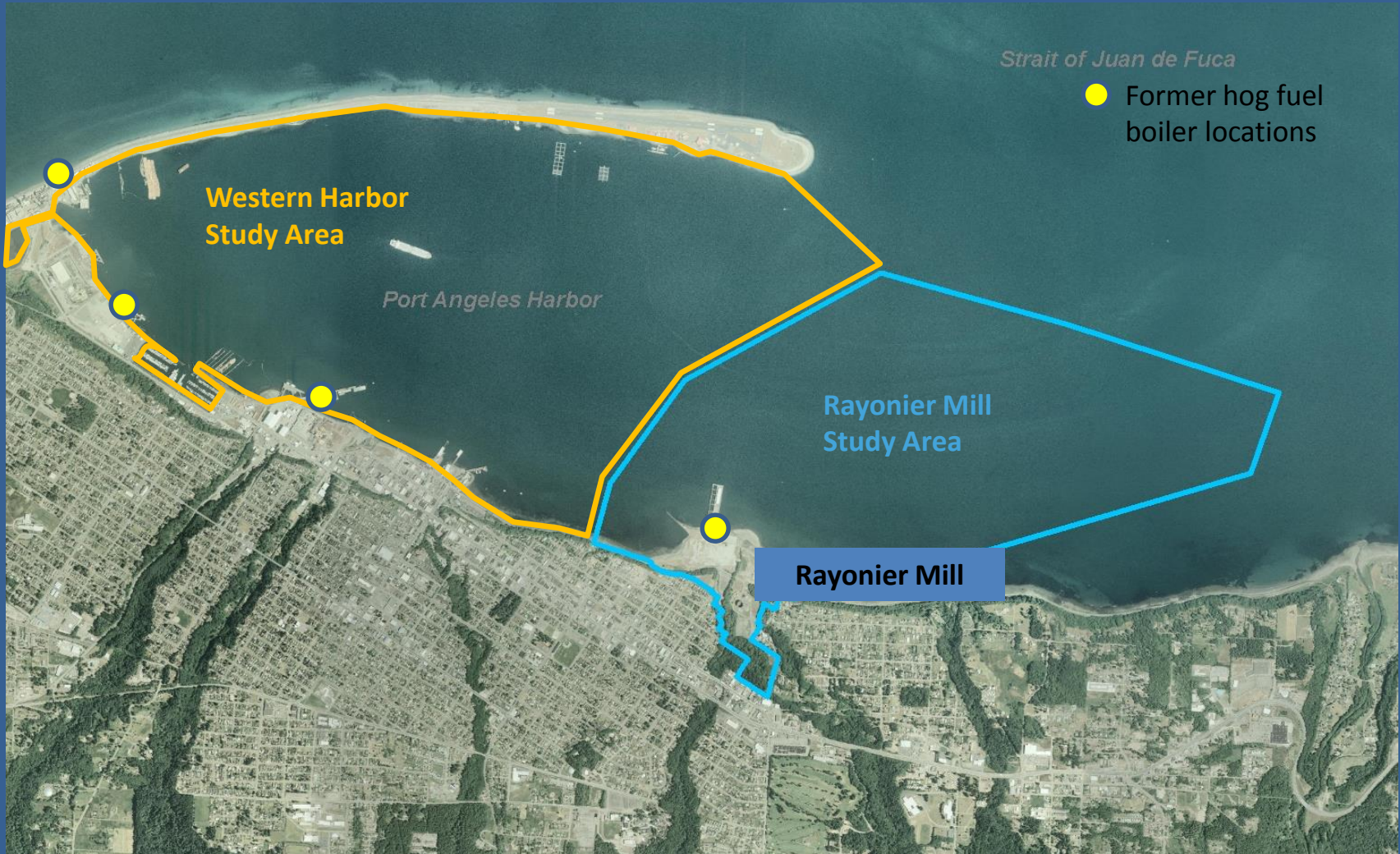
8 Shell Oil

9 Pettit Oil Tumwater Truck Route

Port Angeles Harbor Cleanup & Restoration Timeline



Port Angeles Harbor Cleanup Sites



The cleanup process



Port Angeles Harbor Stakeholder Involvement

Rayonier Mill

Rayonier A.M. Properties, LLC;
WA Department of Natural Resources

Western Port Angeles Harbor

Merril & Ring, City of PA, Port of PA, Georgia-Pacific,
Nippon Paper Industries, WA DNR, Owens Corning

Lower Elwha Klallam Tribe

Concurrence agreement

Port Gamble S'Klallam Jamestown S'Klallam

Natural Resource Damage Trustees

Lower Elwha, Jamestown, Port
Gamble, NOAA, USFWS, Ecology

City of Port Angeles

Port of Port Angeles

Clallam County Health

Port Angeles
Business
Association

Olympic
Environmental
Council

North Olympic
Land Trust

Natural Resources Damage Assessment

- Role:
 - Assess damages
 - Recover damages
 - Ensure restoration



Ennis Creek Restoration Conceptual Plan



Why is this taking so long?

- Large, complex sites
- Multiple PLPs
- Reaching agreement on technical issues
- Timing – tying cleanup and restoration together
- New sediment management standards
- Regional background for sediments



Community Involvement



Public Involvement Strategy

- Keep the community informed about our cleanup work
- Provide opportunities for review and comment on milestone documents
- Maintain a presence in Port Angeles



Community Outreach

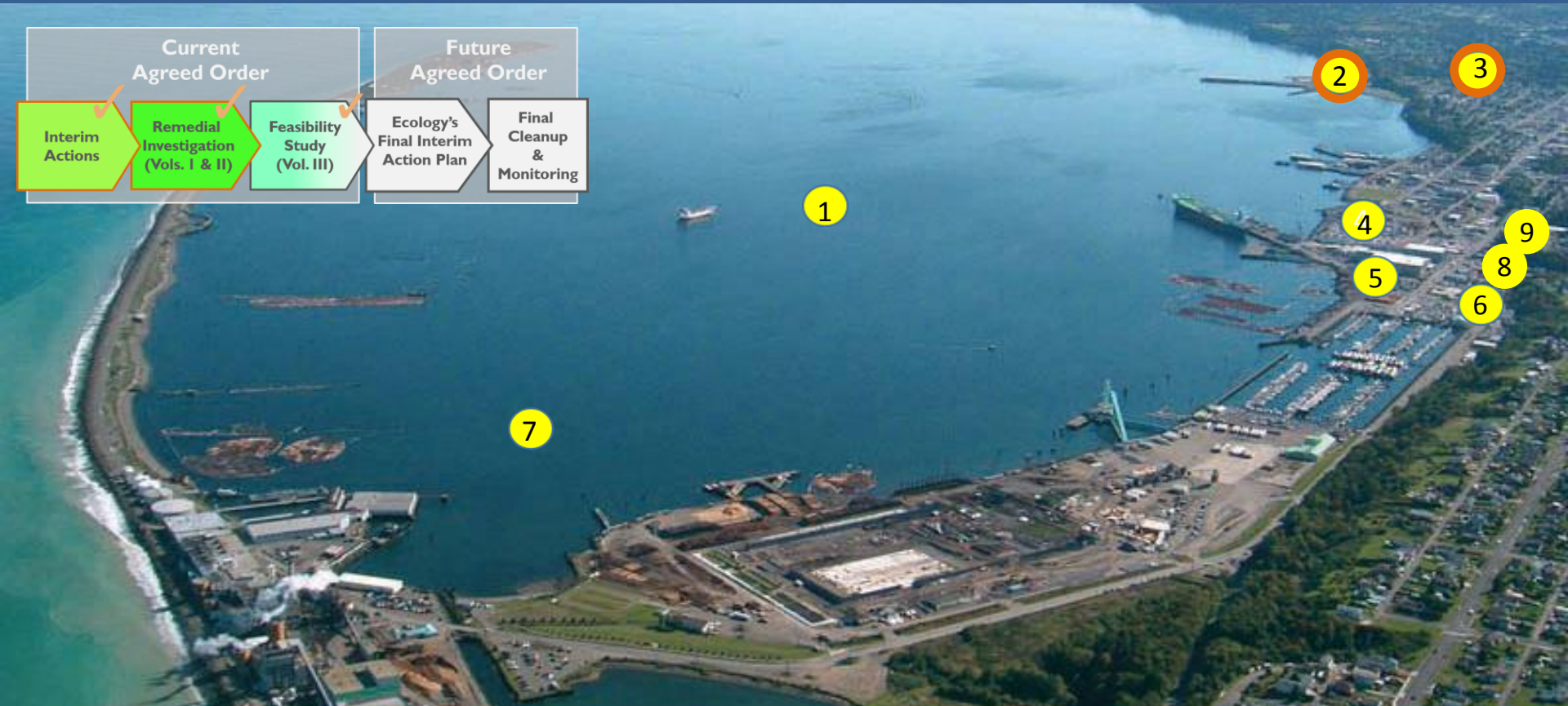
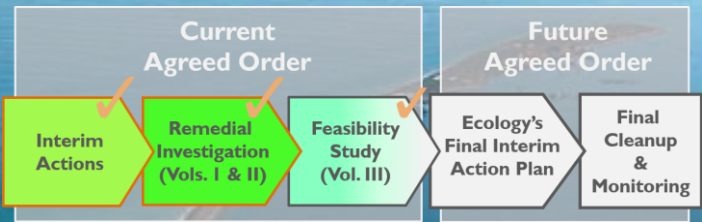
- **28+** visits to Port Angeles in 6 years
- **25+** public presentations
- **600+** on mailing list
- **4,000+** views of 38 blog posts



Rayonier Mill Site



Port Angeles Cleanup Sites – Rayonier Mill



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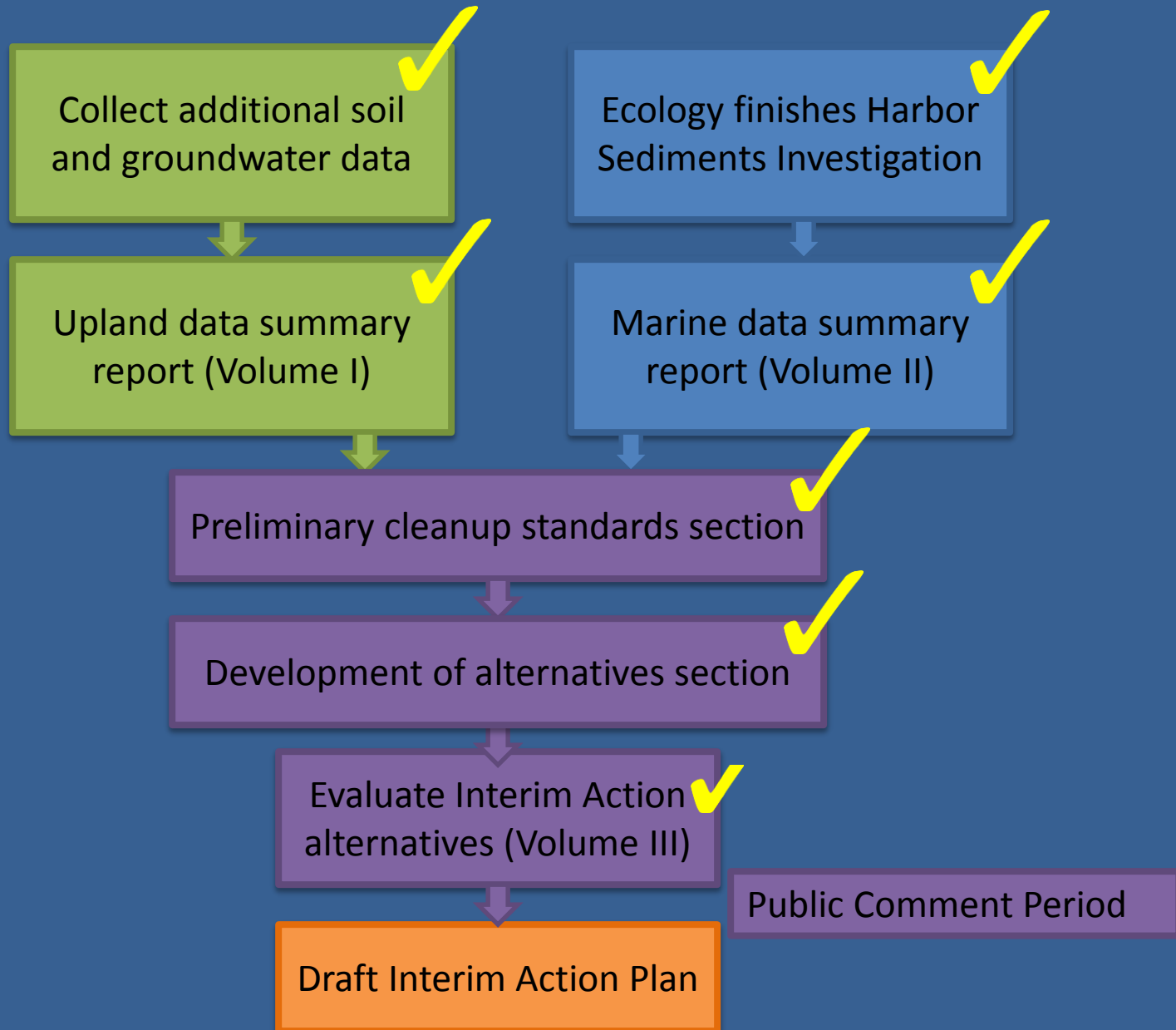
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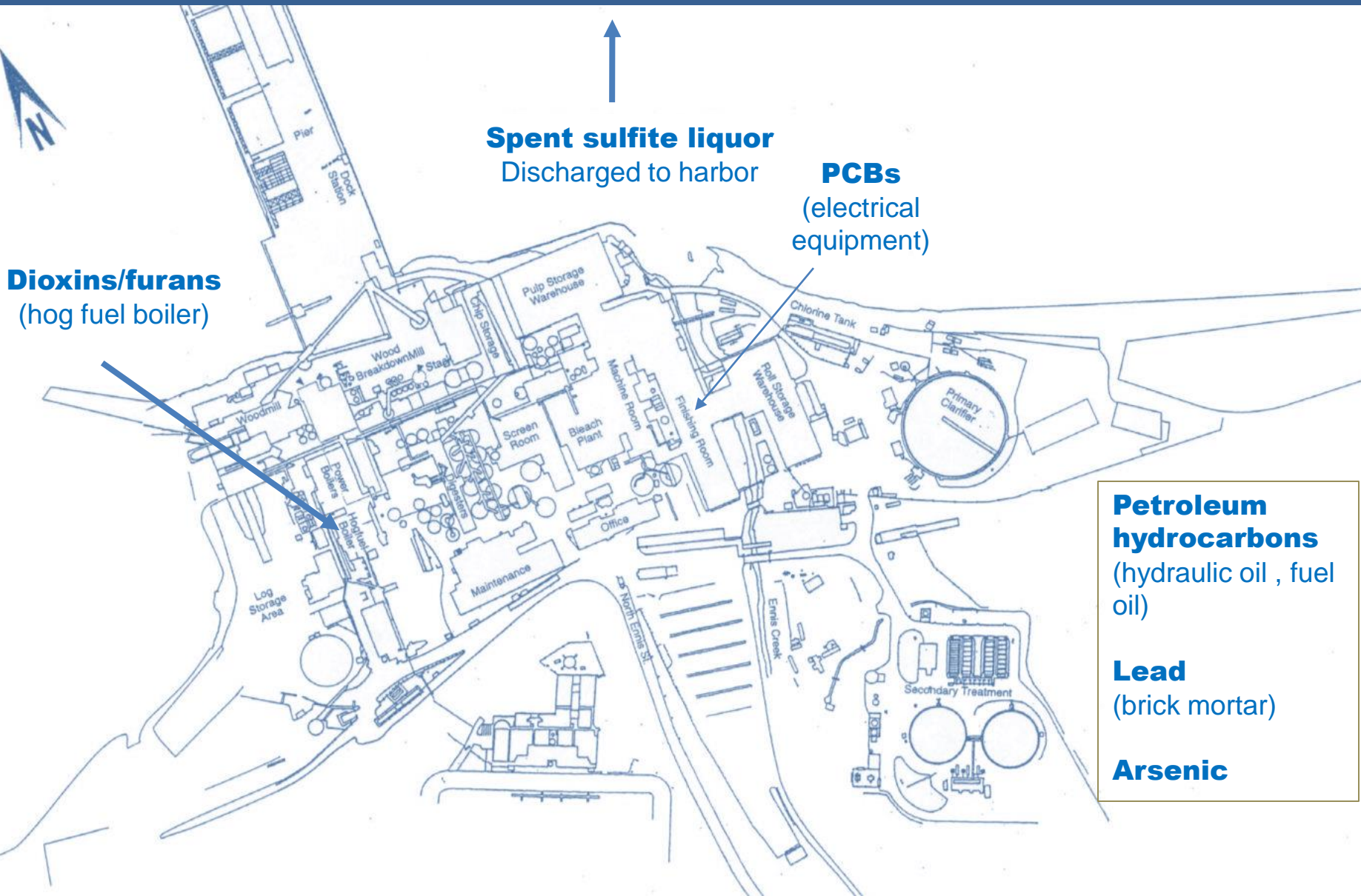
Rayonier Mill Study Area



Getting to Study Area Cleanup



Site Contamination



Dioxins/furans
(hog fuel boiler)

Spent sulfite liquor
Discharged to harbor

PCBs
(electrical equipment)

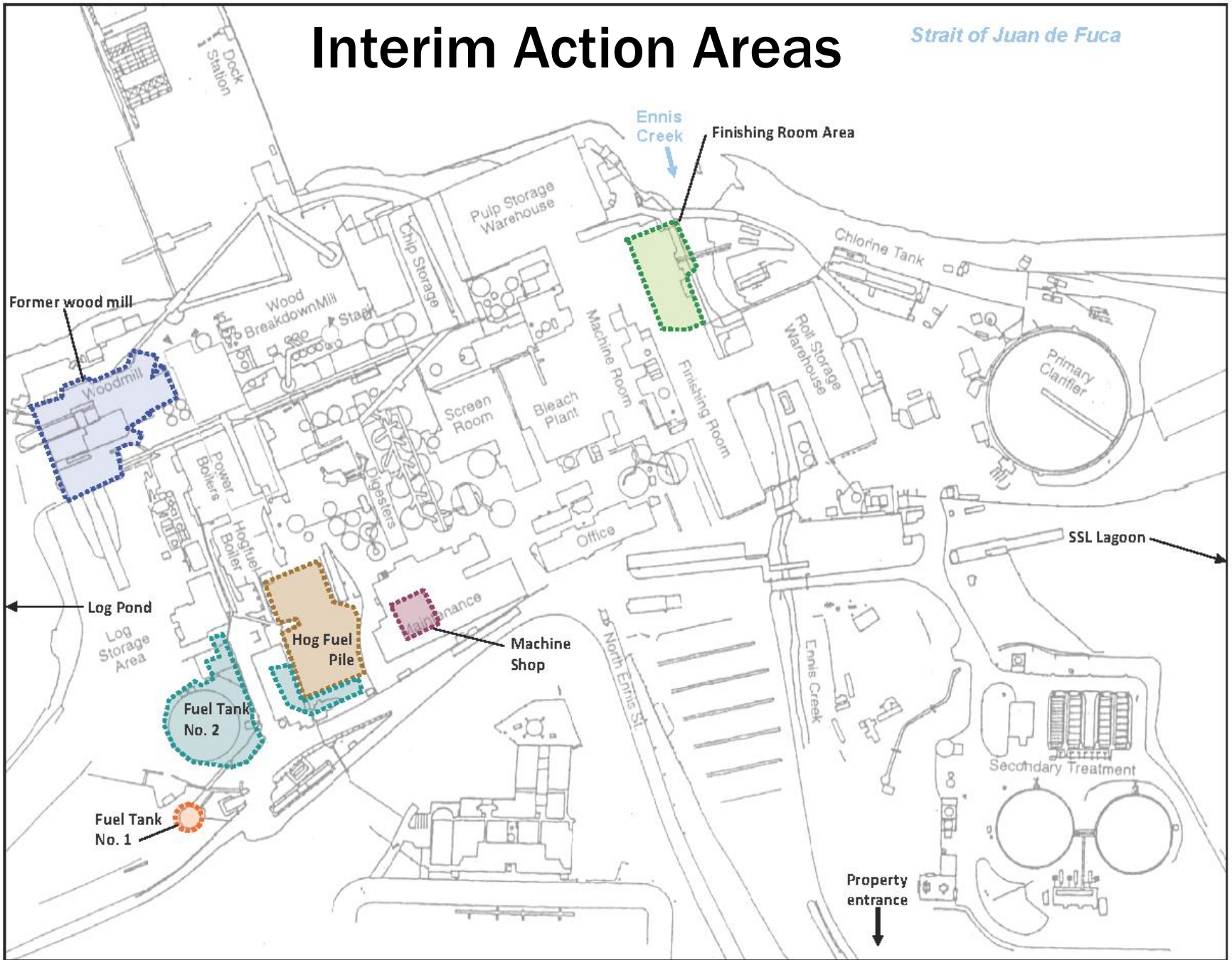
Petroleum hydrocarbons
(hydraulic oil, fuel oil)

Lead
(brick mortar)

Arsenic

Interim Action Areas

Strait of Juan de Fuca

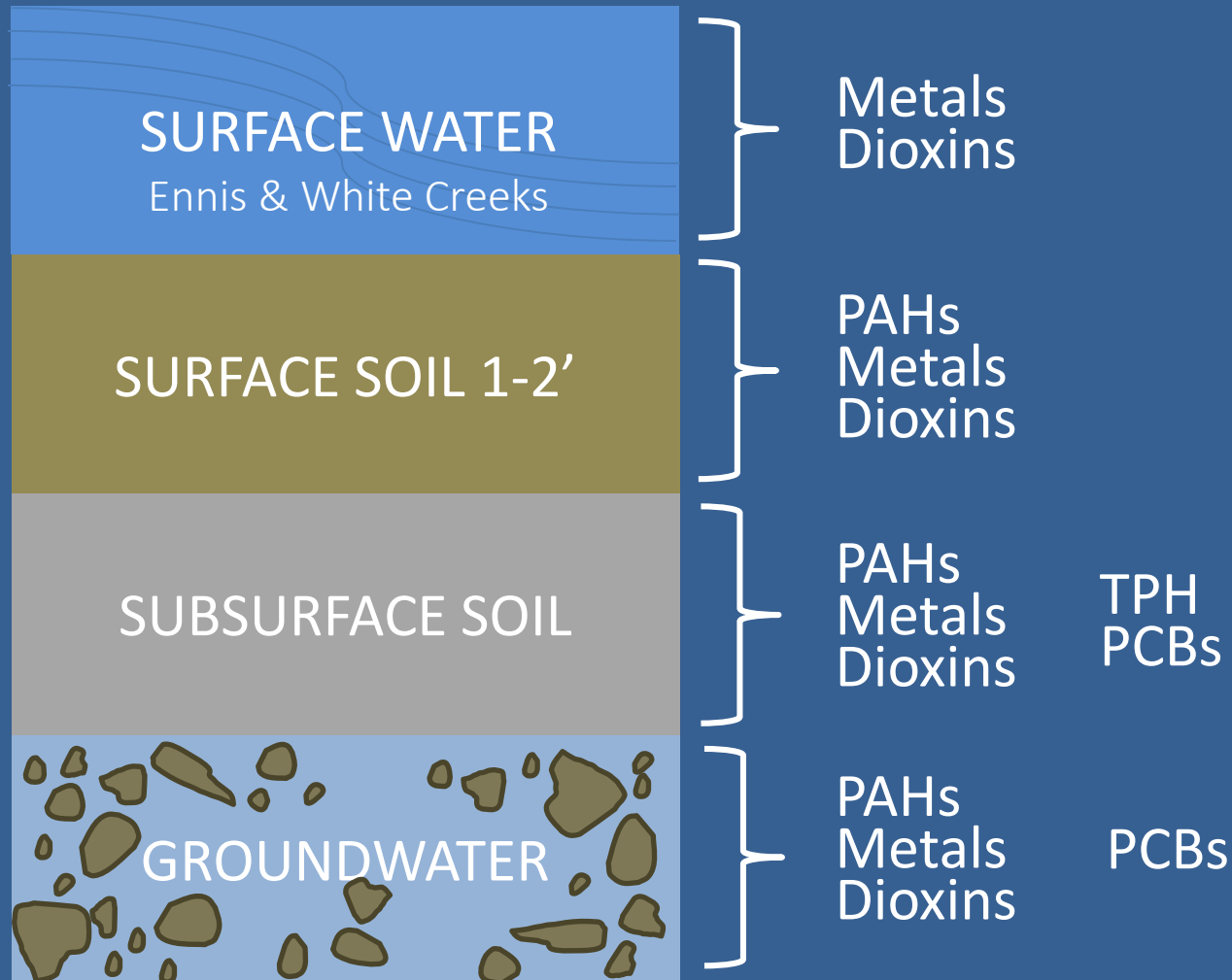


Upland Sampling Locations



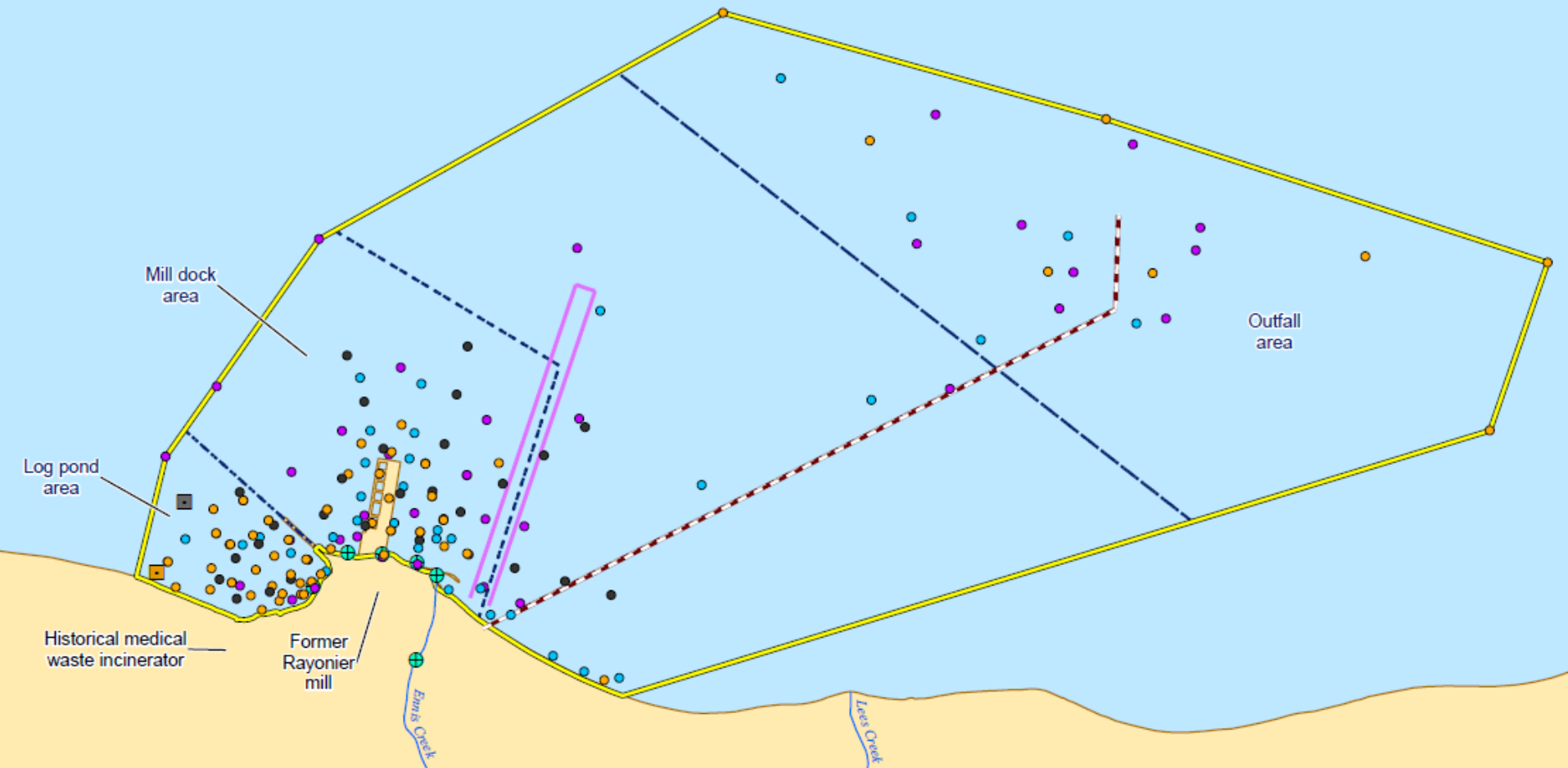
Upland Contamination –

Information from the Upland Data Summary Report



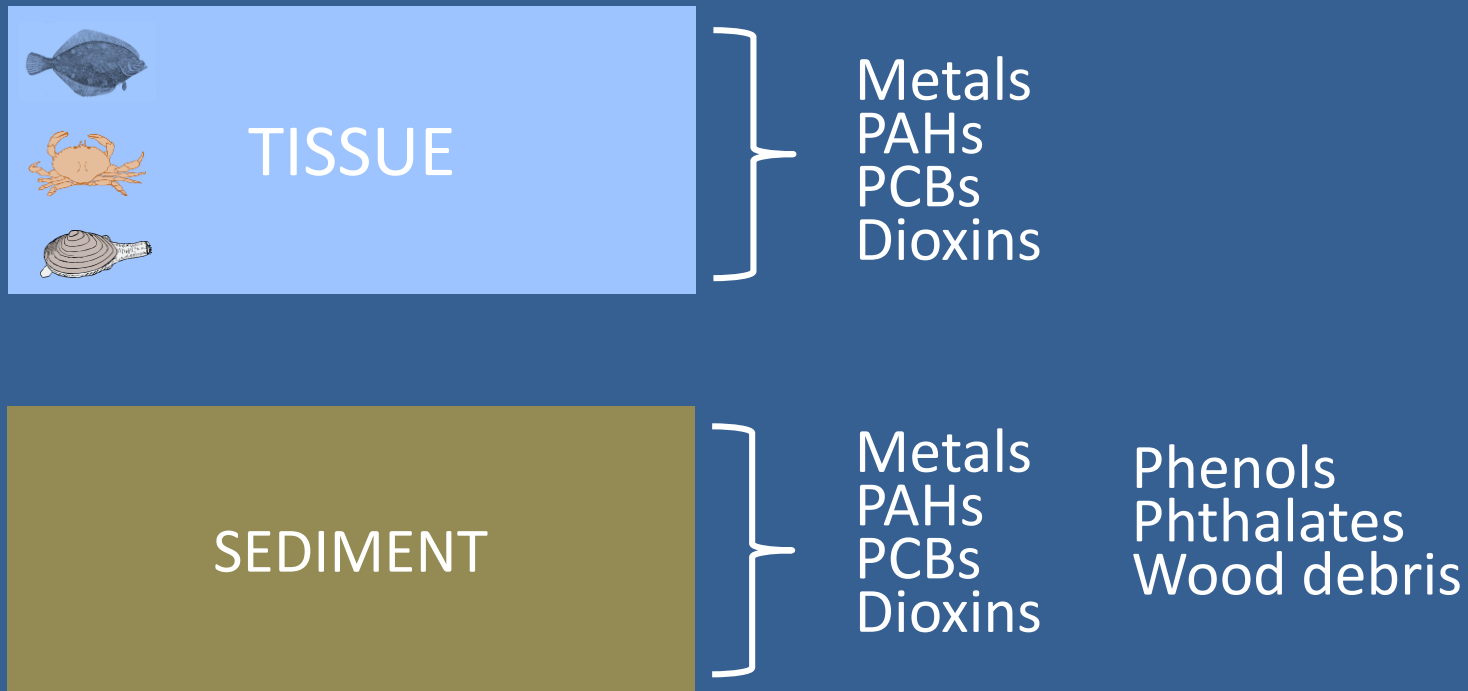
Marine Sampling Locations

Port Angeles Harbor



Marine Contamination –

Information from the Marine Data Summary Report

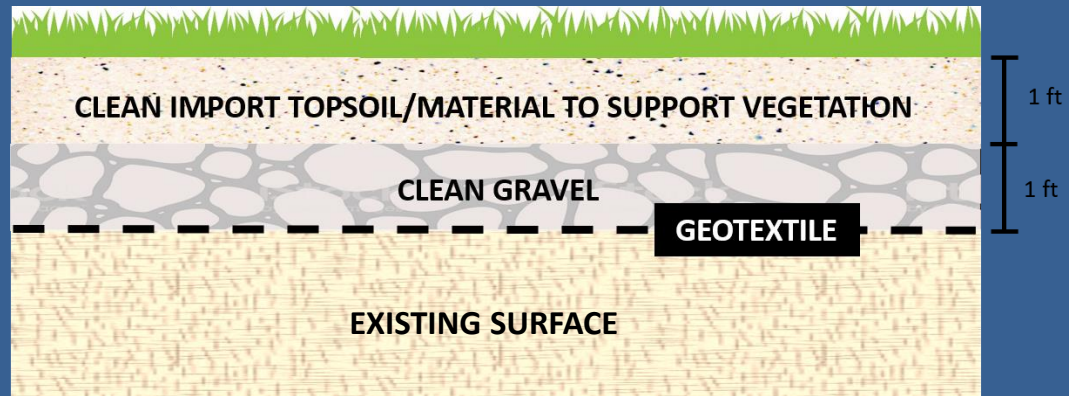


Soil Cleanup Alternatives

Dig and haul

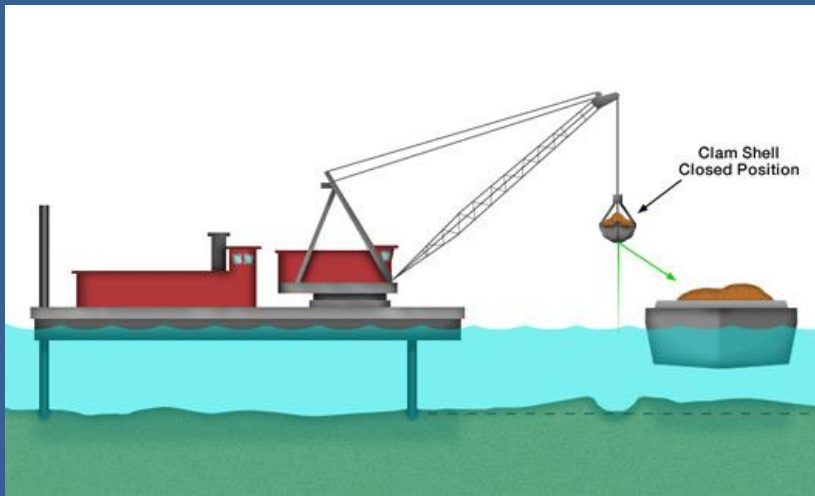


Capping

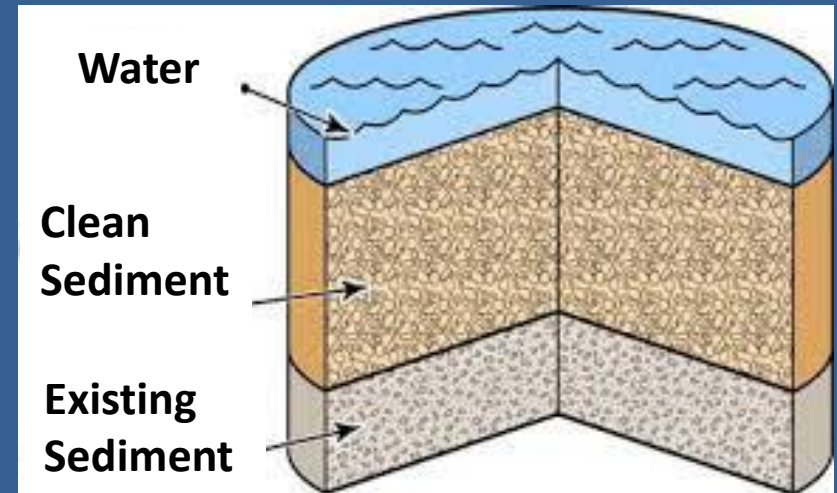


Sediment Cleanup Alternatives

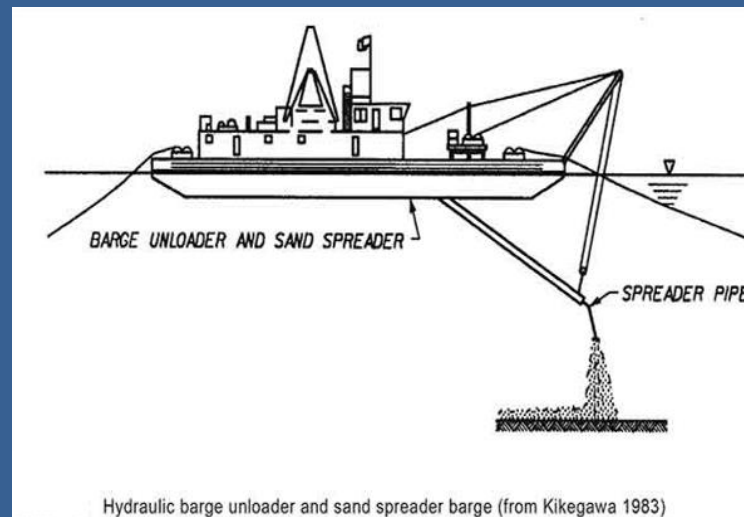
Dredging



Capping



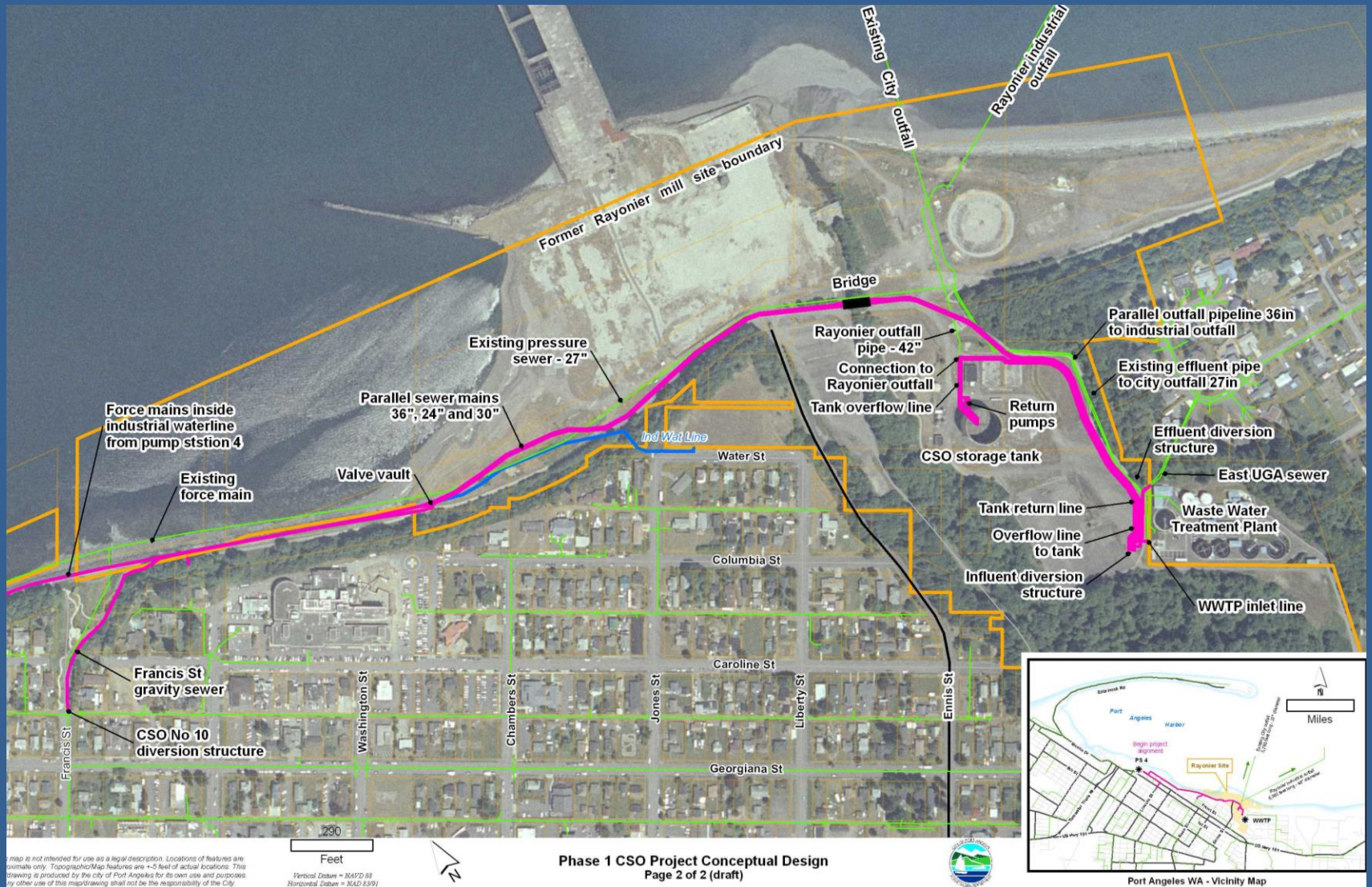
Enhanced Natural Recovery



Next Steps

- Rayonier revise Volume III – 2017
- Ecology review and approve Volume III – 2018
- Public comment period – 2018
- Rayonier revise Vol I, II, III – 2018
- Ecology review and approve Final Volumes – 2018
- Rayonier draft Interim Action Plan – 2018
- Ecology finalize Interim Action Plan – 2019
- Public comment period – 2019
- Cleanup

CSO Phase I Project Location



map is not intended for use as a legal description. Locations of features are approximate only. Topographic/Map features are +/- 5 feet of actual locations. This drawing is produced by the city of Port Angeles for its own use and purposes. Any other use of this map/drawing shall not be the responsibility of the City.

Vertical Datum = NAVD 88
Horizontal Datum = NAD 83/91

Phase 1 CSO Project Conceptual Design
Page 2 of 2 (draft)



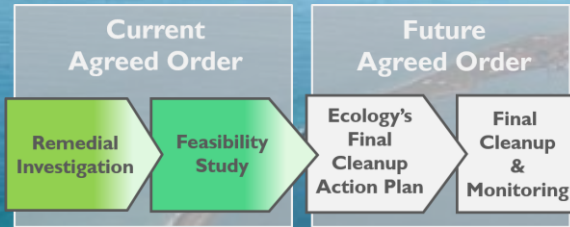
Port Angeles WA - Vicinity Map



Western Port Angeles Harbor Site



Port Angeles Cleanup Sites – Western Harbor



1 Port Angeles Sediment Investigation

2 Rayonier Mill Study Area

3 Rayonier Mill Off-Property Soil Dioxin Study

4 K Ply Site

5 Marine Trades Area Site

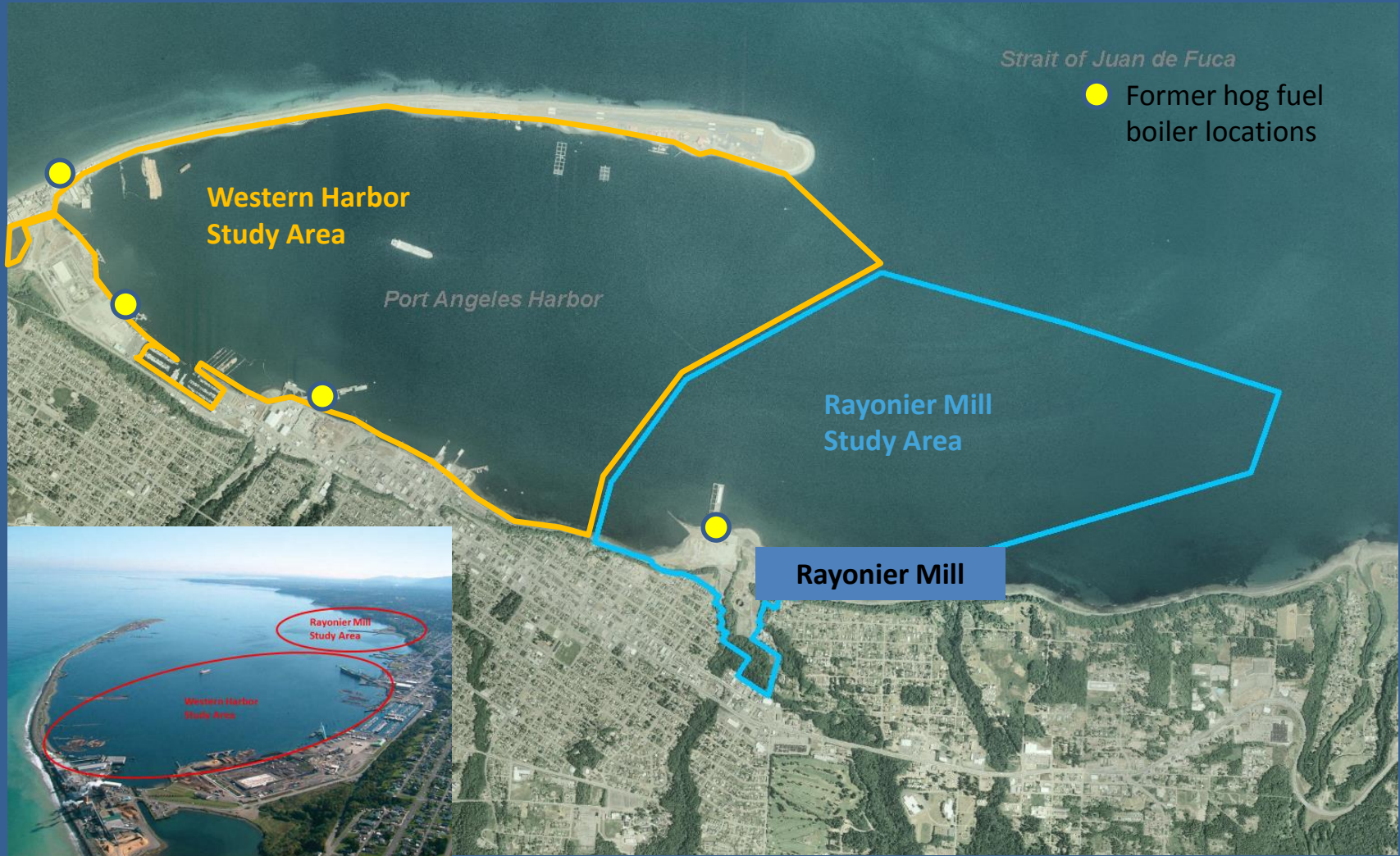
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Port Angeles Harbor Cleanup Sites



Progress

2013 RI/FS Fieldwork completed

2014 Data Report completed

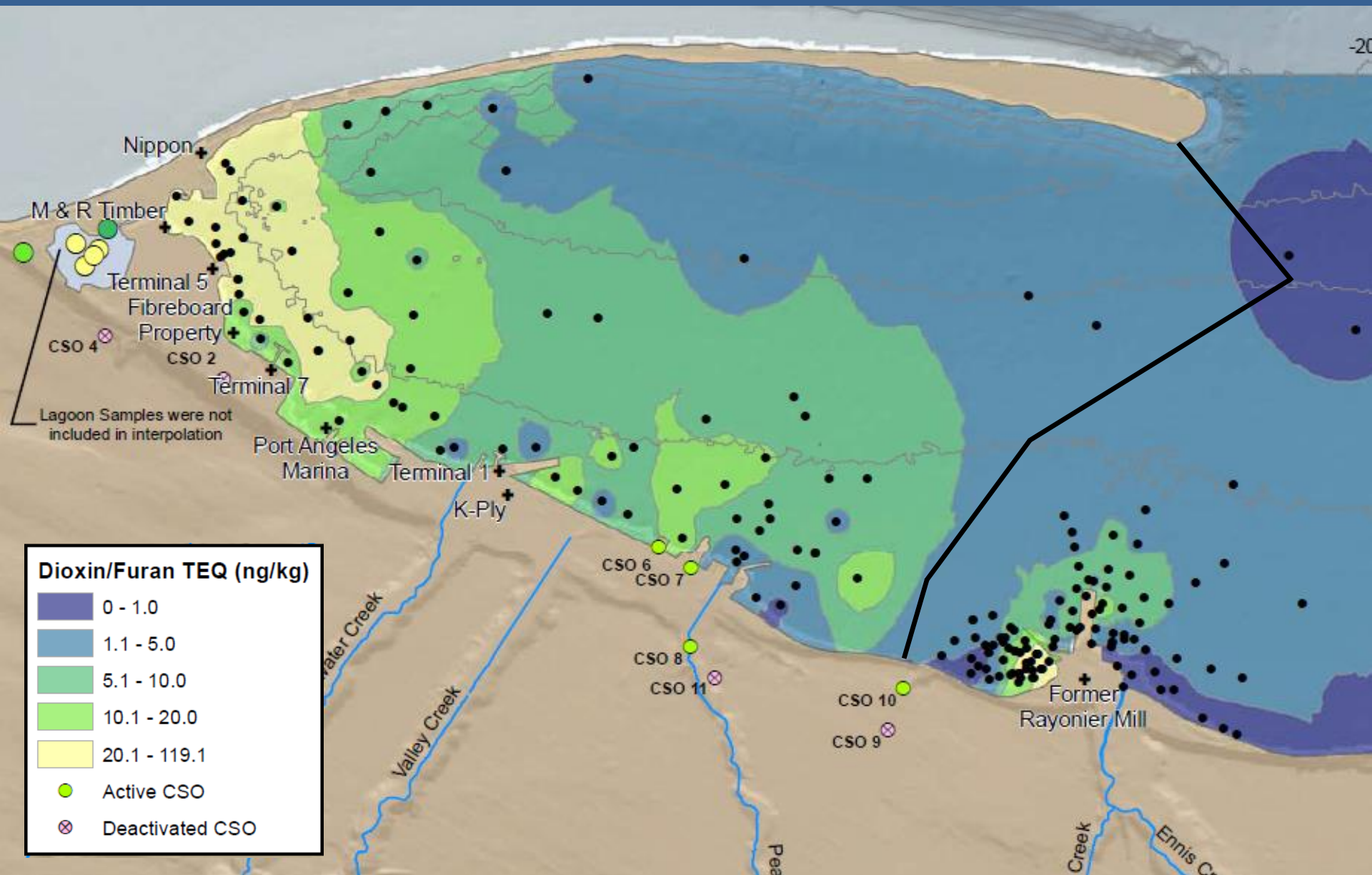
2014 White Paper submitted

2015 White Paper Comments

2017 Revised White Paper Submitted



Dioxins/Furans in Port Angeles Harbor



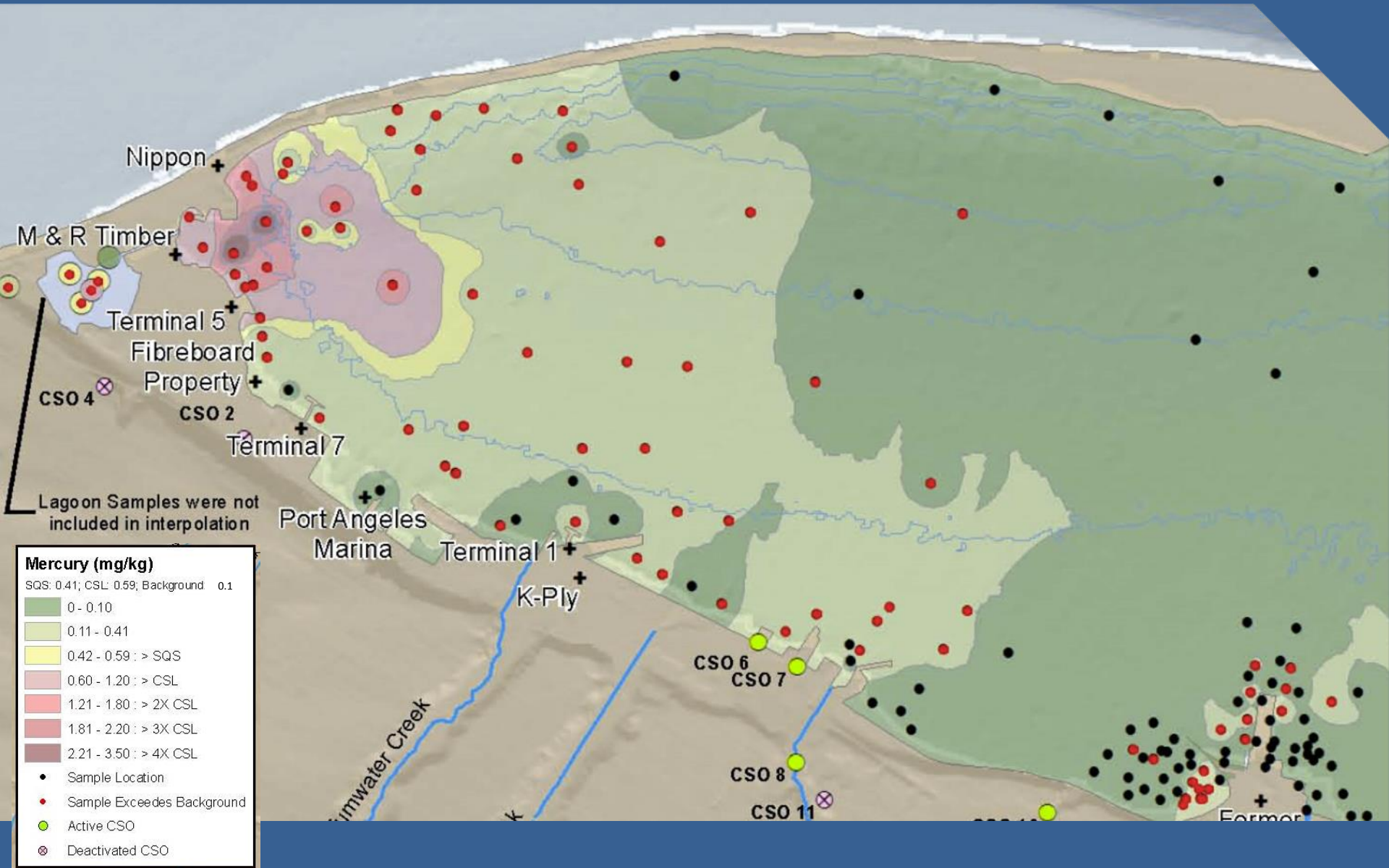
Dioxin/Furan TEQ (ng/kg)

- 0 - 1.0
- 1.1 - 5.0
- 5.1 - 10.0
- 10.1 - 20.0
- 20.1 - 119.1

● Active CSO

⊗ Deactivated CSO

Mercury

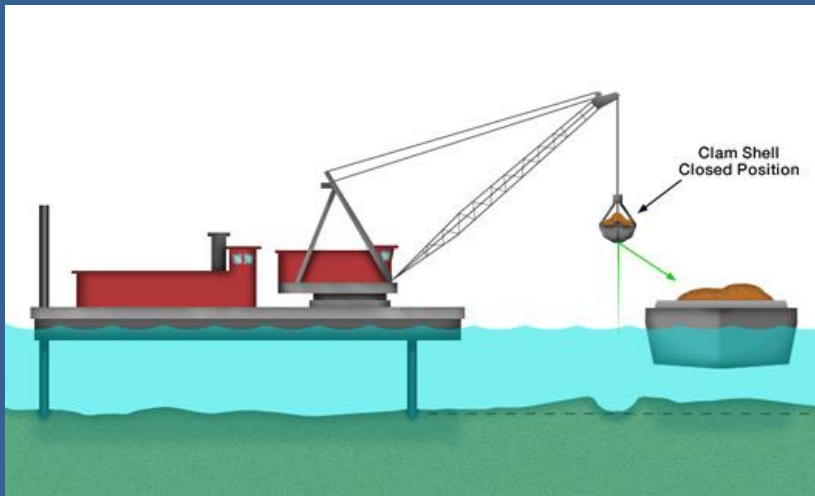


Next Steps

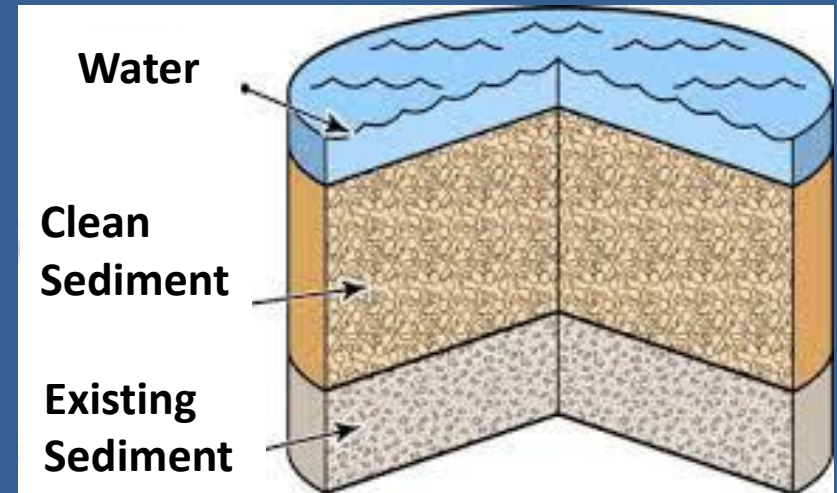
- Ecology reviews White Paper – Summer 2017
 - Agency Review Draft RI/FS – Winter 2017
 - Public Review Draft RI/FS – Spring 2018
 - Public comment – Summer 2018
-
- A cleanup plan will be implemented under a separate legal agreement.
 - Natural resource damage assessment is underway in a separate process.

Sediment Cleanup Alternatives

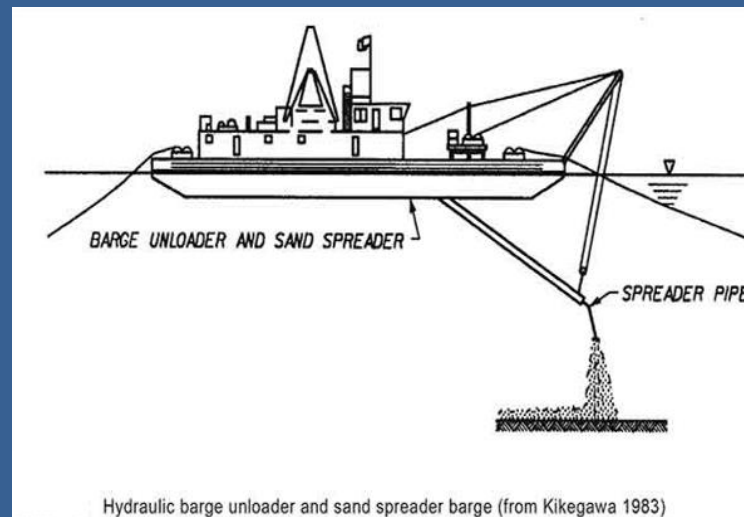
Dredging



Capping



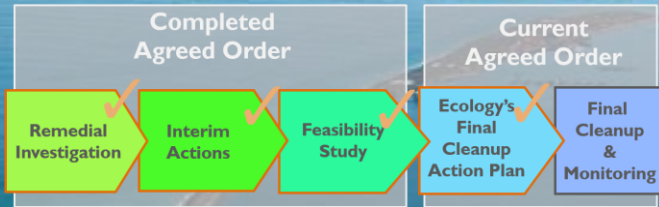
Enhanced Natural Recovery



K-Ply



Port Angeles Cleanup Sites – K Ply



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Progress

2013 Interim Action – Demolition

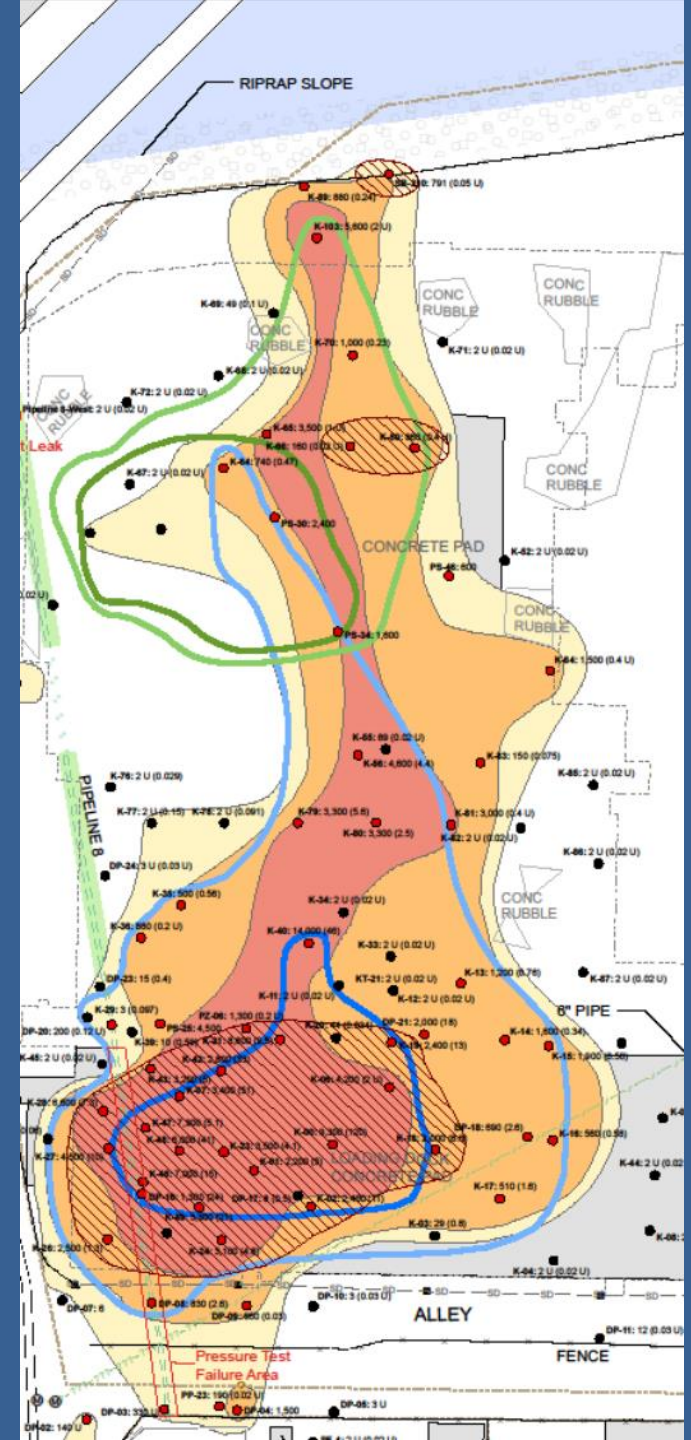
2014 Remedial Investigation/Feasibility Study

2015 Cleanup Action Plan/Cleanup Started

2016 Cleanup completed



Historical extent of contamination





Next Steps

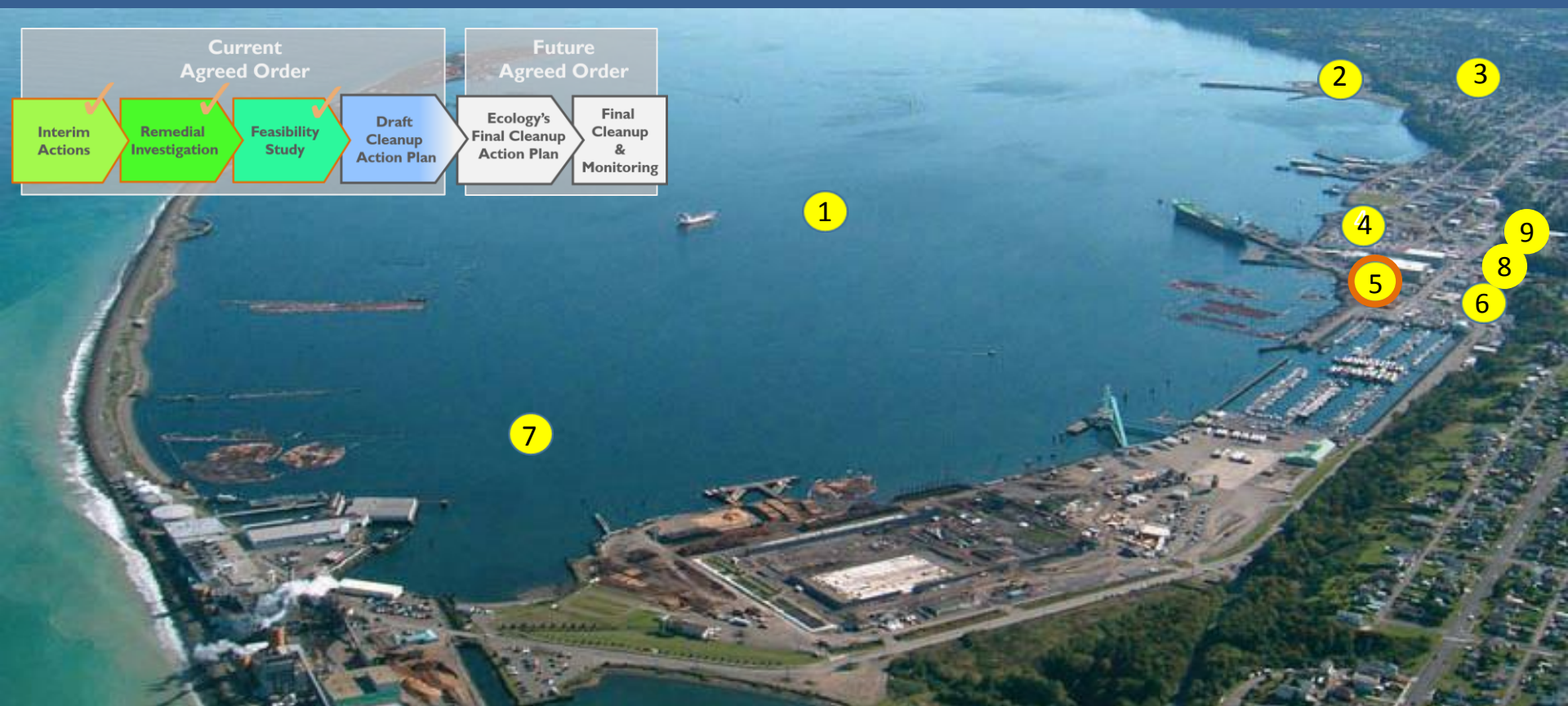
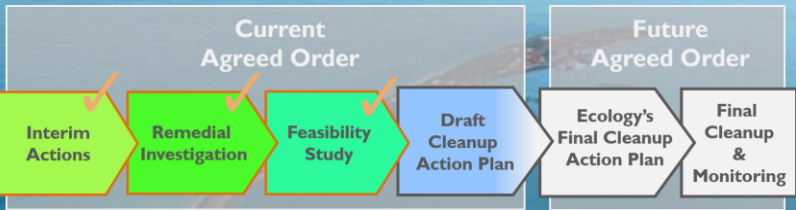
- Monitor soil and groundwater until all soil and groundwater meets cleanup levels
- Place an environmental covenant



Marine Trades Area



Port Angeles Cleanup Sites – Marine Trades



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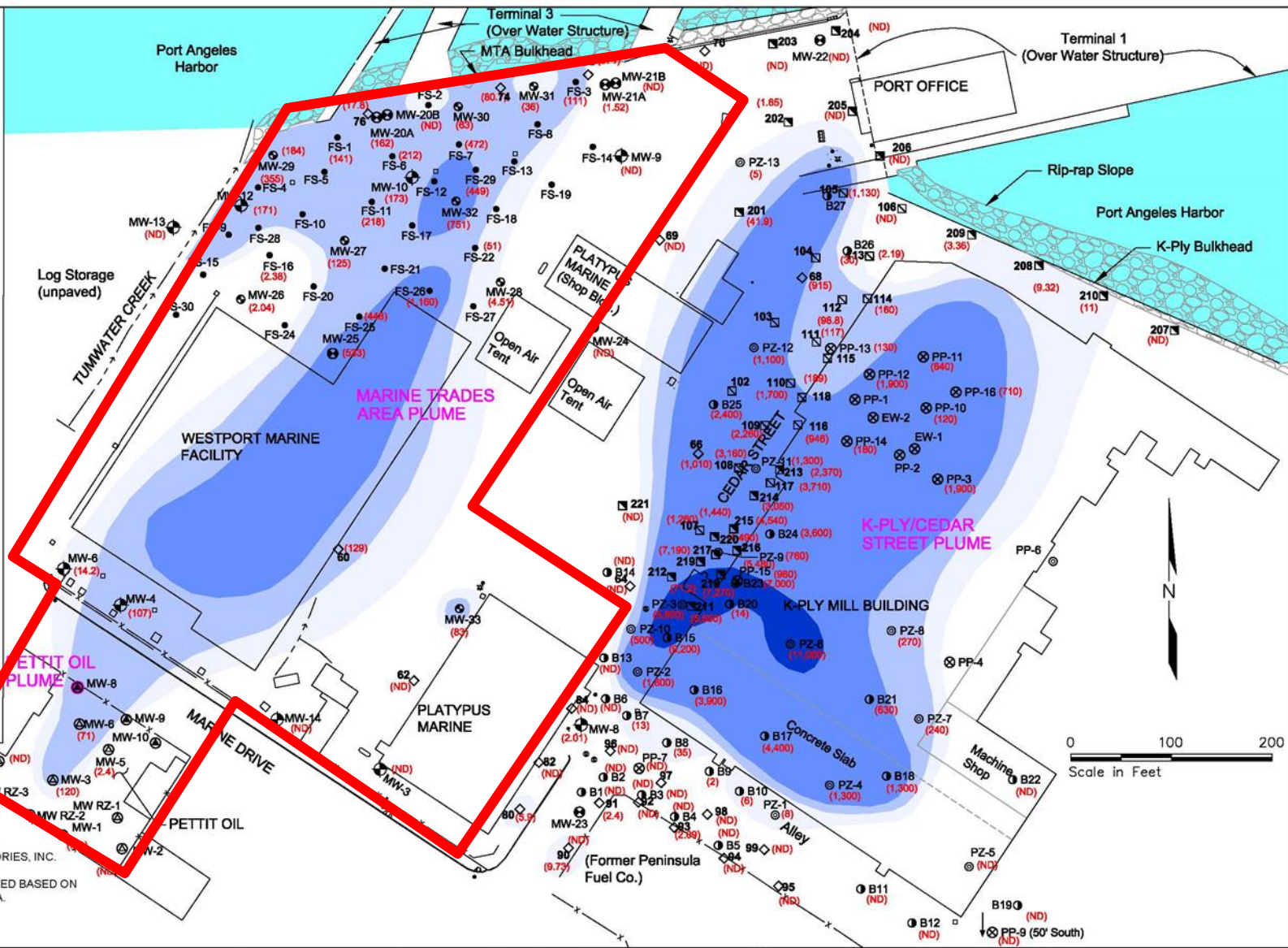
Gasoline in groundwater

- LEGEND**
- Approximate Extent of Benzene in Groundwater: greater than 5,000 µg/L
 - Approximate Extent of Benzene in Groundwater: greater than 500 µg/L
 - Approximate Extent of Benzene in Groundwater: greater than 50 µg/L
 - Approximate Extent of Benzene in Groundwater: greater than 5 µg/L (MTCA A)

- ⊗ PP-12 K-Ply Monitoring Well, Pre-RI
- ⊕ MW-4 MTA Site Monitoring Well, Pre-RI
- ⊕ MW-1 Pettit Oil Monitoring Well, Pre-RI
- ⊙ PZ-13 Piezometer Location Landau Assoc., January 2009
- ⊙ B12 Geoprobe Location Landau Assoc., January 2009
- ⊕ MW-29 MTA Site Monitoring Well Floyd/Snider, February 2008
- FS-5 Geoprobe Location Floyd/Snider, February 2008
- ⊕ MW-24 MTA Site Monitoring Well Floyd/Snider, January 2007
- ⊙ 210 Geoprobe Location (approx.) Floyd/Snider, May-June 2006
- ⊙ 114 Geoprobe Location (approx.) Floyd/Snider, Nov.-Dec. 2005
- ◇ 69 Geoprobe Location (approx.) Floyd/Snider, October 2005
- ⊕ MW-8 Pettit Oil Monitoring Well SAIC, December 2004
- (3,600) Benzene in groundwater (µg/L)
- Indicates well contained measurable free product including gasoline at time of sampling

Results for MTA Site are from May 2007 and February 2008 Sampling events. Results for K-Ply Wells are from the most recent available data from 2002-2009 Sampling. Results for Pettit Oil wells are from the most recent available data from the February 2008 and February 2009 Sampling events.

- NOTES**
1. BASE MAP BY NORTHWESTERN TERRITORIES, INC.
 2. EXTENT OF CONTAMINATION IS ESTIMATED BASED ON RESULTS SHOWN AND HISTORICAL DATA.



Progress

2002 Interim action – soil removal and vapor barrier under Westport Marine

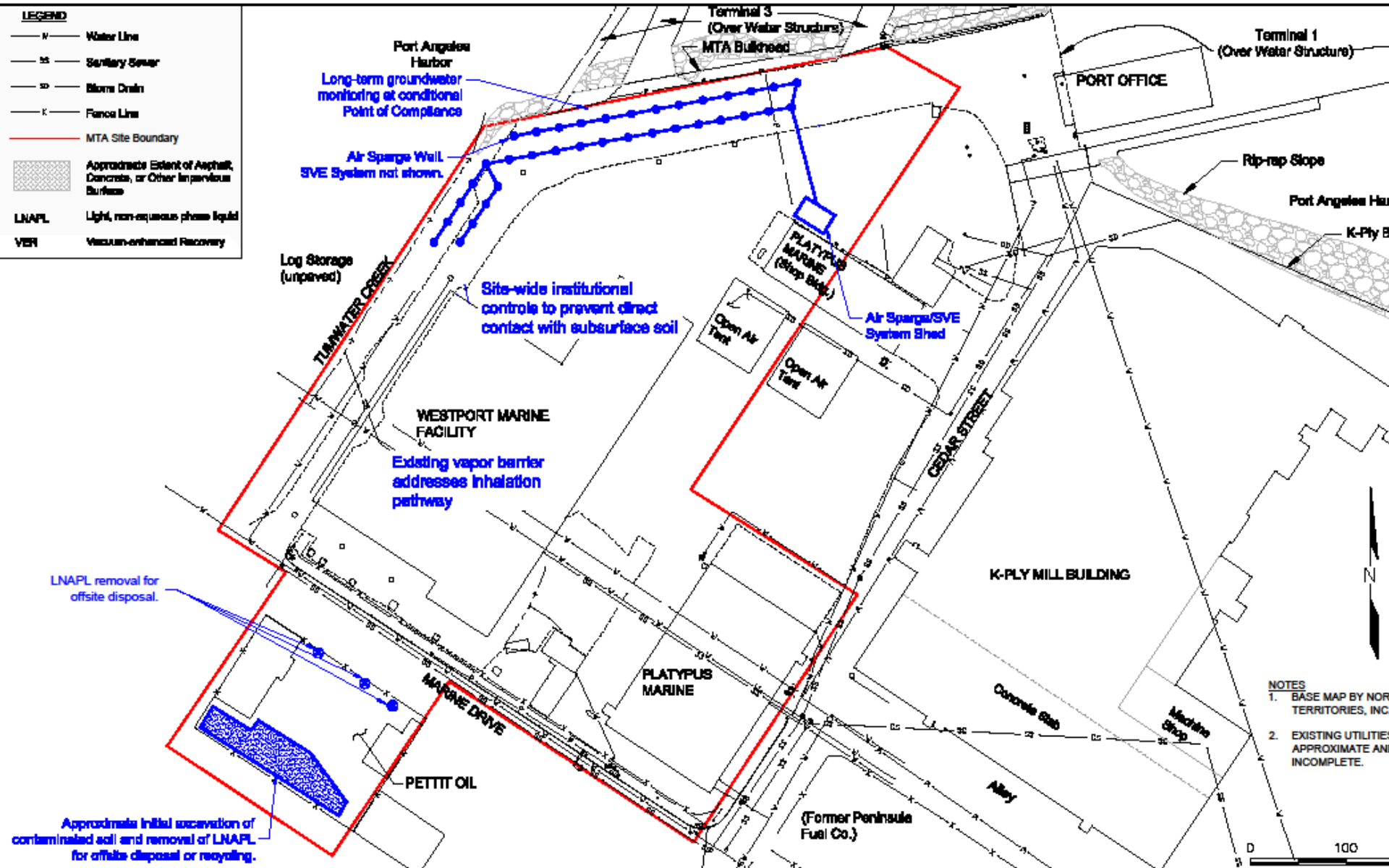
2012 Characterization completed

2013 Remedial investigation/feasibility study completed

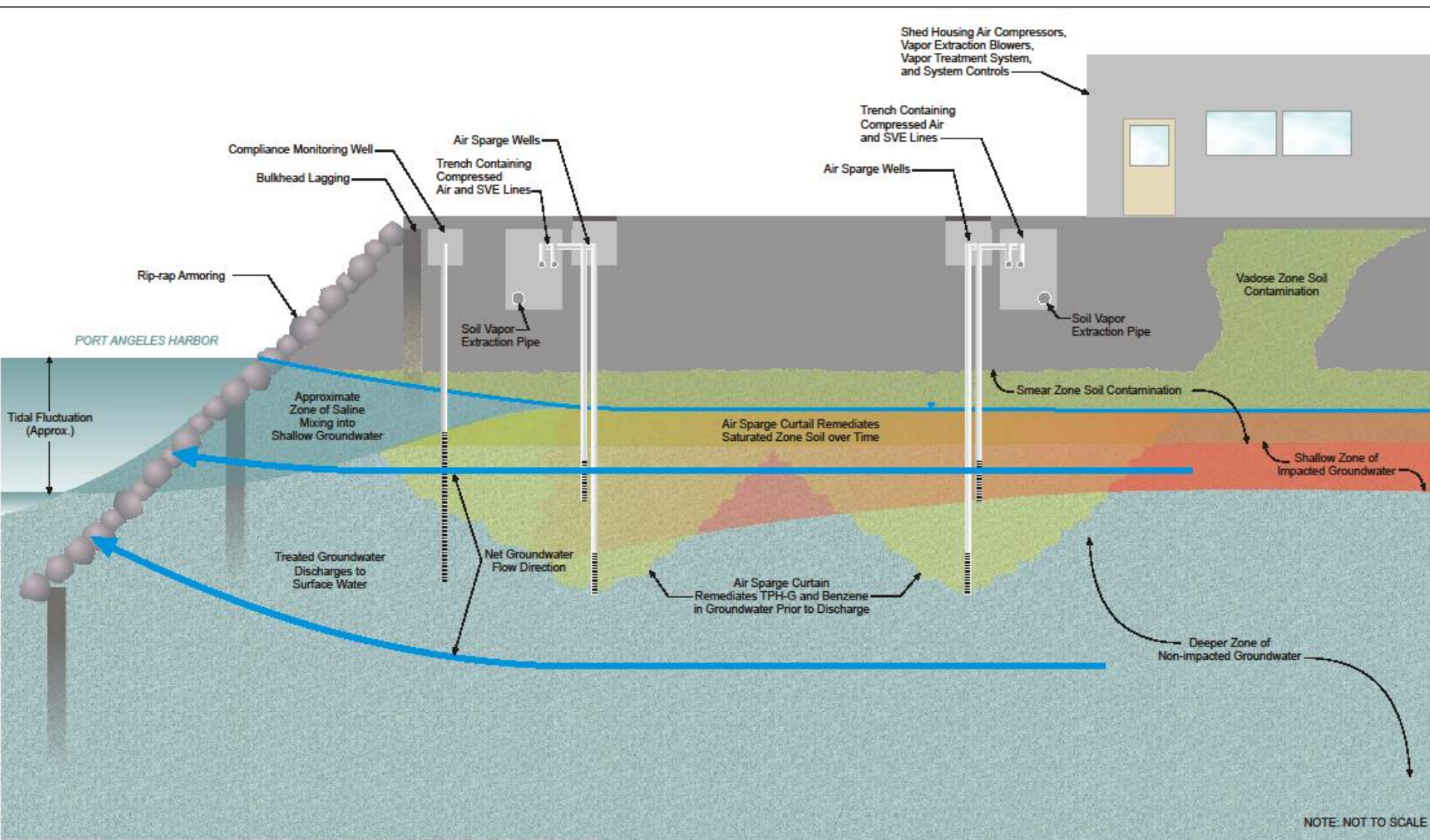
2014 Draft cleanup action plan submitted

2015 Revised draft cleanup action plan submitted

Preferred cleanup option



Air sparging and soil vapor extraction



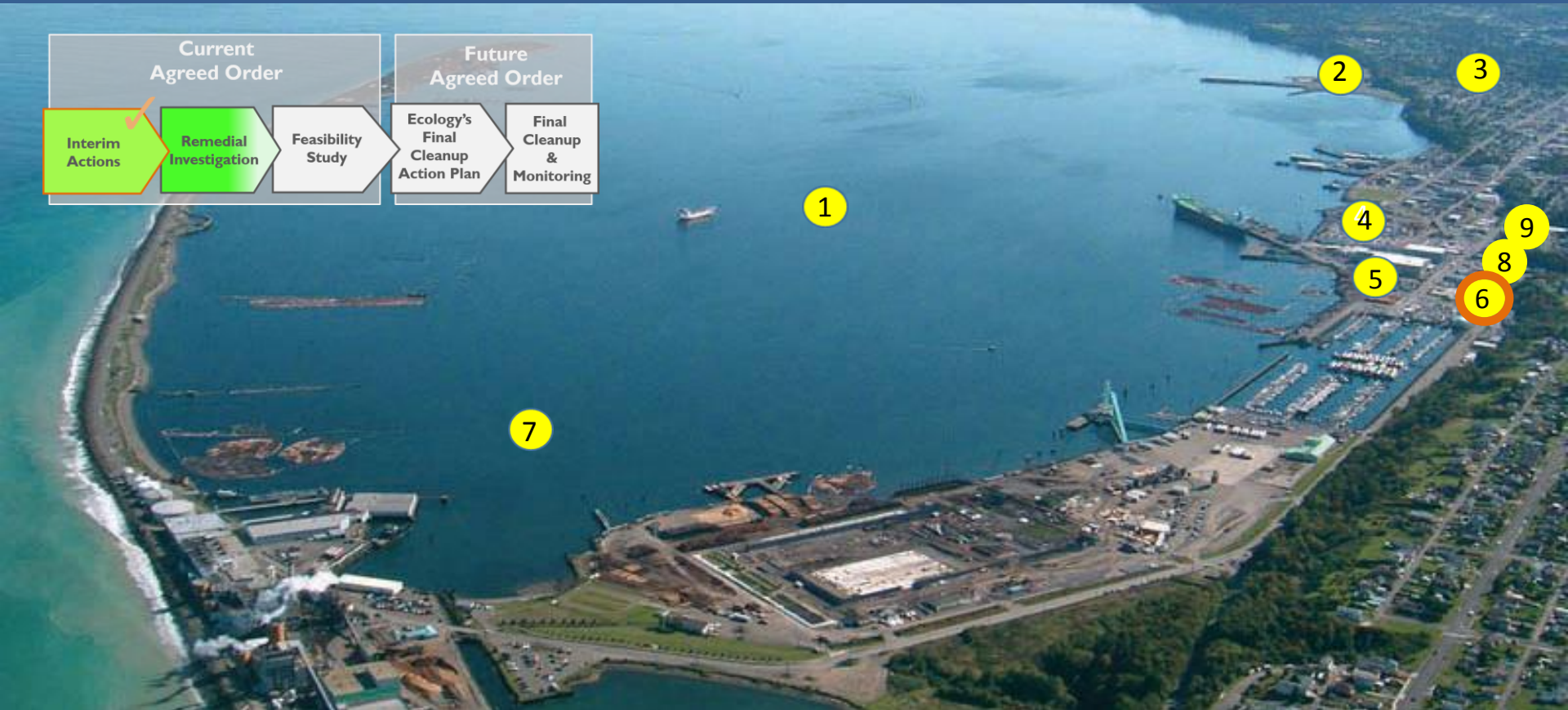
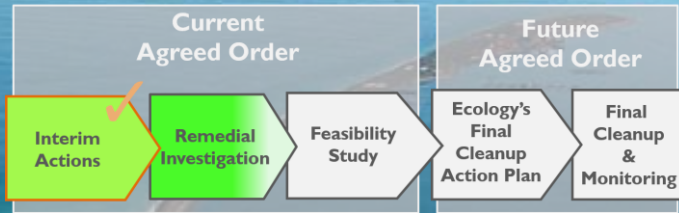
Next Steps

- Ecology completes draft cleanup action plan –2017
- Negotiate agreed order with Port, Chevron, and ARCO – 2017
- Public comment period – 2017
- Finalize CAP and agreed order – 2017
- Cleanup – 2017/2018

Unocal Bulk Plant 0601



Port Angeles Cleanup Sites – Unocal Bulk



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Progress

2015 Draft remedial investigation report submitted

2016 Review of draft remedial investigation showed data gaps

2016 Supplemental work plan approved

Next Steps

- More soil & groundwater sampling mid-2017
- Chevron prepares agency review draft remedial investigation report
- Ecology reviews and comments
- Chevron prepares public review draft RI
- Chevron prepares the feasibility study report
- Ecology prepares draft cleanup action plan
- Public comment

Shell and Pettit Tumwater Truck Route



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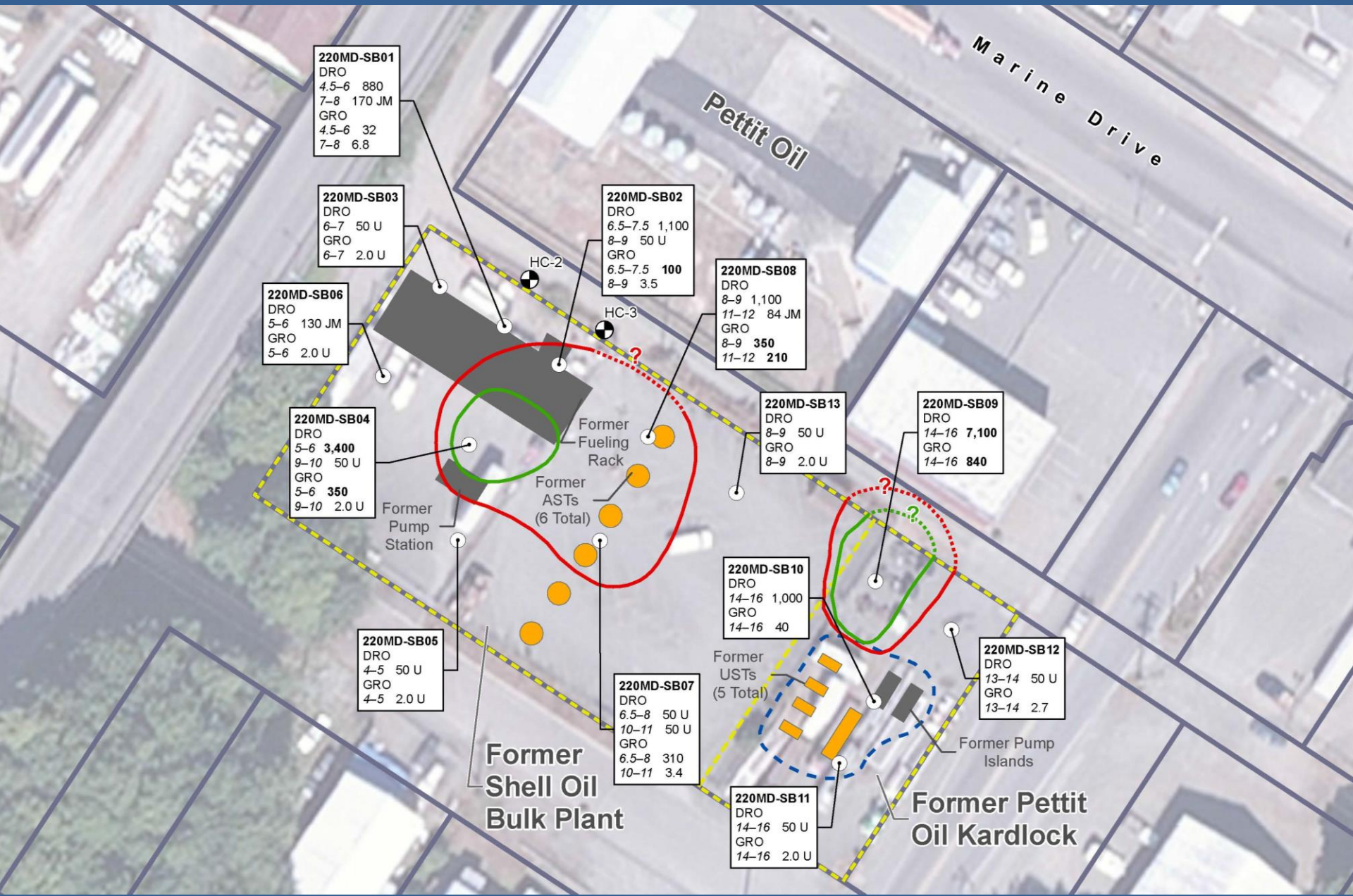
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Shell and Pettit Tumwater Truck Route



Questions?

