

# TACOMA TIDEFLATS

## BROWNFIELDS AND REMEDIATION

### TACOMA TIDEFLATS SUBAREA PLAN & EIS

December 23, 2023

## Introduction

The Tideflats have been used for industrial and commercial purposes for over 140 years and are currently heavily developed for these uses. With its long history, there is a high concern for past industrial and commercial land uses to have released hazardous materials and waste to the subsurface. Prior to modern environmental practices, it was common for industrial activities to dispose of hazardous waste without regard for potential environmental impacts or concerns.

Before the 1972 Clean Water Act<sup>1</sup>, industry would discharge process and wastewater directly into Commencement Bay. Industries then shifted to disposing their wastes into unlined ponds. The Resource Conservation and Recovery Act (RCRA) was enacted in 1976, creating a framework for proper management of hazardous and non-hazardous solid waste. By this time, Commencement Bay had already been severely impacted by industrial practices. Decades of industrial activity released pollutants into the water and sediment, including: arsenic, lead, zinc, cadmium, copper, mercury, Polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), dioxins, and phthalates. Action was needed to restore the health of Commencement Bay.

## History of Cleanup in the Tacoma Tideflats

Ports and industrial facilities work under a multitude of environmental regulations and laws, which are described in Table 1.

---

<sup>1</sup> The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name with amendments in 1972.



**Table 1. Regulatory Framework**

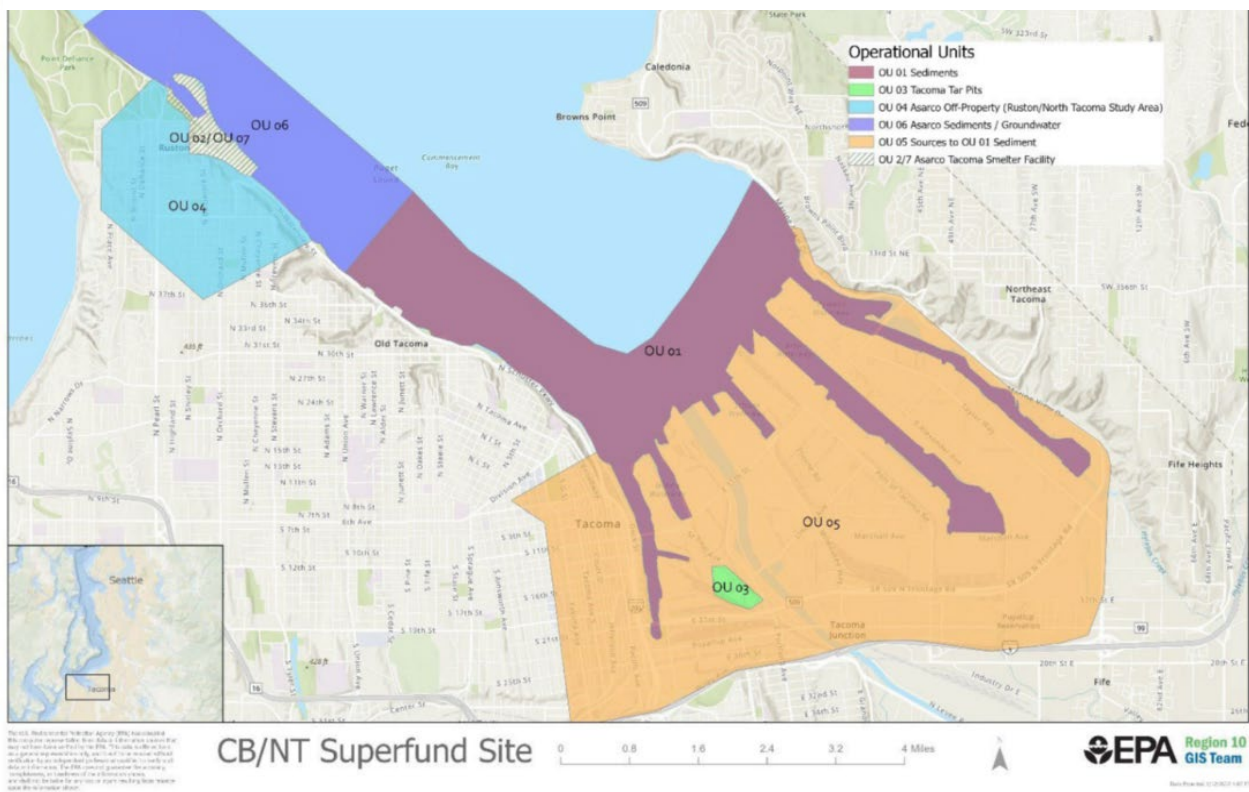
Policy	Year Enacted	State or Federal	Description
Clean Air Act	1963	Federal	Regulates emissions of air pollutants from stationary and mobile sources.
National Environmental Policy Act	1970	Federal	Required federal agencies to assess the environmental impacts of proposed actions prior to decision-making.
State Environmental Policy Act	1971	State	Like the National Environmental Policy Act, Washington's State Environmental Policy Act requires state and local agencies to identify potential environmental impacts related to proposed projects prior to decision-making.
Clean Water Act	1972	Federal	Regulates the discharge of pollutants into navigable waters and regulates surface water quality.
Water Pollution Control Act	1973	State	Chapter 90.48 RCW Water Pollution Control Act in conjunction with Chapter 173-200 WAC Water Quality Standards for Ground Waters regulate the current and future beneficial uses of groundwater.
Toxic Substances Control Act	1976	Federal	Regulates existing and new commercial chemical substances by assessing health or environmental risks and determining the appropriate limits distribution and use.
The Resource Conservation and Recovery Act	1976	Federal	Regulates the management and disposal of solid waste and hazardous waste.
Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)	1980	Federal	Authorizes the federal government to respond to releases or threatened releases of hazardous substances that may endanger public health or the environment.
Hazardous Waste Management Act	1985	State	The Hazardous Waste Management Act (HWMA) is articulated in RCW Chapter 70.105 (recodified as RCW 70A.300) and the Dangerous Waste Regulations WAC Chapter 173-303. Through the HWMA, Ecology is authorized by the EPA to implement the Resource Conservation and Recovery Act within Washington State, which regulates the management and disposal of hazardous waste.
Model Toxics Control Act	1989	State	Authorizes the Washington State Department of Ecology to oversee or manage the cleanup of contaminated sites.
Sediment Management Standards	1991	State	Chapter 173-204 WAC, Sediment Management Standards, was created in 1991 under RCW Chapters 90.48, 70.105D, 90.70, 90.52, 90.54, and 43.21 and establishes marine, low salinity, and freshwater surface sediment management standards (SMS).

The laws that govern brownfield cleanup are the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Model Toxics Control Act (MTCA). These were enacted to force industry to cleanup legacy chemical releases, from both upland and in-water contaminated areas. The passage of these two laws has resulted in a multitude of cleanup actions conducted in the Tacoma Tideflats, examples are included below.

The work first began under CERCLA, when the EPA identified Commencement Bay and nearby tideflats in the south Puget Sound as a Superfund Site in 1983. The site is made of about 10 -12 square miles of shoreline, sediment in shallow water, and industrialized land between the Hylebos Waterway and Point Defiance in both Ruston and Tacoma, Washington. The site consists of seven operable units (OUs) that were established for cleanup in the EPA's 1989 Record of Decision<sup>2</sup>:

- Tideflat sediments - Commencement Bay sediment remediation (OU 1)
- Asarco Smelter and Tacoma Tar Pits related areas (OU 2, 3, 4, 6, 7)
- Tideflat uplands - Commencement Bay source control (OU 5), consisting of over 6,000 acres of potential upland sources of sediment pollutants

Exhibit 1. Commencement Bay Superfund Cleanup Site



Source: EPA

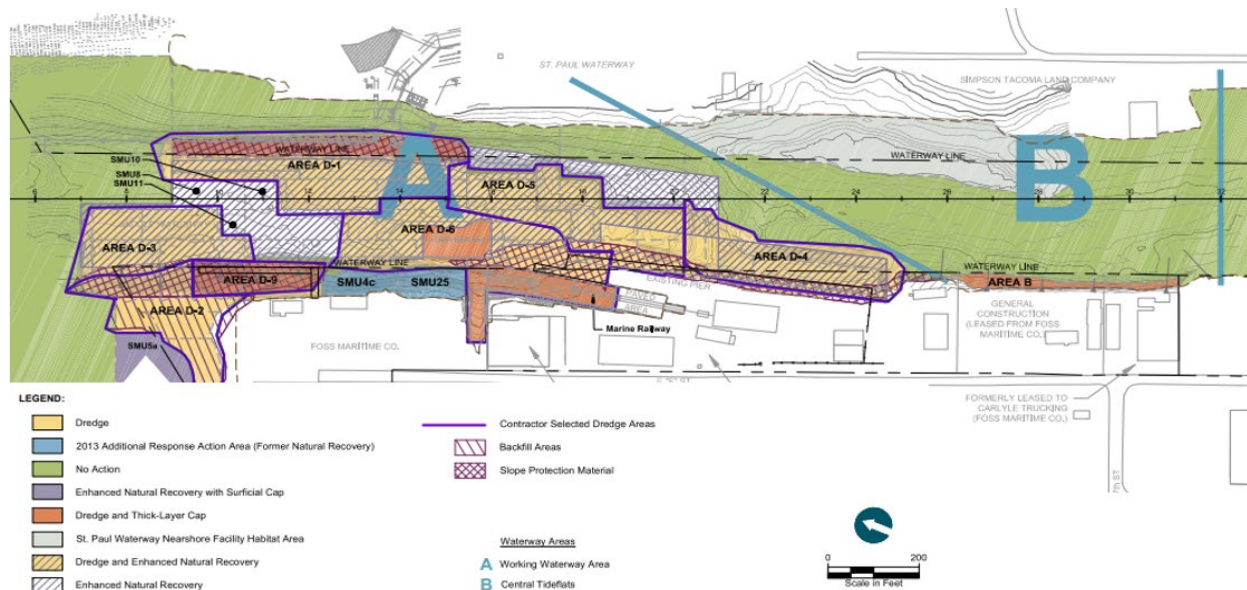
<sup>2</sup> EPA ROD R10-98/020 Commencement Bay Nearshore/Tideflats, WA Second Remedial Action

Commencement Bay sediment remediation (OU 1) consisted of nine sediment problem areas including the Thea Foss Waterway, the Wheeler-Osgood Waterway, the Middle Waterway, the St. Paul Waterway, the Milwaukie Waterway, the Sitcum Waterway, and the head and mouth of the Hylebos Waterway. The Blair Waterway wasn't identified as a separate problem area, as it was thought to be less contaminated than the other waterways. Further, the Port was planning to dredge the waterway in association with the Puyallup Land Claims Settlement.

The remedy objectives were to control sources early, achieve specified sediment concentrations, reduce fish tissue relative to the reference area, and maintain functional habitat and enhance fisheries. The remedy components included implementing a fish consumption advisory (since 1985), upland source control efforts lead by Ecology, dredging and capping above remedial action levels, and monitoring natural recovery 10 years post construction. Each problem waterway was addressed by different groups of performing parties at different times.

**St. Paul Waterway:** The cleanup involved improving wastewater treatment at the nearby paper mill in 1988 and capping 25 acres of contaminated sediment with 180,000 cubic meters of clean sand. The cap, which ranged from 1 to 7 meters thick, also created a healthy intertidal beach habitat as part of a joint Natural Resource Damage Assessment (NRDA) consent decree settlement. After seven years of monitoring, the EPA and the Commencement Bay Natural Resource Trustees confirmed that sediment and habitat objectives had been met. The EPA removed the St. Paul Waterway from the Superfund: National Priorities List (NPL) in 1996.

Exhibit 2. St. Paul Waterway Cleanup Site

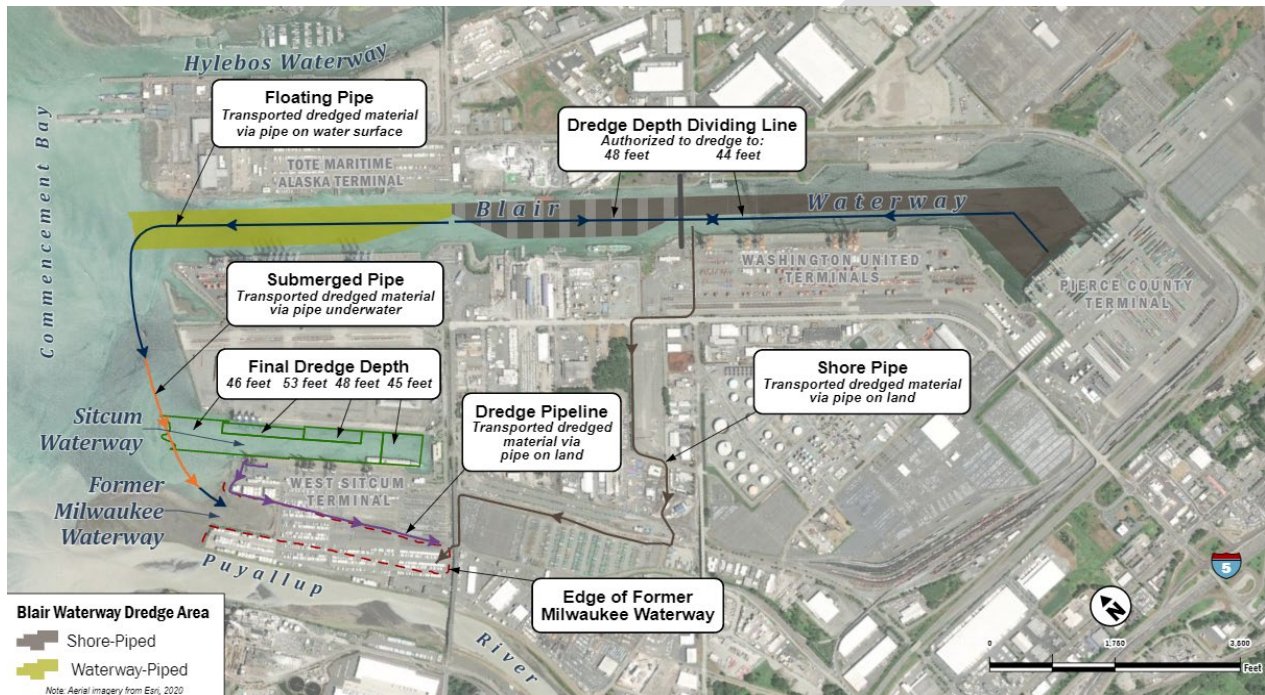


Source: EPA, 2020



**Blair, Milwaukie, and Sitcum Waterways:** The Port of Tacoma lead the remedial action efforts to address these Waterways. In 1995, the Port of Tacoma completed dredging of the Blair and Sitcum Waterways along with construction of the confined disposal facility and habitat site in the Milwaukee Waterway using about 1,225,400 cubic yards of clean, dredged material. Additionally, approximately 875,600 cubic yards of contaminated sediments were removed from the Blair Waterway, while 396,000 cubic yards of contaminated sediments were removed from the Sitcum Waterway. The Port also constructed the 9.5-acre Clear Creek Habitat Improvement Site. The EPA deleted the Blair Waterway from the National Priorities List (NPL) in 1996.

Exhibit 3. Blair Waterway Dredge Area



Source: Port of Tacoma files, 2020

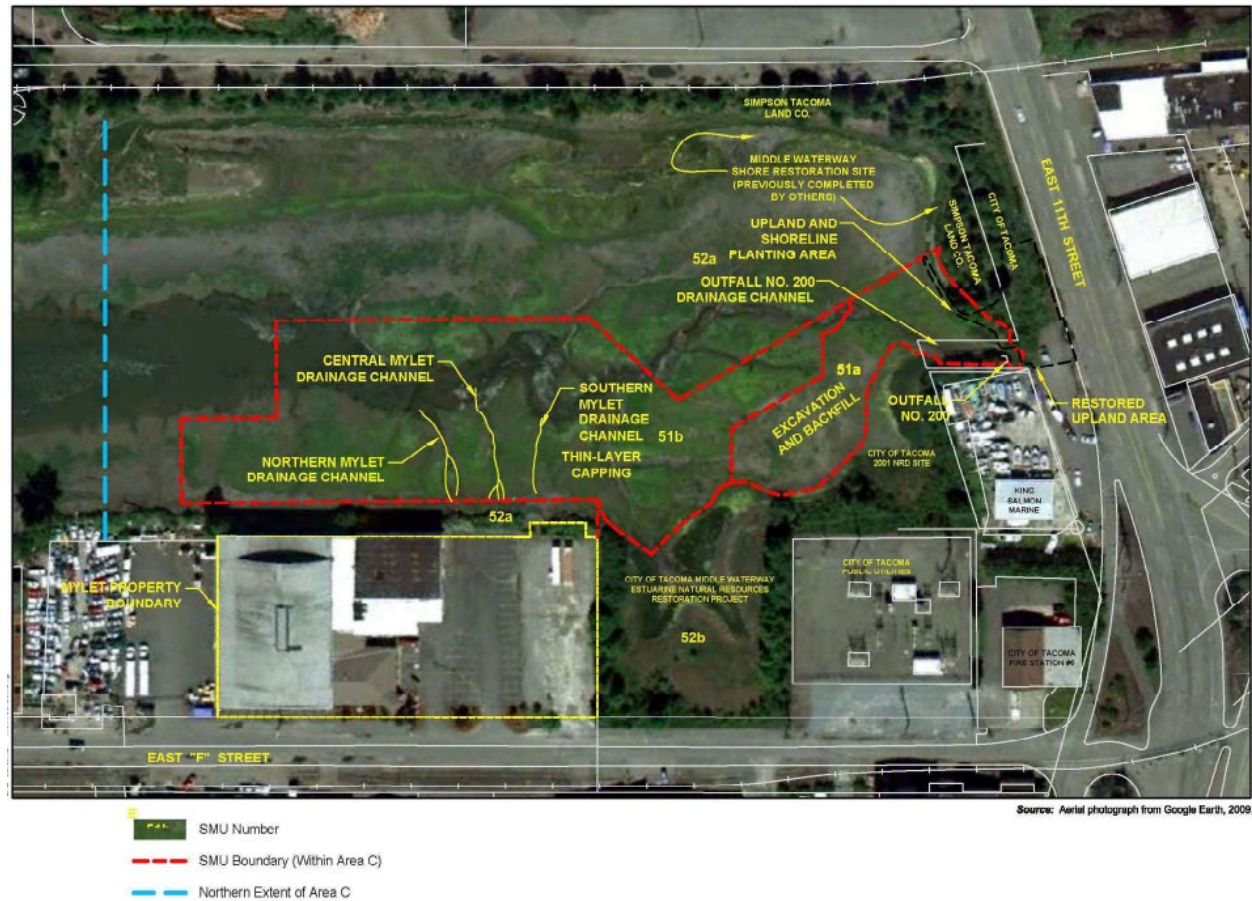
**Middle Waterway:** From Areas A and B, approximately 109,500 cubic yards of dredged sediments from the Middle Waterway were placed in the Blair Slip 1 Nearshore Confined Disposal Facility (NCDF). In August 2004, additional dredging, enhanced natural recovery, and pile removal and replacement was proposed in Areas A and B to address unanticipated post-remediation issues. This work was completed by January 2005. An additional response action to place enhanced natural recovery material and shoreline stabilization was conducted in 2013 to address mercury contamination in sediment in a Natural Recovery area that did not recover as originally anticipated. The remedial action was completed in 2018.

From Area C, approximately 3,125 cubic yards of contaminated sediment was excavated and disposed in the County's LRI Landfill. The dredged area was subsequently backfilled with clean

material. In Area 51a, monitored natural recovery (MNR) was the selected remedial approach. In Area 51b, a thin layer cap (also known as Enhanced Natural Recovery [ENR]) was placed over approximately 1.5 acres.

## Exhibit 2. Middle Way Cleanup Site Plan

**Site Plan**  
Middle Waterway Problem Area C



Source: EPA, Fifth 5-year Review Report for Commencement Bay Nearshore/Tideflats Superfund Site, Pierce County, WA

### Exhibit 3. Thea Foss and Wheeler-Osgood Habitat Sites

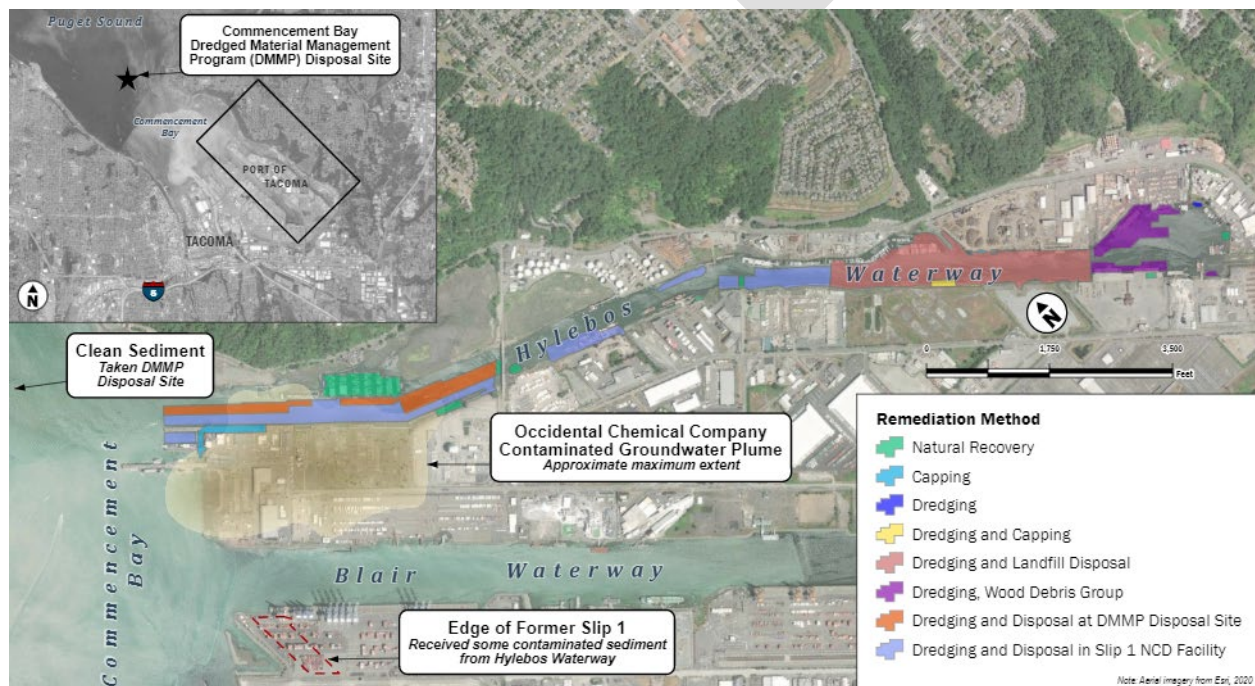




**Hylebos Waterway:** Remedial construction at the head of the Hylebos Waterway was completed in 2006, which included addressing contamination from multiple embankment areas and dredging 405,000 cubic yards of sediment over 42 acres. Dredged sediments were disposed in the Roosevelt Regional Landfill. Post-dredging sampling results indicated that sediment quality objectives were met throughout the approximately 45-acre subtidal area.

Remedial construction at the mouth of the Hylebos Waterway was completed in 2004 by the Port of Tacoma and Occidental Chemical Corporation. A 10-acre nearshore confined disposal facility (NCDF) was constructed in the Blair Slip 1, with a disposal capacity of 650,000 cubic yards. In 2003 and 2004, dredged sediments were transported to either the Commencement Bay open-water disposal site (receiving approximately 190,000 cubic yards of uncontaminated sediment) or the Blair Slip 1 NCDF (receiving approximately 450,000 cubic yards of contaminated sediment). Additional actions included monitored natural recovery in select areas, and habitat construction.

Exhibit 4. Hylebos Waterway Remediation



Source: Port of Tacoma files, 2020

In summary, the OU1 Sediment Remedy included

- 500 acres dredged
- 2,400,000 cubic yards to three confined disposal facilities (CDFs)
- 400,000 cubic yards to off-site landfills
- 200,000 cubic yards to open-water disposal



- 40 acres capped
- 60 acres monitored or enhanced natural recovery
- Coordinated with restoration, navigation, and urban renewal

Currently, the responsible parties working with the EPA continue to monitor remedy effectiveness including sediment quality conditions, environmental cap integrity.

## MTCA actions

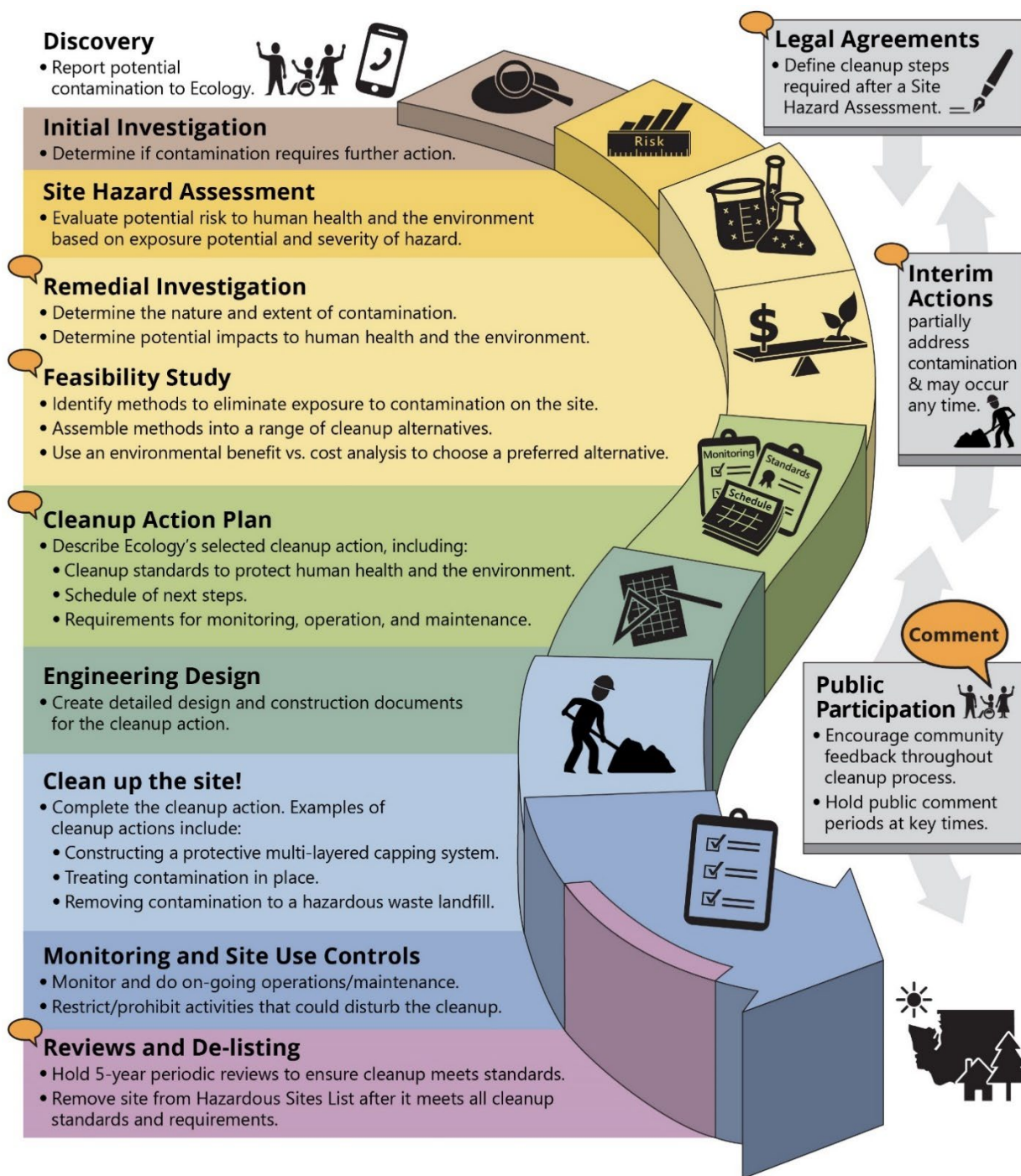
Ecology led the Upland and Nearshore Source Controls efforts for Commencement Bay, starting before 1990 and completed in 2001. These efforts consisted of a series of milestone reports focused on each problem waterway; Milestone 1 – Ongoing Confirmed Sources Identified, Milestone 2 – Essential Administrative Actions in place for Major Sources, Milestone 3 – Essential Remedial Action Implemented for Major Sources, Milestone 4 – Administrative Actions in Place for All Confirmed Sources, and Milestone 5 – Remedial Implementation for all Source. The remedial action could proceed following Ecology's completion and EPA's approval of Milestone 5 report.

Figure 1: Head of the Thea Foss, Twin 96-inch outfalls



Ecology's identified sources largely focused on shoreline industrial properties, except for the Thea Foss, where upland stormwater was identified with the potential to re-contaminate the Waterway. The identified upland sources were also addressed through Ecology's cleanup process.

Exhibit 5. Steps in the formal MTCA cleanup process



Source: Washington State Department of Ecology, 2023.

Ecology's cleanup process begins when the release of a potential contaminant is reported. The reported incident may be the result of a spill, soil testing indicating the need for offsite disposal, or through due diligence related to a property transaction. Upon receiving the alert, Ecology will

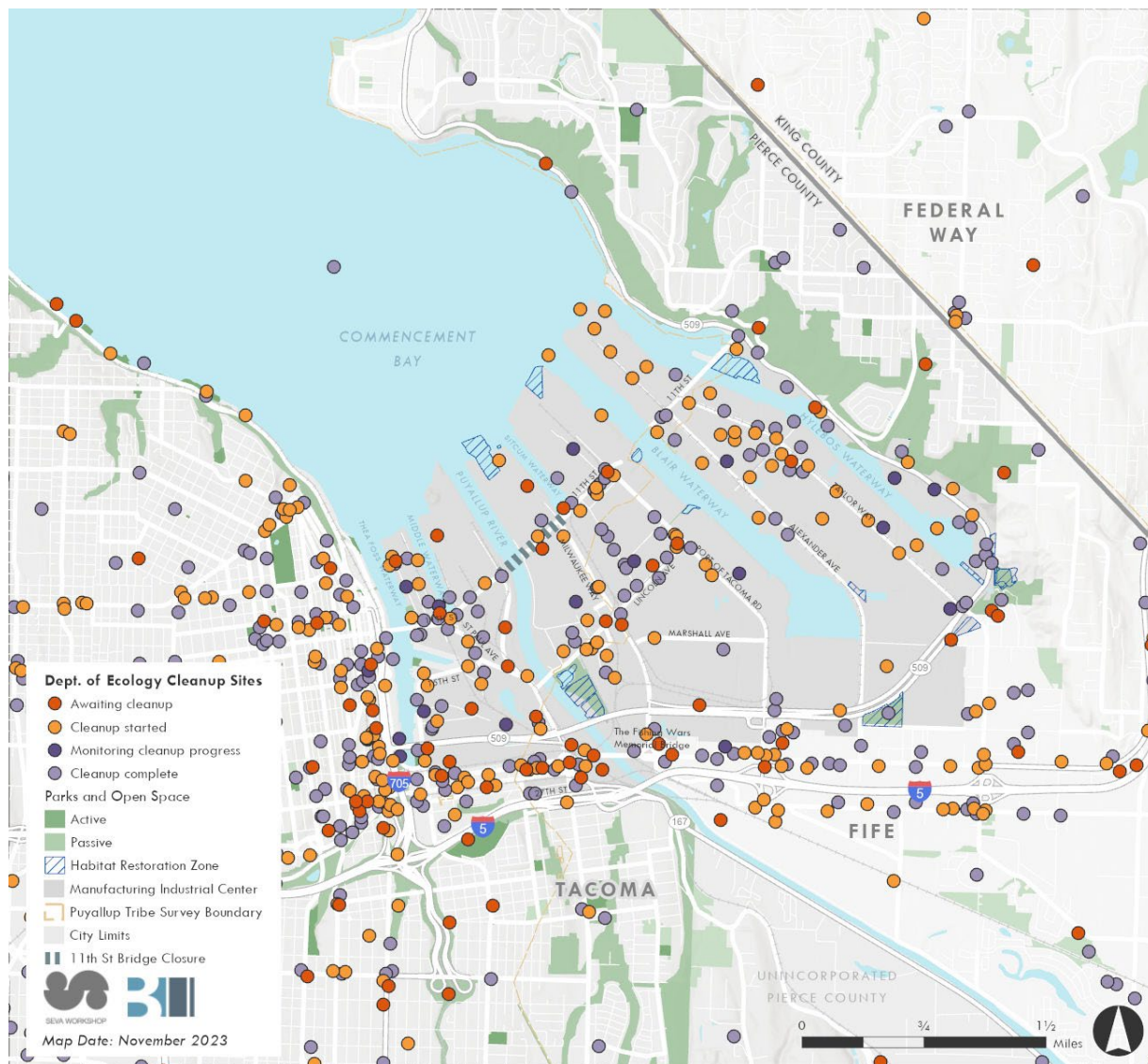
complete a Site Hazard Assessment and determine if additional evaluation is required. Ecology requires liable parties, the owner or operator of the property, to complete all site investigations, develop a cleanup action plan, and implement any required cleanup. Cleanups are conducted either through the formal process under an Ecology Order, through the Voluntary Cleanup Program, or independently. Ecology accepts public input when an interim action is considered and when selecting a preferred cleanup option. If contamination is left on the site, Ecology will place restrictions on how the site is used to ensure Site conditions are protective. Ecology will conduct periodic monitoring on the site to ensure it is meeting all cleanup standards and requirements; these reports are shared for public comment.

Since 2001, Ecology has continued to oversee upland cleanup efforts in the Tacoma Tideflats in cooperation with the liable parties. Over time, Ecology has focused on addressing high priority sites through Orders, while also supporting cleanup efforts through the Voluntary Cleanup Program. Orders are typically used for the more contaminated and impacted properties, while the Voluntary Cleanup Program is often used by developers during property redevelopment.

Exhibit 8 below displays Ecology's current confirmed and suspected cleanup sites, in the Tacoma Tideflats and surrounding areas. There are a total of XXX cleanup sites, X % are complete, X% are started, and X% are awaiting cleanup. Complete means XXXXX, started means XXXX, and awaiting cleanup means XXXX.



## Exhibit 6 Cleanup Sites in the Tideflats Subarea



Source: Department of Ecology, 2023; Seva Workshop, 2023.

## Port of Tacoma's Brownfield Advisory Committee

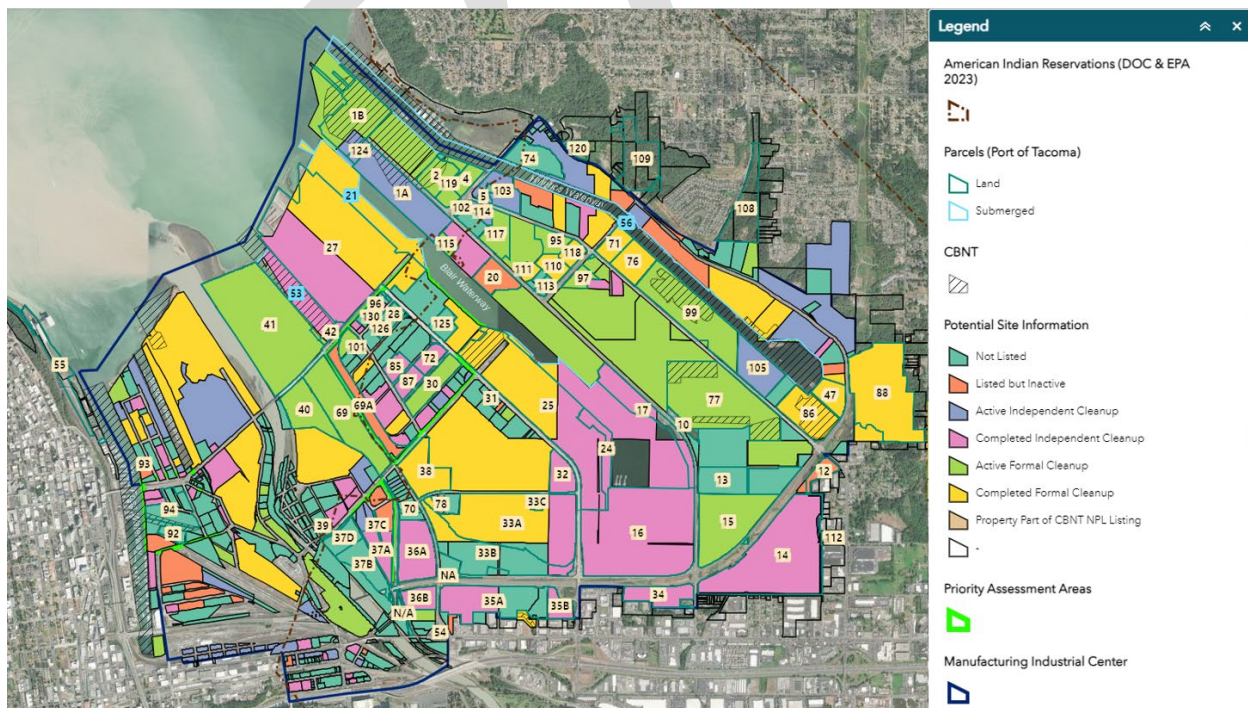
In 2022, the Port of Tacoma was awarded an EPA Region 10 Brownfields Assessment Cooperative Agreement, with a period of performance between October 1, 2022, through September 30, 2026. The project includes community engagement through development of a Brownfield Advisory committee (BAC), development of a Site Inventory of the Tacoma Tideflats, and site characterization, via completion of Phase 1 and Phase 2 investigations, for properties that meet EPA's eligibility funding criteria. To date, the BAC has been formed and met twice, and will continue to meet on a quarterly basis. The site inventory, now largely complete, includes the development of a web-based application, combining multiple databases in one location, including Ecology's contaminated Sites list, as well as the Pierce County Assessor's 2020 Buildable Lands Inventory.

The site inventory web-based tool is suitable for identifying Sites that are part of the Superfund site, sites that are under formal order with Ecology, sites that are under the voluntary cleanup program, and sites that were completed by independent action. The tool also categorizes sites by stage in the formal cleanup process, as well as properties that are not listed with Ecology. While not developed for this purpose, the BAC web-application is an excellent tool for illustrating existing brownfield remediation efforts in the Tideflats subarea.

## Existing Brownfield Remediation Efforts

There are 371 properties in the Tideflat Subarea.

Exhibit X: Site Inventory Potential Site Information



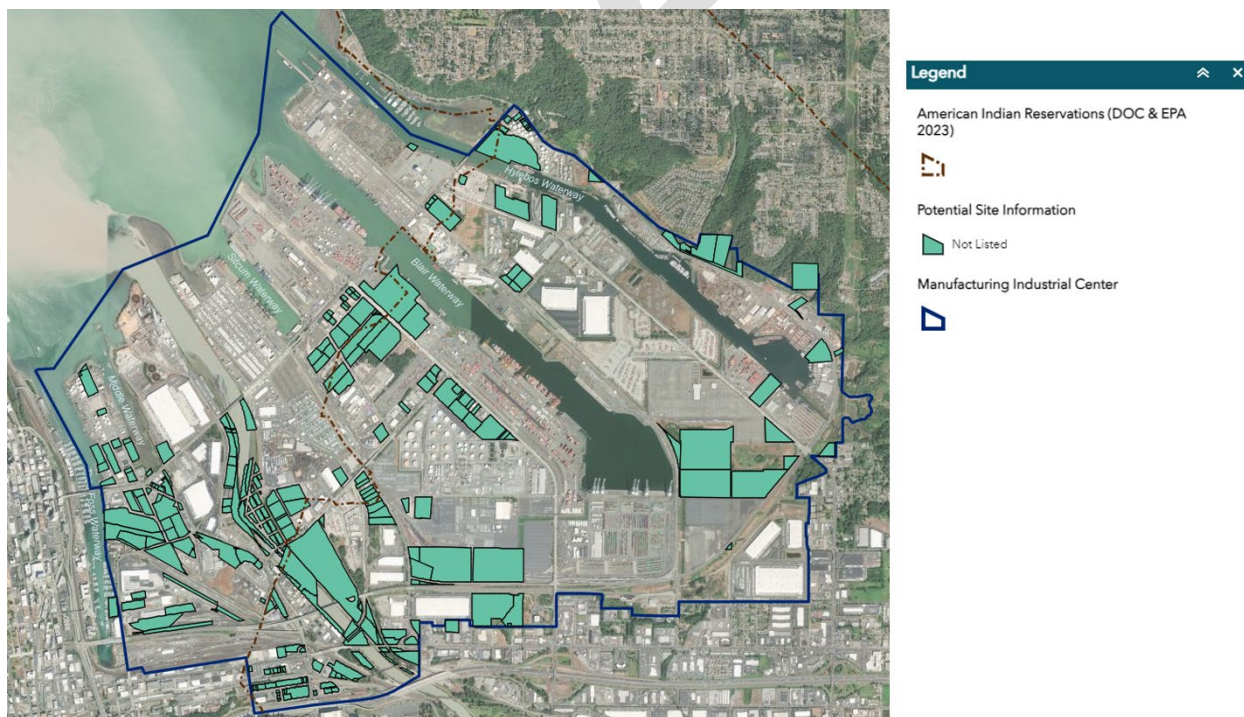


62 properties are part of a formal cleanup – 32 are active, 29 are completed. These properties or Sites are Ecology's highest priority. They are the most complex, technically challenging, and likely most expensive to cleanup. The formal Sites listed as active in Ecology's database are in different stages of the MTCA cleanup process, possibly just starting the Remedial Investigation or all the way through cleanup into long-term monitoring. The term active is somewhat of a misnomer, as little progress may be occurring due to various reasons, including Ecology staffing limitations.

94 properties are undergoing, or have completed, independent cleanup – 30 are active, 46 are completed, and 18 are inactive. The 30 active Sites are likely in Ecology's voluntary cleanup program, undergoing investigations, cleanup planning, remediation design or actively undergoing cleanup. For completed Sites, the cleanup action has been completed and Ecology has rendered an opinion of remedy sufficiency. For the inactive properties, Ecology has not engaged the property owner, or responsible party, however, the owner may be conducting cleanup work independently without Ecology oversight.

215 properties are unlisted. These properties represent 22% of the uplands in the Tideflats Subarea. Most of these properties are not owned by the Port and tend to be smaller in size. If a property transaction has not occurred in recent past, with all appropriate inquiries conducted to evaluate environmental conditions, the owner may not be aware that their property is contaminated. It is likely that many of these unlisted properties, are in fact contaminated and will require cleanup in the future.

Exhibit X: Unlisted Properties



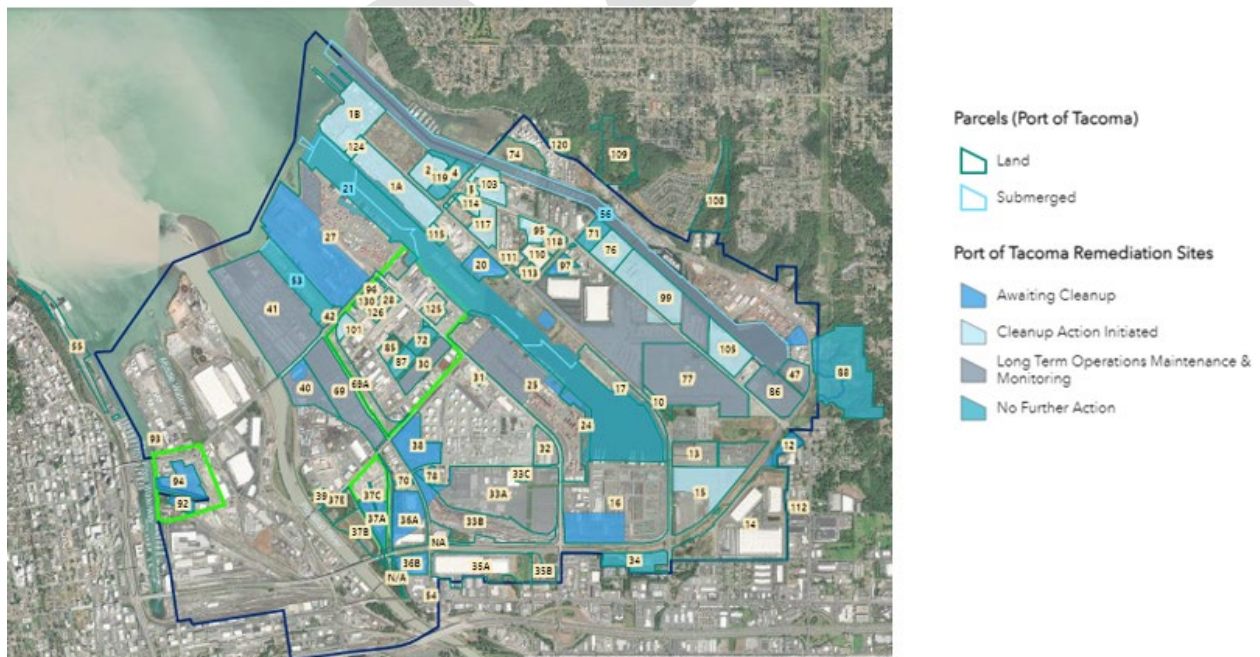


## Future Brownfield Challenges and Opportunities

Encompassing approximately 5000 acres, with 371 upland properties, and over 100 years of heavy industrial use, most of the lands in the Tideflats have been touched by contamination. Cleanup of contaminated property is often long, complicated, and expensive. The uncertainty posed by the presence of known and suspected brownfields is a barrier to economic development. The cleanup of contaminated sites adds significant delay and expense to development projects, increasing the financial risk associated with redevelopment and private investment. For these reasons, the potential presence of brownfields is not only an environmental health issue but also a serious impediment to economic development, creating additional, long-term negative impacts on community welfare.

As the major property owner in the Tideflats, owning approximately 50% of the land mass, the Port of Tacoma is uniquely positioned and qualified to manage contaminated brownfield properties. The Port of Tacoma has been a leader in addressing legacy contamination for decades. The Port is committed to cleaning up contaminated Parcels and finding new uses for them. The Port began on 200 acres a century ago and has been growing ever since, buying contaminated property in the Tideflats and repurposing them for the next economic opportunity. Unlike private landowners, ports can offset some costs by accessing state and federal funds, including money from state taxes paid by companies that import toxic chemicals. The Port of Tacoma also uses some property tax revenue for remediation and tries to recover costs from the original polluters.

Exhibit X: Port Properties and Remediation Projects



Source: Port of Tacoma Brownfields Advisory Committee, 2023.

To date the Port has spent over \$200 Million remediating over 1,100 acres in the Tideflats. The Port is actively working with Ecology to remediate a few hundred more acres of port-owned contaminated property. In 2024, the Port is working toward remedy selection at 10 properties and conducting long-term monitoring and maintenance at 14 other properties where remedies were previously implemented.

Additionally, the Port is working with the EPA and the Brownfield Advisory Committee, under the Site Assessment Grant. Twelve candidate Sites have been identified for Site Assessment, Phase 1 and 2 Site Investigations. These are a mixture of Port, City, and privately held properties, that will be recommended for eligibility assessment based on factors of underutilization, location within a Port priority area, potential for environmental sources, and existing or anticipated site access.



- Former NTR Logistics
- Parcel 94
- Parcel 92
- Former Martinac Shipyard



- Hertz Equipment
- Roadway Construction / Reflex Recycling
- Red Warehouse





- Gog-Le-Hi-Te 3
- Darling International



- Parcel 78/Puget Sound Truck Lines
- City of Tacoma Fire Training Center

Lastly, the Port is also always looking to acquire strategically located Brownfield properties that may prove to be contaminated.

## Potential Policies and Actions

The presence or perceived presence of contamination is a barrier to economic development. The cleanup process can be slow, complicated, and expensive, increasing the financial risk associated with redevelopment. Brownfields are not only an environmental health issue but also a serious impediment to economic development, creating additional, long-term negative impacts on community welfare. The following are potential policies and actions that could reduce the barriers



for brownfield redevelopment and accelerate the cleanup of contaminated properties in the subarea.

Potential Policy	Potential Actions
<u>Develop partnerships with local municipalities</u> to advance brownfield cleanup and redevelopment	<ol style="list-style-type: none"> <li>1) Building on EPA and the Port's Brownfield Advisory Committee, create a brownfield redevelopment workgroup and forum to collaborate, prioritize, and advocate for brownfield cleanup in the Tideflats.</li> <li>2) Pursue brownfield remediation of contaminated City, Port, Puyallup Tribe, and County-owned properties as a strategy to encourage redevelopment in the Subarea, prioritizing strategically located sites that are at the highest risk to the environment or are potential catalysts for the type of development envisioned in the Plan.</li> </ol>
<u>Pursue public/private partnerships</u> to support cleanup funding	<ol style="list-style-type: none"> <li>1) Coordinate with local business and possibly team with private developers, to create business support services, that reduce the burden of brownfield development.</li> <li>2) Develop a partnership plan to answer the following questions: <ul style="list-style-type: none"> <li>• Who should be the point?</li> <li>• What funding tools are readily available, like industrial revenue bonds or tax increment financing, to support private company to overcome the fear of environmental liability?</li> <li>• What tools are available to create disincentives for an owner to leave a property underutilized?</li> </ul> </li> </ol>
<u>Pursue federal and state grants</u> for Site Assessment and Cleanup	<ol style="list-style-type: none"> <li>1) Continue to pursue funding, including grants from the EPA, Department of Commerce, Department of Ecology, and other sources to fund area-wide brownfield assessment work.</li> <li>2) Coordinate with the funding agencies to clarify and possibly update eligibility requirements. Work to streamline grant requirements while maximizing the benefits of a particular grant.</li> </ol>
<u>Improve subarea site assessment databases</u> to support brownfield prioritization, cleanup, and facilitate due diligence around future property transactions	<ol style="list-style-type: none"> <li>1) Maintain and enhance the Site Inventory Tool of the Tideflats, recently developed for EPA's Environmental Assessment Grant.</li> <li>2) Review and improve data inputs and data quality of Ecology's database of confirmed and suspected Sites list to better assist in area-wide cleanup planning within the Tideflats.</li> <li>3) Develop public information pages documenting cleanup status and actions for individual properties to record the site cleanup history, improve public communications, and reduce the due diligence transaction cost with future property lease or sale.</li> </ol>

<p>Work with Ecology to <u>streamline the MTCA process</u> specific to the Tideflats</p>	<ol style="list-style-type: none"> <li>1) Every contaminated site is treated as if it is unique. However, there are commonalities that could be evaluated through Subarea wide studies. Potential examples include: <ul style="list-style-type: none"> <li>• An area wide assessment of drinking water use, to ensure protection of human health and the environment.</li> <li>• An area wide tidal study to evaluate groundwater to surface water interactions and improve understanding of contaminant plume fate and transport.</li> <li>• An update to the 1980 Hart Crowser, Geology of the Port of Tacoma.</li> </ul> </li> <li>2) Develop Model Remedies with Ecology specific to the Subarea to streamline remedy selection.</li> <li>3) Develop Remediation Levels that consider Subarea specific human health and ecological exposure pathways, to guide remedy selection and implementation.</li> </ol>
<p><u>Partner with local Universities to advance research</u> and the state of the science while supporting job skills development</p>	<ol style="list-style-type: none"> <li>1) Develop partnerships with local universities aiming to combine academic research with the practical implementation of Port and industrial projects within the subarea. Fostering these relationships will improve work skills and lead to enhanced workforce development.</li> </ol>