DREDGED MATERIAL MANAGEMENT PROGRAM

State of Washington

including

Puget Sound and Inland Washington State,
Grays Harbor, Willapa Bay, and the Pacific Coast
Columbia River Basin

BIENNIAL REPORT

Dredging Years 2024/2025

PREPARED BY THE DMMP AGENCIES
December 4, 2025

Sarah Benson, U.S. Army Corps of Engineers
Heather Fourie, U.S. Army Corps of Engineers
Brian Hester, U.S. Army Corps of Engineers

US Army Corps of Engineers®

WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

DEPARTMENT OF ECOLOGY State of Washington

EPA United States Environmental Protection Agency

Table of Contents

List of Tables

List of Figures

List of Appendices

List of Abbreviations

BiOp	Biological Opinion
BT	Bioaccumulation Trigger
COCs	Chemicals of Concern
CY	Cubic Yard
Dioxin	Dioxins and furans
DMMO	Dredged Material Management Office
DMMP	Dredged Material Management Program
DMMU	Dredged Material Management Unit
DNR	Washington Department of Natural Resources
DY	Dredging Year
Ecology	Washington Department of Ecology
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ML	Maximum Level
MPR	Management Plan Report
MPRSA	Marine Protection, Research and Sanctuaries Act
NMFS	National Marine Fisheries Service
PAH	Polynuclear Aromatic Hydrocarbon
PSDDA	Puget Sound Dredged Disposal Analysis
PSET	Portland Sediment Evaluation Team
QA/QC	Quality Assurance/Quality Control
SAP	Sampling and Analysis Plan
SDM	Suitability Determination Memorandum
SMARM	Sediment Management Annual Review Meeting
SMS	Sediment Management Standards
SRKW	Southern Resident Killer Whale
SSD	Supplemental Suitability Determination
SL	Screening Level
SQS	Sediment Quality Standard
TEQ	Toxicity Equivalence
TBT	Tributyltin
USACE	US Army Corps of Engineers
USFWS	US Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife

1 Introduction & Project Overview

1.1 Introduction

The Dredged Material Management Program (DMMP) is an interagency program that manages dredged material in the State of Washington. The four cooperating agencies are: U.S. Army Corps of Engineers (USACE), Seattle District; U.S. Environmental Protection Agency (EPA), Region 10; Washington Department of Ecology (Ecology); and Washington Department of Natural Resources (DNR). The DMMP agencies apply dredged material evaluation guidelines to federal and permitted projects in Washington State and co-manage the DMMP open-water dredged material disposal sites. The dredged material evaluation guidelines were originally developed for the Puget Sound Dredged Disposal Analysis (PSDDA) program in the 1980s and expanded to cover Grays Harbor and Willapa Bay in 1995. The DMMP agencies modify the evaluation guidelines, as needed, through an annual review process.

The DMMP evaluates projects in Puget Sound, on the Washington Coast, non-port projects on the Washington side of the Columbia River, and all other water bodies within the state of Washington. Port projects on the Washington side of the Columbia River and all projects on the Oregon side are evaluated by the Portland Sediment Evaluation Team (PSET). PSET is headquartered at the USACE Portland District, and functions similarly to the DMMP for Oregon projects.

This report summarizes DMMP activities for Dredging Years (DY) 2024 and 2025. As defined by the DMMP agencies, DY24 covers the period from June 16, 2023 to June 15, 2024. DY25 covers the period from June 16, 2024 to June 15, 2025.

1.2 Projects Overview

During DY24/25 the DMMP agencies completed a suitability determination or other action (**Tables 1 and 2)** for a total of 36 **projects** (23 in DY24; 13 in DY25). Many projects included full characterizations, intended to assess the suitability of the proposed dredged material for open-water disposal and to evaluate the quality of the sediment to be exposed by dredging. Full characterizations result in a suitability determination memorandum (SDM), signed by the DMMP agencies, that summarizes the results of the characterization and provides an official determination regarding suitability for open-water disposal. Other common DMMP actions include volume revisions, recency extensions, Tier 1 evaluations, and standalone antidegradation evaluations.

Project locations for DY24 and DY25 are plotted in **Figures 1 and 2**, respectively.

Another 16 projects began the DMMP evaluation process during or before DY24/25, but suitability determinations or other actions for these projects were not completed before the end of DY25. These projects are listed in **Table 3** but are not discussed in the remainder of the report.

Chapter 2 presents an overall assessment of sampling and testing activities, including tables related to project ranking, sampling, testing, results, and suitability determinations.

Chapter 3 provides details of projects that were complex in nature or where the application of best professional judgment by the agencies was necessary.

Chapter 4 presents dredged material disposal information and reviews disposal-site monitoring activities during DY24/25. The status of coordination under the Endangered Species Act is also discussed.

Appendices A and B include the chemical and biological evaluation guidelines used during DY24/25.

Appendix C tabulates exceedances of those guidelines.

1.3 DMMP Process and Timeline

For many dredging projects, DMMP sediment sampling and testing are a part of the regulatory requirements under Section 404 of the Clean Water Act. One of the most common questions from dredging projects/applicants is how much time is required to perform DMMP sampling and testing and ultimately obtain a suitability determination or equivalent decision document (the "DMMP Process").

Table 4 summarizes the time required for four common sequential tasks of the DMMP process for a total of 18 DY24/25 projects that conducted DMMP sampling and testing and culminated in a suitability determination, antidegradation determination, or advisory determination memo. Each task is described in more detail below. Many factors can affect the time required, and both the project applicant and DMMP must be actively engaged to achieve a successful outcome in a timely manner.

- **Task 1 - Sampling and Analysis Plan (SAP) Development**. The applicant prepares a draft SAP for characterization of the proposed dredged material. The time required for SAP development is highly variable and almost completely within control of the dredging applicant.
- **Task 2 - SAP Review, Revisions, and Approval**. DMMP agencies review the draft SAP and provide comments to the applicant; the applicant revises the SAP to address the comments, and the revised SAP is submitted to the agencies for approval. More than one round of revision is frequently needed to adequately address all agency comments. Once the SAP is finalized, an approval letter or email message is sent to the applicant. At that point, sampling and analysis may proceed.
- **Task 3 - Sampling and Analysis and Data Compilation/Interpretation**. The applicant conducts field sampling and chemical/biological analysis following the procedures documented in the approved SAP. At the completion of sampling and testing, the applicant compiles and submits a draft data report to the DMMP. Sampling, chemical and/or biological testing, and draft report preparation consume a substantial portion of the overall DMMP process.
- **Task 4 - Data Report Review/Revisions and Suitability Determination Completion.** Upon receipt of the draft data report, the DMMP agencies review the data report for completeness and accuracy, provide review comments to the applicant, and if required, the applicant revises the data report to address the comments. Multiple revision/review cycles of the data report may be needed to ensure that the report addresses all data questions and issues. Once the data report has been finalized, the Dredged Material Management Office (DMMO) drafts a SDM for review and signature by the DMMP agency representatives. The suitability determination is a Memorandum for Record documenting the determination reached on the suitability/unsuitability of each of the dredged material management units for unconfined open-water disposal. The suitability determination also includes an evaluation of the sediment surface that will be exposed by dredging in relation to the State of Washington's antidegradation standard. For projects with upland disposal, a standalone antidegradation determination is prepared instead of a suitability determination. For special studies, an advisory (or similar) determination is prepared.

Summary statistics (median, minimum, and maximum number of days) are available for tasks 2, 3, and 4 described above; task 1 (draft SAP development) is primarily an applicant-driven activity and is not tracked by the DMMP.

Overall (for DY24/25 projects), the median total elapsed time required for tasks 2, 3, and 4 was 429 days (ranging from 180 to 702 days), with the largest amount of time consumed by sampling, testing (chemical and biological), and draft data report preparation by the applicant (task 3). Multiple factors can impact task 3, including 1) weather; 2) sampling difficulties; 3) laboratory capacity and turn-around

time; 4) QA problems arising during chemical and biological testing; 5) data validation; 6) decision-making by the applicant based on testing results; and 7) report compilation time.

Tasks 2 (SAP review, revisions, and approval) and 4 (data report revisions and SDM completion) require project and DMMP engagement, but they were still generally much shorter in duration than task 3. More than half of the SAPs required two or more revision and review cycles. Factors influencing the time required for tasks 2 and 4 include project complexity and contractor/consultant knowledge/expertise.

2 DY24/25 Project Summary & Data Assessment

2.1 Ranking

Project ranking is based on the likelihood of sediments in a project area having concentrations of chemicals of concern (COCs) with the potential to cause adverse biological effects. Sampling and analysis requirements are determined, to a large extent, by the project ranking. The DMMP agencies have established ranks for geographic areas (e.g., Elliott Bay) and activities (e.g., marinas) based on historical data or the presence of active sources of contamination. Ranking guidance for Puget Sound, the Columbia River, Grays Harbor and Willapa Bay can be found in the 2025 DMMP User Manual (DMMP, 2025).

Downward adjustments to project ranking can be made if changes in the sediment chemical quality are demonstrated by two or more sampling events. Projects that underwent DMMP sediment sampling and testing in DY24/25 and had an adjustment to their initial rank are shown in **Table 5**. In this biennium the DMMP made ranking determinations for one large federal navigation project that do not easily fit into these general ranking categories.

Ranking decisions define three aspects of characterization: field sampling density, the number of analyses, and recency. These three variables are applied to proposed dredge volumes to assess the potential risks for placing material at an open-water disposal site. If one rank is applied to a large project with varied influences and conditions, it's likely that areas of lower risk will be over-characterized while areas of greater risk are under-characterized. The DMMP evaluated current and historical information to adopt project-specific rankings for the Swinomish Federal Navigation channel. These project-specific ranks incorporate the relevant and unique aspects of each project and setting and are intended to most efficiently characterize channel sediments to inform appropriate placement of dredged material, as described below.

Swinomish Federal Navigation Channel. Previously ranked Low throughout, the DMMP has developed a project-specific rank for the Swinomish Channel with the following characterization guidelines:

1. Four DMMUs, one encompassing each of the following channel sections:
    a. Southern Entrance (approximately stations 0+00 to 90+00)
    b. Southern Main Channel (approximately stations 90+00 to 190+00)
    c. Main Channel (approximately stations 190+00 to 400+00)
    d. Northern Entrance (approximately stations 400+00 to 690+00)
2. A minimum of three grab samples per DMMU that target current shoals or potential areas of concern
3. COC list to include all routine DMMP marine chemicals of concern. Dioxin or TBT analyses are not required unless a Tier 1 evaluation identifies potential sources
4. 10-year recency period
5. Tier 1 evaluation prior to each dredge event to confirm that conditions have not changed such that the previous characterization no longer represents the dredge prism (e.g., due to spills, changes in chemicals of concern or land uses, etc.)

2.2 Sampling and Analysis Plans

A SAP must be prepared by the applicant and approved by the DMMP agencies before sediment samples are collected. The sampling and analysis requirements are determined by the volume of surface

and subsurface dredged material and the rank. The minimum number of field samples and dredged material management units (DMMUs) for full characterization are calculated as shown in **Table 6**.

The applicant presents a conceptual dredging plan in the SAP with the dredging area divided into the required number of DMMUs. The number of samples and DMMUs may need to be increased beyond the minimum to address site-specific considerations. Sampling locations are identified, and a compositing plan is presented. Protocols for station positioning, decontamination, field sampling, sample compositing, chemical analysis, biological testing, quality assurance/quality control (QA/QC), and data submittal requirements are also included. Once completed, the DMMO coordinates review and approval of the plan with the DMMP agencies. **Table 7** contains data for sampling plans approved for projects with DY24/25 DMMP decision document outcomes.

2.3 Chemical Testing

Table 8 and **Appendix C** summarize the COCs and projects with DMMP guideline exceedances from DY24/25. There are 59 individual chemicals grouped by chemical type that have DMMP evaluation guidelines and are considered standard COCs for marine projects. For projects in freshwater, there are 34 individual chemicals. **Appendix A** provides a list of these COCs. While tributyltin (TBT) is not considered a standard COC for marine projects, it is often required on a case-by-case basis. Dioxin analysis is also required on a case-by-case basis in both marine and fresh water. **Table 9** summarizes the guidelines used for the evaluation of dioxin in DY24/25.

Marine Projects. 13 marine projects were tested in DY24/25; 7 projects had an exceedance. Among these projects, 8 COCs were detected or had non-detect values at concentrations above DMMP screening levels (SL), maximum level (ML), and/or bioaccumulation triggers (BT). BT exceedances occurred for dioxins.

Freshwater Projects. No freshwater projects were tested in DY24/25.

Z-Sample Testing. Testing of Z-samples for antidegradation evaluations were triggered in 6 projects (Table 12). TOTE Maritime and Day Island Yacht Club had no exceedances in the Z-samples and passed antidegradation standards. Five Z-samples across three projects had a dioxin/furan congener BT exceedance. Pierce County Terminal passed antidegradation standards through bioaccumulation testing and Duwamish Yacht Club passed by best professional judgement of historical site data. Middle Blair Waterway did not pass antidegradation and required a clean sand cover to be placed post-dredge. Dagmars Marina had two chemical non-detected SL exceedances (1,2,4-Trichlorobenzene, Hexachlorobenzene) but passed antidegradation due to the normalized values being below the Sediment Management Standards (SMS) Sediment Cleanup Objective (SCO).

2.4 Biological Testing – Bioassays

If a project's chemical testing results indicate the potential for unacceptable adverse environmental or human health effects, the project proponent may opt to further pursue potential suitability for in-water disposal through biological testing. Bioassays are used to evaluate potential toxicity effects on benthic invertebrates. Bioassays are typically only conducted on those DMMUs having one or more exceedance of DMMP screening levels.

Table 10 summarizes the DMMP projects with DY24/25 decision documents for which bioassay testing (marine or freshwater) was performed. **Appendix B** includes the DMMP bioassay interpretative guidelines used in these evaluations and **Appendix C** includes the results for the two projects for which bioassays were conducted in DY24/25.

Marine toxicity (bioassay) testing was conducted on 5 DMMUs from two dredging projects in DY24/25.

Day Island Yacht Club. Bioassays were triggered in 1 of 2 DMMUs. The bioassay passed with no hits (one-hit rule [major hit] or two-hit rule [minor hit]). The same DMMU underwent bioaccumulation testing (See Section 2.5 for details).

Duwamish Yacht Club. Bioassays were triggered in 4 of 13 DMMUs. DMMU 12 had a hit under the two-hit rule and DMMU 13 had a hit under the one-hit rule (major hit) in the 10-day amphipod mortality test. All DMMUs had a major hit in the larval bioassay. The 4 DMMUs that underwent bioassay testing were deemed unsuitable for open-water disposal.

2.5 Biological Testing – Bioaccumulation

See **Table 11** for project details that underwent bioaccumulation testing.

Bioaccumulation testing may be initiated for projects in which one or more COCs exceed the DMMP's marine BT. No BTs exist for freshwater projects, so bioaccumulation testing is triggered for marine projects, or freshwater projects proposing disposal in the marine environment.

During DY24/25, only one chemical group was reported at concentrations above the marine BT in dredged material samples – dioxin/furan congeners. The following projects had BT exceedances in one or more DMMUs:

- Port of Tacoma – Pierce County Terminal
    - A bioaccumulation evaluation was completed, and the weight-of-evidence review determined all DMMUs to be suitable.
- Day Island Yacht Club –
    - Bioaccumulation testing of the highest dioxin/furan DMMU confirmed suitability for disposal for all project DMMUs.
- Duwamish Yacht Club*
- Port of Tacoma – Middle Blair Waterway*
- Port of Tacoma, TOTE Maritime Terminal
    - Bioaccumulation testing on the DMMU composite was initiated but terminated after three weeks due to an error in the preliminary data. The DMMU was suitable for disposal and bioaccumulation testing was not required.

*The dredging proponents from Duwamish Yacht Club and the Middle Blair Waterway chose not to pursue bioaccumulation testing in the affected DMMU(s), and the material was determined unsuitable for open-water disposal.

2.6 Suitability Determinations

A suitability determination summarizes the evaluation procedures used in the characterization of project sediments; evaluates chemical and biological testing data and associated QA/QC data; and documents the interpretation of testing results. The suitability determination is a technical memorandum drafted by the Corps' DMMO then reviewed and signed by representatives from the DMMP agencies. It documents the suitability of proposed dredged sediments for open-water disposal and antidegradation determinations. The suitability determination does not, however, constitute final project approval by the agencies. Comprehensive agency comments on the overall project are provided through the regulatory public notice and review process.

Table 11 summarizes the 12 projects for which the DMMP completed a suitability determination in DY24/25.

Three projects included material that was found unsuitable for unconfined open-water disposal. Of the 4,029,690 cubic yards (cy) of material evaluated in 12 SDMs issued, 4,000,490 cy were found suitable for unconfined open-water disposal. The total unsuitable volume (29,200 cy) was associated with two projects (Duwamish Yacht Club and Port of Tacoma Middle Blair) that opted out of bioaccumulation testing. Final volumes were not calculated due to additional characterization and/or buffers that need to be applied.

2.7 Antidegradation Evaluations

Table 12 summarizes the DMMP projects with Z-sample or post-construction confirmation analysis for which the DMMP prepared an antidegradation evaluation.

Dredging operations expose new sediment to direct contact with the water column. The exposed sediment must meet the State of Washington's antidegradation policy (WAC-173-204-120) contained in the Sediment Management Standards (Ecology, 2013). All DMMP suitability determinations include a section in which antidegradation is evaluated, but not all projects require special testing to support that evaluation. Projects that received DMMP suitability determinations for open-water disposal but did not require additional testing to address antidegradation are not included in this section of the biennial report. The projects included in this section met one of the following criteria: a) upland disposal was planned, so the project did not require a DMMP suitability determination; the only DMMP action was to conduct an antidegradation evaluation; b) additional testing was conducted to support the antidegradation evaluation, including analysis of surface sediment or Z-samples prior to dredging, or analysis of post-dredge samples.

A 'Z-sample' is a sample collected from the sediment layer just below the dredging overdepth and is typically collected during sampling of heterogeneous sediments. The Z-layer is defined as the two-foot interval beyond the overdepth. The Z-samples are typically archived. Depending on the results from characterization of the overlying dredged material prism, it is sometimes necessary to analyze the Z-samples to determine whether dredging the project will result in degradation of the surface sediment condition.

In some cases, collection of Z-samples is not possible (e.g., refusal during vibracore sampling). In other cases, where DMMUs with elevated concentrations of COCs have been removed, there may be concern that residuals from the dredging operation may leave a contaminated surface. In either case, sampling and testing of the new surface sediment after dredging may be necessary.

2.8 Tier 1 Determinations

Table 13 summarizes the projects that received Tier 1 (no-test) Determinations from the DMMP in DY24/25. In general, these are small volume projects with dredged material that is determined suitable for open-water disposal and/or the sediment exposed by dredging is expected to meet antidegradation guidelines based on available information and site conditions.

All projects begin with a Tier 1 evaluation of existing information on the proposed dredging project, including the site history and all previously collected sediment data. Using the information collected in a Tier 1 evaluation, projects can be exempted from sediment testing under three different scenarios: 1) the small-project guidelines are met; 2) the proposed dredged material meets the Section 404 or Section 103 exclusionary criteria; or 3) upland disposal is planned and there are no issues with the sediment surface to be exposed by dredging.

A low rank small project has a maximum no-test volume of 8,000 cy, whereas a low-moderate to moderate rank small project has a maximum volume of 1,000 cy.

The ***exclusionary criteria*** are described in the regulations for the Marine Protection, Research, and Sanctuaries Act (MPRSA) (40 CFR 227.13) and Clean Water Act (40 CFR 230.60). Generally, relatively coarser-grained material (e.g., sand and gravel) from high-energy environments that are geographically removed from contaminant sources meet the exclusionary criteria. The DMMP agencies apply the exclusionary criteria on a case-by-case basis.

2.9 Recency Extensions

Table 14 summarizes the two recency extensions that were approved by the DMMP in DY24/25.

Recency guidelines apply to material that has been sampled, tested, and approved for open-water disposal but not yet dredged, and to projects that may be dredged two or more times within the recency period. Key considerations in determining whether the existing data are still representative are the recency of the information and sources of contamination in the vicinity of the project. For High-ranked projects, the recency guidelines allow characterization data to be valid for a period of 3 years. The DMMP guidelines specify a recency period of 5, 6, 7 and 10 years for Moderate, Low-Moderate, Low and Very Low-ranked projects, respectively.

When other permitting requirements, construction delays or funding constraints prevent a project from being dredged during the recency period, extension of the recency period is considered on a case-by-case basis. When considering whether existing data continue to adequately characterize sediment from a project, the agencies review previous characterization data, any new data from the dredge site or vicinity, site use, and sources of contamination. Based on this review, the agencies may extend the recency period – typically for one to two years – for a project that has not yet been dredged or will require additional dredging beyond the expiration of the current recency period. Recency extensions may be allowed with no additional testing, or it may require some level of confirmatory testing.

2.10 Project Revisions

Table 15 summarizes the project revisions approved by the DMMP during DY24/25.

Dredging projects are dynamic by nature and shoaling continues to occur between the time of sediment characterization and the time of dredging. There may also be design changes that alter the dredging volume or footprint. When the project volume or footprint changes subsequent to full characterization, a dredging applicant may request a revision of the volume or footprint found in the suitability determination. The DMMP agencies review such requests on a case-by-case basis.

2.11 Special Studies

Table 16 summarizes projects for which special or non-routine studies were conducted.

Shelter Bay Marina. Post-dredge sediment sampling and analysis was conducted to evaluate Anti-degradation compliance following the removal of uncharacterized material. Results indicated that the leave surface was in compliance.

Port of Seattle Terminal 5. Post-dredge sediment sampling and analysis was conducted to evaluate Anti-degradation compliance following unauthorized overdredging. Placement of sand cover to bring the overdredged areas back to the authorized depth or placement of 12 inches of clean sand, whichever is more, was required.

2.12 Supplemental Suitability Determinations

Table **17** lists the Supplemental Suitability Determinations (SSD) prepared in DY24/25. A brief description of each project is provided below:

Driftwood Key. A supplemental suitability determination was prepared to document the characterization of an additional DMMU to characterize up to 2,000 cy.

USACE Snohomish Federal Navigation Channel. A supplemental suitability determination was prepared to include areas outside of the characterized areas in the dredge footprint.

3 Non-standard and/or Complex Projects

This chapter includes non-standard or complex projects requiring explanation beyond the summaries provided in Chapters 1 and 2. Projects with special considerations that required best professional judgment (BPJ) for ranking, sampling plan development, sampling, chemical/biological testing, and/or dredging are further described in this chapter.

3.1 Project Characterization

No projects required additional discussion.

3.2 Unauthorized Dredging and Disposal

Driftwood Key Navigation Channel Maintenance Dredging and Port Gamble Bay Habitat Restoration

All proposed dredged material from the Driftwood Key project was found suitable for placement at the Port Gardner open water disposal site. Through coordination outside of DMMP, sediments within the entrance channel were selected as candidate material for beneficial reuse at the Port Gamble aquatic restoration site. Sediments from the inner marina area (known as Coon Bay) were explicitly excluded for use at the restoration site. Due to the unavailability of bottom dump barges, material from Coon Bay was also placed as cover material at the Port Gamble aquatic restoration site without proper coordination with the Port Gamble Trustees. While the material was suitable for the open-water disposal site placement, which is located in deep water where shellfish are not harvested, certain chemical parameters (cPAHs) were above the cleanup screening level criteria applicable for the nearshore shellfish restoration material. Corrective actions are in progress with the engaged agencies to remedy the placement of inappropriate material at the restoration site.

Port of Tacoma - Middle Blair Navigation Safety Improvement Project

During dredging, a release of unsuitable dredged material occurred from a barge at the project dredging site in the Blair Waterway, Tacoma. The spill occurred due to unbalanced loading of the flat-top transfer barge, which caused the containment fence to buckle under the weight of the material. As a result, approximately 800 cubic yards of dredged material flowed over the buckled section and into the water. A portion of the released sediment was removed during subsequent planned dredging in the area, and the remaining material is scheduled for recovery in DY26 as part of the required corrective action. All sediment from this area was intended to be transported to a transloading facility for upland disposal and was not destined for a managed in-water disposal site.

Swinomish Federal Navigation Channel Maintenance Dredging

A slow release occurred from one scow load carrying an estimated 1,000 CY of dredged material during its 12-hour transit between the dredging location and the Rosario Strait open-water dispersive disposal site on November 16-17, 2024. Data Quality Management load tracking reports showed a decrease in draft aft sensor data from the scow during the scow transit, and the incident was confirmed with forward draft sensor data. Contributing factors to the incident included dealing with severe weather, night-time conditions, and a midnight shift change. No other loads (before or afterwards) were affected, Ecology was notified, and corrective actions were implemented to ensure that the incident was not repeated.

3.3 Disposal Activity and Site Use

The DMMP manages multi-user open-water disposal sites located in Puget Sound and coastal Washington (Grays Harbor and Willapa Bay). For projects placing dredged material at these sites, the

Washington State Department of Natural Resources issues site-use authorizations prior to placement. These authorizations are issued for sediments that are:

- Suitable for unconfined open-water disposal as determined by the DMMP evaluation process, and
- Associated with dredging projects that have received all other required regulatory permits (e.g., Clean Water Act 401/404 permits).

Other disposal options for open-water disposal include flow-lane disposal (used primarily in the lower Columbia River and Willapa Bay) and beneficial use. Dredged material not suitable for open-water disposal is typically disposed upland.

During this biennium:

- Puget Sound open water disposal sites - Four of 8 sites were used. Over 450,000 cy of material was placed.
- Grays Harbor - More than 2 million CY was placed, driven primarily by USACE maintenance dredging.
- Willapa Bay - The multi-user dispersive sites were not used.

Flow-lane disposal along the Columbia River is managed by Portland District; cumulative flow-lane volumes in the Columbia River are not tracked by the DMMP agencies.

Tables 18, 19, 20 and **Figures 3 and 4** summarize and graphically illustrate the disposal volumes and placements for DY24/25.

3.4 Cumulative DMMP Disposal Site Use and Monitoring Program

The cumulative dredged material volumes disposed at each Puget Sound and Grays Harbor site since program implementation are depicted in **Figure 5** and **Figure 6** respectively and are listed in **Table 21.** Volume summaries for the Puget Sound non-dispersive sites show that site capacities appear to be sufficient to last at least 38 more years (**Table 22**).

The PSDDA Management Plan Reports (MPR 1988, 1989) recognized that intensive post-disposal monitoring surveys would be required early in the program (in the 1990s) to gather data on the adequacy of the evaluation procedures to meet the site management objectives. In accordance with the management plan, the DMMP agencies have periodically reduced the frequency and scope of monitoring based on past documented compliance with the site management objectives and volumes routinely deposited at each site. The current volume triggers for non-dispersive disposal sites are as follows (DMMP, 2021):

- 150,000 cy at Anderson/Ketron and Bellingham Bay (low-use sites), and
- 500,000 cy at Commencement Bay, Elliott Bay, and Port Gardner (more frequently used sites).

The monitoring triggers are considered soft triggers and may be adjusted at the discretion of the DMMP agencies based on BPJ.

The DMMP agencies have conducted a variety of post-disposal physical and environmental monitoring surveys at the non-dispersive sites in Puget Sound and bathymetric surveys at the dispersive sites since the Puget Sound sites were established in 1988/89 (**Table 23**).

Based on Puget Sound site monitoring conducted to date (including physical mapping, on- and off-site sediment chemistry, sediment toxicity, off-site infaunal bioaccumulation, off-site benthic community structure analysis, and laboratory bioaccumulation comparing on and off-site material), dredged material disposal has not caused adverse impacts at or adjacent to any of the non-dispersive sites.

The overall goals of the DMMP site monitoring program are to ensure that the DMMP-prescribed disposal site conditions are maintained and to verify that DMMP dredged material evaluation

procedures adequately protect the aquatic environment. Monitoring surveys provide feedback to verify the adequacy of the DMMP dredged material evaluation procedures and management plan. The Sediment Management Annual Review Meeting (SMARM) provide a forum to report on these post-disposal survey findings conducted during any given dredging year, and to make management plan adjustments if needed.

Starting in 2017, the DMMP embarked on a focused evaluation of DMMP disposal site monitoring and management, particularly with respect to bioaccumulatives, but also with respect to other issues and inefficiencies identified in the original framework over time. The DMMP reviewed PSDDA framework documents, consulted Washington State SMS experts, and held public workshops to incorporate revisions to the original monitoring framework to:

- Incorporate lessons learned and information gained over 30 years of monitoring of the disposal sites,
- Update the monitoring program based on new technologies and approaches, and
- Comply with federal and state regulations, particularly the 2013 update of Part V of the SMS.

The final Disposal Site Monitoring Plan was presented at the 2024 SMARM and was adopted as the new framework for the DMMP disposal site monitoring program in January 2025 (DMMP, 2025a).

3.5 Monitoring Status at Non-dispersive Sites

Table 24 shows the monitoring status of the non-dispersive sites in Puget Sound at the end of DY2025, including the cumulative volume since the most recent monitoring event at each site, the soft monitoring triggers, and projected monitoring for DY24/25. A routine monitoring event at the Port Gardner site is underway. Routine monitoring events at the Anderson/Ketron site may occur in the next biennium pending completion of dredging projects.

3.6 DY24/25 Post-Disposal Site Monitoring

One disposal site monitoring event was conducted during the DY24/25 biennium (Elliott Bay). Results are summarized below.

2023 Elliott Bay Monitoring Study

Physical, chemical, and biological testing at the Elliott Bay disposal site was conducted in 2023 in accordance with the DSMP (DMMP, 2025a). Full details of the monitoring study findings are available in the study reports (NGS, 2023; NewFields, 2024).

The results for the monitoring met the goals of Part 1 of the monitoring framework and further investigation under Part 2 was not required. The findings are summarized below:

Question 1. *Does the deposited dredged material stay onsite?*

Goal A. *Dredged material remains within the disposal site boundary -* ***Met***

Mapped accumulation of recent dredged material was determined using SPI and included trace, 3 cm, and 10 cm contour layers (Figure 6). Dredged material accumulation ≥ 3 cm was not observed at or beyond the perimeter line. Dredged material accumulation ≥ 10 cm was not observed at or beyond the disposal site boundary.

Question 2*. Does deposited dredge material cause unacceptable adverse impacts to biological conditions on site?*

Goal B*. No long-term adverse effects to on-site benthic biological resources and habitat as defined by Site Condition II (SCII) -* ***Met****.*

Goal B was evaluated through a qualitative assessment of SPI and PV imaging parameters including apparent redox potential discontinuity (RPD) depths, infaunal successional stages, and presence of benthic organisms; analysis of sediment chemistry collected from five locations within the Disposal Site Decision Unit (DU); and confirmatory bioassay testing.

- The SPI and PV imaging suggested that the benthic community within the disposal site was following expected levels of recovery following dredged material disposal. Long-term adverse effects to on-site benthic biological resources and habitat were not apparent.
- Surface sediment (0-10 cm) samples were collected from five randomly selected stations within the Disposal Site DU and analyzed for the benthic DMMP COC list. All COCs were below the DMMP SLs except for mercury at two stations and total PCB Aroclors at another station. However, these stations were outside the footprint of recently placed dredged material within the disposal site . Additionally, there is known mercury and PCB concentration exceedances in the vicinity of the stations. Based on these facts, it was determined that the SL exceedances were unrelated to placement of dredged material.
- Sediment bioassays were initiated within the 8-week holding time for samples from the three stations with mercury or PCB Aroclor exceedances. All samples passed the DMMP bioassay interpretive criteria and were not considered to exhibit toxic effects to benthic receptors.

***Goal C**. No long-term adverse bioaccumulative risk to on-site resources as defined by Site Condition II (SCII) and Sediment Management Standards (SMS) – **Met**.*

Goal C was addressed through the collection and analysis of surface sediment (0-10 cm) composites from the Disposal Site Decision Unit (DU) and from an off-site DU called the Environs DU. The composites consisted of 20 subsamples collected from a stratified random grid within each DU.

SCII and SMS were evaluated by analyzing the sediment composites for DMMP bioaccumulative chemicals of concern and/or conducting bioaccumulation testing of the sediment composite samples and analyzing the exposed tissues for the bioaccumulative chemicals of concern.

All disposal site DU sediment concentrations were below DMMP Bioaccumulation Triggers; all disposal site DU tissue concentrations (from bioaccumulation testing) were also below DMMP target tissue levels or not statistically different when compared to the compliance target tissue levels.

***Question 3**. Does use of the disposal site cause unacceptable adverse impacts to biological conditions off site?*

Goal D**. No significant decrease in off-site benthic habitat quality due to dredged material disposal - **Met

Goal D was evaluated for direct and indirect impacts/effects. Because dredged material was not found off site, no direct effects were evaluated. Indirect effects were evaluated through a qualitative assessment of SPI and PV parameters including ambient sediment characteristics, apparent RPD depths, infaunal successional stages, and biological observations. The SPI and PV imaging indicated that there were no significant decreases in off-site biological conditions caused indirectly by dredged material disposal at the Elliott Bay site.

2025 Port Gardner Monitoring Study

Routine monitoring was initiated for the Port Gardner non-dispersive site in DY26. A Sediment Profile Imaging (SPI)/Plan View (PV) study was conducted in June 2025, after the February 15th dredging work window closed. Full details of the SPI/PV study findings are available in the study report (NGS, 2025). Based upon the SPI results that indicated that all material remained on-site, the bioaccumulative portion of the monitoring program was not triggered. Chemical and biological testing is in progress, with results

anticipated in late 2025. Preliminary chemistry data resulted in bioassays not being triggered. Full results will be summarized in the DY26/27 Biennial Report.

3.7 Endangered Species Act (ESA) Consultation

USACE, in coordination with the DMMP agencies, consults with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act (ESA) and with NMFS under Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act as necessary. Transport to and disposal of material at DMMP multi-user sites are covered under this programmatic consultation so that use of the sites does not need to be consulted individually for each project.

A 2015 Biological Opinion (BiOp) issued by NMFS provides programmatic coverage through 2046. As part of the terms and conditions of the 2015 BiOp, the USACE (and by extension, the DMMP) must comply with biennial reporting requirements, including the submission of this biennial report and reporting of upland volumes. A more detailed summary was provided in section 5.4 of the DY14/15 biennial report.

The most recent consultation, initiated in December 2021 and concluded in February 2022, addressed the revised critical habitat designation for the Southern Resident Killer Whale (SRKW) which is adjacent to the Point Chehalis open-water disposal site at the mouth of Grays Harbor. NMFS concurred that the conditions of the biological opinion are met, and the original opinion remains in effect.

Per the BiOp, the next 5-year assessment of programmatic coverage (2026-2030) is due in 2025, with this DY24/DY25 Biennial Report. Reinitiation of consultation is required and shall be requested by USACE or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) the proposed action causes take; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the written concurrence; or (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16).

4 References

DMMP, 2021. *Updates to DMMP Disposal Site Monitoring Triggers in Puget Sound.* Prepared by Shannon Soto (WDNR) for the DMMP agencies. June 23, 2021.

DMMP, 2022. Revised Monitoring Framework for Puget Sound DMMP Non-Dispersive Disposal Sites. Prepared by Inouye, Fourie, and Dunay for the DMMP. June 10, 2022.

DMMP, 2025a. Disposal Site Monitoring Plan. Unconfined, Open-Water, Non-Dispersive Dredged Material Disposal Sites in Puget Sound. Prepared by the DMMP Agencies. January 13, 2025.

DMMP, 2025b. *Dredged Material Evaluation and Disposal Procedures, User Manual*. Prepared by the Seattle District Dredged Material Management Office for the DMMP agencies. November 2025.

Ecology, 2013. *Sediment Management Standards – Chapter 173-204 WAC*. Washington State Department of Ecology, February 2013.

Ecology, 2021. *Sediment Cleanup User's Manual* (SCUM), Guidance for Implementing the Cleanup Provisions of the Sediment Management Standards, Chapter 173-204 WAC, Washington State Department of Ecology, Third Revision December 2021.

MPR, 1988. *Management Plan Report – Unconfined Open-Water Disposal of Dredged Material, Phase I (Central Puget Sound*). Prepared by the Puget Sound Dredged Disposal Analysis Agencies. June 1988.

MPR, 1989. *Management Plan Report – Unconfined Open-Water Disposal of Dredged Material, Phase II (North and South Puget Sound).* Prepared by the Puget Sound Dredged Disposal Analysis Agencies. September 1989.

NewFields, 2024. *2023 DMMP Monitoring of the Elliott Bay Non-Dispersive Unconfined Open-Water Dredged Material Disposal Site*. Final Data Report. Submitted to Washington DNR, Olympia, Washington. Prepared by NewFields, Edmonds, Washington. July 11, 2024.

NGS, 2023. *Sediment Profile Imaging and Plan View Survey – Elliott Bay Disposal Site, Seattle, Washington.* Final Data Report. Prepared for the U. S. Army Corps of Engineers, Seattle District. Prepared by NuGlobal Solutions, Edmonds, Washington. June 21, 2023.

NGS, 2025. *Sediment Profile Imaging and Plan View Survey – Port Gardner Disposal Site, Everett, Washington.* Final Data Report. Prepared for the U. S. Army Corps of Engineers, Seattle District. Prepared by NuGlobal Solutions, Edmonds, Washington. June 21, 2023.

Full text versions of all decision documents listed in Tables 1 and 2 and referenced elsewhere throughout this report are publicly available on the DMMO's website:

https://www.nws.usace.army.mil/Missions/Civil-Works/Dredging/

Tables

Table 1. DMMP Evaluation Activities Completed in DY24.

No.	PROJECT	DMMP Action	Disposal Area/Type	Project Volume (cy)
1	Anchor Cove Marina, Anacortes	SD	PS	26,900
2	Cape George Marina, Discovery Bay, Jefferson County	T1	BU	1,000
3	Driftwood Key Navigation Channel	SSD	PS	2,000
4	East Fork Lewis River Ridgefield Pits Restoration, Clark County	VR	BU	390,670
5	Little Hangman Creek Restoration near Latah, Washington	T1AD	BU	4,775
6	Lower Columbia Fish Enhancement Group, Baird Creek Splash Dam Liberation	T1AD	BU	37,000
7	Lower Satsop Reach Restoration	T1	BU/UP	58,299
8	Northwest Grain Growers Inc.	T1	UP	6,250
9	Pacific Shellfish, South Bend Maintenance Dredging	T1AD	UP	8,000
10	Palasz Dock Extension	T1	PS	294
11	Port of Seattle, Terminal 5 Overdredging	AD	--	--
12	Port of Tacoma, Pierce County Terminal, Blair Waterway	SD	PS	27,462
13	Sandy Hook Yacht Club Estates, Whidbey Island	SD	PS	32,600
14	Shelter Bay Marina Permit Non-compliance Evaluation, Swinomish Channel	AD	--	--
15	Swinomish Indian Tribal Community, Commercial Fish Dock	SD	PS	7,800
16	USACE Duwamish Navigation Channel - Sections A & B and Turning Basin	SD/RRD	PS	140,000
17	USACE Grays Harbor Navigation Channel	SD	GH/BU	3,200,000
18	USACE NWW Snake River Dams Stilling Basins	T1	OI	36,150
19	USACE Quillayute Navigation Channel and Boat Basin	SD	BU	85,990
20	USACE Snohomish Federal Navigation Channel	SSD	PS/BU	--
21	USACE Swinomish Federal Navigation Channel	RRD	PS	--
22	USACE Swinomish Federal Navigation Channel	RE	--	--
23	USACE Swinomish Federal Navigation Channel	SD	PS	400,000

DMMP Actions

AD = Anti-degradation Determination
DR = Design Revision
RRD = Re-ranking Determination
RE = Recency Extension
SD = Suitability Determination
SS = Special Study
T1 = Tier 1 Evaluation
VR = Volume Revision
SSD = Supplemental Suitability Determination

Disposal Area/Type

BU = Beneficial Use
CR = Columbia River
GH = Grays Harbor
PS = Puget Sound
UP = Upland
WB = Willapa Bay
OI = Other In-Water Disposal Site
FL = Flow Lane
-- = Not applicable

Table 2. DMMP Evaluation Activities Completed in DY25

No.	PROJECT	DMMP Action	Disposal Area/Type	Project Volume (cy)
1	Dagmars Marina	AD	UP	3,046
2	Day Island Yacht Club	SD	PS	24,438
3	Discovery Bay - Pedersen Shoreline Restoration	T1AD	BU/UP	1,666
4	Duwamish Yacht Club, Duwamish River	SD	PS	45,750
5	East Fork Tulalip Creek Hatchery Intake Sediment Removal	T1AD	UP	3,730
6	Lower Cherry Creek Restoration Project Phase II-III	T1	BU/UP	21,518
7	Mason's Resort Marina	T1AD	UP	7,000
8	Newhalem Creek Hydroelectric Decommissioning	T1	BU/UP	500
9	Point Roberts Marina	T1	BU	10,000
10	Port of Tacoma, Middle Blair Waterway	SD	PS	11,750
11	Port of Tacoma, TOTE Maritime, Blair Waterway	SD	PS	15,000
12	West Fork Hoquiam River Dam Removal	T1AD	UP	4,600
13	Zittel's Marina	RE	PS	17,060

DMMP Actions

AD = Anti-degradation Determination
DR = Design Revision
RRD = Re-ranking Determination
RE = Recency Extension
SD = Suitability Determination
SS = Special Study
T1 = Tier 1 Evaluation
VR = Volume Revision
SSD = Supplemental Suitability Determination
SP = Small-Project No-Test Determination

Disposal Area/Type

BU = Beneficial Use
CR = Columbia River
GH = Grays Harbor
PS = Puget Sound
UP = Upland
WB = Willapa Bay
SR = Snake River (in water)
OI = Other In-Water Disposal Site
FL = Flow Lane
-- = Not applicable

Table 3. DMMP Evaluation Activities Initiated in DY24/25 but ongoing into DY26

PROJECT	Project Volume (cy)	SAP Review DY	Status at the end of DY25
Seattle Harbor Deepening - West Waterway	545,000	2025	Waiting on data report
Tacoma Harbor Deepening - Blair Waterway	2,390,258	2025	Waiting on data report and supplemental bioaccumulation testing
Port of Seattle - West Waterway High Spots	16,661	2025	Waiting on data report
Port of Seattle Terminal 18	2,955	2025	Waiting on data report
Port of Seattle Terminal 30	5,561	2025	Waiting on data report
Lagoon Point Marina	16,956	2025	Reviewing draft data report/prep SDM
Clayton Beach Restoration	14,600	2025	SAP review in progress
Boyer Towing	3,500	2025	SAP Addendum review in progress
U.S. Navy Bremerton NAVFAC M2D2	430,224	2025	SAP review in progress
Enloe Dam Removal	588,000	2025	Reviewing draft data report
Meydenbauer Bay Yacht Club	18,500	2023	Reviewing draft data report/prep SDM
Port of Tacoma Husky and Washington United Terminals	314,851	2025	Reviewing draft data report/prep SDM
Oak Harbor	180,760	2025	Reviewing draft data report/prep SDM
Sandy Hook Yacht Club Estates	32,600	2024	Waiting on AIS evaluation
Tulalip Marina	286,370	2025	Waiting on data report
Squalicum Marina	94,810	2025	SAP Addendum review in progress

Notes:

AIS = Aquatic Invasive Species

SAP = Sampling and Analysis Plan

SDM = Suitability Determination Memorandum

Table 4. DMMP Process Times

Task No.	Task Description	Starting point	Endpoint	Roles & Responsibilities	Time Required (days)		
					Median	Min	Max
1	SAP Development	Variable	Draft SAP Submission	Project applicant	NA	NA	NA
2	SAP Review & Revision	Draft SAP Submission	SAP Approval	Project applicant and DMMP	36	14	219
3	Sampling & Testing and Data Compilation	SAP Approval	Draft data report submission	Project applicant	182	92	580
4	Data Report Review & Revisions and Completion of SDM	Draft data report submission	SDM signed	Project applicant and DMMP	86	22	276
2, 3, 4	**Total DMMP Process Time**	**Draft SAP Submission**	**SDM signed**	**Project applicant and DMMP**	**429**	**180**	**702**

Table 5. DY 24/25 Project Rank Changes

PROJECT	DY	Location	Waterbody	Initial Rank	Final Rank
Anchor Cove Marina	2024	Anacortes, WA	Guemes Channel	M	LM
Sandy Hook Marina	2024	Whidbey Island	Cultus Bay	M	LM
USACE Swinomish Federal Navigation Channel	2024	La Conner, WA	Swinomish Channel	L	Project specific
USACE Duwamish Navigation Channel - Section B	2024	Tukwila, WA	Duwamish River	M - 5 years	M - 6 years

Ranking:

NT = No Test

VL = Very Low

L = Low

LM = Low-moderate

M = Moderate

H = High

Table 6. DMMP Sampling Requirements

Puget Sound, Grays Harbor, Willapa Bay and the Upper Columbia River

Project Rank	Maximum Volume Represented by a Field Sample (cy)	Heterogeneous Sediment (contamination level decreases with depth*)		Homogeneous Sediment DMMUs (cy)
		Surface[1] DMMUs (cy)	Subsurface[2] DMMUs (cy)	
Very Low	Project specific	Not applicable	Not applicable	100,000
Low	8,000	48,000	72,000	60,000
Low-Moderate	8,000	32,000	48,000	40,000
Moderate	4,000	16,000	24,000	20,000
High	4,000	4,000	12,000	8,000

Lower Columbia River

Project Rank	DMMUs
Very Low	300,000 cy
Low	100,000 cy
Low-moderate	70,000 cy
Moderate	40,000 cy
High	5,000 cy

Notes

[1]Surface is defined as the top 4 feet of the dredge prism.

[2]Subsurface is defined as that portion of the dredge prism beneath the 4-ft surface layer.

*If contamination increases with depth or there is no suspected difference between surface and subsurface contamination, project specifics will dictate the appropriate volume limits for the surface and subsurface DMMUs.

Table 7. DY24/25 Projects - Approved Sampling Plans

Project	Dredge Year of Decision Document[1]	Rank	Total Volume (cy)	Surface Volume (cy)	Number of Surface Samples	Number of Surface DMMUS	Subsurface Volume (cy)	Number of Sub-surface Samples	Number of Sub-surface DMMUs
USACE Duwamish Navigation Channel - Sections A & B and Turning Basin	2024	Various	140,000	140,000	28	8	0	0	0
Swinomish Indian Tribal Community, Commercial Fish Dock	2024	M	7,800	7,800	3	1	0	0	0
USACE Grays Harbor Navigation Channel	2024	Various	3,200,000	3,200,000	162	39	NA[2]	4	1
USACE Quillayute Navigation Channel and Boat Basin	2024	VL - M	97,990	85,990	18	6	12,000	3	1
Port of Seattle, Terminal 5 Overdredging	2024	H	---		17				
USACE Swinomish Federal Navigation Channel	2024	L[3]	400,000	400,000	24	4	0	0	0
Anchor Cove Marina, Anacortes	2024	M	26,900	26,900	7	2	0	0	0
Port of Tacoma, Pierce County Terminal, Blair Waterway	2024	M	27,462	27,462	6	2	0	0	0
Sandy Hook Yacht Club Estates, Whidbey Island	2024	M	32,600	32,600	6	3	0	0	0
Port of Tacoma, TOTE Maritime, Blair Waterway	2025	M	15,000	13,700	4	1	1,300	2	1
Duwamish Yacht Club, Duwamish River	2025	H	45,750	29,750	47	8	16,000	29	5
Day Island Yacht Club	2025	M	24,438	24,438	7	2	0	0	0
Port of Tacoma, Middle Blair Waterway	2025	H	11,750	11,750	3	3	0	0	0

Notes:

[1] Approved project SAPs are listed in the DY in which their respective DMMP decision document was finalized.

[2] Subsurface units were exploratory only

[3] Homogenous; surface grabs only

Table 8. DY24/25 DMMU Chemical Testing Summary of Exceedances

	Marine						Freshwater			
CHEMICAL OF CONCERN	# of DMMUs D > SL	# of Projects D > SL	# of DMMUs D > BT	# of Projects D > BT	# of DMMUs D > ML	# of Projects D > ML	# of DMMUs D > SL1	# of Projects D > SL1	# of DMMUs D > SL2	# of Projects D > SL2
METALS										
Antimony	0	0	---	---	0	0				
Arsenic	0	0	0	0	0	0	0	0	0	0
Cadmium	0	0	---	---	0	0	0	0	0	0
Chromium	0	0	---	---	0	0	0	0	0	0
Copper	0	0	---	---	0	0	0	0	0	0
Lead	0	0	0	0	0	0	0	0	0	0
Mercury	0	0	0	0	0	0	0	0	0	0
Nickel							0	0	0	0
Selenium	---	---	0	0	---	---	0	0	0	0
Silver	0	0	---	---	0	0	0	0	0	0
Zinc	0	0	---	---	0	0	0	0	0	0
ORGANOMETALLIC COMPOUNDS										
Tributyltin (bulk)	---	---	0	0	---	---	0	0	0	0
Monobutytin							0	0	0	0
Dibutyltin							0	0	0	0
Tetrabutyltin							0	0	0	0
PAHs										
Naphthalene	0	0	---	---	0	0				
Acenaphthylene	0	0	---	---	0	0				
Acenaphthene	0	0	---	---	0	0				
Fluorene	0	0	---	---	0	0				
Phenanthrene	0	0	---	---	0	0				
Anthracene	0	0	---	---	0	0				
1-Methynaphthalene							---	---	---	---
2-Methynaphthalene	0	0	---	---	0	0				
Total LPAH	0	0	---	---	0	0				
Fluoranthene	0	0	0	0	0	0				
Pyrene	0	0	0	0	0	0				
Benz(a)anthracene	0	0	---	---	0	0				
Chrysene	1	1	---	---	0	0				
Benzofluoranthenes (b,j,k)	0	0	---	---	0	0				
Benzo(a)pyrene	0	0	---	---	0	0				
Indeno(1,2,3-c,d)pyrene	0	0	---	---	0	0				
Dibenzo(a,h)anthracene	0	0	---	---	0	0				
Benzo(g,h,i)perylene	0	0	---	---	0	0				
Total HPAH	0	0	---	---	0	0				
Total PAH							0	0	0	0
CHLORINATED HYDROCARBONS										
1,4-Dichlorobenzene	0	0	---	---	0	0				
1,2-Dichlorobenzene	0	0	---	---	0	0				
1,2,4-Trichlorobenzene	0	0	---	---	0	0				
Hexachlorobenzene (HCB)	0	0	0	0	0	0				
beta-Hexachlorocyclohexane							0	0	0	0
PHTHALATES										
Dimethyl phthalate	3	1	---	---	0	0				
Diethyl phthalate	0	0	---	---	0	0				
Di-n-butyl phthalate	0	0	---	---	0	0	0	0	0	0
Butyl benzyl phthalate	1	1	---	---	0	0				
Bis(2-ethylhexyl) phthalate	0	0	---	---	0	0	0	0	0	0

Table 8. DY24/25 DMMU Chemical Testing Summary of Exceedances

	Marine						Freshwater			
CHEMICAL OF CONCERN	# of DMMUs D > SL	# of Projects D > SL	# of DMMUs D > BT	# of Projects D > BT	# of DMMUs D > ML	# of Projects D > ML	# of DMMUs D > SL1	# of Projects D > SL1	# of DMMUs D > SL2	# of Projects D > SL2
Di-n-octyl phthalate	0	0	---	---	0	0	0	0	0	0
PHENOLS										
Phenol	0	0	---	---	0	0	0	0	0	0
2-Methylphenol	0	0	---	---	0	0				
4-Methylphenol	0	0	---	---	0	0	0	0	0	0
2,4-Dimethylphenol	0	0	---	---	0	0				
Pentachlorophenol	0	0	0	0	0	0	0	0	0	0
MISCELLANEOUS EXTRACTABLES										
Benyzl alcohol	2	1	---	---	0	0				
Benzoic acid	1	1	---	---	0	0	0	0	0	0
Dibenzofuran	0	0	---	---	0	0	0	0	0	0
Hexachlorobutadiene	0	0	---	---	0	0				
N-Nitrosodiphenylamine	0	0	---	---	0	0				
Carbazole							0	0	0	0
PESTICIDES & PCBs										
4,4'-DDD	0	0	---	---	---	---				
4,4'-DDE	0	0	---	---	---	---				
4,4'-DDT	0	0	---	---	---	---				
Sum of 4,4-DDX compounds	---	---	0	0	0	0				
2,4'-DDD and 4,4'-DDD							0	0	0	0
2,4'-DDE and 4,4'-DDE							0	0	0	0
2,4'-DDT and 4,4'-DDT							0	0	0	0
Aldrin	0	0	---	---	---	---				
Total chlordane	7	2	0	0	---	---				
Dieldrin	0	0	---	---	0	0	---	---	---	---
Heptachlor	0	0	---	---	0	0				
Endrin ketone							0	0	0	0
Total PCBs	0	0	0	0	0	0	0	0	0	0
BULK PETROLEUM HYDROCARBONS										
TPH-Diesel							0	0	0	0
TPH-Residual							0	0	0	0
DIOXINS/FURANS										
Total TEQ	---	---	17	5	---	---	0	0	0	0

Notes:

D = Detected, SL = Screening Level, BT = Bioaccumulation Trigger, ML = Maximum Level, --- = No guideline

=not a COC for water type

Analytes in **bold** indicate chemical had exceedance in one or more samples.

There are no Z-sample exceedances

Table 9. Dioxin Guidelines Utilized to Evaluate DY24/25 Projects

(a) Puget Sound Interim Guidelines for Nondispersive Sites[1]		
Disposal Sites	**Project Volume-Weighted Average**	**DMMU Maximum**
Anderson-Ketron, Commencement Bay, Elliott Bay, Port Gardner, Bellingham Bay	4 pptr TEQ	10 pptr TEQ
(b) Puget Sound Interim Guidelines for Dispersive Sites		
Disposal Sites	**DMMU Maximum**	
Port Angeles, Port Townsend, Rosario Strait	4 pptr TEQ	
(c) Grays Harbor Guidelines (Derived from 1991 Risk Assessment)		
DMMU Maximum: 2,3,7,8-TCDD = 5 pptr; and TEQ = 15 pptr		
(d) Columbia River Basin		
Comparison to Columbia River background stations downstream of Puget Island: 0.65 to 2.89 pptr TEQ		
(e) Upland Beneficial Use		
Model Toxics Control Act method B unrestricted land use level: 11 pptr TEQ		

Notes:

[1]Case-by-case determinations may be made for exceedances of these guidelines based on material placement sequencing, presence or absence of other bioaccumulatives, and frequency of disposal-site use.

Table 10. DY24/25 Bioassay (Toxicity) Testing Summary

PROJECT	Marine/ Freshwater	# of DMMUs tested	Interpretive Guidelines	Control Sediment source	Reference sediment source	DMMUs with Major or Minor Hits? *									# of tests with QA/QC rejections	# of DMMUs passed bioassays	# of DMMUs failed bioassays
						Marine						Freshwater					
						10-day Amphipod mortality		48-hr Sediment Larval		*20-day Neanthes* Growth		10-day *Hyalella* mortality	20-day *Chironomus* mortality	20-day *Chironomus* growth			
						Minor Hit	Major Hit	Minor Hit	Major Hit	Minor Hit	Major Hit						
Day Island Yacht Club	Marine	1	DMMP	Yaquina Bay, OR	Carr Inlet	0	0	0	0	0	0				0	1	0
Duwamish Yacht Club, Duwamish River	Marine	4	DMMP	Yaquina Bay, OR	Carr Inlet	1	1	0	4	0	0				0	0	4

Notes:

* Major hit = 1-hit; Minor hit = 2-hit

Not applicable

Table 11. DY24/25 Suitability Determinations

PROJECT	Dredging Year (DY)	Rank	Total Volume (cy)	DMMUs, Chemical Analyses	DMMUs, Bioassay Analyses	DMMUs, Bioaccumulation Analyses	DMMUs Failing	Volume Failing (cy)	DMMUs Passing	Volume Passing (cy)	Proposed Disposal Site/Type
Anchor Cove Marina, Anacortes	2024	M	26,900	2	0	0	0	0	2	26,900	RS
Port of Tacoma, Pierce County Terminal, Blair Waterway	2024	M	27,462	2	0	2	0	0	2	27,462	CB
Sandy Hook Yacht Club Estates, Whidbey Island	2024	M	32,600	3	0	0	0	0	3	32,600	PG/PT
Swinomish Indian Tribal Community, Commercial Fish Dock	2024	M	7,800	1	0	0	0	0	1	7,800	RS
USACE Duwamish Navigation Channel - Sections A & B and Turning Basin	2024	Various	140,000	8	0	0	0	0	8	140,000	EB
USACE Grays Harbor Navigation Channel	2024	Various	3,200,000	40	0	0	0	0	40	3,200,000	PC/SJ/BU
USACE Quillayute Navigation Channel and Boat Basin[1]	2024	VL - M	97,990	7	0	0	0	0	7	97,990	BU
USACE Swinomish Federal Navigation Channel	2024	L	400,000	4	0	0	0	0	4	400,000	PG/RS
DY24 Totals			**3,932,752**					**0**		**3,932,752**	
Day Island Yacht Club	2025	M	24,438	2	1	1	0	0	2	24,438	CB
Duwamish Yacht Club, Duwamish River	2025	H	45,750	13	4	0	5	17,450	9	28,300	EB
Port of Tacoma, Middle Blair Waterway	2025	H	11,750	3	0	0	3	11,750	0	0	UP
Port of Tacoma, TOTE Maritime, Blair Waterway	2025	M	15,000	2	0	0	0	0	2	15,000	CB
DY25 Totals			**96,938**					**29,200**		**67,738**	
DY24/25 Totals			**4,029,690**					**29,200**		**4,000,490**	

Notes:

[1] DMMU7 (12,000 CY) passed DMMP SLs (suitable for open water disposal), but exceeded SMS criteria, which made it unsuitable for beach placement (the preferred placement option).

Disposal Sites

AK = Anderson-Ketron (ND)
CB = Commencement Bay (ND)
CR = Columbia River (D)
EB = Elliott Bay (ND)
PC = Point Chehalis (D)
PG = Port Gardner (ND)
PT = Port Townsend (D)
RS = Rosario Strait (D)
SJ = South Jetty (D)
SR = Snake River (ND)

Disposal Type

BU = Beneficial Use (includes both aquatic and upland)
D = Dispersive
FL = Flow Lane
ND = Non-Dispersive
UP = Upland Disposal
WB = Willapa Bay
NA = Not Applicable

Table 12. DY24/25 Projects with Z-Sample Analysis

PROJECT	DY	Rank	Type	Reason for Z-Sample Analysis, Post-Dredge Evaluation or Surface-Sediment Testing	Did the New Surface Meet SQS or Antidegradation Policy?
Port of Tacoma, Pierce County Terminal, Blair Waterway	2024	M	Bioaccumulation Study	Chemical exceedances in DMMUs	Yes
Dagmars Marina	2025	M	Z-sample	Uncertainty. Surficial material not tested and taken upland.	Yes
Day Island Yacht Club	2025	M	Z-sample	Chemical exceedances in DMMU	Yes
Duwamish Yacht Club, Duwamish River	2025	H	Z-sample and Tier 1	Chemical exceedances	Some meet policy. See SDM.
Port of Tacoma, Middle Blair Waterway	2025	H	Z-sample	Chemical exceedances in DMMUs	Some meet policy. See SDM.
Port of Tacoma, TOTE Maritime Terminal	2025	M	Z-sample composite	Chemical exceedances in DMMU	Yes

Note: Refer to Appendix C for detailed z-sample testing exceedances.

Ranking:

NT = No Test

VL = Very Low

L = Low

LM = Low-moderate

M = Moderate

H = High

Table 13. DY24/25 Tier 1 Determinations

PROJECT	DY	Total Volume (cy)	Rank	Reason for No-Test Determination	Proposed Disposal Site
Cape George Marina, Discovery Bay, Jefferson County	2024	1,000	ND	Small volume, frequent maintenance dredging, and previous characterization.	BU
Little Hangman Creek Restoration near Latah, Washington	2024	4,775	ND	Small volume, sand/gravel/cobble, onsite BU, removed from sources.	BU
Lower Columbia Fish Enhancement Group, Baird Creek Splash Dam Liberation	2024	37,000	ND	Remote forested area with no identified sources.	OI
Lower Satsop Reach Restoration	2024	58,299	ND	Majority onsite BU, "like on like", no new sources, minimal material going upland	BU/UP
Northwest Grain Growers Inc.	2024	6,250	LM	Previous characterization, material going upland.	UP
Pacific Shellfish	2024	8,000	ND	Renewal of 10 year maintenance dredge permit, remote area with no identified sources.	UP
Palasz Dock Extension	2024	264	M	Small volume in close proximity to recently characterized navigation channel.	PS
USACE NWW Snake River Dams Stilling Basins	2024	36,150	ND	Previous characterizations within Snake River system, no new identified sources	FL
Discovery Bay - Pedersen Shoreline Restoration	2025	1,660	ND	Small volume for onsite BU "like on like", majority being disposed of upland.	BU/UP
East Fork Tulalip Creek Hatchery Intake Sediment Removal	2025	3,730	ND	Removed from sources, going upland, previously dredged.	UP
Lower Cherry Creek Restoration Project Phase II-III	2025	21,518	ND	Majority onsite BU, "like on like", no new sources, minimal material going upland.	BU/UP
Mason's Resort Marina	2025	7,000	ND	Sand, removed from sources, going upland.	UP
Newhalem Creek Hydroelectric Decommissioning	2025	500	ND	Small volume for onsite BU "like on like", majority being disposed of upland, in close proximity to recent cleanup site.	BU/UP
Point Roberts Marina	2025	10,000	LM	Sand, "like on like" onsite BU, previously characterized and no new sources.	BU
West Fork Hoquiam Dam Removal	2025	4,600	ND	Coarse-grained, removed from sources, going upland.	UP

Ranking:
VL = Very Low
L = Low
M = Moderate
LM = Low-moderate
H = High
ND = Not Determined

Disposal Type
FL = Flow Lane
OI = Other In-Water
PS= Puget Sound
UP = Upland Disposal
BU = Beneficial Use

Table 14. DY24/25 Recency Extensions

PROJECT	DY	Rank	Sampling Date	Recency Time Limit (years)	End of Recency Period	Planned Dredging Period	New Recency Expiration
USACE Swinomish Federal Navigation Channel	2024	Project specific	--	10	Sept 2024	2024-25	Sept 2025
Zittel's Marina	2025	M	June 2020	5	June 2025	2025-2033	Feb 15, 2026

Notes:

M = Moderate

Table 15. DY24/25 Project Revisions

PROJECT	DY	Rank	Description of Project Revision
East Fork Lewis River Ridgefield Pits Restoration, Clark County	2024	ND	A 12% increase in volume

Ranking:

ND = Not Determined

NT = No Test

Table 16. DY24/25 Special Studies

Project	DY	Rank	Number of Chemistry Samples	Number of Bioassay Samples	Sample Device	COC List
Port of Seattle Terminal 5 Overdredging Non-Compliance Evaluation	24	H	6	---	Grab	standard DMMP marine COCs, including TBT and Dioxins
Shelter Bay Marina Permit Non-compliance Evaluation	24	M	1	---	Grab	standard DMMP marine COCs

Notes:
COC = Chemical of Concern
TBT = Tributyltin

Table 17. DY24/25 Supplemental Suitability Determinations

Project	DY	Rank	Number of Chemistry Samples	Number of Bioassay Samples	Sample Device	COC List
Driftwood Key	2024	LM	1	0	Push core low tide	DMMP
USACE Snohomish Federal Navigation Channel	2024	L	0	0	--	--

Notes:

L = Low

LM = Low-moderate

Table 18. Project-Specific Dredged Material Disposal and Beneficial Use Placement, DY24

Site	Proponent/Project	Dredger	Dredge Type	Disposal Volume (cy)	# Barge Loads	#Barges Disposed Inwater "Off Site"	Disposal Dates	Was a debris screen used?	Volume screened (cy)	Volume debris removed (cy)
Federal Navigation Projects										
EB	Duwamish River Maintenance	American Construction	CS	64,067	59		Jan 2 - Feb 15, 2024	No	NA	NA
BU-PO	Snohomish River Maintenance	Portable Hydraulic Dredge	HYD	93,343	NA		Oct 29, 2023 - Jan 02, 2024	No	NA	NA
BU-JI	Snohomish River Maintenance	Portable Hydraulic Dredge	HYD	32,579	NA		Oct 29, 2023 - Jan 02, 2024	No	NA	NA
PC	USACE Grays Harbor	Essayons	HD	236,068	NA		April 27 - May 23, 2024	No	NA	NA
BU-SB	USACE Grays Harbor	Essayons	HD	436,383	NA		April 27 - May 23, 2024	No	NA	NA
PC	USACE Grays Harbor	Yaquina	HD	126,192	NA		April 8 - 22, 2024	No	NA	NA
BU-HMB	USACE Grays Harbor	Yaquina	HD	28,299	NA		April 8 - 22, 2024	No	NA	NA
PC	USACE Grays Harbor Inner Harbor	American Construction	CS	627,445	182		Dec 2, 2023 - Feb 15, 2024	No	NA	NA
Section 10/404 Permitted Projects										
PG	Port of Everett/So. & Central Marina	American Construction	CS	3,849	4		12/1/2023 to 12/15/2023	Yes	3,849	
PG	Port of Everett/So.& Central Marina (overdredge)	American Construction	CS	14	NA		NA	Yes	14	
EB	King County/Mercer Island Enatai	American Construction	CS	9,546	10		7/28/2023 to 1/12/2024	Yes		
EB	Port of Silverdale/ Boatlaunch	American Construction	CS	1,780	4		10/9/2023 to 10/12/2023	Yes	1,780	
EB	Port of Silverdale/ Boatlaunch (overdredge)	American Construction	CS	194	NA		NA	Yes	194	
PC	Port of Grays Harbor-Round 1/ Terminals 1,2 &4	American Construction	CS	39,430	13		10/30/2023 to 11/4/2023	No	NA	NA
PC	Port of Grays Harbor -Round 2/ Terminals 1,2 & 4	American Construction	CS	17,542	6		2/11/2024 to 2/12/2024	No	NA	NA
PC	Port of Grays Harbor -Round 2/ Terminals 1, 2 & 4 (Overdredge)	American Construction	CS	399	NA		NA	No	NA	NA

Open-Water Disposal Sites
EB = Elliott Bay CR = Columbia River (flow-lane disposal)
PG = Port Gardr BC = Bay Center (flow-lane disposal)
A/K = Anderson SR = inwater bench placement
CB = Commencement Bay
PC = Point Chehalis

Beneficial Use Sites
SB = South Beach
JI = Jetty Island
PO = Parcel O
BN = Beach Nourishment
HMB = Half Moon Bay

Dredge Types
CS = Clamshell Dredge
HD = Hopper Dredge
HYD = Hydraulic Dredge

NA = Not applicable

Table 19. Project-Specific Dredged Material Disposal and Beneficial Use Placement, DY25

Site	Proponent/Project	Dredger	Dredge Type	Disposal Volume (cy)	# Barge Loads	#Barges Disposed Inwater "Off Site"	Disposal Dates	Was a debris screen used?	Volume screened (cy)	Volume debris removed (cy)
Federal Navigation Projects										
PC	Grays Harbor Inner	American Construction	CS	1,230,780	394		July 7 - Sept 28, 2024; Dec 2, 2024 - Jan 30, 2025	No	NA	NA
RS	Swinomish Channel Maintenance	American Construction	CS	98,735	102	1	Sept 30, 2024 - Jan 19, 2025	No	NA	NA
PG	Snohomish River Maintenance	HME	CS	250,289	128		Jan 4 - Feb 10, 2025	No	NA	NA
PC	USACE Grays Harbor	Essayons	HD	149,725	150		Apr 12 - May 12, 2025	No	NA	NA
BU-SB	USACE Grays Harbor	Essayons	HD	568,722	150		Apr 12 - May 12, 2025	No	NA	NA
SJ	USACE Grays Harbor	Essayons	HD	4,535	150		Apr 12 - May 12, 2025	No	NA	NA
PC	USACE Grays Harbor	Yaquina	HD	106,002	139		Apr 9 - 22, 2025	No	NA	NA
BU-HMB	USACE Grays Harbor	Yaquina	HD	15,733	139		Apr 9 - 22, 2025	No	NA	NA
Section 10/404 Permitted Projects										
PC	Port of Grays Harbor -Round 1/ Terminals 2 & 4	American Construction	CS	18,584	6		8/8/2024 to 8/11/2024	No		
CB	Port of Tacoma/ TOTE Maritime Alaska	American	CS	9,797	15		1/30/2025 to 2/14/2025	Yes		
CB	Port of Tacoma/ TOTE Maritime Alaska (Overdredge Volume)	American	CS	145	N/A		N/A	Yes		
CB	Port of Tacoma/ PCT Pierce County Terminal	American	CS	17,354	16		2/6/2025 to 2/16/2025	Yes		
CB	Port of Tacoma/ PCT Pierce County Terminal (Overdredge volume)	American	CS	444	N/A		N/A			
PC	Port of Grays Harbor Round 2/ Terminals 1,2,3,4	American	CS	59,576	20		2/1/2025 - 2/9/2025	No		
PC	Port of Grays Harbor Round 1/Terminals 2 & 4	American	CS	21,268	7		8/4/2025 - 8/6/2025	No		

Open-Water Disposal Sites

EB = Elliott Bay
PG = Port Gardner
A/K = Anderson Ketron
CB = Commencement Bay
PC = Point Chehalis
RS = Rosario Strait (D)
CR = Columbia River (flow-lane disposal)
BC = Bay Center (flow-lane disposal)

Beneficial Use Sites

SB = South Beach
JI = Jetty Island
PO = Parcel O
BN = Beach Nourishment
HMB = Half Moon Bay

Dredge Types

CS = Clamshell Dredge
HD = Hopper Dredge
HYD = Hydraulic Dredge

Table 20. DY24/25 Disposal/Placement Summary

Disposal/Placement Sites						
			DY2024		DY2025	
Dredging Location	Placement Site	Type	# of Projects	Total Volume (cy)	# of Projects	Total Volume (cy)
Puget Sound	Commencement Bay	OW-ND	0	0	2	27,740
	Elliott Bay	OW-ND	3	75,587	0	0
	Port Gardner	OW-ND	1	3,863	1	250,289
	Rosario Strait	OW-D	0	0	1	98,735
	Parcel O	BU	1	93,343	0	0
	Jetty Island	BU	1	32,579	0	0
	Beach Nourishment	BN	0	0	0	0
	Upland	UD	0	0	0	0
Grays Harbor	Point Chehalis	OW-D	4	1,047,076	3	1,585,935
	South Beach	BU	1	436,383	0	568,722
	South Jetty	OW-D	0	0	0	4,535
	Half Moon Bay	BU	1	28,299	0	15,733
	near Westport	UD	0	0	0	0
Willapa Bay	Tokeland flow lane	OW-D	0	0	0	0
Quillayute	First Beach	BU	0	0	0	0
	Rialto Beach	BU	0	0	0	0
Columbia River Basin	Baker Bay	FL	0	0	0	0
Snake River	RM 118 near Bishop Bar	OP-ND	0	0	0	0
Disposal/Placement Types - SubTotals						
Puget Sound	Total open-water disposal		4	79,450	4	376,764
	Total beneficial use		2	125,922	0	0
	Total upland disposal		0	0	0	0
Grays Harbor	Total open-water disposal		4	1,047,076	3	1,590,470
	Total beneficial use		2	464,682	0	584,455
	Total upland disposal		0	0	0	0
Willapa Bay	Total open-water disposal		0	0	0	0
Quillayute	Total beneficial use		0	0	0	0
Columbia River Basin	Total flow-lane disposal		0	0	0	0
Snake River	Total open-water non-dispersive		0	0	0	0
Disposal/Placement Types - Grand Totals						
All sites	Grand total open-water disposal			1,126,526		1,967,234
	Grand total beneficial use			590,604		584,455
	Grand total upland disposal			0		0
		Grand total all disposal/placement:		1,717,130		2,551,689

Notes:

This Biennial Report does not include dredging volumes for projects in which DMMP had no involvement (e.g. Superfund dredging with upland disposal)

BU = Beneficial Use OW-D = open-water, dispersive OW-ND = open-water, non-dispersive UD = upland disposal

Table 21. Cumulative Site-Use Summary

Disposal Site	Dredging Years Used	Volume Disposed DY 2024/2025	Cumulative Volumes Disposed (cy)	Average Annual Disposal Volume (cy)
PUGET SOUND (Central)	**1989 – 2025 (36 yrs)**			
Commencement Bay (ND)	89, 91, 95, 96, 98, 99, 00, 01, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 16, 17, 21, 22, 25	27,740	8,739,652	242,768
Elliott Bay (ND)	90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 00, 01, 02, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 16, 18, 20, 21, 22, 23, 24	75,587	3,481,144	96,698
Port Gardner (ND)	90, 91, 93, 94, 95, 96, 97, 02, 06, 07, 08, 09, 10, 11, 12, 13, 15, 16, 17, 19, 20, 21, 22, 23, 25	254,152	4,377,778	121,605
PUGET SOUND (North / South)	**1990 – 2025 (35 yrs)**			
Anderson/Ketron (ND)	93, 95, 04, 05, 07, 08, 12, 14	0	157,215	4,492
Bellingham Bay (ND)	93, 96, 98	0	78,883	2,254
Port Angeles (D)	96	0	22,344	638
Port Townsend (D)	93, 98, 99, 07, 09, 10	0	54,777	1,565
Rosario Strait (D)	91, 92, 93, 94, 95, 96, 98, 99, 02, 03, 04, 05, 06, 07, 09, 11, 12, 13, 15, 16, 18, 19, 20, 23, 25	98,735	2,787,362	79,639
PUGET SOUND (Total)		**456,214**	**19,699,155**	**549,660**
GRAYS HARBOR	**1996 – 2025 (29 yrs)**			
Point Chehalis (D)	96, 97, 98, 99, 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25	2,633,011	29,201,250	1,006,940
South Jetty (D)	96, 97, 98, 99, 00, 01, 02, 03, 04, 05, 06, 07, 09, 11, 12, 17, 18, 19, 20, 21, 22, 23	4,535	14,935,589	515,020
Half Moon Bay (BU)	96, 97, 98, 99, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 17, 21, 22, 23, 24	44,032	3,383,101	116,659
South Beach (BU) (2001-2025)	01, 02, 04, 05, 06, 09, 10, 11, 12, 13, 14, 15, 16, 18, 20, 22, 23, 24	1,005,105	6,675,295	278,137
Southwest (3.9 Mile) Ocean Site (D)	03, 04	0	97,831	3,373
GRAYS HARBOR (Total)		**3,686,683**	**54,293,066**	**1,920,129**
WILLAPA BAY	**1996 – 2025 (29 yrs)**			
Cape Shoalwater (D)	00, 03	0	251,095	8,658
Goose Point (D)	99, 03, 06	0	205,977	7,103
Tokeland (FLD) (2010-2025)	10, 11, 15, 16, 19	0	134,500	8,967
Bay Center (FLD) (2010-2025)	14, 17	0	20,500	1,367
WILLAPA BAY (Total)		**0**	**612,072**	**26,094**
QUILLAYUTE	**2008 – 2025 (17 yrs)**			
Sites A, 1, 2A, B, First Beach, Rialto Beach (BU)	08, 10, 15, 16, 18, 21, 23	0	332,231	19,543
QUILLAYUTE (Total)		**0**	**332,231**	**19,543**
Totals (all sites)		**4,142,897**	**74,936,524**	**2,515,426**

Notes:

ND = non-dispersive; D = dispersive; BU = beneficial use; FLD = flow lane disposal

Table 22. Puget Sound Non-dispersive Sites: Cumulative Disposal Volumes vs. Site Capacity

Disposal Site	Range of Years Open	# of Years Open	Cumulative Volume (cy)	Average Annual Volume (cy/yr)	Site Capacity[1] (cy)	Percent of Site Capacity	Estimated Time to Reach Site Capacity[2] (Years)
Port Gardner	1989-2025	36	4,377,778	121,605	9,000,000	49%	38
Elliott Bay	1989-2025	36	3,481,144	96,698	9,000,000	39%	57
Bellingham Bay[3]	1990-2025	35	78,883	2,254	9,000,000	1%	> 100
Commencement Bay[4]	1989-2025	36	8,739,652	242,768	23,000,000	38%	59
Anderson/Ketron	1990-2025	35	157,215	4,492	9,000,000	2%	> 100

[1] Site capacity estimated in Phase I and II Disposal Site Selection Technical Appendices for non-dispersive sites is approximately 9,000,000 cubic yards.

[2] Estimated Time to Reach Site Capacity = (Site Capacity – Cumulative Volume)/average annual disposal volume.

[3] The Bellingham Bay disposal site has not been used since 1998

[4] The capacity of the Commencement Bay site was increased from 9 to 23 million cubic yards following finalization of a 2010 NEPA/SEPA Supplemental Environmental Impact Statement.

Table 23. Puget Sound Disposal Site Monitoring Survey History

Year	Disposal Site	Type of Survey
1988	Port Gardner, Elliott Bay, Commencement Bay	Initial Baseline Surveys: Full
1989	Bellingham Bay, Anderson/Ketron Island	Initial Baseline surveys: Full
1990	Bellingham Bay	Dungeness Crab Density Study
1990	Port Gardner	Full
1990	Elliott Bay	Partial
1991	Rosario Strait	Bathymetric Survey
1991	Port Gardner, Bellingham Bay	Special Study: New Benchmark Station (PG); Tissue Chemistry Protocol (PG/BB)
1992	Elliott Bay	Full
1993	Bellingham Bay	Partial, Side-Scan Sonar Survey
1994	Port Gardner	Tiered-Full
1994	Rosario Strait	Bathymetric Survey
1995	Elliott Bay	Side-Scan Sonar Survey (debris evaluation)
1995	Commencement Bay	Full (new baseline)
1996	Commencement Bay	Partial
1998	Commencement Bay	SPI Survey
1999	Rosario Strait	Bathymetric Survey
2000	Elliott Bay	Full, Special PCB Congener Study, 45-day Bioaccumulation
2001	Commencement Bay	Full + Bathymetric Survey
2002	Elliott Bay	Tiered-Full, BCOC special study (Lists 1 & 2)
2003	Commencement Bay	Tiered-Full, List 1 & 2 BCOCs
2004	Commencement Bay	Partial + Bathymetric Survey
2005	Commencement Bay	SPI Survey + Special Phenol Study
2005	Anderson/Ketron Island	Full (new baseline), List 1 & 2 BCOCs
2005	Elliott Bay	Special Onsite Chemistry Study
2006	Port Gardner	Full, Dioxin Baseline, List 1 & 2 BCOCs
2006	Commencement Bay	MBS
2007	Commencement Bay	Full + MBS + Tissue BCOCs + Dioxin Baseline
2007	Bellingham Bay and Elliott Bay	Dioxin Baseline
2008	Anderson/Ketron Island	Post-Disposal Dioxin Evaluation (part of OSV Bold Survey)
2009	Rosario Strait	MBS
2010	Port Gardner	Tiered-Full, List 1 & 2 BCOCs
2010	Puget Sound Dispersive Sites	Fate & Transport Study
2013	Commencement Bay	SPI Survey + MBS
2013	Elliott Bay	Partial + MBS
2014	Anderson/Ketron Island	Fate & Transport Study
2014	Anderson/Ketron Island	MBS
2014	Elliott Bay	ROV Debris Inspection
2014/15	Anderson/Ketron Island	Benthic Trawl Survey
2017	Commencement Bay	Tiered-Full + MBS
2019	Rosario Strait	MBS
2019	Port Gardner	MBS
2020	Port Gardner	SPI Survey + Pilot Monitoring + SPME special study
2023	Elliott Bay	SPI Survey + Pilot Monitoring + SPME special study
2025	Port Gardner	SPI Survey + Partial Monitoring

Notes:

BCOC = Bioaccumulative Chemical of Concern

MBS = Multibeam Bathymetric Survey

ROV = Remotely Operated Vehicle

SPI = Sediment Profile Imaging

PG = Port Gardner

BB = Bellingham Bay

Table 24. Cumulative Disposal Volumes Since Last Monitoring and Projected 2026/2027 Monitoring Events

Site: (Monitoring Soft Triggers)	A/K (150k cy)	CB (500k cy)	EB (500k cy)	PG (500k cy)	BB (150k cy)
Last monitoring	Partial 2005	Tiered Full 2017	Routine 2023	Partial 2025	Partial 1993
Cumulative volume since last monitoring event	129,776	49,515	75,587	0	46,000
Projected 2026-2027 monitoring	Maybe	No	No	No	No

Disposal Sites

A/K = Anderson/Ketron

CB = Commencement Bay

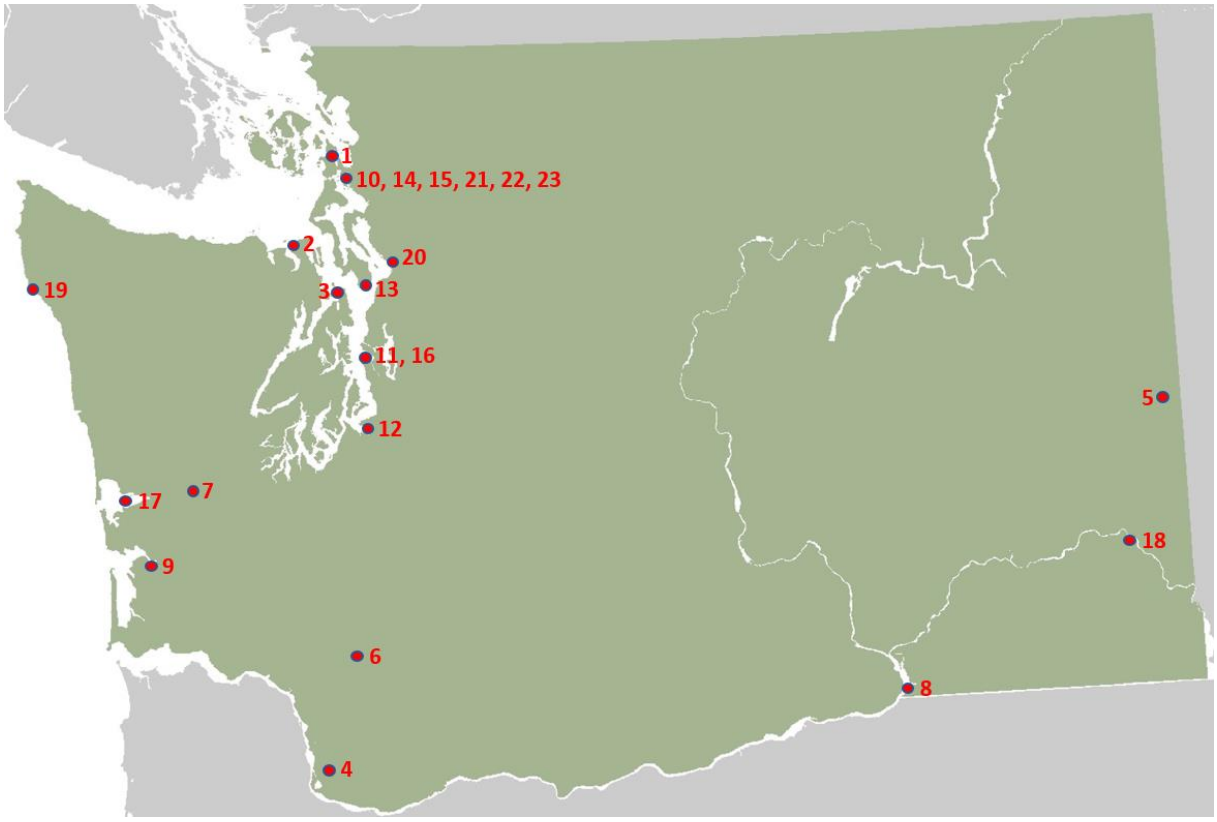
EB = Elliott Bay

PG = Port Gardner

BB = Bellingham Bay

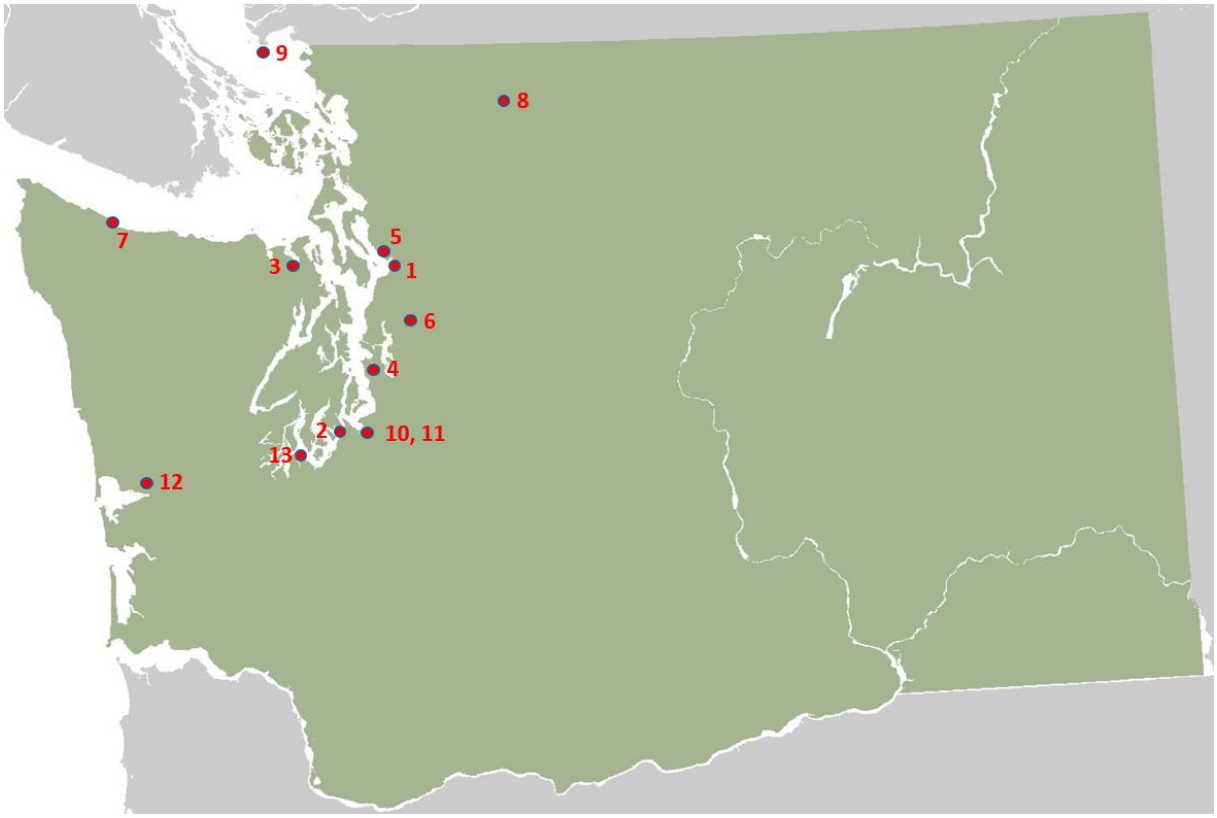
Figures

Figure 1. DY24 Project Locations



Refer to **Table 1** for project numbering key.

Figure 2. DY25 Project Locations



Refer to **Table 2** for project numbering key.

Figure 3. DY24/25 disposal volumes in Puget Sound

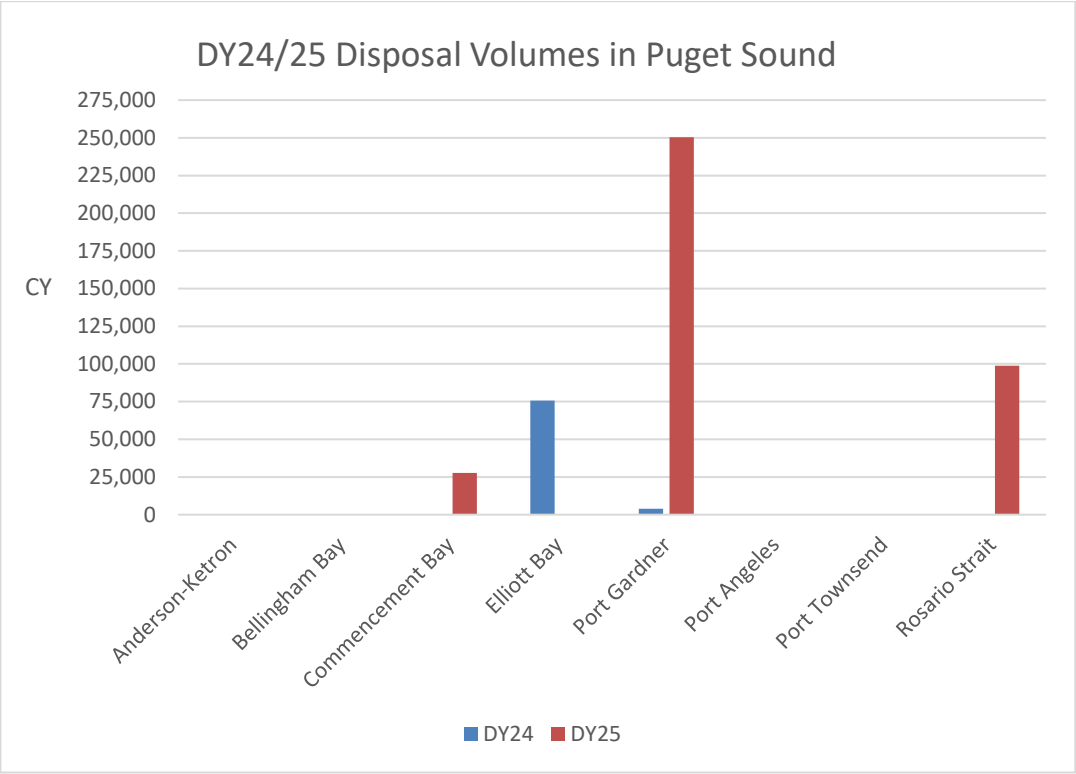


Figure 4. DY24/25 disposal volumes in Grays Harbor

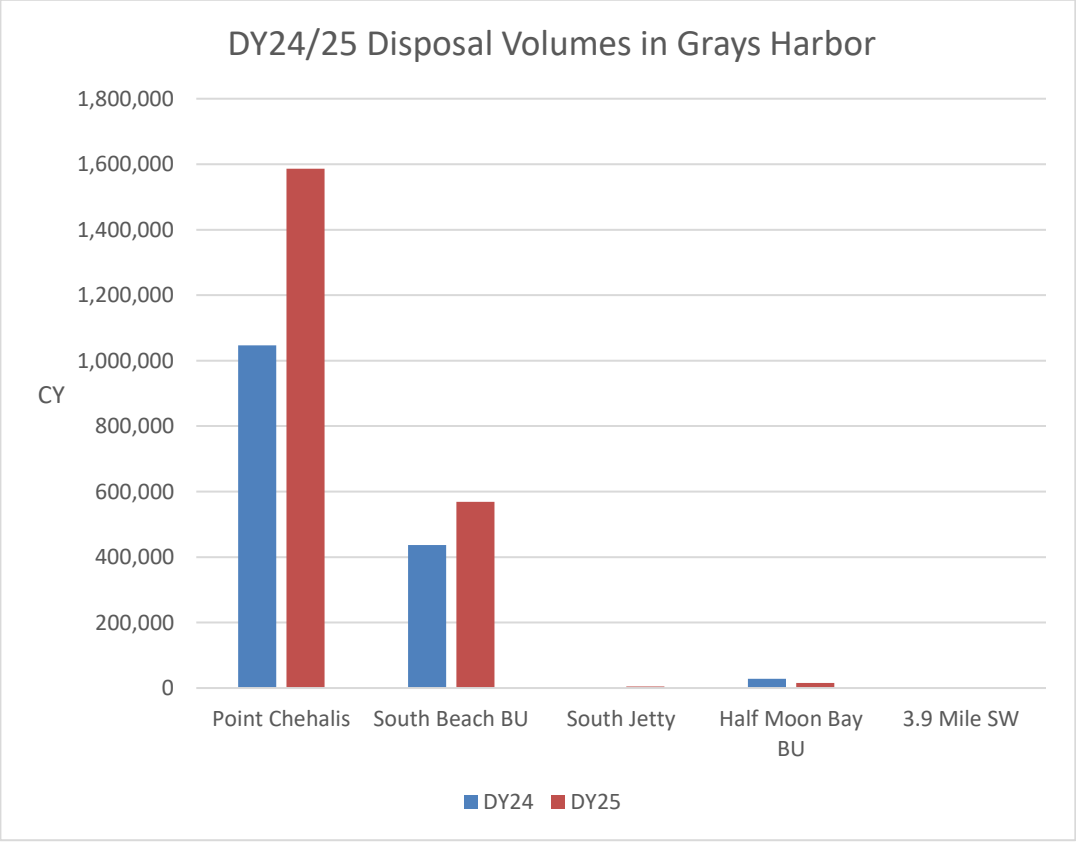


Figure 5. DMMP cumulative disposal volumes in Puget Sound 1989 – 2025

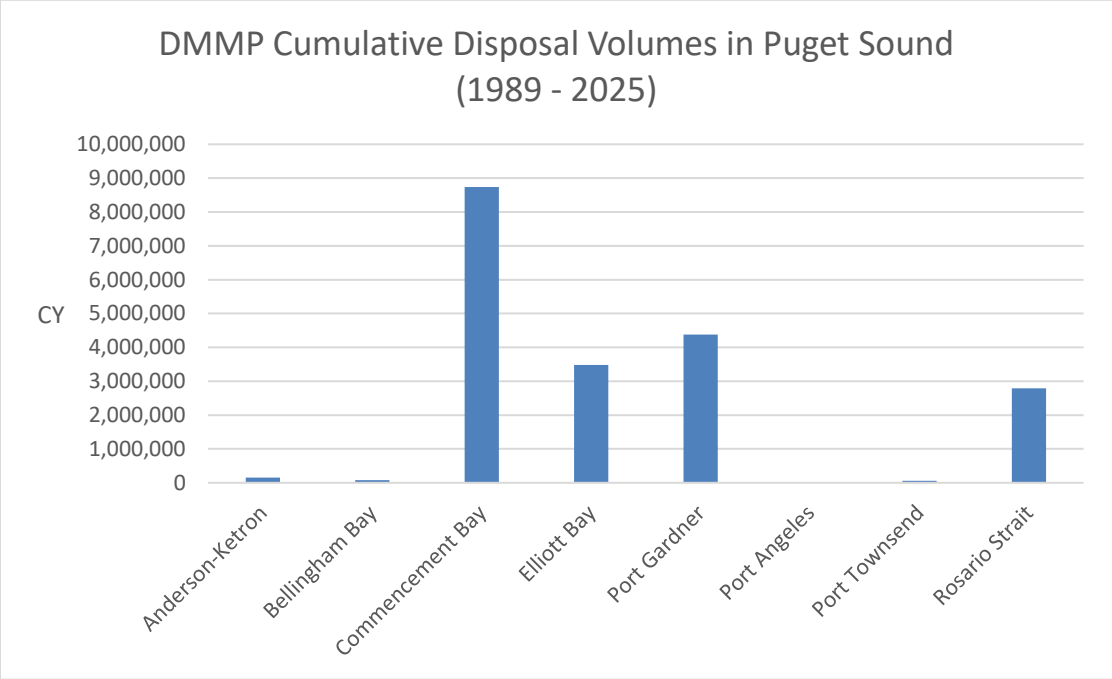
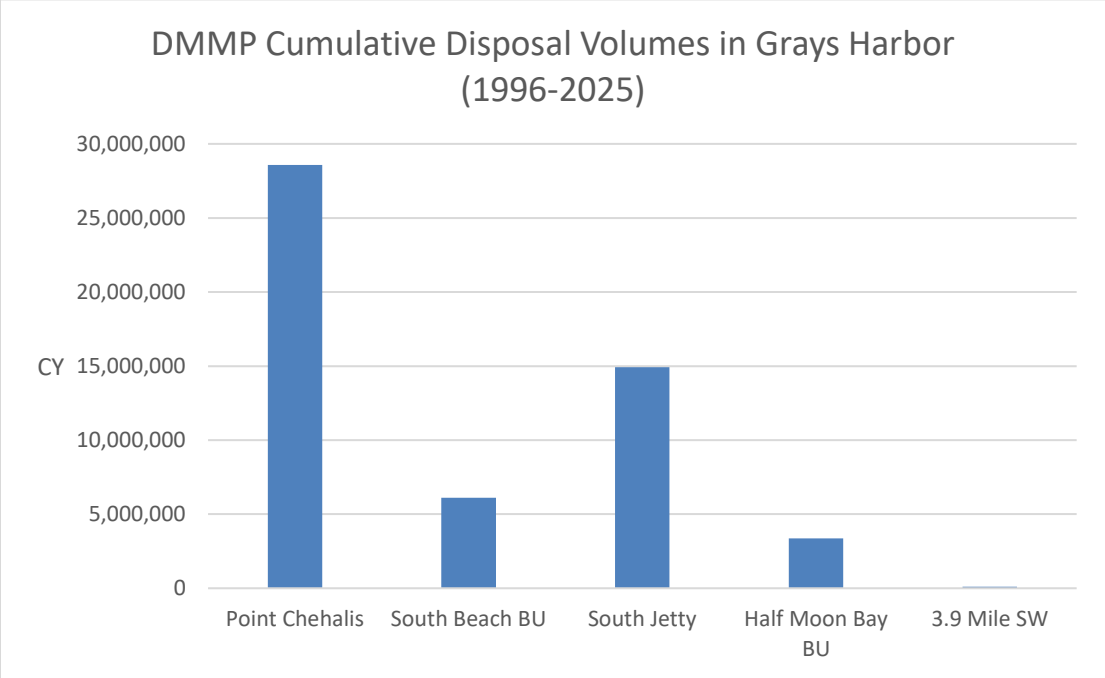


Figure 6. DMMP cumulative disposal volumes in Grays Harbor 1996 – 2025



Appendix A. DY24/25 Guideline Values

- Table 8-3 from the 2025 DMMP User Manual
- Sediment Management Standards Chapter 173-204 WAC Benthic Criteria

Table 8-1. Marine and freshwater sediment chemical criteria for protection of the benthic community.

	SMS Freshwater Sediment[a]		SMS Marine Sediment[b]		AETs Marine Sediment[c,d]	
Analyte	**SCO**	**CSL**	**SCO**	**CSL**	**SCO**	**CSL**
Conventional Pollutants	**mg/kg dw**					
Ammonia	230	300				
Total sulfides	39	61				
Metals	**mg/kg dw**		**mg/kg dw**		**mg/kg dw**	
Arsenic	14	120	57	93	57	93
Cadmium	2.1	5.4	5.1	6.7	5.1	6.7
Chromium	72	88	260	270	260	270
Copper	400	1,200	390	390	390	390
Lead	360	>1,300[e]	450	530	450	530
Mercury	0.66	0.8	0.41	0.59	0.41	0.59
Nickel	26	110				
Selenium	11	> 20[e]				
Silver	0.57	1.7	6.1	6.1	6.1	6.1
Zinc	3200	>4,200[e]	410	960	410	960
Organometallics	**µg/kg dw**					
Monobutyltin	540	>4,800[e]				
Dibutyltin	910	130,000				
Tributyltin	47	320				
Tetrabutyltin	97	>97[e]				
Organic and Chlorinated Organic Chemicals	**µg/kg dw**		**µg/kg dw**		**µg/kg dw**	
2,4-Dimethylphenol			29	29	29	29
2-Methylphenol			63	63	63	63
4-Methylphenol[f]	260	2,000	670	670	670	670
Benzoic acid	2,900	3,800	650	650	650	650
Benzyl alcohol			57	73	57	73
Pentachlorophenol	1,200	>1,200[e]	360	690	360	690
Phenol	120	210	420	1,200	420	1200
Organic and Chlorinated Organic Chemicals (cont.)	**µg/kg dw**		**mg/kg OC**		**µg/kg dw**	
1,2,4-Trichlorobenzene			0.81	1.8	31	51
1,2-Dichlorobenzene			2.3	2.3	35	50
1,4-Dichlorobenzene			3.1	9	110	110
Dibenzofuran	200	680	15	58	540	540
Hexachlorobenzene			0.38	2.3	22	70
Hexachlorobutadiene			3.9	6.2	11	120
N-nitrosodiphenylamine			11	11	28	40

Table 8-1 (cont). Marine & freshwater sediment chemical criteria for protection of the benthic community.

	SMS Freshwater Sediment[a]		SMS Marine Sediment[b]		Marine Sediment AETs[c,d]	
Analyte	**SCO**	**CSL**	**SCO**	**CSL**	**SCO**	**CSL**
Phthalates[d]	**µg/kg dw**		**mg/kg OC**		**µg/kg dw[d]**	
Bis(2-Ethylhexyl)phthalate	500	22,000	47	78	1,300	1,900
Butylbenzyl phthalate			4.9	64	63	900
Diethyl phthalate			61	110	200	>1,200[e]
Dimethyl phthalate			53	53	71	160
Di-n-butyl phthalate	380	1,000	220	1,700	1,400	1,400
Di-n-octyl phthalate	39	>1,100[e]	58	4,500	6,200	6,200
Pesticides and PCBs	**µg/kg dw**		**mg/kg OC**		**µg/kg dw**	
beta-Hexachlorocyclohexane	7.2	11				
Carbazole	900	1,100				
Dieldrin	4.9	9.3				
Endrin ketone	8.5					
Total Aroclor[g]	110	2,500	12	65	130	1,000
Total o,p' and p,p' dichlorodiphenyldichloroethanes (DDDs)	310	860				
Total o,p' and p,p' dichlorodiphenyldichloroethylenes (DDEs)	21	33				
Total o,p' and p,p' dichlorodiphenyltrichloroethanes (DDTs)	100	8,100				
Polycyclic Aromatic Hydrocarbons	**µg/kg dw**		**mg/kg OC**		**µg/kg dw**	
Total PAHs	17,000	30,000				
Total LPAH			370	780	5,200	5,200
2-Methylnaphthalene			38	64	670	670
Acenaphthene			16	57	500	500
Acenaphthylene			66	66	1,300	1,300
Anthracene			220	1,200	960	960
Fluorene			23	79	540	540
Naphthalene			99	170	2,100	2,100
Phenanthrene			100	480	1,500	1,500
Total HPAH			960	5,300	12,000	17,000
Benz[a]anthracene			110	270	1,300	1,600
Benzo[a]pyrene			99	210	1,600	1,600
Benzo[g,h,i]perylene			31	78	670	720
Chrysene			110	460	1,400	2,800
Dibenzo[a,h]anthracene			12	33	230	230
Fluoranthene			160	1,200	1,700	2,500
Indeno[1,2,3-c,d]pyrene			34	88	600	690
Pyrene			1,000	1,400	2,600	3,300
Total benzofluoranthenes			230	450	3,200	3,600

Table 8-1 (cont.). Marine/freshwater sediment chemical criteria for protection of the benthic community.

	SMS Freshwater Sediment[a]		SMS Marine Sediment[b]		Marine Sediment AETs[c,d]	
Analyte	**SCO**	**CSL**	**SCO**	**CSL**	**SCO**	**CSL**
Bulk Petroleum Hydrocarbons	**mg/kg dw**					
TPH-Diesel	340	510				
TPH-Residual	3,600	4,400				

a, All freshwater values are dry weight normalized.

b, Marine values are dry weight normalized for metals and polar organics and normalized to total organic carbon for nonpolar organics.

c, When total organic carbon is outside the range of 0.5 – 3.5%, Ecology may compare to both the TOC normalized criteria and the dry-weight AET values. When total organic carbon values are $\geq$ 5%, analysis of total volatile solids is recommended.

d, Dry weight AETs for phthalates are derived from Barrick et.al, 1988. The SCO is established as the lowest AET and the CSL is the 2nd lowest AET, consistent with the dry weight AETs for the other SMS chemicals. These differ from the DMMP values for phthalates which were updated in 2005, based on additional bioassay endpoints and synoptic chemistry/bioassay data. Bioassays may be used in place of these AETs if necessary.

e, "greater than" value indicates that the upper bound toxicity level is unknown, but is known to be above the concentration shown.

f, 3-methylphenol and 4-methylphenol may not be able to be separated. In this case 4-methylphenol may be reported as the sum of the 3- and 4-methylphenol isomers. See Appendix N for more detail.

g, Upon approval by Ecology on a case-by-case basis, Total PCB congeners may be used as a direct substitute for Total PCB Aroclors to verify compliance with the CSL benthic criteria (i.e., the sum of Total congeners value can substitute for the sum of Total Aroclors), but not the SCO benthic criteria. If the benthic SCO is exceeded, bioassays should be analyzed.

TABLE 8-3. DMMP COCS AND REGULATORY GUIDELINES

	CHEMICAL	CAS[1] NUMBER	USE FOR MARINE PROJECTS			USE FOR FRESHWATER PROJECTS WITHIN DMMP JURISDICTION	
			DMMP MARINE GUIDELINES			DMMP/SMS FRESHWATER	
			SL	BT	ML	SL1	SL2
STANDARD CHEMICALS OF CONCERN	METALS (mg/kg dry weight)						
	Antimony	7440-36-0	150	---	200	---	---
	Arsenic	7440-38-2	57	507.1	700	14	120
	Cadmium	7440-43-9	5.1	--	14	2.1	5.4
	Chromium	7440-47-3	260	--	---	72	88
	Copper	7440-50-8	390	--	1,300	400	1,200
	Lead	7439-92-1	450	975	1,200	360	> 1,300
	Mercury	7439-97-6	0.41	1.5	2.3	0.66	0.8
	Nickel	7440-02-0	---	---	---	38[2]	110
	Selenium	7782-49-2	---	3	---	11	>20
	Silver	7440-22-4	6.1	--	8.4	0.57	1.7
	Zinc	7440-66-6	410	--	3,800	3,200	>4,200
	ORGANOMETALLIC COMPOUNDS[3]						
	Tributyltin ion (interstitial water; ug/L)	36643-28-4	---	0.15	---	---	---
	Tributyltin ion (bulk; ug/kg)[4]	36643-28-4	---	73	---	47	320
	Monobutyltin ion (bulk; ug/kg)	78763-54-9	---	---	---	540	>4,800
	Dibutyltin ion (bulk; ug/kg)	10-53-502	---	---	---	910	130,000
	Tetrabutyltin ion (bulk; ug/kg)	1461-25-2	---	---	---	97	>97
	PAHs (µg/kg dry weight)						
	Naphthalene	91-20-3	2,100	---	2,400	---	---
	Acenaphthylene	208-96-8	560	---	1,300	---	---
	Acenaphthene	83-32-9	500	---	2,000	---	---
	Fluorene	86-73-7	540	---	3,600	---	---
	Phenanthrene	85-01-8	1,500	---	21,000	---	---
	Anthracene	120-12-7	960	---	13,000	---	---
	1-Methylnaphthalene[5]	90-12-0	---	---	---	---	---
	2-Methylnaphthalene[5]	91-57-6	670	---	1,900	---	---
	Total LPAH	**—**	**5,200**	**—**	**29,000**	---	---
	Fluoranthene	206-44-0	1,700	4,600	30,000	---	---
	Pyrene	129-00-0	2,600	11,980	16,000	---	---
	Benz(a)anthracene	56-55-3	1,300	---	5,100	---	---
	Chrysene	218-01-9	1,400	---	21,000	---	---
	Benzofluoranthenes (b, j ,k)	205-99-2 205-82-3 207-08-9	3,200	---	9,900	---	---
	Benzo(a)pyrene	50-32-8	1,600	---	3,600	---	---
	Indeno(1,2,3-c,d)pyrene	193-39-5	600	---	4,400	---	---
	Dibenz(a,h)anthracene	53-70-3	230	---	1,900	---	---

TABLE 8-3. DMMP COCS AND REGULATORY GUIDELINES

	CHEMICAL	CAS[1] NUMBER	USE FOR MARINE PROJECTS			USE FOR FRESHWATER PROJECTS WITHIN DMMP JURISDICTION	
			DMMP MARINE GUIDELINES			DMMP/SMS FRESHWATER	
			SL	BT	ML	SL1	SL2
	Benzo(g,h,i)perylene	191-24-2	670	---	3,200	---	---
	Total HPAH	—	**12,000**	—	**69,000**	---	---
	Total PAHs[6]	—	—	—	—	17,000	30,000
	CHLORINATED HYDROCARBONS (µg/kg dry weight)						
	1,4-Dichlorobenzene	106-46-7	110	---	120	---	---
	1,2-Dichlorobenzene	95-50-1	35	---	110	---	---
	1,2,4-Trichlorobenzene	120-82-1	31	---	64	---	---
	Hexachlorobenzene (HCB)	118-74-1	22	168	230	---	---
	beta-Hexachlorocyclohexane	319-85-7	—	—	—	7.2	11
	PHTHALATES (µg/kg dry weight)						
	Dimethyl phthalate	131-11-3	71	---	1,400	---	---
	Diethyl phthalate	84-66-2	200	---	1,200	---	---
	Di-n-butyl phthalate	84-74-2	1,400	---	5,100	380	1,000
	Butyl benzyl phthalate	85-68-7	63	---	970	---	---
	Bis(2-ethylhexyl) phthalate	117-81-7	1,300	---	8,300	500	22,000
	Di-n-octyl phthalate	117-84-0	6,200	---	6,200	39	>1,100
STANDARD CHEMICALS OF CONCERN	PHENOLS (µg/kg dry weight)						
	Phenol	108-95-2	420	---	1,200	120	210
	2-Methylphenol	95-48-7	63	---	77	---	---
	4-Methylphenol	106-44-5	670	---	3,600	260	2,000
	2,4-Dimethylphenol	105-67-9	29	---	210	---	---
	Pentachlorophenol	87-86-5	400	504	690	1,200	>1,200
	MISCELLANEOUS EXTRACTABLES (µg/kg dry weight)						
	Benzyl alcohol[7]	100-51-6	57	---	870	---	---
	Benzoic acid	65-85-0	650	---	760	2,900	3,800
	Dibenzofuran	132-64-9	540	---	1,700	200	680
	Hexachlorobutadiene	87-68-3	11	---	270	---	---
	N-Nitrosodiphenylamine	86-30-6	28	---	130	---	---
	Carbazole	86-74-8	—	—	—	900	1,100
	PESTICIDES & PCBs (µg/kg dry weight)						
	4,4'-DDD 4,4'-DDE 4,4'-DDT sum of 4,4'-DDD, 4,4'-DDE, 4,4'-DDT	72-54-8 72-55-9 50-29-3 ---	16 9 12 ---	--- --- --- 50	--- --- --- 69	---	---
	2,4'-DDD and 4.4'-DDD 2,4'-DDE and 4,4'-DDE 2,4'-DDT and 4,4'-DDT	--- --- ---	---	---	---	310 21 100	860 33 8,100
	Aldrin	309-00-2	9.5	---	---	---	---

TABLE 8-3. DMMP COCS AND REGULATORY GUIDELINES

	CHEMICAL	CAS[1] NUMBER	USE FOR MARINE PROJECTS			USE FOR FRESHWATER PROJECTS WITHIN DMMP JURISDICTION	
			DMMP MARINE GUIDELINES			DMMP/SMS FRESHWATER	
			SL	BT	ML	SL1	SL2
	Total Chlordane (sum of cis-chlordane, trans-chlordane, cis-nonachlor, trans-nonachlor, oxychlordane)	5103-71-9 5103-74-2 5103-73-1 39765-80-5 27304-13-8	2.8	37	---	---	---
	Dieldrin	60-57-1	1.9	---	1,700	4.9	9.3
	Heptachlor	76-44-8	1.5	---	270	---	---
	Endrin ketone	53494-70-5	---	---	---	8.5	>8.5
	Total PCBs (Aroclors)[8][9]	---	130	38 [10]	3,100	110	2,500
	BULK PETROLEUM HYDROCARBONS (mg/kg)						
	TPH – Diesel	---	---	---	---	340	510
	TPH – Residual	---	---	---	---	3,600	4,400
CASE-BY-CASE COCs [11]	DIOXINS/FURANS						
	Total TEQ (ng/kg dry weight)	---	Puget Sound: see **8.3.2** Grays Harbor: see **8.3.3** Other Waters: see **8.3.4**			See **8.3.4**	

[1] Chemical Abstract Service Registry Number
[2] The Nickel SL1 value is based on the 90th percentile of soil background data from WA state (Ecology, 1994), and was adopted by the DMMP agencies at the 2014 SMARM (DMMP/RSET, 2014b)
[3] TBT and dioxins/furans are not standard COCs for marine projects. They may be required on a case-by-case basis (see Sections **8.3 and 8.4**). All butyltins are required for freshwater projects unless their absence is demonstrated in Tier 1 analysis.
[4] Bulk sediment measurement of TBT is recommended for dredged material and Z-sample evaluations, although porewater TBT remains an option. See Section **8.4.2** for further details.
[5] 1-Methylnaphthalene and 2-Methylnaphthalene are included in the summation of total PAH for freshwater projects. 2-Methylnaphthalene is analyzed for marine projects but is not included in the summation for total LPAHs. 1-Methylnaphthalene is not analyzed for marine projects.
[6] Total PAHs for freshwater projects include the sum of all PAHs listed.
[7] DMMP agencies will use BPJ to determine the need for biological testing for projects in which benzyl alcohol is the only COC present in project sediments (DMMP, 2016a).
[8] Total PCB Aroclors for marine and freshwater projects are calculated differently. See Section **8.2.3** for further details.
[9] PCB evaluation for Columbia River projects that use Oregon disposal sites will need coordination with ODEQ and PSET.
[10] This value is normalized to total organic carbon and is expressed in mg/kg carbon.
[11] Analyses required only when there is sufficient reason-to-believe for presence in a given project or location.
Analytes printed in blue apply ONLY to freshwater.

Appendix B. Bioassay Performance Standards and Evaluation Guidelines

- Marine Bioassays (Table 9-7 from the 2025 DMMP User Manual)
- Freshwater Bioassays (Table 9-9 from the 2025 DMMP User Manual)

Table 9-7. Marine Bioassay Performance Standards and Evaluation Guidelines

Bioassay	For each test to be considered valid, control and reference must meet the following standards:		Test failure assessment guidelines:			
	Negative Control Performance Standard	Reference Sediment Performance Standard	Dispersive Disposal Site Interpretation Guidelines		Non-dispersive Disposal Site Interpretation Guidelines	
			1-hit rule	2-hit rule	1-hit rule	2-hit rule
Amphipod Mortality	$M_C \leq 10\%$	$\lvert M_R - M_C \rvert \leq 20\%$	$\lvert M_T - M_C \rvert > 20\%$ and M_T vs. M_R SD (p=.05) AND			
			$M_T - M_R > 10\%$	NOCN	$M_T - M_R > 30\%$	NOCN
Larval Development	$N_C \div I \geq 0.70$	$N_R \div N_C \geq 0.65$	$N_T \div N_C < 0.80$ and N_T/N_C vs. N_R/N_C SD (p=.10) AND			
			$N_R/N_C - N_T/N_C > 0.15$	NOCN	$N_R/N_C - N_T/N_C > 0.30$	NOCN
Juvenile Infaunal Polychaete growth test (*Neanthes*)	$M_C \leq 10\%$ and $MIG_C \geq 0.38$ mg (dry weight)	$M_R \leq 20\%$ and $MIG_R \div MIG_C \geq 0.80$	$MIG_T \div MIG_C < 0.80$ and MIG_T vs. MIG_R SD (p=.05) AND			
			$MIG_T/MIG_R < 0.70$	NOCN	$MIG_T/MIG_R < 0.50$	$MIG_T/MIG_R < 0.70$

Subscripts:
M = mortality
N = normal larvae
I = initial count
MIG = mean individual growth rate (mg/individual/day); as ash-free dry weight (AFDW), except for the negative control performance standard
SD = statistically significant difference
NOCN = no other conditions necessary
R = reference sediment
C = negative control
T = test sediment

Table 9-9. Freshwater Bioassay Performance Standards and Evaluation Guidelines

Biological Test/ Endpoint [a]	Performance Standard[b]		Screening Level 1 (SL1)	Screening Level 2 (SL2)
	Control[c, d]	Reference		
Hyalella azteca				
10-day mortality	$M_C \leq 15\%$	$M_R \leq 25\%$	$M_T - M_C > 15\%$ and M_T vs M_C SD ($p \leq 0.05$)	$M_T - M_C > 25\%$ and M_T vs M_C SD ($p \leq 0.05$)
28-day mortality	$M_C \leq 20\%$	$M_R \leq 30\%$	$M_T - M_C > 10\%$ and M_T vs M_C SD ($p \leq 0.05$)	$M_T - M_C > 25\%$ and M_T vs M_C SD ($p \leq 0.05$)
28-day growth	$MIG_C \geq 0.35$ mg/ind	$MIG_R \geq 0.15$ mg/ind	$MIG_T / MIG_C < 0.75$ and MIG_T vs MIG_C SD ($p \leq 0.05$)	($MIG_T / MIG_C < 0.60$ and MIG_T vs MIG_C SD ($p \leq 0.05$)
Chironomus dilutus				
10-day mortality	$M_C \leq 20\%$	$M_R \leq 30\%$	$M_T - M_C > 20\%$ and M_T vs M_C SD ($p \leq 0.05$)	$M_T - M_C > 30\%$ and M_T vs M_C SD ($p \leq 0.05$)
10-day growth	$MIG_C \geq 0.60$ mg/ind AFDW	$MIG_R/MIG_C \geq 0.8$ AFDW	$MIG_T / MIG_C < 0.80$ and MIG_T vs MIG_C SD ($p \leq 0.05$) AFDW	$MIG_T / MIG_C < 0.70$ and MIG_T vs MIG_C SD ($p \leq 0.05$) AFDW
20-day mortality	$M_C \leq 20\%$	$M_R \leq 35\%$	$M_T - M_C > 15\%$ and M_T vs M_C SD ($p \leq 0.05$)	$M_T - M_C > 25\%$ and M_T vs M_C SD ($p \leq 0.05$)
20-day growth	$MIG_C \geq 0.60$ mg/ind AFDW	$MIG_R/MIG_C \geq 0.8$ AFDW	$MIG_T / MIG_C < 0.75$ and MIG_T vs MIG_C SD ($p \leq 0.05$) AFDW	$MIG_T / MIG_C < 0.60$ and MIG_T vs MIG_C SD ($p \leq 0.05$) AFDW

Notes:

M = Mortality; C = Control; R = Reference; T = Test; F = Final; MIG = Mean Individual Growth at time final; ind = individual; mg = milligrams; SD = statistically significant difference; AFDW = Ash-Free Dry Weight.

[a] These tests and parameters were developed based on the most updated American Society for Testing and Materials protocols.

[b] Reference performance standards are provided for times when Ecology or DMMP has approved a freshwater reference sediment site(s) and reference results will be substituted for control in comparing test sediments to guidelines

[c] The control mortality performance standard for the 20 day test (≤ 20%) has been updated. The agencies may consider, on a case-by-case basis, a 20-day control has met QA/QC requirements if the mortality is ≤ 32%.

[d] The control growth performance standard for the 20-day test (0.60 mg/individual) is more stringent than for the 10 day test and the agencies may consider, on a case-by-case basis, a 20 day control has met QA/QC requirements if the mean individual growth is at least 0.48 mg/individual.

Appendix C. DY24/25 Marine and Freshwater Guideline Exceedances

- Legend
- Marine DMMU guideline exceedances
- Marine Z-sample guideline exceedances

There were no projects with freshwater guideline exceedances in the DY24/25 Biennium.

APPENDIX C - LEGEND		
S	=	reported concentration exceeds the marine screening level
S^{SL1}	=	reported concentration exceeds the freshwater screening level 1
S^{SL2}	=	reported concentration exceeds the freshwater screening level 2
S^{SMS}	=	reported concentration exceeds the marine sediment management standard
B	=	reported concentration exceeds the bioaccumulation trigger (and SL, if it exists for that COC)
M	=	reported concentration exceeds maximum level
M^{CSL}	=	reported concentration exceeds marine cleanup screening level
BM	=	reported concentration exceeds bioaccumulation trigger and maximum level
U	=	detection limit exceeds either the screening level, bioaccumulation trigger, or maximum level
J	=	estimate
NA	=	not applicable
ND	=	not determined
--	=	not tested
NTR	=	no testing required
NH	=	no hit (bioassay)
2H	=	a hit under the two-hit interpretation guideline (bioassay)
1H	=	a hit under the one-hit interpretation guideline (bioassay)
DMMU Suitability Determination Qualifiers		
PASS	=	test sediment passes DMMP guidelines for open-water unconfined disposal
$PASS^{VWA}$	=	test sediment passes DMMP dioxin guidelines for open-water unconfined disposal based on project volume-weighted average
$PASS^{BPJ}$	=	test sediment passes DMMP guidelines for open-water unconfined disposal based on best professional judgment
$PASS^{BA}$	=	test sediment passes DMMP guidelines for open-water unconfined disposal based on bioaccumulation testing
$FAIL^{B}$	=	test sediment fails DMMP guidelines for open-water unconfined disposal on the basis of bioassay results
$FAIL^{C}$	=	DMMU found unsuitable for open-water disposal on the basis of chemistry data (and the absence of biological testing data)
$FAIL^{D}$	=	DMMU found unsuitable for open-water disposal on the basis of dioxin concentration (and the absence of bioaccumulation testing data)
$FAIL^{M}$	=	DMMU found unsuitable for open-water disposal due to exceedance of MTCA cleanup level
$FAIL^{VWA}$	=	test sediment fails DMMP dioxin guidelines for open-water unconfined disposal based on project volume-weighted average

Appendix C. Marine Guideline Exceedances - DMMUs

PROJECT:	Port of Tacoma - Pierce County Terminal, Blair Waterway		USACE Grays Harbor Navigation Channel				USACE Quillayute Navigation Channel				Day Island Yacht Club				Duwamish Yacht Club								Port of Tacoma, Middle Blair Waterway			Port of Tacoma, TOTE Maritime Terminal
Date of SD:	4/15/2024		1/16/2024				1/22/2024				5/5/2025				8/28/2024								1/13/2025			8/15/2024
DY:	2024		2024				2024				2024		2025		2025								2025			2025
Freshwater/Marine:	Marine		Marine				Marine				Marine				Marine								Marine			Marine
DMMU or Sample ID:	DMMU1	DMMU2	DMMU-NC-05	DMMU-HR-04	DMMU-HR-05	DMMU-AR-01	DMMU-3	DMMU-4	DMMU-5	DMMU-7	DMMU C1	DMMU C2	DMMU C1	DMMU C2	DMMU 1	DMMU 4	DMMU 7	DMMU 9	DMMU 10	DMMU 11	DMMU 12	DMMU 13	DMMU 1	DMMU 2	DMMU 3	DMMU 2
Assessment Rank:	M		Various				Various				M				H								H			M
METALS (mg/kg)																										
Mercury																										
PAHs (ug/kg)																										
Benz(a)anthracene																										
Benzo(a)pyrene																										
Benzo(g,h,i)perylene																										
Chrysene												1,480														
Dibenzo(a,h)anthracene																										
Fluoranthene																										
Indeno(1,2,3-c,d)pyrene																										
Pyrene																										
Total benzofluoranthenes (b,j,k)																										
Total HPAH																										
Naphthalene																										
Acenaphthene										27.5[SMS]																
Fluorene																										
Phenanthrene																										
Anthracene																										
Total LPAH																										
CHLORINATED HYDROCARBONS (ug/kg)																										
Hexachlorobenzene																										
1,2,4-Trichlorobenzene																										
MISCELLANEOUS EXTRACTABLES (ug/kg)																										
2,4-Dimethylphenol																										
4-Methylphenol																										
Benzyl Alcohol																	71.2	66.1								
Benzoic Acid															723 J											
Phenol																										
Dibenzofuran																										
Hexachlorobutadiene																										
N-Nitrosodiphenylamine																										
PHTHALATES (ug/kg)																										
Bis(2-ethylhexyl) phthalate																										
Butyl benzyl phthalate																		82.2								
Dimethyl phthalate																		98.1 J		128	132					
PESTICIDES AND PCBs (ug/kg)																										
Aldrin																										
Total chlordane			2.9 U	3.1 U	3.3 U	3.4 U	3.0 U	3.0 U	2.9 U																	
4,4'-DDT																										
Dieldrin																										
Total PCBs (ug/kg)																										
Total PCBs (ug/kg normalized to organic carbon)																										
OTHER CHEMICALS OF CONCERN																										
Tributyltin (ug/kg bulk)																										
Dioxins/Furans (ng/kg TEQ; u=1/2 DL)	8.88	12.83									5.6	11.6	5		5.18 J	4.52 J	8.47 J	4.06 J	19.3 J	6.46 J	18.7 J	11.5 J	8.49 J	6.30 J	59.5	4.3
BIOASSAYS																										
Amphipod (marine)												NH						NH	NH		2H	1H				
Larval (marine) - standard protocol												NH						1H	1H		1H	1H				
Neanthes Growth Rate (marine) - AFDW endpoint												NH						NH	NH		NH	NH				
Bioassay Result:												PASS						FAIL[B]	FAIL[B]		FAIL[B]	FAIL[B]				
BIOACCUMULATION																										
Bioaccumulation result (P/F)	PASS	PASS											PASS	PASS												
OVERALL DMMU PASS/FAIL:	PASS[BA]	PASS[BA]	PASS[BPJ]	PASS[BPJ]	PASS[BPJ]	PASS[BPJ]	PASS[BPJ]	PASS[BPJ]	PASS[BPJ]	PASS[BPJ]			PASS[BA]	PASS[BA]	PASS[VWA]	PASS[VWA,BPJ]	PASS[VWA]	FAIL[B]	FAIL[B,D]	PASS[VWA]	FAIL[B,D]	FAIL[B,D]	FAIL[C]	FAIL[C]	FAIL[D]	PASS[VWA]
z-sample or underlying DMMU																										
Anti-Degradation PASS/FAIL	PASS[AD]	PASS[AD]	PASS	PASS	PASS	PASS	PASS[AD]	PASS[AD]	PASS[AD]	FAIL			PASS[AD]	PASS[AD]	PASS	PASS	PASS	FAIL	FAIL	PASS	FAIL	FAIL	PASS[AD]	PASS[AD]	PASS[AD]	PASS[AD]
TOTAL SUITABLE PROJECT VOLUME (CY):	27,462		3,200,000				97,990				24,438				28,600								0			15,000

Appendix C. Marine Guideline Exceedances - Z-samples						
PROJECT:	**Port or Tacoma - Pierce County Terminal, Blair Waterway**		**Duwamish Yacht Club**	**Port of Tacoma, Middle Blair Waterway**		**Dagmars Marina**
Date of SD:	4/14/2024		8/24/2025	1/13/2025		3/18/2025
DY:	2024		2025	2025		2025
Freshwater/Marine:	Marine		Marine	Marine		Marine
DMMU or Sample ID:	DMMU 1 z-sample	DMMU 2 z-sample	DMMU 1Z	DMMU 1Z1	DMMU 2 Z1	DMMU 2Z
Assessment Rank:	M		H	H		M
METALS (mg/kg)						
Mercury						
PAHs (ug/kg)						
Acenaphthene						
Anthracene						
Benz(a)anthracene						
Benzo(a)pyrene						
Benzo(g,h,i)perylene						
Chrysene						
Dibenzo(a,h)anthracene						
Fluoranthene						
Fluorene						
Indeno(1,2,3-c,d)pyrene						
Phenanthrene						
Pyrene						
Total benzofluoranthenes (b,j,k)						
Total HPAH						
Total LPAH						
CHLORINATED HDROCARBONS (ug/kg)						
1,2-Dichlorobenzene						
1,2,4-Trichlorobenzene						0.962 U
Hexachlorobenzene						0.481 U
MISCELLANEOUS EXTRACTABLES (ug/kg)						
Benzyl Alcohol						
Benzoic Acid						
Hexachlorobutadiene						
N-Nitrosodiphenylamine						
PESTICIDES AND PCBs (ug/kg)						
Total chlordane						
Total PCBs (ug/kg)						
Total PCBs (ug/kg normalized to organic carbon)						
OTHER CHEMICALS OF CONCERN						
Tributyltin (ug/kg bulk)						
Dioxins/Furans (ng/kg TEQ; u=1/2 DL)	8.95	17.49	4.58 J	10.4 J	11.5 J	
BIOASSAYS						
Amphipod (marine)						
Larval (marine) - standard protocol						
Neanthes Growth Rate (marine) - AFDW endpoint						
Bioassay Result:						
BIOACCUMULATION						
Bioaccumulation result (P/F)	PASS[BA]	PASS[BA]				
Anti-Degradation PASS/FAIL	PASS[AD]	PASS[AD]	PASS[BPJ]	FAIL	FAIL	PASS[BPJ]