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ECOLOGY
State of Washington

Report to the Legislature

Management Review of the Dredged Material Management Program

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Report to the Legislature

**Management Review of the Dredged
Material Management Program**

Shorelands and Environmental Assistance Program
and
Toxics Cleanup Program
Washington State Department of Ecology
Olympia, Washington

and

Aquatics Program
Washington State Department of Natural Resources
Olympia, Washington

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Abbreviations and Acronyms

CSL	Cleanup Screening Level
DMMO	Dredged Material Management Office
DMMP	Dredged Material Management Program
DMMU	Dredged Material Management Unit
DNR	Washington State Department of Natural Resources
Ecology	Washington State Department of Ecology
EPA	Environmental Protection Agency
ESA	Endangered Species Act
JARPA	Joint Aquatic Resources Permit Application
MTCA	Model Toxics Control Act
NOAA	National Oceanic and Atmospheric Administration
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PSDDA	Puget Sound Dredged Disposal Analysis
SAP	Sampling and Analysis Plan
SMARM	Sediment Management Annual Review Meeting
SMS	Sediment Management Standards
TBT	Tributyltin
USACE	U.S. Army Corps of Engineers
USF&W	U.S. Department of Fish and Wildlife
WDFW	Washington Department of Fish and Wildlife

Errata (January 2017)

The following changes provide factual corrections or clarifications to this report:

Page 13, second paragraph: The most current procedures are described in the DMMP User Manual (<http://www.nws.usace.army.mil/Missions/Civil-Works/Dredging/User-Manual/>) published in ~~November 2015~~ August 2016.

Page 18, first paragraph: In 2010, the ~~first~~ bioaccumulative standards were implemented for the open-water disposal sites, ~~specifically~~ for dioxins/furans, which are ubiquitous in the environment.

Page 19, second paragraph: However, the most recent Thurston Pierce County Shoreline Master Program disallowed the disposal site within the Aquatic Preserve.

Page 20, third paragraph: The 2010 dioxin/furan guidelines were ~~the first guidelines for bioaccumulative chemicals intended developed~~ to protect human health and wildlife. These ~~new~~ revised guidelines have increased testing costs and uncertainties in the evaluation process, and certain areas (Olympia, Everett, Kenmore) have experienced failures due to historical releases of dioxins by industry.

Page 25, ninth bullet: Allowing contaminated surface sediments after dredging to be managed through ~~capping~~ applying a thin layer of clean material or natural recovery, rather than through additional dredging or cleanup.

Page 27, second paragraph: The ~~introduction~~ revision of guidelines protective of bioaccumulative risks to humans, wildlife, and fish is likely to have significant impacts to the regulated community and the manner in which dredged material is managed. The dioxin guidelines that were introduced in 2010 provide an early warning that updated guidelines for additional bioaccumulative chemicals may be much lower, and this concern has given rise to the current management-level review.

Page 28, fifth paragraph: ~~The majority of the review of each individual's work occurs at DMMP meetings by the other DMMP team members.~~

Page 30, third bullet: However, it appears higher-level management involvement in significant policy issues has lessened over the years.

Page 31, third bullet: Convening technical workgroups to address emerging scientific issues needed to successfully develop and implement new guidelines, such as PAH guidelines protective of fish, bioaccumulative guidelines for common contaminants such as PCBs and carcinogenic PAHs, updating standardizing standardized bioaccumulation testing procedures, updating protective fish tissue levels, identifying reference fish tissue concentrations, and others as may be identified.

Page 33, list item eight: Develop options for ensuring that the DMMP is sustainable into the future, including new program needs such as enhanced bioaccumulation monitoring.

Page 34, second paragraph: The survey questions are provided in Attachment 1 to Appendix A.

Page 46, fourth paragraph: The persons and organizations participating in the interviews and the date and time of each interview are listed in Attachment A 1 to Appendix B.

Executive Summary

Legislative Proviso

In 2016, the Washington State Legislature directed the Department of Ecology (Ecology), in coordination with the Department of Natural Resources (DNR), to conduct a management review of the Dredged Material Management Program (DMMP) policies and procedures. The complete proviso is included in Chapter 1.

This report presents the results of the management review, which focused specifically on:

- The extent to which current operations, policies, and decisions of the DMMP provide for dredging actions necessary to maintain navigation and commerce.
- Determining what regulatory flexibility exists to allow open-water disposal of dredged material in a manner that will protect human health and the environment.
- An evaluation of the DMMP's process to ensure that existing regulatory flexibility is appropriately used and appropriate management and oversight is incorporated.

Management Review

To meet the directives in the proviso, agency management engaged in the following process:

- Presented the proviso to the public, tribes, and dredging community and invited comment.
- Conducted interviews of staff from ports, federal and state agencies, industry and marina operators, and other dredging applicants.
- Reviewed the DMMP history and activities and evaluated six project-specific case studies.
- Developed an online survey available to various stakeholders and conducted follow-up interviews.

Key Conclusions

The following themes and conclusions emerged from this management review:

- *Capacity and Environmental Protection.* Approximately 92% of dredged material evaluated for open-water disposal has been approved by the DMMP, disposal site capacity is adequate for the next 40 years, and monitoring of the disposal sites has found that current conditions are environmentally protective.

- *Decision Process.* Project applicants described DMMP as responsive, technically adept, and providing a critical service to navigation and commerce. Concerns were expressed that the evaluation process has become more complex and conservative over time.
- *Clarity.* DMMP staff are often involved in permitting and cleanup processes as well as evaluating dredged material for open-water disposal. Additional clarity around roles and the origin of permitting or disposal requirements was requested.
- *Flexibility.* DMMP staff exercise their experience and judgment to provide significant flexibility in the project review and dredged material disposal process. Project applicants and agency staff have additional ideas for flexibility that require more in-depth program evaluation.
- *Risk Management.* Managing the risks from bioaccumulative chemicals at open-water disposal sites may result in less dredged material being found suitable for open-water disposal in the future and may require identification of alternative disposal options or increase the costs of disposing of dredged materials.
- *Dialogue.* Given changes in the regulatory environment, collaborative and creative policy and technical discussions among state and federal agency management, staff, and stakeholders are needed to evaluate ideas for maximizing use of the open-water disposal sites while remaining protective of the environment.

Recommendations

Based on the findings of this management review, Ecology and DNR have the following recommendations.

Address Substantive Regulatory and Policy Issues

- Direct program resources toward examining areas of flexibility in existing regulations in a cross-program, interagency manner.

Improve the DMMP Decision Process

- Clarify staff roles and be more explicit about the relationship between DMMP project review and permitting activities during project reviews, to ensure that the regulatory basis and origin of project or permit requirements are clearly identified.
- Update the DMMP User Manual (User Manual) so that it accurately reflects the current process that an applicant will experience and explains the various roles that agency staff may have.
- Develop a process for elevating an individual project decision for combined management-level review by the four DMMP agencies, including a review threshold, a review process, and a timely response timeframe.
- Revise the Sediment Management Annual Review Meeting (SMARM) format and/or add other opportunities for stakeholder discussion of new program developments or directions.

Program Management

- Develop alternatives for ensuring that the DMMP is sustainable into the future, including new program needs such as bioaccumulation monitoring.
- Hold quarterly meetings between agency management and the DMMP to evaluate progress on implementing the changes recommended in this report.

Chapter 1: Introduction

What is the purpose of this report?

In 2016, the Washington State Legislature passed a proviso directing the Washington State Departments of Ecology (Ecology) and Natural Resources (DNR) to conduct a management review of the Dredged Material Management Program (DMMP). This report presents the results of the review, whose purpose was to:

“...recommend and, as appropriate, implement actions designed to ensure that the program is functioning to facilitate the disposal of dredged material at open water disposal sites using methods that are protective of human health and in compliance with applicable federal and state environmental laws, regulations, and permit requirements.”

The proviso directed the agencies to report findings and recommendations to the Legislature by November 1, 2016, addressing the following three topics:

Proviso Topic 1: The extent to which current operations, policies, and decisions of the dredged material management program provide for dredging actions necessary to maintain navigation and commerce;

Proviso Topic 2: Determining what regulatory flexibility exists to allow open water disposal of dredged materials in a manner that will protect human health and the environment; and

Proviso Topic 3: An evaluation of the dredged material management program's decision-making process and policies to ensure that existing regulatory flexibility is appropriately used and that appropriate management and oversight is incorporated.

The proviso, HB 2376 Section 302(12), is presented below:

“Within the appropriations provided in this section, the director of the department of ecology, working with the commissioner of public lands, will conduct a management review of the joint federal/state dredged material management program and recommend and, as appropriate, implement actions designed to ensure that the program is functioning to facilitate the disposal of dredged material at open water disposal sites using methods that are protective of human health and the environment. The director and commissioner will report findings and proposed actions to the relevant committees of the legislature no later than November 1, 2016. The director and commissioner will consider input and perspectives from agencies that issue permits for open water disposal of dredged material in Puget Sound, including the department of natural resources, the department of ecology, the United States

environmental protection agency, and the United States army corps of engineers. This review will include, but is not limited to: (1) the extent to which current operations, policies, and decisions of the dredged material management program provide for dredging actions necessary to maintain navigation and commerce; (2) determining what regulatory flexibility exists to allow open water disposal of dredged materials designed to protect human health and the environment; and (3) an evaluation of the dredged material management program's decision-making process and policies to ensure that regulatory flexibility is appropriately used and management oversight occurs.”

How is this report organized?

This report is organized into seven chapters:

- Chapter 1 – Introduction. Describes the purpose of this report and the legislative proviso.
- Chapter 2 – Management Review. Summarizes the process that Ecology and DNR conducted to evaluate the DMMP.
- Chapter 3 – Overview of the Dredged Material Management Program. Describes the purpose and history of the DMMP and its role in and process for implementing federal and state regulations applicable to dredging and disposal of dredged material.
- Chapter 4 – Providing for Dredging Necessary to Maintain Navigation and Commerce. Summarizes information on past dredging and disposal activities and evaluates whether DMMP will be able to continue to support dredging needed for navigation and commerce.
- Chapter 5 – Balancing Regulatory Flexibility and Consistency. Describes programmatic and project-by-project flexibility currently employed by the DMMP, constraints on utilizing that flexibility, and options identified by DMMP and stakeholders for increased regulatory flexibility.
- Chapter 6 – Accountability and Management Oversight. Describes current DMMP management and oversight procedures, identifies areas where additional management oversight may be needed, and summarizes options identified by DMMP and stakeholders for improving management oversight where needed.
- Chapter 7 – Conclusions and Recommendations. Summarizes the key conclusions of this review and recommendations.

Chapter 2: Management Review Process

This chapter summarizes the process that Ecology and DNR conducted to meet the proviso directives, including:

- Conducting a presentation to the public at the Sediment Management Annual Review Meeting (SMARM) to introduce the legislative proviso, invite comment on the review, and identify issues for the review.
- Engaging in specific outreach to federal agencies, tribes, ports, and other dredging applicants.
- Conducting a review of the DMMP history and activities.
- Developing an online survey which was made available to various stakeholders.
- Conducting follow-up interviews with dredging applicants and DMMP agencies.
- Reviewing six case studies, which included evaluating steps taken during DMMP project evaluation and preparation of the Suitability Determinations.

What public, tribal, and federal agency outreach was conducted?

At the 2016 SMARM, Ecology and DNR presented a summary of the legislative proviso and the steps that would be taken to perform a management review of the DMMP. The presentation is available at:

http://www.nws.usace.army.mil/Portals/27/docs/civilworks/dredging/SMARM%202016/02-SMARM%20Proviso%20Presentation%20-%205_2_16.pdf. Following this presentation, Ecology and DNR issued an open invitation to provide comments either at SMARM or by email regarding the review process and the DMMP. Several individuals provided verbal comments at the SMARM and one individual provided comments via email after the SMARM.

DNR and Ecology sent a letter to 18 tribes associated with the Puget Sound basin and river drainages, informing them of the proviso and management review and requesting their input. Tribes were invited to participate in the online survey and contacted to determine whether they wanted to be interviewed. DNR and Ecology held an informational meeting for the tribes on September 13, 2016, at the Seattle District U.S. Army Corps of Engineers (USACE).

DNR and Ecology also sent letters to the DMMP federal agencies—Environmental Protection Agency (EPA) and the Seattle District USACE—providing information on the DMMP Management Review and points of contact.

What information was used in the review of the DMMP?

DMMP staff prepared a history of the origin and evolution of the DMMP and presented it at SMARM 2016 to provide information to the public. The presentation is available on the DMMP website at:

<http://www.nws.usace.army.mil/Portals/27/docs/civilworks/dredging/SMARM%202016/01-FINAL-Origin%20and%20Evolution%20of%20DMMP-May%203%202016.pdf>.

Additional information on the DMMP website was reviewed, including:

- Records of disposal site activity reported in DMMP biennial reports.
- Endangered Species Act (ESA) consultation information provided to support permitting of the open-water disposal sites. This information can be found at <http://www.nws.usace.army.mil/Missions/Civil-Works/Dredging/Reports/>.
- Forecasted dredging needs identified in the late 1980s and updated dredging forecasts prepared by DMMP. This information was supplemented by information from DMMP agency staff and managers upon request.

How were the public and regulated community surveyed?

Ecology and DNR conducted an online survey between June 29 and July 25, 2016. The survey was designed as an initial approach to soliciting feedback from stakeholders to better understand which approaches were working well and identify potential areas for improvement. The survey had 25 questions and was divided into three parts:

- Background information.
- DMMP communication process.
- Current and future practices.

The survey was sent to 200 individuals, including attendees of the 2016 SMARM, applicants and consultants who had received Suitability Determinations in the last ten years, tribes in Puget Sound, and environmental groups in Puget Sound. Of these 200 recipients, 63 responded to the survey, resulting in a response rate of 31.5%.

The majority of survey respondents were consultants who had received Suitability Determinations, making up 54% of survey respondents, followed by Ports at 14% and laboratories at 10% (Figure 1).

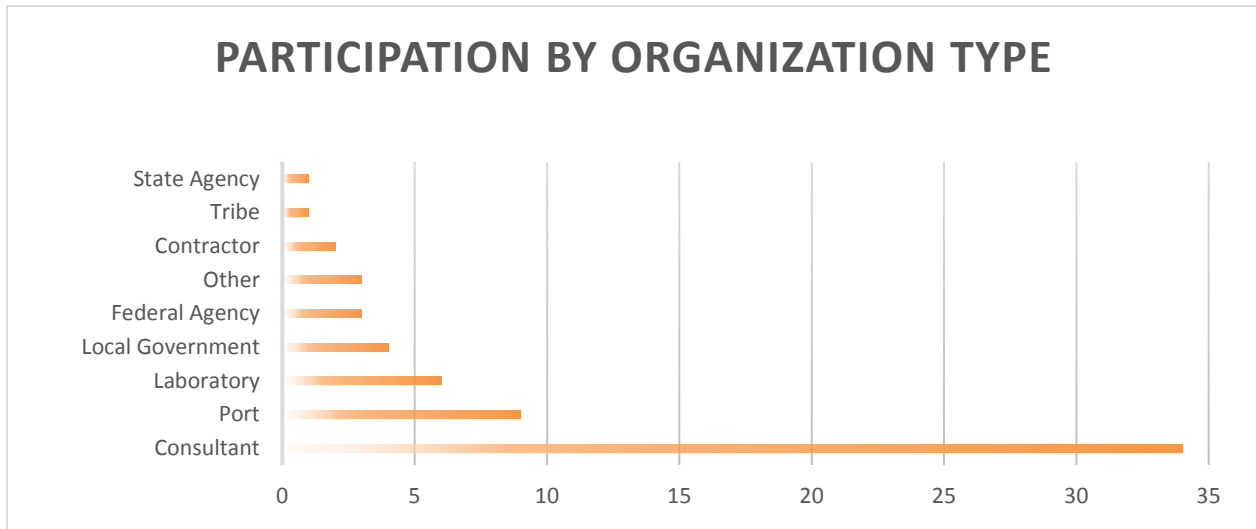


Figure 1. Participation in the online survey

Additional participants included local governments, federal agencies, contractors, tribes, state agencies, and private landowners or businesses. Almost all participants identified themselves as having worked with DMMP, many on a frequent basis.

How were the follow-up interviews conducted?

Ecology and DNR conducted follow-up interviews to obtain more detailed responses, information, and ideas on the Legislative proviso topics. Stakeholders invited to participate in the discussions were selected from users of the DMMP (Ports, USACE Navigation Branch, industry, and marinas) who had been project applicants within the last 10 years. In addition, Ecology and DNR invited all members of the DMMP to be interviewed individually. The USACE DMMP staff chose to be interviewed as a group. Ecology and DNR invited several environmental groups and tribes with Usual and Accustomed Fishing Areas or otherwise active in the project case study areas to be interviewed.

Of the invitees, all DMMP staff, USACE Navigation Branch, two Ports, one industrial applicant, and one family-owned marina participated in the interviews, providing a representative cross-section of DMMP agencies and project applicants. All interviews were held between August 19 and 26, 2016. Each interview was one to two hours long and included an introduction followed by a discussion of the questions and, in some cases, the projects selected as case studies.

The interview questions were organized around the three topics of the legislative proviso, exploring:

- The extent to which current operations, policies, and decisions of the DMMP provide for dredging actions necessary to maintain navigation and commerce.

- What regulatory flexibility exists to allow open-water disposal of dredged materials in a manner that will protect human health and the environment.
- An evaluation of the DMMP's decision-making process and policies to ensure that existing regulatory flexibility is appropriately used and that appropriate management and oversight is incorporated.

How were the case study reviews conducted?

Six project case study reviews were conducted of Suitability Determinations and related documents prepared by the DMMP agencies between 2007 and 2016. The six projects were examined to determine how DMMP project evaluations and Suitability Determinations were performed in comparison to the procedures outlined in the User Manual. The dredging projects were selected to provide a good cross-section of DMMP project applicants in Puget Sound, ranging from near Olympia to Bellingham and widely varying in size and complexity. Project proponents associated with the case studies included ports, King County, private industry, and a small marina operator.

After reviewing the case study documents, additional information was obtained from DMMP staff during a follow-up discussion to clarify how the project evaluation steps were performed for these case studies. The Suitability Determinations are maintained by the Dredged Material Management Office (DMMO) at the USACE and are available at <http://www.nws.usace.army.mil/Missions/Civil-Works/Dredging/Suitability-Determinations/>.

How is this information integrated into this report?

All of the information gathered through these various approaches has been integrated into and summarized as follows:

- Chapters 4, 5, and 6 each address one of the three proviso topics.
- Chapter 7 provides overall conclusions based on the information gained, along with recommendations.
- Appendix A includes the online survey questions and detailed results.
- Appendix B includes methods, questions, and detailed responses to the follow-up interviews.
- Appendix C includes methods, summaries, and findings of the case study reviews.

Chapter 3: Overview of the Dredged Material Management Program

This chapter describes the DMMP's role in implementing federal and state requirements for dredging and disposal of dredged material at established open-water disposal sites and the process used to evaluate dredged material.

What is the Dredged Material Management Program (DMMP)?

The DMMP is a multi-agency partnership that evaluates and manages the disposal of dredged material at open-water disposal sites in Washington State. The program is designed to facilitate commerce and navigation through review and permitting of dredging projects and the disposal of dredged materials while ensuring the environmental integrity of the disposal sites and protection of aquatic resources. The DMMP process integrates and streamlines the evaluation processes of several state and federal agencies, and is designed as a consensus process, with input from all four member agencies.

Two federal and two state agencies, all with roles in the oversight of dredging and disposal, cooperate to streamline dredged material evaluation and regulation. The Seattle District of the USACE acts as the lead agency. Cooperating agencies are Region 10 of the EPA, Ecology, and DNR. The DMMO at Seattle District USACE coordinates the project review process of the four agencies. Each cooperating agency has assigned staff that make up the interagency DMMP review team.

Federal navigation channels, port terminals, and small boat harbors in Puget Sound must be periodically dredged to support the region's economy. Washington's economy is very dependent on national and international trade. The Ports of Puget Sound comprise the second largest harbor in the USA for container traffic.

Maintaining a viable option for open-water disposal is also important because this option is far less expensive than transporting and disposing of dredged materials at landfills. Open-water disposal is intended for dredged material that is relatively clean, with no more than minor effects on sediment-dwelling organisms. More contaminated dredged material must be removed from rivers and harbors and confined in landfills or similar disposal sites.

Why was the DMMP established?

Prior to 1988, federal, state, and local agencies used a case-by-case approach to make decisions on dredging and disposal at open-water sites. This approach led to inconsistencies that undermined public confidence in agency efforts to safely manage dredged material in Puget Sound. Those concerns were heightened by several studies that identified toxic contaminants at the disposal sites in the mid-1980s. In 1984, the Four Mile Rock and Port Gardner disposal sites near Seattle and Everett were closed, in part due to public controversy surrounding the protection of aquatic resources.

The Puget Sound Dredged Disposal Analysis (PSDDA)—now known as the DMMP—was launched to provide sound decisions for regulation of unconfined, open-water dredged material disposal. This interagency study was completed in 1989 and established eight open-water disposal sites and the current framework for evaluation and management of unconfined, open-water disposal of dredged material. This framework includes three primary components:

- Guidelines for siting and approving unconfined open-water disposal site.
- Guidelines for evaluating whether dredged material is clean enough to be disposed of at an approved unconfined, open-water disposal site.
- Guidelines for managing disposal sites.

The PSDDA program addressed dredging and disposal issues in Puget Sound. In 1995, the agencies developed a similar strategy for the coastal estuaries of Grays Harbor and Willapa Bay. In 1998, an interagency strategy was also developed and implemented for the lower Columbia River. With the expansion of interagency efforts beyond Puget Sound, the agencies changed the program name to DMMP.

What is the process for conducting dredging and disposal projects?

Several state and federal agencies are involved in reviewing and permitting dredging and disposal projects. The review process can be divided into three main phases:

- *Dredged material evaluation.* The DMMP agencies work with the dredging proponent (e.g., a port) to provide information to support the agencies' determination on whether dredged material can be disposed of at an open-water disposal site (Figure 2 on the next page). This usually involves sampling and analysis of the dredged material and comparison to disposal guidelines. Biological testing may also be conducted.

The DMMO within the USACE coordinates this work with the other DMMP agencies. The DMMP reviews the sediment characterization report and other available information to determine whether the proposed dredged material is suitable for open-water disposal. The DMMO documents the evaluation process and conclusions in a Suitability Determination that is signed by representatives of all four agencies. This Suitability Determination is required to obtain state and federal permits.

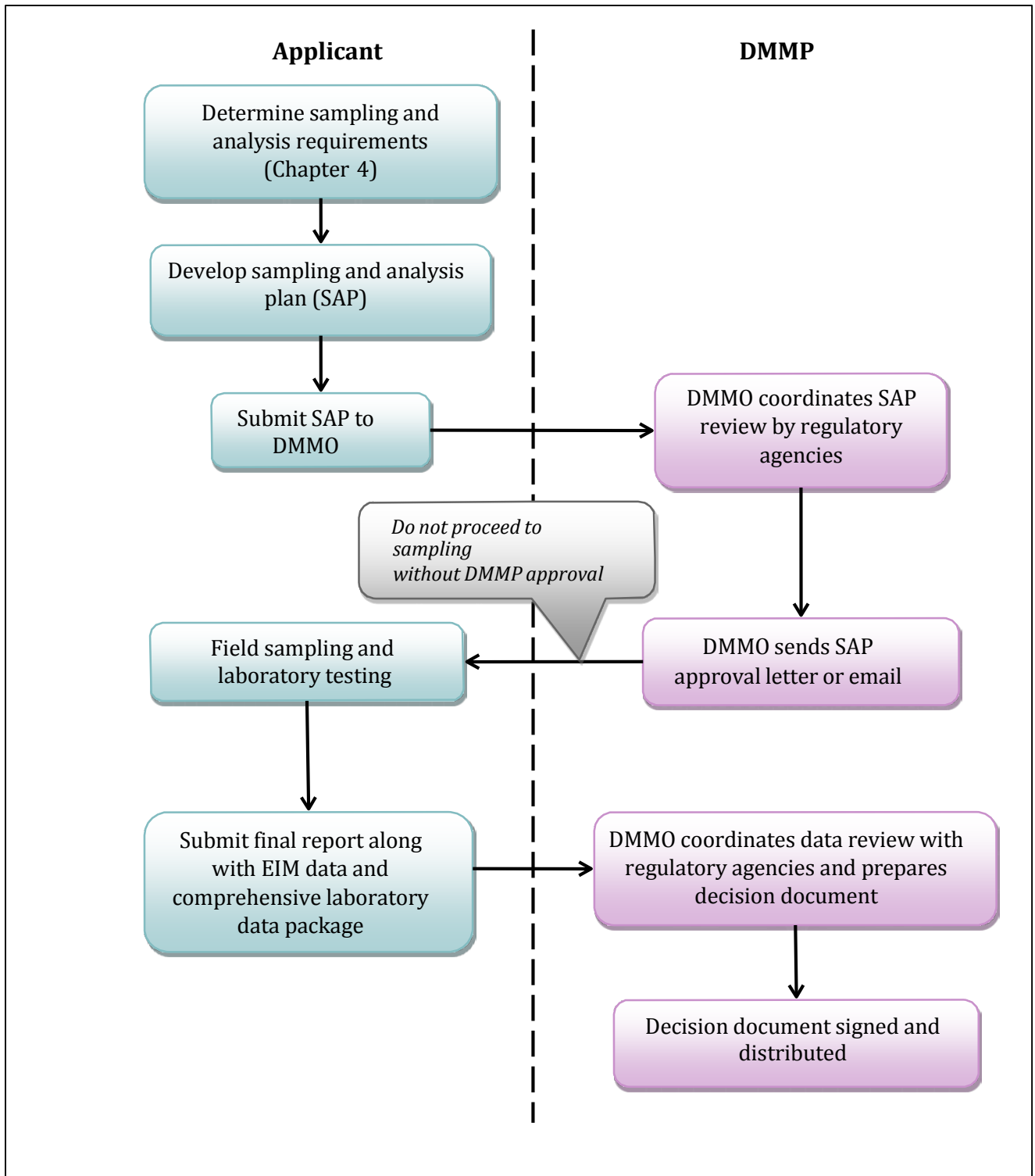


Figure 2. Process for evaluation of dredged material for open-water disposal.

- *Permitting.* The regulatory permitting process begins when the dredging proponent submits a complete permit application (Joint Aquatic Resource Permit Application) to the USACE Regulatory Branch and other appropriate agencies. This process involves:
 - Tribal and public notice and comment.
 - Endangered Species Act consultation with the U.S. Fish and Wildlife Service (USF&W) and the National Marine Fisheries Service.
 - Local approvals.
 - A Section 401 Water Quality Certification and a Coastal Zone Management Act Federal Consistency determination by Ecology.
 - A Hydraulic Project Approval by the Washington Department of Fish and Wildlife (WDFW).
 - A Section 404/Section 10 permit by the USACE Regulatory Branch.
- *Dredging and Disposal.* Once the permits are issued, the project proponent works with the agencies to complete the approved dredging and disposal project as follows:
 - The project proponent works with DNR to obtain a Site Use Authorization for disposal of dredged material at the open-water disposal site,
 - The project proponent prepares and submits a dredging and disposal plan for approval by the USACE Regulatory Branch and Ecology.
 - The project proponent and the agencies hold a pre-dredging conference.
 - Then the project proponent conducts the approved dredging and disposal activities.

How does the DMMP determine whether dredged material is suitable for open-water disposal?

The DMMP has established guidelines for dredged material that will be disposed of at unconfined, open-water disposal sites. These guidelines provide a comprehensive set of procedures for sampling, testing, and evaluation of dredged material.

The original evaluation procedures and the rationale for the procedures were published in June 1988. Since then, the DMMP agencies have frequently updated the original guidelines based on new scientific information. The most current procedures are described in the DMMP User Manual (<http://www.nws.usace.army.mil/Missions/Civil-Works/Dredging/User-Manual/>) published in August 2016. The main questions that the DMMP evaluates are:

1. Is the proposed dredged material suitable for open-water disposal?
2. Will the post-dredge surface meet Washington State anti-degradation standards when the project is finished? In other words, will the sediment surface left behind after dredging be more contaminated than the sediment surface that existed prior to dredging? This question is often the only applicable question if the dredged material will be disposed of at a landfill.

To answer these questions, the DMMP uses a tiered approach to characterization of dredged material:

- Tier 1: Site evaluation and history – review of historical and ongoing sources of contamination, land use, and any previously collected data.
- Tier 2: Chemical testing.
- Tier 3: Biological testing – bioassay and/or bioaccumulation testing.
- Tier 4: Special studies – further testing designed to address a specific issue or concern.

The User Manual explains which tiers are required for each type of site and provides details on how each type of test is conducted and interpreted. Tier 3 and 4 studies are often optional on the part of the applicant and override the results of lower tiers.

Where are the approved open-water disposal sites and how are they managed?

The Aquatic Lands Act (Chapter 79.105 RCW) authorizes DNR to allow aquatic lands to be used for disposal of dredged material. DNR has developed open-water regulations (Chapter 332-30 WAC) and worked with the other DMMP agencies to establish 13 open-water disposal sites for dredged material in Washington, eight of which are located in Puget Sound (Figure 3 on next page).

DNR collects a disposal site user fee, intended to cover oversight and management costs, that is deposited into the DMMP account. The fee also pays for required environmental monitoring at the disposal sites in Puget Sound, including post-disposal physical, chemical and biological monitoring. However, due to a decrease in dredged disposal projects over the last few years, the fund balance of the DMMP account has dropped to a level where it does not cover both the cost of oversight and management by DNR and the monitoring costs. Oversight and management costs are currently being funded by the DNR Resource Management Cost Account, used to fund management of all state-owned aquatic lands.

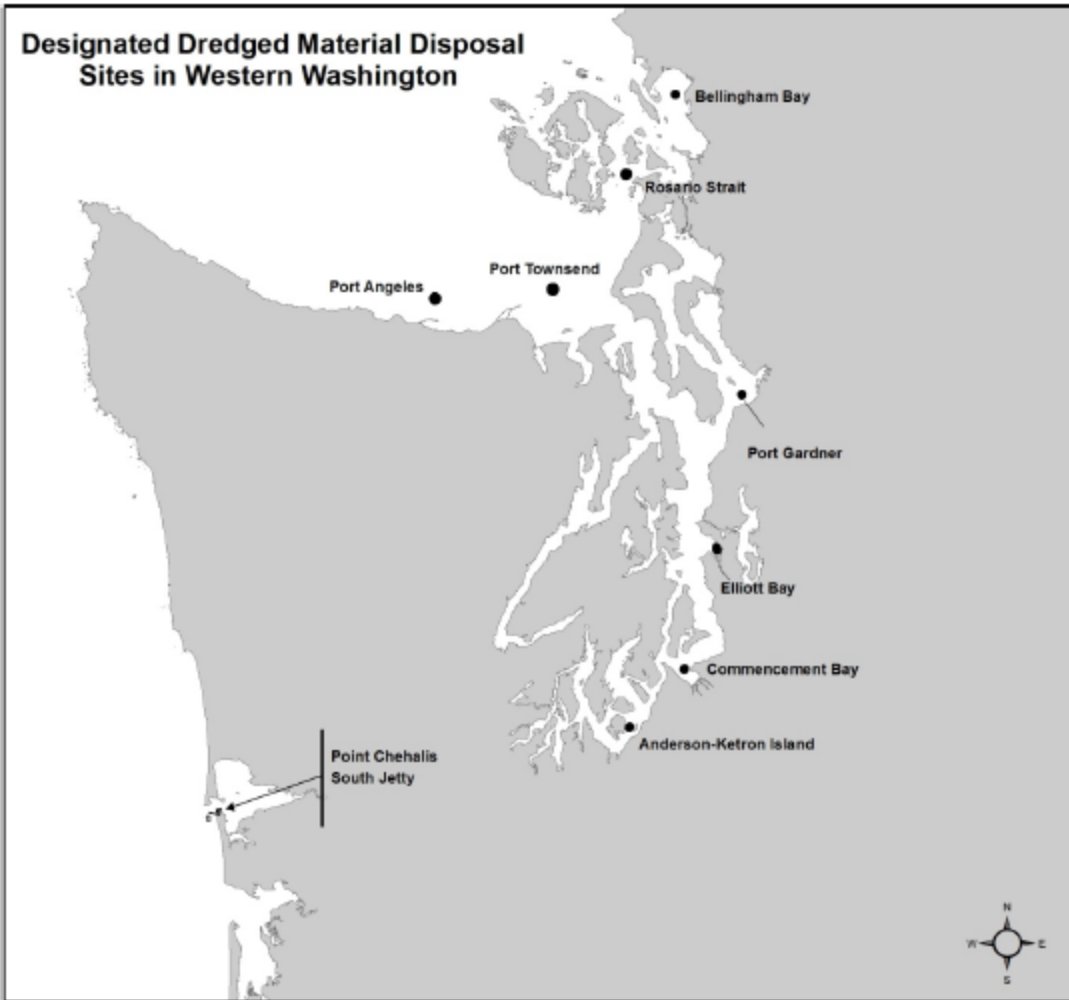


Figure 3. Open-water dredged material disposal sites in the Puget Sound area (from 2015 DMMP).

How can I find more information about the DMMP?

Additional information about the DMMP is available at the DMMP website maintained by the USACE DMMO: <http://www.nws.usace.army.mil/Missions/Civil-Works/Dredging/>. The website provides the most recent version of the User Manual, information on the open-water disposal sites and disposal activity, a comprehensive list of program changes over time, electronic copies of Suitability Determinations and other decision documents, and information on the Sediment Management Annual Review Meeting (SMARM) held each year in May and other opportunities for public comment.

Chapter 4: Providing for Dredging Needed to Support Navigation and Commerce

This chapter addresses proviso topic number 1, an evaluation of whether current DMMP operations, policies, and decisions provide for dredging actions necessary to maintain navigation and commerce, and includes:

- Options for dredged material disposal.
- An evaluation of whether the DMMP has successfully provided for dredging needed to support navigation and commerce in the past.
- An evaluation of whether the DMMP will be able to continue to provide for dredging needed to support navigation and commerce in the future.

What options do dredging proponents have for disposing of dredged material?

Dredging proponents have two main options for disposing of relatively clean dredged material:

- *Open-water disposal sites.* Relatively clean material may be disposed of at one of the 13 approved in-water unconfined disposal sites in Washington.
- *Beneficial use projects.* Clean material may also be used to support habitat restoration, shoreline protection, beach nourishment, or other beneficial use projects.

Dredging proponents also have two main options for disposing of more contaminated material that is not suitable for open-water disposal:

- *Landfills.* Dredged material may be transported to approved solid waste landfills, usually by train.
- *Fill projects.* Material may be transported and used for fill at construction projects.

The DMMP agencies have not developed a comprehensive program for disposal of more contaminated dredged material. In the 1990s, Ecology led an interagency effort to site and develop in-water, confined, multi-user disposal sites for contaminated sediments, which are unlike the open-water disposal sites because they are fully contained, preventing exposure of aquatic life to the contaminated sediments. That effort was discontinued in the late 1990s as new alternatives became available in the form of multimodal large-capacity eastside landfills. There were also significant challenges related to siting, permitting, and managing in-water, confined, multi-user disposal facilities. The percentage of unsuitable material has remained relatively low since that time (approximately 10%).

How has the DMMP supported navigation and commerce while being environmentally protective?

Between 1988 and 2016, DMMP agencies evaluated over 42.6 million cubic yards of dredged material for open-water disposal in Puget Sound. This total amount is similar to forecasted dredging needs prepared in the late 1980s. Of this material, 91.7% was determined by DMMP to be acceptable for open-water disposal (Table 1). Acceptance rates have also been similar to or greater than the acceptance rates forecasted in the late 1980s. To date, the DMMP has successfully supported navigation and commerce through open-water disposal of more than 90% of the dredged material evaluated. More than 25 years of monitoring at the disposal sites has confirmed that the guidelines and evaluation process used by the program have been environmentally protective.

Table 1: Percentage of dredged material found suitable for open-water disposal

Location	Volume (cy) Evaluated (1988-2016)	Volume (cy) Found Acceptable	Percent Acceptable	PSDDA Forecast
Commencement Bay	15,667,117	14,781,001	94.3%	80%
Elliott Bay	5,448,000	4,311,102	79.1%	32%
Port Gardner	14,985,974	13,833,586	92.3%	95%
Anderson/Ketron Island	1,724,799	1,576,109	91.4%	59%
Bellingham Bay	738,553	621,800	84.2%	74%
Rosario Strait	3,684,045	3,630,297	98.5%	100%
Port Angeles	19,200	19,200	100%	100%
Port Townsend	398,950	361,550	90.6%	100%
Puget Sound TOTAL	42,666,638	39,134,645	91.7%	

Responses to the surveys and interviews indicate that the regulated community believes the DMMP has provided a critical service to navigation and commerce. Until relatively recently, the program has generally met applicants' dredging needs for all but the most contaminated areas, and has been considered an accessible, collaborative, and transparent process. However, survey responses and interview results both indicated that the regulated community believes that a number of projects have been abandoned, delayed, or used other disposal alternatives due to increasingly protective disposal guidelines and uncertainties, costs, and delays involved with added testing. These respondents believe that this backlog of projects will continue to grow, particularly if more protective guidelines for additional contaminants are developed, due to lack of funding for alternative disposal methods.

How have proposed dredging volumes and/or acceptance rates changed since 2010?

In 2010, the bioaccumulative standards were implemented for the open-water disposal sites for dioxins/furans, which are ubiquitous in the environment. Because bioaccumulation-based standards are more conservative than past standards, trends before and after 2010 were evaluated. Between 1989 and 2010, there were large fluctuations in the annual volume of material proposed for open-water disposal, although the average annual volumes were generally similar to the forecasted amounts.

Because of these large annual fluctuations in proposed volumes, it is difficult to definitively discern whether the volume of dredged material for open-water disposal has declined since implementation of the 2010 dioxin guidelines (Figure 4). While volumes appear lower after 2010, there have been many previous years in which volumes were similarly low. However, the regulated community states they have reduced applications for open-water disposal of their dredged material due to uncertainty about the evaluation process and outcome.

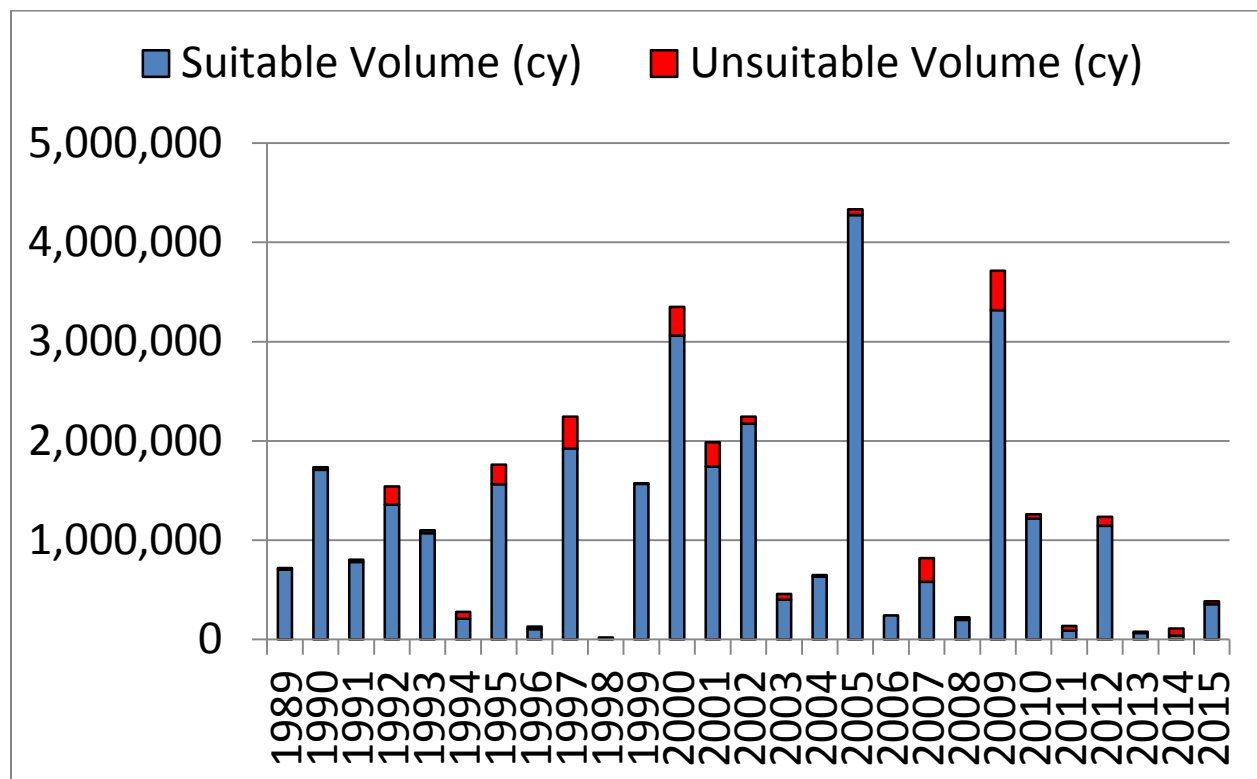


Figure 4. Volumes of dredged material tested and suitability (1989-2015).

Is current open-water disposal site capacity sufficient to support future dredged material disposal?

The DMMP has evaluated past disposal records and estimates that the five primary open-water disposal sites have enough capacity to continue accepting dredged material for over 40 years (Table 2), assuming the average annual volume of dredged material remains similar to past volumes. Therefore, site capacity is not anticipated to be a concern, assuming all of the sites remain available for disposal.

Table 2: Puget Sound non-dispersive sites: cumulative disposal volumes vs. site capacity

Disposal Site	Years Open	Cumulative Volume (cy)	Average Annual Volume (cy/yr)	Site Capacity (cy)	% Capacity Used	Time to Reach Site Capacity (Years)
Commencement Bay	1989-2015	8,216,022	304,297	23,000,000	35.7	49
Elliott Bay	1989-2015	3,030,788	112,251	9,000,000	33.7	53
Port Gardner	1989-2015	3,337,198	123,600	9,000,000	37.1	46
Bellingham Bay	1990-2015	78,883	3,034	9,000,000	0.9	>100
Anderson/Ketron	1990-2015	157,215	6,047	9,000,000	1.7	>100

However, the Bellingham Bay disposal site is closed, due to Tribal concerns and Port of Bellingham’s agreement to discontinue use of the site. The Anderson/Ketron site is located within the recently designated Nisqually Reach Aquatic Preserve. The DMMP agencies conducted several studies to demonstrate that the disposal site would not impact the preserve or local fisheries. However, the most recent Pierce County Shoreline Master Program disallowed the disposal site within the Aquatic Preserve. The proposed Shoreline Master Program is currently under review at Ecology.

Even if these sites both remain unavailable, there is sufficient capacity to meet dredging needs, although haul distances may be longer and transportation more expensive. The DMMP agencies, particularly DNR, expend considerable effort to obtain and maintain the shoreline permits for these sites. As part of obtaining the shoreline permit, ESA consultation is required, which has led to some restrictions on site use and more protective guidelines. There are varying levels of public, tribal, and local government concern related to the disposal sites, and permits must be renewed frequently. DMMP is protective of the disposal sites, in part to minimize concerns during the permitting process and ensure that the sites remain open for use.

Will the DMMP be able to continue to provide for dredging needed to maintain navigation and commerce in an environmentally protective manner?

Past disposal guidelines have been designed primarily to protect sediment-dwelling organisms. These guidelines have been perceived as relatively reasonable, allowing the majority of needed dredging and disposal to occur. Navigation and maintenance dredging proponents (including the USACE, Ports, and private businesses) throughout the state have come to rely on this inexpensive disposal alternative to meet their dredging needs.

There is substantial concern among the regulated community that new disposal guidelines for bioaccumulative chemicals may be so low that most dredged material from urban areas will fail the suitability evaluation. The DMMP agencies acknowledge that changes in the regulations they implement as part of the DMMP and permitting process are likely to result in more protective guidelines to protect human health, wildlife, and fish (including endangered species).

The 2010 dioxin/furan guidelines were developed to protect human health and wildlife. These revised guidelines have increased testing costs and uncertainties in the evaluation process, and certain areas (Olympia, Everett, Kenmore) have experienced failures due to historical releases of dioxins by industry. In the next few years, the DMMP agencies will need to evaluate and develop guidelines for additional bioaccumulative chemicals and chemicals that harm fish. It is anticipated that polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) will be among these, both of which are ubiquitous in urban waterways. Depending on how low these guidelines are set, there is concern among project applicants that many or most urban sediments may fail the evaluation and be considered unsuitable for disposal at the open-water disposal sites.

There has been debate both among the DMMP agencies and with the regulated community over how these newer guidelines should be established and implemented. The DMMP agencies must ensure that the numeric guidelines are established in compliance with state and federal laws so that the disposal sites remain permitted and available. The regulated community seeks flexibility in both technical and policy arenas to ensure that as much dredged material as possible can continue to be disposed of at the open-water disposal sites, while still remaining environmentally protective. This flexibility is considered essential to ensure that Ports and other dredgers can continue to provide shipping lanes and berths and support community businesses, fisheries, and recreational amenities.

The DMMP is not currently designed to provide disposal alternatives for contaminated sediments that fail open-water disposal guidelines. Therefore, the DMMP alone may not be able to provide for all needed navigation and commerce, particularly in contaminated urban areas. During the 1990s, the DMMP agencies did consider developing and maintaining confined disposal sites for contaminated material, but this effort was discontinued due to multiple implementation challenges and better alternatives becoming available for the relatively small amount of dredged material that failed at the time. If open-water disposal guidelines become more restrictive, even with whatever flexibility is possible, such options could again be evaluated.

Chapter 5: Balancing Regulatory Flexibility and Consistency

This chapter addresses proviso topic number 2, an evaluation of what regulatory flexibility exists to allow open-water disposal of dredged materials in a manner that protects human health and the environment, including:

- Summarizing comments and options identified through the surveys and interviews regarding increasing regulatory flexibility.
- Describing the flexibility that is used in the current DMMP process.
- Describing the constraints on regulatory flexibility imposed by current laws and regulations.

What comments were received about the DMMP's current use of regulatory flexibility?

A common theme expressed by project applicants was that the DMMP appears to be getting more conservative over time. Despite the day-to-day project flexibility described below, there is concern that *big-picture* flexibility or creative solutions to the current regulatory environment are not being considered and incorporated into program guidelines. Project applicants acknowledge that regulations are becoming more protective, but believe there is more flexibility in the current User Manual and applicable regulations than is being used.

DMMP staff indicated that applicants may not be aware of the entirety of regulatory authorities that apply to dredging projects that the DMMP must balance and integrate. Some regulations that apply to dredging projects, such as Clean Water Act authorities, are generally more conservative and protective than cleanup regulations. Many of the concepts proposed by applicants for greater flexibility derive from stakeholder discussions and guidance development for the state Sediment Management Standards cleanup program. It is not clear how many of these can be implemented under a Clean Water Act framework. A more intensive effort analyzing specific proposals from a legal, regulatory, and practical standpoint is needed.

What specific suggestions have been made for increasing regulatory flexibility?

Importance of navigation

Project applicants would like DMMP to be able to consider the importance of navigation and commerce to business operations, jobs, services to the community, and tax revenues on both a programmatic and project level. They question when and how this gets balanced with the degree of environmental risk during the decision process. They would like an opportunity for greater flexibility when the stakes are very high for a particular project and there are no feasible disposal alternatives in the region.

Managing risks

More discussion of risk assessment vs. risk management has been suggested. This is a key feature of cleanup programs that appears to project applicants to be missing in the dredging program, particularly related to bioaccumulative chemicals. In developing solutions, economic impacts, business and Port impacts, and community needs are requested to be considered along with risk assessment information. For example, in the Sediment Management Standards for sediment cleanup, it is considered reasonable to allow natural recovery to occur over ten years. This concept is not currently applied at disposal sites because they are not cleanup sites and were not intended to accept contaminated sediments that required risk management. Hence, the applicability and appropriateness of accepting contaminated sediments that require applying concepts such as a ten-year recovery period would require deeper policy-level examination.

Technical studies

A re-evaluation of the scientific concepts underlying bioaccumulative criteria was proposed, to ensure that they are appropriate to receptors and exposures present at the deep-water disposal sites. Field studies could also be conducted to determine how much bioaccumulation is actually occurring at the disposal sites. A comparative risk framework to evaluating risk reduction was suggested (i.e., “does the project create a net environmental benefit?”).

Shoreline permits

Several interviewees were interested in streamlining the shoreline permitting process for the disposal sites and giving the state greater control of the outcome, given the state-wide significance of the disposal sites to navigation, commerce, fisheries, and international trade.

Adaptive management

Many respondents mentioned sequencing (i.e., placing more contaminated material underneath cleaner material) as one way to obtain greater flexibility and complete needed projects. Concerns include risks to disposal site permitting if anything goes wrong, logistical and permitting issues related to ensuring that sufficient clean cover material is available in a timely manner, and the engineering practicability of ensuring cover in deep water. Increased monitoring would be needed to demonstrate protectiveness, which dumping fees are not currently sufficient to cover, as well as contingencies if problems were identified.

Concentration averaging

Consideration of various volume-weighted and surface area-weighted averaging techniques was suggested. Surface area-weighted averaging was suggested to evaluate the protectiveness of the disposal site following a dredging event that incorporates sequencing. In general, applicants felt that site management should be less focused on meeting specific criteria in the dredged material, and more on continuing to meet appropriately protective conditions at the disposal site.

Integrating concepts from existing regulations

Both agency staff and project proponents are interested in using the Sediment Management Standards concept of sediment regional background concentrations as guidelines where available, or making reasonable assumptions where it has not yet been calculated based on disposal site monitoring.

What regulatory flexibility is currently used and why is it needed?

When making Suitability Determinations to determine if dredged material is suitable for open-water disposal, the DMMP works to strike a balance between consistent evaluation procedures and flexibility to address project-specific needs. This is critical to timely decision-making for dredging, as these projects generally have external constraints and timelines that do not always allow for filling all data gaps or obtaining complete information. This is done by implementing regulations and applying provisions in the User Manual, including:

- *Reason to believe.* This tool is used both on a program-wide and project-specific basis when program knowledge and experience is brought to bear in making decisions. For example, “reason to believe” tools are embodied in the User Manual guidance on the four tiers of evaluation and the frequency and types of data that need to be collected. “Reason to believe” may also be used in a project-specific context when there is no existing data for a specific project area but there is enough program experience with the type of project or surrounding area to make a decision on whether certain types of data or project conditions will be needed.
- *Best professional judgment.* This is used for issues unique to specific projects, generally based on the knowledge and experience of the program staff or other experts they consult. For example, *best professional judgment* may be used to accept data that technically does not meet quality assurance guidelines but is still considered by DMMP staff to be acceptable for decision making. At times, use of best professional judgment may follow a pattern over multiple projects, and these instances often are ultimately translated into program guidance. Any significant use of reason to believe or best professional judgment is generally documented in the Suitability Determination for a project.
- *Adaptive management.* The DMMP has embodied the use of adaptive management. Since its inception in 1988, both small and large changes to the program have been incorporated through SMARM. Issue papers are written up and posted in advance and presented at SMARM. The public has an opportunity to comment (both verbally and in writing), and DMMP staff may adopt or delay the proposed changes depending on the comments received. Changes may be adopted immediately or discussion may occur over several years before new approaches are finalized. Pilot studies have been used over the years when there was not enough data to make a decision, although less so in recent years due to limited funding. Economic and project impacts are evaluated as part of adopting major program changes.

The approaches described above apply flexibility in ways that have had varying effects—for example, becoming more conservative, less conservative, more scientifically defensible, more in line with regulatory updates, making better use of available data, and/or responding to concerns expressed by the public, tribes, or regulated community.

As noted in Chapter 4, the current concern expressed by project applicants is that regulations and associated DMMP guidelines are becoming more conservative, to the point where many projects may not be viable. In this context, *regulatory flexibility* differs somewhat from the above in that it mainly addresses whether existing regulations provide areas of flexibility not currently being used that could allow greater continued use of the open-water disposal sites.

When and why does DMMP use best professional judgment on a project-by-project basis?

DMMP may use best professional judgment on a project for a variety of reasons, including:

- When a project is unusual or complex in ways not anticipated by the User Manual.
- When unexpected results or conditions are encountered at the project site.
- When data are limited or exceed quality control limits.
- When recent program data indicate that an interpretive guideline likely should be changed, but hasn't yet.
- When a testing protocol or interpretative guideline is still under development or discussion.
- To save the applicant time or money or to meet specific project needs, when protectiveness would not be affected or compromised.
- When regulations or permit requirements have changed in ways not yet reflected in the User Manual, but are nevertheless required to be implemented.
- When the public, tribes, or other agencies express concerns that could be addressed through sampling and evaluation to avoid delays during the subsequent permitting process.
- When dredging projects are conducted within state or federal cleanup sites, the DMMP has agreements with these agencies to consult with the cleanup program to avoid cross-program issues.

How does DMMP currently exercise flexibility when evaluating dredging projects?

Much of the flexibility currently exercised by DMMP is applied during development of the sampling and analysis plan and review and discussions with the applicant. Project applicants appreciated these pre-dredge meetings and considered them very helpful in planning the project.

This flexibility is frequently incorporated into the User Manual once enough experience has been gained with a specific issue.

Specific areas in which flexibility has been applied include:

- Design of dredged material management units and sampling locations, in particular developing cost-effective designs.
- Tiering and tests that allow overrides of chemical criteria.

- Working effectively and responsively through quality assurance or testing issues with laboratories and consultants.
- Allowing volume-weighted averaging, some sequencing, and case-by-case evaluations for dioxins (and likely other bioaccumulative chemicals in the future).
- Allowing larger composites (fewer individual samples) for bioaccumulation testing.
- Allowing minor exceedances of chemical or biological criteria.
- Evaluating potential non-chemical effects on bioassays.
- Exemptions from debris management requirements on a reason-to-believe basis.
- Allowing older sediment testing data to be used rather than requiring retesting.
- Using best professional judgment in considering whether the surface left behind after dredging needs to be evaluated.
- Allowing contaminated surface sediments after dredging to be managed through applying a thin layer of clean material or natural recovery, rather than through additional dredging or cleanup.
- Conducting special studies to address concerns of resource agencies and tribes.

What constraints do current laws and regulations impose on the DMMP's regulatory flexibility?

The DMMP is subject to considerations raised by the shoreline permitting process that allows programmatic use of the open-water disposal sites. The shoreline permitting process includes federal ESA consultation, public comment, and local government review, among other aspects. If the federal and state resource agencies, tribes, public, and local agencies that are part of that process disagree with how the sites are being used or feel the program is not protective enough, shoreline permits can be jeopardized, which in turn may result in non-renewal and unavailability of the open-water disposal sites.

These considerations come into play when DMMP evaluates a new proposal for flexibility, or disposal of material that is more contaminated than the guidelines. Approval for use of the disposal sites depends on following the existing guidelines and permitting process. Changes to that process or what is considered acceptable for disposal may require additional consultation and permitting.

DMMP staff have a responsibility to carry out the requirements of laws and regulations such as the Clean Water Act and the Sediment Management Standards. As new science has provided more information on risks and impacts, these regulations have evolved to ensure that they remain protective. However, the DMMP has some degree of flexibility in applying these laws to the dredging program and interpreting them on a case-by-case basis. The interface between the

Sediment Management Standards and the dredging program needs further analysis among agency policy staff and attorneys to better define these constraints or areas of flexibility. There is increased scrutiny and requirements in other parts of the permitting process that have affected the DMMP, in both real and perceived ways. The DMMP process is an integral part of the overall permitting process, and there is overlap between the two processes that affects dredged material sampling and evaluation, as well as requirements to coordinate with federal and state cleanup programs where applicable. For example, because ESA consultations are now a more frequent part of the permitting process, ESA agencies have become involved in the DMMP process. DMMP staff perceive the benefits of this coordination to be minimizing later challenges during the permitting process or conflicts with cleanup activities. Project applicants may view this as DMMP staff overstepping their individual authorities and blurring the lines between DMMP review and permitting.

Chapter 6: Accountability and Management Oversight

This chapter addresses proviso topic number 3, an evaluation of whether appropriate management and oversight of the DMMP are applied to ensure that existing regulatory flexibility is appropriately used, including:

- Identifying suggestions for improving current management oversight.
- Identifying suggestions for improving agency accountability.
- Describing current DMMP management and oversight processes.

What options have been suggested for improving management oversight of project decisions?

Most participants agreed that additional management oversight of individual projects is not needed in most cases. There was general agreement that the appropriate time for management input is when major policy or technical changes are being made to the program. Based on the input received, this may be such a time. The revision of guidelines protective of bioaccumulative risks to humans, wildlife, and fish is likely to have significant impacts to the regulated community and the manner in which dredged material is managed. The dioxin guidelines that were introduced in 2010 provide an early warning that updated guidelines for additional bioaccumulative chemicals may be much lower, and this concern has given rise to the current management-level review.

A few individuals, both within the DMMP and project applicants, suggested some form of project decision appeals process. To be consistent with the interagency consensus nature of the DMMP, a management-level review of a project decision would also likely need to involve management at all four agencies in a consensus process. Alternatively, the project could be elevated to the Regional Sediment Evaluation Team at the Northwestern Division of the USACE for independent review.

What options have been suggested for improving agency accountability for project decisions and overall program implementation?

The DMMP was described as an accessible and transparent regulatory program. Survey and interview respondents particularly appreciated SMARM and the DMMO website as means of obtaining information and providing feedback.

The main area where respondents requested additional accountability was in clearly identifying roles and regulatory authorities, whether for project conditions or new program requirements. DMMP staff may at times raise permitting or cleanup issues during the DMMP process. They

generally see this as helpful and coordinative, providing a service to the applicant in an advisory capacity. However, some applicants have begun to feel that DMMP staff are exceeding their authorities during the DMMP process or that it is not clear from whom permit or testing requirements are originating.

Many of the project applicants requested greater clarity on the regulatory origin or justification for special studies, permit conditions, and DMMP changes, as well as assurance that individuals are representing their own agencies rather than other agencies or their personal views. Applicants particularly questioned EPA's role in terms of understanding EPA's regulatory authority, which they believe to be fairly limited for dredging permits. If a constraint or requirement comes from another agency not at the table (such as resource agencies), applicants requested that this be made clear and that these agencies be available to discuss their concerns.

In conducting the project case study reviews, it became clear that the User Manual as currently written may not fully represent the complexity of this process, and may lead applicants to expect that DMMP review is separate from and occurs prior to the permitting process. It may be helpful to update the introduction to the User Manual to reflect the interactions between DMMP, permitting, and cleanup programs that actually occur during DMMP review, and also to provide more clarity during the review process on external requirements.

What is the current DMMP management structure?

The DMMO at the Seattle District USACE coordinates the DMMP activities of the four member agencies. The DMMO is part of the Civil Works Program at the USACE and currently has four staff. At the other agencies, one member of DMMP is in the DNR Aquatics Program, one is in the Ecology Shorelands and Environmental Assistance Program, and two are in the EPA Environmental Review and Sediment Management Unit.

Each of these individuals reports to their section and program managers, and ultimately to their agency directors. However, no agency acts alone, as the DMMP uses a consensus-based decision-making framework in accordance with an interagency Memorandum of Agreement describing the scope and process of the DMMP.

In addition, the DMMP is one of three dredging offices that are part of the Regional Sediment Evaluation Team for Oregon, Washington, and Idaho, housed at the Northwestern Division of the USACE in Portland, Oregon. The Northwestern Division coordinates the dredging offices at Seattle District, Portland District, and Walla Walla District and provides oversight and consistency among the programs.

What is the current level of management oversight?

In general, the DMMP operates fairly autonomously. Each individual is expected to bring their agency's perspective to the table and ensure that project decisions are consistent with both DMMP guidelines and their agency's regulations. DMMP staff notify their managers if there is a project that may be controversial or if they need to seek guidance in a policy or regulatory area. However, project decisions are not individually reviewed by managers. Neither DMMP staff nor project applicants believed that this was necessary or desirable on a routine basis, as it might impact the timely nature of the decisions. Higher level review of a project decision is available to an applicant, but a process for bringing an individual project decision before management of all four DMMP agencies is not clearly identified in the User Manual.

Program managers participate in SMARM and are kept apprised of important policy and technical changes. When a particularly significant change in the program is occurring (such as development of the dioxin guidelines), a multi-level process is held with involvement of staff, program managers, and agency directors participating along with stakeholders.

How is the DMMP currently held accountable for project decisions and program directions?

The DMMP is held accountable by the regulated community, the public, tribal governments, and other agencies through a variety of mechanisms. The SMARM has been and continues to be an annual public forum where the agencies report on projects, disposal activities, and changes to the program. All presentations and comments on proposals are recorded and program decisions are documented and posted on the DMMP website. The regulated community and members of the public are invited to present issues for DMMP consideration and program improvements. A formal comment period is provided for each change to the program, and DMMP reviews and responds to these comments before making a decision.

Project decisions and concerns can also be expressed to program managers and directors through more traditional agency procedures, such as contacting managers, requesting meetings, or documenting concerns in writing. Tribes may request government-to-government consultation with state or federal agencies over concerns they may have. The public is given a variety of opportunities to comment, through SMARM, on individual projects during the permitting process, and when shoreline permits are renewed for the open-water disposal sites. Elected officials at the state and federal level may also play a role in oversight and accountability when significant issues arise.

Chapter 7: Summary and Recommendations

Summary

The following themes and conclusions emerged from this management review:

- The DMMP has generally been successful over the past 28 years in providing for navigation and commerce and protecting the environment through stewardship and management of the open-water disposal sites for dredged material. It is a unique interagency program that has historically enjoyed strong support from the regulated community and its member agencies. However, DMMP's ability to balance and achieve its competing missions currently and in the future is becoming more uncertain due to a changing regulatory environment.
- Over time, additional regulatory requirements have increased the constraints that DMMP is working within as well as the variety of permit requirements that applicants face. Currently, the DMMP member agencies and other permitting agencies are once again undergoing a period of significant regulatory change, associated with managing bioaccumulative contaminants. This carries uncertainty and high stakes for project applicants, as well as the ability to maintain and provide the disposal sites. This change has arisen from more protective regulations designed to protect human health, wildlife, and fish by federal and state cleanup, water quality, and natural resources programs.
- The current level of day-to-day management oversight of the DMMP project evaluations is considered appropriate. However, it appears higher-level management involvement in significant policy issues has lessened over the years. A clear process for elevating a specific project decision for a combined management level review by the four DMMP agencies is not defined in the User Manual.
- The DMMP agencies recognize their responsibility to operate the open-water disposal sites and review project proposals in compliance with updated regulatory requirements. In response, DMMP staff are working on guidelines for bioaccumulative chemicals and protection of fish. However, DMMP staff and project applicants currently encounter and must work through these issues on a project-by-project basis in the absence of a programmatic resolution. This is a policy level challenge for the DMMP that cannot be solved at a technical, project-by-project level. There are few program resources available to carry out these complex tasks, much less engage in an inclusive stakeholder and management-level process to evaluate alternatives and their impacts on the regulated community. Funding for environmental studies and monitoring will also likely be needed to support science-based, defensible approaches.
- There was general agreement among agencies and applicants that more protective dredging and disposal guidelines may cause a substantially larger percentage of dredged material to fail open-water disposal guidelines, particularly in urban areas. Limited areas are already experiencing inability to dispose of dredged material at open-water disposal sites due to dioxin/furan guidelines introduced in 2010.

- There are concerns about potential economic impacts if the ability to maintain Port facilities and navigation channels is significantly hindered by increased difficulty in meeting guidelines for open-water disposal and if cost-effective alternatives for dredged material disposal are not identified. Project applicants have ideas on areas of additional flexibility and potential solutions to add to the discussion and would like to be involved in charting the future course of the DMMP.

Ecology and DNR considered the following ideas provided by the participants during the review as part of developing their recommendations:

- Clarifying the laws and regulations that currently impact the DMMP process and drive development of additional disposal guidelines. Additionally, clarifying the relationship between the DMMP process, cleanup activities, and permitting activities, and how these come into play during project review. The interface between the updated Sediment Management Standards (SMS) and DMMP was identified as particularly unclear to agency staff and applicants alike. A clear definition of Site Condition II as it applies to bioaccumulative chemicals would be helpful.
- Convening technical workgroups to address emerging scientific issues needed to successfully develop and implement new guidelines, such as PAH guidelines protective of fish, bioaccumulative guidelines for common contaminants such as PCBs and carcinogenic PAHs, updating standardized bioaccumulation testing procedures, updating protective fish tissue levels, identifying reference fish tissue concentrations, and others as may be identified.
- Evaluating whether disposal sites could be managed differently to allow sequencing or other approaches that would result in a protective site condition while allowing more flexibility in the material that is disposed. Specific guidelines for when sequencing would be considered would be useful.
- Considering the degree to which risk management could be used in project decisions to take into account navigational needs, business and Port impacts, economic factors such as loss of jobs or revenue, etc., while remaining environmentally protective.
- Evaluating whether the approaches above are likely to sufficiently provide for navigation and commerce needs in the region. If not, considering additional confined disposal or other contaminated sediment management options.

In conclusion, the DMMP has stood the test of time for 28 years, but is reaching a juncture at which it may be necessary to thoroughly evaluate approaches and alternatives for protecting human health, wildlife, and fisheries from bioaccumulative contaminants while furthering navigation and commerce to the greatest extent possible. The stakes are high, both for the environment and navigation and commerce. The current incremental approach to incorporating these guidelines on a case-by-case basis is not ideal and may have unintended and undesirable consequences.

Recommendations

Based on the findings of this management review, Ecology and DNR have the following recommendations. These recommendations, if implemented, put DMMP on a path to address the critical path items identified through this review and outreach to stakeholders.

In the short-term, to address the larger regulatory and technical concerns expressed by both project applicants and agencies:

1. Convene the DMMP state and federal agencies to plan and carry out an inclusive management and stakeholder process to address emerging regulatory issues, particularly with respect to bioaccumulative chemicals. The process would be similar to those previously held by the DMMP to address substantial issues, such as multi-user disposal sites and dioxin guidelines.
2. Direct program resources toward examining areas of flexibility in existing regulations from a cross-program, interagency standpoint to assist in identifying feasible alternatives and regulatory constraints.

In the short-term, to make improvements in process and clarity:

3. Be more explicit about the interface between DMMP project review and permitting activities and requirements during project reviews, and ensure that the regulatory basis and origin of project or permit requirements are clearly identified.
4. Update the User Manual to reflect the current process that an applicant will experience and explain the various roles that agency staff may have, particularly with respect to the relationship between the DMMP and permitting process.
5. Define a process in the User Manual that an applicant can use to elevate an individual project decision before the management of all four DMMP agencies. The process would include a threshold for elevating an issue, a process for resolving the issue, and a timeframe in which an applicant can expect a timely response.
6. Revise the SMARM format and/or add other opportunities for stakeholder discussion of new program developments or directions. The upcoming SMARM in May 2017 could be used as an opportunity to hold a day-long workshop on these issues.
7. Consider more frequent e-mail notification of program or permitting changes that could affect applicants for those who may not regularly attend SMARM or visit the website.

In the long-term, to address cross-agency program needs and ensure progress toward the above recommendations:

8. Evaluate the current budget, staffing, and workload of DMMP staff, as well as future program needs such as monitoring, technical and policy development, and studies, that may not be met by current funding. Develop options for ensuring that the DMMP is sustainable into the future, including new program needs such as enhanced bioaccumulation monitoring.
9. Hold quarterly meetings between agency management and the DMMP to evaluate progress on implementing changes recommended in this report.

Appendix A—DMMP Proviso Survey Results

Dredged Material Management Program Proviso Survey

This survey was designed as an initial step in responding to the DMMP Legislative Proviso, to solicit feedback from stakeholders who have participated in the DMMP process. The goal of the survey was to better understand which approaches are working well and identify potential areas for improvement.

The DMMP proviso survey had 25 questions and was divided into three parts: Background Information, DMMP Communication Process, and Current and Future Practices. The survey questions are provided in Attachment 1. The survey opened on June 29, 2016 and closed on July 25, 2016. The survey was sent to 200 individuals, including Sediment Management Annual Review Meeting (SMARM) attendees, applicants or consultants who received Suitability Determinations, tribes in Puget Sound, and environmental groups in Puget Sound. Of these 200 recipients, 63 responded to the survey, resulting in a response rate of 31.5%.

Background Information

This introductory segment of the survey asked respondents to identify the type of organization they were affiliated with, as well as their level of involvement with DMMP in the past. The majority of survey respondents were consultants who had received Suitability Determinations, making up 54% of survey respondents, followed by Ports at 14% and laboratories at 10%. Additional participants included local government, federal agencies, contractors, tribes, state agencies, and *other*. Participants in the *other* category identified themselves as private property and marina owners, as well as a business that depends on maintenance dredging for their facilities. There were no participants from environmental groups.

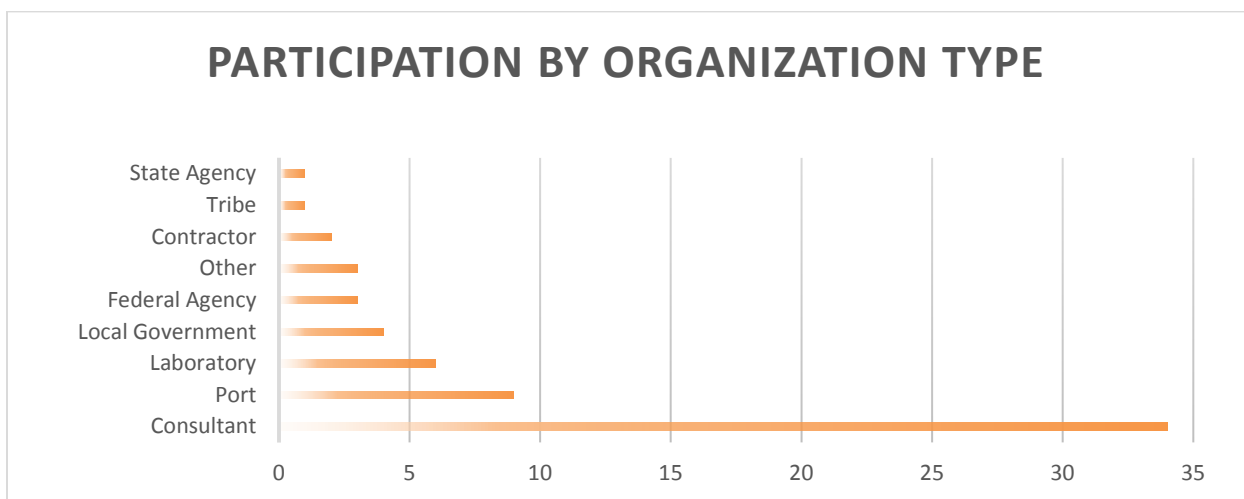


Figure A-1. Survey participation by organization type

Almost all participants identified themselves as having worked with DMMP in the past, only four indicating that they had not. Of those who had worked with DMMP, 39% had done so three to five times in the last five years, 32% one to two times, 14% six to ten times, and 15% of respondents were very familiar with DMMP, having worked with DMMP ten or more times.

DMMP Communication Process

This purpose of this portion of the survey was to evaluate existing DMMP communication processes and seek opportunities for improvement.

Generally, survey respondents indicated that the current DMMP process of providing information and soliciting feedback through the SMARM meetings, website, and email is adequate. Of the 50 respondents who answered this question, 48% agreed with this statement and 16% strongly agreed; 28% neither agreed nor disagreed, and 8% disagreed.

Respondents generally appreciated the SMARM process for soliciting feedback and providing updates on policy. When asked how the DMMP communication process could be improved, themes emerged around a need for more frequent email and in-person meetings to stay up to date on changes to criteria and guidance, as well as more opportunities for frequent DMMP users to engage in a meaningful way in the DMMP.

The following specific suggestions were provided to improve DMMP's current communication processes:

- Change the format of SMARM to provide more opportunity to discuss, comment, and provide input on technical and management issues. A respondent also suggested that DMMP be more explicit on whether updates and proposals will be required and provide dates for comment and implementation. Respondents were interested in increased participation from higher level management.
- Meetings for Tribal representatives.
- More frequent or focused outreach to frequent users of DMMP to foster a common understanding of the issues that clients, consultants, and contractors face and to discuss upcoming technical and policy issues.
- In part because not all applicants are able to consistently attend SMARM, use other forms of communication, such as sending regular or targeted announcements via email if guidelines are updated or a significant change in the process has occurred between SMARMS and/or annual mailings to ports, marinas, and local governments summarizing changes to dredge disposal criteria, guidance, and directives.

Web Communication

The US Army Corps of Engineers DMMO hosts an interagency DMMP website. Of the 50 individuals who responded to questions about the website, 84% had used it in the last year, 10% were unaware of the website, and 6% had not used the website in the last year. Most found the website to be an effective way for DMPP to share information. The User Manual was the most frequently used resource on the website, and was considered very useful by the greatest

percentage of respondents. Disposal site information was used less frequently, but by the most respondents, and was considered to be a useful resource. Generally, most of the information available on the DMMP website was used either frequently or sometimes by those who use the web as a resource, and was perceived as either very useful or useful by users.

The few suggestions provided for improving the website included ensuring that the *Useful Links* section leads to actively maintained websites, and making a redline/strikeout version of the User Manual available on the web to assist in evaluating updates. One respondent noted that communication through the website was relied on to a much greater extent than other approaches (e.g., e-mail).

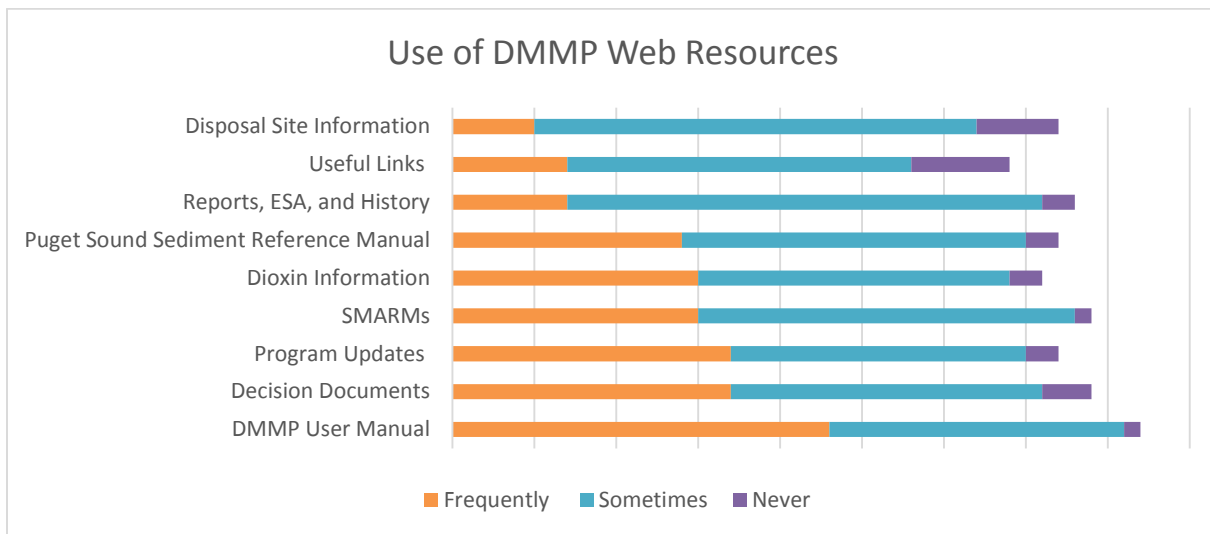


Figure A-2. Use of DMMP web resources

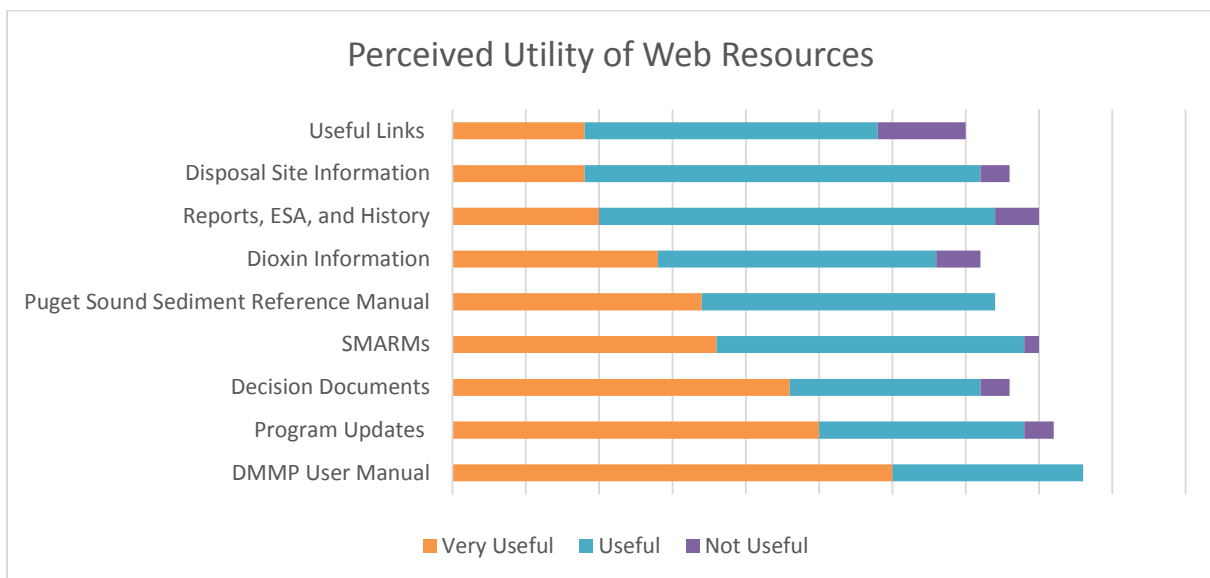


Figure A-3. Perceived utility of web resources

SMARM

Seventy percent of respondents either strongly agreed or agreed that the annual SMARM is an effective means of communication. Suggestions for improving SMARM included the following:

- Quarterly workshops for pre-SMARM public discussions.
- Allocating additional time for discussion, comment and input from attendees on technical issues and spending less time on general updates that could be posted online or in a status report.
- Using SMARM as a technical workshop to get attendees up to speed on useful tools such as technical trends, regulatory issues, and policy changes.
- Providing a forum for and seeking feedback on concerns of the regulated community, including policies such as how the DMMP is applied to projects outside of dredging and open-water disposal, and whether the current practices of the DMMP adequately support navigation and commerce.

Email Communication

A lesser percentage, 43%, of respondents either strongly agreed or agreed that email was an effective means of communication for DMMP. Suggestions for improving email communication included the following:

- More frequent updates on ongoing and upcoming issues (e.g., monthly).
- General increase in information sharing through email, unrelated to SMARM.

Current and Future Practices

Survey respondents were asked to respond to questions about DMMP's current practices related to the management of open-water disposal sites, the Suitability Determination process, and potential challenges.

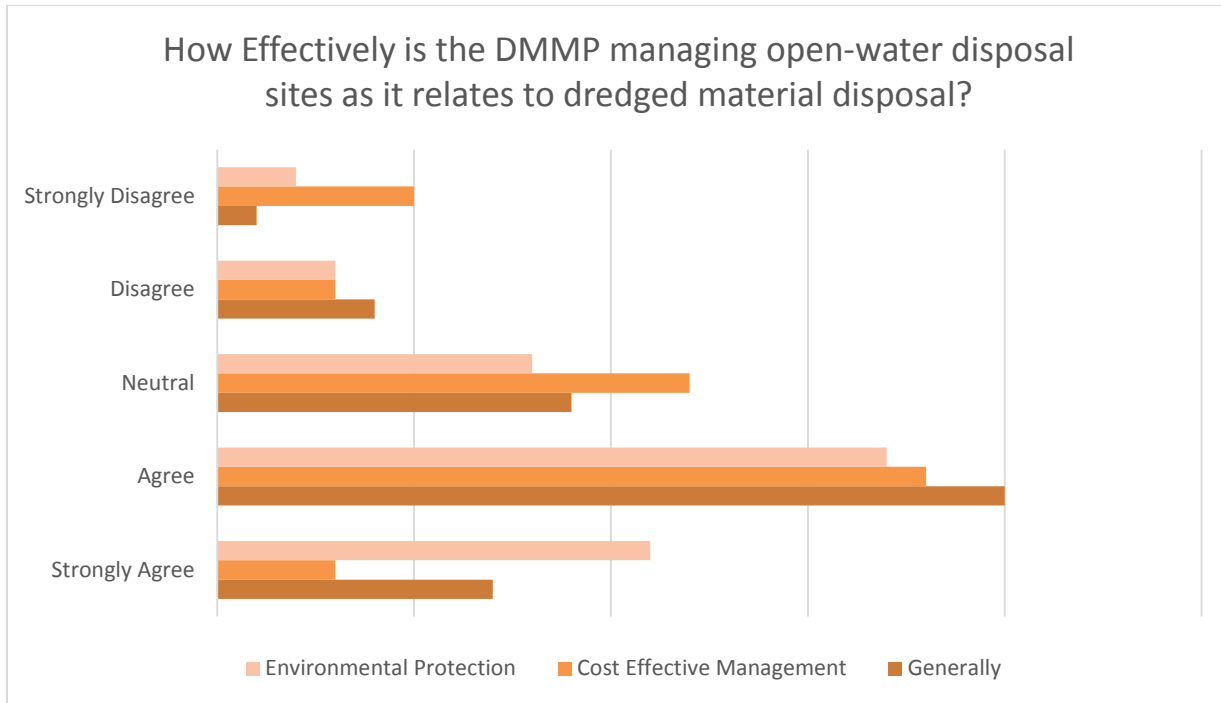


Figure A-4. DMMP effectiveness managing open-water disposal sites

Open-Water Disposal Sites

Most survey respondents were in agreement the DMMP is effectively managing open-water disposal sites—generally, for cost effective management, and for environmental protection. A lesser percentage of respondents neither agreed nor disagreed, while even fewer disagreed.

Participants were asked to provide suggestions for improving the management of open-water disposal sites. These responses included concerns regarding current practices, as well as some suggestions for change and improvement. Concerns and suggestions from respondents related to improving the management of open-water disposal sites included the following:

- Avoid unnecessary conservatism and lack of flexibility due to applying a remediation or permitting mindset or approach. Increasingly conservative Suitability Determinations over the years have resulted in continued declining use of open-water disposal sites. Declining use has resulted in generation of fewer fees, which are used to support monitoring of the open-water disposal sites and management by DNR. The answer is not to increase fees, but to embark on a process of more reasonable decision-making for Suitability Determinations using the flexibility allowed in the User Manual.
- Dumping fees should be increased to allow DMMP to do more monitoring and program development. Funding through tipping fees is not adequate to regularly monitor the disposal sites. Some sites have infrequent to no monitoring because they do not meet monitoring thresholds, yet are receiving dredged material. More frequent monitoring should be conducted to ensure environmental protection. Tipping fees should be increased or additional funding sources determined to ensure environmental protection through increased monitoring.

- Conduct monitoring to evaluate whether suitability decisions are adequately or overly protective for human health and the environment. Ensure that over-protectiveness of disposal sites does not result in the inability to conduct environmentally beneficial projects.
- Use monitoring to support a pilot study to document and quantify how the process of sequential burial (from site operation and natural sedimentation) affects the exposure parameters at the disposal sites. This information would support site-wide management goals (e.g., target area-weighted surface sediment concentration limits), project DMMU targets (e.g., volume-weighted average and maximum limits), and defining protocols for sequenced disposal where this may be used as part of site management.
- Keep disposal sites open for effective management of the program. Concern was expressed about the Anderson/Ketron site.
- Disposal criteria and site use should be jointly determined by scientific, regulatory, and maritime business representatives (including ports) to better represent users of the program and economic, navigation, and commerce needs.
- DNR should work with Ecology to develop agreements that sediment disposed of at open-water disposal sites with concentrations above nearby cleanup standards or regional background levels will not result in triggers for cleanup. Ecology should formally clarify that the triggers for evaluation and cleanup in SMS do not apply to open-water disposal sites. This will reduce any liability concerns from DNR or other state parties.
- Time, expense and uncertainty make the DMMP evaluation process more expensive than it needs to be and too many things are decided by *best professional judgment*. Clear standards and procedures should be established and followed to minimize the number of surprises in the process of determining suitability.

Suitability Determination Process

Fifty-six percent of respondents either agreed or strongly agreed that the criteria the DMMP uses to make Suitability Determinations are clear, and 61% either agreed or strongly agreed that the basis for these determinations is clear in decision documents and communication. Fifty-eight percent of respondents also agreed or strongly agreed that communication between DMMP and project applicants before, during, and after the Suitability Determination process is clear.

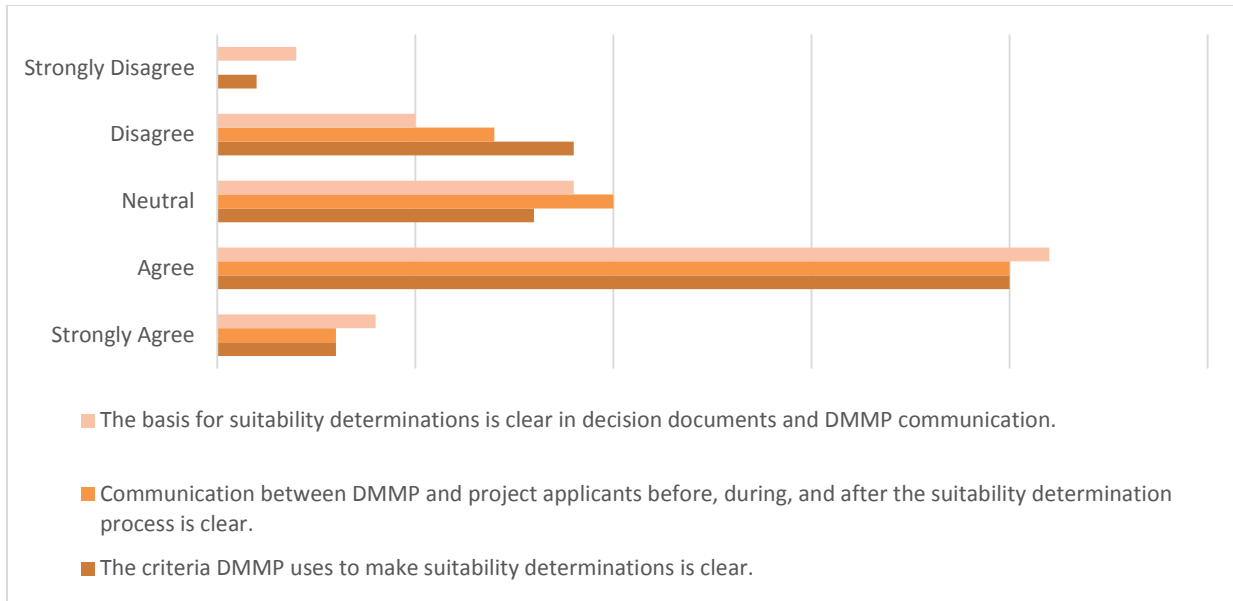


Figure A-5. Clarity of DMMP communications and Suitability Determinations

When asked about the strengths of the Suitability Determination process, the most common response was that the process, guidelines, and explanation for the determination were predictable and clear. Other strengths of the determination process include the following:

- Scoping and kick-off meetings, including the pre-SAP preparation discussions, which save a great deal of time and money by reducing the revision process.
- Transparent and timely collaboration with all interested parties.
- Multi-agency approach prevents contradictory determinations.
- Cooperative decision-making framework incorporating adaptive management.
- The tiered process of chemistry, bioassay, and bioaccumulation testing.
- Clear process and guidelines for Suitability Determinations.
- Timeliness, documentation, and ease of access through the website.
- Detailed explanation in the Suitability Determination for the decision.
- Staff are easy to reach, responsive, and helpful.

Asked to identify areas for improvement pertaining to the Suitability Determination process, the most common themes centered on a need to increase transparency in the decision making process, with repeated concerns about inconsistency in decision-making based on new information, individual influence on outcomes, and an increasingly more conservative decision-making process.

Other suggestions for improvement include the following:

- Increase clarity around which regulatory decision each agency is responsible for making, especially the role EPA plays in the process vs. other agencies.
- Improve internal communication to present consensus opinions on sampling plans. Ensure that individuals are not driving consensus decisions.

- Demonstrate consistency and sound reasoning for decisions.
- Establish new testing procedures and suitability criteria to keep pace with evolving science and regulation.
- Translate use of best professional judgement into clear DMMP guidance as soon as possible.
- Keep process streamlined to ensure timely review and approval so as not to bump up against fish windows or other seasonal restrictions, especially for simpler or cleaner projects.
- Reduce the amount of information required in the SAPs and Results Reports and try to avoid requiring minor revisions that add to the time and expense.
- Conduct, review, and approve dredged material evaluation according to DMMP guidance rather than cleanup or other overly conservative approaches.
- Work to minimize individual variability between project managers in how *weight of evidence* arguments are evaluated. Lay out a process for such evaluations that provides examples and the type of information that the DMMP considers valuable when making those decisions. There are times when new studies arise and white papers present new recommendations that may lead to adjustments to screening levels and guidelines but the information has not been formally vetted and incorporated into the DMMP.
- Provide greater regulatory flexibility by considering frequency of disposal site use and sequencing approaches, maintaining a bioaccumulation testing option, establishing a technical working group to develop bioaccumulation criteria, and providing a process to appeal Suitability Determinations.
- Eliminate the Microtox bioassay and update the tributyltin (TBT) guideline to a science-based value.
- Incorporate risk management into suitability decisions.
- Ensure that interactions with the resource agencies are transparent and documented.

Anticipated Issues and Concerns

Sixty-five percent of respondents indicated that they did not have concerns that impacted their organization's ability to support or conduct DMMP-related projects or work. However, several provided specific concerns for the dredging program in the future and ways that their organization may be affected, including the following:

- The ability to cost-effectively complete dredging projects given new dioxin/furan and PAH guidelines, in addition to others that may be coming (frequently mentioned).
- Unavailability of open-water disposal sites to many applicants due to future protections related to human health and ecological risk and emerging contaminants (frequently mentioned).
- Reduced emphasis on collaborative problem-solving with the regulated community due to impingement of other programs and reduced funding and staffing to address key issues.

- Expansion of the DMMP role to commenting on cleanup-related dredging.
- Future ESA listings.
- Rule-making through guidance development.

Challenges identified in relation to DMMP in the future included:

- Cost impacts to applicants for sediment characterization.
- Consistency in how guidelines are applied for all applicants.
- Revising disposal site monitoring to better address emerging issues and use cost-effective options.
- Striking a balance between environmental protection and economics.
- Appropriate management oversight of the DMMP.
- Ensuring that DMMP and its member agencies remain within their purview and regulatory authority. Specific examples provided include: 1) DMMO provides internal support on sediment issues to Regulatory Branch, but the full DMMP often weighs in; 2) permit applications for dredging projects in cleanup sites should be reviewed by the responsible agency only (EPA or Ecology); and 3) Ecology should conduct the State anti-degradation evaluation. Overall, there appears to applicants to be a blurring of the DMMP and permitting process, with many agencies reviewing permitting issues where they lack explicit regulatory authority.
- Maintaining the availability of the disposal sites based on sound science rather than public perception or politics.
- Ensuring professional courtesy and respect during challenging discussions.

Additional Comments

Final thoughts by the respondents included:

- Concern that the impact to businesses and the costs of uncertainty and delay are being underestimated.
- Concern that DMMP members have divergent agendas and that there are personality-driven outcomes.
- Wish that the process allowed DMMP more flexibility in interpretation.
- Appreciation for the DMMP as being the most transparent and easy to coordinate with of Washington agencies.
- Appreciation of the DMMP staff for their depth of knowledge and dedication.

Follow-Up

Participants were given the opportunity to leave their contact information to be contacted for follow-up interviews. See Appendix B for the process and results of the interviews that were subsequently conducted.

Attachment 1 to Appendix A—Survey Questions

Q1. Which category best describes your organization?

Q2. Have you worked with DMMP in the past?

Q3. If yes, how many times have you worked with DMMP in the last 5 years?

Q4. The current DMMP process of providing information and soliciting feedback through the SMARM meeting, website, and email is adequate.

Q5. How do you think our communication process could be improved?

Q6. The Dredged Material Management Office at the U.S. Army Corps of Engineers hosts an interagency DMMP website. Have you used this website in the last year?

Q7. If yes, do you find the website to be an effective means of sharing information?

Q8. If you use the website, what part of the website do you use the most?

Q9. If you use the website, what elements are most useful to you?

Q10. Please share any suggestions for improving the website.

Q11. The annual SMARM is an effective means of communication.

Q12. Please share any suggestions for improving SMARM.

Q13. Email is an effective means of communication for DMMP.

Q14. Please share any suggestions for improving our email communication.

Q15. Please state your agreement with the following statements about how effectively the DMMP is managing open-water disposal sites as it relates to dredged material disposal.

- Generally, these sites are managed effectively.
- For cost effective management, the sites are managed effectively.
- For environmental protection, the sites are managed effectively.

Q16. If you do not agree, please let us know how the management of open-water disposal sites could be improved.

Management Review of the Dredged Material Management Program

Q17. The following questions pertain to the Suitability Determination process. Please indicate your agreement with the following statements:

- The criteria that DMMP uses to make Suitability Determinations are clear.
- Communication between DMMP and project applicants before, during, and after the Suitability Determination process is clear.
- The basis for Suitability Determinations is clear in decision documents and DMMP communication.

Q18. What are the strengths of the DMMP Suitability Determination process?

Q19. What are areas for improvement for the DMMP Suitability Determination process?

Q20. Do you have any current concerns that impact your organization's ability to support or conduct DMMP-related projects or work?

Q21. If yes, would you like to be contacted as part of the management review?

Q22. What issues or concerns do you anticipate for the dredging program in the future? How might you and your organization be affected?

Q23. What do you see as your greatest obstacles related to the DMMP in the future?

Q24. What is the most helpful?

Q25. Is there anything else you would like to share with us?

Q26. Contact information.

Appendix B—Summary of Interviews

This appendix summarizes the results of stakeholder interviews conducted as part of the management review of the Dredged Material Management Program (DMMP).

Invitations and scheduling

Stakeholders invited to participate in the discussions were selected from users of the DMMP (Ports, USACE Navigation Branch, industry, and marinas) who had been project applicants within the last 10 years. A representative subset was chosen to make the number of interviews manageable, in part related to projects that were selected as case studies to be audited. Project applicants who were interviewed were invited to bring technical staff or consultants if they chose.

In addition, all members of the DMMP were invited to be interviewed individually. The U.S. Army Corps of Engineers DMMP staff chose to be interviewed as a group. Several environmental groups and Native American tribes with Usual and Accustomed Fishing Areas or otherwise active in the project case study areas were also invited to be interviewed.

All invitees were sent an e-mail inviting them to participate and providing instructions for scheduling interviews, with the questions to be discussed attached, along with contact information for further information. Of the invitees, all DMMP staff, USACE Navigation Branch, two Ports, one industrial applicant, and one family-owned marina participated in the interviews, providing a representative cross-section of DMMP agencies and project applicants. The persons and organizations participating in the interviews and the date and time of each interview are listed in Attachment 1 to Appendix B.

Overview of Interviews

All interviews were held in person between August 19 and 26, 2016, except for one interview held by telephone. To provide the participants with the opportunity to speak freely and confidentially, the interviews were conducted by Teresa Michelsen, Farallon Consulting LLC, on behalf of the Washington State Department of Ecology (Ecology) and the Department of Natural Resources (DNR). Each interview was one to two hours long and included an introduction followed by a discussion of the questions and in some cases, the projects selected as case studies.

The introduction to each interview consisted of:

- A description of the legislative proviso calling for the management review of the DMMP
- An overview of the activities being conducted and timeline of the management review
- A description of the interview process, including the confidentiality of the interviews and draft notes, and the process to be used to summarize the results

- Clarification that interviewees could focus on whatever questions were most of interest to them, and discuss the case study projects as well as any other projects that would illustrate their points
- Encouragement to focus on identification of issues and specific ideas for solutions
- An opportunity to ask questions before beginning

Questions and issues raised after the introduction included:

- Whether the interviews were being recorded (they were not, except by taking draft notes)
- Further clarification on how the thoughts expressed in the interviews would be summarized and generalized, with appreciation for the confidential nature of the interviews
- Hope that the DMMP review process would not impact ongoing project decisions

To preserve confidentiality, the thoughts expressed by the interviewees herein are summarized as general points, counterpoints, questions, and suggestions, with an indication of the number of participants in agreement on an issue. Comments, suggestions, and ideas are not attributed to specific individuals or organizations. In some cases, responses are grouped by type of interviewee (e.g., DMMP staff or project applicants) where their responses tended to be consistent. In this context, “DMMP staff” may refer to individuals participating in DMMP project decisions from any of the four DMMP agencies.

The following sections are organized around the questions discussed during the interviews, which were in turn organized around the three main directives of the legislative proviso. The legislative proviso sections and related questions are reproduced below, followed by summaries of the responses to each question.

The results of the interviews have been integrated into the main body of the Legislative Report along with the results of other tasks as appropriate. Overall conclusions based on the interviews, case studies, and the survey are presented in the Conclusions and Recommendations section of the Legislative Report. In addition, information gained on specific case study projects being reviewed was passed along to the project team conducting the reviews, with permission of the interviewees.

Questions and responses

Proviso topics are shown in blue, and interview questions in italics. Responses are summarized in the bullets below each question. *All views presented are those of the interviewees and not those of the interviewer or the agencies conducting the management review.* One exception with an observation by the interviewer is clearly marked out in brackets in the final section.

(a) The extent to which current operations, policies, and decisions of the DMMP provide for dredging actions necessary to maintain navigation and commerce.

To what extent do you believe the current DMMP program provides for dredging actions necessary to maintain navigation and commerce?

- DMMP staff all emphasized stewardship of the open-water disposal sites as a key service to the dredging community that provides for navigation and commerce. This activity consumes a great deal of time and effort, including obtaining and renewing shoreline permits, performing ESA consultations required to obtain shoreline permits, monitoring disposal sites, doing special studies to respond to resource agency or other concerns, and day-to-day management and oversight of dredging activities at the sites. Permitting of disposal sites requires six to nine months when there are no significant issues, and can cost as much as \$6,000 per permit. Renewals are required every five years.
- DMMP staff are uncertain how visible these disposal site-related activities are and whether the community is fully aware of the effort required and the current challenges to disposal site permitting. Seven of the eight original Puget Sound disposal sites are still in operation through these efforts. In contrast, two disposal sites were shut down in the mid-1980s due to public concerns, leading to the original formation of the PSDDA program. DMMP staff are well aware of this history and do not want to see it repeated.
- DMMP review of project volumes currently and in the past indicates that a large percentage of material has been and continues to be suitable for open-water disposal (~90%). They believe that while individual projects may have challenges, the majority of navigation and commerce is provided for. Open-water disposal remains the most cost-effective option for disposal of dredged material.
- Project applicants were very supportive of the DMMP and the open-water disposal site program as a critical part of sustaining navigation and commerce in Puget Sound. There is, however, a sense among applicants that project volumes have been declining in recent years due to more restrictive guidelines and more projects going upland or not being done at all in response to increased uncertainty in the process. In addition, applicants requested a more careful review of impacts to projects, separating out generally clean large-volume navigation projects (including coastal projects) and highly contaminated projects, and looking separately at the urban area projects most likely to be impacted by changes in the guidelines.
- Keeping the navigation channels open and preventing shoaling is considered critical to commercial and industrial businesses, including within Superfund sites like the Lower Duwamish Waterway. There is concern about future sediment moving down the river, but appreciation that navigational dredging has continued to occur. One applicant indicated that DMMP dredging and disposal data provide a good resource for understanding the current state of the environment.
- DMMP staff believe the program's process and service orientation has remained consistent and predictable, even through many program changes over time.

Has this changed from the past, in terms of outcomes, cost, time, or other metrics? What do you believe are the reasons for any changes?

- Nearly every interviewee identified a new emphasis on bioaccumulative chemicals in general and the dioxin guidelines, in particular, as the beginning of major changes to the DMMP. This mirrors changes in other regulations, such as the Sediment Management Standards (SMS) and water quality criteria, and increased focus on these chemicals by the agencies, public, nongovernmental organizations, and tribes. The current process is viewed as less predictable and subject to change, with additional and sometimes unexpected testing requirements.
- Dioxins/furans are being analyzed for and found in sediment on a larger number of projects, increasing the cost of testing and the potential for failure of dredged material management units (DMMUs). Bioaccumulation testing procedures are still under development and are costly and time-consuming. While the program-wide percentage volume found to be unsuitable due to these guidelines may be overall relatively small, certain areas are being disproportionately impacted (e.g., Olympia, Everett, Kenmore).
- Various interviewees stated that some projects are not being brought in for testing and are being taken to upland disposal instead. Some applicants are uncertain enough about what project requirements will be that they aren't sure whether it is worth the time and expense to try to go through the permitting process. These projects are not included in the DMMP's accounting of how much material is determined to be suitable, contributing to a challenge in accurately estimating whether the percentage of suitable material has changed over time.
- Many interviewees brought up the new 1 foot × 1 foot debris screen (grizzly requirement) as increasing costs and slowing production time. There was a feeling among the project applicants that the need for this requirement had not been adequately demonstrated during the SMARM presentation, nor the regulatory authority behind it. There was concern that it was imposed because other EPA regions on the west coast were doing it, without sufficient scrutiny of costs and benefits locally. It also appeared to them, based on the photographs used, that excessive debris encountered at Superfund sites was affecting decision-making, when these projects are not part of the open-water disposal process.
- DMMP staff, on the other hand, cited excessive debris found at the Elliott Bay and Anderson/Ketron disposal sites as the impetus for this change. They stated that the grizzly requirement was implemented because the current measures for preventing debris were apparently not working. It was noted that debris at the disposal sites could attract species such as rockfish and crab, which the disposal sites were originally sited to avoid. Presence of these species, if found, could complicate the shoreline permitting/ESA consultation process.
- Several interviewees mentioned that there is more anti-degradation testing than in the past. Evaluation of the leave surface can be particularly challenging when dredging is occurring within Superfund or MTCA sites, as there may be differences in interpretive frameworks or requirements (e.g., cleanup standards or depth requirements) that complicate the process.

- DMMP staff mentioned that more complex sites seem to be coming through the DMMP/permitting process with more unsuitable material. This has increased the cost and time required to evaluate these sites.
- Several interviewees expressed concern that it is difficult to beneficially re-use dredged material that meets DMMP and SMS criteria, even though this is one of the stated objectives of the DMMP evaluation. It appears to them that such decisions are not necessarily science-based, but rather based on public perception, liability concerns, or other reasons.
- Several interviewees mentioned that the non-DMMP portion of the permit process seems to be taking longer due to ESA consultations, natural resource studies, and other requirements. For example, there are more detailed questions being asked about material being disposed of upland, and potential water quality impacts at transloading sites. This is also true of the permits required for disposal sites.
- DMMP staff believe that it is necessary to be environmentally protective of the disposal sites in order to continue to be able to provide them. Environmental regulations, ESA requirements, and public and tribal scrutiny are increasing, as evidenced by the discontinuation of the Bellingham site and current uncertainty over the Anderson/Ketron site. They believe that some of the proposals by the Ports to take more contaminated material to the open-water disposal sites may risk increasing public and agency concern to the point that disposal sites could be jeopardized. In addition, these proposals may fall outside the current basis for the shoreline permits, requiring permit revisions or renewals. Finally, disposal of material that causes the disposal sites to exceed Cleanup Screening Levels (CSLs)—benthic or bioaccumulative—could result in State liability for cleanup.
- DMMP staff expressed some frustration that proposed projects are increasingly pushing the limits of what is reasonable to dispose at the open-water sites. There is concern that some applicants are attempting to use the open-water disposal sites as the solution to all dredging needs, when they were intended for relatively clean dredged material. DMMP staff reported feeling intensively pressured by Ports and other applicants to find ways to accept material that either is or appears likely to be unsuitable. On one or two projects recently, DMMP agreed to try an unusual approach to accommodate an applicant's needs and things did not go well, in ways that were anticipated by DMMP staff. These experiences have reinforced a sense that there are limits to what should be allowed and that DMMP staff need to be able to exercise their judgment to prevent riskier approaches or activities.
- In contrast, Ports and other applicants believe, based on the original PSDDA documents, that open-water disposal sites were intended to accept material with minor adverse effects, including bioaccumulation. Based on the monitoring that has been conducted over the past 20 or more years, they do not believe that adverse impacts are occurring at the disposal sites to a degree that would warrant making the guidelines more conservative. Prior to taking actions that would cause substantial economic dislocations, they believe the agencies have a responsibility to demonstrate that adverse effects are occurring now that warrant a more conservative approach and/or that any such risks cannot be addressed through site management procedures (existing or new).

- At the same time that these changes have been occurring, other issues such as the Lower Duwamish River cleanup, SMS and Sediment Cleanup User Manual revisions, water quality criteria revisions, Regional Sediment Evaluation Team processes and others have been competing for agency staff attention and resources. Other than the Corps DMMO, none of the DMMP staff are fully funded by the DMMP and have other agency and interagency responsibilities.

Are you concerned about program changes in the future? If so, what types of changes and what impacts might they have?

- Many interviewees expressed concern about criteria being developed for additional bioaccumulative chemicals in the future and what effect that may have on DMMU suitability and ability to use the open-water disposal sites. DMMP staff cited the current bioaccumulation triggers, target tissue levels, and PAH concentrations protective of fish as needing to be updated based on regulatory requirements and the current state of the science.
- There is general awareness among most of the interviewees, agencies and project applicants alike, that bioaccumulation-based guidelines for certain chemicals (e.g., PCBs, PAHs) may cause many or most urban projects to fail in the future. In addition to bioaccumulative risks to human health and wildlife, the resource agencies have been emphasizing the need for PAH guidelines to protect fish, which will be much lower than current guidelines. This single issue of bioaccumulative chemicals appears to be driving much of the concern and fears about the future, among both project applicants and DMMP staff. If navigational or maintenance dredging is no longer possible in urban areas due to lack of disposal sites, it is unclear to many ports and businesses how they can continue to operate their facilities.
- A number of interviewees with experience in the program suggested that the bioaccumulation issue and other recent regulatory changes may require a new program model, new tools, and an updating of various aspects of the program (such as refocusing monitoring). If substantially more material will be unsuitable in the future, renewed program emphasis on finding solutions for unsuitable material may be needed or Ports and other applicants may find themselves without reasonable options. Several interviewees mentioned that the original EIS and technical documents have stood the test of time over 25 years, but that the changed regulatory environment may call for a considered, inclusive process of program reevaluation and updating—a vision for the next 25 years.
- The current incremental approach to updating the program to take into account new regulations threatens to create substantial impacts in terms of the ability to routinely dredge in urban areas. However, loss of funding and staff cutbacks at all of the DMMP agencies has left them without the resources to conduct the intensive program update and stakeholder/management process that may be needed to comprehensively address these issues. Such processes have been conducted among the DMMP agencies and stakeholders in the past when major issues needed to be addressed. This report was seen as an opportunity to present the seriousness of the current situation to management of the four agencies and the Legislature.

- As noted above, DMMP staff are concerned that a more permissive approach to disposal at the open-water disposal sites could result in site closure through the shoreline permitting process. DMMP staff are also aware of other potential future challenges relating to the disposal sites, such as the Baseline process that is currently underway among federal agencies to determine whether the dispersive sites in the Strait of Juan de Fuca should be considered ocean disposal sites, for which the criteria are substantially more restrictive. Two project applicants expressed concern about the future of the Anderson/Ketron site, the closest disposal site for south Sound projects.
- Additionally, changes in other programs may impact DMMP in the future in uncertain ways. For example, the Water Quality program is looking at monitoring fish tissue in rivers for protection of human health, which could result in many more areas being placed on the 303(d) impaired water bodies list.
- It is unclear to DMMP staff how they can address this changing regulatory landscape effectively without greater resources. Most DMMP staff are part-time and their salaries are not all covered by the program, making it difficult to devote the time to effectively address emerging issues. In addition, there is not enough funding for disposal site monitoring, consulting support, or the studies that would be needed to answer many of the questions being raised.

Are there regulatory constraints that may limit the ability of the DMMP program to provide for all necessary navigation and commerce? If so, are these within or outside the control of the four DMMP agencies? What other agencies and statutes may be involved?

- DMMP is substantially constrained by the shoreline permitting process, which includes ESA consultation. If the federal and state resources agencies, tribes, public, and local agencies that are part of that process are unhappy with how the sites are being used or feel the program is not protective enough, shoreline permits can be jeopardized, which in turn may result in non-renewal and unavailability of the open-water disposal sites.

One example of this is the closure of the Bellingham Bay disposal site due to tribal concerns and agreement by the Port of Bellingham to discontinue use of the site. Another is the Pierce County Shoreline Master Plan disallowing the Anderson/Ketron site, which is currently under review by the Department of Ecology. Ports suggested that they could be of assistance in renewal of shoreline permits, since they tend to have strong relationships with cities and counties. Several individuals suggested that there could be regulatory solutions to streamlining the shoreline permitting process for the disposal sites.

- The considerations above come into play when DMMP evaluates a proposal for flexibility that has not been previously used, or disposal of material that is more contaminated than the guidelines. Approval for use of the disposal sites depends on following the existing guidelines and permitting process; changes to that process or what is considered acceptable for disposal may require additional consultation and permitting.
- DMMP staff consistently expressed a responsibility to carry out the requirements of laws and regulations such as the Clean Water Act and SMS, and these regulations are becoming more

conservative over time. However, they feel they have some degree of flexibility in applying these laws to the dredging program and interpreting them on a case-by-case basis. The interface between SMS and the dredging program is currently not well-understood, particularly as it applies to bioaccumulative compounds. Ecology's Toxics Cleanup Program has stated its interpretation that disposal sites should be able to accept material up to the CSL. Whether a Sediment Impact Zone would be necessary (or obtainable) to allow material to be accepted up to the CSL is a point of debate and discussion among the agencies.

- There is increased scrutiny and requirements in other parts of the permitting process that have spilled over onto the DMMP, in both real and perceived ways. Some commercial applicants were unable to distinguish between DMMP and other parts of the permitting process. In other cases, there is overlap between DMMP and the permits, such as increased scrutiny of transloading facilities, and Hydraulic Permit Approvals and ESA consultations that require protection of fish.
- There is a general feeling among project applicants that project requirements are less predictable than they used to be, and that extra studies are required simply because an agency is concerned about a possible impact, rather than being science-based. The burden of proof seems to be on the applicant rather than the agency, being asked to prove a negative or "guilty until proven clean." This was most frequently cited with respect to natural resource studies and resource agencies such as WDFW, National Oceanic & Atmospheric Administration (NOAA), and USF&W, but elutriate testing and other DMMP requirements were also mentioned.

For example, one small business applicant spent seven years obtaining a dredging permit, none of which was related to having unsuitable material. They were required by WDFW to conduct three natural resource studies at substantial cost, without evidence that the resources were present (the studies confirmed that they were not). Some DMMP staff also cited similar examples in the process of permitting disposal sites. While this is mostly a permitting issue, it affects DMMP applicants as well as DMMP efforts to maintain the disposal sites, and adds to the general feeling that the regulatory process is changing in ways that are unpredictable and expensive. Every possible issue seems to be on the table, many of which applicants are not able to anticipate.

- Project applicants also mentioned that local agencies can be a particular challenge during permitting, frequently due to unfamiliarity with dredging projects.

[\(b\) Determining what regulatory flexibility exists to allow open-water disposal of dredged materials in a manner that will protect human health and the environment.](#)

What regulatory flexibility is currently exercised by the DMMP? Can you provide specific examples and areas of flexibility?

- Much of the flexibility currently exercised by DMMP is applied during the SAP review and discussions with the applicant. Project applicants appreciated the pre-dredge meetings and considered them very helpful in planning the project. Project applicants also praised the experience and depth of knowledge of DMMP staff, which they believe allows DMMP to exercise judgment in developing a practical study design and interpreting data. This is

especially valuable when things do not go entirely according to plan. It was considered helpful that many DMMP staff have longevity in the program.

- This flexibility is frequently incorporated into the User Manual once enough experience has been gained with a specific issue.
- Specific areas cited by a variety of interviewees in which flexibility is applied include:
 - Design of DMMUs and sampling locations, developing cost-effective designs
 - Tiering and testing out (though test-outs are needed for bioaccumulatives and PAHs)
 - Working effectively through quality assurance or testing issues with laboratories and consultants
 - Allowing volume-weighted averaging, some sequencing, and case-by-case evaluations for dioxins (and likely other bioaccumulative chemicals in the future)
 - Allowing *supercomposites* for bioaccumulation testing and real-time decision making during testing
 - Allowing minor exceedances of chemical or biological criteria (e.g., if within statistical significance or analytical variability)
 - Evaluation of potential non-treatment effects on bioassays (e.g., ammonia and sulfides)
 - Exemptions from bioassay testing in certain cases (e.g., benzyl alcohol)
 - Exemptions from debris management requirements on a reason-to-believe basis
 - Providing recency extensions when appropriate
 - Using best professional judgment in considering whether z-layer (leave surface) evaluation is required
 - Allowing cover for a leave surface that exceeds criteria, rather than additional dredging or cleanup
 - Conducting special studies to address concerns of resource agencies and tribes, which later support shoreline permits and/or reason-to-believe approaches to DMMP testing
- Several DMMU staff mentioned that applicants appear to only want flexibility applied in a less conservative direction (acknowledged by one project applicant), but that staff need to be free to apply their judgment to be more protective when warranted as well, since part of their mission is to protect the environment and thereby safeguard the open-water disposal sites. In contrast, applicants perceive a tendency toward using flexibility mainly in more conservative ways.

What specific suggestions do you have for increasing regulatory flexibility consistent with existing local, state and federal laws, regulations, and guidance? Can you illustrate this with a project example?

- On a conceptual level, it does not appear to project applicants that the importance of navigation and commerce to business operations, jobs, services to the community, and tax revenues are taken into account at the project level. They question when and how this gets balanced with the degree of environmental risk during the decision process. There should be some room for greater flexibility when the stakes are very high for a particular project and there are no feasible alternatives in the region. One applicant asked an important framing question that could be discussed more broadly, “What is the purpose of flexibility?” This applicant felt that it should be to promote navigation and commerce, but it appeared to them to be used more often as a precautionary principle.
- Most interviewees mentioned the issue of sequencing (i.e., placing more contaminated material underneath cleaner material) as one way to obtain greater flexibility and complete needed projects. DMMP staff had varying opinions on the degree to which sequencing could or should be used, but generally agreed that a thorough discussion of options would be useful. Concerns include risks to disposal site permitting if anything goes wrong, logistical and permitting issues related to ensuring that sufficient cover material is available in a timely manner, and the engineering practicability of ensuring cover in deep water. Increased monitoring would be needed to demonstrate protectiveness, which dumping fees are not sufficient to cover.

In general, DMMP staff were more receptive to sequencing projects with: 1) limited exceedances of criteria (all agree this is difficult to define); 2) all material from one project or under one permit; and 3) willingness of the project applicant to conduct or contribute to monitoring. Some applicants were willing to accept these conditions, as well as to guarantee contingency actions if permit requirements for coverage were not met.

- Several project proponents mentioned that a re-evaluation of the scientific concepts underlying bioaccumulative criteria should be conducted, to ensure that they are appropriate to receptors and exposures present at the open-water disposal sites. DMMP staff also mentioned that studies could be conducted to determine what bioaccumulation is actually occurring at the disposal sites and what risks it poses. Examination of both the theoretical basis and field conditions at the disposal sites may allow development of appropriate bioaccumulation guidelines for the disposal sites.

In general, applicants have a difficult time understanding why dredged material is required to be at background concentrations in deep water when higher levels are allowed to persist at Superfund and SMS sites in shallow estuaries and bays. A comparative risk framework or other more holistic approach to evaluating risk reduction or incremental risk is suggested (i.e., “does the project create a net environmental benefit?”).

- DMMP staff are already working on some of these issues for carcinogenic PAHs and PCBs, in the time available. Concerns about these classes of chemicals may ultimately be lessened accordingly. However, PAH criteria for protection of fish are also under development and are likely to be the most restrictive of the various criteria in terms of impact to dredging projects.
- Project applicants would like DMMP to be more flexible when the scientific underpinnings for a guideline are less certain (TBT was mentioned several times as an example). In these cases, applicants would prefer that DMMP err on the side of allowing projects to move forward, rather than choosing the most conservative path.
- One applicant requested more information on why Corps projects (and others) in coastal areas are still allowed to use the old higher guideline for dioxin, while Puget Sound applicants are required to use the new lower guidelines without having the same degree of flexibility. It was noted that this large volume of coastal material is counted among the volume that passes, even though some of it would fail in Puget Sound, increasing the apparent percentage of material passing and potentially downplaying the impacts associated with the new dioxin guideline.
- Both agency staff and project proponents are interested in using regional background where available, or making reasonable assumptions where it has not yet been calculated, perhaps based on disposal site periphery monitoring. However, there remains confusion and uncertainty as to the relationship between Parts IV and V of the SMS, relating to dredging and cleanup, respectively.
- Consideration of various volume-weighted and surface area-weighted averaging techniques was suggested. Surface area-weighted averaging was suggested to evaluate the protectiveness of the disposal site following a dredging event incorporating sequencing. In general, applicants felt that site management should be less focused on meeting specific criteria in the dredged material, and more focused on continuing to meet Site Condition II at the disposal site.
- Several interviewees suggested that refining and standardizing bioaccumulation testing and other test-out approaches would be helpful, particularly if newer cost-effective technologies such as passive samplers could be used.
- It is possible that a food web model recently developed by WDFW for Puget Sound could be applied to evaluate bioaccumulation.
- It was noted that even if all of the above approaches are considered, it is possible that substantially more material may fail once bioaccumulative guidelines are developed. The DMMP agencies may need to consider revisiting multi-user disposal sites or other options for unsuitable material, as was done earlier in the program history.
- Several interviewees mentioned the need for more discussion of risk assessment vs. risk management. This is a key feature of cleanup programs that appears to project applicants to be missing in applying bioaccumulation in the dredging program. In developing solutions, economic impacts, business and Port impacts, and community needs are requested to be considered along with risk assessment information. For example, in sediment cleanup

programs, it is considered reasonable to allow natural recovery to occur over 10 years, yet there does not appear to be any timeframe during which it is considered reasonable to allow exceedances at disposal sites, even though they are sited in much less environmentally sensitive areas.

Ports and businesses feel strongly that such risk management considerations need to be applied in order to avoid high-stakes impacts to communities and businesses. This is not intended to allow any level whatsoever of risk, but to look at the entire context when there are minor exceedances of guidelines that may be highly uncertain.

How can the need for flexibility and consistency/predictability be balanced within the DMMP process? What procedures could be used for documenting and/or justifying use of flexibility on a project?

- As noted above, most of the current flexibility occurs during the sampling and analysis process and is reflected in the final SAP and documented in emails and project files. Anything unusual or important to the final decision is documented in the Suitability Determination. Interviewees were happy with the current approach to project-specific documentation and did not recommend changes to the Suitability Determination or other project documents.
- Several interviewees requested that, to the extent possible, flexibility be incorporated into the User Manual. On the other hand, commercial/industrial applicants preferred a more predictable or *black-and-white* process.
- Some changes to SMARM and/or additional venues may be appropriate at this point to reflect the fact that the program is no longer in a routine mode, but is making significant changes. Additional opportunities for discussion and feedback are needed. The dredging community asked to be notified whenever anything changes, perhaps not relying entirely on SMARM for notification, as it is frustrating to have apparent differences from project to project.
- The biennial reports were suggested by DMMP staff as a good place to document program changes and notable areas where judgment and flexibility has been applied.

[\(c\) An evaluation of the DMMP's decision-making process and policies to ensure that existing regulatory flexibility is appropriately used and that appropriate management and oversight is incorporated.](#)

What are the strengths of the current DMMP decision-making approach? What can be improved?

- DMMP staff listed strengths of their decision-making process as its consensus-based nature, careful review of data, a science-based approach and the scientific expertise of the staff, transparency and accessibility to project applicants, adaptability, and open discussion of issues. One interviewee also mentioned access to other knowledgeable staff within their various agencies as an advantage when difficult issues arise.

Management Review of the Dredged Material Management Program

- DMMP staff spend substantial time working with consultants, laboratories, and field staff to improve SAPs, field procedures, and laboratory procedures, which benefits the project applicant.
- The DMMP website, User Manual, and biennial reports were cited by many interviewees as valuable, accessible, and informative.
- Applicants generally feel that the process is well-documented and that expectations are clear. The Suitability Determinations are clear, straight-forward, well-written, and useful.
- The low cost of the process and disposal is appreciated by applicants.
- However, the process is lengthy and has become more involved, including both DMMP's part and the rest of the permit process. With additional restrictions such as fish windows constraining dredging, it can be difficult to plan and budget effectively. Ways to reduce the length of time required to get through the DMMP sampling and analysis and decision process would be appreciated.
- Both DMMP staff and project applicants saw the ability to interact with and obtain a joint decision from multiple agencies at once as a strength of the process, regardless of the outcome.
- Project applicants especially appreciated the ability and dedication of the DMMP to making real-time decisions during the course of a project, when timeliness is important due to laboratory or field operations. For example, applicants mentioned staff making themselves available on their vacations and other non-work hours to address a time-critical issue. DMMP staff also see this as a service they are committed to providing.
- Some DMMP staff suggested that there could be more outreach to stakeholders during the year (currently limited by staffing and funding) and perhaps greater coordination within the various branches of the Corps of Engineers (DMMP, Navigation, Regulatory).
- Commercial/industrial applicants felt they could use more assistance dealing with the rest of the permitting process and other agencies. DNR was mentioned as having been particularly helpful to a small business applicant during the permitting process.

Are there areas where greater transparency in the decision-making process would be helpful? What recommendations would you have?

- Project applicants suggested more regular stakeholder engagement, perhaps workshops, focus groups, or newsletters.
- One applicant mentioned that the reasons why certain studies were required were not explained. When the Corps permit was approved, then rescinded, then re-approved, the applicant did not receive an explanation of why this happened, although it delayed the project for another two years. More assistance for small businesses may be helpful in navigating and understanding the process.
- One applicant suggested reporting requirements for projects found unsuitable, to better evaluate the impacts of current policies and guidelines. These could include impacts to small

and large businesses, loss of jobs, revenue losses, and loss of public amenities, as well as topics such as whether any new guidelines were involved and what the alternatives were. This would better assess impacts and help identify any problematic areas for further consideration.

- A DMMP member noted that a great deal of time is spent working directly with consultants and laboratories working through multiple iterations of SAPs and dealing with products or data that do not meet requirements. It may not always be apparent to project proponents who is responsible for delays.

What does or would appropriate management oversight of DMMP decisions look like? Is that occurring now or could that be improved? If so, how? What features are important to you in terms of judging whether appropriate management oversight has taken place?

- Nearly everyone interviewed agreed that routine project oversight by managers would be unwieldy and slow the process down. DMMP currently enjoys substantial autonomy and trust by agency management. Staff expressed the opinion that most of their managers would not want to be involved in project reviews. However, most staff keep their managers informed of new directions and key issues.
- All interviewees agreed that an appropriate time for management oversight is when important technical and policy changes are being made to the program, particularly when they may have significant impacts on the regulated community. Several interviewees also mentioned that they would like to see more of senior management during SMARMs and other public venues to feel certain that they were aware of program changes and issues from both staff and the regulated community.
- While most interviewees were not in favor of management review of projects, several interviewees among both DMMP staff and project proponents were open to some kind of upper-level review process. The process could potentially be triggered by an unsuitability determination with significant cost implications or other relatively high threshold. Like the DMMP itself, any management review process would need to be coordinated among the agencies to make a decision, based on staff and project proponent input.

One interviewee felt that managers might be more risk-averse and conservative than the DMMP staff. Others expressed a belief that managers may be more willing to take into account factors such as economic and community need. Another interviewee suggested that the review should be an independent technical review. One interviewee mentioned that the Portland Sediment Evaluation Team (PSET) has a review process outlined in their manual. If there were a review process, decisions would need to be documented as in a Suitability Determination, with some indication whether the decision was project-specific or represents direction that should be applied to other projects as well.

- Overall, there was a sense that greater oversight of individual projects is not needed so much as dealing with some larger programmatic issues in a deliberative, thoughtful way, with stakeholder and management involvement.

- Two interviewees also suggested that an annual or regular meeting of upper management would be a useful forum for policy discussions, to ensure that they are aware of and kept up to date on program developments. This was originally envisioned as part of the program but has not consistently occurred.

How can the need for responsive, timely interagency decision-making and accountable management oversight be balanced?

- The interviewees did not provide responses to this question.

Other issues/comments

Do you have anything else you would like to discuss regarding the DMMP program, with respect to its flexibility, environmental protectiveness, furtherance of navigation and dredging, and/or management oversight?

Funding

- Many of the potential solutions to these problems depend entirely on having the resources to carry them out, including stakeholder/management processes, program discussions and development of ideas into workable proposals, funding for additional studies and monitoring, and ideally a higher level of staffing. The DMMP has been chronically underfunded for a long time, and this needs to be addressed even to continue its current responsibilities. This situation is exacerbated by shortfalls that many Ports are also experiencing and loss of grant funds. Creative sources of funding for a stakeholder process could be pursued, such as Puget Sound Partnership funds, Legislative funding, etc.

Communication

- DMMP staff emphasized that they strive to provide predictable and consistent service to the dredging community. DMMP staff believe strongly in this program and work hard to balance environmental protection and the needs of the dredging community.
- Nearly all project applicants stated that they felt the tone and cooperative nature of working with the DMMP has changed in recent years. Applicants variously described disrespectful communication, adversarial attitudes, unprofessional behavior, lack of trust and collaboration, and shutting down of opportunities to express ideas and concerns, both at DMMP meetings and at SMARM. In most but not all cases, these concerns were directed at a few individuals. One applicant said that SMARM no longer feels like a safe place to raise and discuss issues.
- At the same time, applicants stated their respect for *all* of the DMMP staff and their knowledge and experience, and were especially thankful for the steady hand and leadership of the Chiefs of the DMMO (both past and present). Applicants want to return to the more collaborative approach of the past. Most applicants would prefer to participate earlier in the process when program changes are under development, rather than hearing about them for the first time at SMARM when there is not adequate time to discuss them. They feel they have solutions to contribute and want the opportunity to do so.

- DMMP staff expressed that they do not personally feel negatively toward Ports or other project applicants. They try hard to work things out with all applicants, to the extent possible given current environmental regulations. For their part, DMMP staff have recently felt strongly pressured by the Ports to accept projects that appear unreasonably outside the guidelines. This can lead to an impression that applicants are not listening or are not willing to accept an answer they have to give.
- With respect to internal dynamics among the DMMP team, project applicants have reported what appear to be a couple of individuals and/or agencies dominating the group. They are uncertain of the extent to which these individuals/agencies are driving the decisions they receive, but are concerned at the outspokenness observed and how it may be affecting their projects. There is some question in their minds whether the individuals concerned have the regulatory authority to impose the requirements or make the decisions they seem to be influencing. They feel that the most conservative members of the group are driving decisions in a manner that does not necessarily balance the needs of navigation and commerce with environmental protection.
- In contrast, DMMP staff strongly believe that, despite differences in individual styles, the team makes decisions in consensus and with each individual and agency participating. One interviewee stated that the differences among them added diversity and were a strength rather than a challenge. None of the DMMP staff interviewed felt that their input was less valued than others or that there was any actual dominance in the group. They were aware that project applicants who may be observing their dynamics for a limited amount of time may come away with a different impression. At times, the more direct members of the group may simply be saying what needs to be said on behalf of the DMMP as a whole. Nevertheless, there was sincere concern about the communication issues raised by applicants, as it is not anyone's intention to be disrespectful.

[Interviewer's Note: It was my observation that the issues described in this section are a true reflection what is being felt and experienced on both sides. As a mediator, I believe this is occurring because many of these projects and larger issues are between a rock and a hard place. Project stakes are high and getting higher, and agencies feel constrained by emerging regulations, leading to a stressful and challenging environment in which project applicants feel they have no choice but to push as hard as possible, and agency staff feel frustration that at times is forcefully expressed. Having taken note of these issues primarily as symptoms of a problem, it is important to turn to resolving the underlying challenges.]

- Many of the DMMP staff have other agency responsibilities, which sometimes involve the permitting process or coordination with permit and/or cleanup staff in their agencies. These staff may at times raise permitting or cleanup issues during the DMMP process. DMMP staff generally see this as helpful and coordinative, providing a service to the applicant in an advisory capacity. However, some applicants have begun to feel that DMMP staff are overstepping their authorities during the DMMP process or that it is not clear from whom permit or testing requirements are originating.

Many of the project applicants requested greater clarity on the regulatory origin or justification for special studies, permit conditions, and DMMP changes, as well assurance

that individuals are representing their own agencies rather than other agencies or their personal views. Applicants particularly questioned EPA's role in terms of understanding EPA's regulatory authority, which they believe to be fairly limited for dredging permits. If a constraint or requirement comes from another agency not at the table, applicants requested that this be made clear and that these agencies own and explain their issues.

Parting Thoughts

- DMMP has been a very successful program in the past; it is important to the region that it continues to be so in the future.
- DMMP and the regulated community share a common goal to support navigation. There are many moving parts, and DMMP is doing the best work that it can with the resources it has within an evolving regulatory environment. Solutions to the problems raised will be multi-faceted.

Attachment 1 to Appendix B—List of Interviews

August 19, 2016, 10:00-11:30 a.m.

U.S. Army Corps of Engineers, Seattle District, Navigation Branch
Kym Anderson

August 19, 2016, 1:00-3:00 p.m.

U.S. Army Corps of Engineers, Seattle District, Dredged Material Management Office
Dave Fox, Luran Warner, Heather Fourie, Kelsey van der Elst

August 23, 2016, 10:45 a.m.-12:15 p.m.

U.S. Environmental Protection Agency, Region 10
Erika Hoffman

August 23, 2016, 1:00-2:30 p.m.

Washington State Department of Ecology
Laura Inouye

August 23, 2016, 3:00-4:30 p.m.

Zittel's Marina
Michael Zittel

August 24, 2016, 9:00-11:00 a.m.

Port of Tacoma
Scott Hooton, Rob Healy

August 24, 2016, 1:00-2:30 p.m.

Glacier-CalPortland
Pete Stoltz

August 25, 2016, 10:45 a.m.-12:30 p.m.

U.S. Environmental Protection Agency, Region 10
Justine Barton

August 26, 2016, 10:30 a.m.-12:30 p.m.

Port of Everett
Erik Gerking, Graham Anderson
Kathy Godtfredsen (Windward Environmental)

August 31, 2016, 2:15-3:30 p.m.

Washington Department of Natural Resources
Celia Barton

Appendix C—Case Studies

Methods and Overview of Case Studies

Six case studies from the last ten years were examined to compare how DMMP project evaluations and Suitability Determinations were conducted with the procedures outlined in the DMMP User Manual (DMMO 2015). The dredging projects were located in Puget Sound, ranging from near Olympia to Bellingham and varied in size and complexity. Project proponents included Ports, King County, private industry, and a small family-owned marina. Total proposed dredge volumes varied from over 500,000 cubic yards to as small as 600 cubic yards. Some dredging was proposed within federal navigation channels and some within Superfund sites. Material to be dredged encompassed recently deposited riverine silts in a marina to an extensive bank cut-back into uplands material (previously placed dredged deposits) in a shoreline/pier realignment.

The Suitability Determination and supporting documents for each case study were reviewed to determine the project evaluation steps followed by the DMMP. Additional information was obtained from DMMP staff during a follow-up interview, to clarify how the evaluation steps were performed. The steps followed in developing the Suitability Determinations were compared to the procedures presented in the DMMP User Manual. The User Manual identifies three primary questions the DMMP focuses on and a series of 10 steps for sediment evaluation. These are presented as a checklist (see Table C-1) against which each of the case studies was compared. Unique circumstances pertinent to a particular step are footnoted in the table.

Three main questions are presented in the User Manual:

1. *Is the proposed dredged material suitable for open-water disposal?* Open-water disposal can be at one of the designated DMMP sites or in flowlane disposal areas.
2. *Is the proposed dredged material suitable for in-water beneficial use?* In general, material proposed for beneficial use needs to meet DMMP guidelines for open-water disposal, as well as Sediment Management Standards requirements. Fisheries agencies or landowners/managers may require lower concentrations, particularly for in-water beneficial reuse or habitat projects.
3. *Will the post-dredge surface meet Washington State anti-degradation standards when the project is finished?* In other words, will the sediment surface left behind after dredging be more contaminated than the sediment surface that existed prior to dredging? This question is often the only applicable question for DMMP consideration if the proposed disposal site is a landfill.

The case study projects were evaluated with respect to each of these three questions (Table C-1).

Table C-1. Case studies compared to the DMMP User Manual.

1. Is the dredged material suitable for open-water disposal?

Port of Tacoma Pier 4	Everett Marina	Bellingham Cold Storage	South Park Bridge	Ash Grove Cement	Zittel's Marina	Dredged Material Evaluation Process (Chapter 3, DMMP User Manual)
x	x	x	x,8	x	x	1. The dredging proponent (with consultant assistance as needed) determines project-specific sampling and analysis requirements, consistent with the User Manual. The DMMO may be contacted for assistance.
x	x	x	x	x	x	2. The dredging proponent develops a sampling and analysis plan (SAP) for sediment evaluation.
x	x	x	x	x	x	3. The dredging proponent submits the SAP to the DMMO.
x,1	x,5	x	9	x	x	4. The DMMO coordinates review of the SAP by the other DMMP agencies. The proponent may be required to address concerns and re-submit the SAP if it does not meet DMMP requirements.
x,2	x	x,5	9	x	x	5. The DMMO sends a SAP approval letter or email to the dredging proponent.
15	15	15	15	15	15	6. A pre-sampling conference call between the DMMP and sampling team may be scheduled prior to the beginning of sampling (optional).
X,3	x	x	x,10	x	x	7. The dredging proponent conducts field sampling and laboratory testing.
X	x	x	x	x	x	8. The dredging proponent submits a sediment characterization report to the DMMO for distribution to all DMMP agencies.
x,4	x	x	x	x	x	9. The DMMO coordinates review of the testing data with the DMMP agencies.
x,2	x,6	x	x	x,12	x,14	10. The DMMO drafts and the agencies review and sign a Suitability Determination for disposal.

2. Is the dredged material suitable for beneficial reuse?

Port of Tacoma Pier 4	Everett Marina	Bellingham Cold Storage	South Park Bridge	Ash Grove Cement	Zittel's Marina	
16	16	16	16	16	16	Review against DMMP guidelines.
16	16	16	16	16	16	Review against SMS criteria.
16	16	16	16	16	16	Other resource agency & land owner/manager requirements?

3. Are antidegradation requirements met?

Port of Tacoma Pier 4	Everett Marina	Bellingham Cold Storage	South Park Bridge	Ash Grove Cement	Zittel's Marina	
x	x	x	x	x,11	x,13	Based on the Sediment Management Standards, WAC 173-204-120.

Footnotes

1. The project encountered unexpected levels of contamination resulting in a Superfund Time-Critical Removal Action for a portion of the area.
2. The project was phased as: 1) a Superfund Time-Critical Removal Action; and 2) a DMMP dredging action, triggering separate SD reviews. The two phases combined were completed in three years.
3. The complexity of contamination and phasing resulted in four sampling events.
4. The review was coordinated with EPA Superfund staff.
5. The SAP went through two rounds of revisions based on DMMP review comments.
6. The Suitability Determination was extended to cover additional material that accumulated prior to dredging (originally 29,000 cubic yards, increased to 39,500 cubic yards). At the Port's request, only one of eight DMMUs was reviewed for dioxins, while all eight were found suitable for other DMMP chemicals. Additional dioxin bioaccumulation studies were being conducted for these other seven DMMUs at the time of this project review.
7. The project included dredging of a berthing area in 2010 and of a federal channel in 2015. The USACE also evaluated dioxins in the federal channel in 2012.
8. DMMP coordination occurred prior to SAP submittal.
9. The project proponent did not provide DMMP with enough time for review and approval of the SAP prior to fieldwork.

10. Sampling comprised two events, one year apart. Bioaccumulation testing was included. Extensive best professional judgement was required to address testing protocol deviations.
11. Antidegradation was conditionally achieved by requiring that a foot of clean aggregate remain above the contaminated sediments.
12. As part of subsequent permitting considerations, the project proponent was advised that their ten-year maintenance dredging permit would not be renewed for continued spilling and dredging of aggregate into surface waters of the State and in the Lower Duwamish Waterway Superfund site.
13. Compliance with antidegradation requirements was determined using best professional judgment without sampling data.
14. Natural resource studies required by other agencies delayed dredging for 5+ years after the Suitability Determination was issued.
15. The User Manual step regarding a pre-sampling conference was recently added to provide project proponents additional support and guidance.
16. DMMP has discontinued evaluation of dredged material for beneficial reuse.

Findings from the Case Studies

This review of project case studies was used to assess how DMMP carries out project evaluations with respect to the steps outlined in the DMMP User Manual. Findings include the following:

- Review of a proposed dredging project to reach a DMMP Suitability Determination is only one of the DMMO/DMMP staff roles and responsibilities:
- DMMP staff are engaged, often directly, in related permitting of a project, in addition to review for the Suitability Determination. For example, Ecology staff may be involved in preparing the 401 Water Quality Certification and DNR staff prepare the Site Use Authorization for disposal of dredged material at the open-water disposal site. DMMO staff support the USACE Regulatory Branch in carrying out Section 404/10 permitting.
- The DMMO often serves as a project proponent's first contact for coordination among all of the reviewing agencies for the Suitability Determination and other permitting that a dredging project requires.
- Project submittal and review does not always occur as presented in the DMMP User Manual, with DMMP review coming first, a Suitability Determination next, and then submittal of the project and Joint Aquatic Resources Permit Application (JARPA) to the permitting agencies. Instead, project reviews often begin with a proponent submitting a JARPA to the USACE Regulatory Branch, which may then get routed to DMMO. Alternatively, the review for the Suitability Determination and other permits may be conducted in parallel with coordination between DMMP staff and other permitting entities.
- DMMP review often requires direct coordination and combined technical assessment of projects with other regulatory entities (Superfund, MTCA, ESA) that is facilitated by the DMMP staff. Particularly when a project is taking place within a cleanup site, the DMMP has formal agreements with EPA and Ecology to coordinate with site managers.
- Projects vary considerably in size, complexity, nature and extent of contamination, need and urgency for collaboration with other regulatory or management entities. DMMP efforts are aimed at developing an efficient, cost-effective sampling effort that meets DMMP as well as any permit and cleanup requirements, thereby avoiding unnecessary duplication and future delays.
- A great deal of flexibility is built into the User Manual procedures, allowing for the best professional judgment needed to evaluate dredging projects that vary widely in volume and complexity. This flexibility in managing potential risks and information needs is exhibited in multiple ways.

For example, four tiers of evaluation can be used in a Suitability Determination review, depending on the site circumstances. The first tier is a simple site evaluation using available information and site history. The second tier is chemical analyses, the third is biological


testing (bioassays or bioaccumulation testing), and the fourth is special studies tailored to site-specific concerns. Depending on the complexity of the site and the DMMP designated level of concern for the areas, the effort necessary for a Suitability Determination may only require the first tier or all four tiers. The third and fourth tier may be optional on the part of the project proponent and the results override the results of lower tiers.

- The DMMP is service-oriented and its staff work to achieve the best outcome for project proponents and a sustainable DMMP unconfined open-water disposal program. The responsiveness and ready availability of DMMP staff to help at all stages of a dredging project from pre-SAP coordination through the dredging action was evidenced in the project timelines and related documents.
- The DMMP process and procedures are constantly evolving:
- Beneficial reuse is no longer being evaluated as part of a typical SD.
- The pre-sampling conference has been added as one of the User Manual's 10 evaluation steps in recent years to ensure data quality and address sampling problems.
- The DMMP is adjusting to new regulatory requirements in as timely and technically sound manner as they can given resource constraints, often on a project-by-project basis. As new regulations require lower concentrations for bioaccumulative chemicals and the addition of more chemicals to be analyzed, the DMMP is addressing analytical and risk assessment needs to evaluate projects for a Suitability Decision and to manage the DMMP disposal sites. These newer requirements are challenging to address on a project-by-project basis, and contribute to uncertainty for the program and for project proponents in completing projects and planning for the future. For example:
- Dioxin risks were initially addressed with interim dioxin guidelines based on sampling near the disposal sites (2007 to 2010), and then updated to Puget Sound-wide guidelines in 2010.
- Bioaccumulation testing has required extensive coordination with the Port of Everett to finalize testing protocols and determine interpretive guidelines.

Case Study Project Summaries

Port of Tacoma, Pier 4

Project background

- Project occurred within the Commencement Bay Superfund Site and entailed several unique aspects (e.g., phasing, Superfund time-critical removal action, significant upland fill dredged as sediment).
 - Three years from initial application to granting two Suitability Determinations.
 - 550,000 cubic yards proposed to be dredged, cutting back into uplands partly created from historic dredged material placement.
- 
- photo courtesy of KPFF Engineers*
- Four rounds of sampling performed to define the extent of tributyltin (TBT) discovered during the first round. The fourth round was conducted under a Superfund Agreed Order on Consent.
 - The project was carried out in two phases, both evaluated for DMMP suitable material. Phase 1 involved removal of 70,000 cubic yards of TBT-contaminated sediments as a Superfund Time Critical Removal Action under an EPA/Port Agreed Order on Consent. 11,300 cubic yards were determined to be suitable. Phase 2 involved dredging 500,000 cubic yards of material suitable for unconfined disposal at the Commencement Bay open-water disposal site.

Project timeline

Phase 1

- JARPA submittal initiated DMMP review in early 2013.
- Sampling dates:
 - April 11-19, 2013
 - August 8-9, 2013
 - November 13-16, 2013
 - June 30 to July 9, 2014

Suitability Determinations for proposed dredging of an estimated 49,000 cubic yards, with 11,300 cubic yards found suitable:

- First draft suitability memorandum submitted by the Port, September 18, 2014
- DMMP comments provided on October 6, 2014

- Second draft suitability memorandum submitted on November 13, 2014
- DMMP comments provided on December 1, 2014
- Third draft suitability memorandum submitted on December 5, 2014
- DMMP comments provided on December 17, 2014
- DMMP final Suitability Determination issued on January 8, 2015

Phase 2

Proposed dredging of 500,000 cubic yards followed removal of approximately 70,000 cubic yards of Phase 1 contaminated material

- Ranking reduced to moderate based on post-Phase 1 confirmational sampling
- Sampling dates:
- See Phase 1 dates above
- Confirmational sampling:
 - January 4-5, 2016
 - January 27 and February 9, 2016
- Draft Data Report submitted on October 15, 2014
- DMMP comments on draft report on November 17, 2014
- Final Data Report submitted on November 24, 2014
- Suitability Determination issued on February 25, 2016

Challenges

- Project fell within the Commencement Bay Superfund site and was subject to oversight by DMMP, dredge permitting agencies, and the EPA Superfund group.
- The SAP and evaluations were coordinated with EPA Superfund, particularly in the fourth round of sampling.
- The highest TBT concentrations reported in Puget Sound sediments were found during initial sampling, prompted phasing of dredging to accommodate a Superfund Time Critical Removal Action.
- The TBT determination was ultimately based on porewater, which sometimes failed porewater guidelines when bulk TBT concentrations would have passed. This decision was based on best professional judgment and best available science on the bioavailability of contaminants.
- DMMP reranked areas where high concentrations of TBT were present from moderate to high, which will require more intense sampling in future.
- Prior to issuing the Phase 2 Suitability Determination, DMMP and EPA Superfund required confirmation that Phase 1 removal of TBT was successful.

Flexibility

- DMMP separately reviewed Phase 1 dredging (mainly removal of highly contaminated material) for material suitable for DMMP disposal (11,300 cubic yards out of 70,000 cubic yards were suitable). This approach allowed a more timely resolution and completion of the time-critical removal action.

- The DMMP was timely and responsive to the project proponent during sampling iterations and resolution of bulkhead removal issues.
- Debris screening was not required for all portions of the project and was allowed to be discontinued where debris was determined to be absent during dredging.
- The DMMP coordinated review of the project with EPA Superfund, including post-dredge confirmation that TBT levels were below DMMP limits.
- Testing was not required where upland DMMUs were presumed to be undisturbed native material.
- The DMMP determined that dredging cutback into uplands to realign existing shorelines was acceptable for open-water disposal, subject to suitability testing.
- The DMMP did not require dredging and removal of slight TBT exceedances of surficial contaminated sediments when slope failure occurred (clean material from the upper slope slumped onto downslope area with low residual TBT).

Departures from typical DMMP User Manual procedures

- DMMP review was initiated by JARPA submittal rather than a SAP or pre-SAP conference.
- During the Phase 1 Time Critical Removal, the DMMP worked with the Port of Tacoma to design and conduct four rounds of sampling, with the final round of sampling planned and conducted under a Superfund Agreed Order on Consent. The DMMP evaluated the proposed Phase 1 sediments for suitable material, even though that effort was focused on contaminant removal.
- An area was reranked after the discovery of TBT from moderate to high. After completion of Phase 1 dredging, confirmational sampling was used to down-rank back to moderate for Phase 2.
- Technical challenges:
 - Post-dredge confirmation was required to demonstrate that the goals of the Phase 1 cleanup were met. Additional Phase 1 cleanup dredging was required based on joint EPA Superfund and DMMP evaluation of the confirmational samples.
 - A coring device was required that was capable of cutting through rock (riprap).
 - A shoreline cutback and uplands areas were characterized and dredged.
 - In the Phase 2 area, it was possible that bulkhead structures were buried in the dredge prism. These were addressed with a debris management plan, using a debris screen until no debris was being dredged.

Everett Marina, Phase 1, Port of Everett

Project background

- The project was initially proposed in 2010.
- The original maintenance dredging project included the entire marina and 131,700 cubic yards based on a 2008 survey.
- The marina includes the Everett Shipyard cleanup site.
- All eight DMMUs were assessed for standard DMMP analytes and found suitable.
- Dioxin was analyzed and complications due to elevated dioxin concentrations prompted the Port to request that the DMMP include only DMMU-1 in the Suitability Determination. Dioxin bioaccumulation testing for the remaining DMMUs was initiated after the first Suitability Determination was issued.
- Dioxin was analyzed in two rounds, with the second round triggered by the presence of dioxins found in the first sampling effort.
- The Suitability Decision was amended in January 2012 to include new material deposited from the Snohomish River, without additional testing. The volume increased from 29,000 to 39,500 cubic yards.



Project timeline

- Submittal of a SAP initiated DMMP review on May 13, 2010
- Comments were provided on June 7, 2010
- The SAP was resubmitted on June 23, 2010
- Comments were provided on July 9, 2010
- The final SAP was submitted on July 13, 2010
- The DMMP approved the SAP on July 15, 2010
- Sampling dates:
 - August 16-20, 2010
- The Data Report was submitted on April 1, 2011.
- The Suitability Decision was issued on April 13, 2011.
- Recency was extended from five to seven years (August 2015 to August 2017).
- The Suitability Decision was amended on January 19, 2012 to include recently accumulated sediments.

Challenges

- Dioxin complicated disposal site options for all but one of eight DMMUs, which resulted in phasing the project. All DMMUs were approved for unconfined disposal for all chemicals except that only DMMU-1 was assessed for dioxins. Hence, the Phase 1 Suitability Determination only approved DMMU-1 for open-water disposal.
- Dioxin sampling occurred in two rounds, after a limited initial effort discovered concentrations that affected suitability for open-water disposal.

Flexibility

- The DMMP determined that antimony was unlikely to pose a risk despite quality assurance issues with the analyses. Antimony was undetected at low detection limits but matrix-spike duplicate recovery was below quality assurance limits and flagged as unusable.
- The DMMP determined that the project complied with state antidegradation requirements based on best professional judgment using data from adjacent areas. This determination resulted in fewer dioxin analyses.
- Additional material above what was projected in the 2010 SAP was accepted by DMMP without additional sampling (flexibility in the DMMP guidelines allowed use of best professional judgment in light of ranking for this additional 10,500 cubic yards).

Departures from typical DMMP User Manual procedures

- None were found for this project.

Bellingham Cold Storage/Squalicum Waterway Navigation Channel

Project background

Federal Navigation Channel/Cold Storage Berthing Area

- The project was proposed in 2010.
- The project was conducted within the Squalicum Waterway federal navigation channel in Bellingham Bay. The berthing area had been evaluated several times previously along with the adjacent navigation channel.
- Dioxin had not been analyzed in the previous round of sampling in 2000. The 2007 interim dioxin guidelines were used to determine that the material was suitable for disposal at the Elliott Bay open-water site. One DMMU was suitable for any open-water site and the volume-averaged concentration of dioxins in the 2 DMMUs was acceptable for Elliott Bay.
- The SAP was submitted on July 13, 2010 and the Suitability Decision was issued on November 4, 2010.
- 6,600 cubic yards were proposed to be dredged.
- DMMP provided comments within seven days on the Draft Data Report.
- The dredged material was disposed of at the Elliott Bay open-water disposal site.
- The state antidegradation policy was complied with.



Federal Navigation Channel

- The project was proposed on July 6, 2015.
- 14,200 cubic yards were proposed for dredging from a different portion of the channel than in 2010.
- Benzyl alcohol concentrations exceeded the Screening Level, but bioassays were not required based on recent DMMP experience.
- Dioxin concentrations were below dispersive site limits of 4 parts per trillion.
- The dredged material was determined to be suitable for disposal at any open-water disposal site.
- The state antidegradation policy was complied with.

- Seattle District USACE performed a dioxin analysis for Squalicum and I&J Waterways in Bellingham and the DMMP issued a Suitability Determination in 2012 that verified that all but the very shoreward terminus of Squalicum Waterway was suitable for dispersive site disposal.

Project timeline

Bellingham Cold Storage Berthing Area

- A SAP was submitted initiating DMMP review on July 13, 2010
- The SAP was approved on July 20, 2010
- Sampling was conducted on July 21-22, 2010
- The Draft Data Report was submitted on October 12, 2010
- Comments were provided on October 19, 2010
- The Final Data Report was submitted on October 27, 2010
- The Suitability Determination was issued on November 4, 2010
- Recency was extended 5 years to July 2015

Squalicum Waterway/Bellingham Cold Storage

- The SAP was submitted on July 6, 2015
- The SAP was approved on July 23, 2015
- Sampling was conducted on August 12-13, 2015
- The Final Data Report was submitted on October 12, 2015
- The Suitability Determination was issued on October 29, 2015
- Recency was extended 5 years to August 2020

Challenges

- At the Bellingham Cold Storage Berthing Area, the concentrations of dioxin limited disposal site options for one of the two DMMUs.

Flexibility

- Bioassays were not required when benzyl alcohol concentrations exceeded the Screening Level. DMMP staff had had other projects where toxicity was predicted based on benzyl alcohol concentrations but not observed.
- For the 2010 berthing area Suitability Determination, DMMP determined that dioxins limited disposal options for one of the two DMMUs, but the volume-weighted average concentration for the two DMMUs allowed for disposal at the Elliott Bay open-water site with sequenced disposal of the lowest-concentration DMMU last. This Suitability Determination was based on the 2007 interim dioxin guidelines.
- Additional material that had accumulated above what was projected in the 2015 Squalicum Waterway SAP was accepted by DMMP without additional sampling. Best professional judgment was used given the ranking and sampling requirements for this area.

Departures from typical DMMP User Manual procedures

- None were found for this project.

South Park Bridge, King County DOT

Project background

- The project was located within the Lower Duwamish Waterway Superfund Site with known contaminated sediments.
- Dredging was proposed to remove 26,237 cubic yards of sediment before and during construction of new bridge caissons.
- Best management practices described in the Suitability Determination addressed containment and control measures for working in an area with known contaminated sediments (e.g., sand blankets prior to pile driving and removal).
- King County coordinated with DMMP prior to submitting the SAP.
- The SAP was submitted less than a week prior to sampling, which did not provide DMMP enough time to review it prior to field work.
- The sampling was conducted in two phases, one year apart.
- Bioaccumulation testing was conducted with deviations from DMMP protocols.



*photo by Joe Mabel
<https://commons.wikimedia.org>*

Project timeline

- Early informal coordination with DMMP occurred in December 2008
- A SAP was submitted initiating formal DMMP review on January 13, 2008
- The SAP was not approved prior to fieldwork
- Sampling was conducted on January 20-27, 2009 and February 10-12, 2010
- The Draft Data Characterization Report was submitted on June 30, 2010
- The Final Data Characterization Report was submitted on August 23, 2010
- A Suitability Determination was issued on August 23, 2010, with errata correction on December 13, 2010.

Challenges

- The project was located within the Lower Duwamish Waterway Superfund Site in an area with known sediment contamination.
- Material that was imported from upland sources during caisson construction was not allowed to be disposed of at the open-water disposal site.
- A bioaccumulation study for PCBs was required for open-water disposal.

Flexibility

- DMMP staff assisted county staff in the early stages of SAP preparation, before it was submitted.
- DMMP protocols for bioaccumulation testing were not followed, but the results were used where possible to maximize the usable data.
- An extensive DMMP effort was undertaken to select appropriate interpretive guidelines for evaluating the PCB bioaccumulation results. This work was described in a technical memorandum detailing the basis for and calculation of these guidelines.
- Best professional judgment was used in determining the suitability of several DMMUs based on the sediment quality of overlying DMMUs or DMMUs composed of undisturbed native materials.

Departures from typical DMMP User Manual procedures

- Complex construction and sequencing of dredging was required for this project.
- Bioaccumulation testing triggered an extensive assessment and review of bioaccumulative interpretive guidelines. Tissue levels were compared between test and reference sediments and against FDA guidelines and DMMP Target Tissue Levels. The outcome was a suitable determination for unconfined, open-water disposal at the Elliott Bay disposal site.
- Material from upland sources was imported as part of construction, but was not allowed for DMMP disposal.
- The SAP was submitted without adequate time for DMMP review prior to field work.

Ash Grove Cement, Lower Duwamish Waterway

Project background

- The project was located within the Lower Duwamish Waterway Superfund Site, requiring coordination with EPA's Superfund group.
- Dredging was proposed to maintain depths at the berthing area due to spillage of aggregate during transfer via a conveyor system. This cycle of accumulation and dredging of spilled material had repeatedly occurred under a ten-year maintenance dredging permit issued to allow for recovery of the material.



photo by Joe Mabel
<https://commons.wikimedia.org>

- Separately from DMMP, EPA Superfund required that Ash Grove eliminate the loss of aggregate into the Lower Duwamish Waterway to avoid continued risk of disturbing contaminated sediments and effects on navigation depth.
- The 600 cubic yards of material to be dredged was recently deposited clean aggregate, so sampling was not required.
- Known contamination in underlying sediments was avoided by requiring a foot of aggregate to be left in place, as had been required in previous dredging events at this location.
- Recovered aggregate was dewatered and reused for making cement.
- The facility subsequently submitted a permit application for design changes to their barge loading/unloading structures.

Project timeline

- Pre-SAP coordination occurred on April 1, 2016
- The project proposal and JARPA were submitted on May 4, 2016
- A Suitability Decision was issued on June 30, 2016

Challenges

- The project was located within the Lower Duwamish Waterway Superfund Site and was subject to oversight by DMMP and EPA's Superfund group.
- Limitations on dredge depth were imposed to avoid disturbing known contaminated sediments.

Flexibility

- The project was initiated by a JARPA submitted to the USACE Regulatory Branch rather than a draft SAP to DMMO, since this was a no-test project.
- DMMP determined that no sampling of the aggregate would be required based on a Tier 1 assessment of existing data.
- No leave surface sampling was required due to a requirement to leave a minimum of one foot of aggregate in place.
- Best professional judgment was used to determine that sampling would not be required in accordance with the User Manual's tiered data review process, reflecting flexibility designed into the program to assess project needs and balance economic considerations.

Departures from typical DMMP User Manual procedures

- Dredged material was dewatered and reused for making cement.
- Other requirements were imposed at the project site to protect against loss of material into surface waters and future disturbance of known sediment contamination in the project area.

Zittel's Marina, Olympia

Project background

- The project involved maintenance dredging of 32,000 cubic yards at a small privately owned marina with disposal at the Anderson/Ketron disposal site.
- Biological testing was performed based on SL chemistry hits for a few PAHs in one DMMU, which passed with only a single low-level exceedance.



Project timeline

- Pre-SAP coordination occurred in fall of 2007
- The SAP was submitted on November 16, 2007
- The SAP was approved on December 7, 2007
- Sampling was conducted on January 17-18, 2008
- The Data Report was submitted on May 12, 2008
- A Suitability Decision was issued on July 2, 2008
- A recency extension was granted from five to seven years (January 2013 to January 2015)

Challenges

- The project was not dredged for several years after the Suitability Determination was issued due to other permit requirements that included surveys for eelgrass and sanddab.

Flexibility

- DMMP site use guidelines allow site condition II (minor effects) on site. The low-level chemistry exceedances and low-level bioassay exceedance for one of the two DMMUs passed DMMP guidelines for open-water, unconfined disposal.
- State antidegradation requirements were considered met based on best professional judgment. Sediment coring failed to recover material from the appropriate depths, but staff determined that the coarse-grained sediments were unlikely to be contaminated.

Departures from Typical DMMP User Manual Procedures

- Best professional judgment was used regarding antidegradation when sampling failed to recover leave surface samples.