

Memorandum for Record**June 29, 2023****Subject: DMMP Ranking Revision Determination for Characterization of the Swinomish Federal Navigation Channel****Introduction**

This memorandum documents the consensus determination of the Dredged Material Management Program (DMMP) agencies (U.S. Army Corps of Engineers, Washington Departments of Ecology and Natural Resources, and the U.S. Environmental Protection Agency) for updating the project rank for characterization of the Swinomish Federal Navigation Channel.

Project Description

The Swinomish Federal Navigation Channel consists of an approximately 11-mile navigation channel connection between Skagit Bay and Padilla Bay (**Figure 1**). This federally authorized project requires periodic dredging to maintain safe and reliable navigation for vessels transiting between central Puget Sound and Anacortes, Bellingham, and other locations north and east of Guemes Channel. The channel is typically dredged every two to four years; the next dredge event is planned for the 2023 – 2024 dredge window (15 July 2023 to 15 February 2024). That dredging is covered under the Suitability Determination completed in 2018 (DMMP 2018).

The next characterization for the Swinomish Channel is also scheduled for 2023. Sampling will take place prior to the start of the dredging. This memorandum establishes an updated ranking for this and future characterizations.

Table 1. Project Summary

Waterbody	Swinomish Channel
Water Classification	Estuarine
Current rank	Low
Date of current Suitability Determination	8 February 2018
Recency Expiration Date (Low Rank – 7 years)	September 2024
Rank for next characterization	Project-specific: 4 DMMUs; min 3 samples/DMMU, regardless of volume (target shoals); 10-year recency

Ranking Guidelines and Applicability

DMMP guidelines allow down-ranking of a project after two testing cycles, based on the results from that testing and the use of best professional judgment (DMMP 2021, PSDDA 1988). The definitions of the various ranks must be considered:

- High = many known chemical sources, high concentration of COCs and/or significant acute toxicity
- Moderate = chemical and biological data are not available or are incomplete, and some sources of chemicals of concern exist nearby
- Low-moderate = available data indicate a low rank, but there are insufficient data to confirm the ranking
- Low = few or no sources of COCs, data are available to verify low chemical concentrations

- Very low = project is sufficiently removed from potential sources of COCs, site is subject to strong currents and/or tidal energy and contains at least 80% sand retained on a No. 230 sieve and total organic carbon (TOC) of less than 0.5 percent.

The problem that DMMP has encountered is that some large projects do not easily fit into these general categories. These projects are frequently dredged navigation channels that have been characterized multiple times since the start of the DMMP (then PSDDA) in 1988. Decades of both dredging and characterization have provided information and data about shoaling patterns and areas of relative risk. The Grays Harbor Navigation Channel and the Snohomish Navigation Channel have recently had project-specific ranking changes that target areas of concern while reducing effort where it doesn't provide useful information. The Swinomish Channel also has project-specific issues to consider for ensuring that the channel is both reliably characterized for open-water evaluation while acknowledging that neither dredging nor potential contaminant risks are distributed evenly along its 11-mile length.

Ranking Revision Evaluation

Channel Characteristics. Proposed dredged material settles out from the Skagit River at the southern end of the channel and from Padilla Bay at the northern end of the channel. Tidal fluctuations distribute sediments along the channel bed. This sediment then settles into shoals where flows slow, and forms sand waves where material is mobilized by tidal exchanges.

Human population density is not high in the channel area, and currently there are few anthropogenic contaminant sources. The channel borders the Swinomish Indian Reservation through much of its length to the west; to the east there are primarily agricultural land uses. The town of La Conner and the Shelter Bay Marina are both near the southern end of the channel. Washington State Route 20 and railroads cross the channel over the northern end just south of Fidalgo Bay.

Sediment in the Swinomish Channel consists predominantly of medium to coarse sand. Total organic carbon (%TOC) and % fines have been low in every characterization, with minor variations (**Table 2**). In every case, the maximum %TOC and % fines have been found in either the north or south entrance areas of the channel. The main channel area consistently showed the lowest TOC and largest grain sizes. During only one characterization (in 2002 in the south channel DMMU) did TOC rise above 0.5% and total fines rise above 10%.

Table 2. Total Organic Carbon and Grain Size Summary, 1994 - 2018

Sampling Year	2017		2009		2002		1994	
	min	max	min	max	min	max	min	max
Total Organic Carbon (%)	0.06	0.24	0.10	0.27	0.19	0.94	0.02	0.07
Gravel (%)	0.1	2.1	0.1	0.9	1.2	2.5	1.0	8.0
Sand (%)	92.7	96.9	90.4	97.3	81.1	84.3	92.0	95.0
Silt (%)	0.1	4.7	0.3	7.1	0.5	14.2	0.0	4.0
Clay (%)	0.8	2.8	1.7	2.6	0.8	3.5	0.0	0.0
Total Fines (%)	0.9	7.5	2.0	9.7	1.3	17.7	0.0	4.0

Dredging Patterns. Shoaling and dredging are not equally distributed along the channel, and dredging volumes vary considerably based on federal funding cycles and dredger availability. There is usually more shoaled material above the authorized depth than can be dredged in each dredge event, so the most problematic shoals, as well as the North and South Entrance Channel areas, are typically targeted for priority dredging. When funding and dredgers are available, secondary areas are dredged.

Characterization Findings. The Swinomish Channel has been ranked “Low” through several rounds of testing (**Table 3**). Given the known homogeneous nature of the sediments, no distinction between surface and subsurface material has been required, and grab samples were approved by the DMMP agencies as a representative sampling technique. All material has been found suitable for open-water disposal at either dispersive or non-dispersive DMMP sites. Swinomish dredged material was also used as capping material for a CERCLA cleanup project in Elliott Bay in 2012 (DMMP 2013).

Table 3. Swinomish Channel Characterization History

Sampling Year	Evaluation Type	Rank	Sampling method	Volume Evaluated (cy)	Volume Suitable (cy)
1994	Full characterization	Low	Grab	144,000	144,000
2002	Full characterization	Low	Grab	120,000	120,000
2009	Full characterization + dioxin evaluation	Low	Grab	152,000	152,000
2017	Full characterization	Low	Grab	233,923	233,923

The material characterized in a given sampling event will be dredged and replaced by presumably similar material one or more times between characterizations. This is acknowledged and anticipated by the DMMP, and regular characterizations provide confirmation that the assumptions about suitability of material dredged between sampling events still hold.

Ranking Determination

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

For most ranking decisions, sampling density and number of analyses (i.e., DMMUs) are usually based on proposed dredge volume. The DMMP has chosen to standardize the number of samples and DMMUs required for characterization of the Swinomish Channel, independent of available volume in a given year. Four reaches were identified, each reach representing an area of similar use and typical shoaling. The reasons for this decision include:

1. This project does not fit the typical program “ranking” definitions. Past characterizations seem to indicate that sampling and testing densities less than those required for the Low Rank could be sufficient to represent the dredge prism. Yet a “very low” rank is inappropriate because the channel is not entirely removed from potential sources of contamination.
2. Given the 11-mile length of the channel and varying uses and sources, sediment quality in one area of the channel may not represent sediment quality in another. Partitioning the channel into reaches ensures that areas with different sediment sources and potential risks are characterized separately.
3. Variable dredging and rapid shoaling conditions make volume estimates at one point in time an unreliable predictor of future needs.

Based on the above, the DMMP has given the Swinomish Channel a project-specific rank with the following characterization guidelines:

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

References

- DMMP 2021. *Dredged Material Evaluation and Disposal Procedures (User Manual)*. Dredged Material Management Program, updated July 2021.
- DMMP 2018. *Determination Regarding the Suitability of Dredged Material from the Swinomish Channel Federal Navigation Channel Dredging Project, Evaluated under Section 404 of the Clean Water Act, for Unconfined Open-Water Disposal at the Port Gardner Nondispersive Site or the Rosario Strait Dispersive Disposal Site*. Prepared by the Dredged Material Management Program, 8 February 2018.
- DMMP 2013. *Dredged Material Management Program Biennial Report: Dredging Years 2012/2013*. Prepared by the DMMP Agencies.
- DMMP 2009. *Determination on the Suitability of Proposed Dredged Material Tested for the Federal Swinomish Channel Navigation Dredging Project (NWS-OD-TS-32) Evaluated under Section 404 of the Clean Water Act for either Open-Water Disposal at the Rosario Strait Dispersive Disposal Site, or at an Appropriate Beneficial Use Site*. Prepared by the Dredged Material Management Program, 11 December 2009.
- DMMP 2002. *Determination on the Suitability of Proposed Dredged Material from the Swinomish Federal Navigation Channel (CENWS-OD-TS-NS-15) for Disposal at the Rosario Strait DMMP Disposal Site, or for Local Beneficial Use*. Prepared by the Dredged Material Management Program, 27 June 2002.
- DMMP 1994. *Determination of the Suitability of Dredged Material tested under PSDDA Evaluation Procedures for the U.S. Army Corps of Engineers maintenance Dredging of the Swinomish Channel for Disposal at the PSDDA Rosario Strait Open Water Disposal Site*. Prepared by the Dredged Material Management Program, 1 August 1994.
- Ecology 2013. *Sediment Management Standards – Chapter 173-204 WAC*. Washington State Department of Ecology, February 2013.

PSDDA 1988. *Evaluation Procedure Technical Appendix – Phase 1 – Central Puget Sound*. U.S. Army Corps of Engineers Seattle District, U.S. Environmental Protection Agency Region 10, Washington State Department of Ecology, Washington State Department of Natural Resources.

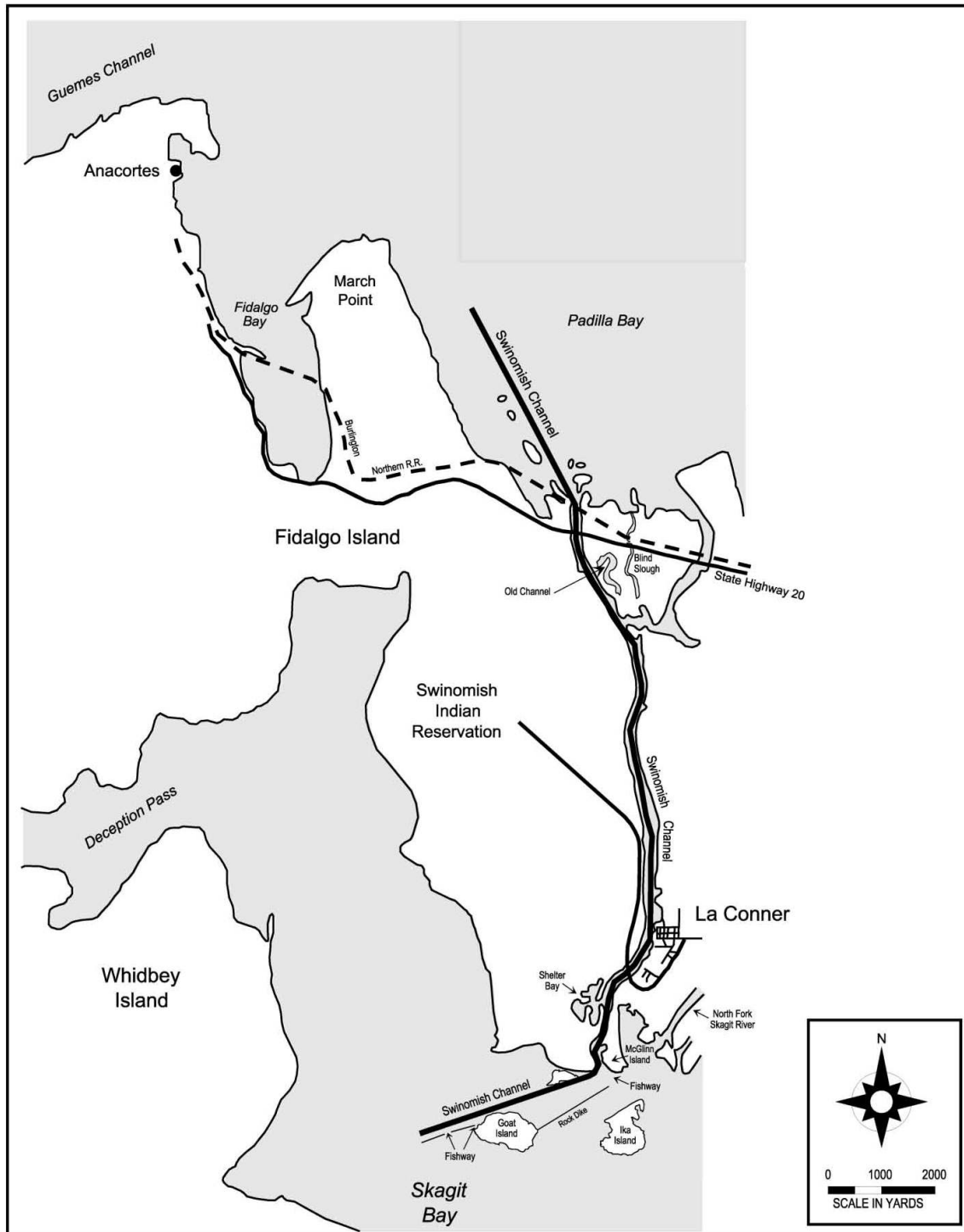


Figure 1. Snohomish Channel Vicinity Map

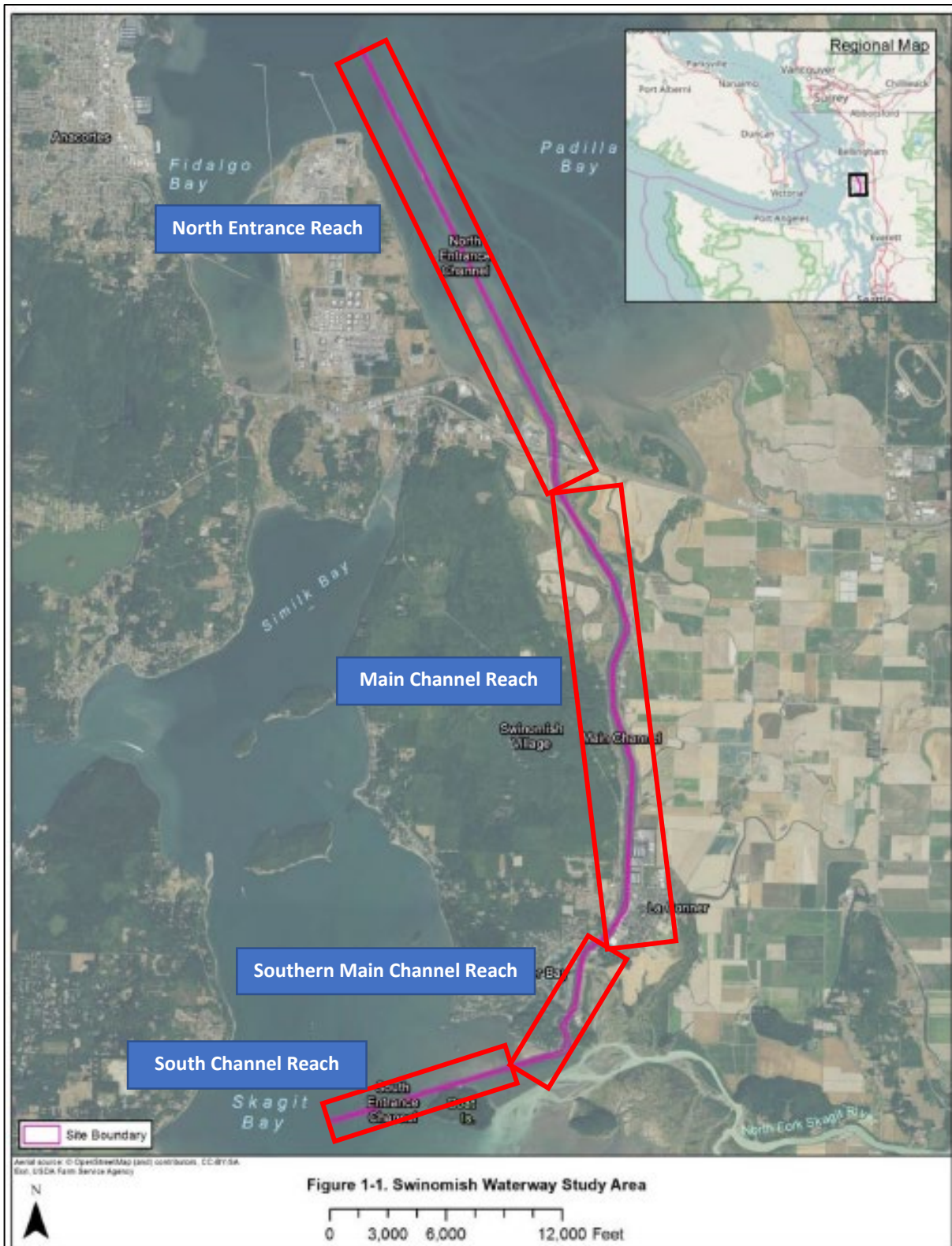


Figure 2. Reaches for future characterizations of the Swinomish Channel

Agency Signatures

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